Appendix A
Cross-Cohort Comparisons

A.1 Cross-Cohort Comparison Crosswalks

The Education Longitudinal Study of 2002 (ELS:2002) second follow-up (2006) data can be used in cross-cohort (intercohort) comparisons to earlier National Center for Education Statistics (NCES) high school cohorts at a comparable point in their educational and occupational careers. Specifically, the following time series comparisons may be made:

- High school seniors 2 years out of high school: National Longitudinal Study of the High School Class of 1972 (NLS:72) (1974), the High School and Beyond (HS&B) senior cohort (1982), HS&B sophomore cohort (1984), the National Education Longitudinal Study of 1988 (NELS:88) (1994), and ELS:2002 (2006).
- High school sophomores 4 years later: HS&B (1984), NELS:88 (1994), and ELS:2002 (2006). Such comparisons may encompass dropouts, students, or both.
- In addition to capturing cross-sections, each at a single time point, one may compare various panels to capture longitudinal intercohort changes. Viable panels could be drawn from the data of seniors 2 years later (1972–1974 vs. 1980–1982, 1982–1984, 1992–1994, and 2004–2006; or the trajectories of sophomores over a 4-year period (1980–1984 vs. 1990–1994 and 2002–2006). Much more extended longitudinal comparisons between ELS:2002 and NELS:88 and HS&B can presumably be made in the future.[1]

Although the four studies[2] 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 into account the factors discussed below, as they pertain to assessment results, questionnaire content, archival records data (such as academic transcripts), and other factors (such as differences in eligibility, sample design, response rates, and so on).[3]

A.1.1 Comparability of Test Scores

While some cross-cohort comparison of assessment results is possible, it is limited by two factors: first, different subjects were tested at different points in time; and second, not all of

[1] For example, starting with high school 9th-grade transcripts in 1979 and 1989, proceeding through the high school years with test and questionnaire data as well as transcript information, and tapping postsecondary transcripts for a period of about 8.5 years past high school (to the fall of 1990 and 2000), the 11-year educational trajectories of the postsecondary-bound portions of the HS&B and NELS:88 cohorts over this critical transition period could be compared. The ELS:2002 cohort could be added as a third comparison point, at the end of study.

[2] A fifth NCES high school cohort longitudinal study, the High School Longitudinal Study of 2009, is currently in its planning and development phase. While its design will differ—data collection at fall of ninth grade, spring of eleventh grade, and continuing into the postsecondary years—it will offer some scope for comparison of trends in expectations, values and beliefs across the transition period from high school to postsecondary education and the labor force.

[3] For a detailed discussion of cross-cohort comparability issues in the base year and first follow-up, as well as a crosswalk of comparable items, see Ingels et al. (2005), appendix H. For a broad discussion of comparability issues across all four high school cohorts, see Ingels (2004). For a detailed discussion of comparability issues in the transcript component, see Bozick et al. (2006), appendix A. Many of the content differences between similar but not identical items across the three sophomore year questionnaires are highlighted in the recent trend report by Cahalan et al. (2006). Dalton et al. (2007) illustrate use of transcript data to analyze math and science coursetaking trends from HS&B through ELS:2002, while Ingels and Dalton (2007, forthcoming) compare seniors in the period 1972–2004.

the tests have been (or can be) equated. Table A-1 shows subjects tested by study and high school round.

Table A-1. Test subjects in the longitudinal high school cohorts, by study and year conducted: 1972–2004

Study and year conducted	Test subjects
NLS:72, 1972	Vocabulary, reading, mathematics, inductive reasoning, memory, and perception
HS&B 1980 senior cohort, 1980	Vocabulary, reading, mathematics, picture number, mosaic comparison, and visualization in three dimensions
HS&B 1980 sophomore cohort, 1980	Vocabulary, reading, mathematics, science, writing, and civics
HS&B 1980 sophomore cohort, 1982	Vocabulary, reading, mathematics, science, writing, and civics
NELS:88, 1990	Reading, mathematics, science, and social studies
NELS:88, 1992	Reading, mathematics, science, and social studies
ELS:2002, 2002	Reading and mathematics
ELS:2002, 2004	Mathematics

NOTE: ELS:2002 = Education Longitudinal Study of 2002; HS&B = High School and Beyond Longitudinal Study; NELS:88 = National Education Longitudinal Study of 1988; NLS:72 = National Longitudinal Study of the High School Class of 1972.
SOURCE: Ingels et al. (2005).

Test linkages of some variety have been effected to certain external data sources such as the National Assessment of Educational Progress (NAEP) and the Program for International Student Assessment (PISA) (specifically, these linkages are concordances, in which ELS:2002 test results have been put on the NAEP or PISA scale), as well as across some points of comparison within the four longitudinal high school cohort studies (these linkages are based on anchor [common item] equating). Table A-2 shows tests for which there is a linkage. However, even when tests have not been placed on the same scale, one may still use an effect size metric to examine group differences or change in the position of one group relative to another over time. (For examples of such analysis, see Green, Dugoni, and Ingels 1995, and Hedges and Nowell 1995).

Table A-2. NCES linked test scores for the longitudinal high school cohorts, by base test: 1972–2005

Base test	Linked tests
NLS:72 mathematics (G12)	HS&B mathematics
HS&B 1980 mathematics (G10)	NELS:88 1990 mathematics, ELS:2002 2002 mathematics
NELS:88 1990 reading (G10)	ELS:2002 2002 reading
NELS:88 1992 mathematics (G12)	ELS:2002 2004 mathematics
NELS:88 1992 mathematics (G12)	NAEP 1992 mathematics
ELS:2002 2002 reading (G10)	PISA 2000 reading
ELS:2002 2002 mathematics (G10)	PISA 2003 mathematics
ELS:2002 2004 mathematics (G12)	NAEP 2005 mathematics

NOTE: ELS:2002 = Education Longitudinal Study of 2002; HS&B = High School and Beyond Longitudinal Study; NAEP = National Assessment of Educational Progress; NELS:88 = National Education Longitudinal Study of 1988; PISA = Program for International Student Assessment. NCES = National Center for Education Statistics.
SOURCE: Ingels et al. (2005).

A.1.2 Comparability of Questionnaire Content

No item crosswalk has been created for the second follow-up questionnaire data. Although the ELS:2002 second follow-up has collected data that are very similar to the data obtained by NELS:88 (and HS&B and NLS:72), many of the specific data elements for 2006 have been changed in various ways. Data users who would like to compare ELS:2002 second follow-up results with those of the NELS:88 third follow-up (1994) should examine the questionnaire content information provided in this manual in conjunction with the NELS:88 computer-assisted telephone interview (CATI) instrument code (appendix A in Haggerty et al. 1996) or the 1994 base questionnaire (appendix Q in Ingels et al. 1994).

A.1.3 Comparability of High School Transcripts

Comparisons may be drawn between ELS:2002, NELS:88, and HS&B high school transcript data, in terms of Carnegie units earned in academic coursetaking (English, mathematics, science, social studies, computer science, and foreign language), as well as specific courses completed in academic (and other) subjects. For an example of such analyses, covering coursetaking from 1982 to 2004, see Dalton et al. (2007). Comparisons may also be drawn to the NAEP high school transcript studies.[4]

A sample design difference between HS&B on the one hand and NELS:88 and ELS:2002 on the other has implications for comparisons of the transcripts of seniors across the studies. The HS&B sophomore cohort was not freshened in 1982 to ensure a truly representative senior cohort; however, the NELS:88 and ELS:2002 cohorts were freshened to give spring-term seniors who were not sophomores or not in the country 2 years previously some chance of selection into the study. If one wants to compare a spring senior cohort, or the subset of spring seniors who in fact graduated (say with a regular or honors diploma), then HS&B provides a biased sample. However, the bias is comparatively small, and represents, from the point of view of trends in coursetaking (such as more advanced coursetaking over time) a conservative bias that understates the actual amount of positive change. This matter is discussed in depth in Dalton et al. (2007).

Analysts interested in comparing coursetaking patterns should examine the Classification of Secondary School Courses (CSSC) codes available in each study. The CSSC codes are the same across studies, thus facilitating direct comparisons. However, the list has evolved and certain subject areas (for example, computer science) have changed accordingly. For some analyses, users may wish to construct measures in a variety of ways to ensure that their findings are robust with respect to different variable specifications. In addition, analysts should consider changes in subject areas over time when conducting time trend analyses and interpreting findings.

One obstacle to precise comparison is that some students were excluded from HS&B and from NELS:88, owing to severe disabilities or language barriers. No students were excluded

[4] NAEP is a spring-defined cohort. To ensure a spring-to-spring basis for comparing ELS:2002 transcripts to NAEP transcripts, the graduating class should be defined (using the high school exit status variable for subsetting) as those who graduated between January 1 and August 31, 2004. Apart from compatibility with NAEP grade cohort definitions, this reference period also best reflects the ELS:2002 (and, adjusted to year, NELS:88) sample designs, since sample freshening is keyed to the spring term. For example, 2003 fall term (or 1991 fall term for NELS:88) 12th-graders who were not 10th-graders in the United States 2 years before and who graduated prior to the spring term are not represented in freshening, from which they are systematically excluded.

from the ELS:2004 transcript component (or from the NAEP transcript studies). However, if one restricts the analysis sample from each survey to a subset of sample members who were high school graduates with a regular or honors diploma and had a complete set of transcripts, then HS&B and NELS:88 will be roughly equivalent in sample to the NAEP and ELS:2002 transcript samples (see Hoachlander 1991 or Ingels and Taylor 1995 on the use of this filter, which defines a complete transcript as one that records 16 or more Carnegie units, with a positive, nonzero number of credits completed in English). However, even when no adjustment is made for difference in inclusion or exclusion, the impact on estimates is small and in a predictable direction (for a detailed appraisal of the magnitude and implications of sample exclusion in HS&B and NELS:88, see Ingels 1996). Table A-3 shows eligibility and exclusion for NCES high school academic transcript collections by data source.

Table A-3. Eligibility and exclusion for NCES high school academic transcript collections, by data source: 1987–2005

Eligibility/exclusion in NCES transcript studies	Data source
Severely disabled and non-English-speaking students excluded	HS&B
No students excluded	HSTS: 1987, 1990, 1994, 1998, 2000, 2005
Severely disabled and non-English-speaking students excluded	NELS:88
No students excluded	ELS:2002

NOTE: NCES = National Center for Education Statistics; HS&B = High School and Beyond Longitudinal Study; HSTS = High School Transcript Studies; NELS-88 = National Education Longitudinal Study of 1988; ELS: 2002 = Education Longitudinal Study of 2002.
SOURCE: Ingels et al. (2005).

A.1.4 Other Factors Affecting Comparability

Though the studies were designed to be as comparable as possible, caution must nonetheless be exercised in comparing NLS:72, HS&B, NELS:88, and ELS:2002 data. School and student response rates differed somewhat, as did item response rates. Missing item data have been statistically imputed in ELS:2002 (for key variables only), though not in the prior studies (the impact of imputation on comparability across studies is explored in Ingels et al. 2005, NCES 2006-344, appendix C). Likewise, missing test scores have been imputed in ELS:2002. Eligibility rules were sometimes somewhat different. The earlier studies used a weighting cell approach for nonresponse adjustments in weighting; ELS:2002 used propensity modeling. (However, methodological work conducted in ELS:2002—see appendix K—suggests this difference would have little impact and should not be a threat to comparability.) There were differences in mode and precise timing of survey administration. The technology of data collection has also changed considerably over the years, especially for out-of-school cohorts. These data were first collected by paper-and-pencil questionnaires, which were replaced first with computerized telephone and personal interviews, and then in the ELS:2002 second follow-up almost completely by web self-administrations. The extent of the impact of mode effects has not been measured in field test experiments or by other devices, although every effort has been made to construct questionnaires that minimize the potential for mode differences. Sociolinguistic changes in the United States over this 32-year period may also affect comparability, and even standard classification variables, such as race classifications, have subtly changed over time.

A.2 Appendix A References

Bozick, R., Lytle, T., Siegel, P.H., Ingels, S.J., Rogers, J.E., Lauff, E., and Planty, M. (2006). *Education Longitudinal Study of 2002: First Follow-up Transcript Component Data File Documentation* (NCES 2006-338). U.S. Department of Education. Washington, DC: National Center for Education Statistics.

Cahalan, M.W., Ingels, S.J., Burns, L.J., Planty, M., and Daniel, B. (2006). *United States High School Sophomores: A Twenty-Two Year Comparison, 1980–2002* (NCES 2006-327). U.S. Department of Education. Washington, DC: National Center for Education Statistics.

Dalton, B., Ingels, S.J., Downing, J. and Bozick, R. (2007). *Advanced Mathematics and Science Coursetaking in the Spring High School Senior Classes of 1982, 1992, and 2004* (NCES 2007-312). Washington, DC: National Center for Education Statistics.

Green, P.J., Dugoni, B., and Ingels, S.J. (1995). *Trends Among High School Seniors, 1972–1992* (NCES 95-380). U.S. Department of Education. Washington, DC: National Center for Education Statistics.

Haggerty, C., Dugoni, B., Reed, L., Cederlund, A., and Taylor, J.R. (1996). *NELS:88/94 Methodology Report* (NCES 96-174). U.S. Department of Education. Washington, DC: National Center for Education Statistics.

Hedges, L.V., and Nowell, A. (1995). Sex Differences in Mental Test Scores, Variability, and Numbers of High-Scoring Individuals. *Science 269*(7): 41–45.

Hoachlander, E.G. (1991). *Participation in Secondary Vocational Education*, *1982–1987* (NCES 91-667). U.S. Department of Education. Washington, DC: National Center for Education Statistics.

Ingels, S.J. (1996). *Sample Exclusion in NELS:88—Characteristics of Base-Year Ineligible Students; Changes in Eligibility Status After Four Years* (NCES 96-723). U.S. Department of Education. Washington, DC: National Center for Education Statistics.

Ingels, S.J. (2004, April). *Creating Time Series Data Sets: Reconciling the Conflicting Imperatives of Continuity and Change*. Paper presented at the American Educational Research Association Annual Meeting, San Diego, California (ERIC ED490756). Retrieved July 10, 2007, from http://www.eric.ed.gov.

Ingels, S.J., and Dalton, B. (forthcoming). *Trends Among High School Seniors, 1972–2004*. Washington, DC: National Center for Education Statistics.

Ingels, S.J., Dowd, K.L., Baldridge, J.D., Stipe, J.L., Bartot, V.H., and Frankel, M.R. (1994). *NELS:88 Second Follow-up: Student Component Data File User's Manual* (NCES 94-374). U.S. Department of Education. Washington, DC: National Center for Education Statistics.

Ingels, S.J., Pratt, D.J., Rogers, J., Siegel, P.H., and Stutts, E.S. (2005). *Education Longitudinal Study of 2002: Base Year to First Follow-up Data File User's Manual* (NCES 2006-344). U.S. Department of Education. Washington, DC: National Center for Education Statistics. Retrieved October 15, 2006, from http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2006344.

Ingels, S.J., and Taylor, J.R. (1995). *National Education Longitudinal Study of 1988: Conducting Cross-Cohort Comparisons Using HS&B, NAEP, and NELS:88 Academic Transcript Data* (NCES 95-06). U.S. Department of Education. Washington, DC: National Center for Education Statistics Working Paper.

Appendix B
Quick Guide to Using the ELS:2002/06 Data

The purpose of the "Quick Guide" is to orient users of the Education Longitudinal Survey of 2002 (ELS:2002) electronic codebook (ECB) data to suggested techniques for working with the data files. Special attention will be paid to topics that will help users easily achieve error-free results in working with ELS:2002 data. This guide is meant to serve as an introduction to, not a replacement for, the *ELS:2002 Base-Year to Second Follow-up Data File Documentation* (NCES 2007-347).

The first two sections of this guide provide an overview of the ELS:2002 survey and available data files. The information found in this appendix is based on the ELS:2002/06 ECB (NCES 2007-346). The third section provides general instructions on how to get started using the ELS:2002/06 data and an orientation to the software that can be used to manipulate the data. The final section contains a series of frequently asked questions (FAQs) that are based on past user inquiries to the National Center for Education Statistics (NCES) and the responses.

B.1 Introduction to ELS:2002

B.1.1 Overview

ELS:2002 represents a major longitudinal effort designed to provide trend data about critical transitions experienced by students as they proceed through high school and into postsecondary education or their careers. The 2002 sophomore cohort (augmented by an overlapping 2004 senior cohort) is being followed, initially at 2-year intervals, to collect policy-relevant data about educational processes and outcomes, especially as such data pertain to student learning, predictors of dropping out, and high school effects on students' access to, and success in, postsecondary education and the workforce.

In the spring-term 2002 base year of the study, over 15,000 high school sophomores were surveyed and assessed in a national sample of 752 public and private high schools with 10th grades. Their parents, teachers, principals, and librarians were surveyed as well. In addition, cognitive tests in mathematics and reading were administered to these students.

In the first of the follow-ups, base-year students who remained in their base-year schools were resurveyed and tested (in mathematics) 2 years later, along with a freshening sample that makes the study representative of spring 2004 high school seniors nationwide. Students who had transferred to a different school, had switched to a homeschool environment, graduated early, or who had dropped out were administered a customized questionnaire tailored to their first follow-up status. School administrators at the participating schools were surveyed once again. Academic transcripts were collected in the winter of 2004–2005; student transcript and course catalogue/offerings data have been added to the ELS:2002 database.

The second follow-up data collection took place in 2006, when most sample members were 2 years out of high school, and maps the transition of the majority of cohort members out of secondary education. For the cohort as a whole, the second follow-up obtained information that will permit researchers and policymakers to better understand issues of postsecondary educational access and choice. Thus, a major focus of the second follow-up interview was the postsecondary decision-making process as reflected in applications to college and initial postsecondary enrollment histories. Additionally, it followed students who did not enroll in college in the 2-year period immediately after high school, and thus provides information on

reasons students did not attend. It also provides information on the transition of non-college-bound students into the labor force.

The second follow-up survey used a web-enabled system to program the 2006 questionnaire for self-administration. The same electronic instrument was used for interviewer administration as well, through CATI and CAPI instruments. (The self-administered and interviewer-administered survey instruments are indistinguishable in terms of screen text and skip patterns in each of the three modes.) The advantages of a web-based instrument include real-time data capture and access, including data editing in parallel with data collection.

B.1.2 Major Features

The major features of ELS:2002 include the integration of student, dropout, parent, teacher, and school data; the initial concentration on a 10th-grade student cohort with the same individuals surveyed repeatedly over time; the addition of a 12th-grade cohort 2 years later; the inclusion of supplementary components such as a course offerings and high school transcript study; and the design linkages to previous longitudinal studies (the National Longitudinal Study of 1972 [NLS:72], High School and Beyond [HS&B], and the National Education Longitudinal Study of 1988 [NELS:88]) and other current studies such as the Program for International Student Assessment (PISA) and the National Assessment of Educational Progress (NAEP).

B.1.3 Research Issues

Apart from helping to describe the status of high school students and their schools, ELS:2002 will provide information to help address a number of key policy and research questions. Part of its aim is to inform decision makers, educational practitioners, and parents about the changes in the operation of the educational system over time and the effects of various elements of the system on the lives of the individuals who pass through it. By design, for most purposes, the basic unit of analysis is the student, with the other components providing contextual information. The second follow-up (2006) data mark, for most sample members, the transition from high school to postsecondary education or the world of work. Issues that can be addressed with ELS:2002 data include

- students' academic growth in mathematics;
- the process of dropping out of high school;
- the association between family background and the home education support system and students' educational success;
- the features of effective schools;
- the relationship between coursetaking choices and success in the high school years (and thereafter); and
- the distribution of educational opportunities as registered in the distinctive school experiences and performance of students from various subgroups. Such subgroups include the following:
  - students in public and private high schools;
  - language minority students;

- students with disabilities;
- students in urban, suburban, and rural settings;
- students in different regions of the country;
- students from upper, middle, and lower socioeconomic status levels;
- male and female high school students; and
- students from different racial or ethnic groups.

With completion of high school, and starting with the 2006 round, new topics can be addressed, including

- the later educational and labor market activities of high school dropouts;
- the transition of those who directly enter the labor market;
- access to, and choice of, postsecondary educational institutions; and
- adult roles, such as family formation and civic participation.

Further in the future, ELS:2002 data may support analyses of further issues:

- persistence in postsecondary education;
- baccalaureate attainment; and
- early social and economic rates of return on education.

These research and policy issues can be investigated at several distinct levels of analysis. The overall scope and design of the study provide for the following four analytical levels:

- cross-sectional profiles of the nation's high school sophomores (2002), seniors (2004), and post-sophomore-year dropouts (2004);
- longitudinal analysis (including examination of life course changes);
- intercohort comparisons with American high school students of earlier decades; and
- international comparisons: U.S. 15-year-olds to 15-year-olds in other nations, including postsecondary and other longitudinal outcomes for the United States that can be related to scale scores in mathematics and reading from PISA.

Since there are a number of content and design similarities between ELS:2002 and its predecessor, NELS:88, researchers are strongly encouraged to examine the NELS:88 annotated bibliography found at http://nces.ed.gov/surveys/nels88/Bibliography.asp. Although it has not yet grown to the dimensions of the NELS:88 literature, a bibliography is also maintained for ELS:2002 at http://nces.ed.gov/surveys/els2002/Bibliography.asp.

The NELS:88 and ELS:2002 bibliographies, arranged alphabetically by author by year, provide abstracts for journal articles, books, conference presentations, reports, and dissertations that have used the NELS:88 data. They were derived from computer searches of online bibliographic databases such as Dissertation Abstracts, ERIC, Psychological Abstracts, Sociological Abstracts, and Major Papers, as well as the NCES website.

Although the ELS:2002 database supports a wide range of analyses, ELS:2002 does have both substantive and methodological limitations. Because of increasing concern with burden on schools and greater restrictions on the collection of sensitive data, the base year and first follow-up ELS:2002 questionnaires and test battery reflect a reduced number both of items and policy areas. As with any data collection effort, there are design constraints (e.g., ELS:2002 did not sample regional or area vocational schools; the study did not test dropouts in 2004) and limitations of the data (e.g., small cell sizes for certain groups of individuals) that must be taken into consideration when planning analyses that use ELS:2002.

B.1.4 Must-Read Publications

Before a researcher attempts to use the ELS:2002 data files, it is strongly suggested that time be spent reading the ELS:2002 user's documentation that references the ELS:2002 base-year, first, and second follow-up studies. The following list of documents will provide researchers with much of the information that they will need to understand the complexities of the ELS:2002 data files. In addition, several substantive reports provide a base from which researchers can identify potential research topics from the ELS:2002 data files. These reports are also listed below. Finally, researchers should consult the ELS:2002 website for the latest information and releases: nces.ed.gov/surveys/els2002/.

Manuals and Technical Documentation

Bozick, R., Lytle, T., Siegel, P.H., Ingels, S.J., Rogers, J.E., Lauff, E., and Planty, M. (2006). *Education Longitudinal Study of 2002: First Follow-up Transcript Component Data File Documentation* (NCES 2006-338). U.S. Department of Education. Washington, DC: National Center for Education Statistics. (Note: this report is available only with the ELS:2002 restricted use transcript files.)

Burns, L.J., Heuer, R., Ingels, S.J., Pollack, J., Pratt, D.J., Rock, D., Rogers, J., Scott, L.A., Siegel, P., and Stutts, E. (2003). *Education Longitudinal Study of 2002 Base Year Field Test Report* (NCES 2003-03). U.S. Department of Education. Washington, DC: National Center for Education Statistics.

Ingels, S.J., Pratt, D.J., Rogers, J.E., Siegel, P.H., and Stutts, E. (2004). *Education Longitudinal Study of 2002: Base Year Data File User's Manual* (NCES 2004-405). U.S. Department of Education. Washington, DC: National Center for Education Statistics.

Ingels, S.J., Pratt, D.J., Rogers, J.E., Siegel, P.H., and Stutts, E. (2005). *Education Longitudinal Study of 2002: Base-Year to First Follow-Up Data File Documentation* (NCES 2006-344). U.S. Department of Education. Washington, DC: National Center for Education Statistics.

Ingels, S.J., Pratt, D.J., Wilson, D., Burns, L.J., Currivan D., Rogers, J.E., and Hubbard-Bednasz, S. (2007) *Education Longitudinal Study of 2002: Base-Year to Second Follow-up Data File Documentation* (NCES 2007-347). U.S. Department of Education. Washington, DC: National Center for Education Statistics.

NCES Reports

Cross-Cohort Analyses: Sophomores, 1980–2002

Cahalan, M.W., Ingels, S.J., Burns, L.J., Planty, M., and Daniel, B. (2006). *United States High School Sophomores: A Twenty-Two Year Comparison, 1980–2002* (NCES 2006-327). U.S. Department of Education, National Center for Education Statistics. Washington, DC: U.S. Government Printing Office.

Cross-Cohort Analyses: Seniors, 1982–2004, 1972–2004

Dalton, B., Ingels, S.J., Downing, J. and Bozick, R. (2007). *Advanced Mathematics and Science Coursetaking in the Spring High School Senior Classes of 1982, 1992, and 2004* (NCES 2007-312). U.S. Department of Education, National Center for Education Statistics. Washington, DC: U.S. Government Printing Office.

Ingels, S.J., and Dalton, B. (2007, forthcoming). *Trends Among High School Seniors, 1972–2004*. Washington, DC: National Center for Education Statistics.

Cross-Sectional Analyses: Base Year Schools[1]

Planty, M., and DeVoe, J.F. (2005). *An Examination of the Conditions of School Facilities Attended by Tenth-Grade Students in 2002* (NCES 2006-302). U.S. Department of Education, National Center for Education Statistics. Washington, DC: U.S. Government Printing Office.

Scott, L.A. (2004). *School Library Media Centers: Selected Results From the Education Longitudinal Study of 2002* (ELS:2002) (NCES 2005-302). U.S. Department of Education, National Center for Education Statistics. Washington, DC: U.S. Government Printing Office.

Cross-Sectional Analyses: Sophomores, Seniors, and the 2004 Graduating Class

Ingels, S.J., Burns, L.J., Chen, X., Cataldi, E.F., and Charleston, S. (2005). *A Profile of the American High School Sophomore in 2002: Initial Results from the Base Year of the Education Longitudinal Study of 2002* (NCES 2005-338). U.S. Department of Education. Washington, DC: National Center for Education Statistics.

Ingels, S.J., Planty, M., and Bozick, R. (2005). *A Profile of the American High School Senior in 2004: A First Look—Initial Results from the First Follow-up of the Education Longitudinal Study of 2002* (NCES 2006-348). U.S. Department of Education. Washington, DC: National Center for Education Statistics.

Planty, M., Bozick, R., and Ingels, S.J. (2006). *Academic Pathways, Preparation, and Performance: A Descriptive Overview of the Transcripts from the High School Graduating Class of 2003-04* (NCES 2007-316). U.S. Department of Education, National Center for Education Statistics. Washington, DC: U.S. Government Printing Office.

[1] Both publications report results both at the school level and at the student level.

Longitudinal Analyses

Bozick, R., and Ingels, S.J. (2007). *Mathematics Coursetaking and Achievement at the End of High School: Evidence from the Education Longitudinal Study of 2002* (ELS:2002) (NCES 2007-329). U.S. Department of Education, National Center for Education Statistics. Washington, DC: U.S. Government Printing Office.

Bozick, R., and Lauff, E. (2007). *A First Look at the Initial Postsecondary Experiences of the Sophomore Class of 2002* (ELS:2002) (NCES 2007-308). U.S. Department of Education, Washington, DC: National Center for Education Statistics.

Hampden-Thompson, G., Kienzl, G., Daniel, B., and Kinukawa, A. (2007). *Course Credit Accrual and Dropping Out of High School*. (NCES 2007-018). Issue Brief. U.S. Department of Education. Washington, DC: National Center for Education Statistics.

B.2 Description of ELS:2002 Files and Electronic Codebooks

The ELS:2002/06 data files are available on a restricted-use ECB. The following waves of ELS:2002 data are included:

2002—Base Year (BY)

2004—First Follow-up (F1) (including transcripts)

2006—Second Follow-up (F2)

Those who do not require direct access to microdata may also be interested in NCES's ELS:2002 web-based Data Analysis System (DAS).

B.2.1 Dataset: ELS:2002 Base Year (2002) Through Second Follow-up (2006)

The restricted-use student "megafile" contains about 16,200 cases and includes all respondents who participated in either initial wave (base year and/or first follow-up), with the exception of a handful of cases that have been removed from the longitudinal file owing to death, study withdrawal, or continuing ineligibility. The student megafile includes base-year questionnaire-incapables who became eligible respondents in the first follow-up as well as freshened 12th-grade respondents (see Ingels et al. 2005 for a description of base-year questionnaire-incapables and freshened 12th-grade students). Data for each student for 2002 (base year), 2004 (first follow-up), and 2006 (second follow-up) can be thought of as one continuous record that contains the following sections:

1. universe and cross-round student status variables;
2. base-year composite variables, assessment scores, and weights;
3. first follow-up composite variables, assessment scores, and weights;
4. first follow-up student high school transcript variables;
5. second follow-up composite variables and weights;
6. base-year student questionnaire variables;
7. first follow-up student questionnaire variables;
8. first follow-up dropout questionnaire variables;

9. first follow-up transfer questionnaire variables;
10. first follow-up early graduate questionnaire variables;
11. first follow-up new participant supplement variables;
12. second follow-up questionnaire variables:
    12a. high school;
    12b. postsecondary education;
    12c. employment;
    12d. community engagement;
13. base-year parent variables;
14. base-year teacher variables (both English and math);
15. base-year school composites at the student level;
16. first follow-up school composites at the student level;
17. base-year school administrator questionnaire variables at the student level;
18. base-year school library questionnaire variables at the student level; and
19. base-year school facilities checklist variables at the student level.

The restricted-use school megafile includes approximately 2,000 schools identified as base-year-responding schools, first follow-up new and "convenience" schools, and schools identified in the transcript component. The school file contains the following sections:

1. base-year school composites and weight at the school level;
2. first follow-up school composites at the school level;
3. base-year school administrator questionnaire variables at the school level;
4. base-year school library questionnaire variables at the school level;
5. base-year school facilities checklist variables at the school level; and
6. first follow-up course offerings variables at the school level.

The restricted use ECB includes the following additional sections that are linkable to the student megafile:

1. high school transcript student course file;
2. high school transcript course offering file;
3. postsecondary institutional file; and
4. ancillary records data sources (e.g., ACT and SAT, postsecondary federal grant and loan files, GED test results).

Not all sections will apply to every student. Data for each section is dependent on the sample member's historical status. For example, a second follow-up respondent who was freshened in the first follow-up will have no base-year student data. In another example, a student who is in school and in the 12th grade in 2004 will not have any data for other first follow-up instruments: dropout, early graduate, or homeschooled.

B.2.2 Description of ELS:2002 Electronic Codebooks

The dataset described above is integrated within NCES's Electronic Codebook (ECB) system. The ECB is a tool that allows the user to browse through the lists of ELS:2002 variables, variable descriptions, and frequencies.

The ECB allows the user to search a list of variables based on key words 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; access data files for extraction; and create system files for use in statistical software packages like SPSS and SAS. See the ELS:2002 ECB guidebook on the CD-ROM for a full description of the functions of the ECB.

B.2.3 CD-ROM

The datasets, ECB, and supporting documentation for the ELS:2002/06 base-year to second follow-up data collection are located on one CD-ROM (NCES 2007-346). This data product contains

- ELS:2002 base-year (2002), first follow-up (2004) (including transcript), and second follow-up (2006) data;
- ECB software (discussed above);
- this quick guide;
- an ECB guidebook; and
- electronic copies of the ELS:2002 documentation.

B.3 Getting Started

This section addresses:

1. What you need to know to get started using the ELS:2002/06 data;
2. How to navigate through the data; and
3. How to generate program syntax to manipulate the data.

B.3.1 Getting Started Using the ELS:2002/06 Data

Minimum Requirements

1. Obtain a CD-ROM with the ELS:2002/06 base-year through second follow-up data. This will require a licensing agreement with NCES.
2. Have access to a computer running Microsoft Windows with 5.0 MB of storage space.
3. Develop an analytical strategy for working with data. The sheer number of variables available in ELS:2002/06 and the multilevel and longitudinal nature of the database make an analytical strategy very important.

The ELS:2002/06 CD-ROM contains three folders and two files in the Root folder that are described below:

1. The Root folder includes the files QuickGuide.pdf, HELP.pdf, and the folders ECBW, Report, and Tag.
2. The ECBW folder includes the data files (student, school, transcript, and ancillary student records), documentation for data files, and an installation program (setup.exe) for the ELS:2002/06 ECB.
3. The Report folder includes an electronic copy of the ELS:2002 Base-Year to Second Follow-up Data File Documentation, the Base-Year to First Follow-up Data File Documentation, and the Base-Year Data File User's Manual.
4. The Tag folder includes three "tag" files that provide the user with tags of critical variables (e.g., IDs, stratification variables, and design weights), which can be imported into an ECB session and used as the basis for producing SPSS or SAS card files. Basically, tag files are simply a subset of variables from the entire set of variables available on the ECB. Given the large number of variables on the ECB, tag files allow users to focus on those variables they select instead of having to sift through the entire ECB each time.

Loading and Using the ECB

1. Install the ECB:
   - Insert the ELS:2002/06 CD into the CD-ROM drive.
   - Click the Windows START menu button, and select RUN.
   - Type: D:\ECBW\Setup.exe (if your CD-ROM drive is not D, enter the appropriate drive letter).
   - Click on OK to run the setup program, and follow the directions on your screen.
2. The user is ready to use the ECB once it is installed. By clicking on each "hot" key on the tool bar found at the top of the ECB screen, the user will quickly understand the structure of the file and the power provided by the ECB to produce data files. At this point, the user should consult the "Electronic Codebook Help Guide" available on the CD-ROM for a specific overview of the ECB functions. (This is a file named HELP.PDF.)
3. Examine 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 human subjects (legitimate values, legitimate skips, refusals, etc.). It is important to realize that some respondents:
   - did not respond to the entire instrument;
   - skipped individual items;
   - refused to complete selected items;
   - did not reach the end of the questionnaire;
   - completed abbreviated versions of the instrument;

- made illegal skips; and
- responded outside predefined valid ranges.

B.3.2 Navigating the ECB and Identifying a Model and Tagging Variables for Analysis

1. Define the base population for analysis and whether longitudinal or cross-sectional analysis is required. That is, what group will this research try to generalize to (e.g., high school seniors, dropouts)?
2. Develop a conceptual model. What does prior research suggest is happening with the data (e.g., characteristics of students who are likely to drop out of school)?
3. Determine the predictor variables (e.g., disadvantaged background, low test scores), intervening processes (e.g., courses completed, teacher qualifications), and outcomes (e.g., dropping out, return to high school, completion of GED, postsecondary entry) that can be used to explain the model.
4. Determine which components (variables) of your model can be addressed with ELS:2002/06 variables. If multiple sources of the same item are available on the data files, choose the one believed to be most reliable and valid. If the variables that the researcher needs are not available on the ELS:2002/06 files, he or she should consider merging variables from other sources to which links have been supplied (e.g., Census, Common Core of Data).
5. Rethink the original model. If the variables contained on the ELS:2002/06 data files cannot be used to study the original model, rethink the model and either modify the model or choose another dataset.
6. The user can select or "tag" the variables of interest by clicking on the "tag box" next to each variable.
7. The analyst must also remember to choose the appropriate weights and flags for the population of interest. In each data file, flags can be selected to identify a particular part of the population. For example, flags are available to identify whether a student was a dropout at the first follow-up. 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. When weights are not used and/or when a flag is used inappropriately, the estimates generated will not be representative of the population.

B.3.3 Generating SAS or SPSS Program Code and Codebook Text

1. After tagging the variables of interest, go to "File" and then "Output."
2. Select the program (e.g., SPSS to generate SPSS program code).
3. Specify directory and name of program code file.
4. Select appropriate button in "Confirmation" box.
5. To view the program code, select "File" and then "View Output."

6. The program code can then be opened 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.

B.4 Frequently Asked Questions (FAQs) About ELS:2002

Since the first release of ELS:2002 data and with the experience from the NELS:88 and past longitudinal studies, NCES staff members have received many questions regarding "proper techniques" for working with the data. In this document, these questions (along with NCES responses) have been categorized into topical areas and presented as a guide. It is hoped that the responses will help users avoid the most commonly made mistakes in working with this important data source. This document is meant to serve as an introduction or supplement to, not a replacement for, the base-year to second follow-up data file documentation. To help the data user identify specific topics of interest, questions and responses have been grouped into the following categories:

General and Background Questions

Who can I contact from the National Center for Education Statistics/Department of Education about the ELS:2002 study?

What are some of the terms that I should be familiar with in dealing with ELS:2002?

What are the interrelationships among the separate ELS:2002/06 files?

How is ELS:2002 related to prior NCES longitudinal studies?

Sampling

In simple terms, explain how the ELS:2002 school and student samples were selected.

Whom do these schools and students represent?

Did ELS:2002 test the same group of students through the first follow-up study?

Does the ELS:2002 sample design support any state-level analyses?

Weights

What cohorts does the ELS:2002 dataset represent and how do I subset these groups?

What are these flags and weights?

Why do we need to use weights with the ELS:2002 data?

Why would unweighted estimates not be representative?

Which weights and flags should I use in my analyses?

Thanks for the description of the weights, but what does this mean in practical terms?

Design Effects

Why do I need to take account of design effects when I do my significance testing?

Electronic Codebooks

When I receive my ELS:2002/06 CD, what are some of the steps that I should follow to check out my CD?

Composite (Derived) Variables

What are the advantages of using composite variables in my analyses?

Model Building

How do I select variables for a working data file?

How do I subset data files?

Privileged or Restricted-Use Data

How do I get a restricted-use license?

NCES Reponses

General and Background Questions

Question: Who can I contact from the National Center for Education Statistics/Department of Education about the ELS:2002 study?

Response: For additional information and questions about ELS:2002 and NCES's education longitudinal studies program, please link to the ELS:2002 web page: http://nces.ed.gov/surveys/els2002/.

Or contact:
John Wirt
(202) 502-7478
John.Wirt@ed.gov

Question: What are some of the terms that I should be familiar with in dealing with ELS:2002?

Response: Knowledge of the following terms will help the user in reading through the following questions and responses. Additional information on these and other terms can also be found in the ELS:2002 glossary in the appendix to the Base-Year to Second Follow-up Data File Documentation.

- Bias: respondents differ from nonrespondents;
- Cohort: factor in common (year of birth or grade);
- Cross-section: represent events at a single point in time;
- Design effects: a measure of sample efficiency, typically related to the precision of estimates;
- ECB: electronic codebook;
- Freshening: adding students to original sample during later waves of data collection to create new grade-representative cohorts (Students at the base-year sample school who were enrolled in the 12th grade in spring of 2004 but were not

in 10th grade in the United States during the spring of 2002 were given a chance of selection into the ELS:2002 sample. In spring term 2002, such students may have been out of the country, been enrolled in school in the United States in a grade other than 10th, had an extended illness or injury, been homeschooled, been institutionalized, or temporarily dropped out of school. These students comprised the first follow-up "freshening" sample.);

- IRT: Item Response Theory (permits vertical scaling of assessments, e.g., from grade 10 to 12, and lateral scaling as well, e.g., ELS:2002 results placed on the NELS:88 scale);
- Longitudinal: similar measurements at multiple points in time;
- Panel: surveying same individuals across time; and
- Weights: used to produce population estimates based on samples, or in other words, when one respondent represents a number of others in the population.

Question: What are the interrelationships among the separate ELS:2002/06 files?

Response: Using common IDs, the individual data files comprising ELS:2002/06 have been merged with each other to form data files containing student (questionnaire, test, transcript), parent, school, library, facilities, and teacher data. By design, the basic unit of analysis for most ELS:2002/06 analyses will be the student. Under this premise, the school administrator, course offerings, library, facilities, parent, and teacher data can be thought of as providing contextual (e.g., background, school characteristics, "opportunity to learn") data.

Because the base year of ELS:2002 involved the participation of 752 randomly selected schools from across the United States that contained 10th-graders, the 10th-grade school sample can be used (in conjunction with the 2002 school weight, BYSCHWT) as a standalone file in which the school is the basic unit of analysis. The first follow-up school file, however, is not nationally representative of high schools with 12th grades, and therefore no school weight has been generated for them. These schools were not selected by a probabilistic method but, rather, entered ELS:2002 by virtue of containing students who participated in the ELS:2002 base-year study.

Universe variables (e.g., F2UNIV1) have been constructed to provide researchers with a history of the involvement of each student over the base-year and first follow-up studies of ELS:2002. These variables show the status of each student during the two data collection periods. For example, a student respondent in 2002 may become a dropout respondent in the first follow-up 2004 data collection. Universe variables can be used to subset cases to desired populations. Universe variables effectively limit the working data file to respondents who fit selected criteria (e.g., dropouts). The universe variables can be found at the beginning of the ELS:2002 data files.

Question: How is ELS:2002 related to prior NCES longitudinal studies?

Response: All of the student and dropout questionnaires employed in the base-year and first follow-up studies of ELS:2002 were designed to provide continuity and consistency with earlier education longitudinal studies.

Specific items in the ELS:2002 instruments replicate items appearing in NELS:88, HS&B, or NLS:72. The comparability and consistency of items across these three datasets allow for (but are not limited to) the execution of the following cross-cohort analyses:

- ELS:2002 2002 sophomores can be compared to NELS:88 1990 sophomores and HS&B 1980 sophomores;
- ELS:2002 2002 sophomores 2 years later (that is, in 2004) can be compared to NELS:88 1990 sophomores 2 years later (that is, in 1992) and HS&B 1980 sophomores 2 years later in 1982;
- ELS:2002 2002 sophomore cohort dropouts (as of 2004) can be compared to NELS:88 1990 sophomore cohort dropouts (as of 1992) and HS&B 1980 sophomore cohort dropouts (as of 1982);
- ELS:2002 2004 seniors can be compared to NELS:88 1992 seniors, HS&B 1980 seniors, and NLS:72 1972 seniors; and
- the transition of ELS:2006 participants out of high school can be compared to the transition of earlier cohorts: seniors 2 years later can be compared using the time points 1974, 1982, 1984, and 1994. Sophomores 4 years later can also be compared, as well as sophomore cohort dropouts 4 years later.

Sampling

Question: In simple terms, explain how the ELS:2002 school and student samples were selected.

Response: Base year: The ELS:2002 schools were selected from a universe file of approximately 25,000 public and private 10th-grade schools across the United States. For the 752 public and private schools with 10th grades that were sampled and agreed to participate in ELS:2002, complete 10th-grade rosters were produced for each school. From this roster, approximately 25 students per school, on average, were randomly selected, with Asian and Hispanic students selected at a higher rate than others.

First follow-up: Prior to the first follow-up data collection period, approximately 8 percent of the students moved to another school. Because of these transitions, students had to be traced to their new schools. In addition, school dropouts, early graduates, and homeschoolers needed to be identified, contacted, and convinced to participate in the follow-up. New (freshened) students needed to be added to the sample so that the first follow-up data would be representative of high school seniors. There was neither subsampling out nor freshening in for the second follow-up sample in 2006, though there was some sample attrition owing to factors such as death or withdrawal from the study.

Question: Whom do these schools and students represent?

Response: The 752 participating schools in the base year represent the approximately 25,000 public and private schools in the United States in 2002 that had a 10th grade. The 15,362 ELS:2002 base-year student participants represent about 3 million 10th-graders attending schools in 2002, with the exception of Bureau of Indian Affairs schools, special schools for students with disabilities, area vocational schools that do

not enroll students directly, and schools for dependents of U.S. personnel serving overseas.

In the first follow-up sample, 14,989 members participated, representing approximately 3.5 million students, dropouts, homeschoolers, and early graduates. Of these, 13,420 sample members were students in the 12th grade, representing about 3 million seniors in public and private schools in 2004.

ELS:2002/06 data can be used to examine the following groups:

- 10th-grade students 4 years later (2006);
- 12th-grade students 2 years later (2006); and
- 2002 sophomore cohort dropouts (as of 2004) 2 years later (2006).

Question: Did ELS:2002 follow the same group of students through the first and second follow-up studies?

Response: The same individuals are followed over multiple waves. Although the major objective of ELS:2002 was to follow a group of 10th-graders, there were modifications to the sample as it progressed between 2002 and 2004. The additions included the augmentations of the base-year sample with freshened seniors in 2004, and those base-year questionnaire-incapable respondents whose eligibility status had changed 2 years later (for example, a student whose English language proficiency was not sufficient for participation in 2002 might have improved in English language skills enough to be included in 2004).

Freshened students: The ELS:2002 sample was freshened with additional 12th-graders in 2004. These students were added so that the sample would be nationally representative of seniors in 2004. Students who were freshened into the sample did not have the opportunity to be selected into the sample during the 10th grade (e.g., they may have been out of the country or out of grade sequence).

Base-year questionnaire-incapable students: In addition to freshened students, base-year questionnaire-incapable sample members were reassessed to see if they could take part in the first follow-up study. Base-year questionnaire-incapable students were individuals for whom it was determined that their lack of English language proficiency, or physical or mental disability, made it unduly difficult for them to complete self-administered questionnaires or cognitive tests, or who would not be able to produce a valid assessment of their abilities and school experiences. These students were included in the restricted-use data only as part of the expanded sample, and contextual information was collected (school administrator surveys, and when possible, parent surveys and teacher surveys). These students were reevaluated during the first follow-up study. Those whose status had changed (e.g., they had become proficient in English) such that they could participate were included as respondents.

Second follow-up: There was no subsampling or freshening in 2006. A few students were removed from the longitudinal file owing to factors such as death, withdrawal from the study, or continued questionnaire-incapable status. Double nonrespondents (i.e., participated in neither base year nor first follow-up) were not pursued.

Question: I understand how ELS:2002 was designed to support a national level of analysis, and subnational analyses at the Census region or division level. However, does the ELS:2002 sample design support any state-level analyses?

Response: In the base year a handful of states (California, Florida, New York, and Texas) had state-representative samples of public schools (though not of private). The rule of thumb that has traditionally been used in the high school cohort studies is that a minimum of 30 schools will be required, if a state sample is to be called representative.

For the several states for which there are state-representative samples, it is possible to conduct independent cross-sectional analyses of base-year schools or students at the state level. Because of the relatively small size of even the largest state samples, standard errors will be accordingly higher than for the national sample, and cross-classification by various subgroups may sometimes result in comparatively small, or even unstable (from an estimation perspective), cell sizes. An additional caveat is that no poststratification or other weighting adjustment has been made to ensure that estimates inflate with full accuracy to the overall or subgroup 10th-grade enrollments at the state level. A nonresponse bias analysis has not been conducted at the state level, so some bias in state-level estimates may exist. This is especially true if any states have patterns of nonresponse different from the national patterns. It therefore would be advisable to evaluate the quality of the ELS:2002 estimates and their adequacy for the intended analytic purpose, by comparing some key ELS:2002 state estimates both overall and by subpopulation with other sources, when available, to see whether they are plausibly close to each other.

It is also possible to analyze the student samples 2 years later, that is, the state's spring 2002 high school sophomores in 2004. Some of the 2002 sophomores are likely to have transferred to a school in another state by 2004; these out-of-state transfers can be identified on the ELS:2002 database. Some analysts may wish to generalize at the state level about spring 2004 seniors, or actual spring/summer 2004 graduates within a state. A state-representative base-year sophomore cohort does not necessarily make for a state-representative senior cohort. The ELS:2002 sample does to some degree "update" the sophomore sample: sophomores who drop out or who are held back are identified in the dataset; the senior year freshening procedure in the base year schools at the time of the first follow-up captures a sample of students who were not in the 2002 sampling frame by virtue of being other than 10th-graders or outside the country; and while there was no state-level freshening, there is a sort of "natural freshening" within the national borders in that students remain in the sample as they transfer to schools across state lines. While conceptually these factors contribute the elements of a state-level senior sample, weighting adjustments have not been made specifically at the state level, and to this extent estimates may be affected and in particular are likely to be less accurate than if a state-based adjustment had been made to the weights.

In sum, the four most populous states have state-representative samples in that there are sufficient public school and student sample sizes for some level of analysis. However, specific measures were not taken during freshening or weighting to ensure accurate state estimates or full state-level coverage of seniors. The study was

designed to be a national-level study; any level of state estimation is an extra benefit, and a benefit to be exploited with caution.

Weights

Question: What groups does the ELS:2002 dataset represent and how do I subset these groups?

Response: The ELS:2002 data represent many different populations (e.g., 10th-graders in 2002; seniors in 2004; 10th-graders who were still in school at 12th grade; 10th-graders who dropped out of school by 12th grade). These groups can be identified through use of flags and analysis weights. (Analysis weights are also known as nonresponse-adjusted weights, and as final weights. They are to be distinguished from raw weights [or design weights], which have not been adjusted to compensate for patterns of nonresponse. Only analysis or final weights appear on the ELS:2002/06 data files.)

Question: What are these flags and weights?

Response: Flags are variables that were put onto the ELS:2002 files to indicate status at a given point in time (e.g., dropout in the first follow-up) or indicate a permanent sample status (e.g., member of the sophomore cohort, member of the senior cohort). Universe variables can be used like flags, that is, to subset for analysis. Universe variables can be found at the beginning of the dataset. These universe variables give the status of each individual for each data collection (e.g., eligible during base year, dropout during first follow-up). Most of the flags are in the same location as composite and derived variables. Flags can be used by the researcher to select cases for analyses. For example, F1PNLFL is the base-year through first follow-up panel flag that indicates the sample member responded at both the base-year and first follow-up waves of ELS:2002 data collection (or for 651 cases, were nonrespondents in the base year, but participated in the first follow-up).

Weights are variables that are put onto the file to compensate for unequal probabilities of selection and to adjust for the effects of nonresponse. Using weights allows a researcher to make generalizations to the national populations represented by ELS:2002. On the ELS:2002/06 student files for the base-year through second follow-up studies there are 11 different analysis weights for students in addition to a school weight:

BYSTUWT: Student final weight for base-year responding students.

BYEXPWT: An expanded sample weight that differs from BYSTUWT in that it includes the questionnaire-incapable as well as the questionnaire-capable respondents.

F1QWT: Final weight for first follow-up respondents, regardless of their base-year participation.

F1EXPWT: An expanded sample weight that differs from F1QWT in that it includes the questionnaire-incapable as well as the questionnaire-eligible respondents.

F1PNLWT: Panel weight for sample members who were respondents in both the base-year and first follow-up waves, or sample members who participated only in the first follow-up, but have selected base-year information (specifically, imputed test

scores, and standard classification variables normally asked in the base year but also asked of first follow-up new participants).

F1XPNLWT: This weight is similar to F1PNLWT except that it also includes the questionnaire-incapable sample members.

F1TRSCWT: This weight is intended for use with the high school transcript file and was created for all sample members who participated in either the base year or first follow-up (or both) who had fully or partially completed transcript data.

F2QWT: The cross-sectional weight for the second follow-up (2006). One must select either the sophomore or senior cohort to derive a meaningful analysis sample from the cases associated with F2QWT.

F2QTSCWT: This weight was created for sample members who completed a questionnaire in 2006 and were transcript respondents in 2004–2005.

F2F1WT: This panel weight accommodates sample members who participated in 2004 and 2006, or were questionnaire-incapable in 2004 but participated in 2006.

F2BYWT. This panel weight accommodates sample members who participated in 2002 and 2006 (including 2002 students not part of the cross-sectional 2002 responding sample[2]) or were questionnaire-incapable in 2002 but participated in 2006.

Each of these 11 weights is specific for a given population, although F1QWT, F2QWT, and their cognates do not generalize to any meaningful analysis population until subset to one of the two grade cohorts. Depending on the group to whom the data are designed to generalize, the individual weights have positive values (> 0) for respondents who are members of that particular group and zero (0) for all others. Note that the base-year school weight is BYSCHWT.

Question: Why do we need to use weights with the ELS:2002 data?

Response: If we do not use weights, the estimates (e.g., counts, proportions, means) that we produce will not be representative of the population about which we are attempting to generalize.

Question: Why would unweighted estimates not be representative?

Response: In the base year of ELS:2002, 15,362 sampled students participated in the survey from across the nation. These 15,362 10th-grade students represent the 3 million students who attended 10th grade in the United States in 2002. Thus, each student represents approximately 196 students (3 million/15,300 = 196). But because some policy-relevant groups (e.g., Asians, Hispanics, students in private schools) were oversampled (greater than their proportion in the population), they are overrepresented in the file. Depending on the sampling ratio, the weights for these students would be smaller than the average student. By the same token, other students

[2] In other words, base-year nonrespondents who responded in the first follow-up are included in the base-year to second follow-up panel. For this group, base-year test scores were imputed, and the base-year standard classification variables (race, SES, etc.) were collected in the first follow-up.

may represent more than 196 students because they were undersampled or part of a subsampled group during the study (base-year nonrespondents were subsampled, with the result that those retained had higher weights). Nonresponse adjustment (correcting for those students who were selected but did not participate in the survey) must also be taken into consideration because the weights of questionnaire nonrespondents are distributed among the respondents with similar characteristics. Thus, weights reflect both unequal probabilities of sampling and nonresponse adjustments. It is not unusual for a specific weight on a follow-up file to have a range of over 1,000 (e.g., F1QWT ranges from 1.77 to 1,427.47—a single student represents 1,427 other students). Therefore, it is incumbent upon the researcher to use appropriate weighting variables.

WARNING: The researcher should avoid breaking down the sample into such small categories that the analysis is questionable. For example, if a cross-tabulation table has a single cell with fewer than 30 cases when the data are not weighted, NCES recommends that the results not be displayed or that the cell be combined with another cell (if appropriate).

Question: Thanks for the description of the weights, but what does this mean in practical terms?

Response: Perhaps the following examples can help clarify how the analysis weights can be used to help define your sample:

Example: You are interested in examining the gains in math between the 10th and 12th grades, using the IRT-estimated number-right scores (either the NELS:88-scaled or ELS:2002-scaled scores can be used for this purpose). Decisions that you need to make include the following:

1. Which ECB should I use? If you are examining the BY to F1 period, and not using F2 data, you can use either the 2004 E4P (public use) or E6R (restricted use). But let us say you want to include transcript variables—then you have no recourse but to use the restricted ECB (or to employ the DAS).
2. Should I use a cross-sectional or panel weight? A panel weight would be more appropriate because you are following a group of students over time.
3. What do I do with the students who drop out of school? Dropouts were not tested in 2004, so they will fall out of the analysis. To select students who were high school sophomores as of the spring of 2002, you would use the 10th-grade cohort flag (G10COHRT) along with F1PNLWT.

Design Effects

Question: Why do I need to take account of design effects when I do my significance testing?

Response: Because the ELS:2002 sample design involved stratification, disproportionate sampling of certain strata (e.g., oversampling of Hispanics), 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. However, without accounting for the design, a researcher will underestimate variance estimates, most notably the standard errors (estimated percentages or counts are not affected by the design effects, only by weights) and actually produce estimates that are often much lower than an SRS design. Underestimating your standard errors will lead to inflated *t* values in

hypothesis testing. This, in turn, increases the chance of a type I error, rejecting the null hypotheses. This is when a researcher states that two groups are different when in fact they are not. A number of statistical packages (SUDAAN and STATA are two of several possible examples) take account of complex sampling designs in the calculation of standard errors. The AM software does so as well (available for free download at am.air.org).

Electronic Codebooks

Question: When I receive my ELS:2002/06 CD, what are some of the steps that I should follow to check out my CD?

Response: The following steps may help you get a better understanding of the ELS:2002/06 data.

Step 1—Make sure that you have the right file

A general rule that should be followed by all researchers when they receive data from the government or any other source is to check the file for accuracy. Does this file include what you think it does? The following questions should be answered for the ELS:2002 CD.

1. Does the ELS:2002/06 CD contain the files listed in the documentation? Check directory and subdirectories.
2. After running frequencies on selected variables on the data file (e.g., first variable, last variable, and five at random in between first and last), do the frequencies agree with those shown for ECB or user manuals? If not, did you receive the correct version?
3. Do the analysis weights (final nonresponse-adjusted weights) contained on the data files allow you to replicate weighted frequencies found in the user manuals? You may want to run weighted frequencies on a single variable using each of the weights contained on the file.

Step 2—Understanding the data

Assuming that you performed the above steps and you are confident that the files appear to contain what you hoped they would, it is now time to start learning about the files that you will be working with. Start by asking the following questions:

1. What were the processes involved in getting data from students via questionnaires and cognitive tests to the medium (CD) that you now possess? Just because you did not collect the data does not mean that you do not need to know the procedures that were involved in collecting and processing the data. You also need to understand the quality control checks that were performed by the contractors in processing the data.
2. It is important to realize that some respondents did not respond to entire instruments; other respondents skipped individual items. For example, (a) some refused to complete selected items, (b) some did not reach the end of the questionnaire, (c) sometimes abbreviated versions of instruments were used in data collection, (d) some respondents made illegal skips, and (e) some respondents responded outside valid ranges.

3. What can I do to further my understanding of the cases and variables that I plan to use? You can perform your own quality control procedures by answering the following questions: Are the cases that I selected representative of the population to which I wish to generalize? How do the various breakdowns of the data compare to known population numbers? Is my sample biased—do nonrespondents look different from respondents?

Composite Variables

Question: What are the advantages of using composite variables in my analyses?

Response: Composite variables (also called derived variables, constructed variables, or created variables) were developed for NCES by RTI to help the researcher analyze the ELS:2002 data. These variables were usually created from two or more variables and are often considered to be more accurate measures of the underlying concept than the individual variables that were used to create them. For example, the base-year socioeconomic status variable (BYSES) is a composite variable made up of five separate variables from the base-year parent questionnaire representing both parents' education levels, both parents' occupations, and family income. In addition, these variables have been used by many researchers over time. This provides for a consistent measure to aid in the comparability of findings between studies/research projects. For more information on particular composite variables see the ECB and Data File User's Manual/Data File Documentation.

Model Building

Question: How do I select variables for a working data file?

Response: The following sequence of steps will help you to produce your own working data file.

Model building

After a researcher understands (1) how the ELS:2002/06 data were collected and processed, (2) limitations of the data, and (3) research issues that can be addressed, he or she is ready to begin selecting variables for his or her working data files.

The working data file will be used to test the models that are derived from previously developed conceptual models. Before a working dataset is created though, the following steps are suggested:

1. Develop a conceptual model—What does prior research suggest is happening with the data (e.g., characteristics of students who are likely to drop out of school)?
2. Determine the predictor variables, intervening processes, and outcomes that can be used to explain the model.
3. Determine which components (variables) of your model can be addressed with ELS:2002/06 variables—If there are multiple sources of data available on the ELS:2002/06 data files, choose the ones that the researcher believes are most reliable and valid. If the variables that the researcher needs are not available on

the ELS:2002/06 files, he/she should consider merging variables from other sources (Census, Common Core of Data) through licensing agreement.

4. Rethink original model—If the variables contained on the ELS:2002/06 data files cannot be used to study original model, rethink the model and either modify the model or choose another dataset.

Once the above steps have been completed, it is time to subset the ELS:2002/06 data files into working data files. The following steps are suggested:

1. Determine which variables are needed from each of the ELS:2002/06 data files. For example, the model may specify that the following variables are needed from selected files. For example, base-year student data on aspirations and hours of homework per week can be used to predict first follow-up outcomes like math proficiency.
2. Determine the analysis population that you wish to work with. This will need to be known so that correct survey questions, filters, and weights can be tagged and included in the extracted files.
3. Use the ECB (E6R) to tag variables and then create a SAS or SPSS system file.
4. Check log of computer runs to determine if program is doing what you want it to do rather than the directions provided by computer program.
5. Run frequencies and/or means on all variables in working data file to serve as codebook and documentation.
6. Document all cases that are excluded from the working data files (e.g., who is being deleted from the analysis).

Question: How do I subset data files?

Response: It is very important for the user of ELS:2002/06 data files to learn the proper techniques for subsetting the data. If a user does not correctly subset the files, there will be extraneous cases on the working data file that can potentially complicate the analyses and result in erroneous findings. Why subset? The ELS:2002/06 data were designed to serve many different audiences. As a result, the data can be subset to represent many different populations (e.g., the 10th-grade class of 2002; the 12th-grade class of 2004; the panel of 10th-graders who participated in the study from the base year through the first follow-up). By applying the analysis weights and utilizing the appropriate flag/universe variables to subset the data, the user can specify the population that is to be examined.

Restricted-Use Data

Question: How do I get a restricted-use license?

Response: While base-year to first follow-up ECB data are available in public use files, there is only a restricted use ECB for base year to second follow-up. Some users may not require direct access to microdata they can manipulate. For them, it may be satisfactory to use the web-based Data Analysis System (DAS). However, for those who need second follow-up microdata, a license must be obtained from NCES. A restricted-file license is available only to users with an institutional affiliation and only to users in the United States. NCES will only accept restricted-use data License applications through its electronic application system (see: http://nces.ed.gov/statprog/instruct.asp). More information about applying for restricted-use data licenses is available at http://nces.ed.gov/statprog/instruct.asp and in the "Restricted-Use Data Procedures Manual" at http://nces.ed.gov/statprog/rudman/toc.asp.

Appendix C
Synopsis of the ELS:2002 Second Follow-up Field Test Report

C.1 Overview of Second Follow-up Field Test

The purpose of the second follow-up field test of the Education Longitudinal Study of 2002 (ELS:2002) for the National Center for Education Statistics (NCES) was to test procedures, learn what challenges to anticipate for the full-scale data collection, and develop strategies to overcome these obstacles. This report of the second follow-up field test activities will briefly describe the approaches taken, highlight difficulties encountered, and provide recommendations for the full-scale data collection.

The report includes

- a chronologically ordered overview of the study procedures, including sampling, instrument design, data collection, and data file construction;
- a report of results, including the response rates, the effectiveness of the incentives employed, interview length, item nonresponse, item reliability, and coding accuracy; and
- recommendations for the full-scale study.

C.2 Procedures

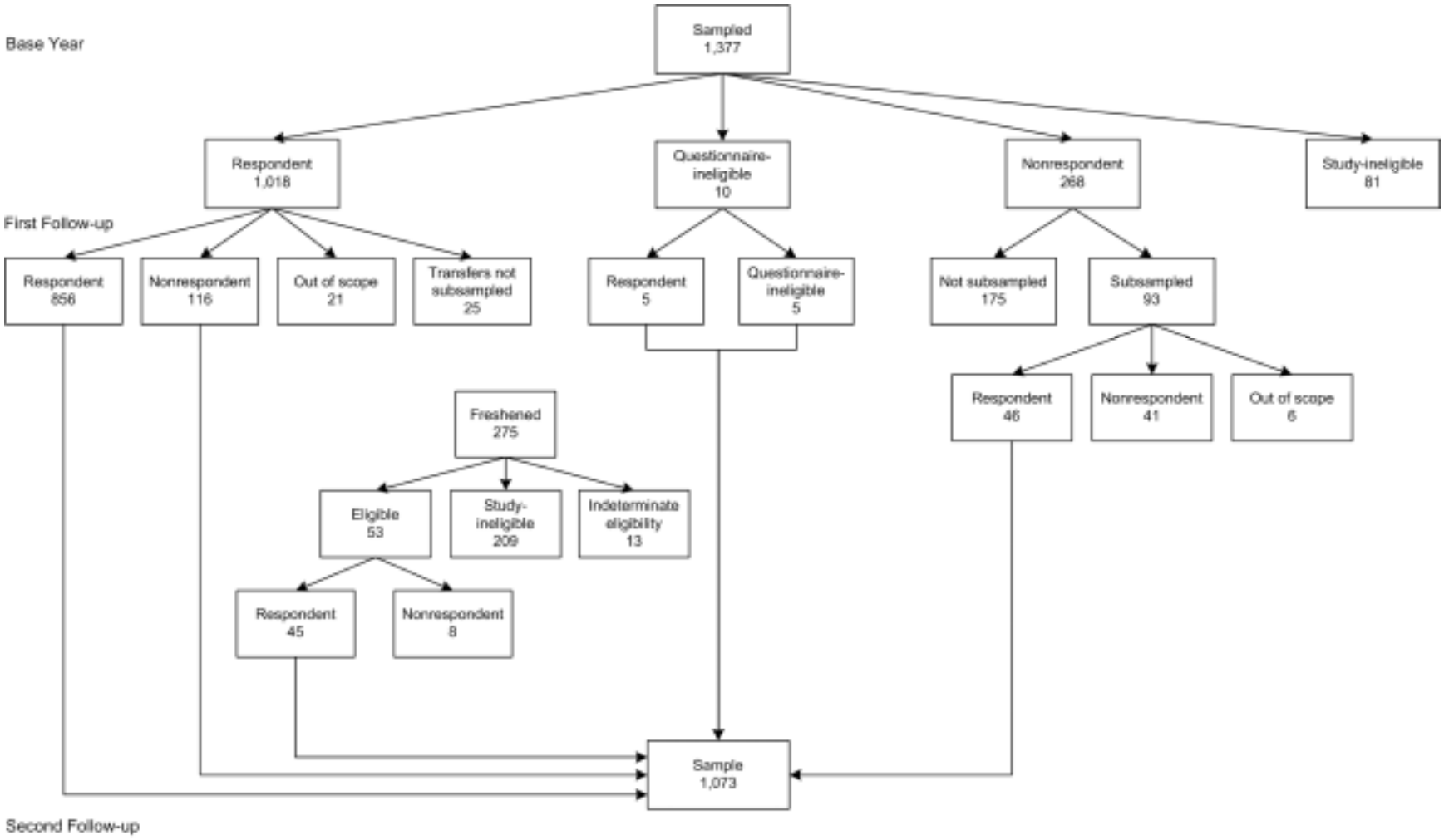
C.2.1 Description of Second Follow-up Field Test Sample

The ELS:2002 second follow-up field test sample members were initially selected either in the base-year field test as 10th-grade students in spring 2001 or in the first follow-up field test as 12th-grade students in spring 2003. The students who were added in the first follow-up field test had not been eligible for selection 2 years earlier. Altogether, 1,073 ELS:2002 sample members were carried forward from the first follow-up field test sample to form the second follow-up field test sample.

As shown in figure C-1, these second follow-up field test members included

- sample members who responded in both the base-year field test and the first follow-up field test (856);
- sample members who responded in the base-year field test but did not respond in the first follow-up field test (116);
- base-year field test nonrespondents who were subsampled and responded in the first follow-up field test (46);
- freshened students (12th-graders in spring 2003 who were not eligible for selection in spring 2001) who responded to the first follow-up field test questionnaire (45); and
- base-year field test questionnaire-ineligible sample members (10).

Figure C-1. ELS:2002 field test base-year sample distribution, first follow-up sample distribution, and second follow-up sample distribution



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

Those who were found to be out of scope in the first follow-up field test were excluded from the second follow-up field test sample. In addition, there were 49 sample members who were eligible for the first follow-up field test but were not included in the second follow-up field test sample. Most of these were questionnaire-eligible students who did not respond to the questionnaire in both the base-year field test and the first follow-up field test. The remainder were 12th-grade students selected during the freshening process in the first follow-up field test who did not respond to the questionnaire. These sample members were not carried forward, because they were missing both high school data points and therefore had no analytical value. The same approach will be used in the full-scale study.

Of these 1,073 sample members, 31 were found to be out of scope in the second follow-up (26 base-year respondents/F1 respondents and 5 base-year respondents/F1 nonrespondents). Table C-1 shows the distribution of the remaining 1,000 second follow-up field test study-eligible sample members according to their response status.

Table C-1. ELS:2002 second follow-up field test sample disposition: 2005

Sample disposition	Eligible sample	Respondent	Percent response rate
Total	1,000	800	75.3
BY respondent/F1 respondent	830	670	80.6
BY respondent/F1 nonrespondent	110	40	39.6
BY nonrespondent/F1 respondent	50	40	76.1
Freshened respondent	50	30	68.9
BY questionnaire-ineligible/F1 questionnaire-ineligible	10	#	20.0
BY questionnaire-ineligible/F1 respondent	10	10	100.0

Rounds to zero.

NOTE: Detail may not sum to totals because of rounding. BY = base year; F2 = second follow-up field test; F1 = first follow-up field test.

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

C.2.2 Instrument Design and Development

A target interview length of 30 minutes was chosen for the second follow-up field test to balance the competing demands of high response rates and rich data. The expectation was that the length would be further reduced for the full-scale study based on the results of the field test. Given the premium on interview minutes, items were selected with particular care.

The primary research objectives of ELS:2002 are longitudinal. Given that this round of data collection was preceded by two rounds and would be followed by at least one more, two types of items were of highest priority. The first were items that would be predictive of future outcomes; the second were items that would represent near-term outcomes predicted by base-year and first follow-up data. As ELS:2002 is the most recent of the NCES high school cohort studies, a second priority was to replicate some items from these previous studies so that intercohort comparisons could be made. While the National Education Longitudinal Study of 1988 (NELS:88) third follow-up interview served as a springboard for discussions, attention was given to ways to improve upon or update the survey to address current issues.

Instrument developers worked closely with two experts in the field of education research to develop content and questions. In addition to the NELS:88 third follow-up interview, items were also drawn from NCES postsecondary studies such as Beginning Postsecondary Students Longitudinal Study (BPS) and the National Postsecondary Student Aid Study (NPSAS). The second follow-up field test interview had the following seven sections: High School, Postsecondary Education, Work, Finance, Family, Life, and Locating. Dividing the instrument into sections provided a structure to the interview and allowed the instrument to be programmed on a flow basis.

The High School section updated the respondents' high school status since the last interview. In the full-scale interview, respondents for whom complete transcript information is available will be able to skip this part of the section. Additional questions for first follow-up field test nonrespondents ascertained whether the sample member was in the 12th grade or a dropout in the spring term of 2003 so they could be appropriately classified. Questions about dual enrollment and college entrance and other exams rounded out the section.

The Postsecondary Education section only briefly touched on applications to postsecondary institutions, but collected a detailed enrollment history for each institution attended. Respondents were asked about any degrees or certificates earned from their self-identified "main" institution or their intentions to do so. Sample members with nonstandard enrollment patterns were questioned about their reasons for dropping out, transferring, and/or attending multiple schools. Additional information was collected about coursetaking, extracurricular participation, and academic preparation for postsecondary education. The section concluded with questions about educational plans for the future.

The Work section first collected a month-by-month employment history and then focused on the job held longest in the calendar year 2004. These questions were asked only of sample members who had no postsecondary education or students who considered themselves primarily or equally an employee. The final questions pertained to annual earnings in 2004 and occupational expectations.

In contrast to the previous section, the Finance section primarily pertained to those who had some postsecondary education. Items referred to education financing, work experience while enrolled, and spending habits. All respondents answered several questions about debt and dependents.

The final three sections were administered to all sample members. The Family section included questions about marriage, children, and living arrangements. The last substantive section, Life, covered a range of topics including values, volunteering, civic participation, time use, and use of various technologies. The final section, Locating, collected contact information for future follow-ups with the sample members.

As the content for each section of the instrument was finalized, question ordering and logic was determined. Specifications were then entered into the Instrument Development and Documentation System (IDADS). Programmers then expanded upon the specifications downloaded from IDADS to create a fully functional instrument.

As will be the case in the full-scale data collection, a single web-enabled instrument was used in the ELS:2002 second follow-up field test. Given that virtually all of the ELS:2002 field test sample members would no longer be in high school at the time of the second follow-up, a

paper-and-pencil self-administered questionnaire (PAPI SAQ), the primary means of data collection in the base-year and first follow-up, was no longer a viable approach for data collection. Sample members were no longer clustered in schools, so group administration of a PAPI SAQ was neither feasible nor cost-effective. Therefore, a different approach to data collection was needed for the second follow-up. Computer-assisted telephone interviewing (CATI) was the primary means of collecting data. However, the instrument was designed so it could also be self-administered on the Web or loaded onto a laptop computer for field administration. Using the same exact instrument across modes minimized the mode effects inherent in any multimodal study.

C.2.3 Data Collection

C.2.3.1 Overview

Following is a description of the data collection procedures for the ELS:2002 second follow-up field test. First, the sample maintenance, contacting, and tracing procedures are described in sections C.2.3.2 through C.2.3.4. Data collection procedures in each mode of administration are covered in C.2.3.5. Sections on quality control procedures, incentive payments, and data file construction follow.

C.2.3.2 Sample Maintenance

Locating and maintaining contact with ELS:2002 sample members was a key challenge of the second follow-up data collection. Following the first follow-up data collection, the young adults in the sample transitioned from high school to college, the workforce, or the military. Given this dispersion, field test sample members were located using several methods.

Sample maintenance and locating efforts for the second follow-up field test sample began in December 2004, several months before the start of data collection in late March 2005. At this point two cost-effective batch tracing services were used: the United States Postal Service (USPS) National Change of Address (NCOA) and Telematch®. NCOA provided updated addresses for sample members, especially those who had recently moved. Telematch confirmed or updated the telephone number matched to each sample member at his or her most current known address. These services are most effective when used in this sequence.

Using the contact information confirmed and updated through batch tracing services, a direct mailing was sent to all field test sample members in late January. The mailing consisted of a return postcard for respondents to confirm or update their address, telephone number, and other contact information. The postcard also provided a toll-free number that sample members could call to update their contact information, although almost no sample members chose this option.

C.2.3.3 Contact With Sample Members

In late March 2005, a packet was mailed to all sample members that included a cover letter, an informational brochure, instructions for completing the interview along with a unique password and user identification, and a toll-free number and e-mail address that could be used to request assistance or pose questions. The toll-free number could also be used to complete an interview with a trained telephone interviewer.

E-mail was another channel of communication employed during data collection. A message from the project director announcing the opening of data collection was e-mailed to 746

sample members for whom an e-mail address had been collected. This e-mail provided instructions for completing an interview via the NCES website and the toll-free number for telephone completion.

Once data collection began, additional contacts were made. About 1 week after the opening of data collection, a reminder postcard was sent to all 904 sample members with a valid address who had not yet completed an interview. The postcard reminded sample members that they would receive an additional $10 by completing an interview during an early bonus period and again provided instructions for completing an interview via the website or the toll-free number. The postcard also thanked sample members who completed the interview while the postcard was in transit.

During the early bonus period, two reminder e-mails were sent to sample members for whom an e-mail address had been collected. These e-mail notices contained the same information as the postcards. The first e-mail reminder was sent in early April to 646 sample members who had yet to complete the survey. The second was sent just over a week later to 566 sample members and emphasized that the end of the $10 early bonus period was nearly over.

At various times during data collection, further reminders were e-mailed to sample members and their parents. Three weeks after the early bonus period had ended and outbound calling began, reminder messages were e-mailed to both sample members and their parents. Parents' e-mail addresses had been collected in earlier rounds of data collections. In mid-July, a final reminder was sent to all sample members who had not yet completed an interview to emphasize that only 2 weeks of data collection remained.

Sample members also communicated with ELS:2002 project staff via the toll-free line, or more often, through e-mail. The most frequent reason sample members sent e-mail messages was to request that their study identification number and password be sent, or to report difficulty using them. A small number of field test sample members called the toll-free number. Besides calling for assistance with self-administration of the web survey or to complete the survey by telephone, some sample members or their parents called to update contact information or to decline to participate in the study.

C.2.3.4 Intensive Tracing Procedures

Intensive tracing activities began a week after outbound CATI calls commenced. Tracing staff used a comprehensive and proven set of procedures to attempt to locate 235 sample members whose contact information proved inaccurate or missing. The located cases were returned to telephone or field data collection, as appropriate, with the updated addresses and telephone numbers. Cases that were not located were sent to field interviewers for field locating along with the historical data generated by intensive tracing efforts.

C.2.3.5 Modes of Data Collection

Data collection for the second follow-up field test opened on March 30, 2005, when sample members had the option of completing an interview via the ELS:2002 website or calling a toll-free number to complete an interview with a telephone interviewer. Outbound calling for CATI began 3 weeks later. Sample members who were particularly difficult to contact or to enlist in the study were traced in the field. In all modes, the same web-enabled instrument was used by respondents and interviewers.

C.2.3.5.1 Web-enabled Self-administration

The web-enabled survey option allowed the young adults in the second follow-up field test sample to use a data collection mode familiar to many of them—the Web. It provided them access to the survey at any location where they had internet access, allowed them to complete the survey on their own time and at their own pace, and offered greater privacy through self-administration. To avoid technical problems, the web-enabled survey system was designed to function appropriately in a wide range of computing environments, including different web browsers, different internet connections, and different computer settings.

The web-enabled interview was available for 3 weeks prior to the start of outbound telephone activities. The toll-free project number allowed sample members who wanted to participate via the Web (but encountered technical difficulties in doing so) to receive technical support. Help desk staff communicated with respondents over the telephone and via e-mail. They also offered to conduct a CATI interview with sample members who called in.

C.2.3.5.2 Web-Enabled Computer-Assisted Telephone Interview

After the first 3 weeks of field test data collection, telephone interviewing staff began calling sample members to either complete an interview or encourage completion via the website. Interviewers followed a set of standardized interviewing procedures that were determined prior to data collection and provided in interviewer training. This not only ensured that all CATI interviewers were following procedures consistently, but also helped to minimize mode effects between self-administration and interviewer administration. The CATI case management system (CATI-CMS) allowed interviewers to record notes for each call. These case history notes were then used by interviewers, supervisors, and other project staff to set appropriate callback days and times and otherwise develop an effective strategy for reaching individual sample members. CATI-CMS automatically scheduled callback times for some routine call results, such as a ring but no answer, busy signal, or answering machine. Interviewers also used CATI-CMS to code cases that could not be reached and interviewed via CATI, such as those who were disabled, unlocatable, or otherwise unreachable, in addition to coding those who initially refused to participate.

C.2.3.5.3 Web-Enabled Computer-Assisted Personal Interview

Field data collection using computer-assisted personal interviewing (CAPI) started in the beginning of June. Thereafter, cases for field data collection were assigned on a flow basis each week. The two most common reasons to assign cases to the field were that the sample member could not be located by intensive tracing efforts and that the sample member had initially refused to participate. Sample members who were located at a particular address but did not have a telephone were also assigned to field interviewing staff.

Field interviewers generally began efforts to contact each sample member using the "best" telephone number for the subject listed. Because many cases sent for field follow-up did not have a clear best telephone number, field interviewers were often required to visit the sample member's last known address and, if the sample member was no longer there, initiate field tracing steps. When contact was made with a parent, relative, friend, or neighbor of the sample member, field interviewers asked a recommended set of questions (as appropriate) to generate leads on sample members. Field interviewers recorded all tracing steps and results of contact to maintain a case history for each sample member they attempted to locate and contact.

C.2.3.6 Quality Control

Telephone interviews were monitored for errors in question delivery and data entry. Supervisors also monitored e-mails that Help Desk staff sent to sample members to ensure accurate and appropriate information was being communicated. Starting about 1 week after the opening of data collection, project staff held biweekly quality circle (QC) meetings with interviewers to ensure procedures were being followed correctly and data quality was being maintained. After each meeting, project staff summarized the issues discussed and provided the interview staff with resolutions to any problems in the form of QC memoranda.

C.2.3.7 Incentive Payments

An important element for ensuring high participation rates across all subgroups was the respondent incentive plan for the ELS:2002 second follow-up field test. One of two base incentive amounts was set for each respondent, depending on whether or not they had ever been identified by their school or themselves as a dropout. The base incentive was $20 for sample members who had no record of a dropout episode and $40 for those who did. These base amounts were augmented by $10 when one of the two following conditions was met.

First, to encourage sample members to participate prior to outbound telephone calling, an additional $10 was paid to respondents who completed the survey via the Web or telephone during the first 3 weeks of data collection, the "early bonus period." This extra incentive not only served to motivate sample members to participate early via the Web or by calling in, but it also saved the costs associated with telephone and in-person follow-up efforts.

Second, an extra $10 incentive was offered to those sample members who proved extremely difficult to contact or enlist in the study. Sample members were designated as "difficult" cases based on previous attempts to contact and locate them. Difficult cases were those that met one or more of the following criteria:

- More than 20 calls had been made to contact the sample member without completing an interview.
- The sample member refused to participate in an initial contact.
- The sample member could not be located through any of the telephone numbers previously provided, so the case had to be sent for intensive tracing.
- The case was sent to a field interviewer for field data collection.

C.2.4 Data File Construction

Frequent reviews of data began during data collection to spot any potential problems with the functioning of the instrument. Because a single instrument was used for all three modes of data collection, all response data was stored in the same database. In addition, because all skip logic was the same across modes, only one set of editing rules was required. The majority of editing cleaned out data that were entered into dependent fields where a respondent backed up and changed the response to a gate question. The same process will be implemented in the full-scale study.

All respondent records in the final dataset were verified with the Survey Control System (SCS) to spot inconsistencies. For example, it is possible that data were collected for a respondent that later was set to an ineligible status. The SCS served as a safeguard to ensure that

such data was not delivered. Furthermore, the data files served as a check against the SCS to ensure that all respondent information was included in production reports.

C.3 Results

C.3.1 Data Collection Results

C.3.1.1 Response Rates Overall

Table C-2 provides the overall response rate for the second follow-up field test data collection. Overall, 75 percent of eligible field test sample members completed an interview.

Table C-2. ELS:2002 second follow-up field test overall response rate (unweighted): 2005

	Eligible sample	Percent of total eligible
Total sample	1,000	100.0
Respondents	790	75.3
Nonrespondents	260	24.7

NOTE: Detail may not sum to totals because of rounding.

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

Table C-3 summarizes the final dispositions of the 260 second follow-up field test nonrespondents. Almost 11 percent of the sample members could not be located through tracing efforts during the data collection period. Nearly 5 percent of the sample members refused to participate in the field test. Another person such as a parent refused on behalf of 3 percent of sample members. Data collection staff was not able to complete an interview with the remaining 6 percent of field test nonrespondents for other reasons. The most common issue among this last set of nonrespondents was that these sample members were rarely at home and parents were not able to help us contact them.

Table C-3. Final dispositions of nonrespondents in the ELS:2002 field test (unweighted): 2005

	Nonrespondents	Percent of total eligible	Percent of nonrespondents
Total	260	24.7	100.0
Unable to locate	110	10.9	44.0
Refusal by sample member	50	4.7	18.7
Refusal by other	30	3.0	12.1
Time/effort exhausted	60	6.1	24.9

NOTE: Detail may not sum to totals because of rounding.

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

In the full-scale study, it will be necessary to achieve an overall response rate of 92 percent. A direct comparison of the response rate achieved in the field test with the needed response rate in the full-scale study is a bit misleading for a number of reasons. First, the full-scale data collection period will be 7 months in duration as compared to 4 months in the field test. Additional time to locate sample members and convert refusals will increase the response rate. In addition, the field test sample has a greater proportion of first follow-up nonrespondents

than the full-scale sample. As will be illustrated later in this report, first follow-up nonrespondents were particularly challenging to locate. Nonetheless, additional effort will be needed to locate enough sample members to achieve the necessary response rate.

C.3.1.2 Response Rates by Dropout Status

An important subgroup in the ELS:2002 field test data collection was sample members for whom the study had recorded a high school dropout episode. These sample members had been identified as high school dropouts by their high school or in a previous interview. This subgroup is important for three reasons: first, the policy relevance of high school dropouts is particularly high; second, the response propensities of high school dropouts have historically been substantially lower than their peers; and third, extra incentives were allocated to encourage a higher participation rate for this group.

Table C-4 presents the response rates for those who had ever been identified as dropouts compared to those who had never been identified as dropouts. Offering sample members who had been identified as a dropout a higher base incentive ($40 instead of $20) appears to have been beneficial. Table C-4 shows that the response rate for dropouts was only about 8 percent lower than the response rate for nondropouts (68 percent versus 76 percent). Given the greater burden typically associated with locating dropouts and encouraging them to participate, the higher incentive amount appears to have been generally effective. Although the field test sample was somewhat limited in size, these results indicate that appropriate procedures in the second follow-up data collection may produce a response rate among dropouts nearly as high as among nondropouts.

Table C-4. ELS:2002 field test response rates by ever dropout status (unweighted): 2005

	Outcome in ELS:2002 second follow-up field test			
	Overall			
Dropout status, first follow-up	Eligible sample	Percent of total eligible	Number interviewed	Percent interviewed
Total sample	1,000	100.0	790	75.3
Ever dropped out	90	9.0	60	68.1
Never dropped out	950	91.0	720	76.1

NOTE: Detail may not sum to totals because of rounding.

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

C.3.1.3 Response Rates by First Follow-up Response Status

First follow-up nonrespondents, a second important subgroup, constituted 11 percent of the second follow-up field test sample. First follow-up nonrespondents were offered the same $20 base incentive as first follow-up respondents. Table C-5 shows the second follow-up field test response rates by first follow-up response status. There is a large difference in response rates for first follow-up respondents versus nonrespondents.

Table C-5. ELS:2002 field test response rates, by first follow-up response status (unweighted): 2005

First follow-up response status	Outcome in ELS:2002 second follow-up field test			
	Overall			
	Eligible sample	Percent of total eligible	Number interviewed	Percent interviewed
Total sample	1,000	100.0	790	75.3
F1 respondent	930	88.9	740	79.9
F1 nonrespondent	120	11.1	50	38.8

NOTE: Detail may not sum to totals because of rounding. F1 = first follow-up field test.

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

While about 80 percent of first follow-up field test participants completed a second follow-up interview, less than 40 percent of first follow-up field test nonrespondents participated in the second follow-up. Locating issues were significant with first follow-up nonrespondents, because for many of them, the available contact information was 4 years old. It is possible that increased incentives for this group would aid in locating them, given that higher incentives may encourage contacted family members or friends to provide information about the respondent's whereabouts. Also, many first follow-up nonrespondents were likely to not be as committed to the study as first follow-up respondents, so they required additional encouragement to participate in the survey.

C.3.1.3 Evaluation of Incentive Plan

As noted above, second follow-up field test sample members were offered differential incentive payments that varied based on completion during an early period, their dropout status, and the level of effort required to find the sample member and/or gain his/her cooperation. Altogether, field test sample members were offered one of four different incentive amounts, ranging from $20 to $50.

Table C-6 shows the number and percentage of respondents and nonrespondents overall and by dropout and first follow-up responses status. Respondents are classified by the incentive they received: the early bonus incentive, the base incentive only, or the difficult case incentive. Almost three quarters (74 percent) of all respondents completed the interview in the early bonus period, which demonstrates the viability of self-administration as the first mode of a multimodal design. However, the early bonus payment was not equally as effective for those who were ever identified as dropouts as compared with those who were not. Only 7 percent of second follow-up participants who had ever dropped out took part during the first 3 weeks of data collection. The early bonus incentive was even less effective for first follow-up nonrespondents (3 percent). This is likely due to the fact that many dropouts and first follow-up nonrespondents were not reached during the early bonus period due to outdated contact information.

Table C-6. ELS:2002 field test incentive payment distribution overall and by dropout and first follow-up response status (unweighted): 2005

Incentive payment	All sample members		Dropout status				First follow-up response status			
			Never dropout		Ever dropout		F1 Respondent		F1 Nonrespondent	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Total	1,000	100.0	950	100.0	90	100.0	930	100.0	120	100.0
Early bonus	250	23.6	240	25.2	10	7.4	240	26.2	#	2.6
Base incentive only	290	28.2	260	26.9	40	41.5	280	29.9	20	14.7
Difficult case bonus	240	22.7	220	23.1	20	19.1	220	23.2	20	19.0
Nonrespondents[1]	270	25.4	240	24.8	30	31.9	190	20.6	70	63.8

Rounds to zero.

[1] This row includes eight respondents who did not receive an incentive because they did not confirm or provide an address for the incentive payment mailing.

NOTE: Detail may not sum to totals because of rounding. F1 = first follow-up field test.

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

After the early bonus period, some sample members became eligible for a bonus incentive based on a high number of unsuccessful calls, an initial refusal to participate, the inability to locate them, or the need to pursue them in the field. By the end of data collection, all remaining nonparticipants were eligible for the difficult case bonus. Therefore, all final nonrespondents were classified as difficult cases.

Table C-6 shows that almost half of all sample members met at least one of the criteria for the difficult bonus offer (48 percent; 23 percent difficult case bonus respondents plus 25 percent nonrespondents). Of the sample members with some indication of a dropout episode, 51 percent eventually qualified for the difficult case bonus (19 percent of difficult case bonus respondents plus 32 percent nonrespondents). In contrast, 83 percent of first follow-up field test nonrespondents became eligible for this bonus (19 percent of difficult case bonus respondents plus 64 percent nonrespondents). Recall that first follow-up field test nonrespondents were not offered a higher base incentive as dropouts were.

As displayed in Table C-7, almost half (47 percent) of those who were offered the difficult case bonus eventually completed the interview. These results varied by dropout and first follow-up response status. Thirty-eight percent of dropouts and 23 percent of first follow-up nonrespondents completed the interview once the difficult case bonus was offered.

Table C-7. ELS:2002 field test response rate among difficult cases, overall and by dropout status and first follow-up response status (unweighted): 2005

	All difficult cases		Dropout status				First follow-up response status			
			Never dropout		Ever dropout		F1 Respondent		F1 Nonrespondent	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Total	500	100.0	450	100.0	50	100.0	410	100.0	100	100.0
F2 respondents	240	47.2	220	48.2	20	37.5	220	53.0	20	22.9
F2 nonrespondents[1]	270	52.8	240	51.7	30	62.5	190	47.0	70	77.1

[1] This row includes eight respondents who did not receive an incentive, because they did not confirm or provide an address for the incentive payment mailing.

NOTE: Detail may not sum to totals because of rounding. F1 = first follow-up field test.

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

C.3.1.4 Modes of Participation

Table C-8 shows the distribution of respondents across the three survey modes of participation. These figures show that nearly half of all field test interviews were completed by CATI (49 percent). Over one third of participants self-administered the web-enabled interview (37 percent), and the remaining 15 percent of respondents completed a CAPI interview.

Table C-8. ELS:2002 field test respondents, by mode of administration (unweighted): 2005

Mode of administration	Number of respondents	Percent of respondents
Total	790	100.0
Web	290	36.7
CATI	380	48.8
CAPI	110	14.5

NOTE: Detail may not sum to totals because of rounding. CATI = computer-assisted telephone interview; CAPI = computer-assisted personal interview.

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

C.3.1.5 Interview Length

The goal in the second follow-up field test was to design a 30-minute instrument with the expectation that the length would be reduced for the full-scale interview after assessing the quality of the items. This length allowed RTI to field test a sufficient number of items without significantly compromising interview response rates. Interview timing was analyzed overall, by mode of administration, and by respondents' status as student or employee.

Table C-9 shows the average length of the interview overall and by each interview section. Overall, the interview took 33 minutes to complete, about 3 minutes longer than planned. The sections covering postsecondary education and work were the longest, as intended. Two sections ran longer than expected. The Life section, which covered a range of topics including values, community involvement, and use of technology, approached the length of the Postsecondary and Work sections. The final section of the interview, in which contact information is collected for future follow-up, was over a minute longer than the typical 5 minutes allotted to it.

Table C-9. Average length of interview, by interview section: 2005

Interview section	Number of cases	Average time
Total interview[1]	744	33.3
High school	761	2.3
Postsecondary education	768	8.8
Work	773	7.3
Finances	759	1.5
Family	757	1.3
Life	767	5.8
Locating	763	6.4

[1] Note that the number of cases on which the averages are based fluctuates across sections. This is because timings greater than 3 standard deviations from the mean were removed from analyses. These fluctuations are mostly accounted for among web respondents. One likely reason for this is that web respondents are more likely to complete part of the survey and resume at a later time.

NOTE: Average time in minutes.

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

Given that first follow-up nonrespondents and dropouts are generally more reluctant to participate, and perhaps less tolerant of a long interview, timing analyses were also conducted for these subgroups. On average, the interview took 34 minutes to complete for both first follow-up nonrespondents and dropouts as compared to 33 minutes for all respondents.

Table C-10 shows the average length of the interview overall and by mode of administration for all respondents. While the average length of the interview across modes was 3 minutes longer than intended, the length of the interview was on target for web self-administration at an average of 30 minutes per complete. The CATI and CAPI interviews ran long by 4 minutes and 7 minutes, respectively. The added minutes for the CATI and CAPI interviews were largely attributable to the Work, Life, and Locating sections.

Table C-10. Average time to complete field test student interview, by mode: 2005

Mode	All respondents	
	Number of cases	Average minutes
All modes	740	33.3
Web self-administration	260	30.4
CATI	380	34.3
CAPI	110	37.0

NOTE: Detail may not sum to totals because of rounding. CATI = computer-assisted telephone interview; CAPI = computer-assisted personal interview.

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

The length of the interview was also compared for three different routes through the interview. In an effort to reduce the average length of the interview, the instrument was designed to selectively administer questions based on the respondents' status as a student or employee. If a respondent had attended a postsecondary institution and had also worked, the respondent was asked if he or she considered him- or herself to be primarily a student, primarily an employee, or equally a student and an employee. Based on their responses, participants with dual roles were asked a full battery of questions about their primary role and a smaller set of questions about

their secondary role. Those who identified themselves as equally a student and an employee were administered the full set of items for both roles.

Table C-11 displays the average length of the interview by identification as a student, employee, or both. Respondents who were only or primarily postsecondary students completed the interview in 31 minutes on average. Those who were not students or who identified themselves primarily as employees took over 33 minutes. Not surprisingly, the average interview time was greatest for those who identified equally with their role as a student and as an employee. On average, these respondents spent 37 minutes answering questions.

Table C-11. Average length of interview, by interview section and role identification: 2005

	Primarily/only student		Primarily/only employee		Equally	
Interview section	Number of cases	Average time	Number of cases	Average time	Number of cases	Average time
Total interview [1]	272	30.8	229	33.4	226	36.8
High school	280	2.3	230	2.4	234	2.2
Postsecondary education	281	10.4	235	5.3	235	10.9
Work	287	2.9	234	10.6	235	9.6
Finances	271	2.0	234	1.1	238	1.5
Family	280	1.2	229	1.5	232	1.3
Life	279	5.9	234	5.6	237	5.9
Locating	282	6.2	228	6.9	238	6.0

[1] Note that the number of cases on which the averages are based fluctuates across sections. This is because timings greater than 3 standard deviations from the mean were removed from analyses. These fluctuations are mostly accounted for among web respondents. One likely reason for this is that web respondents are more likely to complete part of the survey and resume at a later time.

NOTE: Average time in minutes.

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

Most of this variation in overall interview length can be attributed to variation in the time elapsed in the postsecondary education and work sections. Respondents who were postsecondary students only or primarily so, like those who identified equally as students and employees, completed the Postsecondary Education section in about 10 minutes. However, the ones who considered themselves equally employees had the added burden of the full set of employment questions. The student group completed the Work section in about 3 minutes, whereas the equally employee group took almost 10 minutes.

The longer-than-anticipated average interview length for some subgroups did not have a deleterious effect on interview completions once the respondent had begun the survey. Only five respondents did not complete their interview after they had finished the High School and Postsecondary Education sections.

C.3.2 Data Quality Analyses

C.3.2.1 Item Nonresponse

The quality of the data was assessed to guide selection of items for the full-scale survey. Item nonresponse rates were one measure of data quality that was evaluated. Item nonresponse rates were very low overall. Only two items were skipped by more than 5 percent of respondents.

The first of these items asked respondents what they expected their total annual income to be at 30 years of age. While about 111 respondents skipped the question (14 percent), 69 of these had previously reported that they did not know what occupation they expected to have at that age. It is reasonable to assume that most of these respondents would have chosen a "don't know" option had it been provided.

The only other item with a nonresponse rate greater than 5 percent was the question about total annual earnings in 2004. This is not surprising given that open-ended questions about earnings are well-known to be sensitive items that tend to have relatively high nonresponse rates. In anticipation of this issue, a follow-up question was asked of those who did not provide their 2004 earnings. These respondents were asked to choose the range which included their earnings level. Ranges allow respondents to provide information without indicating their precise income. In addition, respondents who are not sure of their precise earnings may feel more comfortable providing an estimate if ranges are provided. While 97 respondents (12 percent) did not report their earnings in the open-ended question, only 25 (3 percent) did not choose an earnings category.

C.3.2.2 Reliability

A subsample of 64 CATI respondents was selected at random to complete a reinterview designed to assess the temporal stability of selected interview items. Information and gate questions from the initial interview were preloaded in the reinterview to ensure that questions were asked in the same way and with the same wording across the two interviews. Reinterviews were conducted in CATI about 3 weeks following the completion of the first interview. By the end of data collection, 49 respondents had completed a telephone reinterview.

The reinterview consisted of questions newly written for the second follow-up field test that were of critical importance, either for their substance or for their impact on routing, or questions that had previously had their reliability called into question. Items were not selected if it was anticipated that the correct response may in fact change within a period of several weeks or not enough respondents would be administered the item to yield sufficient data for analysis. Sixty-three items were selected, but six of these were administered to fewer than 30 respondents and were eliminated from the analysis. The remaining 57 items are displayed in table C-12. Percent agreement was based on cases where a response was provided in both interviews. Percent agreement ranged from 43 percent to 100 percent, with two thirds of the items having matched responses in at least 75 percent of the cases.

Ten of the items with less than 75 percent agreement were subitems to two questions in the postsecondary education section. The first of these questions asked respondents to indicate whether various reasons explained why they had chosen to attend their postsecondary institution. Percent agreement ranged from 64 percent to 83 percent across these reasons for attending with three reasons matching less than 75 percent of the time. Location, affordability, and ability to work while in school were matched in 72 percent, 64 percent, and 72 percent of the cases respectively.

The second question asked postsecondary attendees how well their high school courses in various subject areas had prepared them for postsecondary institutions: not at all, somewhat, or a great deal. The percent agreement for these ratings ranged from 49 percent to 72 percent. The ratings of preparation in core high school subjects such as mathematics, English, and history/social studies had higher percent agreement (72 percent, 67 percent, and 69 percent) than

foreign languages, vocational-technical, and visual art courses (all 49 percent). The overall reliability is likely to be improved by asking respondents about their preparation for a specific institution they had attended instead of postsecondary institutions in general.

The remaining items with low reliability were subitems in two questions in the Life section of the interview. One of these questions asked all respondents how frequently they used their public library for various purposes; never, rarely, sometimes, or often. All but one of the subitems had matched responses in fewer than 75 percent of the cases, ranging from 59 percent to 71 percent. The time frame was not specified in the questions, so the respondents' reference period may have differed from the first administration to the second. The other question asked respondents how many hours per day they spent watching television on weekdays and weekend days. Categorical response options were provided. Percent agreement was 50 percent for weekdays and 43 percent for weekend days. Both library usage and television viewership is likely to differ during the school year and summer break. Because some reinterviews were administered during the summer months, temporal stability may have been compromised for these cases.

Table C-12. Questions included on reliability reinterview, by variable label: 2005

Variable label	Percent agreement	N
High school		
Type of high school credential received	97.4	38
Ever took course for college credit while in high school (not AP/IB)	97.5	40
Postsecondary Education		
Whether took off more than 4 months at first postsecondary school	80.6	36
Attended main school for reputation of school/program/faculty	75.0	36
Attended main school for financial aid package	80.6	36
Attended main school for location	72.2	36
Attended main school for affordability	63.9	36
Attended main school for ability to work while in school	72.2	36
Attended main school because only school accepted application	83.3	36
Attended main school for other reason	83.3	36
Took postsecondary course in evening	80.6	36
Took postsecondary course on weekends	97.2	36
Took postsecondary course at satellite campus location	97.2	36
Took postsecondary course online	94.4	36
Did not take postsecondary course online/in evening/weekends/satellite location	86.1	36
Took reading skills course in postsecondary school	83.3	36
Took basic writing skills course in postsecondary school	75.0	36
Took high school level math in postsecondary school	83.3	36
Took another basic skills course in postsecondary school	91.7	36
Took another postsecondary basic skills course	80.6	36
Took none of these basic skills courses in postsecondary school	77.8	36
Took college algebra in postsecondary school	88.9	36
Took finite/computer math in postsecondary school	97.2	36
Took statistics in postsecondary school	94.4	36
Took precalculus in postsecondary school	91.7	36
Took calculus in postsecondary school	94.4	36
Took math course more advanced than calculus in postsecondary school	100.0	36
Took technical math in postsecondary school	88.9	36
Took other math in postsecondary school	88.9	36
Did not take math in postsecondary school	86.1	36
High school math prepared for postsecondary school	72.2	36
High school science prepared for postsecondary school	51.4	35
High school English/communication prepared for postsecondary school	66.7	33
High school history/social science prepared for postsecondary school	69.4	36
High school foreign language prepared for postsecondary school	48.6	35
High school voc/technical courses prepared for postsecondary school	48.6	35
High school visual arts courses prepared for postsecondary school	48.6	35

See notes at end of table.

Table C-12. Questions included on reliability reinterview, by variable label: 2005—Continued

Variable label	Percent agreement	N
Family		
Household roster—lives alone	93.9	49
Household composition—friends	80.0	40
Household composition—biological father	90.0	40
Household composition—male guardian	100.0	35
Household composition—biological mother	83.3	42
Household composition—female guardian	100.0	35
Household composition—siblings	76.2	42
Life		
Registered to vote	95.9	49
Use of public library for leisure reading	71.4	49
Use of public library for Internet access	59.2	49
Use of public library to read magazines/newspaper	67.4	46
Use of public library for personal interests outside of school	59.2	49
Use of public library for databases	65.3	49
Use of public library for programs or training	87.2	47
Whether has own cell/mobile phone	95.9	49
Whether has own personal digital assistant	91.5	47
Whether has own desktop computer	87.8	49
Whether has own laptop computer	97.9	48
Hours/day spent watching TV/DVD on weekdays	50.0	48
Hours/day spent watching TV/DVD on weekend days	42.9	49

NOTE: AP = advanced placement; IB = international baccalaureate.

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

C.3.2.3 Quality of Online Coding

The ELS:2002 field test instrument included tools that allowed online coding of literal responses for occupation and field of study. For occupation, sample members were asked about the job they held the longest in 2004 or the job they expect to have at the age of 30, or both. Occupations were coded into one of 52 categories. For field of study, sample members were asked about the degree they intended to complete.[1] The code frame for field of study included 192 categories.

Coders first entered text to describe the occupation or the field of study. Occupation coding was done with a set of three sequential dropdown menus, each with choices increasing in their level of specificity. The first dropdown menu contained a general list of occupations. The options presented in the second dropdown were dependent on the code selected in the first. Some selections from the second dropdown required coders to make a selection from a third, more detailed dropdown menu. The field-of-study coder operated differently. While the occupation coder was independent of the textual response, the field-of-study coder was influenced by it. Coders were presented with a customized list of fields of study based on the text string they entered. Coders had the option of selecting one of the fields of study listed or choosing the "none

[1] Respondents who had already completed a degree were asked to code the field of study in which it was earned. However, too few sample members had earned a degree to allow for a meaningful analysis of coding quality.

of these" option. Selecting "none of these" brought the coder to a two-tiered dropdown menu that operated like the triple dropdown menu of occupations. For both the occupation and field of study coders, interviewers were provided coding guides and trained to use probing techniques to assist in the online coding process. Self-administered web respondents were provided limited supporting text on screen.

Coding experts evaluated coding quality overall and by mode of administration. A 30 percent sample of the pairs of verbatim strings and codes was selected for analysis. Expert coders who were unaware of the codes selected during the interview evaluated the verbatim strings and assigned codes. Cases were not coded when the verbatim string lacked sufficient clarity or specificity.

Table C-13 shows the results of the recode analysis overall and for each coding system. Overall, 64 percent of the codes selected during the interview were determined to be correct. Coding accuracy ranged from 60 percent for occupation expected at age 30 to 70 percent for intended field of study. Taken together, about 6 percent of the text strings were too vague to evaluate. However, all of the text strings associated with the occupation held in 2004 had sufficient specificity to be coded. In contrast, 8 percent of the text strings for occupation expected at age 30 and 11 percent of the text strings for the intended field of study were too vague to code.

Table C-13. Summary of ELS:2002 first follow-up field test recode results: 2005

Type of coding	Coding attempts sampled	Percent original code correctly	Percent text string too vague to code
Total	494	64.2	6.1
Occupation in 2004	153	64.7	0.0
Occupation at age 30	201	59.7	7.5
Intended field of study	140	70.0	10.7

NOTE: ELS:2002 = Education Longitudinal Study of 2002.

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

Table C-14 displays the results of the analysis of coding quality by mode of administration. Overall, the correct code was selected for 64 percent of the selected cases in both modes of administration: interviewer administered via CATI/CAPI and self-administration via the Web. Statistically significant differences by mode were not detected for any of the coding systems. Coding accuracy ranged from 60 percent to 69 percent for CATI/CAPI, whereas accuracy ranged from 56 percent to 76 percent for self-administration via the Web.

Table C-14. Summary of ELS:2002 first follow-up field test recode results, by mode of interview administration: 2005

	CATI/CAPI			Self-administration via the Web		
Type of coding	Coding attempts sampled	Percent original code correct	Percent text string too vague to code	Coding attempts sampled	Percent original code correct	Percent text string too vague to code
Total	320	64.1	6.9	174	64.4	4.6
Occupation in 2004	105	68.6	0.0	48	56.3	0.0
Occupation at age 30	137	59.9	8.8	64	59.4	4.7
Intended field of study	78	65.4	12.8	62	75.8	8.1

NOTE: CATI = computer-assisted telephone interview; CAPI = computer-assisted personal interview.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Second Follow-up Field Test."

C.4 Recommendations for the Full-Scale Study

In general, the field test effort confirmed that the data collection procedures would be appropriate and successful for the full-scale study. Nonetheless, several modifications have been recommended and implemented for the full-scale study. With respect to data collection, it was learned that parents continue to act as gatekeepers for the sample members even though the sample members are no longer minors. A concerted effort must be made in the full-scale study to convince parents of the value of the study so they cooperate and share information with their children. The full-scale study procedures include dual mailings to both the sample members and their parents. These procedures will ensure at both the sample maintenance and data collection stages that parents are aware of the procedures for the second follow-up. Direct mail and e-mail contacts with parents will also allow parents to provide updated contact information for their young adults. Also, because the majority of phone numbers available for sample members are numbers for their parents' homes, CATI procedures will be in place to guide interviewers on how to appropriately ask for and record new contact information for sample members from parents. Successful contacts with parents will be an important part of interviewer training for the full-scale study.

The use of a larger incentive for sample members classified as dropouts proved to be very successful. The response rate for dropouts approached the rate for the rest of the sample. This was highlighted in comparison with the low response rate for first follow-up field test nonrespondents. Like dropouts, previous-round nonparticipants typically have lower rates of cooperation than their participating counterparts. However, while dropouts received a higher amount, the first follow-up field test nonrespondents were offered the standard incentive amount. The response rate for first follow-up field test nonrespondents was about half that of the rate for first follow-up field test respondents. Based on this evidence, it is strongly recommended that the greater incentive amount be offered to both dropouts and first follow-up field test nonrespondents.

The survey instrument proved to take more time to complete on average than had been anticipated. Analysis of the timing data by respondent types demonstrated that the interview was considerably longer for sample members who equally identified with their student and employee roles. About one-third of the respondents reported that they considered themselves equally students and employees, and as such, were asked to complete a long battery of questions about

each role. For the full-scale study, the project staff recommends constructing two mutually exclusive paths through the postsecondary and employment sections of the interview to reduce the average minutes per complete.

Another aspect of the instrument that warrants review is the occupation and field-of-study coding applications. Post-hoc codes of verbatim strings by expert coders matched the codes selected during the interview in 60 to 70 percent of the cases, depending on the question. The project staff recommends using an assisted coder for occupation coding as well as field-of-study coding. In addition, a thorough review of the keywords used to match verbatim strings to response offerings is recommended to increase the proportion of correct codes selected during the interview by CATI/CAPI interviewers and web respondents.

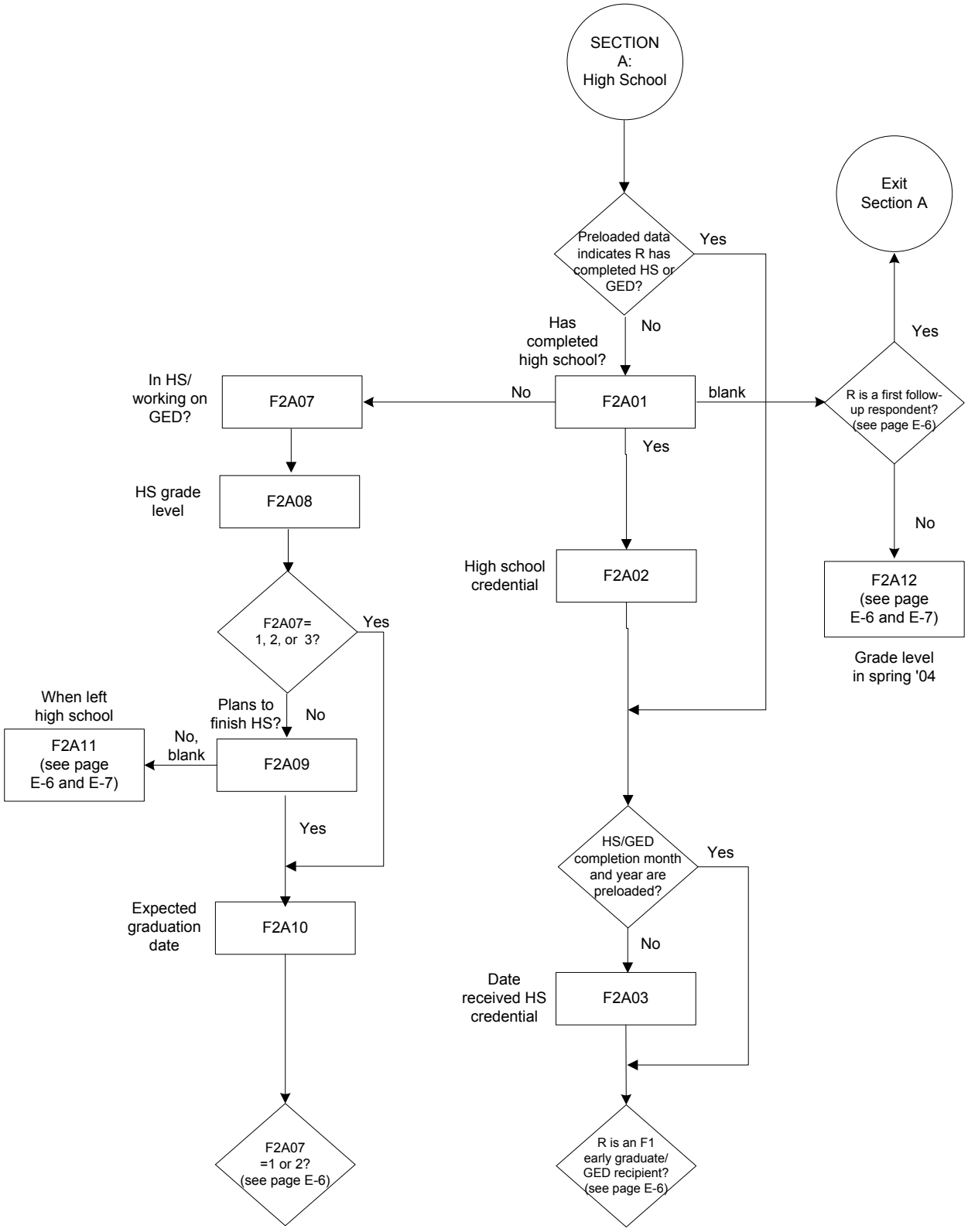
Appendix D
Data File Documentation Errata

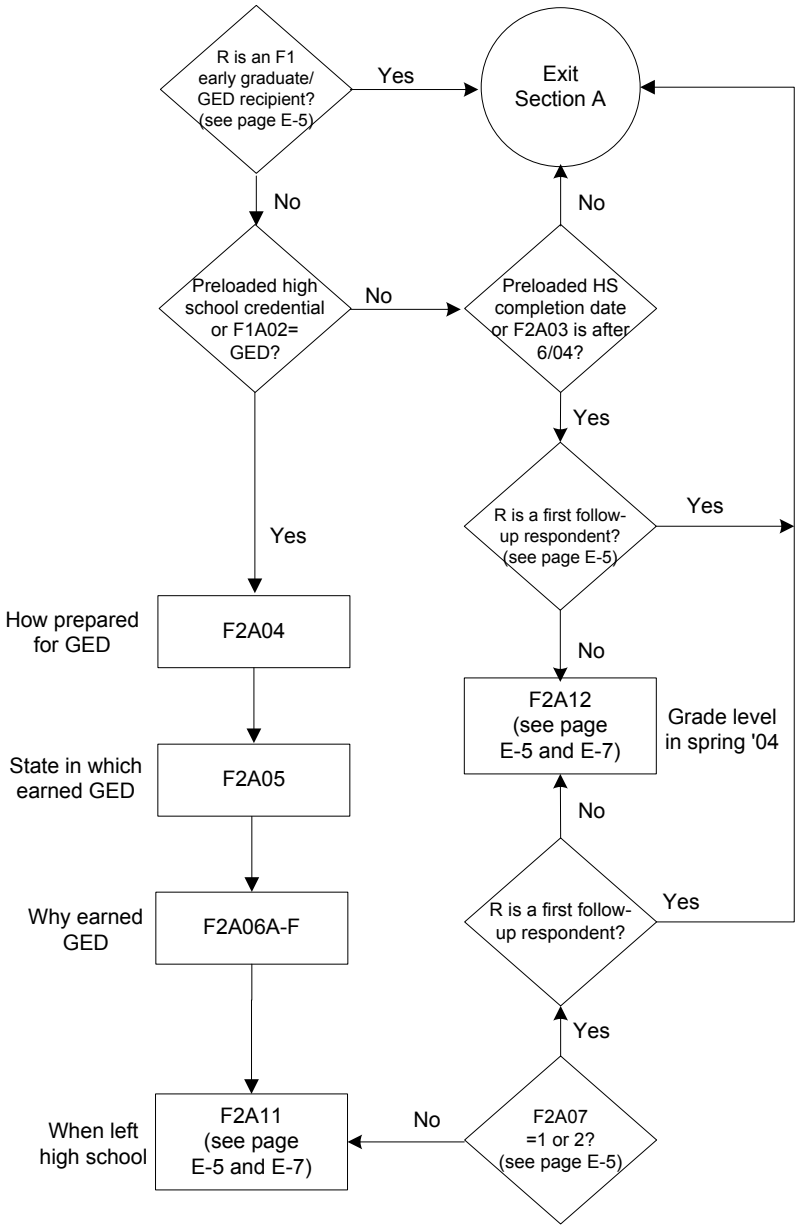
The following errata appear in the *Base-Year to First Follow-Up Data File Documentation* at page 36 (table 5), where the variable names for IRT-estimated number-right scores in mathematics are misstated. The variable name BYTXMIR2 should be F1TXMBIR. The variable name F1TXMIR2 should be F1TXM1IR. The appropriate variable name for the rescaled base-year IRT-estimated number-right score (F1TXMBIR) appears correctly in chapter 2 of this report. The appropriate variable name for the first follow-up IRT-estimated number-right score (F1TXM1IR) also appears correctly in chapter 2 of this report.

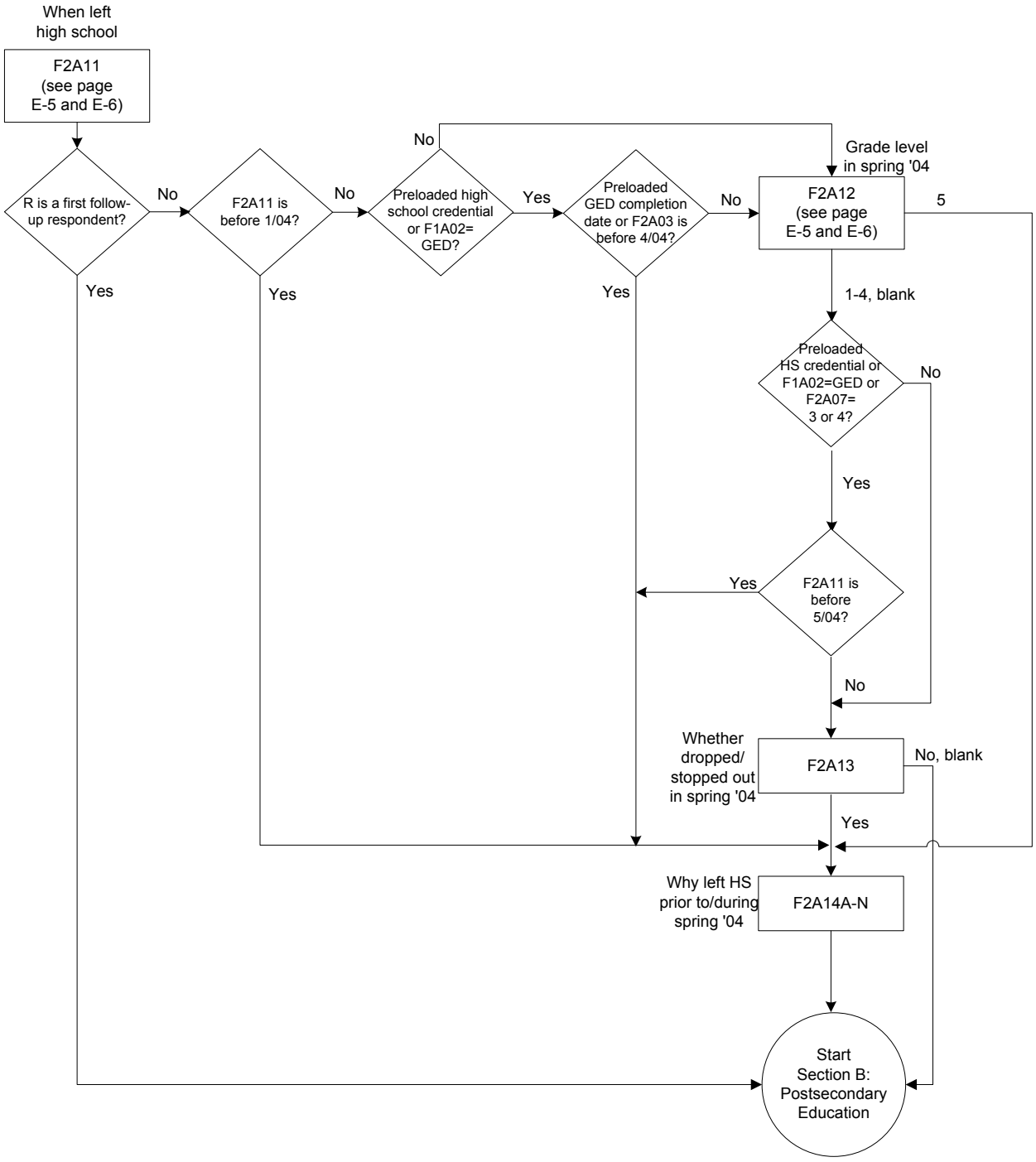
In the *Base Year Data File User's Manual* and in the *Base-Year to First Follow-Up Data File Documentation* the following misstatement occurs: "*w* is the estimated population and *y* is a 0/1 variable indicating whether or not a certain characteristic is present for the sample member." The corrected statement is: "*w* is the sample weight and *y* is a 0/1 variable indicating whether a certain characteristic is present for the sample member." The misstatement may be found on page 100 (footnote 38) of the base-year report, and on page 90 (footnote 25) of the base-year to first follow-up report.

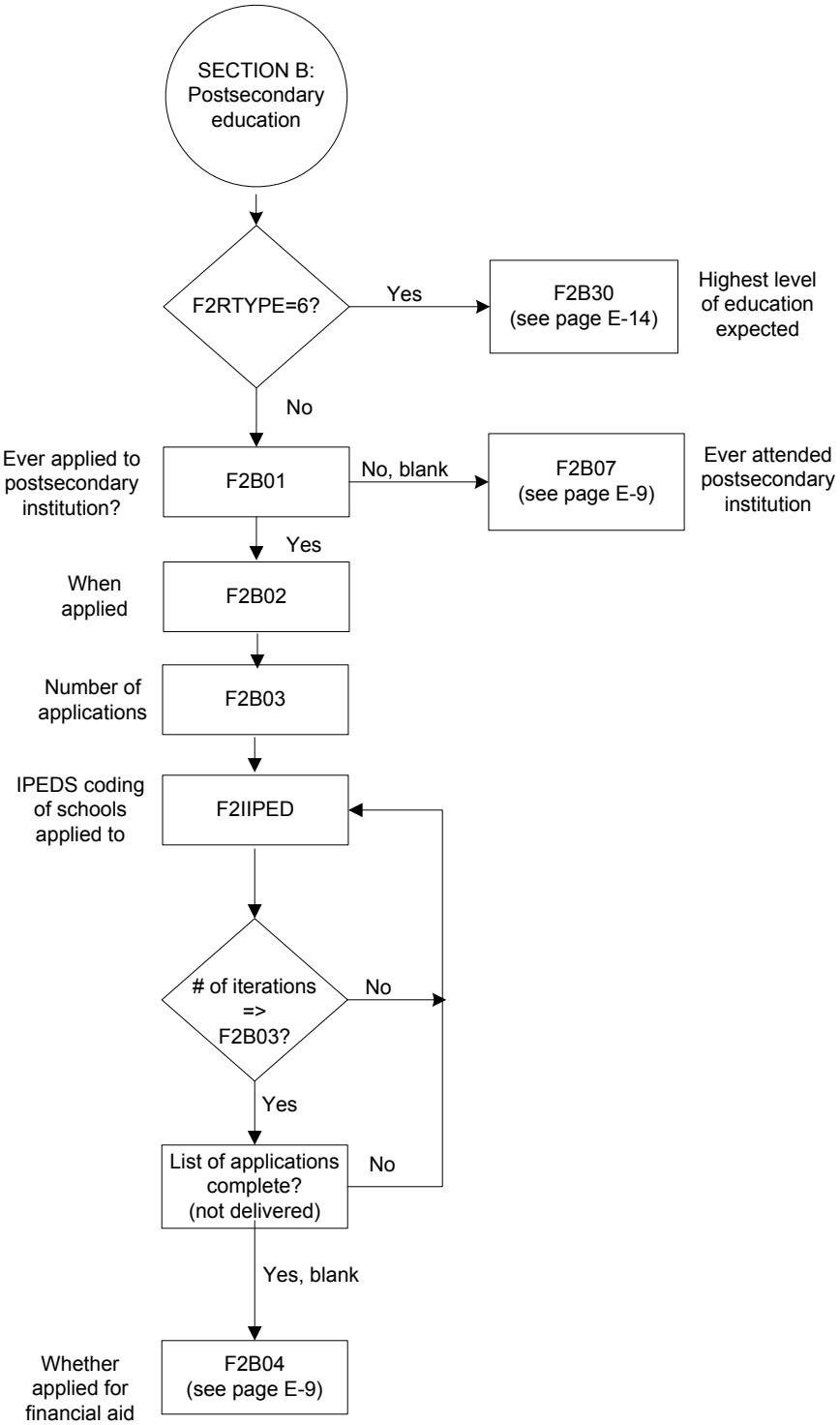
Appendix E
Flow Chart and Facsimile for the Second Follow-up Questionnaire

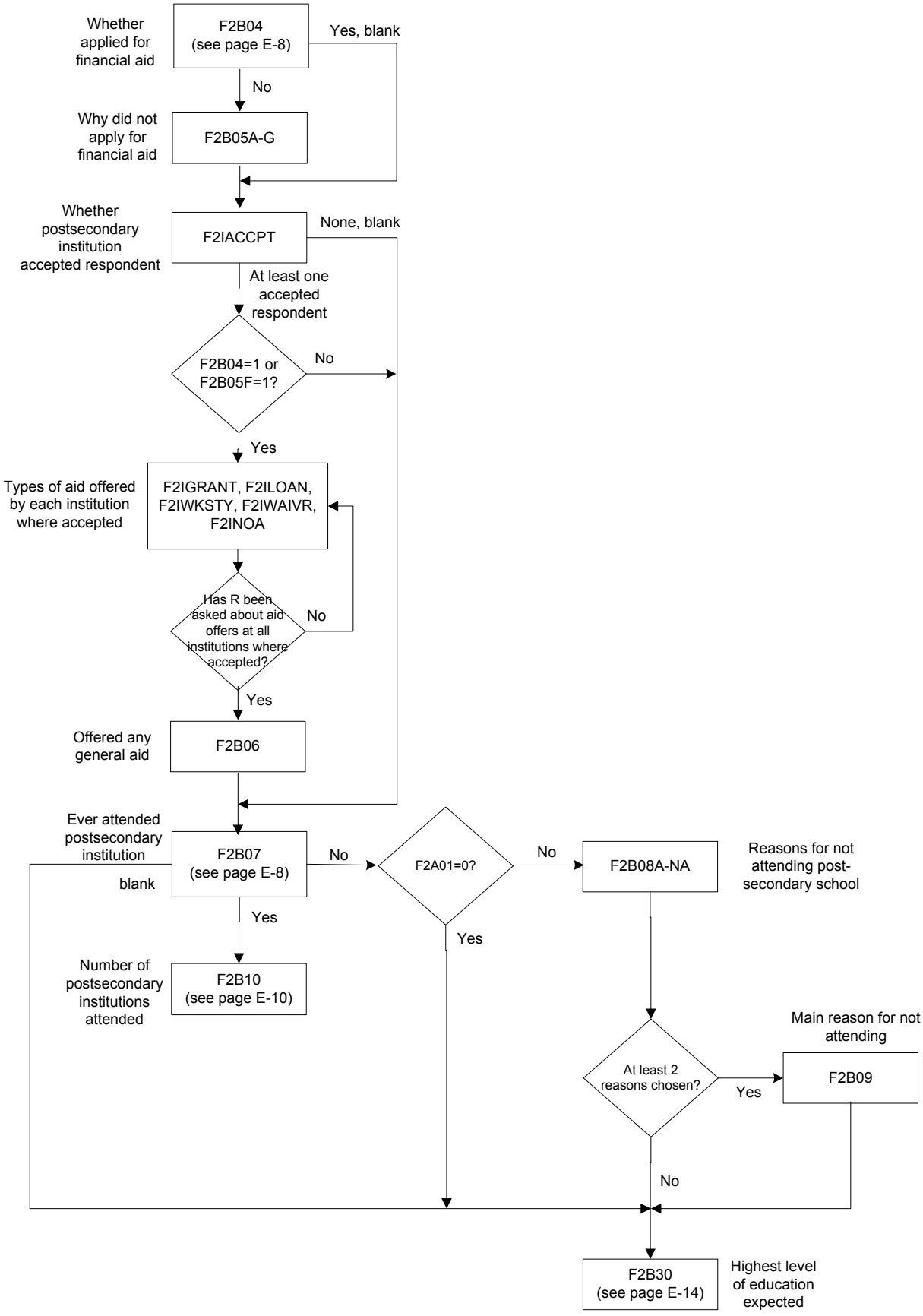
Flowcharts

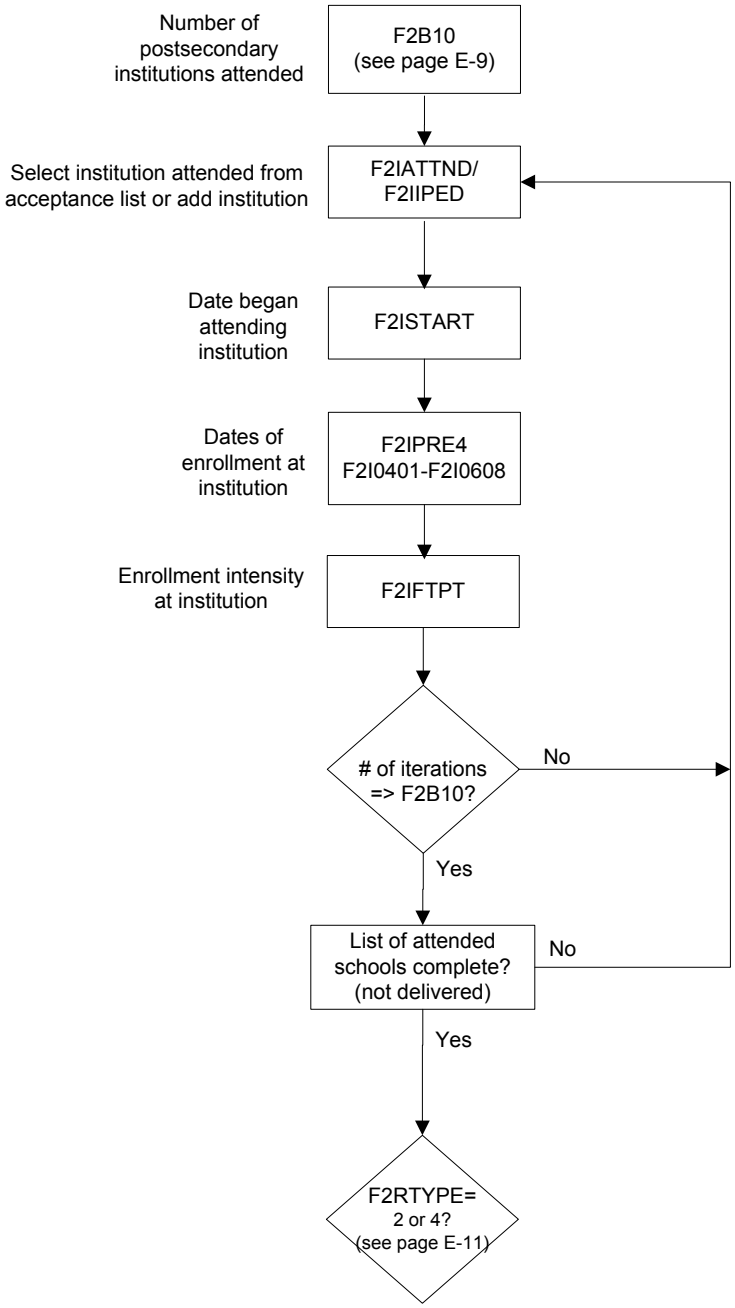

SECTION A: High School
Preloaded data indicates R has completed HS or GED?
Yes
No
Has completed high school?
F2A01
No
In HS/ working on GED?
F2A07
blank
R is a first follow-up respondent? (see page E-6)
Yes
Exit Section A
No
F2A12 (see page E-6 and E-7)
Grade level in spring '04
Yes
High school credential
F2A02
HS grade level
F2A08
F2A07= 1, 2, or 3?
Yes
When left high school
Plans to finish HS?
No
No, blank
F2A11 (see page E-6 and E-7)
F2A09
Yes
Expected graduation date
F2A10
F2A07 =1 or 2? (see page E-6)
HS/GED completion month and year are preloaded?
Yes
No
Date received HS credential
F2A03
R is an F1 early graduate/ GED recipient? (see page E-6)

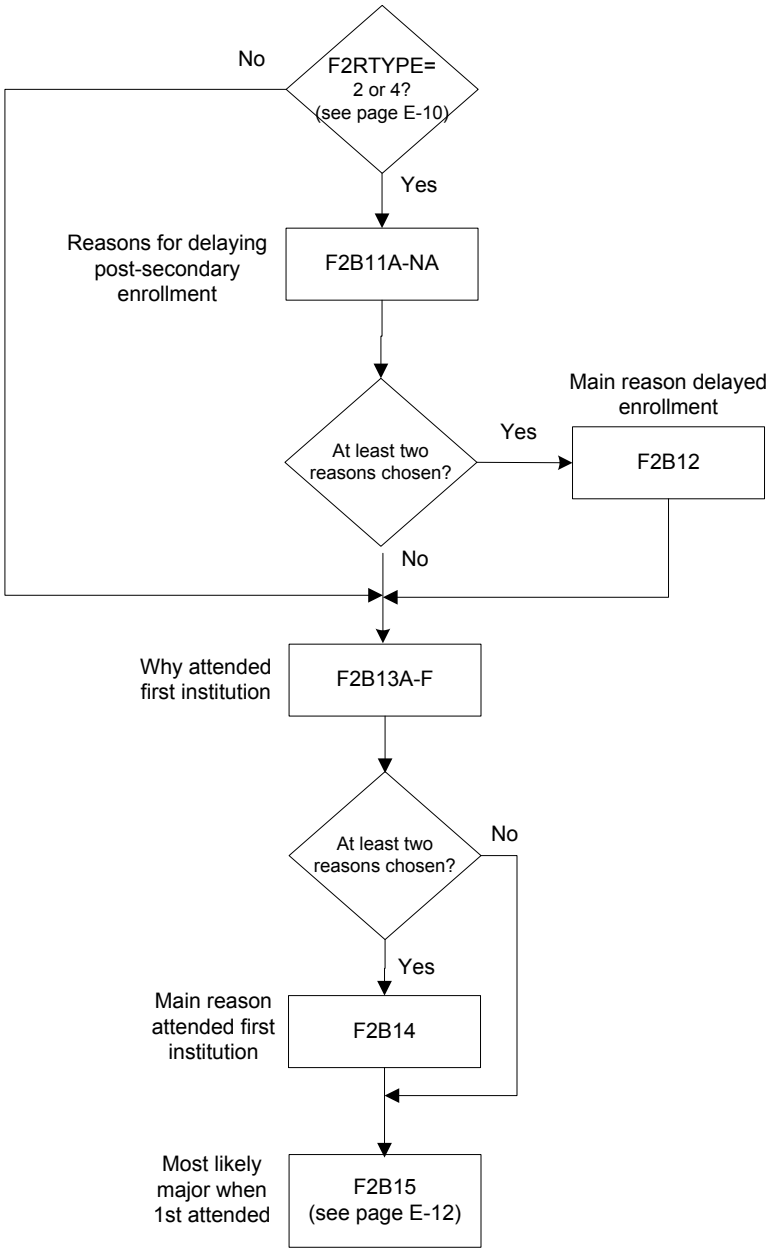

R is an F1 early graduate/ GED recipient? (see page E-5)
Yes
Exit Section A
No
No
Preloaded high school credential or F1A02= GED?
No
Preloaded HS completion date or F2A03 is after 6/04?
Yes
R is a first follow-up respondent? (see page E-5)
Yes
Yes
How prepared for GED
F2A04
No
F2A12 (see page E-5 and E-7)
Grade level in spring '04
State in which earned GED
F2A05
No
Why earned GED
F2A06A-F
R is a first follow-up respondent?
Yes
Yes
When left high school
F2A11 (see page E-5 and E-7)
No
F2A07 =1 or 2? (see page E-5)

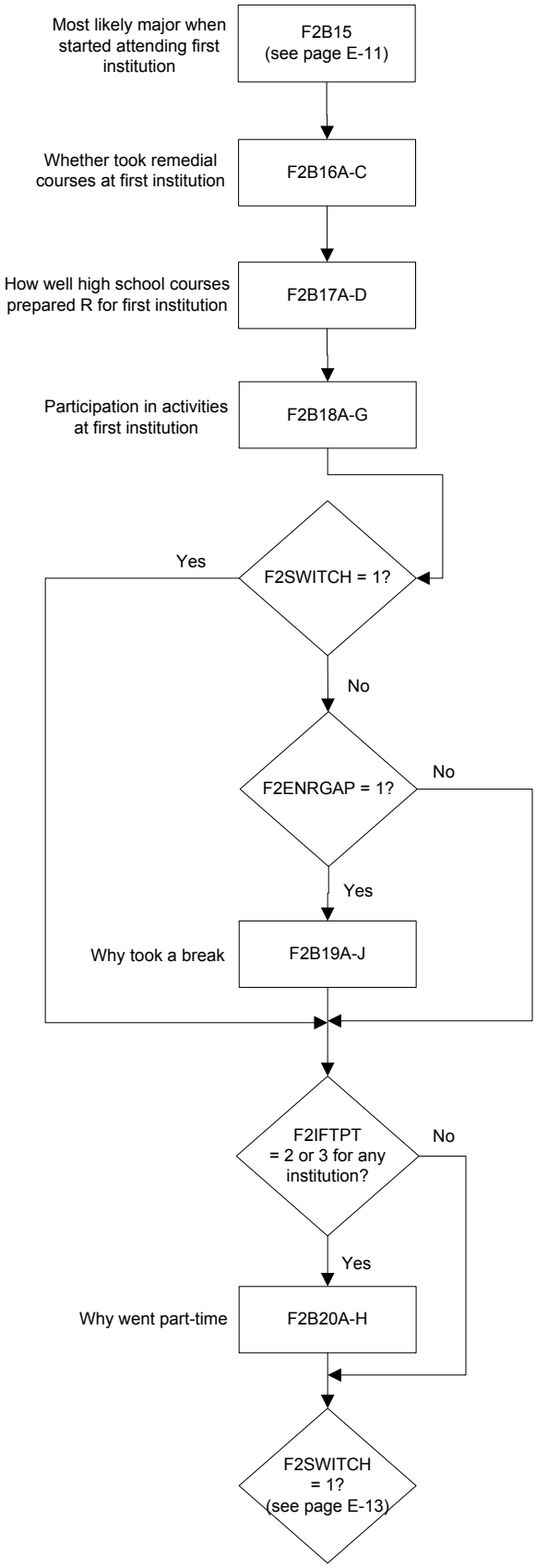

When left high school
F2A11 (see page E-5 and E-6)
R is a first follow-up respondent?
No
Yes
F2A11 is before 1/04?
No
Yes
Preloaded high school credential or F1A02= GED?
No
Yes
Preloaded GED completion date or F2A03 is before 4/04?
No
Yes
Grade level in spring '04
F2A12 (see page E-5 and E-6)
5
1-4, blank
Preloaded HS credential or F1A02=GED or F2A07= 3 or 4?
No
Yes
F2A11 is before 5/04?
Yes
No
Whether dropped/ stopped out in spring '04
F2A13
No, blank
Yes
Why left HS prior to/during spring '04
F2A14A-N
Start Section B: Postsecondary Education

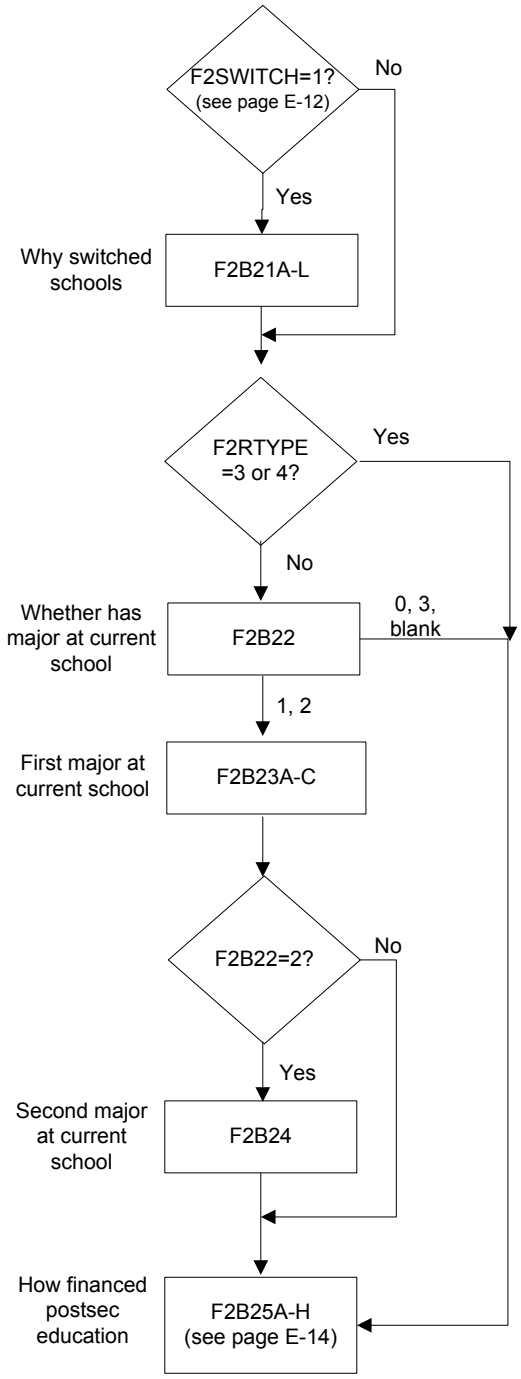

SECTION B: Postsecondary education
F2RTYPE=6?
Yes
F2B30 (see page E-14)
Highest level of education expected
No
Ever applied to postsecondary institution?
F2B01
No, blank
F2B07 (see page E-9)
Ever attended postsecondary institution
Yes
When applied
F2B02
Number of applications
F2B03
IPEDS coding of schools applied to
F2IIPED
# of iterations => F2B03?
No
Yes
List of applications complete? (not delivered)
No
Yes, blank
Whether applied for financial aid
F2B04 (see page E-9)

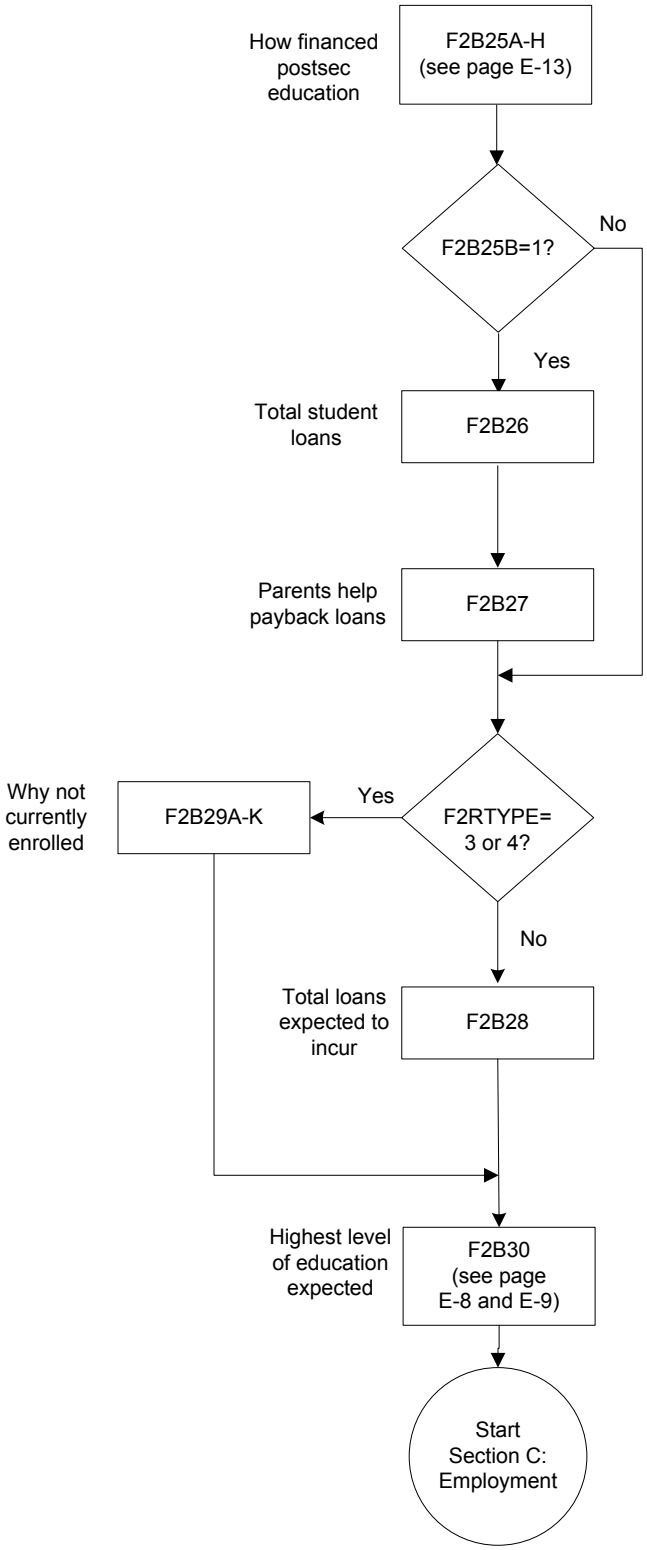

Whether applied for financial aid
F2B04 (see page E-8)
Yes, blank
No
Why did not apply for financial aid
F2B05A-G
Whether postsecondary institution accepted respondent
F2IACCPT
None, blank
At least one accepted respondent
F2B04=1 or F2B05F=1?
No
Yes
Types of aid offered by each institution where accepted
F2IGRANT, F2ILOAN, F2IWKSTY, F2IWAIVR, F2INOA
Has R been asked about aid offers at all institutions where accepted?
No
Yes
Offered any general aid
F2B06
Ever attended postsecondary institution
F2B07 (see page E-8)
No
F2A01=0?
No
F2B08A-NA
Reasons for not attending post-secondary school
blank
Yes
Yes
Number of postsecondary institutions attended
F2B10 (see page E-10)
Main reason for not attending
At least 2 reasons chosen?
Yes
F2B09
No
F2B30 (see page E-14)
Highest level of education expected

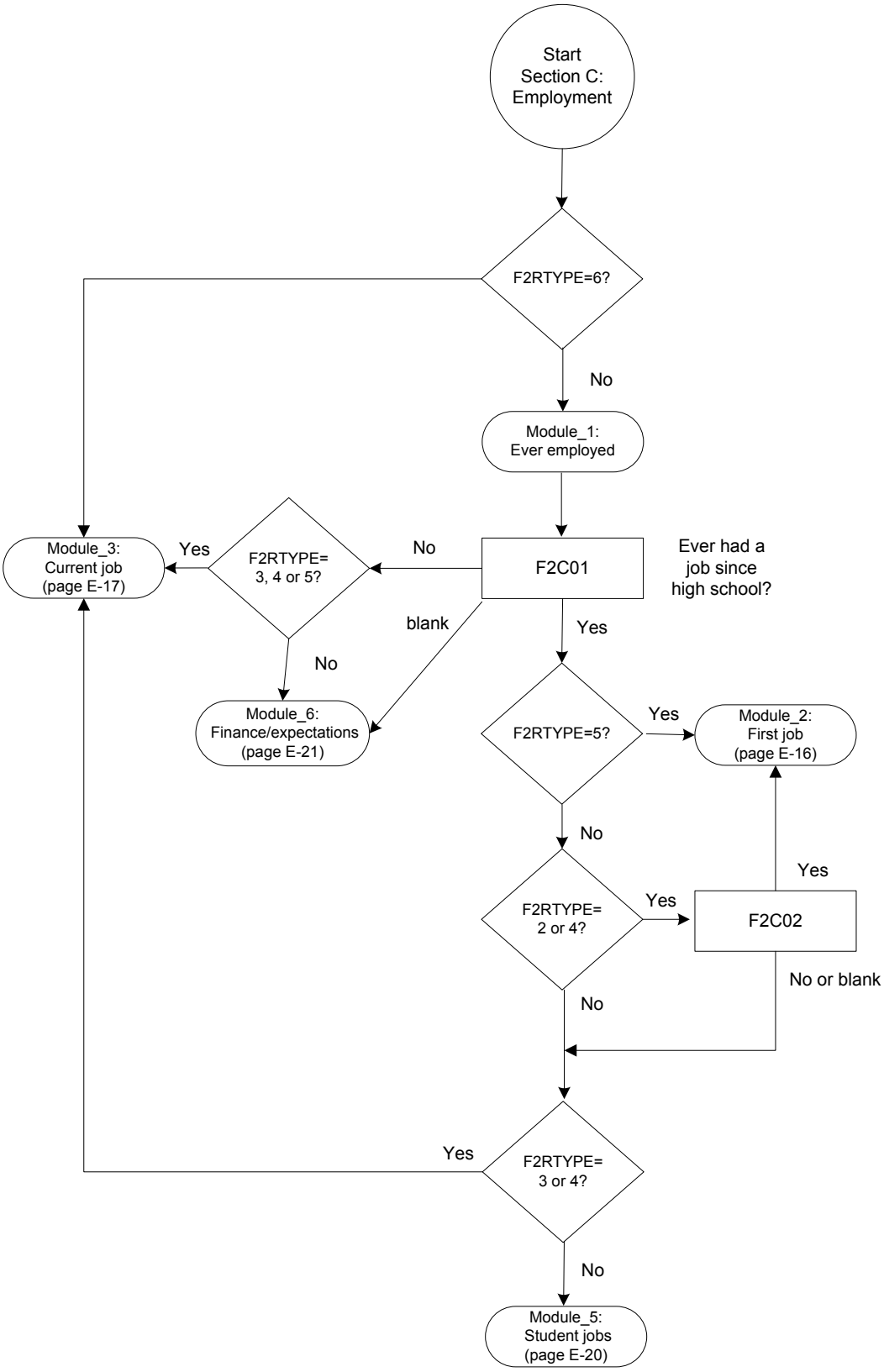

Number of postsecondary institutions attended
F2B10
(see page E-9)
Select institution attended from acceptance list or add institution
F2IATTND/
F2IIPED
Date began attending institution
F2ISTART
Dates of enrollment at institution
F2IPRE4
F2I0401-F2I0608
Enrollment intensity at institution
F2IFTPT
# of iterations => F2B10?
No
Yes
List of attended schools complete? (not delivered)
No
Yes
F2RTYPE=
2 or 4?
(see page E-11)

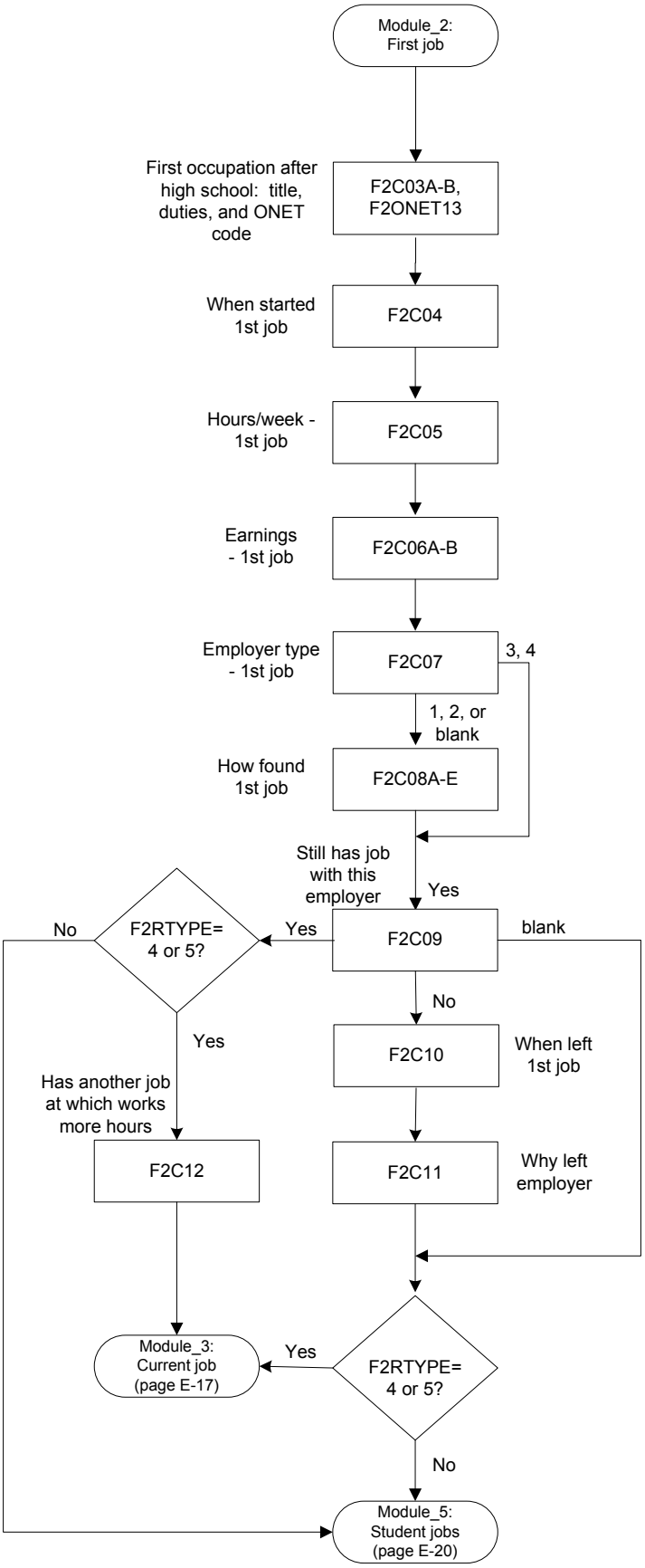

No
F2RTYPE=
2 or 4?
(see page E-10)
Yes
Reasons for delaying post-secondary enrollment
F2B11A-NA
Main reason delayed enrollment
At least two reasons chosen?
Yes
F2B12
No
Why attended first institution
F2B13A-F
At least two reasons chosen?
No
Yes
Main reason attended first institution
F2B14
Most likely major when 1st attended
F2B15
(see page E-12)

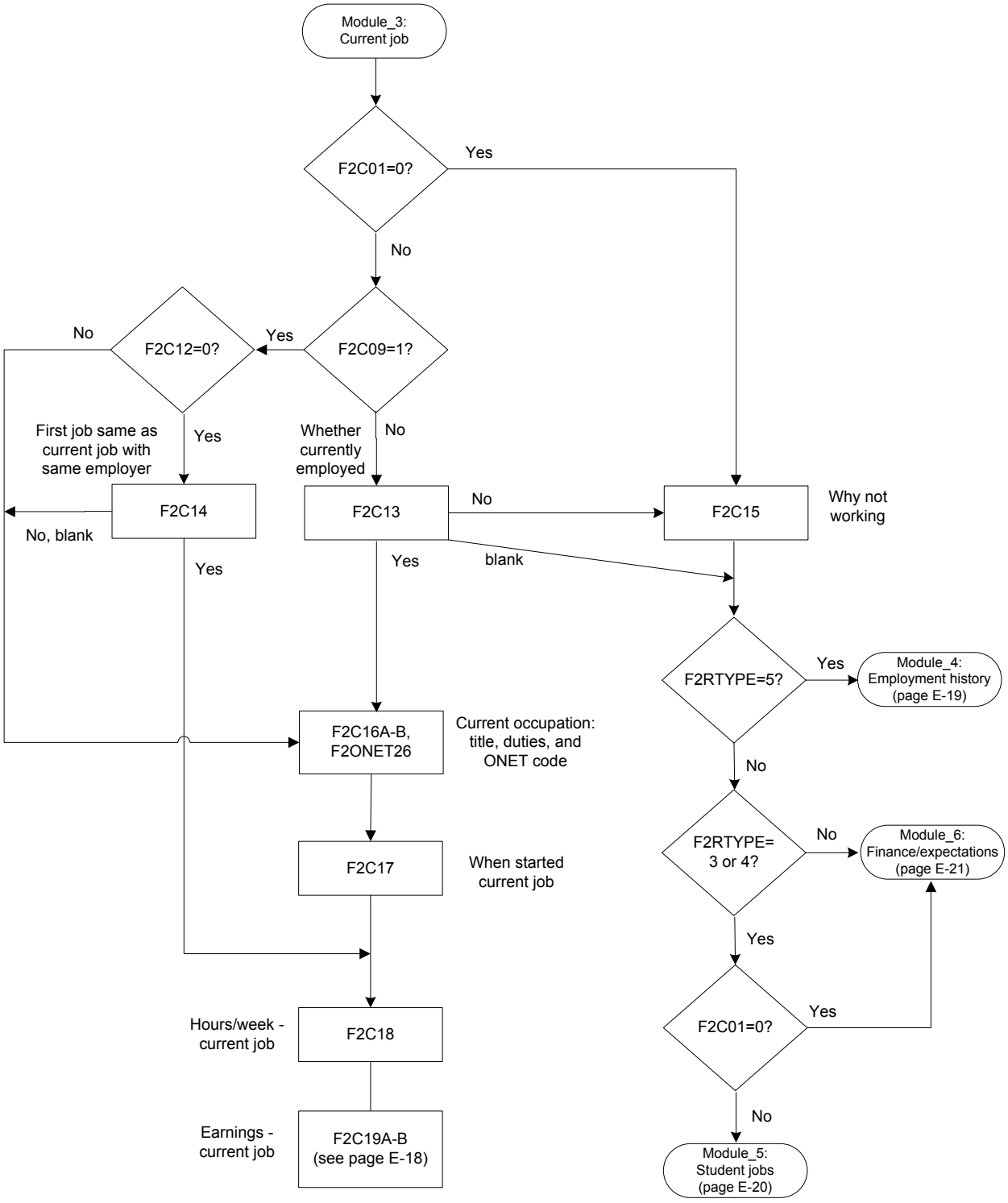

Most likely major when started attending first institution
F2B15 (see page E-11)
Whether took remedial courses at first institution
F2B16A-C
How well high school courses prepared R for first institution
F2B17A-D
Participation in activities at first institution
F2B18A-G
F2SWITCH = 1?
Yes
No
F2ENRGAP = 1?
No
Yes
Why took a break
F2B19A-J
F2IFTPT = 2 or 3 for any institution?
No
Yes
Why went part-time
F2B20A-H
F2SWITCH = 1? (see page E-13)

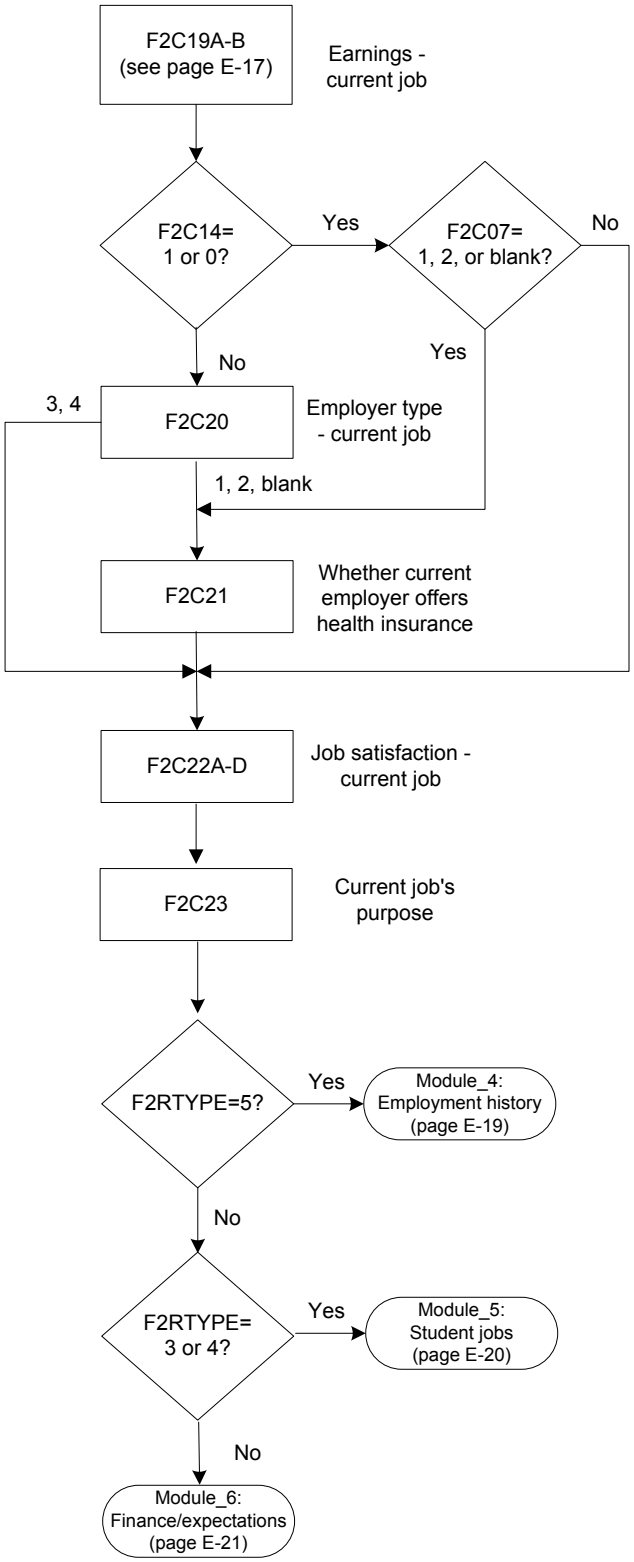

F2SWITCH=1?
(see page E-12)
No
Yes
Why switched schools
F2B21A-L
F2RTYPE =3 or 4?
Yes
No
Whether has major at current school
F2B22
0, 3, blank
1, 2
First major at current school
F2B23A-C
F2B22=2?
No
Yes
Second major at current school
F2B24
How financed postsec education
F2B25A-H
(see page E-14)

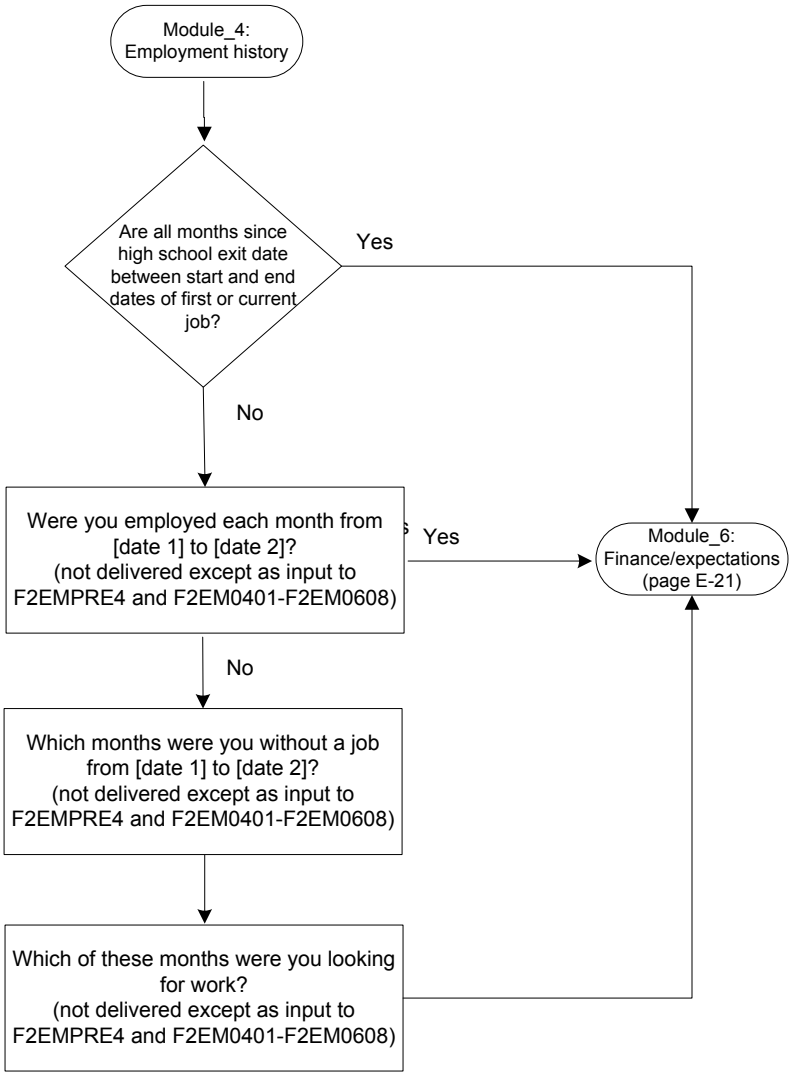

How financed postsec education
F2B25A-H (see page E-13)
F2B25B=1?
No
Yes
Total student loans
F2B26
Parents help payback loans
F2B27
Why not currently enrolled
F2B29A-K
Yes
F2RTYPE= 3 or 4?
No
Total loans expected to incur
F2B28
Highest level of education expected
F2B30 (see page E-8 and E-9)
Start Section C: Employment

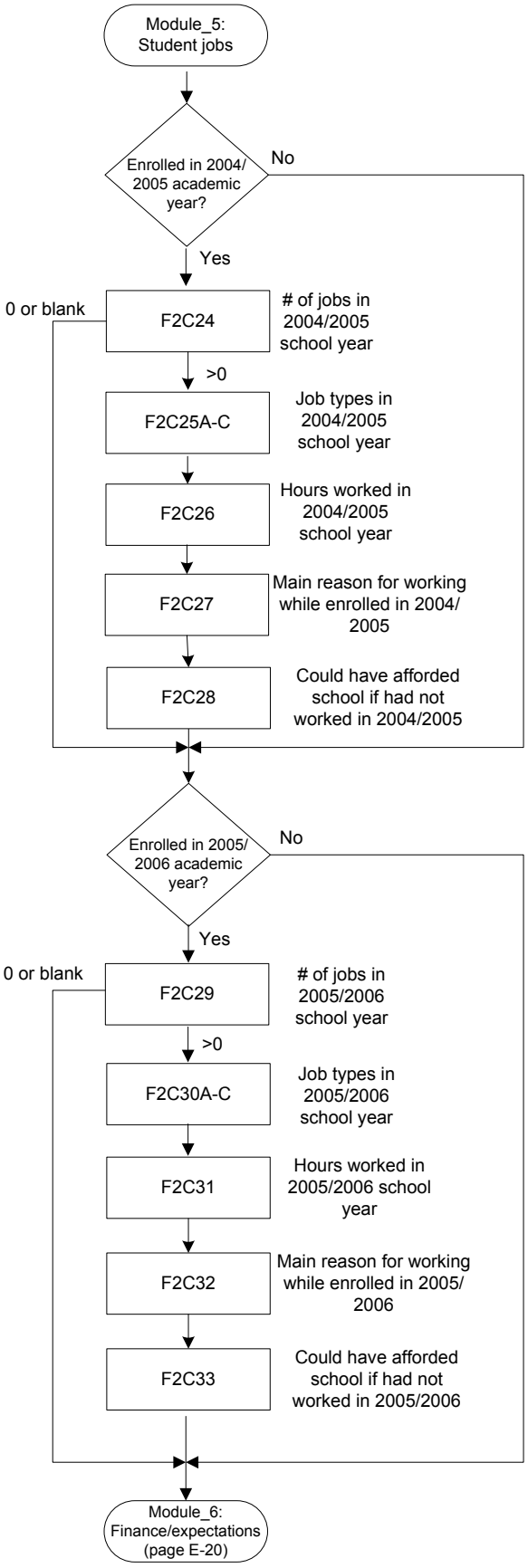

Start
Section C:
Employment
F2RTYPE=6?
No
Module_1:
Ever employed
F2C01
Ever had a
job since
high school?
No
F2RTYPE=
3, 4 or 5?
Yes
Module_3:
Current job
(page E-17)
blank
No
Module_6:
Finance/expectations
(page E-21)
Yes
F2RTYPE=5?
Yes
Module_2:
First job
(page E-16)
No
F2RTYPE=
2 or 4?
Yes
F2C02
Yes
No or blank
No
Yes
F2RTYPE=
3 or 4?
No
Module_5:
Student jobs
(page E-20)

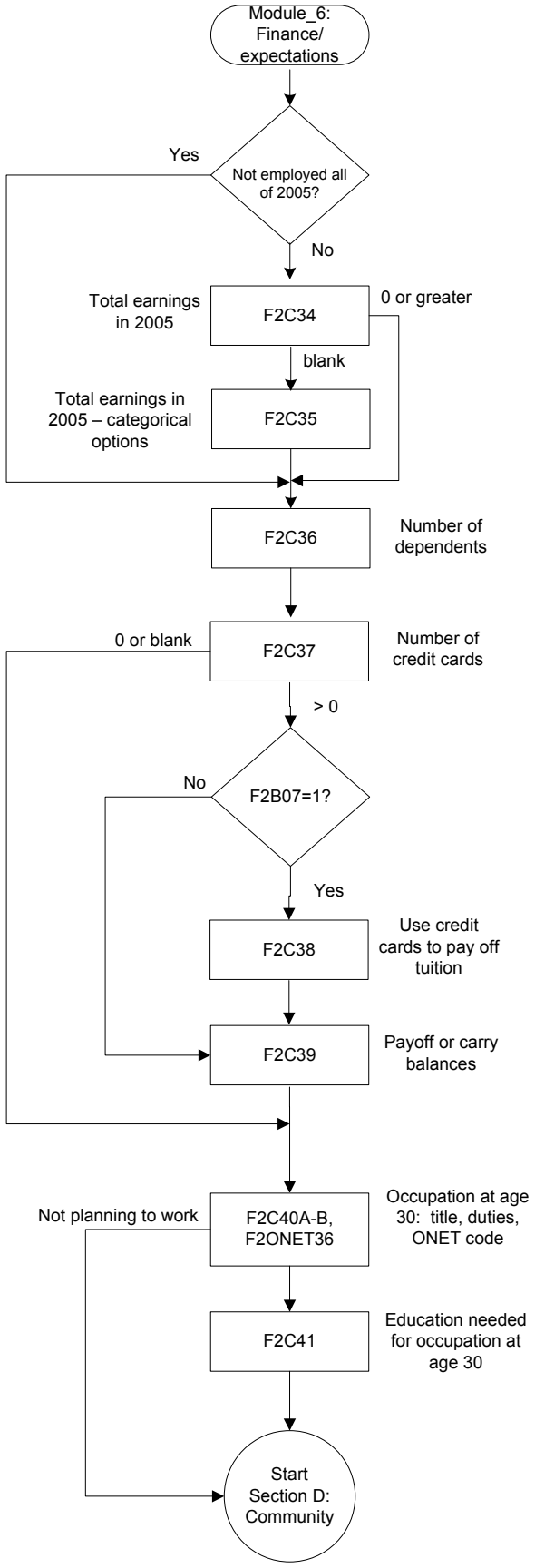

Module_2: First job
First occupation after high school: title, duties, and ONET code
F2C03A-B, F2ONET13
When started 1st job
F2C04
Hours/week - 1st job
F2C05
Earnings - 1st job
F2C06A-B
Employer type - 1st job
F2C07
3, 4
1, 2, or blank
How found 1st job
F2C08A-E
Still has job with this employer
Yes
No
F2RTYPE= 4 or 5?
Yes
F2C09
blank
No
Yes
F2C10
When left 1st job
Has another job at which works more hours
F2C12
F2C11
Why left employer
Module_3: Current job (page E-17)
Yes
F2RTYPE= 4 or 5?
No
Module_5: Student jobs (page E-20)

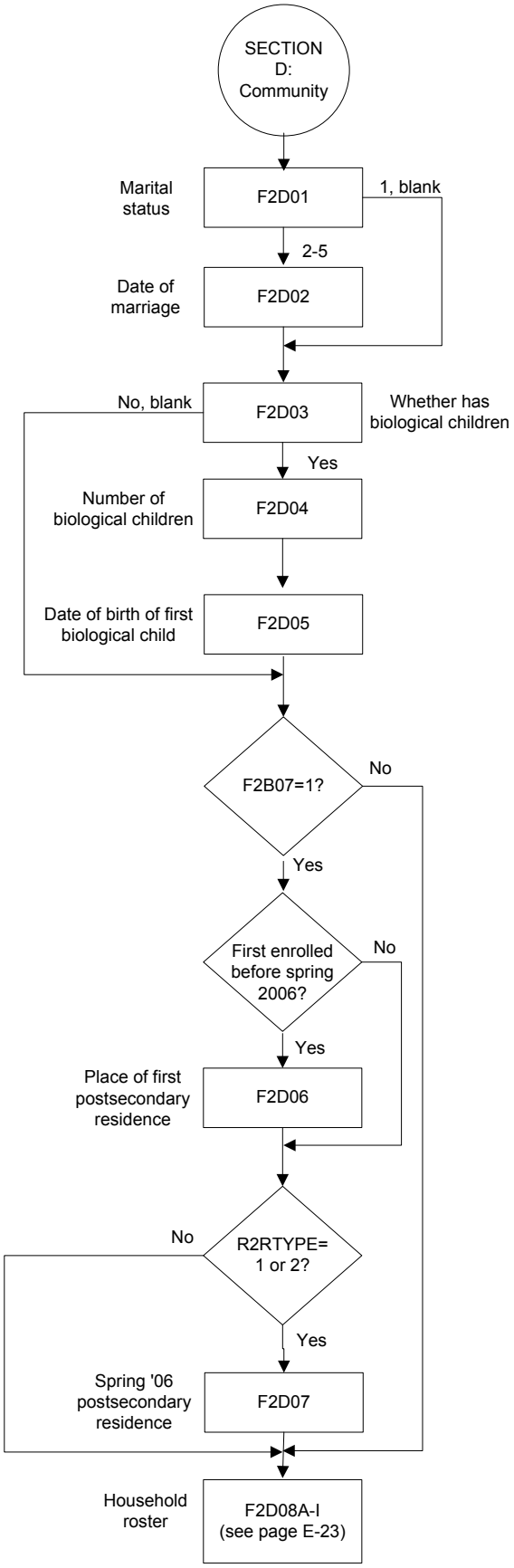

Module_3:
Current job
F2C01=0?
Yes
No
F2C09=1?
Yes
F2C12=0?
No
First job same as current job with same employer
Yes
No, blank
Whether currently employed
No
F2C14
F2C13
No
F2C15
Why not working
Yes
blank
Yes
F2RTYPE=5?
Yes
Module_4:
Employment history
(page E-19)
F2C16A-B, F2ONET26
Current occupation: title, duties, and ONET code
No
F2RTYPE= 3 or 4?
No
Module_6:
Finance/expectations
(page E-21)
F2C17
When started current job
Yes
F2C01=0?
Yes
Hours/week - current job
F2C18
No
Earnings - current job
F2C19A-B
(see page E-18)
Module_5:
Student jobs
(page E-20)

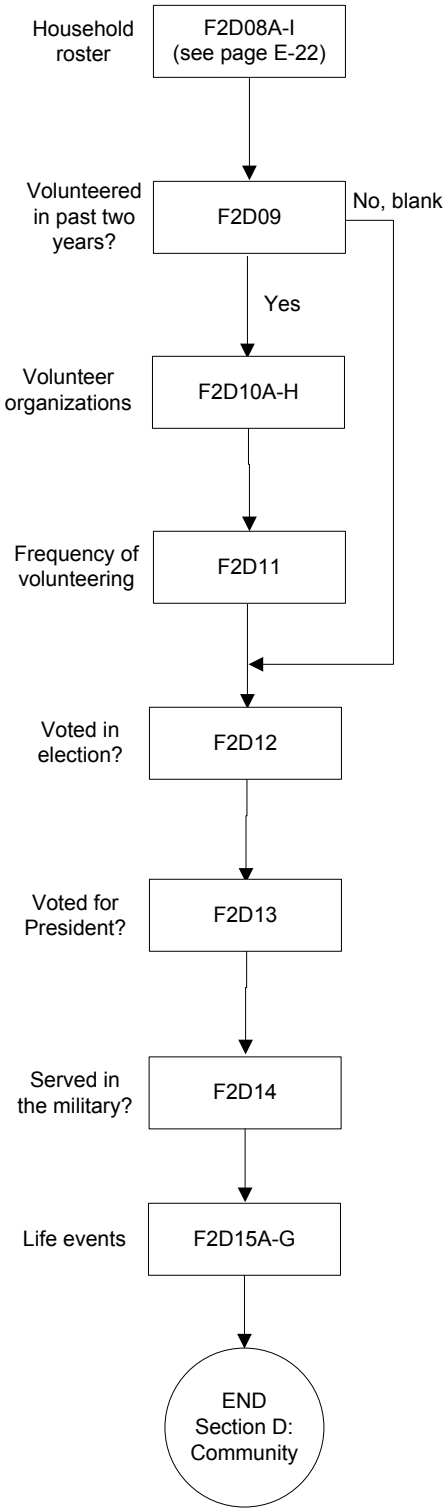

F2C19A-B
(see page E-17)
Earnings -
current job
F2C14=
1 or 0?
Yes
F2C07=
1, 2, or blank?
No
Yes
No
3, 4
F2C20
Employer type
- current job
1, 2, blank
F2C21
Whether current
employer offers
health insurance
F2C22A-D
Job satisfaction -
current job
F2C23
Current job's
purpose
F2RTYPE=5?
Yes
Module_4:
Employment history
(page E-19)
No
F2RTYPE=
3 or 4?
Yes
Module_5:
Student jobs
(page E-20)
No
Module_6:
Finance/expectations
(page E-21)


Module_4:
Employment history
Are all months since high school exit date between start and end dates of first or current job?
Yes
No
Were you employed each month from [date 1] to [date 2]?
(not delivered except as input to F2EMPRE4 and F2EM0401-F2EM0608)
Yes
Module_6:
Finance/expectations
(page E-21)
No
Which months were you without a job from [date 1] to [date 2]?
(not delivered except as input to F2EMPRE4 and F2EM0401-F2EM0608)
Which of these months were you looking for work?
(not delivered except as input to F2EMPRE4 and F2EM0401-F2EM0608)


Module_5: Student jobs
Enrolled in 2004/ 2005 academic year?
No
Yes
0 or blank
F2C24
# of jobs in 2004/2005 school year
>0
F2C25A-C
Job types in 2004/2005 school year
F2C26
Hours worked in 2004/2005 school year
F2C27
Main reason for working while enrolled in 2004/ 2005
F2C28
Could have afforded school if had not worked in 2004/2005
Enrolled in 2005/ 2006 academic year?
No
Yes
0 or blank
F2C29
# of jobs in 2005/2006 school year
>0
F2C30A-C
Job types in 2005/2006 school year
F2C31
Hours worked in 2005/2006 school year
F2C32
Main reason for working while enrolled in 2005/ 2006
F2C33
Could have afforded school if had not worked in 2005/2006
Module_6: Finance/expectations (page E-20)


Module_6: Finance/ expectations
Not employed all of 2005?
Yes
No
Total earnings in 2005
F2C34
0 or greater
blank
Total earnings in 2005 – categorical options
F2C35
F2C36
Number of dependents
0 or blank
F2C37
Number of credit cards
> 0
No
F2B07=1?
Yes
F2C38
Use credit cards to pay off tuition
F2C39
Payoff or carry balances
Not planning to work
F2C40A-B, F2ONET36
Occupation at age 30: title, duties, ONET code
F2C41
Education needed for occupation at age 30
Start Section D: Community


SECTION D: Community
Marital status
F2D01
1, blank
2-5
Date of marriage
F2D02
No, blank
F2D03
Whether has biological children
Yes
Number of biological children
F2D04
Date of birth of first biological child
F2D05
F2B07=1?
No
Yes
First enrolled before spring 2006?
No
Yes
Place of first postsecondary residence
F2D06
No
R2RTYPE= 1 or 2?
Yes
Spring '06 postsecondary residence
F2D07
Household roster
F2D08A-I
(see page E-23)


Household roster
F2D08A-I (see page E-22)
Volunteered in past two years?
F2D09
No, blank
Yes
Volunteer organizations
F2D10A-H
Frequency of volunteering
F2D11
Voted in election?
F2D12
Voted for President?
F2D13
Served in the military?
F2D14
Life events
F2D15A-G
END Section D: Community

Facsimile

Section A: High School Education

The first questions update your high school information since your last ELS:2002 interview.

Variable Name(s): F2A01

Have you received a high school diploma, certificate of attendance, or a GED or other equivalency certificate?
1 = Yes
0 = No

Variable Name(s): F2A02

What type of high school diploma or certificate did you complete? Did you receive a...
1 = diploma,
2 = certificate of attendance, or
3 = GED or other equivalency certificate?

Variable Name(s): F2A03

In what month and year did you receive your [diploma/certificate of attendance/GED or other equivalency]?
* Month:
1 = January
2 = February
3 = March
4 = April
5 = May
6 = June
7 = July
8 = August
9 = September
10 = October
11 = November
12 = December

* Year:
2002 = 2002
2003 = 2003
2004 = 2004
2005 = 2005
2006 = 2006

Variable Name(s): F2A04

How did you earn the GED or equivalency, or in other words, what program or school were you enrolled in, if any?
1 = No program, you just took the exam,
2 = part of a job training program,
3 = enrolled through adult education,
4 = part of a child care program or early childhood program, or
5 = some other program?
* Specify:

Variable Name(s): F2A05

From what state did you receive your GED or equivalency?

1 = Alabama
2 = Alaska
3 = Arizona
4 = Arkansas
5 = California
6 = Colorado
7 = Connecticut
8 = Delaware
9 = District of Columbia
10 = Florida
11 = Georgia
12 = Hawaii
13 = Idaho
14 = Illinois
15 = Indiana
16 = Iowa
17 = Kansas
18 = Kentucky
19 = Louisiana
20 = Maine
21 = Maryland
22 = Massachusetts
23 = Michigan
24 = Minnesota
25 = Mississippi
26 = Missouri
27 = Montana
28 = Nebraska
29 = Nevada
30 = New Hampshire
31 = New Jersey
32 = New Mexico
33 = New York
34 = North Carolina
35 = North Dakota
36 = Ohio
37 = Oklahoma
38 = Oregon
39 = Pennsylvania
40 = Rhode Island
41 = South Carolina
42 = South Dakota
43 = Tennessee
44 = Texas
45 = Utah
46 = Vermont
47 = Virginia
48 = Washington
49 = West Virginia
50 = Wisconsin
51 = Wyoming
52 = Puerto Rico
54 = American Samoa
55 = Guam
56 = Fed State Micronesia
57 = Marshall Islands
58 = Northern Mariana Isl
59 = Palau
60 = Virgin Islands
63 = FOREIGN COUNTRY

Variable Name(s): F2A06A-F2A06F

Why did you decide to complete your GED or equivalency? Was it...
* to improve, advance, or keep up to date on your current job?
* to train for a new job/career?
* to improve basic reading, writing or math skills?
* to meet requirements for additional study?
* required or encouraged by your employer?
* for personal, family or social reasons?
1 = Yes
0 = No

Variable Name(s): F2A07

Which of the following activities best describes your current high school activity?
Are you...
1 = currently enrolled in high school and working towards a high school diploma,
2 = currently enrolled in high school and working towards a certificate of attendance,
3 = currently working towards a GED or equivalency, or
4 = not currently enrolled in a high school completion program?

Variable Name(s): F2A08

What grade [are you in/were you in when you left high school]?
1 = 10th grade
2 = 11th grade
3 = 12th grade
4 = No grade system used in your high school

Variable Name(s): F2A09

Do you plan to get a GED, high school diploma, or certificate of attendance?
1 = Yes
0 = No

Variable Name(s): F2A10

About what month and year do you expect to [receive a high school diploma/ receive a certificate of attendance/take the examination for the GED or other high school equivalency exam/receive a high school diploma or certificate of attendance or to take the examination for the GED or other high school equivalency exam]?
* Month:
1 = January
2 = February
3 = March
4 = April
5 = May
6 = June
7 = July
8 = August
9 = September
10 = October
11 = November
12 = December

* Year:
2006 = 2006
2007 = 2007
2008 = 2008 or after

Variable Name(s): F2A11

In what month and year did you last attend high school?
* Month:
1 = January
2 = February
3 = March
4 = April
5 = May
6 = June
7 = July
8 = August
9 = September
10 = October
11 = November
12 = December

* Year:
2002 = 2002
2003 = 2003
2004 = 2004
2005 = 2005
2006 = 2006

Variable Name(s): F2A12

What grade were you in during the spring term of 2004?
1 = 10th grade
2 = 11th grade
3 = 12th grade
4 = No grade system was used in your school
5 = You were not in school in the spring term of 2004

Variable Name(s): F2A13

In the spring term of 2004, were you ever out of school for four or more weeks in a row? Do not include school breaks or an absence due to illness or injury.
1 = Yes
0 = No

Variable Name(s): F2A14A-G

(Screen 1 of 2)
Here are some reasons other people have given for leaving high school. Which of these would you say were your reasons when you [left school in F2A11/left school before the spring term of 2004/were out of school during the spring term of 2004]? Was it...
* because you got a job?
* because you didn't like school?
* because you couldn't get along with your teachers or other students?
* because [you were pregnant or you/you] became a [mother/father]?
* because you had to support your family or care for a family member?
* because you were suspended or expelled from school?
* because you did not feel safe at school?
1 = Yes
0 = No

Variable Name(s): F2A14H-N

(Continued: Screen 2 of 2)
(Here are some reasons other people have given for leaving high school. Which of these would you say were your reasons when you [left school in F2A11/left school before the spring term of 2004/were out of school during the spring term of 2004]? Was it...)
* because you felt you did not belong at school?
* because you couldn't keep up with your schoolwork?
* because you were getting poor grades or failing school?
* because you couldn't work and go to school at the same time?
* because you thought you could not complete coursework requirements or pass a test required for graduation?
* because you thought it would be easier to get a GED?
* because you missed too many school days?

1 = Yes
0 = No

Section B: Postsecondary Education

The following questions are about education after high school.

Variable Name(s): F2B01

[When you participated in ELS:2002 in the spring of 2004, you indicated you had applied to [preloaded postsecondary institution 1] [and [preloaded postsecondary institution 2]].]
[To confirm, did you apply/Have you ever applied] to [any/this school or any other/either of these school or any other] colleges, universities, vocational-technical or trade schools?
1 = Yes
0 = No

Variable Name(s): F2B02

Did you apply...
1 = while still in high school,
2 = sometime after high school, or
3 = both?

Variable Name(s): F2B03

[When you were in high school, how/How/When you were in high school, when you first applied, how/When you first applied, how] many colleges, universities, vocational-technical or trade schools did you apply to?

Variable Name(s): Not delivered

As mentioned, our information shows that you had applied to [[preloaded postsecondary institution 1]/[preloaded postsecondary institution 1] and [preloaded postsecondary institution 2]].
Is this information correct?
1 = Yes, I applied to both of these schools.
2 = No, I did not apply to [preloaded postsecondary institution 1] but I did apply to [preloaded postsecondary institution 2].
3 = No, I did not apply to [preloaded postsecondary institution 2] but I did apply to [preloaded postsecondary institution 1].
4 = No, I did not apply to either school.

Variable Name(s): F2IIPED, F2ISTATE, F2ILEVEL, F2ICNTRL

We would like to know where you applied to [when you were in high school/after high school/when you first applied].
(You have already named: [Names of postsecondary institutions already identified])
What is the name of [the school/a school/another school] you applied to? (Do not use acronyms or abbreviations of school names. For example, do not enter ASU for Arizona State University or BTI for Berks Technical Institute. You can narrow your search by selecting the state and/or city. Then select continue.)

From the list below, click on the name of the school you applied to [when you were in high school/after high school/when you first applied].
If the school is not listed:
Make sure you did not use abbreviations or acronyms
Make sure you did not misspell any words
Make sure the school is not located in a different city.
You may change the city and/or state and click "Continue" to get a new list of schools.
If you still cannot find your school, click "Unable to Find School".

Please provide the following information about this school:
State:
City:
School name:
Is this school a…
1 = Four-year college or university
2 = Two-year community college
3 = Vocational, technical or trade school
Is this school…
1 = Public
2 = Private, not-for-profit
3 = Private, for-profit

Variable Name(s): Not delivered

(You have already named: [Names of postsecondary institutions already identified])
[This is the only school/These are all the schools] you applied to [when you were in high school/ when you first applied].
Is that correct?
1 = Yes
0 = No. Need to add another school.

Variable Name(s): F2B04

[When you were in high school, did/Did] you or your family apply for financial aid such as grants, scholarships, fellowships, loans, or work-study to help pay for your education [at this school/at these schools]?
1 = Yes
0 = No

Variable Name(s): F2B05A-F2B05G

What were the reasons you and your family did not apply for financial aid?
(Please check all that apply)
* The aid application process was too difficult
* You or your family thought you would not qualify for aid
* You or your family could not afford to pay back a loan
* You or your family were able to pay for education without financial aid
* You or your family did not want to report financial information
* You were offered aid without applying (e.g., ROTC, athletic scholarship)
* Another reason

Variable Name(s): F2IACCPT

[If more than one school] Which of these schools accepted you? Were you accepted at...
(Please check all that apply)
[Name of first school applied to]
[Name of second school applied to]
Etc.
None of these schools?
[If only one school] Were you accepted at [school name]?
(Please check one box)
Yes
No

Variable Name(s): F2IGRANT, F2ILOAN, F2IWKSTY, F2IWAIVR, F2NOA

What kinds of financial aid did [postsecondary institution(s) where accepted] offer you for the first academic year?
(Please check all that apply)
* Scholarship or Grant
* Loan
* Work Study job
* Tuition waiver or discount
* None of the above

Variable Name(s): F2B06

Apart from any aid offers from [this school/these schools], were you offered any forms of financial aid that could be used at any school? Examples would be scholarships to attend a college within your state or a grant that you received from your church or temple to attend the school of your choice.
1 = Yes
0 = No

Variable Name(s): F2B07

Now, we want to know about any schools you may have attended since high school, [even ones you have not already named/even if you did not apply. (Some schools do not require an application for admission. They admit all students who register for classes.)] Since you [received your high school diploma/received your high school certificate of attendance/received your GED or other equivalency/completed high school/left high school], have you attended a college, university, vocational-technical or trade school where you took courses for credit? (Please include all schools, even if you have not completed a course.)
1 = Yes
0 = No

Variable Name(s): F2B08A-F2B08G

(Screen 1 of 2)
Which of the following are reasons why you have not continued your education after high school? Would you say you have not continued your education...
* because you don't like school?
* because your grades are not high enough?
* because your college admission scores are not high enough?
* because you won't need more education for the career you want?
* because you can't afford to go on to school?
* because you'd rather work and make money than go to school?
* because you don't feel that going on to school is important?
1 = Yes
0 = No

Variable Name(s): F2B08H-F2B08NA

(Continued: Screen 2 of 2)
(Which of the following are reasons why you have not continued your education after high school? Would you say you have not continued your education...)
* because you need to help support your family?
* because you have a good job?
* because you were not accepted at the school(s) where you wanted to go?
* because you had a traumatic experience (such as you were in an accident, a victim of a crime, grieving a death)?
* because you have personal health reasons?
* because you were incarcerated?
* for another reason?
1 = Yes
0 = No
* Specify:

Variable Name(s): F2B09

Which one of these is the main reason you have not continued your education after high school?
"Yes" responses to F2B08A-F2B08N listed here as response options

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Variable Name(s): F2B10

How many colleges, universities, vocational-technical or trade schools have you attended since high school?

Variable Name(s): F2IATTND

(You have already named: [Names of postsecondary institutions already identified])
What is the [first/second/third/fourth...] school you attended since high school?
1 = [Name of first school where accepted]
2 = [Name of second school where accepted]
3 = Etc.
99 = A school not listed here

Variable Name(s): F2IIPED, F2ISTATE, F2ILEVEL, F2ICNTRL

(You have already named: [Names of postsecondary institutions already identified])
What is the name of the [first/second/third...] school you attended since high school?
(Do not use acronyms or abbreviations of school names. For example, do not enter ASU for Arizona State University or BTI for Berks Technical Institute. You can narrow your search by selecting the state and/or city. Then select continue.)

(From the list below, click on the name of the [first/second/third...] school you attended.
If the school is not listed:
Make sure you did not use abbreviations or acronyms
Make sure you did not misspell any words
Make sure the school is not located in a different city.
You may change the city and/or state and click "Continue" to get a new list of schools.
If you still cannot find your school, click "Unable to Find School".)

Please provide the following information about this school:
State:
City:
School name:
Is this school a…
1 = Four-year college or university
2 = Two-year community college
3 = Vocational, technical or trade school

Is this school…
1 = Public
2 = Private, not-for-profit
3 = Private, for-profit

Variable Name(s): F2ISTART

What month and year did you first start attending [postsecondary institution(s) attended]?
* Month:
1 = January
2 = February
3 = March
4 = April
5 = May
6 = June
7 = July
8 = August
9 = September
10 = October
11 = November
12 = December

* Year:
1 = 2002
2 = 2003
3 = 2004
4 = 2005
5 = 2006

Variable Name(s): F2IPRE4, F2I0401 – F2I0608

Please indicate all of the months you have been enrolled at [postsecondary institution(s) attended] [starting with [F2ISTART]/since you left high school in [F2A11 /since you received your GED or other equivalency in F2A03].
If your enrollment covers only a portion of any month, please include that month.
F2ISTART – F2 interview month, 2006

Variable Name(s): F2IFTPT

While enrolled at [postsecondary institution(s) attended], [have you been/were you]...
1 = full-time or mainly full-time,
2 = part-time or mainly part-time, or
3 = an equal mix of full-time and part-time?

Variable Name(s): Not delivered

(You have already named: [Names of postsecondary institutions already identified])
[This is the only school/These are all the schools] you attended since high school.
Is that correct?
1 = Yes
0 = No

Variable Name(s): F2B11A-F2B11G

(Screen 1 of 2)
According to your dates of enrollment, you took a break from school after high school. Which of the following are reasons why you decided not to continue your education right after high school? Was it...
* because you could not afford schooling after high school?
* because you needed to earn money to pay for school?
* because you did not receive enough financial aid?
* because you were not accepted at the schools where you wanted to go?
* because you needed to improve your academic qualifications?
* because you were admitted to a school, but only on a deferred basis?
* because you wanted to work?
1 = Yes
0 = No

Variable Name(s): F2B11H-F2B11NA

(Continued: Screen 2 of 2)
(Which of the following are reasons why you decided not to continue your education right after high school? Was it...)
* because you wanted to serve in the military?
* because you needed to help support your family?
* because you wanted to travel or pursue other interests?
* because you had a traumatic experience (such as you were in an accident, a victim of crime, grieving a death)?
* because you had personal health reasons?
* because you were incarcerated?
* for another reason?
1 = Yes
0 = No
* Specify:

Variable Name(s): F2B12

Which one of these is the main reason you decided not to continue your education right after high school?
["Yes" responses to F2B11A-F2B11NA listed here as response options]

Variable Name(s): F2B13A-F2B13F

The next questions are about your experience with [F2PS1].
Why did you decide to attend [F2PS1]?
(Please check all that apply)
* Program of study
* Reputation (of program, faculty, or school)
* Cost (affordability or other financial reasons)
* Location
* Personal or family reasons
* Another reason

Variable Name(s): F2B14

Which of the following is the main reason you decided to attend [F2PS1]?
Checked items F2B13A-F2B13NA listed here as response options

Variable Name(s): F2B15

When you began at [F2PS1], what field of study did you think you would most likely pursue? (Please choose one)
1 = Business or Marketing
2 = Health (for example, Medical Technology, Nursing, Pre-Med)
3 = Education (for example, Teaching)
4 = Engineering or Engineering Technology
5 = Computer or Information Sciences
6 = Natural Sciences or Mathematics (for example, Biology, Physics, or Statistics)
7 = Environmental Studies
8 = Social Sciences or Social Work (for example, Psychology, History, Political Science)
9 = Architecture, Design, or Urban Planning
10 = Fine Arts (for example, Music, Theater, Dance)
11 = Humanities (for example, English, Philosophy, Foreign Languages)
12 = Communications (for example, Journalism)
13 = University Transfer or General Education
14 = Other Vocational Programs (for example, Cosmetology, Culinary Arts, or Construction)
15 = Other
16 = Don't know/Undecided

Variable Name(s): F2B16A-F2B16C

At [F2PS1], [have you ever taken/did you ever take] remedial or developmental courses to improve your...
* Reading skills?
* Writing skills?
* Mathematics skills?
1 = Yes
0 = No

Variable Name(s): F2B17A-F2B17D

To what extent did the following high school courses prepare you for [F2PS1]? Would you say not at all, somewhat, or a great deal?
* High school math courses
* High school science courses
* High school English or writing courses
* High school vocational or technical courses
1 = Not at all
2 = Somewhat
3 = A great deal
4 = Did not take in high school

Variable Name(s): F2B18A-F2B18G

During the time that you [have been/were] enrolled at [F2PS1], how often [have/did] you [participated/participate] in the following activities? Choose never, sometimes, or often. How often [have/did] you...
* [talked/talk] with faculty about academic matters outside of class time?
* [met/meet] with your advisor concerning academic plans?
* [worked/work] on coursework at your school library?
* [used/use] the web to access your school library for coursework?
* [participated/participate] in intramural or nonvarsity sports?
* [participated/participate] in varsity or intercollegiate sports?
* [participated/participate] in other extracurricular activities?
1 = Never
2 = Sometimes
3 = Often

Variable Name(s): F2B19A-F2B19K

According to your dates of enrollment, you've been enrolled in school some terms and taken other terms off. Which of the following are reasons why you took a break from school?
(Please check all that apply)
* Completed degree or certificate
* Finished taking desired classes
* Academic problems
* Classes not available/scheduling not convenient
* Dissatisfaction with program/school/campus/faculty
* Financial reasons
* Family responsibilities
* Personal health reasons
* Called for military service
* Traumatic experience (accident, victim of crime, grieving a death)
* Another reason

Variable Name(s): F2B20A-F2B20H

You indicated earlier that you attended school on a part-time basis for at least some of your time in school. Which of the following are reasons you attended school part-time rather than full-time?
(Please check all that apply)
* Financial reasons
* Full-time program was not available
* Family responsibilities
* Worked while attending school
* Pursuing other interests or hobbies
* Personal health reasons
* Traumatic experience (accident, victim of crime, grieving a death)
* Another reason
1 = Yes
0 = No

Variable Name(s): F2B21A-F2B21L

Which of the following are reasons you left [F2PS1] and enrolled at another school?
(Please check all that apply)
* Completed degree or certificate
* Finished taking desired classes
* Pursue Bachelor's degree at a 4-year college
* Academic problems
* Classes not available /scheduling not convenient
* Dissatisfaction with program/school/campus/faculty
* Location
* Financial reasons
* Family responsibilities
* Personal health reasons
* Traumatic experience (accident, victim of crime, grieving a death)
* Another reason

Variable Name(s): F2B22

Now in 2006, have you declared a major yet at [F2PS2006]?
0 = Not in a degree program
1 = Declared major
2 = Declared double major
3 = Not yet declared

Variable Name(s): F2B23A

What is your [first] major or field of study?

Variable Name(s): F2B23B - F2B23C

Please click on the entry in the list below that most closely describes your field of study: [F2B23A].
If your field is not listed, click on the "None of these" button on the bottom of the screen to see more choices.

Variable Name(s): F2B23B - F2B23C

Please help us to categorize [F2B23A] using the drop-down list boxes.
(Coding Directions: Please select a general area and then the specific discipline within the general area. Use the arrow at the right side of the first dropdown box to display the general areas. Click to select the desired general area, and then select the desired specific discipline within the area from the second dropdown box.)

Variable Name(s): F2B24

What is your second major or field of study?
(Please do not include a minor.)

Variable Name(s): F2B25A-F2B25H

How have you and your family paid for your education at [name of school attended since high school/all the schools you attended since high school]?
(Please check all that apply)
* Grants or scholarships
* Student loans
* Parent loans (loans taken out by your parents)
* College work-study
* Your savings or job earnings (other than from College Work-Study)
* Contributions from parents, guardians, or relatives
* Employer assistance or tuition reimbursement
* Other

Variable Name(s): F2B26

How much [have you already borrowed/did you borrow] in student loans for your education after high school? (Please do not include any money borrowed from family or friends.)

Variable Name(s): F2B27

Are your parents or guardians helping you or going to help you to repay your education loans?
1 = Yes
0 = No

Variable Name(s): F2B28

[Not including the amount you have already borrowed, how much more/How much] do you expect you will borrow in student loans for your undergraduate education? (If you do not expect to take out any student loans in the future, please enter zero. Please do not include any money you may borrow from family or friends.)

Variable Name(s): F2B29A-F2B29K

According to your dates of enrollment, currently, you are not enrolled in school. Which of the following are reasons you are not in school?
(Check all that apply)
* Completed a degree or certificate
* Finished taking desired classes
* Academic problems
* Classes not available/scheduling not convenient
* Dissatisfaction with program/school/campus/faculty
* Financial reasons
* Family responsibilities
* Personal health reasons
* Called for military service
* Traumatic experience (accident, victim of crime, grieving a death)
* Another reason

Variable Name(s): F2B30

As things stand now, what is the highest level of education you ever expect to complete?
1 = Less than high school graduation
2 = GED or other equivalency only
3 = High school graduation only
4 = Attend or complete a 1- or 2-year program in a community college or vocational school
5 = Attend college, but not complete a 4- or 5-year degree
6 = Graduate from college (4- or 5-year degree)
7 = Obtain a Master's degree or equivalent
8 = Obtain a Ph.D., M.D., or other advanced degree
9 = Don't know

Section C: Employment

The next questions are about paid employment you have had [since you received your high school diploma/since you received your high school certificate of attendance/since you received your GED or other equivalency/since you completed high school/since you left high school] including self-employment, work done for a family business, or the armed forces. [We are also interested in school-related jobs such as paid internships, co-ops and Work Study jobs.] Do not include unpaid community service or volunteer work.

Variable Name(s): F2C01

Have you ever held a job for pay since [leaving high school/receiving your GED or other equivalency], not including volunteer work?
1 = Yes
0 = No

Variable Name(s): F2C02

Did you hold a job for pay at any time between [leaving high school/receiving your GED or other equivalency] [in F2A03/F2A11] and first enrolling at [F2PS1] in [F2ISTART for F2PS1]?
1 = Yes
0 = No

Variable Name(s): F2C03A - F2C03B

The next questions are about the first job you held after [leaving high school/you received your GED or other equivalency]. This may be a job you started while you were still in high school. If you had more than one job, please refer to the job at which you worked the most hours.
* What was your job title?
* What did you do in your first job after high school?

Variable Name(s): F2ONET16

(Please click on the entry in the list below that most closely describes [F2C03A]/your first job after high school.
If an appropriate entry does not appear in the list, you may search again by changing the keywords in one of the textboxes above, and clicking on one of the "Search" buttons. If you are still unable to find your job by searching, click on the "None of these" button at the bottom of the screen.)

Variable Name(s): F2ONET16

Please find the best occupational category to describe [F2C03A /your first job after high school].
* Please select a general category:
* Please select a more specific category within this area:
* Please select a final detailed category:

Variable Name(s): F2C04

What month and year did you start [this job as a(n) [F2C03A]/your first job after high school]?
1 = January
2 = February
3 = March
4 = April
5 = May
6 = June
7 = July
8 = August
9 = September
10 = October
11 = November
12 = December

2002 = 2002 or before
2003 = 2003
2004 = 2004
2005 = 2005
2006 = 2006

Variable Name(s): F2C05

How many hours per week on average did you work at this job [when you first started/after leaving high school [in F2A03/F2A11]/after receiving your GED or other equivalency [in F2A03]?

Variable Name(s): F2C06A - F2C06B

On average, how much did you earn at this job [when you first started/after leaving high school [in F2A03/F2A11]/after receiving your GED or other equivalency [in F2A03]/ after leaving high school] (including any tips)?
1 = per hour
2 = per day
3 = per week
4 = every two weeks/twice a month
5 = per month
6 = per year

Variable Name(s): F2C07

On this job, were you...
1 = working for an employer,
2 = a member of the armed forces,
3 = working for your family's business or farm, or
4 = self-employed?

Variable Name(s): F2C08A - F2C08E

How did you find [your job as a(n) [F2C03A]/this job]?
(Please check all that apply)
* Responded to job advertisements in a newspaper, magazine or on the internet
* Sent out resume or contacted employers
* Networked with friends or relatives
* Used school assistance such as the placement office, school job fairs, or spoke with faculty/staff
* Found the job in another way

Variable Name(s): F2C09

Do you still work for [this employer/your family business or farm/yourself]?
1 = Yes
0 = No

Variable Name(s): F2C10

What month and year did you last work for [that employer/yourself/your family business or farm]?
1 = January
2 = February
3 = March
4 = April
5 = May
6 = June
7 = July
8 = August
9 = September
10 = October
11 = November
12 = December

2002 = 2002 or before
2003 = 2003
2004 = 2004
2005 = 2005
2006 = 2006

Variable Name(s): F2C11

Why are you no longer working for [that employer/yourself/your family business or farm]?
Would you say...
1 = you left voluntarily or quit,
2 = you were laid off,
3 = the company went out of business or plant closed,
4 = you were discharged or fired,
5 = your temporary or seasonal job ended,
6 = you left on disability, or
7 = some other reason?

Variable Name(s): F2C12

Besides [your job with this employer/working for your family business or farm/working for yourself], do you currently have another job at which you work more hours per week?
1 = Yes
0 = No

Variable Name(s): F2C13

Are you currently working for pay?
1 = Yes
0 = No

Variable Name(s): F2C14

Do you still work as a(n) [F2C03A] with your first employer after high school?
1 = Yes
0 = No

Variable Name(s): F2C15

What is the main reason you are not currently working for pay?
1 = Have not found a job you want yet
2 = Unable to find a job
3 = Do not need to work
4 = Volunteering instead of working
5 = Family responsibilities
6 = Personal health reasons
7 = Traumatic experience (accident, victim of crime, grieving a death)
8 = Another reason

Variable Name(s): F2C16A - F2C16B

[For the next questions, please refer to the job at which you work the most hours.]
[The next questions are about your current job.]
[The next questions are about your current job. If you have more than one job, please refer to the job at which you work the most hours.]
* What do you do in your current job?
* What is your current job title?

Variable Name(s): F2ONETC6

(Please click on the entry in the list below that most closely describes
[F2C16A].
If an appropriate entry does not appear in the list, you may search again by changing the keywords in one of the textboxes above, and clicking on one of the "Search" buttons. If you are still unable to find your job by searching, click on the "None of these" button at the bottom of the screen.)

Variable Name(s): F2ONETC6
Please find the best occupational category to describe [F2C16A].
* Please select a general category:
* Please select a more specific category within this area:
* Please select a final detailed category:

Variable Name(s): F2C17

What month and year did you start your current job as a(n) [F2C16A]?

1 = January
2 = February
3 = March
4 = April
5 = May
6 = June
7 = July
8 = August
9 = September
10 = October
11 = November
12 = December

2002 = 2002 or before
2003 = 2003
2004 = 2004
2005 = 2005
2006 = 2006

Variable Name(s): F2C18

Currently, how many hours per week on average do you work at this job?

Variable Name(s): F2C19A - F2C19B

On average, how much do you earn at this job (including any tips)?

1 = per hour
2 = per day
3 = per week
4 = every two weeks/twice a month
5 = per month
6 = per year

Variable Name(s): F2C20

On this job, are you...

1 = working for an employer,
2 = a member of the armed forces,
3 = working for your family's business or farm, or
4 = self-employed?

Variable Name(s): F2C21

At your current job, does your employer make health insurance available to you?

1 = Yes
0 = No

Variable Name(s): F2C22A - F2C22D

How satisfied are you with the following aspects of this job? Would you say very satisfied, somewhat satisfied, or dissatisfied?

* The job's pay and fringe benefits?
* Its working conditions?
* The opportunity for promotion and advancement?
* Its security and permanence?

1 = Very satisfied
2 = Somewhat satisfied
3 = Dissatisfied

Variable Name(s): F2C23

Which of these best describes this job?

1 = A career position
2 = A way to explore a career option
3 = A way to save money for school
4 = A way to pay the bills
5 = A way to earn spending money

Variable Name(s): Not delivered – input to F2EMPRE4 and F2EM0401-F2EM0608

[According to the information you have provided, you [left high school in/received your GED or other equivalency in] [F2A03/F2A11] and started your first job in [F2C04]].
Which months [between [F2A03/F2A11] and [F2C04]] were you looking for work?
(Check all that apply)
*[F2A03/F2A11] - [F2C04]

Variable Name(s): Not delivered – input to F2EMPRE4 and F2EM0401-F2EM0608

Were you employed each month from the time you left your first employer until you started your current job[, that is from [F2C10] to [F2C17]?

1 = Yes
0 = No

Variable Name(s): Not delivered – input to F2EMPRE4 and F2EM0401-F2EM0608

Which months were you without a job from the time you left your first employer [in F2C10] until you started your current job [in F2C17]? (If you worked any portion of a month, do not include that month.)
(Check all that apply)
* [F2C10] – [F2C17]

Variable Name(s): Not delivered – input to F2EMPRE4 and F2EM0401-F2EM0608

Which of these months were you looking for work?
(Check all that apply)
* [Months selected in previous question]

Variable Name(s): Not delivered – input to F2EMPRE4 and F2EM0401-F2EM0608

Which months have you been without a job since you left your first employer,
that is since [F2C10]?
(Check all that apply)
* [F2C10] – F2 interview month, 2006

Variable Name(s): Not delivered – input to F2EMPRE4 and F2EM0401-F2EM0608

Which of these months were you looking for work? (Check all that apply)
* [Months selected in previous question]

Variable Name(s): F2C24

Now we are interested in your work experience while enrolled in school after high school. [This may include work experience you have already mentioned.]
During the 2004-2005 school year, how many jobs for pay did you have while you were enrolled? (If you did not work for pay or only worked during breaks from school, answer zero.)

Variable Name(s): F2C25A - F2C25C

[Was this job.../Were any of these jobs...]
* [a paid internship or co-op job/paid internships or co-op jobs]?
* [a Work-Study job/Work-Study jobs]?
* related to your studies or career goals?
1 = Yes
0 = No

Variable Name(s): F2C26

When you were enrolled in the 2004-2005 school year, how many hours did you work in a typical week?
* hours per week

Variable Name(s): F2C27

What was your main reason for working while you were enrolled during the 2004-2005 school year? Was it to...
1 = earn spending money,
2 = pay tuition, fees, or living expenses,
3 = gain job experience, or
4 = for some other reason?

Variable Name(s): F2C28

Could you have afforded to attend school if you had not worked while enrolled during the 2004-2005 school year?
1 = Yes
0 = No

Variable Name(s): F2C29

[Now we are interested in your work experience while enrolled in school after high school.] [This may include work experience you have already mentioned.]
During the 2005-2006 school year, how many jobs for pay did you have while you were enrolled? (If you did not work for pay or only worked during breaks from school, answer zero.)

Variable Name(s): F2C30A - F2C30C

[Was this job.../Were any of these jobs...]
* [a paid internship or co-op job/paid internships or co-op jobs]?
* [a Work-Study job/Work-Study jobs]?
* related to your studies or career goals?
1 = Yes
0 = No

Variable Name(s): F2C31

When you were enrolled in the 2005-2006 school year, how many hours did you work in a typical week?
* hours per week

Variable Name(s): F2C32

What was your main reason for working while you were enrolled during the 2005-2006 school year? Was it to...
1 = earn spending money,
2 = pay tuition, fees, or living expenses,
3 = gain job experience, or
4 = for some other reason?

Variable Name(s): F2C33

Could you have afforded to attend school if you had not worked while enrolled during the 2005-2006 school year?
1 = Yes
0 = No

Variable Name(s): F2C34

What were your total earnings from all jobs in the 2005 calendar year?

Variable Name(s): F2C35

Income information is very important to this study and the usefulness of its results.
Please indicate the range that best estimates your total job earnings in 2005.
0 = No income
1 = Less than $1,000
2 = $1,000-$2,999
3 = $3,000-$5,999
4 = $6,000-$9,999
5 = $10,000-$14,999
6 = $15,000-$19,999
7 = $20,000-$24,999
8 = $25,000-$34,999
9 = $35,000-$49,999
10 = $50,000 and above

Variable Name(s): F2C36

Now, we have a few questions about your current finances and future employment plans.
Do you financially contribute to anyone else's support, such as children, parents, siblings, grandparents, aunts, or other relatives, regardless of whether or not they currently live with you?
1 = Yes
0 = No

Variable Name(s): F2C37

How many credit cards do you have in your own name that are billed to you?
(If none, enter zero.)

Variable Name(s): F2C38

Have you used your credit [card/cards] to pay any portion of your tuition?
1 = Yes
0 = No

Variable Name(s): F2C39

Do you usually pay off your credit card [balance/balances] each month, or carry the [balance/balances] over from month to month?
1 = Pay off balances
2 = Carry balances

Variable Name(s): F2C40A - F2C40B

What job or occupation do you expect or plan to have when you are 30 years old?
What do you expect to do in this job?
* Not planning to work at age 30
* Don't know
1 = Yes
0 = No

Variable Name(s): F2ONET36

(Please click on the entry in the list below that most closely describes [F2C40A].
If an appropriate entry does not appear in the list, you may search again by changing the keywords in one of the textboxes above, and clicking on one of the "Search" buttons. If you are still unable to find your job by searching, click on the "None of these" button at the bottom of the screen.)

Variable Name(s): F2ONET36

Please find the best occupational category to describe [F2C40A].
* Please select a general category:
* Please select a more specific category within this area:
* Please select a final detailed category:

Variable Name(s): F2C41

How much education do you think you need to get [the job you expect or plan to/ a job you might] have when you are 30 years old?
1 = Some high school
2 = High school diploma or GED
3 = Less than 2 years in a community college or vocational school
4 = Completion of a 2-year program at a community college or vocational school
5 = Some college, but not complete a 4- or 5-year degree
6 = 4- or 5-year college degree
7 = Master's degree
8 = Ph.D.
9 = Professional degree (such as J.D. or M.D.)

Section D: Community

Now a few questions about your family, household, and community involvement.

Variable Name(s): F2D01

Are you currently...
1 = single and never married,
2 = married,
3 = separated,
4 = divorced, or
5 = widowed?

Variable Name(s): F2D02

In what month and year did your marriage begin? (If you have been married more than once, please report the date your first marriage began.)

* Month
1 = January
2 = February
3 = March
4 = April
5 = May
6 = June
7 = July
8 = August
9 = September
10 = October
11 = November
12 = December

* Year
2002 = 2002 or before
2003 = 2003
2004 = 2004
2005 = 2005
2006 = 2006

Variable Name(s): F2D03

Have you had any biological children [, that is, children born to you/, that is, children for whom you are the natural father]?
1 = Yes
0 = No

Variable Name(s): F2D04

How many biological children have you had?

Variable Name(s): F2D05

In what month and year was your [first] biological child born?

* Month
1 = January
2 = February
3 = March
4 = April
5 = May
6 = June
7 = July
8 = August
9 = September
10 = October
11 = November
12 = December

* Year
2001 = 2001 or before
2002 = 2002
2003 = 2003
2004 = 2004
2005 = 2005
2006 = 2006

Variable Name(s): F2D06

When you were first enrolled at [F2PS1] [in F2ISTART for F2PS1], did you live...
1 = in school-provided housing,
2 = with your parent(s) or guardian(s), or
3 = some place else off campus?

Variable Name(s): F2D07

[During the spring term of 2006 at [F2PS2006], did you live/Now, during the spring term of 2006 at [F2PS2006] do you live]...
1 = in school-provided housing,
2 = with your parent(s) or guardian(s), or
3 = some place else off campus?

Variable Name(s): F2D08A - F2D08I

[Now, how/During the spring of 2006, how/During the spring term of 2006 at F2PS2006, how] many of each of the following people [live/lived] with you?
[If you [live/lived] in a room or suite in a dormitory or a [fraternity/sorority], only list those who [share/shared] that room or suite with you.]
[If you [live/lived] by yourself, please indicate so.]
* You [live/lived] alone.
1 = Yes
0 = No
* Your father or male guardian.
* Your mother or female guardian.
* Friends or roommates (including girlfriends/ boyfriends).
* Brothers or sisters (including adoptive, step, and foster siblings).
* Your spouse (husband or wife).
* Your biological [child/children].
* [Other children/Children] in your care (such as adopted or stepchildren)
* Others not already listed

Variable Name(s): F2D09

The following questions are about your activities over the past two years, that is, since [current month] 2004. During the past two years, have you performed any unpaid volunteer or community service work through such organizations as youth groups, service clubs, church clubs, school groups, or social action groups?
1 = Yes
0 = No

Variable Name(s): F2D10A - F2D10H

Which of the following types of organizations have you been involved with in your unpaid volunteer or community service work during the past two years?
* A youth organization such as coaching Little League or helping out with scouts
* School or community organizations, such as Big Brother, Big Sister, or Key Club
* Political clubs or organizations
* Church or church-related groups (not including worship services)
* Community centers, neighborhood improvement, or social action associations or groups
* Organized volunteer group in a hospital or nursing home
* Education organizations
* A conservation, recycling, or environmental group such as Sierra Club or the Nature Conservancy

1 = Yes
0 = No

Variable Name(s): F2D11

During the past two years, how often did you spend time volunteering or performing community service?
1 = Less than once a month
2 = At least once a month, but not weekly
3 = At least once a week

Variable Name(s): F2D12

During the past two years, have you voted in a local or state election?
1 = Yes
0 = No

Variable Name(s): F2D13

Did you vote in the 2004 Presidential election?
1 = Yes
0 = No

Variable Name(s): F2D14

Now, we have some questions about any military service as well as significant life events.
[Since leaving high school, have you/Have you ever] served in the regular Armed Forces, the Coast Guard, the National Guard or the Reserves?
1 = Yes
0 = No

Variable Name(s): F2D15A - F2D15G

In the past two years, have any of the following happened to you?
* Your parents or guardians got divorced or separated
* One of your parents or guardians lost his or her job
* One of your parents or guardians died
* A close relative or friend died
* You became seriously ill or disabled
* A family member became seriously ill or disabled
* You were the victim of a violent crime

1 = Yes
0 = No

Appendix F
Occupational Coding Crosswalk

Occupational Crosswalk: O*NET and ELS:2002 Classifications

F.1 Overview

The coding system within the Education Longitudinal Study of 2002 (ELS:2002) second follow-up survey instrument used O*NET. O*NET OnLine was developed for the U.S. Department of Labor by the National Center for O*NET Development. For more information about the O*NET project, please visit the O*NET Resource Center at http://www.onetcenter.org/. The classification structure of O*NET provides three levels: general, midlevel, and specific. Twenty-three categories make up the general level, which expand to 96 midlevel categories, which expand to 821 specific-level categories. Specific-level categories subsequently roll up to mid- and general-level categories.

Given that occupation was coded differently in the present interview than in the base-year and first follow-up rounds of ELS:2002, an occupational crosswalk was constructed to map the new coding scheme to the original taxonomy. The provided crosswalk maps all 821 specific-level O*NET categories to the 16 occupational categories used in the base year and first follow-up. Such a crosswalk enables users to examine either set of coded data, depending on their analysis needs. Details regarding the general O*NET level, the ELS:2002 scheme, and how to use the occupational crosswalk are provided.

F.1.1 General O*NET Level

The general level of coding provides the foundation for further, more detailed classification within the O*NET structure. Given the more manageable number of occupational categories, it may also be a preferred analysis level. The 23 general-level O*NET classifications are provided below, in numerical order. For each category, the coded value is given first, followed by the category name, which is followed by select occupational examples as classified by O*NET.

11 – Management (such as sales manager, education administrator, legislator)
13 – Business and Financial Operations (such as accountant, financial analyst, loan officer)
15 – Computer and Mathematical (such as computer programmer, computer support specialist, statistician)
17 – Architecture and Engineering (such as architect, engineer other than software, surveying technician, drafter)
19 – Life, Physical, and Social Science (such as biologist, psychologist, survey researcher, research assistant)
21 – Community and Social Services (such as social worker, marriage counselor, clergy)
23 – Legal (such as lawyer, judge, law clerk)
25 – Education, Training, and Library (such as college professor, elementary school teacher, librarian, teacher assistant)
27 – Arts, Design, Entertainment, Sports, and Media (such as artist, interior designer, actor, athlete, photographer, writer)
29 – Healthcare Practitioners and Technical (such as physician, surgeon, registered nurse, pharmacy technician)
31 – Healthcare Support (such as nursing aide, medical assistant)

33 – Protective Service (such as police officer, fire fighter, security guard)
35 – Food Preparation and Serving Related (such as cook, waiter, dishwasher)
37 – Building and Grounds Cleaning and Maintenance (such as janitor, housekeeper, landscaper)
39 – Personal Care and Service (such as hair stylist, child care worker, flight attendant)
41 – Sales and Related (such as cashier, retail salesperson, real estate agent, insurance agent)
43 – Office and Administrative Support (such as bank teller, receptionist, mail carrier, office clerk)
45 – Farming, Fishing, and Forestry (such as farm worker, trapper, logging worker)
47 – Construction and Extraction (such as carpet installer, electrician, construction laborer, oil drill operator)
49 – Installation, Maintenance, and Repair (such as auto mechanic, heating/air conditioning installer, machinery maintenance worker)
51 – Production (such as assembler, meat cutter, machine operator, welder)
53 – Transportation and Material Moving (such as pilot, truck driver, service station attendant, stocker)
55 – Military Specific (any occupation performed in the military)

F.1.2 ELS:2002 Coding Scheme

The hierarchy of occupational categories used in the base year and first follow-up of ELS:2002 is provided below, from lowest to highest rank. For each category, the coded value is given first, followed by the category name, which is followed by occupational examples as they originally appeared on the questionnaires. Two categories are not shown below due to being unranked: these are homemaker (4) and military (7).

5 – Laborer (such as construction worker, car washer, sanitary worker, farm laborer)
8 – Operative (such as meat cutter, assembly worker, machine operator, welder, taxicab, bus or truck driver)
15 – Service (such as barber, beautician, practical nurse, private household worker, janitor, waiter)
2 – Craftsperson (such as baker, automobile mechanic, machinist, painter, plumber, telephone installer, carpenter)
3 – Farmer (such as farmer, farm manager)
12 – Protective Services (such as detective, police officer or guard, sheriff, fire fighter)
11 – Proprietor, Owner (such as owner of small business, contractor, restaurant owner)
12 – Sales (such as salesperson, advertising or insurance agent, real estate broker)
1 – Clerical (such as bank teller, bookkeeper, secretary, typist, mail carrier, ticket agent)
6 – Manager, Administrator (such as sales manager, office manager, school administrator, buyer, restaurant manager, government official)
16 – Technical (such as draftsman, medical or dental technician, computer programmer)
14 – School Teacher (such as elementary or high school teacher)
9 – Professional 1 (such as accountant, artist, registered nurse, engineer, librarian, writer, social worker, actor, actress, athlete, politician, but not including school teacher) (note that Professional 1 does not require an advanced degree)

10 – Professional 2 (such as clergyman, dentist, physician, lawyer, scientist, college professor) (note that Professional 2 requires an advanced degree)

F.1.3 Using the Occupational Crosswalk

O*NET codes constitute a total of six digits at the specific level, and were recorded as such in the ELS:2002 Second Follow-up instrument. The first two digits represent the nested general level code, while the first three digits represent the nested midlevel code. As mentioned, specific level codes can roll up to the broader categorizations by simply dropping the last three digits (if midlevel desired) or last four digits (if general level desired).

The O*NET to ELS:2002 occupational crosswalk maps every level of O*NET classification to its appropriate ELS:2002 counterpart. Each row represents a single mapped occupation, giving a total of 821 possible mappings. All O*NET category names, or occupational descriptors, come directly from O*NET. The crosswalk contains eight columns, which provide the following information:

- General O*NET Code, which gives the 2-digit O*NET code;
- General O*NET Category, which gives the general-level O*NET category name;
- Midlevel O*NET Code, which gives the 3-digit O*NET code;
- Midlevel O*NET Category, which gives the midlevel O*NET category name;
- Specific O*NET Code, which gives the 6-digit O*NET code (instrument-recorded);
- Specific O*NET Category, which gives the specific-level O*NET category name;
- ELS Code, which gives the mapped ELS:2002 code (1 through 16); and
- ELS Category, which gives the mapped ELS:2002 category name.

Some O*NET categories, in particular those that encapsulate "All Other," correspond to more than one ELS:2002 category. In these instances, the most applicable code is presented first in the ELS Code column, followed by other possible codes in parentheses. The ELS Category column, however, reflects the most applicable category name only.

Table F-1. Occupational coding crosswalk: 2006

General O*NET code	General O*NET category	Midlevel O*NET code	Midlevel O*NET category	Specific O*NET code	Specific O*NET category	ELS code	ELS category
11	Management Occupations	111	Top Executives	111011	Chief Executives	6	Manager, Administrator
11	Management Occupations	111	Top Executives	111021	General and Operations Managers	6 (also 11)	Manager, Administrator
11	Management Occupations	111	Top Executives	111031	Legislators	6	Manager, Administrator
11	Management Occupations	112	Advertising, Marketing, Promotions, Public Relations, and Sales Managers	112011	Advertising and Promotions Managers	6	Manager, Administrator
11	Management Occupations	112	Advertising, Marketing, Promotions, Public Relations, and Sales Managers	112021	Marketing Managers	6	Manager, Administrator
11	Management Occupations	112	Advertising, Marketing, Promotions, Public Relations, and Sales Managers	112022	Sales Managers	6	Manager, Administrator
11	Management Occupations	112	Advertising, Marketing, Promotions, Public Relations, and Sales Managers	112031	Public Relations Managers	6	Manager, Administrator
11	Management Occupations	113	Operations Specialties Managers	113011	Administrative Services Managers	6	Manager, Administrator
11	Management Occupations	113	Operations Specialties Managers	113021	Computer and Information Systems Managers	6	Manager, Administrator
11	Management Occupations	113	Operations Specialties Managers	113031	Financial Managers	6	Manager, Administrator
11	Management Occupations	113	Operations Specialties Managers	113041	Compensation and Benefits Managers	6	Manager, Administrator
11	Management Occupations	113	Operations Specialties Managers	113042	Training and Development Managers	6	Manager, Administrator
11	Management Occupations	113	Operations Specialties Managers	113049	Human Resources Managers, All Other	6	Manager, Administrator
11	Management Occupations	113	Operations Specialties Managers	113051	Industrial Production Managers	6	Manager, Administrator
11	Management Occupations	113	Operations Specialties Managers	113061	Purchasing Managers	6	Manager, Administrator
11	Management Occupations	113	Operations Specialties Managers	113071	Transportation, Storage, and Distribution Managers	6	Manager, Administrator
11	Management Occupations	119	Other Management Occupations	119011	Farm, Ranch, and Other Agricultural Managers	3	Farmer, Farm Manager
11	Management Occupations	119	Other Management Occupations	119012	Farmers and Ranchers	3	Farmer, Farm Manager
11	Management Occupations	119	Other Management Occupations	119021	Construction Managers	6	Manager, Administrator
11	Management Occupations	119	Other Management Occupations	119031	Education Administrators, Preschool and Child Care Center/Program	6	Manager, Administrator
11	Management Occupations	119	Other Management Occupations	119032	Education Administrators, Elementary and Secondary School	6	Manager, Administrator
11	Management Occupations	119	Other Management Occupations	119033	Education Administrators, Postsecondary	6	Manager, Administrator

See notes at end of table.

Table F-1. Occupational coding crosswalk: 2006—Continued

General O*NET code	General O*NET category	Midlevel O*NET code	Midlevel O*NET category	Specific O*NET code	Specific O*NET category	ELS code	ELS category
11	Management Occupations	119	Other Management Occupations	119039	Education Administrators, All Other	6	Manager, Administrator
11	Management Occupations	119	Other Management Occupations	119041	Engineering Managers	6	Manager, Administrator
11	Management Occupations	119	Other Management Occupations	119051	Food Service Managers	6	Manager, Administrator
11	Management Occupations	119	Other Management Occupations	119061	Funeral Directors	6	Manager, Administrator
11	Management Occupations	119	Other Management Occupations	119071	Gaming Managers	6	Manager, Administrator
11	Management Occupations	119	Other Management Occupations	119081	Lodging Managers	6	Manager, Administrator
11	Management Occupations	119	Other Management Occupations	119111	Medical and Health Services Managers	6	Manager, Administrator
11	Management Occupations	119	Other Management Occupations	119121	Natural Sciences Managers	6	Manager, Administrator
11	Management Occupations	119	Other Management Occupations	119131	Postmasters and Mail Superintendents	6	Manager, Administrator
11	Management Occupations	119	Other Management Occupations	119141	Property, Real Estate, and Community Association Managers	6	Manager, Administrator
11	Management Occupations	119	Other Management Occupations	119151	Social and Community Service Managers	6	Manager, Administrator
11	Management Occupations	119	Other Management Occupations	119199	Managers, All Other	6	Manager, Administrator
13	Business and Financial Operations Occupations	131	Business Operations Specialists	131011	Agents and Business Managers of Artists, Performers, and Athletes	13	Sales
13	Business and Financial Operations Occupations	131	Business Operations Specialists	131021	Purchasing Agents and Buyers, Farm Products	6	Manager, Administrator
13	Business and Financial Operations Occupations	131	Business Operations Specialists	131022	Wholesale and Retail Buyers, Except Farm Products	6	Manager, Administrator
13	Business and Financial Operations Occupations	131	Business Operations Specialists	131023	Purchasing Agents, Except Wholesale, Retail, and Farm Products	13	Sales
13	Business and Financial Operations Occupations	131	Business Operations Specialists	131031	Claims Adjusters, Examiners, and Investigators	1	Clerical
13	Business and Financial Operations Occupations	131	Business Operations Specialists	131032	Insurance Appraisers, Auto Damage	1	Clerical
13	Business and Financial Operations Occupations	131	Business Operations Specialists	131041	Compliance Officers, Except Agriculture, Construction, Health and Safety, and Transportation	1	Clerical
13	Business and Financial Operations Occupations	131	Business Operations Specialists	131051	Cost Estimators	1	Clerical
13	Business and Financial Operations Occupations	131	Business Operations Specialists	131061	Emergency Management Specialists	9	Professional A
13	Business and Financial Operations Occupations	131	Business Operations Specialists	131071	Employment, Recruitment, and Placement Specialists	9	Professional A
13	Business and Financial Operations Occupations	131	Business Operations Specialists	131072	Compensation, Benefits, and Job Analysis Specialists	9	Professional A

See notes at end of table.

Table F-1. Occupational coding crosswalk: 2006—Continued

General O*NET code	General O*NET category	Midlevel O*NET code	Midlevel O*NET category	Specific O*NET code	Specific O*NET category	ELS code	ELS category
13	Business and Financial Operations Occupations	131	Business Operations Specialists	131073	Training and Development Specialists	9	Professional A
13	Business and Financial Operations Occupations	131	Business Operations Specialists	131079	Human Resources, Training, and Labor Relations Specialists, All Other	9	Professional A
13	Business and Financial Operations Occupations	131	Business Operations Specialists	131081	Logisticians	9	Professional A
13	Business and Financial Operations Occupations	131	Business Operations Specialists	131111	Management Analysts	9	Professional A
13	Business and Financial Operations Occupations	131	Business Operations Specialists	131121	Meeting and Convention Planners	9	Professional A
13	Business and Financial Operations Occupations	131	Business Operations Specialists	131199	Business Operations Specialists, All Other	9	Professional A
13	Business and Financial Operations Occupations	132	Financial Specialists	132011	Accountants and Auditors	9	Professional A
13	Business and Financial Operations Occupations	132	Financial Specialists	132021	Appraisers and Assessors of Real Estate	9	Professional A
13	Business and Financial Operations Occupations	132	Financial Specialists	132031	Budget Analysts	9	Professional A
13	Business and Financial Operations Occupations	132	Financial Specialists	132041	Credit Analysts	9	Professional A
13	Business and Financial Operations Occupations	132	Financial Specialists	132051	Financial Analysts	9	Professional A
13	Business and Financial Operations Occupations	132	Financial Specialists	132052	Personal Financial Advisors	9	Professional A
13	Business and Financial Operations Occupations	132	Financial Specialists	132053	Insurance Underwriters	1	Clerical
13	Business and Financial Operations Occupations	132	Financial Specialists	132061	Financial Examiners	1	Clerical
13	Business and Financial Operations Occupations	132	Financial Specialists	132071	Loan Counselors	1	Clerical
13	Business and Financial Operations Occupations	132	Financial Specialists	132072	Loan Officers	1	Clerical
13	Business and Financial Operations Occupations	132	Financial Specialists	132081	Tax Examiners, Collectors, and Revenue Agents	1	Clerical
13	Business and Financial Operations Occupations	132	Financial Specialists	132082	Tax Preparers	1	Clerical
13	Business and Financial Operations Occupations	132	Financial Specialists	132099	Financial Specialists, All Other	9 (also 1)	Professional A

See notes at end of table.

Table F-1. Occupational coding crosswalk: 2006—Continued

General O*NET code	General O*NET category	Midlevel O*NET code	Midlevel O*NET category	Specific O*NET code	Specific O*NET category	ELS code	ELS category
15	Computer and Mathematical Occupations	151	Computer Specialists	151011	Computer and Information Scientists, Research	9	Professional A
15	Computer and Mathematical Occupations	151	Computer Specialists	151021	Computer Programmers	16	Technical
15	Computer and Mathematical Occupations	151	Computer Specialists	151031	Computer Software Engineers, Applications	9	Professional A
15	Computer and Mathematical Occupations	151	Computer Specialists	151032	Computer Software Engineers, Systems Software	9	Professional A
15	Computer and Mathematical Occupations	151	Computer Specialists	151041	Computer Support Specialists	16	Technical
15	Computer and Mathematical Occupations	151	Computer Specialists	151051	Computer Systems Analysts	16	Technical
15	Computer and Mathematical Occupations	151	Computer Specialists	151061	Database Administrators	16	Technical
15	Computer and Mathematical Occupations	151	Computer Specialists	151071	Network and Computer Systems Administrators	16	Technical
15	Computer and Mathematical Occupations	151	Computer Specialists	151081	Network Systems and Data Communications Analysts	16	Technical
15	Computer and Mathematical Occupations	151	Computer Specialists	151099	Computer Specialists, All Other	16	Technical
15	Computer and Mathematical Occupations	152	Mathematical Science Occupations	152011	Actuaries	9	Professional A
15	Computer and Mathematical Occupations	152	Mathematical Science Occupations	152021	Mathematicians	10	Professional B
15	Computer and Mathematical Occupations	152	Mathematical Science Occupations	152031	Operations Research Analysts	9	Professional A
15	Computer and Mathematical Occupations	152	Mathematical Science Occupations	152041	Statisticians	10	Professional B
15	Computer and Mathematical Occupations	152	Mathematical Science Occupations	152091	Mathematical Technicians	16	Technical
15	Computer and Mathematical Occupations	152	Mathematical Science Occupations	152099	Mathematical Scientists, All Other	10 (also 9, 16)	Professional B
17	Architecture and Engineering Occupations	171	Architects, Surveyors, and Cartographers	171011	Architects, Except Landscape and Naval	9	Professional A
17	Architecture and Engineering Occupations	171	Architects, Surveyors, and Cartographers	171012	Landscape Architects	9	Professional A
17	Architecture and Engineering Occupations	171	Architects, Surveyors, and Cartographers	171021	Cartographers and Photogrammetrists	9	Professional A

See notes at end of table.

Table F-1. Occupational coding crosswalk: 2006—Continued

General O*NET code	General O*NET category	Midlevel O*NET code	Midlevel O*NET category	Specific O*NET code	Specific O*NET category	ELS code	ELS category
17	Architecture and Engineering Occupations	171	Architects, Surveyors, and Cartographers	171022	Surveyors	9	Professional A
17	Architecture and Engineering Occupations	172	Engineers	172011	Aerospace Engineers	9	Professional A
17	Architecture and Engineering Occupations	172	Engineers	172021	Agricultural Engineers	9	Professional A
17	Architecture and Engineering Occupations	172	Engineers	172031	Biomedical Engineers	9	Professional A
17	Architecture and Engineering Occupations	172	Engineers	172041	Chemical Engineers	9	Professional A
17	Architecture and Engineering Occupations	172	Engineers	172051	Civil Engineers	9	Professional A
17	Architecture and Engineering Occupations	172	Engineers	172061	Computer Hardware Engineers	9	Professional A
17	Architecture and Engineering Occupations	172	Engineers	172071	Electrical Engineers	9	Professional A
17	Architecture and Engineering Occupations	172	Engineers	172072	Electronics Engineers, Except Computer	9	Professional A
17	Architecture and Engineering Occupations	172	Engineers	172081	Environmental Engineers	9	Professional A
17	Architecture and Engineering Occupations	172	Engineers	172111	Health and Safety Engineers, Except Mining Safety Engineers and Inspectors	9	Professional A
17	Architecture and Engineering Occupations	172	Engineers	172112	Industrial Engineers	9	Professional A
17	Architecture and Engineering Occupations	172	Engineers	172121	Marine Engineers and Naval Architects	9	Professional A
17	Architecture and Engineering Occupations	172	Engineers	172131	Materials Engineers	9	Professional A
17	Architecture and Engineering Occupations	172	Engineers	172141	Mechanical Engineers	9	Professional A
17	Architecture and Engineering Occupations	172	Engineers	172151	Mining and Geological Engineers, Including Mining Safety Engineers	9	Professional A
17	Architecture and Engineering Occupations	172	Engineers	172161	Nuclear Engineers	9	Professional A
17	Architecture and Engineering Occupations	172	Engineers	172171	Petroleum Engineers	9	Professional A
17	Architecture and Engineering Occupations	172	Engineers	172199	Engineers, All Other	9	Professional A

See notes at end of table.

Table F-1. Occupational coding crosswalk: 2006—Continued

General O*NET code	General O*NET category	Midlevel O*NET code	Midlevel O*NET category	Specific O*NET code	Specific O*NET category	ELS code	ELS category
17	Architecture and Engineering Occupations	173	Drafters, Engineering, and Mapping Technicians	173011	Architectural and Civil Drafters	16	Technical
17	Architecture and Engineering Occupations	173	Drafters, Engineering, and Mapping Technicians	173012	Electrical and Electronics Drafters	16	Technical
17	Architecture and Engineering Occupations	173	Drafters, Engineering, and Mapping Technicians	173013	Mechanical Drafters	16	Technical
17	Architecture and Engineering Occupations	173	Drafters, Engineering, and Mapping Technicians	173019	Drafters, All Other	16	Technical
17	Architecture and Engineering Occupations	173	Drafters, Engineering, and Mapping Technicians	173021	Aerospace Engineering and Operations Technicians	16	Technical
17	Architecture and Engineering Occupations	173	Drafters, Engineering, and Mapping Technicians	173022	Civil Engineering Technicians	16	Technical
17	Architecture and Engineering Occupations	173	Drafters, Engineering, and Mapping Technicians	173023	Electrical and Electronic Engineering Technicians	16	Technical
17	Architecture and Engineering Occupations	173	Drafters, Engineering, and Mapping Technicians	173024	Electro-Mechanical Technicians	16	Technical
17	Architecture and Engineering Occupations	173	Drafters, Engineering, and Mapping Technicians	173025	Environmental Engineering Technicians	16	Technical
17	Architecture and Engineering Occupations	173	Drafters, Engineering, and Mapping Technicians	173026	Industrial Engineering Technicians	16	Technical
17	Architecture and Engineering Occupations	173	Drafters, Engineering, and Mapping Technicians	173027	Mechanical Engineering Technicians	16	Technical
17	Architecture and Engineering Occupations	173	Drafters, Engineering, and Mapping Technicians	173029	Engineering Technicians, Except Drafters, All Other	16	Technical
17	Architecture and Engineering Occupations	173	Drafters, Engineering, and Mapping Technicians	173031	Surveying and Mapping Technicians	16	Technical
19	Life, Physical, and Social Science Occupations	191	Life Scientists	191011	Animal Scientists	10	Professional B
19	Life, Physical, and Social Science Occupations	191	Life Scientists	191012	Food Scientists and Technologists	10	Professional B
19	Life, Physical, and Social Science Occupations	191	Life Scientists	191013	Soil and Plant Scientists	10	Professional B
19	Life, Physical, and Social Science Occupations	191	Life Scientists	191021	Biochemists and Biophysicists	10	Professional B
19	Life, Physical, and Social Science Occupations	191	Life Scientists	191022	Microbiologists	10	Professional B
19	Life, Physical, and Social Science Occupations	191	Life Scientists	191023	Zoologists and Wildlife Biologists	10	Professional B

See notes at end of table.

Table F-1. Occupational coding crosswalk: 2006—Continued

General O*NET code	General O*NET category	Midlevel O*NET code	Midlevel O*NET category	Specific O*NET code	Specific O*NET category	ELS code	ELS category
19	Life, Physical, and Social Science Occupations	191	Life Scientists	191029	Biological Scientists, All Other	10	Professional B
19	Life, Physical, and Social Science Occupations	191	Life Scientists	191031	Conservation Scientists	10	Professional B
19	Life, Physical, and Social Science Occupations	191	Life Scientists	191032	Foresters	9	Professional A
19	Life, Physical, and Social Science Occupations	191	Life Scientists	191041	Epidemiologists	10	Professional B
19	Life, Physical, and Social Science Occupations	191	Life Scientists	191042	Medical Scientists, Except Epidemiologists	10	Professional B
19	Life, Physical, and Social Science Occupations	191	Life Scientists	191099	Life Scientists, All Other	10	Professional B
19	Life, Physical, and Social Science Occupations	192	Physical Scientists	192011	Astronomers	10	Professional B
19	Life, Physical, and Social Science Occupations	192	Physical Scientists	192012	Physicists	10	Professional B
19	Life, Physical, and Social Science Occupations	192	Physical Scientists	192021	Atmospheric and Space Scientists	10	Professional B
19	Life, Physical, and Social Science Occupations	192	Physical Scientists	192031	Chemists	10	Professional B
19	Life, Physical, and Social Science Occupations	192	Physical Scientists	192032	Materials Scientists	10	Professional B
19	Life, Physical, and Social Science Occupations	192	Physical Scientists	192041	Environmental Scientists and Specialists, Including Health	10	Professional B
19	Life, Physical, and Social Science Occupations	192	Physical Scientists	192042	Geoscientists, Except Hydrologists and Geographers	10	Professional B
19	Life, Physical, and Social Science Occupations	192	Physical Scientists	192043	Hydrologists	10	Professional B
19	Life, Physical, and Social Science Occupations	192	Physical Scientists	192099	Physical Scientists, All Other	10	Professional B
19	Life, Physical, and Social Science Occupations	193	Social Scientists and Related Workers	193011	Economists	10	Professional B
19	Life, Physical, and Social Science Occupations	193	Social Scientists and Related Workers	193021	Market Research Analysts	9	Professional A
19	Life, Physical, and Social Science Occupations	193	Social Scientists and Related Workers	193022	Survey Researchers	9	Professional A
19	Life, Physical, and Social Science Occupations	193	Social Scientists and Related Workers	193031	Clinical, Counseling, and School Psychologists	10	Professional B

See notes at end of table.

Table F-1. Occupational coding crosswalk: 2006—Continued

General O*NET code	General O*NET category	Midlevel O*NET code	Midlevel O*NET category	Specific O*NET code	Specific O*NET category	ELS code	ELS category
19	Life, Physical, and Social Science Occupations	193	Social Scientists and Related Workers	193032	Industrial-Organizational Psychologists	10	Professional B
19	Life, Physical, and Social Science Occupations	193	Social Scientists and Related Workers	193039	Psychologists, All Other	10	Professional B
19	Life, Physical, and Social Science Occupations	193	Social Scientists and Related Workers	193041	Sociologists	10	Professional B
19	Life, Physical, and Social Science Occupations	193	Social Scientists and Related Workers	193051	Urban and Regional Planners	9	Professional A
19	Life, Physical, and Social Science Occupations	193	Social Scientists and Related Workers	193091	Anthropologists and Archeologists	10	Professional B
19	Life, Physical, and Social Science Occupations	193	Social Scientists and Related Workers	193092	Geographers	10	Professional B
19	Life, Physical, and Social Science Occupations	193	Social Scientists and Related Workers	193093	Historians	10	Professional B
19	Life, Physical, and Social Science Occupations	193	Social Scientists and Related Workers	193094	Political Scientists	10	Professional B
19	Life, Physical, and Social Science Occupations	193	Social Scientists and Related Workers	193099	Social Scientists and Related Workers, All Other	10 (also 9)	Professional B
19	Life, Physical, and Social Science Occupations	194	Life, Physical, and Social Science Technicians	194011	Agricultural and Food Science Technicians	16	Technical
19	Life, Physical, and Social Science Occupations	194	Life, Physical, and Social Science Technicians	194021	Biological Technicians	16	Technical
19	Life, Physical, and Social Science Occupations	194	Life, Physical, and Social Science Technicians	194031	Chemical Technicians	16	Technical
19	Life, Physical, and Social Science Occupations	194	Life, Physical, and Social Science Technicians	194041	Geological and Petroleum Technicians	16	Technical
19	Life, Physical, and Social Science Occupations	194	Life, Physical, and Social Science Technicians	194051	Nuclear Technicians	16	Technical
19	Life, Physical, and Social Science Occupations	194	Life, Physical, and Social Science Technicians	194061	Social Science Research Assistants	16	Technical
19	Life, Physical, and Social Science Occupations	194	Life, Physical, and Social Science Technicians	194091	Environmental Science and Protection Technicians, Including Health	16	Technical
19	Life, Physical, and Social Science Occupations	194	Life, Physical, and Social Science Technicians	194092	Forensic Science Technicians	16	Technical
19	Life, Physical, and Social Science Occupations	194	Life, Physical, and Social Science Technicians	194093	Forest and Conservation Technicians	16	Technical

See notes at end of table.

Table F-1. Occupational coding crosswalk: 2006—Continued

General O*NET code	General O*NET category	Midlevel O*NET code	Midlevel O*NET category	Specific O*NET code	Specific O*NET category	ELS code	ELS category
19	Life, Physical, and Social Science Occupations	194	Life, Physical, and Social Science Technicians	194099	Life, Physical, and Social Science Technicians, All Other	16	Technical
21	Community and Social Services Occupations	211	Counselors, Social Workers, and Other Community and Social Service Specialists	211011	Substance Abuse and Behavioral Disorder Counselors	9	Professional A
21	Community and Social Services Occupations	211	Counselors, Social Workers, and Other Community and Social Service Specialists	211012	Educational, Vocational, and School Counselors	9	Professional A
21	Community and Social Services Occupations	211	Counselors, Social Workers, and Other Community and Social Service Specialists	211013	Marriage and Family Therapists	9	Professional A
21	Community and Social Services Occupations	211	Counselors, Social Workers, and Other Community and Social Service Specialists	211014	Mental Health Counselors	9	Professional A
21	Community and Social Services Occupations	211	Counselors, Social Workers, and Other Community and Social Service Specialists	211015	Rehabilitation Counselors	9	Professional A
21	Community and Social Services Occupations	211	Counselors, Social Workers, and Other Community and Social Service Specialists	211019	Counselors, All Other	9	Professional A
21	Community and Social Services Occupations	211	Counselors, Social Workers, and Other Community and Social Service Specialists	211021	Child, Family, and School Social Workers	9	Professional A
21	Community and Social Services Occupations	211	Counselors, Social Workers, and Other Community and Social Service Specialists	211022	Medical and Public Health Social Workers	9	Professional A
21	Community and Social Services Occupations	211	Counselors, Social Workers, and Other Community and Social Service Specialists	211023	Mental Health and Substance Abuse Social Workers	9	Professional A
21	Community and Social Services Occupations	211	Counselors, Social Workers, and Other Community and Social Service Specialists	211029	Social Workers, All Other	9	Professional A
21	Community and Social Services Occupations	211	Counselors, Social Workers, and Other Community and Social Service Specialists	211091	Health Educators	9	Professional A
21	Community and Social Services Occupations	211	Counselors, Social Workers, and Other Community and Social Service Specialists	211092	Probation Officers and Correctional Treatment Specialists	9	Professional A

See notes at end of table.

Table F-1. Occupational coding crosswalk: 2006—Continued

General O*NET code	General O*NET category	Midlevel O*NET code	Midlevel O*NET category	Specific O*NET code	Specific O*NET category	ELS code	ELS category
21	Community and Social Services Occupations	211	Counselors, Social Workers, and Other Community and Social Service Specialists	211093	Social and Human Service Assistants	15	Service
21	Community and Social Services Occupations	211	Counselors, Social Workers, and Other Community and Social Service Specialists	211099	Community and Social Service Specialists, All Other	9 (also 15)	Professional A
21	Community and Social Services Occupations	212	Religious Workers	212011	Clergy	10	Professional B
21	Community and Social Services Occupations	212	Religious Workers	212021	Directors, Religious Activities and Education	10	Professional B
21	Community and Social Services Occupations	212	Religious Workers	212099	Religious Workers, All Other	10	Professional B
23	Legal Occupations	231	Lawyers, Judges, and Related Workers	231011	Lawyers	10	Professional B
23	Legal Occupations	231	Lawyers, Judges, and Related Workers	231021	Administrative Law Judges, Adjudicators, and Hearing Officers	9	Professional A
23	Legal Occupations	231	Lawyers, Judges, and Related Workers	231022	Arbitrators, Mediators, and Conciliators	9	Professional A
23	Legal Occupations	231	Lawyers, Judges, and Related Workers	231023	Judges, Magistrate Judges, and Magistrates	10	Professional B
23	Legal Occupations	232	Legal Support Workers	232011	Paralegals and Legal Assistants	9	Professional A
23	Legal Occupations	232	Legal Support Workers	232091	Court Reporters	9	Professional A
23	Legal Occupations	232	Legal Support Workers	232092	Law Clerks	1	Clerical
23	Legal Occupations	232	Legal Support Workers	232093	Title Examiners, Abstractors, and Searchers	1	Clerical
23	Legal Occupations	232	Legal Support Workers	232099	Legal Support Workers, All Other	1	Clerical
25	Education, Training, and Library Occupations	251	Postsecondary Teachers	251011	Business Teachers, Postsecondary	10	Professional B
25	Education, Training, and Library Occupations	251	Postsecondary Teachers	251021	Computer Science Teachers, Postsecondary	10	Professional B
25	Education, Training, and Library Occupations	251	Postsecondary Teachers	251022	Mathematical Science Teachers, Postsecondary	10	Professional B
25	Education, Training, and Library Occupations	251	Postsecondary Teachers	251031	Architecture Teachers, Postsecondary	10	Professional B
25	Education, Training, and Library Occupations	251	Postsecondary Teachers	251032	Engineering Teachers, Postsecondary	10	Professional B

See notes at end of table.

Table F-1. Occupational coding crosswalk: 2006—Continued

General O*NET code	General O*NET category	Midlevel O*NET code	Midlevel O*NET category	Specific O*NET code	Specific O*NET category	ELS code	ELS category
25	Education, Training, and Library Occupations	251	Postsecondary Teachers	251041	Agricultural Sciences Teachers, Postsecondary	10	Professional B
25	Education, Training, and Library Occupations	251	Postsecondary Teachers	251042	Biological Science Teachers, Postsecondary	10	Professional B
25	Education, Training, and Library Occupations	251	Postsecondary Teachers	251043	Forestry and Conservation Science Teachers, Postsecondary	10	Professional B
25	Education, Training, and Library Occupations	251	Postsecondary Teachers	251051	Atmospheric, Earth, Marine, and Space Sciences Teachers, Postsecondary	10	Professional B
25	Education, Training, and Library Occupations	251	Postsecondary Teachers	251052	Chemistry Teachers, Postsecondary	10	Professional B
25	Education, Training, and Library Occupations	251	Postsecondary Teachers	251053	Environmental Science Teachers, Postsecondary	10	Professional B
25	Education, Training, and Library Occupations	251	Postsecondary Teachers	251054	Physics Teachers, Postsecondary	10	Professional B
25	Education, Training, and Library Occupations	251	Postsecondary Teachers	251061	Anthropology and Archeology Teachers, Postsecondary	10	Professional B
25	Education, Training, and Library Occupations	251	Postsecondary Teachers	251062	Area, Ethnic, and Cultural Studies Teachers, Postsecondary	10	Professional B
25	Education, Training, and Library Occupations	251	Postsecondary Teachers	251063	Economics Teachers, Postsecondary	10	Professional B
25	Education, Training, and Library Occupations	251	Postsecondary Teachers	251064	Geography Teachers, Postsecondary	10	Professional B
25	Education, Training, and Library Occupations	251	Postsecondary Teachers	251065	Political Science Teachers, Postsecondary	10	Professional B
25	Education, Training, and Library Occupations	251	Postsecondary Teachers	251066	Psychology Teachers, Postsecondary	10	Professional B
25	Education, Training, and Library Occupations	251	Postsecondary Teachers	251067	Sociology Teachers, Postsecondary	10	Professional B
25	Education, Training, and Library Occupations	251	Postsecondary Teachers	251069	Social Sciences Teachers, Postsecondary, All Other	10	Professional B
25	Education, Training, and Library Occupations	251	Postsecondary Teachers	251071	Health Specialties Teachers, Postsecondary	10	Professional B
25	Education, Training, and Library Occupations	251	Postsecondary Teachers	251072	Nursing Instructors and Teachers, Postsecondary	10	Professional B
25	Education, Training, and Library Occupations	251	Postsecondary Teachers	251081	Education Teachers, Postsecondary	10	Professional B
25	Education, Training, and Library Occupations	251	Postsecondary Teachers	251082	Library Science Teachers, Postsecondary	10	Professional B

See notes at end of table.

Table F-1. Occupational coding crosswalk: 2006—Continued

General O*NET code	General O*NET category	Midlevel O*NET code	Midlevel O*NET category	Specific O*NET code	Specific O*NET category	ELS code	ELS category
25	Education, Training, and Library Occupations	251	Postsecondary Teachers	251111	Criminal Justice and Law Enforcement Teachers, Postsecondary	10	Professional B
25	Education, Training, and Library Occupations	251	Postsecondary Teachers	251112	Law Teachers, Postsecondary	10	Professional B
25	Education, Training, and Library Occupations	251	Postsecondary Teachers	251113	Social Work Teachers, Postsecondary	10	Professional B
25	Education, Training, and Library Occupations	251	Postsecondary Teachers	251121	Art, Drama, and Music Teachers, Postsecondary	10	Professional B
25	Education, Training, and Library Occupations	251	Postsecondary Teachers	251122	Communications Teachers, Postsecondary	10	Professional B
25	Education, Training, and Library Occupations	251	Postsecondary Teachers	251123	English Language and Literature Teachers, Postsecondary	10	Professional B
25	Education, Training, and Library Occupations	251	Postsecondary Teachers	251124	Foreign Language and Literature Teachers, Postsecondary	10	Professional B
25	Education, Training, and Library Occupations	251	Postsecondary Teachers	251125	History Teachers, Postsecondary	10	Professional B
25	Education, Training, and Library Occupations	251	Postsecondary Teachers	251126	Philosophy and Religion Teachers, Postsecondary	10	Professional B
25	Education, Training, and Library Occupations	251	Postsecondary Teachers	251191	Graduate Teaching Assistants	15	Service
25	Education, Training, and Library Occupations	251	Postsecondary Teachers	251192	Home Economics Teachers, Postsecondary	10	Professional B
25	Education, Training, and Library Occupations	251	Postsecondary Teachers	251193	Recreation and Fitness Studies Teachers, Postsecondary	10	Professional B
25	Education, Training, and Library Occupations	251	Postsecondary Teachers	251194	Vocational Education Teachers, Postsecondary	10	Professional B
25	Education, Training, and Library Occupations	251	Postsecondary Teachers	251199	Postsecondary Teachers, All Other	10	Professional B
25	Education, Training, and Library Occupations	252	Primary, Secondary, and Special Education School Teachers	252011	Preschool Teachers, Except Special Education	14	School Teacher
25	Education, Training, and Library Occupations	252	Primary, Secondary, and Special Education School Teachers	252012	Kindergarten Teachers, Except Special Education	14	School Teacher
25	Education, Training, and Library Occupations	252	Primary, Secondary, and Special Education School Teachers	252021	Elementary School Teachers, Except Special Education	14	School Teacher
25	Education, Training, and Library Occupations	252	Primary, Secondary, and Special Education School Teachers	252022	Middle School Teachers, Except Special and Vocational Education	14	School Teacher
25	Education, Training, and Library Occupations	252	Primary, Secondary, and Special Education School Teachers	252023	Vocational Education Teachers, Middle School	14	School Teacher

See notes at end of table.

Table F-1. Occupational coding crosswalk: 2006—Continued

General O*NET code	General O*NET category	Midlevel O*NET code	Midlevel O*NET category	Specific O*NET code	Specific O*NET category	ELS code	ELS category
25	Education, Training, and Library Occupations	252	Primary, Secondary, and Special Education School Teachers	252031	Secondary School Teachers, Except Special and Vocational Education	14	School Teacher
25	Education, Training, and Library Occupations	252	Primary, Secondary, and Special Education School Teachers	252032	Vocational Education Teachers, Secondary School	14	School Teacher
25	Education, Training, and Library Occupations	252	Primary, Secondary, and Special Education School Teachers	252041	Special Education Teachers, Preschool, Kindergarten, and Elementary School	14	School Teacher
25	Education, Training, and Library Occupations	252	Primary, Secondary, and Special Education School Teachers	252042	Special Education Teachers, Middle School	14	School Teacher
25	Education, Training, and Library Occupations	252	Primary, Secondary, and Special Education School Teachers	252043	Special Education Teachers, Secondary School	14	School Teacher
25	Education, Training, and Library Occupations	253	Other Teachers and Instructors	253011	Adult Literacy, Remedial Education, and GED Teachers and Instructors	9	Professional A
25	Education, Training, and Library Occupations	253	Other Teachers and Instructors	253021	Self-Enrichment Education Teachers	9	Professional A
25	Education, Training, and Library Occupations	253	Other Teachers and Instructors	253099	Teachers and Instructors, All Other	9	Professional A
25	Education, Training, and Library Occupations	254	Librarians, Curators, and Archivists	254011	Archivists	9	Professional A
25	Education, Training, and Library Occupations	254	Librarians, Curators, and Archivists	254012	Curators	9	Professional A
25	Education, Training, and Library Occupations	254	Librarians, Curators, and Archivists	254013	Museum Technicians and Conservators	16	Technical
25	Education, Training, and Library Occupations	254	Librarians, Curators, and Archivists	254021	Librarians	9	Professional A
25	Education, Training, and Library Occupations	254	Librarians, Curators, and Archivists	254031	Library Technicians	16	Technical
25	Education, Training, and Library Occupations	259	Other Education, Training, and Library Occupations	259011	Audio-Visual Collections Specialists	16	Technical
25	Education, Training, and Library Occupations	259	Other Education, Training, and Library Occupations	259021	Farm and Home Management Advisors	9	Professional A
25	Education, Training, and Library Occupations	259	Other Education, Training, and Library Occupations	259031	Instructional Coordinators	9	Professional A
25	Education, Training, and Library Occupations	259	Other Education, Training, and Library Occupations	259041	Teacher Assistants	15	Service
25	Education, Training, and Library Occupations	259	Other Education, Training, and Library Occupations	259099	Education, Training, and Library Workers, All Other	9 (also 16, 15)	Professional A

See notes at end of table.

Table F-1. Occupational coding crosswalk: 2006—Continued

General O*NET code	General O*NET category	Midlevel O*NET code	Midlevel O*NET category	Specific O*NET code	Specific O*NET category	ELS code	ELS category
27	Arts, Design, Entertainment, Sports, and Media Occupations	271	Art and Design Workers	271011	Art Directors	6	Manager, Administrator
27	Arts, Design, Entertainment, Sports, and Media Occupations	271	Art and Design Workers	271012	Craft Artists	9	Professional A
27	Arts, Design, Entertainment, Sports, and Media Occupations	271	Art and Design Workers	271013	Fine Artists, Including Painters, Sculptors, and Illustrators	9	Professional A
27	Arts, Design, Entertainment, Sports, and Media Occupations	271	Art and Design Workers	271014	Multi-Media Artists and Animators	9	Professional A
27	Arts, Design, Entertainment, Sports, and Media Occupations	271	Art and Design Workers	271019	Artists and Related Workers, All Other	9	Professional A
27	Arts, Design, Entertainment, Sports, and Media Occupations	271	Art and Design Workers	271021	Commercial and Industrial Designers	9	Professional A
27	Arts, Design, Entertainment, Sports, and Media Occupations	271	Art and Design Workers	271022	Fashion Designers	9	Professional A
27	Arts, Design, Entertainment, Sports, and Media Occupations	271	Art and Design Workers	271023	Floral Designers	9	Professional A
27	Arts, Design, Entertainment, Sports, and Media Occupations	271	Art and Design Workers	271024	Graphic Designers	16	Technical
27	Arts, Design, Entertainment, Sports, and Media Occupations	271	Art and Design Workers	271025	Interior Designers	9	Professional A
27	Arts, Design, Entertainment, Sports, and Media Occupations	271	Art and Design Workers	271026	Merchandise Displayers and Window Trimmers	15	Service
27	Arts, Design, Entertainment, Sports, and Media Occupations	271	Art and Design Workers	271027	Set and Exhibit Designers	9	Professional A
27	Arts, Design, Entertainment, Sports, and Media Occupations	271	Art and Design Workers	271029	Designers, All Other	9 (also 6, 16, 15)	Professional A

See notes at end of table.

Table F-1. Occupational coding crosswalk: 2006—Continued

General O*NET code	General O*NET category	Midlevel O*NET code	Midlevel O*NET category	Specific O*NET code	Specific O*NET category	ELS code	ELS category
27	Arts, Design, Entertainment, Sports, and Media Occupations	272	Entertainers and Performers, Sports and Related Workers	272011	Actors	9	Professional A
27	Arts, Design, Entertainment, Sports, and Media Occupations	272	Entertainers and Performers, Sports and Related Workers	272012	Producers and Directors	9	Professional A
27	Arts, Design, Entertainment, Sports, and Media Occupations	272	Entertainers and Performers, Sports and Related Workers	272021	Athletes and Sports Competitors	9	Professional A
27	Arts, Design, Entertainment, Sports, and Media Occupations	272	Entertainers and Performers, Sports and Related Workers	272022	Coaches and Scouts	9	Professional A
27	Arts, Design, Entertainment, Sports, and Media Occupations	272	Entertainers and Performers, Sports and Related Workers	272023	Umpires, Referees, and Other Sports Officials	15	Service
27	Arts, Design, Entertainment, Sports, and Media Occupations	272	Entertainers and Performers, Sports and Related Workers	272031	Dancers	9	Professional A
27	Arts, Design, Entertainment, Sports, and Media Occupations	272	Entertainers and Performers, Sports and Related Workers	272032	Choreographers	9	Professional A
27	Arts, Design, Entertainment, Sports, and Media Occupations	272	Entertainers and Performers, Sports and Related Workers	272041	Music Directors and Composers	9	Professional A
27	Arts, Design, Entertainment, Sports, and Media Occupations	272	Entertainers and Performers, Sports and Related Workers	272042	Musicians and Singers	9	Professional A
27	Arts, Design, Entertainment, Sports, and Media Occupations	272	Entertainers and Performers, Sports and Related Workers	272099	Entertainers and Performers, Sports and Related Workers, All Other	9 (also 15)	Professional A
27	Arts, Design, Entertainment, Sports, and Media Occupations	273	Media and Communication Workers	273011	Radio and Television Announcers	9	Professional A
27	Arts, Design, Entertainment, Sports, and Media Occupations	273	Media and Communication Workers	273012	Public Address System and Other Announcers	9	Professional A
27	Arts, Design, Entertainment, Sports, and Media Occupations	273	Media and Communication Workers	273021	Broadcast News Analysts	9	Professional A

See notes at end of table.

Table F-1. Occupational coding crosswalk: 2006—Continued

General O*NET code	General O*NET category	Midlevel O*NET code	Midlevel O*NET category	Specific O*NET code	Specific O*NET category	ELS code	ELS category
27	Arts, Design, Entertainment, Sports, and Media Occupations	273	Media and Communication Workers	273022	Reporters and Correspondents	9	Professional A
27	Arts, Design, Entertainment, Sports, and Media Occupations	273	Media and Communication Workers	273031	Public Relations Specialists	9	Professional A
27	Arts, Design, Entertainment, Sports, and Media Occupations	273	Media and Communication Workers	273041	Editors	9	Professional A
27	Arts, Design, Entertainment, Sports, and Media Occupations	273	Media and Communication Workers	273042	Technical Writers	9	Professional A
27	Arts, Design, Entertainment, Sports, and Media Occupations	273	Media and Communication Workers	273043	Writers and Authors	9	Professional A
27	Arts, Design, Entertainment, Sports, and Media Occupations	273	Media and Communication Workers	273091	Interpreters and Translators	9	Professional A
27	Arts, Design, Entertainment, Sports, and Media Occupations	273	Media and Communication Workers	273099	Media and Communication Workers, All Other	9	Professional A
27	Arts, Design, Entertainment, Sports, and Media Occupations	274	Media and Communication Equipment Workers	274011	Audio and Video Equipment Technicians	16	Technical
27	Arts, Design, Entertainment, Sports, and Media Occupations	274	Media and Communication Equipment Workers	274012	Broadcast Technicians	16	Technical
27	Arts, Design, Entertainment, Sports, and Media Occupations	274	Media and Communication Equipment Workers	274013	Radio Operators	16	Technical
27	Arts, Design, Entertainment, Sports, and Media Occupations	274	Media and Communication Equipment Workers	274014	Sound Engineering Technicians	16	Technical
27	Arts, Design, Entertainment, Sports, and Media Occupations	274	Media and Communication Equipment Workers	274021	Photographers	9	Professional A
27	Arts, Design, Entertainment, Sports, and Media Occupations	274	Media and Communication Equipment Workers	274031	Camera Operators, Television, Video, and Motion Picture	16	Technical

See notes at end of table.

Table F-1. Occupational coding crosswalk: 2006—Continued

General O*NET code	General O*NET category	Midlevel O*NET code	Midlevel O*NET category	Specific O*NET code	Specific O*NET category	ELS code	ELS category
27	Arts, Design, Entertainment, Sports, and Media Occupations	274	Media and Communication Equipment Workers	274032	Film and Video Editors	9	Professional A
27	Arts, Design, Entertainment, Sports, and Media Occupations	274	Media and Communication Equipment Workers	274099	Media and Communication Equipment Workers, All Other	16 (also 9)	Technical
29	Healthcare Practitioners and Technical Occupations	291	Health Diagnosing and Treating Practitioners	291011	Chiropractors	9	Professional A
29	Healthcare Practitioners and Technical Occupations	291	Health Diagnosing and Treating Practitioners	291021	Dentists, General	10	Professional B
29	Healthcare Practitioners and Technical Occupations	291	Health Diagnosing and Treating Practitioners	291022	Oral and Maxillofacial Surgeons	10	Professional B
29	Healthcare Practitioners and Technical Occupations	291	Health Diagnosing and Treating Practitioners	291023	Orthodontists	10	Professional B
29	Healthcare Practitioners and Technical Occupations	291	Health Diagnosing and Treating Practitioners	291024	Prosthodontists	10	Professional B
29	Healthcare Practitioners and Technical Occupations	291	Health Diagnosing and Treating Practitioners	291029	Dentists, All Other Specialists	10	Professional B
29	Healthcare Practitioners and Technical Occupations	291	Health Diagnosing and Treating Practitioners	291031	Dietitians and Nutritionists	9	Professional A
29	Healthcare Practitioners and Technical Occupations	291	Health Diagnosing and Treating Practitioners	291041	Optometrists	10	Professional B
29	Healthcare Practitioners and Technical Occupations	291	Health Diagnosing and Treating Practitioners	291051	Pharmacists	9	Professional A
29	Healthcare Practitioners and Technical Occupations	291	Health Diagnosing and Treating Practitioners	291061	Anesthesiologists	10	Professional B
29	Healthcare Practitioners and Technical Occupations	291	Health Diagnosing and Treating Practitioners	291062	Family and General Practitioners	10	Professional B
29	Healthcare Practitioners and Technical Occupations	291	Health Diagnosing and Treating Practitioners	291063	Internists, General	10	Professional B
29	Healthcare Practitioners and Technical Occupations	291	Health Diagnosing and Treating Practitioners	291064	Obstetricians and Gynecologists	10	Professional B
29	Healthcare Practitioners and Technical Occupations	291	Health Diagnosing and Treating Practitioners	291065	Pediatricians, General	10	Professional B
29	Healthcare Practitioners and Technical Occupations	291	Health Diagnosing and Treating Practitioners	291066	Psychiatrists	10	Professional B
29	Healthcare Practitioners and Technical Occupations	291	Health Diagnosing and Treating Practitioners	291067	Surgeons	10	Professional B

See notes at end of table.

Table F-1. Occupational coding crosswalk: 2006—Continued

General O*NET code	General O*NET category	Midlevel O*NET code	Midlevel O*NET category	Specific O*NET code	Specific O*NET category	ELS code	ELS category
29	Healthcare Practitioners and Technical Occupations	291	Health Diagnosing and Treating Practitioners	291069	Physicians and Surgeons, All Other	10	Professional B
29	Healthcare Practitioners and Technical Occupations	291	Health Diagnosing and Treating Practitioners	291071	Physician Assistants	9	Professional A
29	Healthcare Practitioners and Technical Occupations	291	Health Diagnosing and Treating Practitioners	291081	Podiatrists	10	Professional B
29	Healthcare Practitioners and Technical Occupations	291	Health Diagnosing and Treating Practitioners	291111	Registered Nurses	9	Professional A
29	Healthcare Practitioners and Technical Occupations	291	Health Diagnosing and Treating Practitioners	291121	Audiologists	9	Professional A
29	Healthcare Practitioners and Technical Occupations	291	Health Diagnosing and Treating Practitioners	291122	Occupational Therapists	9	Professional A
29	Healthcare Practitioners and Technical Occupations	291	Health Diagnosing and Treating Practitioners	291123	Physical Therapists	9	Professional A
29	Healthcare Practitioners and Technical Occupations	291	Health Diagnosing and Treating Practitioners	291124	Radiation Therapists	9	Professional A
29	Healthcare Practitioners and Technical Occupations	291	Health Diagnosing and Treating Practitioners	291125	Recreational Therapists	9	Professional A
29	Healthcare Practitioners and Technical Occupations	291	Health Diagnosing and Treating Practitioners	291126	Respiratory Therapists	9	Professional A
29	Healthcare Practitioners and Technical Occupations	291	Health Diagnosing and Treating Practitioners	291127	Speech-Language Pathologists	9	Professional A
29	Healthcare Practitioners and Technical Occupations	291	Health Diagnosing and Treating Practitioners	291129	Therapists, All Other	9	Professional A
29	Healthcare Practitioners and Technical Occupations	291	Health Diagnosing and Treating Practitioners	291131	Veterinarians	10	Professional B
29	Healthcare Practitioners and Technical Occupations	291	Health Diagnosing and Treating Practitioners	291199	Health Diagnosing and Treating Practitioners, All Other	10 (also 9)	Professional B
29	Healthcare Practitioners and Technical Occupations	292	Health Technologists and Technicians	292011	Medical and Clinical Laboratory Technologists	16	Technical
29	Healthcare Practitioners and Technical Occupations	292	Health Technologists and Technicians	292012	Medical and Clinical Laboratory Technicians	16	Technical
29	Healthcare Practitioners and Technical Occupations	292	Health Technologists and Technicians	292021	Dental Hygienists	16	Technical
29	Healthcare Practitioners and Technical Occupations	292	Health Technologists and Technicians	292031	Cardiovascular Technologists and Technicians	16	Technical
29	Healthcare Practitioners and Technical Occupations	292	Health Technologists and Technicians	292032	Diagnostic Medical Sonographers	16	Technical

See notes at end of table.

Table F-1. Occupational coding crosswalk: 2006—Continued

General O*NET code	General O*NET category	Midlevel O*NET code	Midlevel O*NET category	Specific O*NET code	Specific O*NET category	ELS code	ELS category
29	Healthcare Practitioners and Technical Occupations	292	Health Technologists and Technicians	292033	Nuclear Medicine Technologists	16	Technical
29	Healthcare Practitioners and Technical Occupations	292	Health Technologists and Technicians	292034	Radiologic Technologists and Technicians	16	Technical
29	Healthcare Practitioners and Technical Occupations	292	Health Technologists and Technicians	292041	Emergency Medical Technicians and Paramedics	16	Technical
29	Healthcare Practitioners and Technical Occupations	292	Health Technologists and Technicians	292051	Dietetic Technicians	16	Technical
29	Healthcare Practitioners and Technical Occupations	292	Health Technologists and Technicians	292052	Pharmacy Technicians	16	Technical
29	Healthcare Practitioners and Technical Occupations	292	Health Technologists and Technicians	292053	Psychiatric Technicians	16	Technical
29	Healthcare Practitioners and Technical Occupations	292	Health Technologists and Technicians	292054	Respiratory Therapy Technicians	16	Technical
29	Healthcare Practitioners and Technical Occupations	292	Health Technologists and Technicians	292055	Surgical Technologists	16	Technical
29	Healthcare Practitioners and Technical Occupations	292	Health Technologists and Technicians	292056	Veterinary Technologists and Technicians	16	Technical
29	Healthcare Practitioners and Technical Occupations	292	Health Technologists and Technicians	292061	Licensed Practical and Licensed Vocational Nurses	15	Service
29	Healthcare Practitioners and Technical Occupations	292	Health Technologists and Technicians	292071	Medical Records and Health Information Technicians	16	Technical
29	Healthcare Practitioners and Technical Occupations	292	Health Technologists and Technicians	292081	Opticians, Dispensing	16	Technical
29	Healthcare Practitioners and Technical Occupations	292	Health Technologists and Technicians	292091	Orthotists and Prosthetists	16	Technical
29	Healthcare Practitioners and Technical Occupations	292	Health Technologists and Technicians	292099	Health Technologists and Technicians, All Other	16	Technical
29	Healthcare Practitioners and Technical Occupations	299	Other Healthcare Practitioners and Technical Occupations	299011	Occupational Health and Safety Specialists	9	Professional A
29	Healthcare Practitioners and Technical Occupations	299	Other Healthcare Practitioners and Technical Occupations	299012	Occupational Health and Safety Technicians	16	Technical
29	Healthcare Practitioners and Technical Occupations	299	Other Healthcare Practitioners and Technical Occupations	299091	Athletic Trainers	15	Service
29	Healthcare Practitioners and Technical Occupations	299	Other Healthcare Practitioners and Technical Occupations	299099	Healthcare Practitioners and Technical Workers, All Other	9 (also 16,15)	Professional A
31	Healthcare Support Occupations	311	Nursing, Psychiatric, and Home Health Aides	311011	Home Health Aides	15	Service

See notes at end of table.

Table F-1. Occupational coding crosswalk: 2006—Continued

General O*NET code	General O*NET category	Midlevel O*NET code	Midlevel O*NET category	Specific O*NET code	Specific O*NET category	ELS code	ELS category
31	Healthcare Support Occupations	311	Nursing, Psychiatric, and Home Health Aides	311012	Nursing Aides, Orderlies, and Attendants	15	Service
31	Healthcare Support Occupations	311	Nursing, Psychiatric, and Home Health Aides	311013	Psychiatric Aides	15	Service
31	Healthcare Support Occupations	312	Occupational and Physical Therapist Assistants and Aides	312011	Occupational Therapist Assistants	15	Service
31	Healthcare Support Occupations	312	Occupational and Physical Therapist Assistants and Aides	312012	Occupational Therapist Aides	15	Service
31	Healthcare Support Occupations	312	Occupational and Physical Therapist Assistants and Aides	312021	Physical Therapist Assistants	15	Service
31	Healthcare Support Occupations	312	Occupational and Physical Therapist Assistants and Aides	312022	Physical Therapist Aides	15	Service
31	Healthcare Support Occupations	319	Other Healthcare Support Occupations	319011	Massage Therapists	15	Service
31	Healthcare Support Occupations	319	Other Healthcare Support Occupations	319091	Dental Assistants	15	Service
31	Healthcare Support Occupations	319	Other Healthcare Support Occupations	319092	Medical Assistants	15	Service
31	Healthcare Support Occupations	319	Other Healthcare Support Occupations	319093	Medical Equipment Preparers	15	Service
31	Healthcare Support Occupations	319	Other Healthcare Support Occupations	319094	Medical Transcriptionists	1	Clerical
31	Healthcare Support Occupations	319	Other Healthcare Support Occupations	319095	Pharmacy Aides	15	Service
31	Healthcare Support Occupations	319	Other Healthcare Support Occupations	319096	Veterinary Assistants and Laboratory Animal Caretakers	15	Service
31	Healthcare Support Occupations	319	Other Healthcare Support Occupations	319099	Healthcare Support Workers, All Other	15	Service
33	Protective Service Occupations	331	First-Line Supervisors/Managers, Protective Service Workers	331011	First-Line Supervisors/Managers of Correctional Officers	6	Manager, Administrator
33	Protective Service Occupations	331	First-Line Supervisors/Managers, Protective Service Workers	331012	First-Line Supervisors/Managers of Police and Detectives	6	Manager, Administrator
33	Protective Service Occupations	331	First-Line Supervisors/Managers, Protective Service Workers	331021	First-Line Supervisors/Managers of Fire Fighting and Prevention Workers	6	Manager, Administrator
33	Protective Service Occupations	331	First-Line Supervisors/Managers, Protective Service Workers	331099	First-Line Supervisors/Managers, Protective Service Workers, All Other	6	Manager, Administrator
33	Protective Service Occupations	332	Fire Fighting and Prevention Workers	332011	Fire Fighters	12	Protective Service

See notes at end of table.

Table F-1. Occupational coding crosswalk: 2006—Continued

General O*NET code	General O*NET category	Midlevel O*NET code	Midlevel O*NET category	Specific O*NET code	Specific O*NET category	ELS code	ELS category
33	Protective Service Occupations	332	Fire Fighting and Prevention Workers	332021	Fire Inspectors and Investigators	12	Protective Service
33	Protective Service Occupations	332	Fire Fighting and Prevention Workers	332022	Forest Fire Inspectors and Prevention Specialists	12	Protective Service
33	Protective Service Occupations	333	Law Enforcement Workers	333011	Bailiffs	12	Protective Service
33	Protective Service Occupations	333	Law Enforcement Workers	333012	Correctional Officers and Jailers	12	Protective Service
33	Protective Service Occupations	333	Law Enforcement Workers	333021	Detectives and Criminal Investigators	12	Protective Service
33	Protective Service Occupations	333	Law Enforcement Workers	333031	Fish and Game Wardens	12	Protective Service
33	Protective Service Occupations	333	Law Enforcement Workers	333041	Parking Enforcement Workers	15	Service
33	Protective Service Occupations	333	Law Enforcement Workers	333051	Police and Sheriff's Patrol Officers	12	Protective Service
33	Protective Service Occupations	333	Law Enforcement Workers	333052	Transit and Railroad Police	12	Protective Service
33	Protective Service Occupations	339	Other Protective Service Workers	339011	Animal Control Workers	12	Protective Service
33	Protective Service Occupations	339	Other Protective Service Workers	339021	Private Detectives and Investigators	12	Protective Service
33	Protective Service Occupations	339	Other Protective Service Workers	339031	Gaming Surveillance Officers and Gaming Investigators	12	Protective Service
33	Protective Service Occupations	339	Other Protective Service Workers	339032	Security Guards	12	Protective Service
33	Protective Service Occupations	339	Other Protective Service Workers	339091	Crossing Guards	15	Service
33	Protective Service Occupations	339	Other Protective Service Workers	339092	Lifeguards, Ski Patrol, and Other Recreational Protective Service Workers	15	Service
33	Protective Service Occupations	339	Other Protective Service Workers	339099	Protective Service Workers, All Other	12 (also 15)	Protective Service
35	Food Preparation and Serving Related Occupations	351	Supervisors, Food Preparation and Serving Workers	351011	Chefs and Head Cooks	2	Craftsperson
35	Food Preparation and Serving Related Occupations	351	Supervisors, Food Preparation and Serving Workers	351012	First-Line Supervisors/Managers of Food Preparation and Serving Workers	6	Manager, Administrator
35	Food Preparation and Serving Related Occupations	352	Cooks and Food Preparation Workers	352011	Cooks, Fast Food	15	Service

See notes at end of table.

Table F-1. Occupational coding crosswalk: 2006—Continued

General O*NET code	General O*NET category	Midlevel O*NET code	Midlevel O*NET category	Specific O*NET code	Specific O*NET category	ELS code	ELS category
35	Food Preparation and Serving Related Occupations	352	Cooks and Food Preparation Workers	352012	Cooks, Institution and Cafeteria	15	Service
35	Food Preparation and Serving Related Occupations	352	Cooks and Food Preparation Workers	352013	Cooks, Private Household	15	Service
35	Food Preparation and Serving Related Occupations	352	Cooks and Food Preparation Workers	352014	Cooks, Restaurant	15	Service
35	Food Preparation and Serving Related Occupations	352	Cooks and Food Preparation Workers	352015	Cooks, Short Order	15	Service
35	Food Preparation and Serving Related Occupations	352	Cooks and Food Preparation Workers	352019	Cooks, All Other	15	Service
35	Food Preparation and Serving Related Occupations	352	Cooks and Food Preparation Workers	352021	Food Preparation Workers	15	Service
35	Food Preparation and Serving Related Occupations	353	Food and Beverage Serving Workers	353011	Bartenders	15	Service
35	Food Preparation and Serving Related Occupations	353	Food and Beverage Serving Workers	353021	Combined Food Preparation and Serving Workers, Including Fast Food	15	Service
35	Food Preparation and Serving Related Occupations	353	Food and Beverage Serving Workers	353022	Counter Attendants, Cafeteria, Food Concession, and Coffee Shop	15	Service
35	Food Preparation and Serving Related Occupations	353	Food and Beverage Serving Workers	353031	Waiters and Waitresses	15	Service
35	Food Preparation and Serving Related Occupations	353	Food and Beverage Serving Workers	353041	Food Servers, Nonrestaurant	15	Service
35	Food Preparation and Serving Related Occupations	359	Other Food Preparation and Serving Related Workers	359011	Dining Room and Cafeteria Attendants and Bartender Helpers	15	Service
35	Food Preparation and Serving Related Occupations	359	Other Food Preparation and Serving Related Workers	359021	Dishwashers	15	Service
35	Food Preparation and Serving Related Occupations	359	Other Food Preparation and Serving Related Workers	359031	Hosts and Hostesses, Restaurant, Lounge, and Coffee Shop	15	Service
35	Food Preparation and Serving Related Occupations	359	Other Food Preparation and Serving Related Workers	359099	Food Preparation and Serving Related Workers, All Other	15	Service
37	Building and Grounds Cleaning and Maintenance Occupations	371	Supervisors, Building and Grounds Cleaning and Maintenance Workers	371011	First-Line Supervisors/Managers of Housekeeping and Janitorial Workers	6	Manager, Administrator
37	Building and Grounds Cleaning and Maintenance Occupations	371	Supervisors, Building and Grounds Cleaning and Maintenance Workers	371012	First-Line Supervisors/Managers of Landscaping, Lawn Service, and Groundskeeping Workers	6	Manager, Administrator

See notes at end of table.

Table F-1. Occupational coding crosswalk: 2006—Continued

General O*NET code	General O*NET category	Midlevel O*NET code	Midlevel O*NET category	Specific O*NET code	Specific O*NET category	ELS code	ELS category
37	Building and Grounds Cleaning and Maintenance Occupations	372	Building Cleaning and Pest Control Workers	372011	Janitors and Cleaners, Except Maids and Housekeeping Cleaners	15	Service
37	Building and Grounds Cleaning and Maintenance Occupations	372	Building Cleaning and Pest Control Workers	372012	Maids and Housekeeping Cleaners	15	Service
37	Building and Grounds Cleaning and Maintenance Occupations	372	Building Cleaning and Pest Control Workers	372019	Building Cleaning Workers, All Other	15	Service
37	Building and Grounds Cleaning and Maintenance Occupations	372	Building Cleaning and Pest Control Workers	372021	Pest Control Workers	15	Service
37	Building and Grounds Cleaning and Maintenance Occupations	373	Grounds Maintenance Workers	373011	Landscaping and Groundskeeping Workers	5	Laborer
37	Building and Grounds Cleaning and Maintenance Occupations	373	Grounds Maintenance Workers	373012	Pesticide Handlers, Sprayers, and Applicators, Vegetation	5	Laborer
37	Building and Grounds Cleaning and Maintenance Occupations	373	Grounds Maintenance Workers	373013	Tree Trimmers and Pruners	5	Laborer
37	Building and Grounds Cleaning and Maintenance Occupations	373	Grounds Maintenance Workers	373019	Grounds Maintenance Workers, All Other	5	Laborer
39	Personal Care and Service Occupations	391	Supervisors, Personal Care and Service Workers	391011	Gaming Supervisors	6	Manager, Administrator
39	Personal Care and Service Occupations	391	Supervisors, Personal Care and Service Workers	391012	Slot Key Persons	1	Clerical
39	Personal Care and Service Occupations	391	Supervisors, Personal Care and Service Workers	391021	First-Line Supervisors/Managers of Personal Service Workers	6	Manager, Administrator
39	Personal Care and Service Occupations	392	Animal Care and Service Workers	392011	Animal Trainers	2	Craftsperson
39	Personal Care and Service Occupations	392	Animal Care and Service Workers	392021	Nonfarm Animal Caretakers	15	Service
39	Personal Care and Service Occupations	393	Entertainment Attendants and Related Workers	393011	Gaming Dealers	1	Clerical
39	Personal Care and Service Occupations	393	Entertainment Attendants and Related Workers	393012	Gaming and Sports Book Writers and Runners	1	Clerical

See notes at end of table.

Table F-1. Occupational coding crosswalk: 2006—Continued

General O*NET code	General O*NET category	Midlevel O*NET code	Midlevel O*NET category	Specific O*NET code	Specific O*NET category	ELS code	ELS category
39	Personal Care and Service Occupations	393	Entertainment Attendants and Related Workers	393019	Gaming Service Workers, All Other	1	Clerical
39	Personal Care and Service Occupations	393	Entertainment Attendants and Related Workers	393021	Motion Picture Projectionists	15	Service
39	Personal Care and Service Occupations	393	Entertainment Attendants and Related Workers	393031	Ushers, Lobby Attendants, and Ticket Takers	15	Service
39	Personal Care and Service Occupations	393	Entertainment Attendants and Related Workers	393091	Amusement and Recreation Attendants	15	Service
39	Personal Care and Service Occupations	393	Entertainment Attendants and Related Workers	393092	Costume Attendants	15	Service
39	Personal Care and Service Occupations	393	Entertainment Attendants and Related Workers	393093	Locker Room, Coatroom, and Dressing Room Attendants	15	Service
39	Personal Care and Service Occupations	393	Entertainment Attendants and Related Workers	393099	Entertainment Attendants and Related Workers, All Other	15	Service
39	Personal Care and Service Occupations	394	Funeral Service Workers	394011	Embalmers	15	Service
39	Personal Care and Service Occupations	394	Funeral Service Workers	394021	Funeral Attendants	15	Service
39	Personal Care and Service Occupations	395	Personal Appearance Workers	395011	Barbers	15	Service
39	Personal Care and Service Occupations	395	Personal Appearance Workers	395012	Hairdressers, Hairstylists, and Cosmetologists	15	Service
39	Personal Care and Service Occupations	395	Personal Appearance Workers	395091	Makeup Artists, Theatrical and Performance	15	Service
39	Personal Care and Service Occupations	395	Personal Appearance Workers	395092	Manicurists and Pedicurists	15	Service
39	Personal Care and Service Occupations	395	Personal Appearance Workers	395093	Shampooers	15	Service
39	Personal Care and Service Occupations	395	Personal Appearance Workers	395094	Skin Care Specialists	15	Service
39	Personal Care and Service Occupations	396	Transportation, Tourism, and Lodging Attendants	396011	Baggage Porters and Bellhops	15	Service
39	Personal Care and Service Occupations	396	Transportation, Tourism, and Lodging Attendants	396012	Concierges	15	Service
39	Personal Care and Service Occupations	396	Transportation, Tourism, and Lodging Attendants	396021	Tour Guides and Escorts	15	Service
39	Personal Care and Service Occupations	396	Transportation, Tourism, and Lodging Attendants	396022	Travel Guides	15	Service

See notes at end of table.

Table F-1. Occupational coding crosswalk: 2006—Continued

General O*NET code	General O*NET category	Midlevel O*NET code	Midlevel O*NET category	Specific O*NET code	Specific O*NET category	ELS code	ELS category
39	Personal Care and Service Occupations	396	Transportation, Tourism, and Lodging Attendants	396031	Flight Attendants	15	Service
39	Personal Care and Service Occupations	396	Transportation, Tourism, and Lodging Attendants	396032	Transportation Attendants, Except Flight Attendants and Baggage Porters	15	Service
39	Personal Care and Service Occupations	399	Other Personal Care and Service Workers	399011	Child Care Workers	15	Service
39	Personal Care and Service Occupations	399	Other Personal Care and Service Workers	399021	Personal and Home Care Aides	15	Service
39	Personal Care and Service Occupations	399	Other Personal Care and Service Workers	399031	Fitness Trainers and Aerobics Instructors	15	Service
39	Personal Care and Service Occupations	399	Other Personal Care and Service Workers	399032	Recreation Workers	15	Service
39	Personal Care and Service Occupations	399	Other Personal Care and Service Workers	399041	Residential Advisors	15	Service
39	Personal Care and Service Occupations	399	Other Personal Care and Service Workers	399099	Personal Care and Service Workers, All Other	15	Service
41	Sales and Related Occupations	411	Supervisors, Sales Workers	411011	First-Line Supervisors/Managers of Retail Sales Workers	6	Manager, Administrator
41	Sales and Related Occupations	411	Supervisors, Sales Workers	411012	First-Line Supervisors/Managers of Non-Retail Sales Workers	6	Manager, Administrator
41	Sales and Related Occupations	412	Retail Sales Workers	412011	Cashiers	15	Service
41	Sales and Related Occupations	412	Retail Sales Workers	412012	Gaming Change Persons and Booth Cashiers	15	Service
41	Sales and Related Occupations	412	Retail Sales Workers	412021	Counter and Rental Clerks	15	Service
41	Sales and Related Occupations	412	Retail Sales Workers	412022	Parts Salespersons	13	Sales
41	Sales and Related Occupations	412	Retail Sales Workers	412031	Retail Salespersons	13	Sales
41	Sales and Related Occupations	413	Sales Representatives, Services	413011	Advertising Sales Agents	13	Sales
41	Sales and Related Occupations	413	Sales Representatives, Services	413021	Insurance Sales Agents	13	Sales
41	Sales and Related Occupations	413	Sales Representatives, Services	413031	Securities, Commodities, and Financial Services Sales Agents	13	Sales
41	Sales and Related Occupations	413	Sales Representatives, Services	413041	Travel Agents	13	Sales

See notes at end of table.

Table F-1. Occupational coding crosswalk: 2006—Continued

General O*NET code	General O*NET category	Midlevel O*NET code	Midlevel O*NET category	Specific O*NET code	Specific O*NET category	ELS code	ELS category
41	Sales and Related Occupations	413	Sales Representatives, Services	413099	Sales Representatives, Services, All Other	13	Sales
41	Sales and Related Occupations	414	Sales Representatives, Wholesale and Manufacturing	414011	Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	13	Sales
41	Sales and Related Occupations	414	Sales Representatives, Wholesale and Manufacturing	414012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	13	Sales
41	Sales and Related Occupations	419	Other Sales and Related Workers	419011	Demonstrators and Product Promoters	13	Sales
41	Sales and Related Occupations	419	Other Sales and Related Workers	419012	Models	9	Professional A
41	Sales and Related Occupations	419	Other Sales and Related Workers	419021	Real Estate Brokers	13	Sales
41	Sales and Related Occupations	419	Other Sales and Related Workers	419022	Real Estate Sales Agents	13	Sales
41	Sales and Related Occupations	419	Other Sales and Related Workers	419031	Sales Engineers	9	Professional A
41	Sales and Related Occupations	419	Other Sales and Related Workers	419041	Telemarketers	13	Sales
41	Sales and Related Occupations	419	Other Sales and Related Workers	419091	Door-To-Door Sales Workers, News and Street Vendors, and Related Workers	13	Sales
41	Sales and Related Occupations	419	Other Sales and Related Workers	419099	Sales and Related Workers, All Other	13	Sales
43	Office and Administrative Support Occupations	431	Supervisors, Office and Administrative Support Workers	431011	First-Line Supervisors/Managers of Office and Administrative Support Workers	6	Manager, Administrator
43	Office and Administrative Support Occupations	432	Communications Equipment Operators	432011	Switchboard Operators, Including Answering Service	1	Clerical
43	Office and Administrative Support Occupations	432	Communications Equipment Operators	432021	Telephone Operators	1	Clerical
43	Office and Administrative Support Occupations	432	Communications Equipment Operators	432099	Communications Equipment Operators, All Other	1	Clerical
43	Office and Administrative Support Occupations	433	Financial Clerks	433011	Bill and Account Collectors	1	Clerical
43	Office and Administrative Support Occupations	433	Financial Clerks	433021	Billing and Posting Clerks and Machine Operators	1	Clerical
43	Office and Administrative Support Occupations	433	Financial Clerks	433031	Bookkeeping, Accounting, and Auditing Clerks	1	Clerical

See notes at end of table.

Table F-1. Occupational coding crosswalk: 2006—Continued

General O*NET code	General O*NET category	Midlevel O*NET code	Midlevel O*NET category	Specific O*NET code	Specific O*NET category	ELS code	ELS category
43	Office and Administrative Support Occupations	433	Financial Clerks	433041	Gaming Cage Workers	1	Clerical
43	Office and Administrative Support Occupations	433	Financial Clerks	433051	Payroll and Timekeeping Clerks	1	Clerical
43	Office and Administrative Support Occupations	433	Financial Clerks	433061	Procurement Clerks	1	Clerical
43	Office and Administrative Support Occupations	433	Financial Clerks	433071	Tellers	1	Clerical
43	Office and Administrative Support Occupations	434	Information and Record Clerks	434011	Brokerage Clerks	1	Clerical
43	Office and Administrative Support Occupations	434	Information and Record Clerks	434021	Correspondence Clerks	1	Clerical
43	Office and Administrative Support Occupations	434	Information and Record Clerks	434031	Court, Municipal, and License Clerks	1	Clerical
43	Office and Administrative Support Occupations	434	Information and Record Clerks	434041	Credit Authorizers, Checkers, and Clerks	1	Clerical
43	Office and Administrative Support Occupations	434	Information and Record Clerks	434051	Customer Service Representatives	1	Clerical
43	Office and Administrative Support Occupations	434	Information and Record Clerks	434061	Eligibility Interviewers, Government Programs	1	Clerical
43	Office and Administrative Support Occupations	434	Information and Record Clerks	434071	File Clerks	1	Clerical
43	Office and Administrative Support Occupations	434	Information and Record Clerks	434081	Hotel, Motel, and Resort Desk Clerks	1	Clerical
43	Office and Administrative Support Occupations	434	Information and Record Clerks	434111	Interviewers, Except Eligibility and Loan	1	Clerical
43	Office and Administrative Support Occupations	434	Information and Record Clerks	434121	Library Assistants, Clerical	1	Clerical
43	Office and Administrative Support Occupations	434	Information and Record Clerks	434131	Loan Interviewers and Clerks	1	Clerical
43	Office and Administrative Support Occupations	434	Information and Record Clerks	434141	New Accounts Clerks	1	Clerical
43	Office and Administrative Support Occupations	434	Information and Record Clerks	434151	Order Clerks	1	Clerical
43	Office and Administrative Support Occupations	434	Information and Record Clerks	434161	Human Resources Assistants, Except Payroll and Timekeeping	1	Clerical
43	Office and Administrative Support Occupations	434	Information and Record Clerks	434171	Receptionists and Information Clerks	1	Clerical

See notes at end of table.

Table F-1. Occupational coding crosswalk: 2006—Continued

General O*NET code	General O*NET category	Midlevel O*NET code	Midlevel O*NET category	Specific O*NET code	Specific O*NET category	ELS code	ELS category
43	Office and Administrative Support Occupations	434	Information and Record Clerks	434181	Reservation and Transportation Ticket Agents and Travel Clerks	1	Clerical
43	Office and Administrative Support Occupations	434	Information and Record Clerks	434199	Information and Record Clerks, All Other	1	Clerical
43	Office and Administrative Support Occupations	435	Material Recording, Scheduling, Dispatching, and Distributing Workers	435011	Cargo and Freight Agents	1	Clerical
43	Office and Administrative Support Occupations	435	Material Recording, Scheduling, Dispatching, and Distributing Workers	435021	Couriers and Messengers	1	Clerical
43	Office and Administrative Support Occupations	435	Material Recording, Scheduling, Dispatching, and Distributing Workers	435031	Police, Fire, and Ambulance Dispatchers	1	Clerical
43	Office and Administrative Support Occupations	435	Material Recording, Scheduling, Dispatching, and Distributing Workers	435032	Dispatchers, Except Police, Fire, and Ambulance	1	Clerical
43	Office and Administrative Support Occupations	435	Material Recording, Scheduling, Dispatching, and Distributing Workers	435041	Meter Readers, Utilities	1	Clerical
43	Office and Administrative Support Occupations	435	Material Recording, Scheduling, Dispatching, and Distributing Workers	435051	Postal Service Clerks	1	Clerical
43	Office and Administrative Support Occupations	435	Material Recording, Scheduling, Dispatching, and Distributing Workers	435052	Postal Service Mail Carriers	1	Clerical
43	Office and Administrative Support Occupations	435	Material Recording, Scheduling, Dispatching, and Distributing Workers	435053	Postal Service Mail Sorters, Processors, and Processing Machine Operators	1	Clerical
43	Office and Administrative Support Occupations	435	Material Recording, Scheduling, Dispatching, and Distributing Workers	435061	Production, Planning, and Expediting Clerks	1	Clerical
43	Office and Administrative Support Occupations	435	Material Recording, Scheduling, Dispatching, and Distributing Workers	435071	Shipping, Receiving, and Traffic Clerks	1	Clerical
43	Office and Administrative Support Occupations	435	Material Recording, Scheduling, Dispatching, and Distributing Workers	435081	Stock Clerks and Order Fillers	1	Clerical
43	Office and Administrative Support Occupations	435	Material Recording, Scheduling, Dispatching, and Distributing Workers	435111	Weighers, Measurers, Checkers, and Samplers, Recordkeeping	1	Clerical

See notes at end of table.

Table F-1. Occupational coding crosswalk: 2006—Continued

General O*NET code	General O*NET category	Midlevel O*NET code	Midlevel O*NET category	Specific O*NET code	Specific O*NET category	ELS code	ELS category
43	Office and Administrative Support Occupations	436	Secretaries and Administrative Assistants	436011	Executive Secretaries and Administrative Assistants	1	Clerical
43	Office and Administrative Support Occupations	436	Secretaries and Administrative Assistants	436012	Legal Secretaries	1	Clerical
43	Office and Administrative Support Occupations	436	Secretaries and Administrative Assistants	436013	Medical Secretaries	1	Clerical
43	Office and Administrative Support Occupations	436	Secretaries and Administrative Assistants	436014	Secretaries, Except Legal, Medical, and Executive	1	Clerical
43	Office and Administrative Support Occupations	439	Other Office and Administrative Support Workers	439011	Computer Operators	1	Clerical
43	Office and Administrative Support Occupations	439	Other Office and Administrative Support Workers	439021	Data Entry Keyers	1	Clerical
43	Office and Administrative Support Occupations	439	Other Office and Administrative Support Workers	439022	Word Processors and Typists	1	Clerical
43	Office and Administrative Support Occupations	439	Other Office and Administrative Support Workers	439031	Desktop Publishers	1	Clerical
43	Office and Administrative Support Occupations	439	Other Office and Administrative Support Workers	439041	Insurance Claims and Policy Processing Clerks	1	Clerical
43	Office and Administrative Support Occupations	439	Other Office and Administrative Support Workers	439051	Mail Clerks and Mail Machine Operators, Except Postal Service	1	Clerical
43	Office and Administrative Support Occupations	439	Other Office and Administrative Support Workers	439061	Office Clerks, General	1	Clerical
43	Office and Administrative Support Occupations	439	Other Office and Administrative Support Workers	439071	Office Machine Operators, Except Computer	1	Clerical
43	Office and Administrative Support Occupations	439	Other Office and Administrative Support Workers	439081	Proofreaders and Copy Markers	1	Clerical
43	Office and Administrative Support Occupations	439	Other Office and Administrative Support Workers	439111	Statistical Assistants	1	Clerical
43	Office and Administrative Support Occupations	439	Other Office and Administrative Support Workers	439199	Office and Administrative Support Workers, All Other	1	Clerical
45	Farming, Fishing, and Forestry Occupations	451	Supervisors, Farming, Fishing, and Forestry Workers	451011	First-Line Supervisors/Managers of Farming, Fishing, and Forestry Workers	3	Farmer, Farm Manager
45	Farming, Fishing, and Forestry Occupations	451	Supervisors, Farming, Fishing, and Forestry Workers	451012	Farm Labor Contractors	3	Farmer, Farm Manager
45	Farming, Fishing, and Forestry Occupations	452	Agricultural Workers	452011	Agricultural Inspectors	1	Clerical
45	Farming, Fishing, and Forestry Occupations	452	Agricultural Workers	452021	Animal Breeders	2	Craftsperson

See notes at end of table.

Table F-1. Occupational coding crosswalk: 2006—Continued

General O*NET code	General O*NET category	Midlevel O*NET code	Midlevel O*NET category	Specific O*NET code	Specific O*NET category	ELS code	ELS category
45	Farming, Fishing, and Forestry Occupations	452	Agricultural Workers	452041	Graders and Sorters, Agricultural Products	5	Laborer
45	Farming, Fishing, and Forestry Occupations	452	Agricultural Workers	452091	Agricultural Equipment Operators	8	Operative
45	Farming, Fishing, and Forestry Occupations	452	Agricultural Workers	452092	Farmworkers and Laborers, Crop, Nursery, and Greenhouse	5	Laborer
45	Farming, Fishing, and Forestry Occupations	452	Agricultural Workers	452093	Farmworkers, Farm and Ranch Animals	5	Laborer
45	Farming, Fishing, and Forestry Occupations	452	Agricultural Workers	452099	Agricultural Workers, All Other	5 (also 1, 2, 8)	Laborer
45	Farming, Fishing, and Forestry Occupations	453	Fishing and Hunting Workers	453011	Fishers and Related Fishing Workers	5	Laborer
45	Farming, Fishing, and Forestry Occupations	453	Fishing and Hunting Workers	453021	Hunters and Trappers	5	Laborer
45	Farming, Fishing, and Forestry Occupations	454	Forest, Conservation, and Logging Workers	454011	Forest and Conservation Workers	5	Laborer
45	Farming, Fishing, and Forestry Occupations	454	Forest, Conservation, and Logging Workers	454021	Fallers	8	Operative
45	Farming, Fishing, and Forestry Occupations	454	Forest, Conservation, and Logging Workers	454022	Logging Equipment Operators	8	Operative
45	Farming, Fishing, and Forestry Occupations	454	Forest, Conservation, and Logging Workers	454023	Log Graders and Scalers	1	Clerical
45	Farming, Fishing, and Forestry Occupations	454	Forest, Conservation, and Logging Workers	454029	Logging Workers, All Other	8 (also 1, 5)	Operative
47	Construction and Extraction Occupations	471	Supervisors, Construction and Extraction Workers	471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	6	Manager, Administrator
47	Construction and Extraction Occupations	472	Construction Trades Workers	472011	Boilermakers	2	Craftsperson
47	Construction and Extraction Occupations	472	Construction Trades Workers	472021	Brickmasons and Blockmasons	2	Craftsperson
47	Construction and Extraction Occupations	472	Construction Trades Workers	472022	Stonemasons	2	Craftsperson
47	Construction and Extraction Occupations	472	Construction Trades Workers	472031	Carpenters	2	Craftsperson
47	Construction and Extraction Occupations	472	Construction Trades Workers	472041	Carpet Installers	2	Craftsperson

See notes at end of table.

Table F-1. Occupational coding crosswalk: 2006—Continued

General O*NET code	General O*NET category	Midlevel O*NET code	Midlevel O*NET category	Specific O*NET code	Specific O*NET category	ELS code	ELS category
47	Construction and Extraction Occupations	472	Construction Trades Workers	472042	Floor Layers, Except Carpet, Wood, and Hard Tiles	2	Craftsperson
47	Construction and Extraction Occupations	472	Construction Trades Workers	472043	Floor Sanders and Finishers	2	Craftsperson
47	Construction and Extraction Occupations	472	Construction Trades Workers	472044	Tile and Marble Setters	2	Craftsperson
47	Construction and Extraction Occupations	472	Construction Trades Workers	472051	Cement Masons and Concrete Finishers	2	Craftsperson
47	Construction and Extraction Occupations	472	Construction Trades Workers	472053	Terrazzo Workers and Finishers	2	Craftsperson
47	Construction and Extraction Occupations	472	Construction Trades Workers	472061	Construction Laborers	5	Laborer
47	Construction and Extraction Occupations	472	Construction Trades Workers	472071	Paving, Surfacing, and Tamping Equipment Operators	8	Operative
47	Construction and Extraction Occupations	472	Construction Trades Workers	472072	Pile-Driver Operators	8	Operative
47	Construction and Extraction Occupations	472	Construction Trades Workers	472073	Operating Engineers and Other Construction Equipment Operators	8	Operative
47	Construction and Extraction Occupations	472	Construction Trades Workers	472081	Drywall and Ceiling Tile Installers	2	Craftsperson
47	Construction and Extraction Occupations	472	Construction Trades Workers	472082	Tapers	2	Craftsperson
47	Construction and Extraction Occupations	472	Construction Trades Workers	472111	Electricians	2	Craftsperson
47	Construction and Extraction Occupations	472	Construction Trades Workers	472121	Glaziers	2	Craftsperson
47	Construction and Extraction Occupations	472	Construction Trades Workers	472131	Insulation Workers, Floor, Ceiling, and Wall	2	Craftsperson
47	Construction and Extraction Occupations	472	Construction Trades Workers	472132	Insulation Workers, Mechanical	2	Craftsperson
47	Construction and Extraction Occupations	472	Construction Trades Workers	472141	Painters, Construction and Maintenance	2	Craftsperson
47	Construction and Extraction Occupations	472	Construction Trades Workers	472142	Paperhangers	2	Craftsperson
47	Construction and Extraction Occupations	472	Construction Trades Workers	472151	Pipelayers	2	Craftsperson
47	Construction and Extraction Occupations	472	Construction Trades Workers	472152	Plumbers, Pipefitters, and Steamfitters	2	Craftsperson

See notes at end of table.

Table F-1. Occupational coding crosswalk: 2006—Continued

General O*NET code	General O*NET category	Midlevel O*NET code	Midlevel O*NET category	Specific O*NET code	Specific O*NET category	ELS code	ELS category
47	Construction and Extraction Occupations	472	Construction Trades Workers	472161	Plasterers and Stucco Masons	2	Craftsperson
47	Construction and Extraction Occupations	472	Construction Trades Workers	472171	Reinforcing Iron and Rebar Workers	2	Craftsperson
47	Construction and Extraction Occupations	472	Construction Trades Workers	472181	Roofers	2	Craftsperson
47	Construction and Extraction Occupations	472	Construction Trades Workers	472211	Sheet Metal Workers	2	Craftsperson
47	Construction and Extraction Occupations	472	Construction Trades Workers	472221	Structural Iron and Steel Workers	2	Craftsperson
47	Construction and Extraction Occupations	473	Helpers, Construction Trades	473011	Helpers--Brickmasons, Blockmasons, Stonemasons, and Tile and Marble Setters	5	Laborer
47	Construction and Extraction Occupations	473	Helpers, Construction Trades	473012	Helpers--Carpenters	5	Laborer
47	Construction and Extraction Occupations	473	Helpers, Construction Trades	473013	Helpers--Electricians	5	Laborer
47	Construction and Extraction Occupations	473	Helpers, Construction Trades	473014	Helpers--Painters, Paperhangers, Plasterers, and Stucco Masons	5	Laborer
47	Construction and Extraction Occupations	473	Helpers, Construction Trades	473015	Helpers--Pipelayers, Plumbers, Pipefitters, and Steamfitters	5	Laborer
47	Construction and Extraction Occupations	473	Helpers, Construction Trades	473016	Helpers--Roofers	5	Laborer
47	Construction and Extraction Occupations	473	Helpers, Construction Trades	473019	Helpers, Construction Trades, All Other	5	Laborer
47	Construction and Extraction Occupations	474	Other Construction and Related Workers	474011	Construction and Building Inspectors	1	Clerical
47	Construction and Extraction Occupations	474	Other Construction and Related Workers	474021	Elevator Installers and Repairers	2	Craftsperson
47	Construction and Extraction Occupations	474	Other Construction and Related Workers	474031	Fence Erectors	5	Laborer
47	Construction and Extraction Occupations	474	Other Construction and Related Workers	474041	Hazardous Materials Removal Workers	5	Laborer
47	Construction and Extraction Occupations	474	Other Construction and Related Workers	474051	Highway Maintenance Workers	8	Operative
47	Construction and Extraction Occupations	474	Other Construction and Related Workers	474061	Rail-Track Laying and Maintenance Equipment Operators	8	Operative

See notes at end of table.

Table F-1. Occupational coding crosswalk: 2006—Continued

General O*NET code	General O*NET category	Midlevel O*NET code	Midlevel O*NET category	Specific O*NET code	Specific O*NET category	ELS code	ELS category
47	Construction and Extraction Occupations	474	Other Construction and Related Workers	474071	Septic Tank Servicers and Sewer Pipe Cleaners	5	Laborer
47	Construction and Extraction Occupations	474	Other Construction and Related Workers	474091	Segmental Pavers	5	Laborer
47	Construction and Extraction Occupations	474	Other Construction and Related Workers	474099	Construction and Related Workers, All Other	5 (also 1, 2, 8)	Laborer
47	Construction and Extraction Occupations	475	Extraction Workers	475011	Derrick Operators, Oil and Gas	8	Operative
47	Construction and Extraction Occupations	475	Extraction Workers	475012	Rotary Drill Operators, Oil and Gas	8	Operative
47	Construction and Extraction Occupations	475	Extraction Workers	475013	Service Unit Operators, Oil, Gas, and Mining	8	Operative
47	Construction and Extraction Occupations	475	Extraction Workers	475021	Earth Drillers, Except Oil and Gas	8	Operative
47	Construction and Extraction Occupations	475	Extraction Workers	475031	Explosives Workers, Ordnance Handling Experts, and Blasters	8	Operative
47	Construction and Extraction Occupations	475	Extraction Workers	475041	Continuous Mining Machine Operators	8	Operative
47	Construction and Extraction Occupations	475	Extraction Workers	475042	Mine Cutting and Channeling Machine Operators	8	Operative
47	Construction and Extraction Occupations	475	Extraction Workers	475049	Mining Machine Operators, All Other	8	Operative
47	Construction and Extraction Occupations	475	Extraction Workers	475051	Rock Splitters, Quarry	8	Operative
47	Construction and Extraction Occupations	475	Extraction Workers	475061	Roof Bolters, Mining	8	Operative
47	Construction and Extraction Occupations	475	Extraction Workers	475071	Roustabouts, Oil and Gas	8	Operative
47	Construction and Extraction Occupations	475	Extraction Workers	475081	Helpers--Extraction Workers	5	Laborer
47	Construction and Extraction Occupations	475	Extraction Workers	475099	Extraction Workers, All Other	8 (also 5)	Operative
49	Installation, Maintenance, and Repair Occupations	491	Supervisors of Installation, Maintenance, and Repair Workers	491011	First-Line Supervisors/Managers of Mechanics, Installers, and Repairers	6	Manager, Administrator
49	Installation, Maintenance, and Repair Occupations	492	Electrical and Electronic Equipment Mechanics, Installers, and Repairers	492011	Computer, Automated Teller, and Office Machine Repairers	2	Craftsperson

See notes at end of table.

Table F-1. Occupational coding crosswalk: 2006—Continued

General O*NET code	General O*NET category	Midlevel O*NET code	Midlevel O*NET category	Specific O*NET code	Specific O*NET category	ELS code	ELS category
49	Installation, Maintenance, and Repair Occupations	492	Electrical and Electronic Equipment Mechanics, Installers, and Repairers	492021	Radio Mechanics	2	Craftsperson
49	Installation, Maintenance, and Repair Occupations	492	Electrical and Electronic Equipment Mechanics, Installers, and Repairers	492022	Telecommunications Equipment Installers and Repairers, Except Line Installers	2	Craftsperson
49	Installation, Maintenance, and Repair Occupations	492	Electrical and Electronic Equipment Mechanics, Installers, and Repairers	492091	Avionics Technicians	2	Craftsperson
49	Installation, Maintenance, and Repair Occupations	492	Electrical and Electronic Equipment Mechanics, Installers, and Repairers	492092	Electric Motor, Power Tool, and Related Repairers	2	Craftsperson
49	Installation, Maintenance, and Repair Occupations	492	Electrical and Electronic Equipment Mechanics, Installers, and Repairers	492093	Electrical and Electronics Installers and Repairers, Transportation Equipment	2	Craftsperson
49	Installation, Maintenance, and Repair Occupations	492	Electrical and Electronic Equipment Mechanics, Installers, and Repairers	492094	Electrical and Electronics Repairers, Commercial and Industrial Equipment	2	Craftsperson
49	Installation, Maintenance, and Repair Occupations	492	Electrical and Electronic Equipment Mechanics, Installers, and Repairers	492095	Electrical and Electronics Repairers, Powerhouse, Substation, and Relay	2	Craftsperson
49	Installation, Maintenance, and Repair Occupations	492	Electrical and Electronic Equipment Mechanics, Installers, and Repairers	492096	Electronic Equipment Installers and Repairers, Motor Vehicles	2	Craftsperson
49	Installation, Maintenance, and Repair Occupations	492	Electrical and Electronic Equipment Mechanics, Installers, and Repairers	492097	Electronic Home Entertainment Equipment Installers and Repairers	2	Craftsperson
49	Installation, Maintenance, and Repair Occupations	492	Electrical and Electronic Equipment Mechanics, Installers, and Repairers	492098	Security and Fire Alarm Systems Installers	2	Craftsperson
49	Installation, Maintenance, and Repair Occupations	493	Vehicle and Mobile Equipment Mechanics, Installers, and Repairers	493011	Aircraft Mechanics and Service Technicians	2	Craftsperson
49	Installation, Maintenance, and Repair Occupations	493	Vehicle and Mobile Equipment Mechanics, Installers, and Repairers	493021	Automotive Body and Related Repairers	2	Craftsperson
49	Installation, Maintenance, and Repair Occupations	493	Vehicle and Mobile Equipment Mechanics, Installers, and Repairers	493022	Automotive Glass Installers and Repairers	2	Craftsperson

See notes at end of table.

Table F-1. Occupational coding crosswalk: 2006—Continued

General O*NET code	General O*NET category	Midlevel O*NET code	Midlevel O*NET category	Specific O*NET code	Specific O*NET category	ELS code	ELS category
49	Installation, Maintenance, and Repair Occupations	493	Vehicle and Mobile Equipment Mechanics, Installers, and Repairers	493023	Automotive Service Technicians and Mechanics	2	Craftsperson
49	Installation, Maintenance, and Repair Occupations	493	Vehicle and Mobile Equipment Mechanics, Installers, and Repairers	493031	Bus and Truck Mechanics and Diesel Engine Specialists	2	Craftsperson
49	Installation, Maintenance, and Repair Occupations	493	Vehicle and Mobile Equipment Mechanics, Installers, and Repairers	493041	Farm Equipment Mechanics	2	Craftsperson
49	Installation, Maintenance, and Repair Occupations	493	Vehicle and Mobile Equipment Mechanics, Installers, and Repairers	493042	Mobile Heavy Equipment Mechanics, Except Engines	2	Craftsperson
49	Installation, Maintenance, and Repair Occupations	493	Vehicle and Mobile Equipment Mechanics, Installers, and Repairers	493043	Rail Car Repairers	2	Craftsperson
49	Installation, Maintenance, and Repair Occupations	493	Vehicle and Mobile Equipment Mechanics, Installers, and Repairers	493051	Motorboat Mechanics	2	Craftsperson
49	Installation, Maintenance, and Repair Occupations	493	Vehicle and Mobile Equipment Mechanics, Installers, and Repairers	493052	Motorcycle Mechanics	2	Craftsperson
49	Installation, Maintenance, and Repair Occupations	493	Vehicle and Mobile Equipment Mechanics, Installers, and Repairers	493053	Outdoor Power Equipment and Other Small Engine Mechanics	2	Craftsperson
49	Installation, Maintenance, and Repair Occupations	493	Vehicle and Mobile Equipment Mechanics, Installers, and Repairers	493091	Bicycle Repairers	2	Craftsperson
49	Installation, Maintenance, and Repair Occupations	493	Vehicle and Mobile Equipment Mechanics, Installers, and Repairers	493092	Recreational Vehicle Service Technicians	2	Craftsperson
49	Installation, Maintenance, and Repair Occupations	493	Vehicle and Mobile Equipment Mechanics, Installers, and Repairers	493093	Tire Repairers and Changers	2	Craftsperson
49	Installation, Maintenance, and Repair Occupations	499	Other Installation, Maintenance, and Repair Occupations	499011	Mechanical Door Repairers	2	Craftsperson
49	Installation, Maintenance, and Repair Occupations	499	Other Installation, Maintenance, and Repair Occupations	499012	Control and Valve Installers and Repairers, Except Mechanical Door	2	Craftsperson
49	Installation, Maintenance, and Repair Occupations	499	Other Installation, Maintenance, and Repair Occupations	499021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	2	Craftsperson

See notes at end of table.

Table F-1. Occupational coding crosswalk: 2006—Continued

General O*NET code	General O*NET category	Midlevel O*NET code	Midlevel O*NET category	Specific O*NET code	Specific O*NET category	ELS code	ELS category
49	Installation, Maintenance, and Repair Occupations	499	Other Installation, Maintenance, and Repair Occupations	499031	Home Appliance Repairers	2	Craftsperson
49	Installation, Maintenance, and Repair Occupations	499	Other Installation, Maintenance, and Repair Occupations	499041	Industrial Machinery Mechanics	2	Craftsperson
49	Installation, Maintenance, and Repair Occupations	499	Other Installation, Maintenance, and Repair Occupations	499042	Maintenance and Repair Workers, General	8	Operative
49	Installation, Maintenance, and Repair Occupations	499	Other Installation, Maintenance, and Repair Occupations	499043	Maintenance Workers, Machinery	8	Operative
49	Installation, Maintenance, and Repair Occupations	499	Other Installation, Maintenance, and Repair Occupations	499044	Millwrights	2	Craftsperson
49	Installation, Maintenance, and Repair Occupations	499	Other Installation, Maintenance, and Repair Occupations	499045	Refractory Materials Repairers, Except Brickmasons	2	Craftsperson
49	Installation, Maintenance, and Repair Occupations	499	Other Installation, Maintenance, and Repair Occupations	499051	Electrical Power-Line Installers and Repairers	2	Craftsperson
49	Installation, Maintenance, and Repair Occupations	499	Other Installation, Maintenance, and Repair Occupations	499052	Telecommunications Line Installers and Repairers	2	Craftsperson
49	Installation, Maintenance, and Repair Occupations	499	Other Installation, Maintenance, and Repair Occupations	499061	Camera and Photographic Equipment Repairers	2	Craftsperson
49	Installation, Maintenance, and Repair Occupations	499	Other Installation, Maintenance, and Repair Occupations	499062	Medical Equipment Repairers	2	Craftsperson
49	Installation, Maintenance, and Repair Occupations	499	Other Installation, Maintenance, and Repair Occupations	499063	Musical Instrument Repairers and Tuners	2	Craftsperson
49	Installation, Maintenance, and Repair Occupations	499	Other Installation, Maintenance, and Repair Occupations	499064	Watch Repairers	2	Craftsperson
49	Installation, Maintenance, and Repair Occupations	499	Other Installation, Maintenance, and Repair Occupations	499069	Precision Instrument and Equipment Repairers, All Other	2	Craftsperson
49	Installation, Maintenance, and Repair Occupations	499	Other Installation, Maintenance, and Repair Occupations	499091	Coin, Vending, and Amusement Machine Servicers and Repairers	2	Craftsperson
49	Installation, Maintenance, and Repair Occupations	499	Other Installation, Maintenance, and Repair Occupations	499092	Commercial Divers	2	Craftsperson
49	Installation, Maintenance, and Repair Occupations	499	Other Installation, Maintenance, and Repair Occupations	499093	Fabric Menders, Except Garment	2	Craftsperson
49	Installation, Maintenance, and Repair Occupations	499	Other Installation, Maintenance, and Repair Occupations	499094	Locksmiths and Safe Repairers	2	Craftsperson
49	Installation, Maintenance, and Repair Occupations	499	Other Installation, Maintenance, and Repair Occupations	499095	Manufactured Building and Mobile Home Installers	2	Craftsperson
49	Installation, Maintenance, and Repair Occupations	499	Other Installation, Maintenance, and Repair Occupations	499096	Riggers	2	Craftsperson

See notes at end of table.

Table F-1. Occupational coding crosswalk: 2006—Continued

General O*NET code	General O*NET category	Midlevel O*NET code	Midlevel O*NET category	Specific O*NET code	Specific O*NET category	ELS code	ELS category
49	Installation, Maintenance, and Repair Occupations	499	Other Installation, Maintenance, and Repair Occupations	499097	Signal and Track Switch Repairers	2	Craftsperson
49	Installation, Maintenance, and Repair Occupations	499	Other Installation, Maintenance, and Repair Occupations	499098	Helpers--Installation, Maintenance, and Repair Workers	5	Laborer
49	Installation, Maintenance, and Repair Occupations	499	Other Installation, Maintenance, and Repair Occupations	499099	Installation, Maintenance, and Repair Workers, All Other	2	Craftsperson
51	Production Occupations	511	Supervisors, Production Workers	511011	First-Line Supervisors/Managers of Production and Operating Workers	6	Manager, Administrator
51	Production Occupations	512	Assemblers and Fabricators	512011	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	8	Operative
51	Production Occupations	512	Assemblers and Fabricators	512021	Coil Winders, Tapers, and Finishers	8	Operative
51	Production Occupations	512	Assemblers and Fabricators	512022	Electrical and Electronic Equipment Assemblers	8	Operative
51	Production Occupations	512	Assemblers and Fabricators	512023	Electromechanical Equipment Assemblers	8	Operative
51	Production Occupations	512	Assemblers and Fabricators	512031	Engine and Other Machine Assemblers	8	Operative
51	Production Occupations	512	Assemblers and Fabricators	512041	Structural Metal Fabricators and Fitters	8	Operative
51	Production Occupations	512	Assemblers and Fabricators	512091	Fiberglass Laminators and Fabricators	8	Operative
51	Production Occupations	512	Assemblers and Fabricators	512092	Team Assemblers	8	Operative
51	Production Occupations	512	Assemblers and Fabricators	512093	Timing Device Assemblers, Adjusters, and Calibrators	8	Operative
51	Production Occupations	512	Assemblers and Fabricators	512099	Assemblers and Fabricators, All Other	8	Operative
51	Production Occupations	513	Food Processing Workers	513011	Bakers	2	Craftsperson
51	Production Occupations	513	Food Processing Workers	513021	Butchers and Meat Cutters	8	Operative
51	Production Occupations	513	Food Processing Workers	513022	Meat, Poultry, and Fish Cutters and Trimmers	8	Operative
51	Production Occupations	513	Food Processing Workers	513023	Slaughterers and Meat Packers	8	Operative
51	Production Occupations	513	Food Processing Workers	513091	Food and Tobacco Roasting, Baking, and Drying Machine Operators and Tenders	8	Operative
51	Production Occupations	513	Food Processing Workers	513092	Food Batchmakers	8	Operative
51	Production Occupations	513	Food Processing Workers	513093	Food Cooking Machine Operators and Tenders	8	Operative
51	Production Occupations	514	Metal Workers and Plastic Workers	514011	Computer-Controlled Machine Tool Operators, Metal and Plastic	8	Operative
51	Production Occupations	514	Metal Workers and Plastic Workers	514012	Numerical Tool and Process Control Programmers	8	Operative

See notes at end of table.

Table F-1. Occupational coding crosswalk: 2006—Continued

General O*NET code	General O*NET category	Midlevel O*NET code	Midlevel O*NET category	Specific O*NET code	Specific O*NET category	ELS code	ELS category
51	Production Occupations	514	Metal Workers and Plastic Workers	514021	Extruding and Drawing Machine Setters, Operators, and Tenders, Metal and Plastic	8	Operative
51	Production Occupations	514	Metal Workers and Plastic Workers	514022	Forging Machine Setters, Operators, and Tenders, Metal and Plastic	8	Operative
51	Production Occupations	514	Metal Workers and Plastic Workers	514023	Rolling Machine Setters, Operators, and Tenders, Metal and Plastic	8	Operative
51	Production Occupations	514	Metal Workers and Plastic Workers	514031	Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	8	Operative
51	Production Occupations	514	Metal Workers and Plastic Workers	514032	Drilling and Boring Machine Tool Setters, Operators, and Tenders, Metal and Plastic	8	Operative
51	Production Occupations	514	Metal Workers and Plastic Workers	514033	Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators, and Tenders, Metal and Plastic	8	Operative
51	Production Occupations	514	Metal Workers and Plastic Workers	514034	Lathe and Turning Machine Tool Setters, Operators, and Tenders, Metal and Plastic	8	Operative
51	Production Occupations	514	Metal Workers and Plastic Workers	514035	Milling and Planing Machine Setters, Operators, and Tenders, Metal and Plastic	8	Operative
51	Production Occupations	514	Metal Workers and Plastic Workers	514041	Machinists	2	Craftsperson
51	Production Occupations	514	Metal Workers and Plastic Workers	514051	Metal-Refining Furnace Operators and Tenders	8	Operative
51	Production Occupations	514	Metal Workers and Plastic Workers	514052	Pourers and Casters, Metal	8	Operative
51	Production Occupations	514	Metal Workers and Plastic Workers	514061	Model Makers, Metal and Plastic	8	Operative
51	Production Occupations	514	Metal Workers and Plastic Workers	514062	Patternmakers, Metal and Plastic	8	Operative
51	Production Occupations	514	Metal Workers and Plastic Workers	514071	Foundry Mold and Coremakers	8	Operative
51	Production Occupations	514	Metal Workers and Plastic Workers	514072	Molding, Coremaking, and Casting Machine Setters, Operators, and Tenders, Metal and Plastic	8	Operative
51	Production Occupations	514	Metal Workers and Plastic Workers	514081	Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic	8	Operative
51	Production Occupations	514	Metal Workers and Plastic Workers	514111	Tool and Die Makers	2	Craftsperson
51	Production Occupations	514	Metal Workers and Plastic Workers	514121	Welders, Cutters, Solderers, and Brazers	8	Operative
51	Production Occupations	514	Metal Workers and Plastic Workers	514122	Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	8	Operative

See notes at end of table.

Table F-1. Occupational coding crosswalk: 2006—Continued

General O*NET code	General O*NET category	Midlevel O*NET code	Midlevel O*NET category	Specific O*NET code	Specific O*NET category	ELS code	ELS category
51	Production Occupations	514	Metal Workers and Plastic Workers	514191	Heat Treating Equipment Setters, Operators, and Tenders, Metal and Plastic	8	Operative
51	Production Occupations	514	Metal Workers and Plastic Workers	514192	Lay-Out Workers, Metal and Plastic	8	Operative
51	Production Occupations	514	Metal Workers and Plastic Workers	514193	Plating and Coating Machine Setters, Operators, and Tenders, Metal and Plastic	8	Operative
51	Production Occupations	514	Metal Workers and Plastic Workers	514194	Tool Grinders, Filers, and Sharpeners	8	Operative
51	Production Occupations	514	Metal Workers and Plastic Workers	514199	Metal Workers and Plastic Workers, All Other	8 (also 2)	Operative
51	Production Occupations	515	Printing Workers	515011	Bindery Workers	8	Operative
51	Production Occupations	515	Printing Workers	515012	Bookbinders	8	Operative
51	Production Occupations	515	Printing Workers	515021	Job Printers	8	Operative
51	Production Occupations	515	Printing Workers	515022	Prepress Technicians and Workers	8	Operative
51	Production Occupations	515	Printing Workers	515023	Printing Machine Operators	8	Operative
51	Production Occupations	516	Textile, Apparel, and Furnishings Workers	516011	Laundry and Dry-Cleaning Workers	15	Service
51	Production Occupations	516	Textile, Apparel, and Furnishings Workers	516021	Pressers, Textile, Garment, and Related Materials	15	Service
51	Production Occupations	516	Textile, Apparel, and Furnishings Workers	516031	Sewing Machine Operators	8	Operative
51	Production Occupations	516	Textile, Apparel, and Furnishings Workers	516041	Shoe and Leather Workers and Repairers	8	Operative
51	Production Occupations	516	Textile, Apparel, and Furnishings Workers	516042	Shoe Machine Operators and Tenders	8	Operative
51	Production Occupations	516	Textile, Apparel, and Furnishings Workers	516051	Sewers, Hand	2	Craftsperson
51	Production Occupations	516	Textile, Apparel, and Furnishings Workers	516052	Tailors, Dressmakers, and Custom Sewers	2	Craftsperson
51	Production Occupations	516	Textile, Apparel, and Furnishings Workers	516061	Textile Bleaching and Dyeing Machine Operators and Tenders	8	Operative
51	Production Occupations	516	Textile, Apparel, and Furnishings Workers	516062	Textile Cutting Machine Setters, Operators, and Tenders	8	Operative
51	Production Occupations	516	Textile, Apparel, and Furnishings Workers	516063	Textile Knitting and Weaving Machine Setters, Operators, and Tenders	8	Operative

See notes at end of table.

Table F-1. Occupational coding crosswalk: 2006—Continued

General O*NET code	General O*NET category	Midlevel O*NET code	Midlevel O*NET category	Specific O*NET code	Specific O*NET category	ELS code	ELS category
51	Production Occupations	516	Textile, Apparel, and Furnishings Workers	516064	Textile Winding, Twisting, and Drawing Out Machine Setters, Operators, and Tenders	8	Operative
51	Production Occupations	516	Textile, Apparel, and Furnishings Workers	516091	Extruding and Forming Machine Setters, Operators, and Tenders, Synthetic and Glass Fibers	8	Operative
51	Production Occupations	516	Textile, Apparel, and Furnishings Workers	516092	Fabric and Apparel Patternmakers	8	Operative
51	Production Occupations	516	Textile, Apparel, and Furnishings Workers	516093	Upholsterers	8	Operative
51	Production Occupations	516	Textile, Apparel, and Furnishings Workers	516099	Textile, Apparel, and Furnishings Workers, All Other	8 (also 2, 15)	Operative
51	Production Occupations	517	Woodworkers	517011	Cabinetmakers and Bench Carpenters	2	Craftsperson
51	Production Occupations	517	Woodworkers	517021	Furniture Finishers	2	Craftsperson
51	Production Occupations	517	Woodworkers	517031	Model Makers, Wood	2	Craftsperson
51	Production Occupations	517	Woodworkers	517032	Patternmakers, Wood	2	Craftsperson
51	Production Occupations	517	Woodworkers	517041	Sawing Machine Setters, Operators, and Tenders, Wood	8	Operative
51	Production Occupations	517	Woodworkers	517042	Woodworking Machine Setters, Operators, and Tenders, Except Sawing	8	Operative
51	Production Occupations	517	Woodworkers	517099	Woodworkers, All Other	2 (also 8)	Craftsperson
51	Production Occupations	518	Plant and System Operators	518011	Nuclear Power Reactor Operators	8	Operative
51	Production Occupations	518	Plant and System Operators	518012	Power Distributors and Dispatchers	8	Operative
51	Production Occupations	518	Plant and System Operators	518013	Power Plant Operators	8	Operative
51	Production Occupations	518	Plant and System Operators	518021	Stationary Engineers and Boiler Operators	8	Operative
51	Production Occupations	518	Plant and System Operators	518031	Water and Liquid Waste Treatment Plant and System Operators	8	Operative
51	Production Occupations	518	Plant and System Operators	518091	Chemical Plant and System Operators	8	Operative
51	Production Occupations	518	Plant and System Operators	518092	Gas Plant Operators	8	Operative
51	Production Occupations	518	Plant and System Operators	518093	Petroleum Pump System Operators, Refinery Operators, and Gaugers	8	Operative
51	Production Occupations	518	Plant and System Operators	518099	Plant and System Operators, All Other	8	Operative
51	Production Occupations	519	Other Production Occupations	519011	Chemical Equipment Operators and Tenders	8	Operative

See notes at end of table.

Table F-1. Occupational coding crosswalk: 2006—Continued

General O*NET code	General O*NET category	Midlevel O*NET code	Midlevel O*NET category	Specific O*NET code	Specific O*NET category	ELS code	ELS category
51	Production Occupations	519	Other Production Occupations	519012	Separating, Filtering, Clarifying, Precipitating, and Still Machine Setters, Operators, and Tenders	8	Operative
51	Production Occupations	519	Other Production Occupations	519021	Crushing, Grinding, and Polishing Machine Setters, Operators, and Tenders	8	Operative
51	Production Occupations	519	Other Production Occupations	519022	Grinding and Polishing Workers, Hand	5	Laborer
51	Production Occupations	519	Other Production Occupations	519023	Mixing and Blending Machine Setters, Operators, and Tenders	8	Operative
51	Production Occupations	519	Other Production Occupations	519031	Cutters and Trimmers, Hand	5	Laborer
51	Production Occupations	519	Other Production Occupations	519032	Cutting and Slicing Machine Setters, Operators, and Tenders	8	Operative
51	Production Occupations	519	Other Production Occupations	519041	Extruding, Forming, Pressing, and Compacting Machine Setters, Operators, and Tenders	8	Operative
51	Production Occupations	519	Other Production Occupations	519051	Furnace, Kiln, Oven, Drier, and Kettle Operators and Tenders	8	Operative
51	Production Occupations	519	Other Production Occupations	519061	Inspectors, Testers, Sorters, Samplers, and Weighers	8	Operative
51	Production Occupations	519	Other Production Occupations	519071	Jewelers and Precious Stone and Metal Workers	2	Craftsperson
51	Production Occupations	519	Other Production Occupations	519081	Dental Laboratory Technicians	16	Technical
51	Production Occupations	519	Other Production Occupations	519082	Medical Appliance Technicians	16	Technical
51	Production Occupations	519	Other Production Occupations	519083	Ophthalmic Laboratory Technicians	16	Technical
51	Production Occupations	519	Other Production Occupations	519111	Packaging and Filling Machine Operators and Tenders	8	Operative
51	Production Occupations	519	Other Production Occupations	519121	Coating, Painting, and Spraying Machine Setters, Operators, and Tenders	8	Operative
51	Production Occupations	519	Other Production Occupations	519122	Painters, Transportation Equipment	8	Operative
51	Production Occupations	519	Other Production Occupations	519123	Painting, Coating, and Decorating Workers	2	Craftsperson
51	Production Occupations	519	Other Production Occupations	519131	Photographic Process Workers	15	Service
51	Production Occupations	519	Other Production Occupations	519132	Photographic Processing Machine Operators	8	Operative
51	Production Occupations	519	Other Production Occupations	519141	Semiconductor Processors	8	Operative
51	Production Occupations	519	Other Production Occupations	519191	Cementing and Gluing Machine Operators and Tenders	8	Operative

See notes at end of table.

Table F-1. Occupational coding crosswalk: 2006—Continued

General O*NET code	General O*NET category	Midlevel O*NET code	Midlevel O*NET category	Specific O*NET code	Specific O*NET category	ELS code	ELS category
51	Production Occupations	519	Other Production Occupations	519192	Cleaning, Washing, and Metal Pickling Equipment Operators and Tenders	8	Operative
51	Production Occupations	519	Other Production Occupations	519193	Cooling and Freezing Equipment Operators and Tenders	8	Operative
51	Production Occupations	519	Other Production Occupations	519194	Etchers and Engravers	8	Operative
51	Production Occupations	519	Other Production Occupations	519195	Molders, Shapers, and Casters, Except Metal and Plastic	8	Operative
51	Production Occupations	519	Other Production Occupations	519196	Paper Goods Machine Setters, Operators, and Tenders	8	Operative
51	Production Occupations	519	Other Production Occupations	519197	Tire Builders	8	Operative
51	Production Occupations	519	Other Production Occupations	519198	Helpers--Production Workers	5	Laborer
51	Production Occupations	519	Other Production Occupations	519199	Production Workers, All Other	8 (also 2, 5, 15, 16)	Operative
53	Transportation and Material Moving Occupations	531	Supervisors, Transportation and Material Moving Workers	531011	Aircraft Cargo Handling Supervisors	6	Manager, Administrator
53	Transportation and Material Moving Occupations	531	Supervisors, Transportation and Material Moving Workers	531021	First-Line Supervisors/Managers of Helpers, Laborers, and Material Movers, Hand	6	Manager, Administrator
53	Transportation and Material Moving Occupations	531	Supervisors, Transportation and Material Moving Workers	531031	First-Line Supervisors/Managers of Transportation and Material-Moving Machine and Vehicle Operators	6	Manager, Administrator
53	Transportation and Material Moving Occupations	532	Air Transportation Workers	532011	Airline Pilots, Copilots, and Flight Engineers	9	Professional A
53	Transportation and Material Moving Occupations	532	Air Transportation Workers	532012	Commercial Pilots	9	Professional A
53	Transportation and Material Moving Occupations	532	Air Transportation Workers	532021	Air Traffic Controllers	9	Professional A
53	Transportation and Material Moving Occupations	532	Air Transportation Workers	532022	Airfield Operations Specialists	9	Professional A
53	Transportation and Material Moving Occupations	533	Motor Vehicle Operators	533011	Ambulance Drivers and Attendants, Except Emergency Medical Technicians	8	Operative
53	Transportation and Material Moving Occupations	533	Motor Vehicle Operators	533021	Bus Drivers, Transit and Intercity	8	Operative
53	Transportation and Material Moving Occupations	533	Motor Vehicle Operators	533022	Bus Drivers, School	8	Operative
53	Transportation and Material Moving Occupations	533	Motor Vehicle Operators	533031	Driver/Sales Workers	8	Operative

See notes at end of table.

Table F-1. Occupational coding crosswalk: 2006—Continued

General O*NET code	General O*NET category	Midlevel O*NET code	Midlevel O*NET category	Specific O*NET code	Specific O*NET category	ELS code	ELS category
53	Transportation and Material Moving Occupations	533	Motor Vehicle Operators	533032	Truck Drivers, Heavy and Tractor-Trailer	8	Operative
53	Transportation and Material Moving Occupations	533	Motor Vehicle Operators	533033	Truck Drivers, Light or Delivery Services	8	Operative
53	Transportation and Material Moving Occupations	533	Motor Vehicle Operators	533041	Taxi Drivers and Chauffeurs	8	Operative
53	Transportation and Material Moving Occupations	533	Motor Vehicle Operators	533099	Motor Vehicle Operators, All Other	8	Operative
53	Transportation and Material Moving Occupations	534	Rail Transportation Workers	534011	Locomotive Engineers	9	Professional A
53	Transportation and Material Moving Occupations	534	Rail Transportation Workers	534012	Locomotive Firers	8	Operative
53	Transportation and Material Moving Occupations	534	Rail Transportation Workers	534013	Rail Yard Engineers, Dinkey Operators, and Hostlers	8	Operative
53	Transportation and Material Moving Occupations	534	Rail Transportation Workers	534021	Railroad Brake, Signal, and Switch Operators	8	Operative
53	Transportation and Material Moving Occupations	534	Rail Transportation Workers	534031	Railroad Conductors and Yardmasters	9	Operative
53	Transportation and Material Moving Occupations	534	Rail Transportation Workers	534041	Subway and Streetcar Operators	8	Operative
53	Transportation and Material Moving Occupations	534	Rail Transportation Workers	534099	Rail Transportation Workers, All Other	8 (also 9)	Operative
53	Transportation and Material Moving Occupations	535	Water Transportation Workers	535011	Sailors and Marine Oilers	8	Operative
53	Transportation and Material Moving Occupations	535	Water Transportation Workers	535021	Captains, Mates, and Pilots of Water Vessels	9	Professional A
53	Transportation and Material Moving Occupations	535	Water Transportation Workers	535022	Motorboat Operators	8	Operative
53	Transportation and Material Moving Occupations	535	Water Transportation Workers	535031	Ship Engineers	9	Professional A
53	Transportation and Material Moving Occupations	536	Other Transportation Workers	536011	Bridge and Lock Tenders	8	Operative
53	Transportation and Material Moving Occupations	536	Other Transportation Workers	536021	Parking Lot Attendants	15	Service
53	Transportation and Material Moving Occupations	536	Other Transportation Workers	536031	Service Station Attendants	15	Service
53	Transportation and Material Moving Occupations	536	Other Transportation Workers	536041	Traffic Technicians	16	Technical

See notes at end of table.

Table F-1. Occupational coding crosswalk: 2006—Continued

General O*NET code	General O*NET category	Midlevel O*NET code	Midlevel O*NET category	Specific O*NET code	Specific O*NET category	ELS code	ELS category
53	Transportation and Material Moving Occupations	536	Other Transportation Workers	536051	Transportation Inspectors	1	Clerical
53	Transportation and Material Moving Occupations	536	Other Transportation Workers	536099	Transportation Workers, All Other	15 (also 1, 8, 16)	Service
53	Transportation and Material Moving Occupations	537	Material Moving Workers	537011	Conveyor Operators and Tenders	8	Operative
53	Transportation and Material Moving Occupations	537	Material Moving Workers	537021	Crane and Tower Operators	8	Operative
53	Transportation and Material Moving Occupations	537	Material Moving Workers	537031	Dredge Operators	8	Operative
53	Transportation and Material Moving Occupations	537	Material Moving Workers	537032	Excavating and Loading Machine and Dragline Operators	8	Operative
53	Transportation and Material Moving Occupations	537	Material Moving Workers	537033	Loading Machine Operators, Underground Mining	8	Operative
53	Transportation and Material Moving Occupations	537	Material Moving Workers	537041	Hoist and Winch Operators	8	Operative
53	Transportation and Material Moving Occupations	537	Material Moving Workers	537051	Industrial Truck and Tractor Operators	8	Operative
53	Transportation and Material Moving Occupations	537	Material Moving Workers	537061	Cleaners of Vehicles and Equipment	5	Laborer
53	Transportation and Material Moving Occupations	537	Material Moving Workers	537062	Laborers and Freight, Stock, and Material Movers, Hand	5	Laborer
53	Transportation and Material Moving Occupations	537	Material Moving Workers	537063	Machine Feeders and Offbearers	5	Laborer
53	Transportation and Material Moving Occupations	537	Material Moving Workers	537064	Packers and Packagers, Hand	5	Laborer
53	Transportation and Material Moving Occupations	537	Material Moving Workers	537071	Gas Compressor and Gas Pumping Station Operators	8	Operative
53	Transportation and Material Moving Occupations	537	Material Moving Workers	537072	Pump Operators, Except Wellhead Pumpers	8	Operative
53	Transportation and Material Moving Occupations	537	Material Moving Workers	537073	Wellhead Pumpers	8	Operative
53	Transportation and Material Moving Occupations	537	Material Moving Workers	537081	Refuse and Recyclable Material Collectors	5	Laborer
53	Transportation and Material Moving Occupations	537	Material Moving Workers	537111	Shuttle Car Operators	8	Operative
53	Transportation and Material Moving Occupations	537	Material Moving Workers	537121	Tank Car, Truck, and Ship Loaders	5	Laborer

See notes at end of table.

Table F-1. Occupational coding crosswalk: 2006—Continued

General O*NET code	General O*NET category	Midlevel O*NET code	Midlevel O*NET category	Specific O*NET code	Specific O*NET category	ELS code	ELS category
53	Transportation and Material Moving Occupations	537	Material Moving Workers	537199	Material Moving Workers, All Other	8 (also 5)	Operative
55	Military Specific Occupations	551	Military Officer Special and Tactical Operations Leaders/Managers	551011	Air Crew Officers	7	Military
55	Military Specific Occupations	551	Military Officer Special and Tactical Operations Leaders/Managers	551012	Aircraft Launch and Recovery Officers	7	Military
55	Military Specific Occupations	551	Military Officer Special and Tactical Operations Leaders/Managers	551013	Armored Assault Vehicle Officers	7	Military
55	Military Specific Occupations	551	Military Officer Special and Tactical Operations Leaders/Managers	551014	Artillery and Missile Officers	7	Military
55	Military Specific Occupations	551	Military Officer Special and Tactical Operations Leaders/Managers	551015	Command and Control Center Officers	7	Military
55	Military Specific Occupations	551	Military Officer Special and Tactical Operations Leaders/Managers	551016	Infantry Officers	7	Military
55	Military Specific Occupations	551	Military Officer Special and Tactical Operations Leaders/Managers	551017	Special Forces Officers	7	Military
55	Military Specific Occupations	551	Military Officer Special and Tactical Operations Leaders/Managers	551019	Military Officer Special and Tactical Operations Leaders/Managers, All Other	7	Military
55	Military Specific Occupations	552	First-Line Enlisted Military Supervisor/Managers	552011	First-Line Supervisors/Managers of Air Crew Members	7	Military
55	Military Specific Occupations	552	First-Line Enlisted Military Supervisor/Managers	552012	First-Line Supervisors/Managers of Weapons Specialists/Crew Members	7	Military
55	Military Specific Occupations	552	First-Line Enlisted Military Supervisor/Managers	552013	First-Line Supervisors/Managers of All Other Tactical Operations Specialists	7	Military
55	Military Specific Occupations	553	Military Enlisted Tactical Operations and Air/Weapons Specialists and Crew Members	553011	Air Crew Members	7	Military
55	Military Specific Occupations	553	Military Enlisted Tactical Operations and Air/Weapons Specialists and Crew Members	553012	Aircraft Launch and Recovery Specialists	7	Military
55	Military Specific Occupations	553	Military Enlisted Tactical Operations and Air/Weapons Specialists and Crew Members	553013	Armored Assault Vehicle Crew Members	7	Military
55	Military Specific Occupations	553	Military Enlisted Tactical Operations and Air/Weapons Specialists and Crew Members	553014	Artillery and Missile Crew Members	7	Military
55	Military Specific Occupations	553	Military Enlisted Tactical Operations and Air/Weapons Specialists and Crew Members	553015	Command and Control Center Specialists	7	Military

See notes at end of table.

Table F-1. Occupational coding crosswalk: 2006—Continued

General O*NET code	General O*NET category	Midlevel O*NET code	Midlevel O*NET category	Specific O*NET code	Specific O*NET category	ELS code	ELS category
55	Military Specific Occupations	553	Military Enlisted Tactical Operations and Air/Weapons Specialists and Crew Members	553016	Infantry	7	Military
55	Military Specific Occupations	553	Military Enlisted Tactical Operations and Air/Weapons Specialists and Crew Members	553017	Radar and Sonar Technicians	7	Military
55	Military Specific Occupations	553	Military Enlisted Tactical Operations and Air/Weapons Specialists and Crew Members	553018	Special Forces	7	Military
55	Military Specific Occupations	553	Military Enlisted Tactical Operations and Air/Weapons Specialists and Crew Members	553019	Military Enlisted Tactical Operations and Air/Weapons Specialists and Crew Members, All Other	7	Military

NOTE: O*NET OnLine was developed for the U.S. Department of Labor by the National Center for O*NET Development.

SOURCE: O*NET Online: The Online Occupational Information Network, available at http://online.onetcenter.org/. 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 G
Transcript Standard Errors and Design Effects

Table G-1. Student design effects, by survey item using transcript weight, all respondents: 2004–05

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Left school in 2004	F1RDTLFT	89.2	0.44	0.27	13,700	2.81	1.68
Left school with standard diploma	F1RREASL = 1	85.1	0.52	0.30	14,400	3.11	1.76
Total CUs in mathematics	F1RMAT_C	3.3	0.02	0.01	14,900	5.10	2.26
Total CUs in science	F1RSCI_C	3.0	0.02	0.01	14,900	4.54	2.13
Total CUs in English	F1RENG_C	4.0	0.02	0.01	14,900	4.70	2.17
Total CUs in social studies	F1RSOC_C	3.7	0.03	0.01	14,900	7.35	2.71
Total CUs in fine arts	F1RFIN_C	1.8	0.03	0.01	14,900	4.18	2.04
Total CUs in non-English language	F1RNON_C	1.7	0.03	0.01	14,900	5.56	2.36
Total CUs in family/cons. science	F1RFAM_C	0.4	0.01	0.01	14,900	5.20	2.28
Total CUs in general labor market preparation	F1RGLA_C	0.4	0.02	0.01	14,900	5.76	2.40
Total CUs in specific labor market preparation	F1RSLA_C	2.5	0.05	0.02	14,900	6.87	2.62
Total CUs in general studies	F1RGEN_C	0.5	0.02	0.01	14,900	6.68	2.58
Total CUs in health/physical/recreation education	F1RHEA_C	2.2	0.02	0.01	14,900	6.17	2.48
Total CUs in religion and theology	F1RREL_C	0.2	0.01	0.01	14,900	2.22	1.49
Total CUs in military science	F1RMIL_C	0.1	0.01	0.01	14,900	4.42	2.10
Total CUs	F1RHTUN	24.1	0.11	0.05	14,900	5.86	2.42
Total AP/IB courses	F1RAPIB	0.7	0.03	0.01	14,900	4.04	2.01
Math pipeline: Advanced III	F1RMAPIP = 8	11.3	0.45	0.26	14,900	3.02	1.74
Academic concentrator	F1RTRCC = 1	20.8	0.69	0.33	14,900	4.35	2.09
New basics: College bound, core curriculum	F1RNEWB = 1	25.8	0.70	0.36	14,900	3.79	1.95
9th-grade GPA	F1RGP9	2.7	0.01	0.01	14,500	3.97	1.99
9th-grade academic GPA	F1RAGP9	2.5	0.02	0.01	14,400	3.87	1.97
10th-grade GPA	F1RGP10	2.6	0.02	0.01	14,700	4.56	2.13
10th-grade academic GPA	F1RAGP10	2.5	0.02	0.01	14,700	4.33	2.08
11th-grade GPA	F1RGP11	2.7	0.01	0.01	13,900	4.00	2.00
11th-grade academic GPA	F1RAGP11	2.5	0.02	0.01	13,900	3.78	1.94
12th-grade GPA	F1RGP12	2.8	0.01	0.01	13,200	3.78	1.94
12th-grade academic GPA	F1RAGP12	2.7	0.01	0.01	13,100	3.67	1.92
Total GPA	F1RGP	2.7	0.01	0.01	14,900	4.75	2.18
Total academic GPA	F1RAGP	2.5	0.01	0.01	14,900	4.53	2.13
SUMMARY STATISTICS							
Mean						4.57	2.12
Minimum						2.22	1.49
Median						4.39	2.09
Maximum						7.35	2.71
Standard deviation						1.21	0.28

NOTE: N = sample size; DEFF = design effect; DEFT = square root of the design effect; CU = Carnegie Unit.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "High School Transcript Study."

Table G-2. Student design effects, by survey item using transcript weight, male respondents: 2004–05

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Left school in 2004	F1RDTLFT	87.5	0.58	0.40	6,800	2.07	1.44
Left school with standard diploma	F1RREASL = 1	82.4	0.69	0.45	7,100	2.32	1.52
Total CUs in mathematics	F1RMAT_C	3.2	0.02	0.01	7,400	3.06	1.75
Total CUs in science	F1RSCI_C	2.9	0.02	0.01	7,400	2.81	1.67
Total CUs in English	F1RENG_C	3.9	0.03	0.01	7,400	3.01	1.74
Total CUs in social studies	F1RSOC_C	3.5	0.03	0.02	7,400	4.22	2.06
Total CUs in fine arts	F1RFIN_C	1.5	0.03	0.02	7,400	2.80	1.67
Total CUs in non-English language	F1RNON_C	1.5	0.03	0.01	7,400	3.28	1.81
Total CUs in family/cons. science	F1RFAM_C	0.3	0.01	0.01	7,400	3.22	1.80
Total CUs in general labor market preparation	F1RGLA_C	0.5	0.02	0.01	7,400	3.78	1.95
Total CUs in specific labor market preparation	F1RSLA_C	2.8	0.06	0.03	7,400	4.08	2.02
Total CUs in general studies	F1RGEN_C	0.5	0.02	0.01	7,400	3.77	1.94
Total CUs in health/physical/recreation education	F1RHEA_C	2.4	0.03	0.02	7,400	3.94	1.99
Total CUs in religion and theology	F1RREL_C	0.2	0.01	0.01	7,400	2.49	1.58
Total CUs in military science	F1RMIL_C	0.1	0.01	0.01	7,400	3.05	1.75
Total CUs	F1RHTUN	23.6	0.13	0.07	7,400	3.53	1.88
Total AP/IB courses	F1RAPIB	0.6	0.03	0.02	7,400	2.72	1.65
Math pipeline: Advanced III	F1RMAPIP = 8	11.5	0.57	0.37	7,400	2.37	1.54
Academic concentrator	F1RTRCC = 1	19.0	0.76	0.45	7,400	2.82	1.68
New basics: College bound, core curriculum	F1RNEWB = 1	24.8	0.79	0.50	7,400	2.51	1.58
9th-grade GPA	F1RGP9	2.5	0.02	0.01	7,200	2.63	1.62
9th-grade academic GPA	F1RAGP9	2.4	0.02	0.01	7,200	2.54	1.59
10th-grade GPA	F1RGP10	2.5	0.02	0.01	7,400	2.92	1.71
10th-grade academic GPA	F1RAGP10	2.3	0.02	0.01	7,300	2.90	1.70
11th-grade GPA	F1RGP11	2.5	0.02	0.01	6,900	2.53	1.59
11th-grade academic GPA	F1RAGP11	2.3	0.02	0.01	6,900	2.51	1.59
12th-grade GPA	F1RGP12	2.7	0.02	0.01	6,500	2.49	1.58
12th-grade academic GPA	F1RAGP12	2.5	0.02	0.01	6,500	2.37	1.54
Total GPA	F1RGP	2.5	0.02	0.01	7,400	2.95	1.72
Total academic GPA	F1RAGP	2.3	0.02	0.01	7,400	2.90	1.70
SUMMARY STATISTICS							
Mean						2.95	1.71
Minimum						2.07	1.44
Median						2.86	1.69
Maximum						4.22	2.06
Standard deviation						0.56	0.16

NOTE: N = sample size; DEFF = design effect; DEFT = square root of the design effect; CU = Carnegie Unit.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), “High School Transcript Study.”

Table G-3. Student design effects, by survey item using transcript weight, female respondents: 2004–05

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Left school in 2004	F1RDTLFT	91.0	0.49	0.35	6,900	2.04	1.43
Left school with standard diploma	F1RREASL = 1	87.8	0.57	0.38	7,200	2.21	1.49
Total CUs in mathematics	F1RMAT_C	3.4	0.02	0.01	7,500	3.35	1.83
Total CUs in science	F1RSCI_C	3.1	0.02	0.01	7,500	3.06	1.75
Total CUs in English	F1RENG_C	4.1	0.02	0.01	7,500	3.19	1.79
Total CUs in social studies	F1RSOC_C	3.8	0.03	0.01	7,500	4.70	2.17
Total CUs in fine arts	F1RFIN_C	2.1	0.04	0.02	7,500	3.15	1.77
Total CUs in non-English language	F1RNON_C	1.9	0.03	0.02	7,500	3.94	1.98
Total CUs in family/cons. science	F1RFAM_C	0.6	0.02	0.01	7,500	4.04	2.01
Total CUs in general labor market preparation	F1RGLA_C	0.3	0.02	0.01	7,500	3.36	1.83
Total CUs in specific labor market preparation	F1RSLA_C	2.2	0.05	0.02	7,500	4.78	2.19
Total CUs in general studies	F1RGEN_C	0.6	0.02	0.01	7,500	4.50	2.12
Total CUs in health/physical/recreation education	F1RHEA_C	2.0	0.03	0.01	7,500	4.59	2.14
Total CUs in religion and theology	F1RREL_C	0.2	0.01	0.01	7,500	2.53	1.59
Total CUs in military science	F1RMIL_C	0.1	0.01	0.01	7,500	3.51	1.87
Total CUs	F1RHTUN	24.5	0.12	0.06	7,500	3.72	1.93
Total AP/IB courses	F1RAPIB	0.8	0.03	0.02	7,500	2.97	1.72
Math pipeline: Advanced III	F1RMAPIP = 8	11.1	0.54	0.36	7,500	2.21	1.49
Academic concentrator	F1RTRCC = 1	22.6	0.84	0.48	7,500	3.00	1.73
New basics: College bound, core curriculum	F1RNEWB = 1	26.8	0.90	0.51	7,500	3.08	1.75
9th-grade GPA	F1RGP9	2.8	0.02	0.01	7,300	3.04	1.74
9th-grade academic GPA	F1RAGP9	2.7	0.02	0.01	7,200	3.09	1.76
10th-grade GPA	F1RGP10	2.8	0.02	0.01	7,400	3.26	1.81
10th-grade academic GPA	F1RAGP10	2.7	0.02	0.01	7,400	3.17	1.78
11th-grade GPA	F1RGP11	2.8	0.02	0.01	7,000	3.16	1.78
11th-grade academic GPA	F1RAGP11	2.7	0.02	0.01	7,000	2.98	1.73
12th-grade GPA	F1RGP12	3.0	0.02	0.01	6,700	3.00	1.73
12th-grade academic GPA	F1RAGP12	2.9	0.02	0.01	6,700	2.96	1.72
Total GPA	F1RGP	2.8	0.02	0.01	7,500	3.60	1.90
Total academic GPA	F1RAGP	2.7	0.02	0.01	7,500	3.51	1.87
SUMMARY STATISTICS							
Mean						3.32	1.81
Minimum						2.04	1.43
Median						3.17	1.78
Maximum						4.78	2.19
Standard deviation						0.69	0.19

NOTE: N = sample size; DEFF = design effect; DEFT = square root of the design effect; CU = Carnegie Unit.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "High School Transcript Study."

Table G-4. Student design effects, by survey item using transcript weight, American Indian or Alaska Native respondents: 2004–05

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Left school in 2004	F1RDTLFT	81.9	3.57	3.67	100	0.94	0.97
Left school with standard diploma	F1RREASL = 1	72.4	4.26	4.07	100	1.10	1.05
Total CUs in mathematics	F1RMAT_C	2.9	0.13	0.10	130	1.68	1.30
Total CUs in science	F1RSCI_C	2.6	0.14	0.10	130	2.07	1.44
Total CUs in English	F1RENG_C	3.9	0.20	0.13	130	2.17	1.47
Total CUs in social studies	F1RSOC_C	3.7	0.22	0.14	130	2.42	1.55
Total CUs in fine arts	F1RFIN_C	1.3	0.20	0.12	130	2.52	1.59
Total CUs in non-English language	F1RNON_C	1.1	0.14	0.10	130	1.92	1.38
Total CUs in family/cons. science	F1RFAM_C	0.6	0.09	0.06	130	1.85	1.36
Total CUs in general labor market preparation	F1RGLA_C	0.8	0.17	0.11	130	2.36	1.54
Total CUs in specific labor market preparation	F1RSLA_C	2.5	0.18	0.16	130	1.21	1.10
Total CUs in general studies	F1RGEN_C	0.6	0.17	0.09	130	3.71	1.93
Total CUs in health/physical/recreation education	F1RHEA_C	2.4	0.17	0.12	130	2.05	1.43
Total CUs in religion and theology	F1RREL_C	#	0.02	0.03	130	†	†
Total CUs in military science	F1RMIL_C	0.2	0.10	0.06	130	2.31	1.52
Total CUs	F1RHTUN	22.7	0.67	0.53	130	1.59	1.26
Total AP/IB courses	F1RAPIB	0.2	0.08	0.07	130	1.51	1.23
Math pipeline: Advanced III	F1RMAPIP = 8	3.7	1.78	1.67	130	1.13	1.06
Academic concentrator	F1RTRCC = 1	8.7	3.17	2.50	130	1.61	1.27
New basics: College bound, core curriculum	F1RNEWB = 1	10.6	3.73	2.73	130	1.87	1.37
9th-grade GPA	F1RGP9	2.3	0.11	0.08	120	1.90	1.38
9th-grade academic GPA	F1RAGP9	2.1	0.11	0.08	120	1.76	1.33
10th-grade GPA	F1RGP10	2.3	0.08	0.07	120	1.50	1.23
10th-grade academic GPA	F1RAGP10	2.1	0.09	0.08	120	1.50	1.22
11th-grade GPA	F1RGP11	2.2	0.10	0.09	120	1.26	1.12
11th-grade academic GPA	F1RAGP11	2.0	0.11	0.09	120	1.33	1.15
12th-grade GPA	F1RGP12	2.6	0.10	0.09	100	1.33	1.15
12th-grade academic GPA	F1RAGP12	2.5	0.11	0.10	100	1.22	1.10
Total GPA	F1RGP	2.3	0.08	0.07	130	1.42	1.19
Total academic GPA	F1RAGP	2.1	0.08	0.07	130	1.23	1.11
SUMMARY STATISTICS							
Mean						1.69	1.28
Minimum						0.39	0.63
Median						1.60	1.26
Maximum						3.71	1.93
Standard deviation						0.62	0.24

† Not applicable.
# Rounds to zero.
NOTE: N = sample size; DEFF = design effect; DEFT = square root of the design effect; CU = Carnegie Unit.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "High School Transcript Study."

Table G-5. Student design effects, by survey item using transcript weight, Asian respondents: 2004–05

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Left school in 2004	F1RDTLFT	92.2	1.03	0.72	1,400	2.07	1.44
Left school with standard diploma	F1RREASL = 1	88.6	1.24	0.84	1,500	2.21	1.49
Total CUs in mathematics	F1RMAT_C	3.6	0.05	0.03	1,500	2.48	1.58
Total CUs in science	F1RSCI_C	3.4	0.06	0.04	1,500	3.17	1.78
Total CUs in English	F1RENG_C	4.2	0.05	0.03	1,500	2.68	1.64
Total CUs in social studies	F1RSOC_C	3.7	0.06	0.03	1,500	3.48	1.87
Total CUs in fine arts	F1RFIN_C	1.7	0.06	0.04	1,500	2.48	1.57
Total CUs in non-English language	F1RNON_C	2.1	0.06	0.03	1,500	3.46	1.86
Total CUs in family/cons. science	F1RFAM_C	0.2	0.02	0.01	1,500	2.21	1.49
Total CUs in general labor market preparation	F1RGLA_C	0.2	0.03	0.01	1,500	3.38	1.84
Total CUs in specific labor market preparation	F1RSLA_C	1.9	0.07	0.04	1,500	2.63	1.62
Total CUs in general studies	F1RGEN_C	0.6	0.04	0.02	1,500	3.24	1.80
Total CUs in health/physical/recreation education	F1RHEA_C	2.2	0.05	0.03	1,500	3.25	1.80
Total CUs in religion and theology	F1RREL_C	0.2	0.04	0.02	1,500	4.21	2.05
Total CUs in military science	F1RMIL_C	0.1	0.02	0.01	1,500	2.59	1.61
Total CUs	F1RHTUN	24.3	0.24	0.14	1,500	2.99	1.73
Total AP/IB courses	F1RAPIB	1.8	0.13	0.07	1,500	3.71	1.93
Math pipeline: Advanced III	F1RMAPIP = 8	29.2	2.15	1.17	1,500	3.38	1.84
Academic concentrator	F1RTRCC = 1	33.8	2.00	1.22	1,500	2.72	1.65
New basics: College bound, core curriculum	F1RNEWB = 1	29.6	1.77	1.17	1,500	2.27	1.51
9th-grade GPA	F1RGP9	3.0	0.03	0.02	1,400	2.08	1.44
9th-grade academic GPA	F1RAGP9	2.9	0.03	0.02	1,400	2.01	1.42
10th-grade GPA	F1RGP10	2.9	0.03	0.02	1,500	2.33	1.53
10th-grade academic GPA	F1RAGP10	2.8	0.03	0.02	1,500	2.13	1.46
11th-grade GPA	F1RGP11	2.9	0.03	0.02	1,400	2.12	1.46
11th-grade academic GPA	F1RAGP11	2.8	0.03	0.02	1,400	2.16	1.47
12th-grade GPA	F1RGP12	3.0	0.03	0.02	1,400	2.04	1.43
12th-grade academic GPA	F1RAGP12	2.9	0.03	0.02	1,400	1.97	1.40
Total GPA	F1RGP	2.9	0.03	0.02	1,500	2.54	1.59
Total academic GPA	F1RAGP	2.8	0.03	0.02	1,500	2.46	1.57
SUMMARY STATISTICS							
Mean						2.68	1.63
Minimum						1.97	1.40
Median						2.51	1.58
Maximum						4.21	2.05
Standard deviation						0.60	0.18

NOTE: N = sample size; DEFF = design effect; DEFT = square root of the design effect; CU = Carnegie Unit.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "High School Transcript Study."

Table G-6. Student design effects, by survey item using transcript weight, Black or African American respondents: 2004–05

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Left school in 2004	F1RDTLFT	82.2	1.41	0.94	1,700	2.24	1.50
Left school with standard diploma	F1RREASL = 1	77.8	1.45	0.97	1,800	2.22	1.49
Total CUs in mathematics	F1RMAT_C	3.3	0.05	0.03	1,900	2.68	1.64
Total CUs in science	F1RSCI_C	2.8	0.05	0.03	1,900	2.65	1.63
Total CUs in English	F1RENG_C	3.9	0.05	0.03	1,900	2.46	1.57
Total CUs in social studies	F1RSOC_C	3.5	0.05	0.03	1,900	2.32	1.52
Total CUs in fine arts	F1RFIN_C	1.4	0.05	0.03	1,900	2.38	1.54
Total CUs in non-English language	F1RNON_C	1.3	0.05	0.03	1,900	3.48	1.87
Total CUs in family/cons. science	F1RFAM_C	0.5	0.03	0.02	1,900	2.91	1.71
Total CUs in general labor market preparation	F1RGLA_C	0.5	0.03	0.02	1,900	2.40	1.55
Total CUs in specific labor market preparation	F1RSLA_C	2.5	0.08	0.05	1,900	3.12	1.77
Total CUs in general studies	F1RGEN_C	0.5	0.03	0.02	1,900	2.48	1.58
Total CUs in health/physical/recreation education	F1RHEA_C	2.3	0.05	0.03	1,900	2.81	1.68
Total CUs in religion and theology	F1RREL_C	0.1	0.01	0.01	1,900	0.92	0.96
Total CUs in military science	F1RMIL_C	0.3	0.04	0.02	1,900	4.10	2.02
Total CUs	F1RHTUN	22.9	0.24	0.15	1,900	2.68	1.64
Total AP/IB courses	F1RAPIB	0.3	0.03	0.02	1,900	1.72	1.31
Math pipeline: Advanced III	F1RMAPIP = 8	3.4	0.42	0.41	1,900	1.04	1.02
Academic concentrator	F1RTRCC = 1	12.4	1.09	0.75	1,900	2.10	1.45
New basics: College bound, core curriculum	F1RNEWB = 1	23.5	1.40	0.97	1,900	2.08	1.44
9th-grade GPA	F1RGP9	2.2	0.03	0.02	1,900	2.04	1.43
9th-grade academic GPA	F1RAGP9	2.1	0.03	0.02	1,800	1.85	1.36
10th-grade GPA	F1RGP10	2.1	0.03	0.02	1,900	1.85	1.36
10th-grade academic GPA	F1RAGP10	2.0	0.03	0.02	1,900	1.66	1.29
11th-grade GPA	F1RGP11	2.3	0.03	0.02	1,700	1.75	1.32
11th-grade academic GPA	F1RAGP11	2.1	0.03	0.02	1,700	1.74	1.32
12th-grade GPA	F1RGP12	2.4	0.03	0.02	1,600	1.84	1.36
12th-grade academic GPA	F1RAGP12	2.3	0.03	0.02	1,600	1.92	1.38
Total GPA	F1RGP	2.2	0.02	0.02	1,900	1.98	1.41
Total academic GPA	F1RAGP	2.0	0.02	0.02	1,900	1.82	1.35
SUMMARY STATISTICS							
Mean						2.24	1.48
Minimum						0.92	0.96
Median						2.16	1.47
Maximum						4.10	2.02
Standard deviation						0.65	0.22

NOTE: N = sample size; DEFF = design effect; DEFT = square root of the design effect; CU = Carnegie Unit.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "High School Transcript Study."

Table G-7. Student design effects, by survey item using transcript weight, Hispanic or Latino respondents: 2004–05

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Left school in 2004	F1RDTLFT	82.7	1.14	0.85	2,000	1.78	1.33
Left school with standard diploma	F1RREASL = 1	76.4	1.31	0.93	2,100	1.99	1.41
Total CUs in mathematics	F1RMAT_C	3.0	0.05	0.03	2,200	3.54	1.88
Total CUs in science	F1RSCI_C	2.6	0.04	0.02	2,200	2.60	1.61
Total CUs in English	F1RENG_C	4.1	0.06	0.03	2,200	3.42	1.85
Total CUs in social studies	F1RSOC_C	3.4	0.05	0.03	2,200	3.48	1.87
Total CUs in fine arts	F1RFIN_C	1.5	0.06	0.03	2,200	3.45	1.86
Total CUs in non-English language	F1RNON_C	1.6	0.05	0.03	2,200	3.59	1.89
Total CUs in family/cons. science	F1RFAM_C	0.4	0.02	0.01	2,200	2.73	1.65
Total CUs in general labor market preparation	F1RGLA_C	0.4	0.03	0.02	2,200	2.54	1.59
Total CUs in specific labor market preparation	F1RSLA_C	2.2	0.07	0.04	2,200	3.19	1.79
Total CUs in general studies	F1RGEN_C	0.6	0.04	0.02	2,200	3.11	1.76
Total CUs in health/physical/recreation education	F1RHEA_C	2.3	0.05	0.03	2,200	3.54	1.88
Total CUs in religion and theology	F1RREL_C	0.1	0.02	0.01	2,200	1.55	1.25
Total CUs in military science	F1RMIL_C	0.1	0.02	0.01	2,200	2.58	1.61
Total CUs	F1RHTUN	22.4	0.26	0.13	2,200	3.83	1.96
Total AP/IB courses	F1RAPIB	0.4	0.04	0.03	2,200	2.15	1.47
Math pipeline: Advanced III	F1RMAPIP = 8	4.8	0.59	0.46	2,200	1.68	1.30
Academic concentrator	F1RTRCC = 1	11.0	0.90	0.67	2,200	1.84	1.36
New basics: College bound, core curriculum	F1RNEWB = 1	19.2	1.45	0.84	2,200	2.98	1.73
9th-grade GPA	F1RGP9	2.4	0.03	0.02	2,100	2.96	1.72
9th-grade academic GPA	F1RAGP9	2.2	0.03	0.02	2,100	2.72	1.65
10th-grade GPA	F1RGP10	2.3	0.04	0.02	2,200	4.00	2.00
10th-grade academic GPA	F1RAGP10	2.1	0.04	0.02	2,200	3.78	1.94
11th-grade GPA	F1RGP11	2.4	0.04	0.02	2,000	3.58	1.89
11th-grade academic GPA	F1RAGP11	2.2	0.04	0.02	2,000	3.17	1.78
12th-grade GPA	F1RGP12	2.6	0.04	0.02	1,800	3.98	1.99
12th-grade academic GPA	F1RAGP12	2.4	0.04	0.02	1,800	3.66	1.91
Total GPA	F1RGP	2.3	0.03	0.02	2,200	4.14	2.03
Total academic GPA	F1RAGP	2.2	0.03	0.02	2,200	3.79	1.95
SUMMARY STATISTICS							
Mean						3.04	1.73
Minimum						1.55	1.25
Median						3.18	1.78
Maximum						4.14	2.03
Standard deviation						0.76	0.23

NOTE: N = sample size; DEFF = design effect; DEFT = square root of the design effect; CU = Carnegie Unit.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "High School Transcript Study."

Table G-8. Student design effects, by survey item using transcript weight, White respondents: 2004–05

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Left school in 2004	F1RDTLFT	92.6	0.40	0.30	8,000	1.86	1.36
Left school with standard diploma	F1RREASL = 1	89.2	0.51	0.34	8,200	2.26	1.50
Total CUs in mathematics	F1RMAT_C	3.4	0.02	0.01	8,500	4.07	2.02
Total CUs in science	F1RSCI_C	3.1	0.02	0.01	8,500	3.59	1.90
Total CUs in English	F1RENG_C	4.0	0.02	0.01	8,500	3.90	1.97
Total CUs in social studies	F1RSOC_C	3.8	0.03	0.01	8,500	6.46	2.54
Total CUs in fine arts	F1RFIN_C	2.0	0.04	0.02	8,500	3.01	1.74
Total CUs in non-English language	F1RNON_C	1.9	0.03	0.01	8,500	4.27	2.07
Total CUs in family/cons. science	F1RFAM_C	0.4	0.02	0.01	8,500	4.19	2.05
Total CUs in general labor market preparation	F1RGLA_C	0.4	0.02	0.01	8,500	4.98	2.23
Total CUs in specific labor market preparation	F1RSLA_C	2.7	0.06	0.03	8,500	5.95	2.44
Total CUs in general studies	F1RGEN_C	0.5	0.02	0.01	8,500	5.89	2.43
Total CUs in health/physical/recreation education	F1RHEA_C	2.2	0.03	0.01	8,500	5.50	2.35
Total CUs in religion and theology	F1RREL_C	0.3	0.01	0.01	8,500	2.23	1.49
Total CUs in military science	F1RMIL_C	0.1	0.01	0.01	8,500	2.83	1.68
Total CUs	F1RHTUN	24.9	0.12	0.06	8,500	4.93	2.22
Total AP/IB courses	F1RAPIB	0.8	0.03	0.02	8,500	3.48	1.87
Math pipeline: Advanced III	F1RMAPIP = 8	14.0	0.60	0.38	8,500	2.51	1.58
Academic concentrator	F1RTRCC = 1	25.1	0.94	0.47	8,500	3.94	1.99
New basics: College bound, core curriculum	F1RNEWB = 1	28.7	0.91	0.49	8,500	3.44	1.85
9th-grade GPA	F1RGP9	2.8	0.01	0.01	8,200	2.60	1.61
9th-grade academic GPA	F1RAGP9	2.7	0.02	0.01	8,200	2.59	1.61
10th-grade GPA	F1RGP10	2.8	0.01	0.01	8,400	2.78	1.67
10th-grade academic GPA	F1RAGP10	2.7	0.02	0.01	8,400	2.74	1.66
11th-grade GPA	F1RGP11	2.8	0.01	0.01	8,000	2.61	1.61
11th-grade academic GPA	F1RAGP11	2.7	0.02	0.01	8,000	2.47	1.57
12th-grade GPA	F1RGP12	3.0	0.01	0.01	7,700	2.39	1.55
12th-grade academic GPA	F1RAGP12	2.8	0.01	0.01	7,700	2.30	1.52
Total GPA	F1RGP	2.8	0.01	0.01	8,400	2.75	1.66
Total academic GPA	F1RAGP	2.7	0.01	0.01	8,400	2.70	1.64
SUMMARY STATISTICS							
Mean						3.51	1.85
Minimum						1.86	1.36
Median						2.92	1.71
Maximum						6.46	2.54
Standard deviation						1.27	0.32

NOTE: N = sample size; DEFF = design effect; DEFT = square root of the design effect; CU = Carnegie Unit.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "High School Transcript Study."

Table G-9. Student design effects, by survey item using transcript weight, respondents reporting more than one race: 2004–05

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Left school in 2004	F1RDTLFT	86.6	1.50	1.34	700	1.26	1.12
Left school with standard diploma	F1RREASL = 1	83.3	1.75	1.43	700	1.50	1.22
Total CUs in mathematics	F1RMAT_C	3.2	0.06	0.04	700	1.90	1.38
Total CUs in science	F1RSCI_C	2.9	0.06	0.05	700	1.65	1.28
Total CUs in English	F1RENG_C	3.9	0.06	0.05	700	1.77	1.33
Total CUs in social studies	F1RSOC_C	3.6	0.07	0.05	700	2.01	1.42
Total CUs in fine arts	F1RFIN_C	1.9	0.11	0.07	700	2.11	1.45
Total CUs in non-English language	F1RNON_C	1.6	0.06	0.05	700	1.83	1.35
Total CUs in family/cons. science	F1RFAM_C	0.4	0.03	0.02	700	1.74	1.32
Total CUs in general labor market preparation	F1RGLA_C	0.4	0.05	0.03	700	2.05	1.43
Total CUs in specific labor market preparation	F1RSLA_C	2.6	0.14	0.09	700	2.55	1.60
Total CUs in general studies	F1RGEN_C	0.6	0.05	0.04	700	1.95	1.39
Total CUs in health/physical/recreation education	F1RHEA_C	2.1	0.06	0.04	700	2.25	1.50
Total CUs in religion and theology	F1RREL_C	0.2	0.03	0.03	700	0.90	0.95
Total CUs in military science	F1RMIL_C	0.1	0.02	0.02	700	1.37	1.17
Total CUs	F1RHTUN	23.5	0.30	0.22	700	1.85	1.36
Total AP/IB courses	F1RAPIB	0.6	0.07	0.06	700	1.58	1.26
Math pipeline: Advanced III	F1RMAPIP = 8	9.7	1.34	1.12	700	1.44	1.20
Academic concentrator	F1RTRCC = 1	16.5	1.84	1.40	700	1.74	1.32
New basics: College bound, core curriculum	F1RNEWB = 1	18.3	1.92	1.46	700	1.73	1.32
9th-grade GPA	F1RGP9	2.6	0.04	0.03	700	1.42	1.19
9th-grade academic GPA	F1RAGP9	2.5	0.04	0.03	700	1.46	1.21
10th-grade GPA	F1RGP10	2.5	0.04	0.03	700	1.58	1.26
10th-grade academic GPA	F1RAGP10	2.4	0.04	0.03	700	1.55	1.24
11th-grade GPA	F1RGP11	2.6	0.04	0.03	600	1.58	1.26
11th-grade academic GPA	F1RAGP11	2.5	0.04	0.04	600	1.56	1.25
12th-grade GPA	F1RGP12	2.7	0.04	0.03	600	1.78	1.34
12th-grade academic GPA	F1RAGP12	2.6	0.05	0.04	600	1.81	1.35
Total GPA	F1RGP	2.6	0.03	0.03	700	1.54	1.24
Total academic GPA	F1RAGP	2.5	0.04	0.03	700	1.60	1.26
SUMMARY STATISTICS							
Mean						1.70	1.30
Minimum						0.90	0.95
Median						1.69	1.30
Maximum						2.55	1.60
Standard deviation						0.32	0.12

NOTE: N = sample size; DEFF = design effect; DEFT = square root of the design effect; CU = Carnegie Unit.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "High School Transcript Study."

Table G-10. Student design effects, by survey item using transcript weight, public school: 2004–05

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Left school in 2004	F1RDTLFT	88.7	0.48	0.31	10,600	2.42	1.56
Left school with standard diploma	F1RREASL = 1	84.5	0.55	0.34	11,200	2.64	1.62
Total CUs in mathematics	F1RMAT_C	3.3	0.02	0.01	11,700	4.46	2.11
Total CUs in science	F1RSCI_C	3.0	0.02	0.01	11,700	3.96	1.99
Total CUs in English	F1RENG_C	4.0	0.02	0.01	11,700	4.12	2.03
Total CUs in social studies	F1RSOC_C	3.6	0.03	0.01	11,700	6.49	2.55
Total CUs in fine arts	F1RFIN_C	1.8	0.03	0.02	11,700	3.51	1.87
Total CUs in non-English language	F1RNON_C	1.7	0.03	0.01	11,700	4.90	2.21
Total CUs in family/cons. science	F1RFAM_C	0.4	0.01	0.01	11,700	4.51	2.12
Total CUs in general labor market preparation	F1RGLA_C	0.4	0.02	0.01	11,700	4.90	2.21
Total CUs in specific labor market preparation	F1RSLA_C	2.6	0.05	0.02	11,700	6.06	2.46
Total CUs in general studies	F1RGEN_C	0.6	0.02	0.01	11,700	5.80	2.41
Total CUs in health/physical/recreation education	F1RHEA_C	2.2	0.03	0.01	11,700	5.36	2.32
Total CUs in religion and theology	F1RREL_C	#	#	#	11,700	†	†
Total CUs in military science	F1RMIL_C	0.1	0.01	0.01	11,700	3.77	1.94
Total CUs	F1RHTUN	24.0	0.12	0.05	11,700	5.08	2.25
Total AP/IB courses	F1RAPIB	0.6	0.03	0.01	11,700	3.54	1.88
Math pipeline: Advanced III	F1RMAPIP = 8	10.4	0.46	0.28	11,700	2.65	1.63
Academic concentrator	F1RTRCC = 1	18.8	0.71	0.36	11,700	3.89	1.97
New basics: College bound, core curriculum	F1RNEWB = 1	24.7	0.73	0.40	11,700	3.31	1.82
9th-grade GPA	F1RGP9	2.6	0.01	0.01	11,400	3.48	1.86
9th-grade academic GPA	F1RAGP9	2.5	0.02	0.01	11,300	3.39	1.84
10th-grade GPA	F1RGP10	2.6	0.02	0.01	11,600	3.99	2.00
10th-grade academic GPA	F1RAGP10	2.4	0.02	0.01	11,500	3.79	1.95
11th-grade GPA	F1RGP11	2.6	0.02	0.01	10,800	3.47	1.86
11th-grade academic GPA	F1RAGP11	2.5	0.02	0.01	10,800	3.29	1.81
12th-grade GPA	F1RGP12	2.8	0.01	0.01	10,200	3.26	1.81
12th-grade academic GPA	F1RAGP12	2.7	0.02	0.01	10,200	3.17	1.78
Total GPA	F1RGP	2.6	0.01	0.01	11,700	4.16	2.04
Total academic GPA	F1RAGP	2.5	0.02	0.01	11,700	3.97	1.99
SUMMARY STATISTICS							
Mean						4.00	1.98
Minimum						2.42	1.56
Median						3.84	1.96
Maximum						6.49	2.55
Standard deviation						1.03	0.25

† Not applicable.
# Rounds to zero.
NOTE: N = sample size; DEFF = design effect; DEFT = square root of the design effect; CU = Carnegie Unit.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "High School Transcript Study."

Table G-11. Student design effects, by survey item using transcript weight, Catholic school: 2004–05

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Left school in 2004	F1RDTLFT	96.4	0.51	0.44	1,800	1.40	1.18
Left school with standard diploma	F1RREASL = 1	95.7	0.59	0.47	1,900	1.57	1.25
Total CUs in mathematics	F1RMAT_C	3.7	0.03	0.02	1,900	3.12	1.77
Total CUs in science	F1RSCI_C	3.4	0.05	0.02	1,900	7.24	2.69
Total CUs in English	F1RENG_C	4.3	0.06	0.02	1,900	8.32	2.88
Total CUs in social studies	F1RSOC_C	4.0	0.07	0.02	1,900	8.27	2.88
Total CUs in fine arts	F1RFIN_C	1.6	0.09	0.03	1,900	7.92	2.81
Total CUs in non-English language	F1RNON_C	2.7	0.07	0.02	1,900	7.72	2.78
Total CUs in family/cons. science	F1RFAM_C	0.1	0.02	0.01	1,900	8.57	2.93
Total CUs in general labor market preparation	F1RGLA_C	0.1	0.03	0.01	1,900	22.21	4.71
Total CUs in specific labor market preparation	F1RSLA_C	1.3	0.07	0.03	1,900	7.37	2.71
Total CUs in general studies	F1RGEN_C	0.2	0.03	0.01	1,900	8.55	2.92
Total CUs in health/physical/recreation education	F1RHEA_C	1.7	0.07	0.02	1,900	12.13	3.48
Total CUs in religion and theology	F1RREL_C	3.4	0.06	0.02	1,900	11.44	3.38
Total CUs in military science	F1RMIL_C	#	0.03	0.01	1,900	†	†
Total CUs	F1RHTUN	26.8	0.25	0.08	1,900	9.74	3.12
Total AP/IB courses	F1RAPIB	1.0	0.09	0.04	1,900	5.33	2.31
Math pipeline: Advanced III	F1RMAPIP = 8	21.0	1.73	0.94	1,900	3.39	1.84
Academic concentrator	F1RTRCC = 1	49.8	3.40	1.15	1,900	8.71	2.95
New basics: College bound, core curriculum	F1RNEWB = 1	53.8	3.62	1.15	1,900	9.97	3.16
9th-grade GPA	F1RGP9	3.0	0.03	0.02	1,900	4.33	2.08
9th-grade academic GPA	F1RAGP9	2.9	0.04	0.02	1,900	4.22	2.06
10th-grade GPA	F1RGP10	2.9	0.04	0.02	1,900	4.58	2.14
10th-grade academic GPA	F1RAGP10	2.8	0.04	0.02	1,900	4.55	2.13
11th-grade GPA	F1RGP11	2.9	0.03	0.02	1,800	4.34	2.08
11th-grade academic GPA	F1RAGP11	2.8	0.04	0.02	1,800	4.39	2.10
12th-grade GPA	F1RGP12	3.0	0.03	0.01	1,800	4.25	2.06
12th-grade academic GPA	F1RAGP12	2.9	0.03	0.02	1,800	3.90	1.98
Total GPA	F1RGP	3.0	0.03	0.01	1,900	4.72	2.17
Total academic GPA	F1RAGP	2.8	0.03	0.02	1,900	4.59	2.14
SUMMARY STATISTICS							
Mean						7.00	2.54
Minimum						1.40	1.18
Median						6.28	2.50
Maximum						22.21	4.71
Standard deviation						4.17	0.74

† Not applicable.
# Rounds to zero.
NOTE: N = sample size; DEFF = design effect; DEFT = square root of the design effect; CU = Carnegie Unit.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "High School Transcript Study."

Table G-12. Student design effects, by survey item using transcript weight, other private school: 2004–05

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Left school in 2004	F1RDTLFT	92.8	1.59	0.73	1,300	4.77	2.18
Left school with standard diploma	F1RREASL = 1	87.3	2.96	0.92	1,300	10.32	3.21
Total CUs in mathematics	F1RMAT_C	3.6	0.07	0.03	1,300	7.21	2.69
Total CUs in science	F1RSCI_C	3.4	0.07	0.03	1,300	5.56	2.36
Total CUs in English	F1RENG_C	4.2	0.08	0.03	1,300	5.42	2.33
Total CUs in social studies	F1RSOC_C	3.8	0.11	0.04	1,300	9.97	3.16
Total CUs in fine arts	F1RFIN_C	2.0	0.19	0.05	1,300	17.59	4.19
Total CUs in non-English language	F1RNON_C	2.3	0.14	0.04	1,300	13.50	3.67
Total CUs in family/cons. science	F1RFAM_C	0.1	0.03	0.01	1,300	10.28	3.21
Total CUs in general labor market preparation	F1RGLA_C	0.2	0.04	0.01	1,300	12.82	3.58
Total CUs in specific labor market preparation	F1RSLA_C	1.1	0.08	0.03	1,300	7.00	2.65
Total CUs in general studies	F1RGEN_C	0.3	0.04	0.02	1,300	7.84	2.80
Total CUs in health/physical/recreation education	F1RHEA_C	1.7	0.10	0.03	1,300	12.65	3.56
Total CUs in religion and theology	F1RREL_C	1.5	0.16	0.04	1,300	13.73	3.70
Total CUs in military science	F1RMIL_C	#	0.03	0.01	1,300	†	†
Total CUs	F1RHTUN	24.2	0.45	0.15	1,300	9.14	3.02
Total AP/IB courses	F1RAPIB	1.1	0.17	0.05	1,300	10.42	3.23
Math pipeline: Advanced III	F1RMAPIP = 8	25.0	3.46	1.19	1,300	8.50	2.92
Academic concentrator	F1RTRCC = 1	38.6	3.64	1.33	1,300	7.46	2.73
New basics: College bound, core curriculum	F1RNEWB = 1	22.0	2.71	1.13	1,300	5.72	2.39
9th-grade GPA	F1RGP9	3.1	0.04	0.02	1,200	4.29	2.07
9th-grade academic GPA	F1RAGP9	3.0	0.04	0.02	1,200	4.39	2.09
10th-grade GPA	F1RGP10	3.1	0.04	0.02	1,300	4.56	2.13
10th-grade academic GPA	F1RAGP10	3.0	0.05	0.02	1,300	5.18	2.28
11th-grade GPA	F1RGP11	3.1	0.04	0.02	1,200	5.21	2.28
11th-grade academic GPA	F1RAGP11	3.0	0.05	0.02	1,200	5.07	2.25
12th-grade GPA	F1RGP12	3.2	0.04	0.02	1,200	5.27	2.29
12th-grade academic GPA	F1RAGP12	3.1	0.04	0.02	1,200	4.99	2.23
Total GPA	F1RGP	3.1	0.04	0.02	1,300	5.51	2.35
Total academic GPA	F1RAGP	3.0	0.04	0.02	1,300	5.85	2.42
SUMMARY STATISTICS							
Mean						7.92	2.76
Minimum						4.29	2.07
Median						7.11	2.67
Maximum						17.59	4.19
Standard deviation						3.44	0.58

† Not applicable.
# Rounds to zero.
NOTE: N = sample size; DEFF = design effect; DEFT = square root of the design effect; CU = Carnegie Unit.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "High School Transcript Study."

Table G-13. Student design effects, by survey item using transcript weight, low socioeconomic status: 2004–05

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Left school in 2004	F1RDTLFT	82.1	0.98	0.69	3,100	2.06	1.43
Left school with standard diploma	F1RREASL = 1	75.9	1.04	0.74	3,400	1.98	1.41
Total CUs in mathematics	F1RMAT_C	3.0	0.03	0.02	3,500	2.72	1.65
Total CUs in science	F1RSCI_C	2.6	0.03	0.02	3,500	2.53	1.59
Total CUs in English	F1RENG_C	4.0	0.04	0.02	3,500	2.40	1.55
Total CUs in social studies	F1RSOC_C	3.4	0.04	0.02	3,500	2.40	1.55
Total CUs in fine arts	F1RFIN_C	1.5	0.04	0.03	3,500	2.07	1.44
Total CUs in non-English language	F1RNON_C	1.2	0.03	0.02	3,500	2.51	1.59
Total CUs in family/cons. science	F1RFAM_C	0.5	0.02	0.01	3,500	2.27	1.51
Total CUs in general labor market preparation	F1RGLA_C	0.5	0.03	0.02	3,500	2.39	1.55
Total CUs in specific labor market preparation	F1RSLA_C	2.7	0.07	0.04	3,500	2.87	1.69
Total CUs in general studies	F1RGEN_C	0.6	0.03	0.02	3,500	3.01	1.74
Total CUs in health/physical/recreation education	F1RHEA_C	2.2	0.04	0.02	3,500	3.21	1.79
Total CUs in religion and theology	F1RREL_C	0.1	0.01	0.01	3,500	0.88	0.94
Total CUs in military science	F1RMIL_C	0.1	0.02	0.01	3,500	2.21	1.49
Total CUs	F1RHTUN	22.7	0.19	0.11	3,500	3.16	1.78
Total AP/IB courses	F1RAPIB	0.3	0.02	0.02	3,500	1.63	1.28
Math pipeline: Advanced III	F1RMAPIP = 8	4.5	0.48	0.35	3,500	1.89	1.37
Academic concentrator	F1RTRCC = 1	8.8	0.64	0.48	3,500	1.80	1.34
New basics: College bound, core curriculum	F1RNEWB = 1	16.6	0.90	0.63	3,500	2.05	1.43
9th-grade GPA	F1RGP9	2.4	0.02	0.01	3,400	2.56	1.60
9th-grade academic GPA	F1RAGP9	2.2	0.02	0.02	3,400	2.32	1.52
10th-grade GPA	F1RGP10	2.3	0.02	0.02	3,500	2.58	1.61
10th-grade academic GPA	F1RAGP10	2.1	0.02	0.02	3,500	2.42	1.55
11th-grade GPA	F1RGP11	2.4	0.03	0.02	3,100	2.52	1.59
11th-grade academic GPA	F1RAGP11	2.2	0.03	0.02	3,100	2.42	1.55
12th-grade GPA	F1RGP12	2.6	0.02	0.02	2,900	2.04	1.43
12th-grade academic GPA	F1RAGP12	2.4	0.02	0.02	2,800	1.88	1.37
Total GPA	F1RGP	2.3	0.02	0.01	3,500	2.89	1.70
Total academic GPA	F1RAGP	2.2	0.02	0.01	3,500	2.57	1.60
SUMMARY STATISTICS							
Mean						2.34	1.52
Minimum						0.88	0.94
Median						2.40	1.55
Maximum						3.21	1.79
Standard deviation						0.48	0.17

NOTE: N = sample size; DEFF = design effect; DEFT = square root of the design effect; CU = Carnegie Unit.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "High School Transcript Study."

Table G-14. Student design effects, by survey item using transcript weight, middle socioeconomic status: 2004–05

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Left school in 2004	F1RDTLFT	89.4	0.52	0.38	6,600	1.91	1.38
Left school with standard diploma	F1RREASL = 1	85.5	0.64	0.42	6,900	2.29	1.51
Total CUs in mathematics	F1RMAT_C	3.3	0.02	0.01	7,200	3.60	1.90
Total CUs in science	F1RSCI_C	3.0	0.02	0.01	7,200	2.90	1.70
Total CUs in English	F1RENG_C	4.0	0.02	0.01	7,200	2.98	1.73
Total CUs in social studies	F1RSOC_C	3.7	0.03	0.02	7,200	4.86	2.20
Total CUs in fine arts	F1RFIN_C	1.8	0.03	0.02	7,200	2.50	1.58
Total CUs in non-English language	F1RNON_C	1.7	0.03	0.01	7,200	3.29	1.81
Total CUs in family/cons. science	F1RFAM_C	0.4	0.02	0.01	7,200	3.43	1.85
Total CUs in general labor market preparation	F1RGLA_C	0.4	0.02	0.01	7,200	3.82	1.95
Total CUs in specific labor market preparation	F1RSLA_C	2.7	0.06	0.03	7,200	4.44	2.11
Total CUs in general studies	F1RGEN_C	0.5	0.02	0.01	7,200	4.03	2.01
Total CUs in health/physical/recreation education	F1RHEA_C	2.2	0.03	0.01	7,200	4.07	2.02
Total CUs in religion and theology	F1RREL_C	0.2	0.01	0.01	7,200	1.60	1.27
Total CUs in military science	F1RMIL_C	0.1	0.01	0.01	7,200	2.45	1.57
Total CUs	F1RHTUN	24.2	0.13	0.07	7,200	3.88	1.97
Total AP/IB courses	F1RAPIB	0.5	0.02	0.02	7,200	2.06	1.44
Math pipeline: Advanced III	F1RMAPIP = 8	8.4	0.42	0.33	7,200	1.63	1.28
Academic concentrator	F1RTRCC = 1	18.0	0.72	0.45	7,200	2.49	1.58
New basics: College bound, core curriculum	F1RNEWB = 1	26.1	0.87	0.52	7,200	2.82	1.68
9th-grade GPA	F1RGP9	2.6	0.02	0.01	7,000	2.50	1.58
9th-grade academic GPA	F1RAGP9	2.5	0.02	0.01	7,000	2.46	1.57
10th-grade GPA	F1RGP10	2.6	0.02	0.01	7,100	2.94	1.72
10th-grade academic GPA	F1RAGP10	2.4	0.02	0.01	7,100	2.88	1.70
11th-grade GPA	F1RGP11	2.6	0.02	0.01	6,700	2.55	1.60
11th-grade academic GPA	F1RAGP11	2.5	0.02	0.01	6,700	2.45	1.57
12th-grade GPA	F1RGP12	2.8	0.02	0.01	6,400	2.67	1.63
12th-grade academic GPA	F1RAGP12	2.6	0.02	0.01	6,300	2.64	1.62
Total GPA	F1RGP	2.6	0.02	0.01	7,200	2.93	1.71
Total academic GPA	F1RAGP	2.5	0.02	0.01	7,200	2.90	1.70
SUMMARY STATISTICS							
Mean						2.93	1.70
Minimum						1.60	1.27
Median						2.85	1.69
Maximum						4.86	2.20
Standard deviation						0.79	0.23

NOTE: N = sample size; DEFF = design effect; DEFT = square root of the design effect; CU = Carnegie Unit.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "High School Transcript Study."

Table G-15. Student design effects, by survey item using transcript weight, high socioeconomic status: 2004–05

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Left school in 2004	F1RDTLFT	95.6	0.43	0.33	4,000	1.69	1.30
Left school with standard diploma	F1RREASL = 1	93.4	0.56	0.39	4,100	2.09	1.44
Total CUs in mathematics	F1RMAT_C	3.6	0.03	0.02	4,200	2.72	1.65
Total CUs in science	F1RSCI_C	3.4	0.03	0.02	4,200	3.10	1.76
Total CUs in English	F1RENG_C	4.1	0.03	0.02	4,200	3.83	1.96
Total CUs in social studies	F1RSOC_C	3.9	0.04	0.02	4,200	4.84	2.20
Total CUs in fine arts	F1RFIN_C	2.1	0.05	0.03	4,200	3.42	1.85
Total CUs in non-English language	F1RNON_C	2.4	0.03	0.02	4,200	2.61	1.61
Total CUs in family/cons. science	F1RFAM_C	0.3	0.01	0.01	4,200	2.94	1.71
Total CUs in general labor market preparation	F1RGLA_C	0.3	0.02	0.01	4,200	4.05	2.01
Total CUs in specific labor market preparation	F1RSLA_C	1.9	0.05	0.03	4,200	2.79	1.67
Total CUs in general studies	F1RGEN_C	0.5	0.03	0.01	4,200	4.37	2.09
Total CUs in health/physical/recreation education	F1RHEA_C	2.1	0.03	0.02	4,200	3.81	1.95
Total CUs in religion and theology	F1RREL_C	0.4	0.02	0.02	4,200	2.15	1.47
Total CUs in military science	F1RMIL_C	0.1	0.01	0.01	4,200	2.95	1.72
Total CUs	F1RHTUN	25.3	0.13	0.07	4,200	3.19	1.79
Total AP/IB courses	F1RAPIB	1.5	0.06	0.03	4,200	3.58	1.89
Math pipeline: Advanced III	F1RMAPIP = 8	24.1	0.99	0.66	4,200	2.27	1.51
Academic concentrator	F1RTRCC = 1	38.5	1.31	0.75	4,200	3.07	1.75
New basics: College bound, core curriculum	F1RNEWB = 1	34.5	1.27	0.73	4,200	2.99	1.73
9th-grade GPA	F1RGP9	3.1	0.02	0.01	4,100	2.31	1.52
9th-grade academic GPA	F1RAGP9	3.0	0.02	0.01	4,100	2.36	1.54
10th-grade GPA	F1RGP10	3.0	0.02	0.01	4,200	2.42	1.55
10th-grade academic GPA	F1RAGP10	2.9	0.02	0.01	4,200	2.44	1.56
11th-grade GPA	F1RGP11	3.0	0.02	0.01	4,100	2.26	1.50
11th-grade academic GPA	F1RAGP11	2.9	0.02	0.01	4,100	2.19	1.48
12th-grade GPA	F1RGP12	3.1	0.02	0.01	4,000	2.20	1.48
12th-grade academic GPA	F1RAGP12	3.0	0.02	0.01	4,000	2.07	1.44
Total GPA	F1RGP	3.0	0.02	0.01	4,200	2.37	1.54
Total academic GPA	F1RAGP	2.9	0.02	0.01	4,200	2.33	1.53
SUMMARY STATISTICS							
Mean						2.85	1.67
Minimum						1.69	1.30
Median						2.67	1.63
Maximum						4.84	2.20
Standard deviation						0.76	0.22

NOTE: N = sample size; DEFF = design effect; DEFT = square root of the design effect; CU = Carnegie Unit.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "High School Transcript Study."

Table G-16. Student design effects, by survey item using transcript weight, urban: 2004–05

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Left school in 2004	F1RDTLFT	86.6	1.06	0.51	4,500	4.31	2.08
Left school with standard diploma	F1RREASL = 1	82.0	1.18	0.56	4,700	4.51	2.12
Total CUs in mathematics	F1RMAT_C	3.2	0.04	0.02	4,900	7.51	2.74
Total CUs in science	F1RSCI_C	3.0	0.05	0.02	4,900	6.90	2.63
Total CUs in English	F1RENG_C	4.0	0.04	0.02	4,900	4.80	2.19
Total CUs in social studies	F1RSOC_C	3.5	0.04	0.02	4,900	5.53	2.35
Total CUs in fine arts	F1RFIN_C	1.7	0.06	0.02	4,900	6.70	2.59
Total CUs in non-English language	F1RNON_C	1.8	0.05	0.02	4,900	8.27	2.88
Total CUs in family/cons. science	F1RFAM_C	0.3	0.02	0.01	4,900	7.06	2.66
Total CUs in general labor market preparation	F1RGLA_C	0.4	0.03	0.01	4,900	7.52	2.74
Total CUs in specific labor market preparation	F1RSLA_C	2.1	0.07	0.03	4,900	6.28	2.51
Total CUs in general studies	F1RGEN_C	0.5	0.04	0.01	4,900	7.70	2.77
Total CUs in health/physical/recreation education	F1RHEA_C	2.0	0.04	0.02	4,900	6.11	2.47
Total CUs in religion and theology	F1RREL_C	0.4	0.03	0.01	4,900	3.13	1.77
Total CUs in military science	F1RMIL_C	0.1	0.02	0.01	4,900	4.66	2.16
Total CUs	F1RHTUN	23.4	0.24	0.08	4,900	7.86	2.80
Total AP/IB courses	F1RAPIB	0.8	0.06	0.02	4,900	5.17	2.27
Math pipeline: Advanced III	F1RMAPIP = 8	10.8	0.86	0.44	4,900	3.73	1.93
Academic concentrator	F1RTRCC = 1	21.6	1.38	0.59	4,900	5.52	2.35
New basics: College bound, core curriculum	F1RNEWB = 1	25.7	1.41	0.62	4,900	5.08	2.25
9th-grade GPA	F1RGP9	2.6	0.03	0.01	4,700	5.61	2.37
9th-grade academic GPA	F1RAGP9	2.5	0.03	0.01	4,700	5.58	2.36
10th-grade GPA	F1RGP10	2.5	0.03	0.01	4,800	6.40	2.53
10th-grade academic GPA	F1RAGP10	2.4	0.04	0.01	4,800	6.18	2.49
11th-grade GPA	F1RGP11	2.6	0.03	0.01	4,500	5.66	2.38
11th-grade academic GPA	F1RAGP11	2.5	0.03	0.01	4,500	5.16	2.27
12th-grade GPA	F1RGP12	2.7	0.03	0.01	4,300	5.11	2.26
12th-grade academic GPA	F1RAGP12	2.6	0.03	0.01	4,200	5.17	2.27
Total GPA	F1RGP	2.5	0.03	0.01	4,900	6.95	2.64
Total academic GPA	F1RAGP	2.4	0.03	0.01	4,900	6.77	2.60
SUMMARY STATISTICS							
Mean						5.90	2.41
Minimum						3.13	1.77
Median						5.63	2.37
Maximum						8.27	2.88
Standard deviation						1.26	0.27

NOTE: N = sample size; DEFF = design effect; DEFT = square root of the design effect; CU = Carnegie Unit.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "High School Transcript Study."

Table G-17. Student design effects, by survey item using transcript weight, suburban: 2004–05

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Left school in 2004	F1RDTLFT	90.4	0.54	0.36	6,800	2.27	1.51
Left school with standard diploma	F1RREASL = 1	86.7	0.62	0.40	7,100	2.35	1.53
Total CUs in mathematics	F1RMAT_C	3.3	0.03	0.01	7,300	4.10	2.03
Total CUs in science	F1RSCI_C	3.0	0.02	0.01	7,300	3.25	1.80
Total CUs in English	F1RENG_C	4.0	0.03	0.01	7,300	3.96	1.99
Total CUs in social studies	F1RSOC_C	3.7	0.04	0.01	7,300	6.83	2.61
Total CUs in fine arts	F1RFIN_C	1.8	0.04	0.02	7,300	3.21	1.79
Total CUs in non-English language	F1RNON_C	1.8	0.03	0.02	7,300	4.79	2.19
Total CUs in family/cons. science	F1RFAM_C	0.5	0.02	0.01	7,300	4.55	2.13
Total CUs in general labor market preparation	F1RGLA_C	0.4	0.02	0.01	7,300	4.27	2.07
Total CUs in specific labor market preparation	F1RSLA_C	2.6	0.07	0.03	7,300	6.56	2.56
Total CUs in general studies	F1RGEN_C	0.5	0.03	0.01	7,300	6.47	2.54
Total CUs in health/physical/recreation education	F1RHEA_C	2.2	0.03	0.01	7,300	5.23	2.29
Total CUs in religion and theology	F1RREL_C	0.2	0.01	0.01	7,300	2.06	1.43
Total CUs in military science	F1RMIL_C	0.1	0.02	0.01	7,300	4.80	2.19
Total CUs	F1RHTUN	24.2	0.15	0.06	7,300	5.22	2.29
Total AP/IB courses	F1RAPIB	0.7	0.04	0.02	7,300	3.88	1.97
Math pipeline: Advanced III	F1RMAPIP = 8	12.4	0.64	0.39	7,300	2.72	1.65
Academic concentrator	F1RTRCC = 1	21.3	0.98	0.48	7,300	4.14	2.04
New basics: College bound, core curriculum	F1RNEWB = 1	26.2	0.95	0.51	7,300	3.41	1.85
9th-grade GPA	F1RGP9	2.7	0.02	0.01	7,100	3.24	1.80
9th-grade academic GPA	F1RAGP9	2.6	0.02	0.01	7,000	3.17	1.78
10th-grade GPA	F1RGP10	2.6	0.02	0.01	7,200	3.59	1.89
10th-grade academic GPA	F1RAGP10	2.5	0.02	0.01	7,200	3.43	1.85
11th-grade GPA	F1RGP11	2.7	0.02	0.01	6,800	3.23	1.80
11th-grade academic GPA	F1RAGP11	2.6	0.02	0.01	6,800	3.26	1.81
12th-grade GPA	F1RGP12	2.9	0.02	0.01	6,500	3.46	1.86
12th-grade academic GPA	F1RAGP12	2.7	0.02	0.01	6,500	3.37	1.83
Total GPA	F1RGP	2.7	0.02	0.01	7,300	3.65	1.91
Total academic GPA	F1RAGP	2.5	0.02	0.01	7,300	3.56	1.89
SUMMARY STATISTICS							
Mean						3.93	1.96
Minimum						2.06	1.43
Median						3.58	1.89
Maximum						6.83	2.61
Standard deviation						1.20	0.29

NOTE: N = sample size; DEFF = design effect; DEFT = square root of the design effect; CU = Carnegie Unit.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "High School Transcript Study."

Table G-18. Student design effects, by survey item using transcript weight, rural: 2004–05

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Left school in 2004	F1RDTLFT	90.0	0.80	0.61	2,400	1.75	1.32
Left school with standard diploma	F1RREASL = 1	85.5	1.13	0.69	2,600	2.63	1.62
Total CUs in mathematics	F1RMAT_C	3.4	0.04	0.02	2,700	4.19	2.05
Total CUs in science	F1RSCI_C	3.1	0.05	0.02	2,700	4.20	2.05
Total CUs in English	F1RENG_C	4.1	0.06	0.02	2,700	6.13	2.48
Total CUs in social studies	F1RSOC_C	3.8	0.08	0.03	2,700	9.90	3.15
Total CUs in fine arts	F1RFIN_C	2.0	0.07	0.04	2,700	3.24	1.80
Total CUs in non-English language	F1RNON_C	1.5	0.05	0.02	2,700	4.89	2.21
Total CUs in family/cons. science	F1RFAM_C	0.5	0.03	0.01	2,700	5.19	2.28
Total CUs in general labor market preparation	F1RGLA_C	0.5	0.05	0.02	2,700	6.40	2.53
Total CUs in specific labor market preparation	F1RSLA_C	3.1	0.14	0.05	2,700	8.77	2.96
Total CUs in general studies	F1RGEN_C	0.6	0.04	0.02	2,700	5.69	2.39
Total CUs in health/physical/recreation education	F1RHEA_C	2.3	0.07	0.03	2,700	7.98	2.83
Total CUs in religion and theology	F1RREL_C	#	0.01	#	2,700	†	†
Total CUs in military science	F1RMIL_C	0.1	0.02	0.01	2,700	2.75	1.66
Total CUs	F1RHTUN	25.0	0.21	0.10	2,700	3.93	1.98
Total AP/IB courses	F1RAPIB	0.4	0.04	0.02	2,700	2.66	1.63
Math pipeline: Advanced III	F1RMAPIP = 8	9.5	0.96	0.56	2,700	2.93	1.71
Academic concentrator	F1RTRCC = 1	18.4	1.40	0.74	2,700	3.52	1.88
New basics: College bound, core curriculum	F1RNEWB = 1	25.0	1.45	0.83	2,700	3.03	1.74
9th-grade GPA	F1RGP9	2.7	0.03	0.02	2,661	3.21	1.79
9th-grade academic GPA	F1RAGP9	2.6	0.03	0.02	2,700	3.06	1.75
10th-grade GPA	F1RGP10	2.7	0.03	0.02	2,700	3.69	1.92
10th-grade academic GPA	F1RAGP10	2.5	0.03	0.02	2,700	3.58	1.89
11th-grade GPA	F1RGP11	2.7	0.03	0.02	2,500	3.30	1.82
11th-grade academic GPA	F1RAGP11	2.6	0.03	0.02	2,500	3.07	1.75
12th-grade GPA	F1RGP12	2.9	0.02	0.02	2,400	2.44	1.56
12th-grade academic GPA	F1RAGP12	2.7	0.03	0.02	2,400	2.25	1.50
Total GPA	F1RGP	2.7	0.03	0.01	2,700	3.61	1.90
Total academic GPA	F1RAGP	2.6	0.03	0.02	2,700	3.30	1.82
SUMMARY STATISTICS							
Mean						4.17	2.00
Minimum						1.75	1.32
Median						3.55	1.88
Maximum						9.90	3.15
Standard deviation						1.95	0.43

† Not applicable.
# Rounds to zero.
NOTE: N = sample size; DEFF = design effect; DEFT = square root of the design effect; CU = Carnegie Unit.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "High School Transcript Study."

Table G-19. Student design effects, by survey item using transcript weight, 2004 spring graduates: 2004–05

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Left school in 2004	F1RDTLFT	100.0	#	#	10,900	†	†
Left school with standard diploma	F1RREASL = 1	100.0	#	#	10,900	†	†
Total CUs in mathematics	F1RMAT_C	3.6	0.02	0.01	10,900	5.09	2.26
Total CUs in science	F1RSCI_C	3.3	0.02	0.01	10,900	4.54	2.13
Total CUs in English	F1RENG_C	4.3	0.02	0.01	10,900	6.17	2.48
Total CUs in social studies	F1RSOC_C	4.0	0.03	0.01	10,900	8.44	2.91
Total CUs in fine arts	F1RFIN_C	2.0	0.03	0.02	10,900	3.62	1.90
Total CUs in non-English language	F1RNON_C	2.0	0.03	0.01	10,900	4.69	2.16
Total CUs in family/cons. science	F1RFAM_C	0.4	0.01	0.01	10,900	4.58	2.14
Total CUs in general labor market preparation	F1RGLA_C	0.4	0.02	0.01	10,900	4.63	2.15
Total CUs in specific labor market preparation	F1RSLA_C	2.7	0.05	0.02	10,900	5.96	2.44
Total CUs in general studies	F1RGEN_C	0.6	0.02	0.01	10,900	6.22	2.49
Total CUs in health/physical/recreation education	F1RHEA_C	2.3	0.03	0.01	10,900	5.79	2.41
Total CUs in religion and theology	F1RREL_C	0.2	0.01	0.01	10,900	2.32	1.52
Total CUs in military science	F1RMIL_C	0.1	0.01	0.01	10,900	3.78	1.94
Total CUs	F1RHTUN	26.1	0.09	0.03	10,900	9.13	3.02
Total AP/IB courses	F1RAPIB	0.8	0.03	0.02	10,900	3.61	1.90
Math pipeline: Advanced III	F1RMAPIP = 8	14.1	0.56	0.33	10,900	2.83	1.68
Academic concentrator	F1RTRCC = 1	27.0	0.86	0.43	10,900	4.09	2.02
New basics: College bound, core curriculum	F1RNEWB = 1	32.8	0.87	0.45	10,900	3.73	1.93
9th-grade GPA	F1RGP9	2.9	0.01	0.01	10,900	3.00	1.73
9th-grade academic GPA	F1RAGP9	2.7	0.01	0.01	10,900	2.85	1.69
10th-grade GPA	F1RGP10	2.8	0.01	0.01	10,900	3.10	1.76
10th-grade academic GPA	F1RAGP10	2.7	0.01	0.01	10,900	3.02	1.74
11th-grade GPA	F1RGP11	2.8	0.01	0.01	10,900	3.14	1.77
11th-grade academic GPA	F1RAGP11	2.7	0.01	0.01	10,900	2.87	1.70
12th-grade GPA	F1RGP12	3.0	0.01	0.01	10,900	3.40	1.84
12th-grade academic GPA	F1RAGP12	2.8	0.01	0.01	10,900	3.14	1.77
Total GPA	F1RGP	2.9	0.01	0.01	10,900	3.32	1.82
Total academic GPA	F1RAGP	2.7	0.01	0.01	10,900	3.10	1.76
SUMMARY STATISTICS							
Mean						4.29	2.04
Minimum						2.32	1.52
Median						3.67	1.92
Maximum						9.13	3.02
Standard deviation						1.68	0.37

† Not applicable.
# Rounds to zero.
NOTE: N = sample size; DEFF = design effect; DEFT = square root of the design effect; CU = Carnegie Unit.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "High School Transcript Study."

Table G-20. Student design effects, by survey item using transcript weight, male 2004 spring graduates: 2004–05

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Left school in 2004	F1RDTLFT	100.0	#	#	5,300	†	†
Left school with standard diploma	F1RREASL = 1	100.0	#	#	5,300	†	†
Total CUs in mathematics	F1RMAT_C	3.6	0.02	0.01	5,300	3.16	1.78
Total CUs in science	F1RSCI_C	3.3	0.03	0.02	5,300	2.80	1.67
Total CUs in English	F1RENG_C	4.3	0.03	0.01	5,300	4.21	2.05
Total CUs in social studies	F1RSOC_C	3.9	0.03	0.01	5,300	4.82	2.19
Total CUs in fine arts	F1RFIN_C	1.7	0.04	0.03	5,300	2.53	1.59
Total CUs in non-English language	F1RNON_C	1.8	0.03	0.02	5,300	3.00	1.73
Total CUs in family/cons. science	F1RFAM_C	0.3	0.01	0.01	5,300	2.86	1.69
Total CUs in general labor market preparation	F1RGLA_C	0.4	0.02	0.01	5,300	3.00	1.73
Total CUs in specific labor market preparation	F1RSLA_C	3.1	0.07	0.03	5,300	3.79	1.95
Total CUs in general studies	F1RGEN_C	0.5	0.02	0.01	5,300	3.70	1.92
Total CUs in health/physical/recreation education	F1RHEA_C	2.5	0.03	0.02	5,300	3.45	1.86
Total CUs in religion and theology	F1RREL_C	0.3	0.02	0.01	5,300	2.67	1.63
Total CUs in military science	F1RMIL_C	0.1	0.01	0.01	5,300	2.74	1.65
Total CUs	F1RHTUN	26.0	0.10	0.05	5,300	5.25	2.29
Total AP/IB courses	F1RAPIB	0.8	0.04	0.02	5,300	2.47	1.57
Math pipeline: Advanced III	F1RMAPIP = 8	14.8	0.74	0.49	5,300	2.33	1.53
Academic concentrator	F1RTRCC = 1	25.9	1.00	0.60	5,300	2.78	1.67
New basics: College bound, core curriculum	F1RNEWB = 1	33.2	1.05	0.65	5,300	2.63	1.62
9th-grade GPA	F1RGP9	2.8	0.01	0.01	5,300	2.06	1.44
9th-grade academic GPA	F1RAGP9	2.6	0.02	0.01	5,300	2.02	1.42
10th-grade GPA	F1RGP10	2.7	0.02	0.01	5,300	2.17	1.47
10th-grade academic GPA	F1RAGP10	2.5	0.02	0.01	5,300	2.22	1.49
11th-grade GPA	F1RGP11	2.7	0.01	0.01	5,300	2.15	1.46
11th-grade academic GPA	F1RAGP11	2.5	0.02	0.01	5,300	2.06	1.44
12th-grade GPA	F1RGP12	2.8	0.01	0.01	5,300	2.25	1.50
12th-grade academic GPA	F1RAGP12	2.6	0.02	0.01	5,300	2.14	1.46
Total GPA	F1RGP	2.8	0.01	0.01	5,300	2.16	1.47
Total academic GPA	F1RAGP	2.6	0.01	0.01	5,300	2.17	1.47
SUMMARY STATISTICS							
Mean						2.84	1.67
Minimum						2.02	1.42
Median						2.65	1.63
Maximum						5.25	2.29
Standard deviation						0.85	0.23

† Not applicable.
# Rounds to zero.
NOTE: N = sample size; DEFF = design effect; DEFT = square root of the design effect; CU = Carnegie Unit.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "High School Transcript Study."

Table G-21. Student design effects, by survey item using transcript weight, female 2004 spring graduates: 2004–05

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Left school in 2004	F1RDTLFT	100.0	#	#	5,600	†	†
Left school with standard diploma	F1RREASL = 1	100.0	#	#	5,600	†	†
Total CUs in mathematics	F1RMAT_C	3.6	0.02	0.01	5,600	3.53	1.88
Total CUs in science	F1RSCI_C	3.3	0.02	0.01	5,600	3.13	1.77
Total CUs in English	F1RENG_C	4.4	0.03	0.01	5,600	3.92	1.98
Total CUs in social studies	F1RSOC_C	4.0	0.03	0.01	5,600	5.27	2.30
Total CUs in fine arts	F1RFIN_C	2.3	0.04	0.03	5,600	2.83	1.68
Total CUs in non-English language	F1RNON_C	2.2	0.03	0.02	5,600	3.47	1.86
Total CUs in family/cons. science	F1RFAM_C	0.5	0.02	0.01	5,600	3.67	1.92
Total CUs in general labor market preparation	F1RGLA_C	0.3	0.02	0.01	5,600	3.11	1.76
Total CUs in specific labor market preparation	F1RSLA_C	2.3	0.06	0.03	5,600	4.33	2.08
Total CUs in general studies	F1RGEN_C	0.6	0.02	0.01	5,600	3.96	1.99
Total CUs in health/physical/recreation education	F1RHEA_C	2.1	0.03	0.01	5,600	4.67	2.16
Total CUs in religion and theology	F1RREL_C	0.2	0.02	0.01	5,600	2.45	1.57
Total CUs in military science	F1RMIL_C	0.1	0.01	0.01	5,600	3.15	1.78
Total CUs	F1RHTUN	26.1	0.10	0.04	5,600	5.44	2.33
Total AP/IB courses	F1RAPIB	0.9	0.04	0.02	5,600	2.69	1.64
Math pipeline: Advanced III	F1RMAPIP = 8	13.6	0.66	0.46	5,600	2.11	1.45
Academic concentrator	F1RTRCC = 1	28.1	1.03	0.60	5,600	2.93	1.71
New basics: College bound, core curriculum	F1RNEWB = 1	32.5	1.10	0.62	5,600	3.08	1.76
9th-grade GPA	F1RGP9	3.0	0.02	0.01	5,600	2.72	1.65
9th-grade academic GPA	F1RAGP9	2.9	0.02	0.01	5,600	2.66	1.63
10th-grade GPA	F1RGP10	2.9	0.02	0.01	5,600	2.61	1.61
10th-grade academic GPA	F1RAGP10	2.8	0.02	0.01	5,600	2.55	1.60
11th-grade GPA	F1RGP11	2.9	0.02	0.01	5,600	2.78	1.67
11th-grade academic GPA	F1RAGP11	2.8	0.02	0.01	5,600	2.61	1.62
12th-grade GPA	F1RGP12	3.1	0.02	0.01	5,600	2.95	1.72
12th-grade academic GPA	F1RAGP12	3.0	0.02	0.01	5,600	2.66	1.63
Total GPA	F1RGP	3.0	0.01	0.01	5,600	2.93	1.71
Total academic GPA	F1RAGP	2.9	0.02	0.01	5,600	2.77	1.67
SUMMARY STATISTICS							
Mean						3.25	1.79
Minimum						2.11	1.45
Median						2.94	1.72
Maximum						5.44	2.33
Standard deviation						0.84	0.22

† Not applicable.
# Rounds to zero.
NOTE: N = sample size; DEFF = design effect; DEFT = square root of the design effect; CU = Carnegie Unit.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "High School Transcript Study."

Table G-22. Student design effects, by survey item using transcript weight, American Indian or Alaska Native 2004 spring graduates: 2004–05

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Left school in 2004	F1RDTLFT	100.0	#	#	80	†	†
Left school with standard diploma	F1RREASL = 1	100.0	#	#	80	†	†
Total CUs in mathematics	F1RMAT_C	3.3	0.13	0.11	80	1.31	1.15
Total CUs in science	F1RSCI_C	3.1	0.20	0.12	80	2.58	1.60
Total CUs in English	F1RENG_C	4.4	0.22	0.14	80	2.46	1.57
Total CUs in social studies	F1RSOC_C	4.2	0.27	0.15	80	3.19	1.79
Total CUs in fine arts	F1RFIN_C	1.4	0.27	0.17	80	2.36	1.54
Total CUs in non-English language	F1RNON_C	1.4	0.20	0.14	80	2.11	1.45
Total CUs in family/cons. science	F1RFAM_C	0.7	0.11	0.09	80	1.48	1.22
Total CUs in general labor market preparation	F1RGLA_C	1.0	0.25	0.17	80	2.31	1.52
Total CUs in specific labor market preparation	F1RSLA_C	2.7	0.24	0.21	80	1.39	1.18
Total CUs in general studies	F1RGEN_C	0.7	0.24	0.11	80	4.83	2.20
Total CUs in health/physical/recreation education	F1RHEA_C	2.7	0.23	0.16	80	2.03	1.42
Total CUs in religion and theology	F1RREL_C	0.1	0.03	0.05	80	0.36	0.60
Total CUs in military science	F1RMIL_C	0.2	0.12	0.07	80	2.51	1.59
Total CUs	F1RHTUN	25.8	0.61	0.38	80	2.63	1.62
Total AP/IB courses	F1RAPIB	0.3	0.13	0.11	80	1.42	1.19
Math pipeline: Advanced III	F1RMAPIP = 8	6.0	2.81	2.73	80	1.05	1.03
Academic concentrator	F1RTRCC = 1	14.1	5.10	4.01	80	1.62	1.27
New basics: College bound, core curriculum	F1RNEWB = 1	16.2	5.79	4.25	80	1.85	1.36
9th-grade GPA	F1RGP9	2.5	0.13	0.10	80	1.83	1.35
9th-grade academic GPA	F1RAGP9	2.3	0.15	0.11	80	1.72	1.31
10th-grade GPA	F1RGP10	2.5	0.10	0.08	80	1.55	1.24
10th-grade academic GPA	F1RAGP10	2.3	0.11	0.10	80	1.23	1.11
11th-grade GPA	F1RGP11	2.5	0.13	0.10	80	1.68	1.30
11th-grade academic GPA	F1RAGP11	2.3	0.13	0.11	80	1.45	1.20
12th-grade GPA	F1RGP12	2.8	0.09	0.08	70	1.38	1.17
12th-grade academic GPA	F1RAGP12	2.6	0.10	0.09	70	1.24	1.11
Total GPA	F1RGP	2.6	0.10	0.07	80	1.66	1.29
Total academic GPA	F1RAGP	2.4	0.10	0.08	80	1.33	1.15
SUMMARY STATISTICS							
Mean						1.88	1.34
Minimum						0.36	0.60
Median						1.67	1.29
Maximum						4.83	2.20
Standard deviation						0.83	0.29

† Not applicable.
# Rounds to zero.
NOTE: N = sample size; DEFF = design effect; DEFT = square root of the design effect; CU = Carnegie Unit.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "High School Transcript Study."

Table G-23. Student design effects, by survey item using transcript weight, Asian 2004 spring graduates: 2004–05

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Left school in 2004	F1RDTLFT	100.0	#	#	1,100	†	†
Left school with standard diploma	F1RREASL = 1	100.0	#	#	1,100	†	†
Total CUs in mathematics	F1RMAT_C	3.8	0.04	0.03	1,100	2.24	1.50
Total CUs in science	F1RSCI_C	3.7	0.06	0.04	1,100	2.84	1.69
Total CUs in English	F1RENG_C	4.4	0.05	0.03	1,100	3.12	1.77
Total CUs in social studies	F1RSOC_C	3.9	0.05	0.03	1,100	3.19	1.79
Total CUs in fine arts	F1RFIN_C	1.8	0.08	0.05	1,100	2.38	1.54
Total CUs in non-English language	F1RNON_C	2.4	0.06	0.04	1,100	2.92	1.71
Total CUs in family/cons. science	F1RFAM_C	0.3	0.02	0.02	1,100	2.16	1.47
Total CUs in general labor market preparation	F1RGLA_C	0.2	0.03	0.02	1,100	3.32	1.82
Total CUs in specific labor market preparation	F1RSLA_C	2.0	0.08	0.05	1,100	2.59	1.61
Total CUs in general studies	F1RGEN_C	0.6	0.04	0.03	1,100	2.72	1.65
Total CUs in health/physical/recreation education	F1RHEA_C	2.3	0.05	0.03	1,100	3.27	1.81
Total CUs in religion and theology	F1RREL_C	0.2	0.05	0.02	1,100	3.97	1.99
Total CUs in military science	F1RMIL_C	0.1	0.02	0.01	1,100	2.65	1.63
Total CUs	F1RHTUN	26.0	0.17	0.09	1,100	3.36	1.83
Total AP/IB courses	F1RAPIB	2.1	0.16	0.08	1,100	3.55	1.88
Math pipeline: Advanced III	F1RMAPIP = 8	33.8	2.54	1.40	1,100	3.30	1.82
Academic concentrator	F1RTRCC = 1	41.0	2.34	1.45	1,100	2.60	1.61
New basics: College bound, core curriculum	F1RNEWB = 1	35.4	2.16	1.41	1,100	2.34	1.53
9th-grade GPA	F1RGP9	3.1	0.03	0.02	1,100	1.97	1.40
9th-grade academic GPA	F1RAGP9	3.0	0.03	0.02	1,100	1.99	1.41
10th-grade GPA	F1RGP10	3.1	0.03	0.02	1,100	2.04	1.43
10th-grade academic GPA	F1RAGP10	3.0	0.03	0.02	1,100	1.97	1.40
11th-grade GPA	F1RGP11	3.1	0.03	0.02	1,100	2.13	1.46
11th-grade academic GPA	F1RAGP11	3.0	0.03	0.02	1,100	2.18	1.47
12th-grade GPA	F1RGP12	3.1	0.03	0.02	1,100	2.02	1.42
12th-grade academic GPA	F1RAGP12	3.0	0.03	0.02	1,100	1.99	1.41
Total GPA	F1RGP	3.1	0.03	0.02	1,100	2.12	1.46
Total academic GPA	F1RAGP	3.0	0.03	0.02	1,100	2.15	1.47
SUMMARY STATISTICS							
Mean						2.61	1.61
Minimum						1.97	1.40
Median						2.48	1.58
Maximum						3.97	1.99
Standard deviation						0.58	0.18

† Not applicable.
# Rounds to zero.
NOTE: N = sample size; DEFF = design effect; DEFT = square root of the design effect; CU = Carnegie Unit.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "High School Transcript Study."

Table G-24. Student design effects, by survey item using transcript weight, Black or African American 2004 spring graduates: 2004–05

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Left school in 2004	F1RDTLFT	100.0	#	#	1,200	†	†
Left school with standard diploma	F1RREASL = 1	100.0	#	#	1,200	†	†
Total CUs in mathematics	F1RMAT_C	3.7	0.05	0.03	1,200	2.69	1.64
Total CUs in science	F1RSCI_C	3.2	0.05	0.03	1,200	2.31	1.52
Total CUs in English	F1RENG_C	4.4	0.05	0.03	1,200	2.88	1.70
Total CUs in social studies	F1RSOC_C	3.9	0.05	0.03	1,200	2.87	1.69
Total CUs in fine arts	F1RFIN_C	1.6	0.07	0.05	1,200	2.30	1.52
Total CUs in non-English language	F1RNON_C	1.7	0.06	0.03	1,200	3.25	1.80
Total CUs in family/cons. science	F1RFAM_C	0.5	0.04	0.02	1,200	2.48	1.57
Total CUs in general labor market preparation	F1RGLA_C	0.5	0.04	0.03	1,200	2.31	1.52
Total CUs in specific labor market preparation	F1RSLA_C	2.8	0.11	0.06	1,200	2.89	1.70
Total CUs in general studies	F1RGEN_C	0.6	0.04	0.03	1,200	2.34	1.53
Total CUs in health/physical/recreation education	F1RHEA_C	2.4	0.06	0.04	1,200	2.67	1.63
Total CUs in religion and theology	F1RREL_C	0.1	0.01	0.02	1,200	0.69	0.83
Total CUs in military science	F1RMIL_C	0.3	0.05	0.03	1,200	3.01	1.73
Total CUs	F1RHTUN	26.0	0.20	0.10	1,200	3.83	1.96
Total AP/IB courses	F1RAPIB	0.4	0.04	0.03	1,200	1.67	1.29
Math pipeline: Advanced III	F1RMAPIP = 8	4.9	0.71	0.63	1,200	1.27	1.13
Academic concentrator	F1RTRCC = 1	18.4	1.62	1.13	1,200	2.06	1.44
New basics: College bound, core curriculum	F1RNEWB = 1	34.6	1.89	1.38	1,200	1.87	1.37
9th-grade GPA	F1RGP9	2.5	0.03	0.02	1,200	2.02	1.42
9th-grade academic GPA	F1RAGP9	2.3	0.03	0.02	1,200	1.83	1.35
10th-grade GPA	F1RGP10	2.4	0.03	0.02	1,200	2.05	1.43
10th-grade academic GPA	F1RAGP10	2.2	0.03	0.02	1,200	1.82	1.35
11th-grade GPA	F1RGP11	2.4	0.03	0.02	1,200	2.13	1.46
11th-grade academic GPA	F1RAGP11	2.3	0.03	0.02	1,200	1.98	1.41
12th-grade GPA	F1RGP12	2.6	0.03	0.02	1,200	2.13	1.46
12th-grade academic GPA	F1RAGP12	2.4	0.03	0.02	1,200	1.91	1.38
Total GPA	F1RGP	2.5	0.03	0.02	1,200	2.22	1.49
Total academic GPA	F1RAGP	2.3	0.03	0.02	1,200	1.93	1.39
SUMMARY STATISTICS							
Mean						2.26	1.49
Minimum						0.69	0.83
Median						2.17	1.47
Maximum						3.83	1.96
Standard deviation						0.62	0.22

† Not applicable.
# Rounds to zero.
NOTE: N = sample size; DEFF = design effect; DEFT = square root of the design effect; CU = Carnegie Unit.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "High School Transcript Study."

Table G-25. Student design effects, by survey item using transcript weight, Hispanic or Latino 2004 spring graduates: 2004–05

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Left school in 2004	F1RDTLFT	100.0	#	#	1,400	†	†
Left school with standard diploma	F1RREASL = 1	100.0	#	#	1,400	†	†
Total CUs in mathematics	F1RMAT_C	3.5	0.04	0.03	1,400	2.79	1.67
Total CUs in science	F1RSCI_C	2.9	0.04	0.03	1,400	2.09	1.45
Total CUs in English	F1RENG_C	4.6	0.06	0.03	1,400	3.27	1.81
Total CUs in social studies	F1RSOC_C	3.8	0.05	0.03	1,400	4.11	2.03
Total CUs in fine arts	F1RFIN_C	1.8	0.07	0.04	1,400	2.61	1.62
Total CUs in non-English language	F1RNON_C	1.9	0.06	0.03	1,400	3.27	1.81
Total CUs in family/cons. science	F1RFAM_C	0.4	0.03	0.02	1,400	2.47	1.57
Total CUs in general labor market preparation	F1RGLA_C	0.4	0.03	0.02	1,400	2.09	1.45
Total CUs in specific labor market preparation	F1RSLA_C	2.5	0.09	0.06	1,400	2.59	1.61
Total CUs in general studies	F1RGEN_C	0.7	0.05	0.03	1,400	2.83	1.68
Total CUs in health/physical/recreation education	F1RHEA_C	2.4	0.06	0.03	1,400	3.47	1.86
Total CUs in religion and theology	F1RREL_C	0.2	0.02	0.02	1,400	1.43	1.19
Total CUs in military science	F1RMIL_C	0.2	0.03	0.02	1,400	2.91	1.71
Total CUs	F1RHTUN	25.3	0.21	0.09	1,400	5.90	2.43
Total AP/IB courses	F1RAPIB	0.7	0.05	0.04	1,400	1.86	1.36
Math pipeline: Advanced III	F1RMAPIP = 8	7.1	0.88	0.69	1,400	1.61	1.27
Academic concentrator	F1RTRCC = 1	16.4	1.30	1.00	1,400	1.70	1.30
New basics: College bound, core curriculum	F1RNEWB = 1	27.3	1.96	1.20	1,400	2.66	1.63
9th-grade GPA	F1RGP9	2.7	0.03	0.02	1,400	2.09	1.45
9th-grade academic GPA	F1RAGP9	2.5	0.03	0.02	1,400	1.98	1.41
10th-grade GPA	F1RGP10	2.6	0.03	0.02	1,400	2.31	1.52
10th-grade academic GPA	F1RAGP10	2.4	0.03	0.02	1,400	2.40	1.55
11th-grade GPA	F1RGP11	2.6	0.03	0.02	1,400	2.22	1.49
11th-grade academic GPA	F1RAGP11	2.5	0.03	0.02	1,400	2.04	1.43
12th-grade GPA	F1RGP12	2.8	0.03	0.02	1,400	2.57	1.60
12th-grade academic GPA	F1RAGP12	2.6	0.03	0.02	1,400	2.35	1.53
Total GPA	F1RGP	2.7	0.03	0.02	1,400	2.52	1.59
Total academic GPA	F1RAGP	2.5	0.03	0.02	1,400	2.40	1.55
SUMMARY STATISTICS							
Mean						2.59	1.59
Minimum						1.43	1.19
Median						2.44	1.56
Maximum						5.90	2.43
Standard deviation						0.87	0.25

† Not applicable.
# Rounds to zero.
NOTE: N = sample size; DEFF = design effect; DEFT = square root of the design effect; CU = Carnegie Unit.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "High School Transcript Study."

Table G-26. Student design effects, by survey item using transcript weight, White 2004 spring graduates: 2004–05

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Left school in 2004	F1RDTLFT	100.0	#	#	6,600	†	†
Left school with standard diploma	F1RREASL = 1	100.0	#	#	6,600	†	†
Total CUs in mathematics	F1RMAT_C	3.6	0.02	0.01	6,600	4.04	2.01
Total CUs in science	F1RSCI_C	3.4	0.02	0.01	6,600	3.56	1.89
Total CUs in English	F1RENG_C	4.3	0.02	0.01	6,600	4.54	2.13
Total CUs in social studies	F1RSOC_C	4.0	0.03	0.01	6,600	6.94	2.63
Total CUs in fine arts	F1RFIN_C	2.2	0.04	0.02	6,600	2.84	1.68
Total CUs in non-English language	F1RNON_C	2.1	0.03	0.02	6,600	3.86	1.96
Total CUs in family/cons. science	F1RFAM_C	0.4	0.02	0.01	6,600	3.71	1.93
Total CUs in general labor market preparation	F1RGLA_C	0.4	0.02	0.01	6,600	4.15	2.04
Total CUs in specific labor market preparation	F1RSLA_C	2.8	0.07	0.03	6,600	5.10	2.26
Total CUs in general studies	F1RGEN_C	0.5	0.02	0.01	6,600	5.75	2.40
Total CUs in health/physical/recreation education	F1RHEA_C	2.3	0.03	0.01	6,600	5.29	2.30
Total CUs in religion and theology	F1RREL_C	0.3	0.02	0.01	6,600	2.31	1.52
Total CUs in military science	F1RMIL_C	0.1	0.01	0.01	6,600	2.54	1.59
Total CUs	F1RHTUN	26.3	0.11	0.04	6,600	7.94	2.82
Total AP/IB courses	F1RAPIB	0.9	0.04	0.02	6,600	3.20	1.79
Math pipeline: Advanced III	F1RMAPIP = 8	16.2	0.70	0.45	6,600	2.40	1.55
Academic concentrator	F1RTRCC = 1	30.3	1.08	0.57	6,600	3.64	1.91
New basics: College bound, core curriculum	F1RNEWB = 1	34.3	1.08	0.58	6,600	3.45	1.86
9th-grade GPA	F1RGP9	3.0	0.01	0.01	6,600	2.03	1.42
9th-grade academic GPA	F1RAGP9	2.9	0.01	0.01	6,600	2.04	1.43
10th-grade GPA	F1RGP10	2.9	0.01	0.01	6,600	2.07	1.44
10th-grade academic GPA	F1RAGP10	2.8	0.01	0.01	6,600	2.11	1.45
11th-grade GPA	F1RGP11	2.9	0.01	0.01	6,600	2.13	1.46
11th-grade academic GPA	F1RAGP11	2.8	0.01	0.01	6,600	1.99	1.41
12th-grade GPA	F1RGP12	3.1	0.01	0.01	6,600	2.33	1.53
12th-grade academic GPA	F1RAGP12	2.9	0.01	0.01	6,600	2.22	1.49
Total GPA	F1RGP	3.0	0.01	0.01	6,600	2.11	1.45
Total academic GPA	F1RAGP	2.8	0.01	0.01	6,600	2.05	1.43
SUMMARY STATISTICS							
Mean						3.44	1.81
Minimum						1.99	1.41
Median						3.02	1.74
Maximum						7.94	2.82
Standard deviation						1.58	0.40

† Not applicable.
# Rounds to zero.
NOTE: N = sample size; DEFF = design effect; DEFT = square root of the design effect; CU = Carnegie Unit.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "High School Transcript Study."

Table G-27. Student design effects, by survey item using transcript weight, 2004 spring graduates reporting more than one race: 2004–05

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Left school in 2004	F1RDTLFT	100.0	#	#	500	†	†
Left school with standard diploma	F1RREASL = 1	100.0	#	#	500	†	†
Total CUs in mathematics	F1RMAT_C	3.5	0.06	0.04	500	1.92	1.39
Total CUs in science	F1RSCI_C	3.2	0.06	0.05	500	1.60	1.26
Total CUs in English	F1RENG_C	4.3	0.06	0.04	500	2.16	1.47
Total CUs in social studies	F1RSOC_C	3.9	0.07	0.05	500	1.93	1.39
Total CUs in fine arts	F1RFIN_C	2.1	0.14	0.09	500	2.10	1.45
Total CUs in non-English language	F1RNON_C	1.9	0.07	0.05	500	1.77	1.33
Total CUs in family/cons. science	F1RFAM_C	0.3	0.03	0.03	500	1.69	1.30
Total CUs in general labor market preparation	F1RGLA_C	0.3	0.05	0.04	500	1.85	1.36
Total CUs in specific labor market preparation	F1RSLA_C	2.8	0.18	0.11	500	2.84	1.69
Total CUs in general studies	F1RGEN_C	0.7	0.07	0.05	500	2.05	1.43
Total CUs in health/physical/recreation education	F1RHEA_C	2.2	0.08	0.05	500	2.31	1.52
Total CUs in religion and theology	F1RREL_C	0.3	0.04	0.04	500	0.96	0.98
Total CUs in military science	F1RMIL_C	0.1	0.02	0.02	500	1.20	1.10
Total CUs	F1RHTUN	25.9	0.23	0.15	500	2.48	1.58
Total AP/IB courses	F1RAPIB	0.8	0.09	0.07	500	1.60	1.27
Math pipeline: Advanced III	F1RMAPIP = 8	12.4	1.75	1.49	500	1.39	1.18
Academic concentrator	F1RTRCC = 1	23.1	2.56	1.90	500	1.82	1.35
New basics: College bound, core curriculum	F1RNEWB = 1	24.1	2.52	1.93	500	1.70	1.30
9th-grade GPA	F1RGP9	2.8	0.04	0.03	500	1.77	1.33
9th-grade academic GPA	F1RAGP9	2.7	0.05	0.03	500	1.73	1.32
10th-grade GPA	F1RGP10	2.8	0.05	0.03	500	1.94	1.39
10th-grade academic GPA	F1RAGP10	2.6	0.05	0.03	500	1.71	1.31
11th-grade GPA	F1RGP11	2.8	0.05	0.03	500	1.98	1.41
11th-grade academic GPA	F1RAGP11	2.6	0.05	0.04	500	1.89	1.37
12th-grade GPA	F1RGP12	2.9	0.04	0.03	500	2.10	1.45
12th-grade academic GPA	F1RAGP12	2.7	0.05	0.03	500	2.03	1.42
Total GPA	F1RGP	2.8	0.04	0.03	500	1.88	1.37
Total academic GPA	F1RAGP	2.7	0.04	0.03	500	1.81	1.34
SUMMARY STATISTICS							
Mean						1.86	1.36
Minimum						0.96	0.98
Median						1.86	1.36
Maximum						2.84	1.69
Standard deviation						0.36	0.14

† Not applicable.
# Rounds to zero.
NOTE: N = sample size; DEFF = design effect; DEFT = square root of the design effect; CU = Carnegie Unit.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "High School Transcript Study."

Table G-28. Student design effects, by survey item using transcript weight, public school 2004 spring graduates: 2004–05

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Left school in 2004	F1RDTLFT	100.0	#	#	8,200	†	†
Left school with standard diploma	F1RREASL = 1	100.0	#	#	8,200	†	†
Total CUs in mathematics	F1RMAT_C	3.6	0.02	0.01	8,200	4.37	2.09
Total CUs in science	F1RSCI_C	3.3	0.02	0.01	8,200	3.88	1.97
Total CUs in English	F1RENG_C	4.3	0.02	0.01	8,200	5.30	2.30
Total CUs in social studies	F1RSOC_C	4.0	0.03	0.01	8,200	7.33	2.71
Total CUs in fine arts	F1RFIN_C	2.0	0.04	0.02	8,200	2.96	1.72
Total CUs in non-English language	F1RNON_C	1.9	0.03	0.01	8,200	4.05	2.01
Total CUs in family/cons. science	F1RFAM_C	0.4	0.02	0.01	8,200	3.88	1.97
Total CUs in general labor market preparation	F1RGLA_C	0.4	0.02	0.01	8,200	3.86	1.96
Total CUs in specific labor market preparation	F1RSLA_C	2.8	0.06	0.03	8,200	5.15	2.27
Total CUs in general studies	F1RGEN_C	0.6	0.02	0.01	8,200	5.29	2.30
Total CUs in health/physical/recreation education	F1RHEA_C	2.4	0.03	0.01	8,200	4.92	2.22
Total CUs in religion and theology	F1RREL_C	#	#	#	8,200	†	†
Total CUs in military science	F1RMIL_C	0.1	0.01	0.01	8,200	3.13	1.77
Total CUs	F1RHTUN	26.0	0.10	0.04	8,200	7.85	2.80
Total AP/IB courses	F1RAPIB	0.8	0.03	0.02	8,200	3.08	1.75
Math pipeline: Advanced III	F1RMAPIP = 8	13.1	0.58	0.37	8,200	2.41	1.55
Academic concentrator	F1RTRCC = 1	24.7	0.90	0.48	8,200	3.57	1.89
New basics: College bound, core curriculum	F1RNEWB = 1	31.8	0.91	0.51	8,200	3.15	1.77
9th-grade GPA	F1RGP9	2.8	0.01	0.01	8,200	2.58	1.61
9th-grade academic GPA	F1RAGP9	2.7	0.01	0.01	8,200	2.46	1.57
10th-grade GPA	F1RGP10	2.8	0.01	0.01	8,200	2.67	1.63
10th-grade academic GPA	F1RAGP10	2.7	0.01	0.01	8,200	2.60	1.61
11th-grade GPA	F1RGP11	2.8	0.01	0.01	8,200	2.69	1.64
11th-grade academic GPA	F1RAGP11	2.7	0.01	0.01	8,200	2.46	1.57
12th-grade GPA	F1RGP12	2.9	0.01	0.01	8,200	2.91	1.71
12th-grade academic GPA	F1RAGP12	2.8	0.01	0.01	8,200	2.69	1.64
Total GPA	F1RGP	2.8	0.01	0.01	8,200	2.87	1.69
Total academic GPA	F1RAGP	2.7	0.01	0.01	8,200	2.67	1.63
SUMMARY STATISTICS							
Mean						3.69	1.89
Minimum						2.41	1.55
Median						3.10	1.76
Maximum						7.85	2.80
Standard deviation						1.43	0.34

† Not applicable.
# Rounds to zero.
NOTE: N = sample size; DEFF = design effect; DEFT = square root of the design effect; CU = Carnegie Unit.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "High School Transcript Study."

Table G-29. Student design effects, by survey item using transcript weight, Catholic school 2004 spring graduates: 2004–05

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Left school in 2004	F1RDTLFT	100.0	#	#	1,600	†	†
Left school with standard diploma	F1RREASL = 1	100.0	#	#	1,600	†	†
Total CUs in mathematics	F1RMAT_C	3.8	0.03	0.02	1,600	2.77	1.66
Total CUs in science	F1RSCI_C	3.5	0.06	0.02	1,600	7.72	2.78
Total CUs in English	F1RENG_C	4.4	0.06	0.02	1,600	10.87	3.30
Total CUs in social studies	F1RSOC_C	4.1	0.07	0.02	1,600	9.52	3.09
Total CUs in fine arts	F1RFIN_C	1.7	0.10	0.04	1,600	7.89	2.81
Total CUs in non-English language	F1RNON_C	2.8	0.07	0.02	1,600	7.54	2.75
Total CUs in family/cons. science	F1RFAM_C	0.1	0.03	0.01	1,600	9.09	3.02
Total CUs in general labor market preparation	F1RGLA_C	0.1	0.03	0.01	1,600	18.91	4.35
Total CUs in specific labor market preparation	F1RSLA_C	1.3	0.07	0.03	1,600	7.09	2.66
Total CUs in general studies	F1RGEN_C	0.2	0.03	0.01	1,600	7.62	2.76
Total CUs in health/physical/recreation education	F1RHEA_C	1.8	0.08	0.02	1,600	11.27	3.36
Total CUs in religion and theology	F1RREL_C	3.4	0.07	0.02	1,600	12.59	3.55
Total CUs in military science	F1RMIL_C	#	0.03	0.01	1,600	†	†
Total CUs	F1RHTUN	27.4	0.24	0.06	1,600	16.18	4.02
Total AP/IB courses	F1RAPIB	1.1	0.10	0.04	1,600	5.29	2.30
Math pipeline: Advanced III	F1RMAPIP = 8	22.0	1.83	1.03	1,600	3.17	1.78
Academic concentrator	F1RTRCC = 1	53.2	3.56	1.24	1,600	8.26	2.87
New basics: College bound, core curriculum	F1RNEWB = 1	57.5	3.82	1.23	1,600	9.67	3.11
9th-grade GPA	F1RGP9	3.0	0.03	0.02	1,600	3.75	1.94
9th-grade academic GPA	F1RAGP9	2.9	0.04	0.02	1,600	3.59	1.90
10th-grade GPA	F1RGP10	2.9	0.03	0.02	1,600	4.02	2.00
10th-grade academic GPA	F1RAGP10	2.9	0.04	0.02	1,600	4.01	2.00
11th-grade GPA	F1RGP11	3.0	0.03	0.02	1,600	3.86	1.97
11th-grade academic GPA	F1RAGP11	2.9	0.04	0.02	1,600	3.84	1.96
12th-grade GPA	F1RGP12	3.0	0.03	0.02	1,600	4.26	2.06
12th-grade academic GPA	F1RAGP12	2.9	0.03	0.02	1,600	3.92	1.98
Total GPA	F1RGP	3.0	0.03	0.02	1,600	4.15	2.04
Total academic GPA	F1RAGP	2.9	0.03	0.02	1,600	3.96	1.99
SUMMARY STATISTICS							
Mean						7.41	2.63
Minimum						2.77	1.66
Median						7.31	2.70
Maximum						18.91	4.35
Standard deviation						4.17	0.73

† Not applicable.
# Rounds to zero.
NOTE: N = sample size; DEFF = design effect; DEFT = square root of the design effect; CU = Carnegie Unit.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "High School Transcript Study."

Table G-30. Student design effects, by survey item using transcript weight, other private school 2004 spring graduates: 2004–05

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Left school in 2004	F1RDTLFT	100.0	#	#	1,000	†	†
Left school with standard diploma	F1RREASL = 1	100.0	#	#	1,000	†	†
Total CUs in mathematics	F1RMAT_C	3.8	0.07	0.02	1,000	8.21	2.87
Total CUs in science	F1RSCI_C	3.6	0.06	0.03	1,000	4.89	2.21
Total CUs in English	F1RENG_C	4.4	0.08	0.03	1,000	7.21	2.69
Total CUs in social studies	F1RSOC_C	4.0	0.12	0.04	1,000	12.13	3.48
Total CUs in fine arts	F1RFIN_C	2.1	0.21	0.05	1,000	15.03	3.88
Total CUs in non-English language	F1RNON_C	2.5	0.13	0.04	1,000	10.64	3.26
Total CUs in family/cons. science	F1RFAM_C	0.1	0.03	0.01	1,000	9.39	3.06
Total CUs in general labor market preparation	F1RGLA_C	0.2	0.05	0.01	1,000	12.88	3.59
Total CUs in specific labor market preparation	F1RSLA_C	1.1	0.08	0.04	1,000	5.12	2.26
Total CUs in general studies	F1RGEN_C	0.3	0.05	0.02	1,000	7.87	2.81
Total CUs in health/physical/recreation education	F1RHEA_C	1.8	0.10	0.03	1,000	11.18	3.34
Total CUs in religion and theology	F1RREL_C	1.5	0.18	0.05	1,000	12.13	3.48
Total CUs in military science	F1RMIL_C	0.1	0.04	0.01	1,000	7.86	2.80
Total CUs	F1RHTUN	25.8	0.37	0.10	1,000	12.60	3.55
Total AP/IB courses	F1RAPIB	1.3	0.19	0.06	1,000	9.18	3.03
Math pipeline: Advanced III	F1RMAPIP = 8	30.2	4.07	1.42	1,000	8.18	2.86
Academic concentrator	F1RTRCC = 1	47.8	4.16	1.55	1,000	7.21	2.69
New basics: College bound, core curriculum	F1RNEWB = 1	25.4	3.38	1.35	1,000	6.27	2.50
9th-grade GPA	F1RGP9	3.2	0.04	0.02	1,000	3.70	1.92
9th-grade academic GPA	F1RAGP9	3.1	0.04	0.02	1,000	3.66	1.91
10th-grade GPA	F1RGP10	3.1	0.04	0.02	1,000	3.59	1.90
10th-grade academic GPA	F1RAGP10	3.1	0.04	0.02	1,000	3.84	1.96
11th-grade GPA	F1RGP11	3.2	0.04	0.02	1,000	4.37	2.09
11th-grade academic GPA	F1RAGP11	3.1	0.04	0.02	1,000	4.09	2.02
12th-grade GPA	F1RGP12	3.3	0.04	0.02	1,000	4.48	2.12
12th-grade academic GPA	F1RAGP12	3.2	0.04	0.02	1,000	4.21	2.05
Total GPA	F1RGP	3.2	0.03	0.02	1,000	4.13	2.03
Total academic GPA	F1RAGP	3.1	0.04	0.02	1,000	4.04	2.01
SUMMARY STATISTICS							
Mean						7.43	2.66
Minimum						3.59	1.90
Median						7.21	2.69
Maximum						15.03	3.88
Standard deviation						3.45	0.62

† Not applicable.
# Rounds to zero.
NOTE: N = sample size; DEFF = design effect; DEFT = square root of the design effect; CU = Carnegie Unit.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), “High School Transcript Study.”

Table G-31. Student design effects, by survey item using transcript weight, low socioeconomic status 2004 spring graduates: 2004–05

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Left school in 2004	F1RDTLFT	100.0	#	#	2,200	†	†
Left school with standard diploma	F1RREASL = 1	100.0	#	#	2,200	†	†
Total CUs in mathematics	F1RMAT_C	3.4	0.03	0.02	2,200	2.32	1.52
Total CUs in science	F1RSCI_C	3.0	0.03	0.02	2,200	2.28	1.51
Total CUs in English	F1RENG_C	4.4	0.04	0.02	2,200	2.59	1.61
Total CUs in social studies	F1RSOC_C	3.8	0.04	0.02	2,200	2.51	1.59
Total CUs in fine arts	F1RFIN_C	1.8	0.05	0.04	2,200	1.73	1.31
Total CUs in non-English language	F1RNON_C	1.5	0.04	0.03	2,200	2.10	1.45
Total CUs in family/cons. science	F1RFAM_C	0.6	0.03	0.02	2,200	1.82	1.35
Total CUs in general labor market preparation	F1RGLA_C	0.5	0.03	0.02	2,200	2.10	1.45
Total CUs in specific labor market preparation	F1RSLA_C	3.1	0.08	0.05	2,200	2.52	1.59
Total CUs in general studies	F1RGEN_C	0.7	0.03	0.02	2,200	2.63	1.62
Total CUs in health/physical/recreation education	F1RHEA_C	2.4	0.04	0.03	2,200	2.53	1.59
Total CUs in religion and theology	F1RREL_C	0.1	0.01	0.01	2,200	0.88	0.94
Total CUs in military science	F1RMIL_C	0.2	0.02	0.02	2,200	2.29	1.51
Total CUs	F1RHTUN	25.7	0.15	0.07	2,200	4.03	2.01
Total AP/IB courses	F1RAPIB	0.4	0.03	0.02	2,200	1.61	1.27
Math pipeline: Advanced III	F1RMAPIP = 8	6.5	0.70	0.53	2,200	1.77	1.33
Academic concentrator	F1RTRCC = 1	13.3	0.94	0.73	2,200	1.67	1.29
New basics: College bound, core curriculum	F1RNEWB = 1	23.9	1.28	0.92	2,200	1.95	1.40
9th-grade GPA	F1RGP9	2.6	0.02	0.02	2,200	1.97	1.40
9th-grade academic GPA	F1RAGP9	2.5	0.02	0.02	2,200	1.83	1.35
10th-grade GPA	F1RGP10	2.5	0.02	0.02	2,200	1.93	1.39
10th-grade academic GPA	F1RAGP10	2.4	0.02	0.02	2,200	1.86	1.37
11th-grade GPA	F1RGP11	2.6	0.02	0.02	2,200	1.83	1.35
11th-grade academic GPA	F1RAGP11	2.4	0.02	0.02	2,200	1.79	1.34
12th-grade GPA	F1RGP12	2.8	0.02	0.01	2,200	1.92	1.38
12th-grade academic GPA	F1RAGP12	2.6	0.02	0.02	2,200	1.65	1.28
Total GPA	F1RGP	2.6	0.02	0.01	2,200	2.03	1.43
Total academic GPA	F1RAGP	2.5	0.02	0.01	2,200	1.83	1.35
SUMMARY STATISTICS							
Mean						2.07	1.43
Minimum						0.88	0.94
Median						1.94	1.39
Maximum						4.03	2.01
Standard deviation						0.54	0.18

† Not applicable.
# Rounds to zero.
NOTE: N = sample size; DEFF = design effect; DEFT = square root of the design effect; CU = Carnegie Unit.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "High School Transcript Study."

Table G-32. Student design effects, by survey item using transcript weight, middle socioeconomic status 2004 spring graduates: 2004–05

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Left school in 2004	F1RDTLFT	100.0	#	#	5,200	†	†
Left school with standard diploma	F1RREASL = 1	100.0	#	#	5,200	†	†
Total CUs in mathematics	F1RMAT_C	3.5	0.02	0.01	5,200	3.51	1.87
Total CUs in science	F1RSCI_C	3.2	0.02	0.01	5,200	2.84	1.69
Total CUs in English	F1RENG_C	4.3	0.03	0.01	5,200	3.76	1.94
Total CUs in social studies	F1RSOC_C	4.0	0.03	0.01	5,200	5.76	2.40
Total CUs in fine arts	F1RFIN_C	2.0	0.04	0.03	5,200	2.26	1.50
Total CUs in non-English language	F1RNON_C	1.9	0.03	0.02	5,200	3.05	1.75
Total CUs in family/cons. science	F1RFAM_C	0.4	0.02	0.01	5,200	3.13	1.77
Total CUs in general labor market preparation	F1RGLA_C	0.4	0.02	0.01	5,200	3.19	1.79
Total CUs in specific labor market preparation	F1RSLA_C	2.9	0.07	0.03	5,200	3.97	1.99
Total CUs in general studies	F1RGEN_C	0.6	0.02	0.01	5,200	3.80	1.95
Total CUs in health/physical/recreation education	F1RHEA_C	2.3	0.03	0.02	5,200	3.99	2.00
Total CUs in religion and theology	F1RREL_C	0.2	0.01	0.01	5,200	1.70	1.30
Total CUs in military science	F1RMIL_C	0.1	0.01	0.01	5,200	2.15	1.47
Total CUs	F1RHTUN	26.1	0.11	0.04	5,200	5.61	2.37
Total AP/IB courses	F1RAPIB	0.6	0.03	0.02	5,200	1.95	1.40
Math pipeline: Advanced III	F1RMAPIP = 8	10.3	0.54	0.42	5,200	1.68	1.30
Academic concentrator	F1RTRCC = 1	23.0	0.91	0.58	5,200	2.46	1.57
New basics: College bound, core curriculum	F1RNEWB = 1	33.0	1.10	0.65	5,200	2.84	1.69
9th-grade GPA	F1RGP9	2.8	0.01	0.01	5,200	2.08	1.44
9th-grade academic GPA	F1RAGP9	2.7	0.02	0.01	5,200	2.04	1.43
10th-grade GPA	F1RGP10	2.8	0.02	0.01	5,200	2.29	1.51
10th-grade academic GPA	F1RAGP10	2.6	0.02	0.01	5,200	2.30	1.52
11th-grade GPA	F1RGP11	2.8	0.02	0.01	5,200	2.22	1.49
11th-grade academic GPA	F1RAGP11	2.6	0.02	0.01	5,200	2.14	1.46
12th-grade GPA	F1RGP12	2.9	0.02	0.01	5,200	2.38	1.54
12th-grade academic GPA	F1RAGP12	2.8	0.02	0.01	5,200	2.30	1.52
Total GPA	F1RGP	2.8	0.01	0.01	5,200	2.28	1.51
Total academic GPA	F1RAGP	2.7	0.01	0.01	5,200	2.22	1.49
SUMMARY STATISTICS							
Mean						2.85	1.67
Minimum						1.68	1.30
Median						2.34	1.53
Maximum						5.76	2.40
Standard deviation						1.05	0.29

† Not applicable.
# Rounds to zero.
NOTE: N = sample size; DEFF = design effect; DEFT = square root of the design effect; CU = Carnegie Unit.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "High School Transcript Study."

Table G-33. Student design effects, by survey item using transcript weight, high socioeconomic status 2004 spring graduates: 2004–05

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Left school in 2004	F1RDTLFT	100.0	#	#	3,500	†	†
Left school with standard diploma	F1RREASL = 1	100.0	#	#	3,500	†	†
Total CUs in mathematics	F1RMAT_C	3.8	0.03	0.01	3,500	3.19	1.79
Total CUs in science	F1RSCI_C	3.6	0.03	0.02	3,500	3.47	1.86
Total CUs in English	F1RENG_C	4.3	0.03	0.02	3,500	3.88	1.97
Total CUs in social studies	F1RSOC_C	4.1	0.04	0.02	3,500	4.55	2.13
Total CUs in fine arts	F1RFIN_C	2.2	0.06	0.03	3,500	3.35	1.83
Total CUs in non-English language	F1RNON_C	2.6	0.03	0.02	3,500	2.55	1.60
Total CUs in family/cons. science	F1RFAM_C	0.3	0.01	0.01	3,500	2.97	1.72
Total CUs in general labor market preparation	F1RGLA_C	0.2	0.02	0.01	3,500	3.24	1.80
Total CUs in specific labor market preparation	F1RSLA_C	2.0	0.05	0.03	3,500	2.71	1.65
Total CUs in general studies	F1RGEN_C	0.5	0.03	0.01	3,500	4.23	2.06
Total CUs in health/physical/recreation education	F1RHEA_C	2.2	0.04	0.02	3,500	3.70	1.92
Total CUs in religion and theology	F1RREL_C	0.4	0.03	0.02	3,500	2.01	1.42
Total CUs in military science	F1RMIL_C	0.1	0.02	0.01	3,500	2.42	1.55
Total CUs	F1RHTUN	26.4	0.12	0.05	3,500	4.88	2.21
Total AP/IB courses	F1RAPIB	1.6	0.07	0.04	3,500	3.27	1.81
Math pipeline: Advanced III	F1RMAPIP = 8	26.7	1.12	0.75	3,500	2.22	1.49
Academic concentrator	F1RTRCC = 1	44.3	1.42	0.84	3,500	2.87	1.69
New basics: College bound, core curriculum	F1RNEWB = 1	39.1	1.43	0.83	3,500	3.00	1.73
9th-grade GPA	F1RGP9	3.1	0.02	0.01	3,500	1.94	1.39
9th-grade academic GPA	F1RAGP9	3.1	0.02	0.01	3,500	2.02	1.42
10th-grade GPA	F1RGP10	3.1	0.02	0.01	3,500	2.07	1.44
10th-grade academic GPA	F1RAGP10	3.0	0.02	0.01	3,500	2.07	1.44
11th-grade GPA	F1RGP11	3.1	0.02	0.01	3,500	1.97	1.40
11th-grade academic GPA	F1RAGP11	3.0	0.02	0.01	3,500	1.84	1.36
12th-grade GPA	F1RGP12	3.2	0.02	0.01	3,500	2.00	1.41
12th-grade academic GPA	F1RAGP12	3.0	0.02	0.01	3,500	1.78	1.33
Total GPA	F1RGP	3.1	0.01	0.01	3,500	1.94	1.39
Total academic GPA	F1RAGP	3.0	0.02	0.01	3,500	1.90	1.38
SUMMARY STATISTICS							
Mean						2.79	1.65
Minimum						1.78	1.33
Median						2.63	1.62
Maximum						4.88	2.21
Standard deviation						0.89	0.26

† Not applicable.
# Rounds to zero.
NOTE: N = sample size; DEFF = design effect; DEFT = square root of the design effect; CU = Carnegie Unit.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "High School Transcript Study."

Table G-34. Student design effects, by survey item using transcript weight, urban 2004 spring graduates: 2004–05

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Left school in 2004	F1RDTLFT	100.0	#	#	3,500	†	†
Left school with standard diploma	F1RREASL = 1	100.0	#	#	3,500	†	†
Total CUs in mathematics	F1RMAT_C	3.6	0.04	0.01	3,500	6.52	2.55
Total CUs in science	F1RSCI_C	3.4	0.05	0.02	3,500	6.81	2.61
Total CUs in English	F1RENG_C	4.4	0.04	0.02	3,500	5.04	2.25
Total CUs in social studies	F1RSOC_C	3.9	0.05	0.02	3,500	6.66	2.58
Total CUs in fine arts	F1RFIN_C	2.0	0.07	0.03	3,500	5.46	2.34
Total CUs in non-English language	F1RNON_C	2.2	0.05	0.02	3,500	6.71	2.59
Total CUs in family/cons. science	F1RFAM_C	0.3	0.03	0.01	3,500	6.65	2.58
Total CUs in general labor market preparation	F1RGLA_C	0.4	0.03	0.01	3,500	6.59	2.57
Total CUs in specific labor market preparation	F1RSLA_C	2.2	0.08	0.03	3,500	5.83	2.41
Total CUs in general studies	F1RGEN_C	0.5	0.04	0.01	3,500	8.11	2.85
Total CUs in health/physical/recreation education	F1RHEA_C	2.1	0.05	0.02	3,500	5.28	2.30
Total CUs in religion and theology	F1RREL_C	0.4	0.04	0.02	3,500	3.37	1.84
Total CUs in military science	F1RMIL_C	0.2	0.03	0.01	3,500	4.89	2.21
Total CUs	F1RHTUN	25.7	0.19	0.06	3,500	11.29	3.36
Total AP/IB courses	F1RAPIB	1.1	0.07	0.03	3,500	4.59	2.14
Math pipeline: Advanced III	F1RMAPIP = 8	14.6	1.16	0.60	3,500	3.72	1.93
Academic concentrator	F1RTRCC = 1	30.2	1.73	0.78	3,500	4.91	2.22
New basics: College bound, core curriculum	F1RNEWB = 1	34.7	1.68	0.81	3,500	4.32	2.08
9th-grade GPA	F1RGP9	2.8	0.03	0.01	3,500	4.41	2.10
9th-grade academic GPA	F1RAGP9	2.7	0.03	0.01	3,400	4.30	2.07
10th-grade GPA	F1RGP10	2.8	0.03	0.01	3,500	4.36	2.09
10th-grade academic GPA	F1RAGP10	2.7	0.03	0.01	3,500	4.22	2.05
11th-grade GPA	F1RGP11	2.8	0.03	0.01	3,500	4.12	2.03
11th-grade academic GPA	F1RAGP11	2.7	0.03	0.01	3,500	3.64	1.91
12th-grade GPA	F1RGP12	2.9	0.03	0.01	3,500	4.80	2.19
12th-grade academic GPA	F1RAGP12	2.8	0.03	0.01	3,500	4.39	2.10
Total GPA	F1RGP	2.8	0.02	0.01	3,500	4.87	2.21
Total academic GPA	F1RAGP	2.7	0.03	0.01	3,500	4.55	2.13
SUMMARY STATISTICS							
Mean						5.37	2.30
Minimum						3.37	1.84
Median						4.88	2.21
Maximum						11.29	3.36
Standard deviation						1.64	0.33

† Not applicable.
# Rounds to zero.
NOTE: N = sample size; DEFF = design effect; DEFT = square root of the design effect; CU = Carnegie Unit.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "High School Transcript Study."

Table G-35. Student design effects, by survey item using transcript weight, suburban 2004 spring graduates: 2004–05

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Left school in 2004	F1RDTLFT	100.0	#	#	5,500	†	†
Left school with standard diploma	F1RREASL = 1	100.0	#	#	5,500	†	†
Total CUs in mathematics	F1RMAT_C	3.6	0.03	0.01	5,500	4.44	2.11
Total CUs in science	F1RSCI_C	3.2	0.03	0.01	5,500	3.62	1.90
Total CUs in English	F1RENG_C	4.3	0.03	0.01	5,500	4.41	2.10
Total CUs in social studies	F1RSOC_C	4.0	0.04	0.01	5,500	7.63	2.76
Total CUs in fine arts	F1RFIN_C	2.0	0.04	0.03	5,500	2.89	1.70
Total CUs in non-English language	F1RNON_C	2.0	0.04	0.02	5,500	4.33	2.08
Total CUs in family/cons. science	F1RFAM_C	0.5	0.02	0.01	5,500	4.02	2.00
Total CUs in general labor market preparation	F1RGLA_C	0.4	0.02	0.01	5,500	3.64	1.91
Total CUs in specific labor market preparation	F1RSLA_C	2.7	0.08	0.03	5,500	5.99	2.45
Total CUs in general studies	F1RGEN_C	0.6	0.03	0.01	5,500	5.76	2.40
Total CUs in health/physical/recreation education	F1RHEA_C	2.4	0.03	0.02	5,500	4.65	2.16
Total CUs in religion and theology	F1RREL_C	0.2	0.02	0.01	5,500	2.20	1.48
Total CUs in military science	F1RMIL_C	0.1	0.02	0.01	5,500	3.79	1.95
Total CUs	F1RHTUN	26.0	0.13	0.04	5,500	8.83	2.97
Total AP/IB courses	F1RAPIB	0.8	0.04	0.02	5,500	3.50	1.87
Math pipeline: Advanced III	F1RMAPIP = 8	15.1	0.78	0.48	5,500	2.61	1.62
Academic concentrator	F1RTRCC = 1	26.7	1.17	0.60	5,500	3.85	1.96
New basics: College bound, core curriculum	F1RNEWB = 1	32.5	1.18	0.63	5,500	3.46	1.86
9th-grade GPA	F1RGP9	2.9	0.02	0.01	5,400	2.55	1.60
9th-grade academic GPA	F1RAGP9	2.8	0.02	0.01	5,400	2.41	1.55
10th-grade GPA	F1RGP10	2.8	0.02	0.01	5,500	2.68	1.64
10th-grade academic GPA	F1RAGP10	2.7	0.02	0.01	5,500	2.65	1.63
11th-grade GPA	F1RGP11	2.8	0.02	0.01	5,500	2.89	1.70
11th-grade academic GPA	F1RAGP11	2.7	0.02	0.01	5,500	2.74	1.66
12th-grade GPA	F1RGP12	3.0	0.02	0.01	5,500	3.13	1.77
12th-grade academic GPA	F1RAGP12	2.8	0.02	0.01	5,400	2.93	1.71
Total GPA	F1RGP	2.9	0.02	0.01	5,500	2.92	1.71
Total academic GPA	F1RAGP	2.7	0.02	0.01	5,500	2.78	1.67
SUMMARY STATISTICS							
Mean						3.83	1.93
Minimum						2.20	1.48
Median						3.48	1.86
Maximum						8.83	2.97
Standard deviation						1.57	0.36

† Not applicable.
# Rounds to zero.
NOTE: N = sample size; DEFF = design effect; DEFT = square root of the design effect; CU = Carnegie Unit.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "High School Transcript Study."

Table G-36. Student design effects, by survey item using transcript weight, rural 2004 spring graduates: 2004–05

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Left school in 2004	F1RDTLFT	100.0	#	#	2,000	†	†
Left school with standard diploma	F1RREASL = 1	100.0	#	#	2,000	†	†
Total CUs in mathematics	F1RMAT_C	3.6	0.05	0.02	2,000	4.93	2.22
Total CUs in science	F1RSCI_C	3.3	0.05	0.02	2,000	3.90	1.98
Total CUs in English	F1RENG_C	4.4	0.07	0.02	2,000	10.33	3.21
Total CUs in social studies	F1RSOC_C	4.1	0.08	0.02	2,000	11.05	3.32
Total CUs in fine arts	F1RFIN_C	2.2	0.08	0.04	2,000	3.18	1.78
Total CUs in non-English language	F1RNON_C	1.8	0.06	0.03	2,000	4.00	2.00
Total CUs in family/cons. science	F1RFAM_C	0.4	0.03	0.02	2,000	4.28	2.07
Total CUs in general labor market preparation	F1RGLA_C	0.4	0.04	0.02	2,000	4.74	2.18
Total CUs in specific labor market preparation	F1RSLA_C	3.3	0.15	0.06	2,000	6.46	2.54
Total CUs in general studies	F1RGEN_C	0.6	0.04	0.02	2,000	5.10	2.26
Total CUs in health/physical/recreation education	F1RHEA_C	2.4	0.09	0.03	2,000	7.95	2.82
Total CUs in religion and theology	F1RREL_C	#	0.01	0.01	2,000	†	†
Total CUs in military science	F1RMIL_C	0.1	0.02	0.01	2,000	2.01	1.42
Total CUs	F1RHTUN	26.7	0.20	0.07	2,000	7.45	2.73
Total AP/IB courses	F1RAPIB	0.6	0.05	0.03	2,000	2.46	1.57
Math pipeline: Advanced III	F1RMAPIP = 8	11.2	1.06	0.71	2,000	2.24	1.50
Academic concentrator	F1RTRCC = 1	23.4	1.85	0.95	2,000	3.78	1.94
New basics: College bound, core curriculum	F1RNEWB = 1	31.2	1.95	1.04	2,000	3.50	1.87
9th-grade GPA	F1RGP9	2.9	0.03	0.02	2,000	2.41	1.55
9th-grade academic GPA	F1RAGP9	2.7	0.03	0.02	2,000	2.29	1.51
10th-grade GPA	F1RGP10	2.8	0.03	0.02	2,000	2.58	1.60
10th-grade academic GPA	F1RAGP10	2.7	0.03	0.02	2,000	2.52	1.59
11th-grade GPA	F1RGP11	2.8	0.03	0.02	2,000	2.57	1.60
11th-grade academic GPA	F1RAGP11	2.7	0.03	0.02	2,000	2.32	1.52
12th-grade GPA	F1RGP12	3.0	0.02	0.02	2,000	2.37	1.54
12th-grade academic GPA	F1RAGP12	2.8	0.03	0.02	2,000	2.23	1.49
Total GPA	F1RGP	2.9	0.02	0.01	2,000	2.49	1.58
Total academic GPA	F1RAGP	2.7	0.03	0.02	2,000	2.31	1.52
SUMMARY STATISTICS							
Mean						4.09	1.95
Minimum						2.01	1.42
Median						3.17	1.78
Maximum						11.05	3.32
Standard deviation						2.45	0.54

† Not applicable.
# Rounds to zero.
NOTE: N = sample size; DEFF = design effect; DEFT = square root of the design effect; CU = Carnegie Unit.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "High School Transcript Study."

Appendix H
Propensity Models Versus Weighting Cell Approaches to Nonresponse Adjustment: A Methodological Comparison

Propensity Models Versus Weighting Cell Approaches to Nonresponse Adjustment

A Methodological Comparison

Peter H. Siegel, Elizabeth Copello, and James R. Chromy

September 2005

Contractor report to the Statistical Standards Program, National Center for Education Statistics

Executive Summary

Statistical adjustment of nonresponse is a deep and pervasive issue for National Center for Education Studies (NCES) sample surveys. One example of nonresponse is in the base year of the Education Longitudinal Study of 2002 (ELS:2002). Approximately 61 percent of schools cooperated and about 87 percent of students responded by completing the questionnaire. The final two-stage response rate is the product of the school and student levels, or just over 53 percent. Adjusting for this magnitude of nonrandom unit nonresponse is an enormous challenge, given that most survey estimates and some of the population parameters are available only through the survey itself and not through objective benchmarks in other sources. To compare approaches to nonresponse adjustment, ELS:2002 data was used to examine the weight adjustment approaches. The adjustments are limited to student adjustments for students in public schools.

Section 1 defines the weighting methods typically used for adjusting sample weights. The nonresponse adjustments produce almost identical weights when one or two variables are used, except when using the logistic regression method. When additional variables are used, similar weights after nonresponse adjustment are produced by collapsing variables identically for each method and by using the same interaction terms. Section 2 describes and presents results for nonresponse adjustment using each of the four methods and using one, two, four, six, and eight variables.

Section 3 discusses and presents results for weight trimming using the interquartile range to determine extreme weights. Sometimes sampling weights or the weights after nonresponse or poststratification are extremely small or large; that is, the weights are outliers or extreme values. These outlier weights can be trimmed and smoothed (i.e., re-allocated) to an extent to not significantly increase the unequal weighting effect (UWE). Deciding when to trim and smooth weights is a subjective decision made during the weighting process. RTI's Generalized Exponential Model (GEM) can incorporate this trimming and smoothing. For other methods, the trimming and smoothing can be done separately before or after the weight adjustments. The four weighting methods produced results that were similar.

Section 4 discusses and presents results for poststratification using each of the four methods. Poststratification to control totals is done in some surveys to adjust the weights to match known population totals. The ELS:2002 student data were not poststratified because there were no known population totals. For the sake of comparing the four methods, control totals were formed using the ELS:2002 final weights applied to the selected sample of students in public schools. These final weights differ from the weights generated by GEM in these examples because ELS:2002 used two nonresponse models and more variables in the nonresponse models. The four weighting methods produced similar results to each other.

Section 5 discusses and presents results for the nonresponse bias analysis using each of the four methods. Unit nonresponse causes bias in survey estimates when the outcomes of respondents and nonrespondents are different. For ELS:2002, student response is defined as the student completing at least a specified portion of the student questionnaire. The student response rate was above 85 percent overall. In addition to comparing the weights and the UWEs across the four methods, the reduction in nonresponse bias was analyzed. The weighting class method had the least amount of significant bias among the methods.

Section 6 discusses the advantages and disadvantages of using each method, and further analyses that can be done to continue this research.

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1. Introduction

1.1 Background and Purpose of the Research

Statistical adjustment of nonresponse is a deep and pervasive issue for National Center for Education Statistics (NCES) sample surveys. One example of nonresponse can be seen in the base year of the Education Longitudinal Study of 2002 (ELS:2002). Approximately 61 percent of schools cooperated and about 87 percent of students responded by completing the questionnaire. The final two-stage response rate is the product of the school and student levels, or just over 53 percent. Adjusting for this magnitude of non-random unit nonresponse is an enormous challenge, especially in light of the fact that most survey estimates and some of the population parameters are available only through the survey itself, and not through objective benchmarks in other sources.

Contemporary statistical methods offer researchers three broad approaches to nonresponse adjustment. The first is using a traditional weighting cell approach. A second and more recent development is response propensity modeling, typically using logistic regression. A third common approach to weight adjustment is raking. A fourth, RTI's Generalized Exponential Model (GEM) is a generalization of weight adjustments, and in addition to nonresponse adjustment can optionally include features such as poststratification and weight trimming (Folsom and Singh, 2000).

A literature review discovered two comparative studies of the weighting class approach versus alternative methods completed in 1994 using panel data from the Survey of Income and Program Participation (SIPP). SIPP was using a weighting class approach for nonresponse adjustment, and Folsom and Witt (1994) compared it to inverse response propensity weighting via generalized raking. They had mixed results and were not able to show any superiority for the response propensity approach over the weighting class approach. Rizzo et al. (1994) compared SIPP's weighting class approach with six alternative weighting schemes and concluded that the different methods produced similar estimates, the weights from the different methods were highly correlated with each other, and the variability of the weights was similar for all the weighting schemes.

More recently, Kalton and Flores-Cervantes (2003) compared eight weighting techniques: cell weighting, raking, linear weighting, GREG weighting, logistic regression weighting, a mixture of cell weighting and another method, logit weighting, and truncated linear weighting. They briefly described each adjustment method and illustrated its application with a simple example. They compared results across methods.

In comparing approaches to nonresponse adjustment, ELS:2002 data was used to examine the weight adjustment approaches. Appendix A presents an overview of ELS:2002. The adjustments are limited to student adjustments for students in public schools. Four weight adjustment methods are defined below.

1.2 Description of Methods Studied

Four weight adjustment approaches were examined:

1. Weighting class adjustments, which are made by partitioning the sample into groups called weighting classes and adjusting the sample weights so that the sum of the weights of respondents equals the sum of the weights of respondents and nonrespondents for each cell.
2. Raking, which is an iterative proportional fitting procedure where the respondent row totals are first forced to equal the sum of the weights of respondents and nonrespondents for the row. Then the respondent adjusted column totals are forced to equal the sum of the weights of respondents and nonrespondents for the column. These adjustments are repeated until convergence is reached. Raking controls at the margins and can also be done for more than two dimensions.
3. Logistic regression, which uses auxiliary data to predict the response propensity of each sample member. The inverse of the respondent's predicted response propensity is the weight adjustment. The logistic approach is not a calibration method. Therefore, it does not force the weight sums to the marginal totals, but the weight sums are usually close to the marginal totals.
4. GEM, which is a unified approach to nonresponse adjustment, poststratification, and extreme weight reduction. GEM is a general version of weight adjustments, and is based on a generalization of Deville and Särndal's logit model (Deville and Särndal 1992). The GEM approach controls at the margins, and adjustment factors can be constrained individually.

Weighting class, raking, and GEM methods can be applied to poststratification as well as nonresponse adjustment. In poststratification, control totals are obtained from external sources believed to be the truth or at least much more precise than those based on the survey sample. Control totals for nonresponse adjustment are generated from the selected sample. The logistic regression modeling approach analyzes the selected sample and uses response as the dependent variable; this approach implicitly generates its own control totals based on the selected sample. Logistic regression does not naturally extend to poststratification.

Weighting class methods are the simplest to implement and to explain (Chapman 1976). Adjustments are either based on a single dimension or performed at the cell level (fully interacted model basis) for multiway table controls. When alternative methods are applied at the fully interacted model level, they reduce to a weighting class approach, as shown in the following sections.

Raking or iterative proportional fitting applies a weighting class approach in one dimension and then applies it to the adjusted weights in one or more other dimensions. The process controls marginal distributions only and continues until the cell-level adjustment stabilizes (Oh and Scheuren 1983). If applied in a single dimension (or at the cell level), it reduces to the weighting class method.

Logistic regression or response propensity methods fit a logistic regression model to the selected sample to predict the probability of responding. Variables used as predictors in the logistic regression must be known for all members of the selected sample (both respondents and

nonrespondents). Although the predictor variables can be continuous or categorical, this report compares only categorical predictors with other methods. As mentioned above, logistic regression is not a calibration method.

The GEM method developed by Folsom and Singh (2000) is a generalization of a calibration model presented by Deville and Särndal (1992) that allows bounds to be set on the adjustment factors. The form of the weight adjustment factors is

$$a_k(\lambda) = \frac{l(u-1) + u(1-l)e^{Ax_k'\lambda}}{(u-1) + (1-l)e^{Ax_k'\lambda}},$$

where $l < 1 < u$ and $A = (u-l)/[(u-1)(1-l)]$. The parameters, *u* and *l,* are user-specified bounds on the adjustment factors. The column vector, λ, represents the model parameters corresponding to the covariate vector, *x*. The model parameters are obtained for poststratification by requiring that

$$\sum_{respondents} x_k d_k a_k(\lambda) = T_x,$$

where T_x is a vector of poststratification totals.

Two special cases are used in this report. The first was identified in the Deville-Särndal paper as $l \to 0$ and $u \to \infty$, $a_k(\lambda) \to e^{x_k'\lambda}$. This solution corresponds to the exponential model and in the limit yields the same results as the raking method.

Folsom and Singh's GEM generalized the Deville-Särndal calibration method by allowing unit-specific bounds on the adjustment factors and by adding a centering factor, c_k.

$$a_k(\lambda) = \frac{l_k(u_k - c_k) + u_k(c_k - l_k)e^{A_k x_k'\lambda}}{(u_k - c_k) + (c_k - l_k)e^{A_k x_k'\lambda}}$$

with $A_k = (u_k - l_k)/[(u_k - c_k)(c_k - l_k)]$. This model can be applied to either poststratification or nonresponse adjustment. For nonresponse adjustment, model parameters are obtained by solving

$$\sum_{respondents} x_k d_k a_k(\lambda) = \tilde{T}_x,$$

where $\tilde{T}_x$ is a vector of sums based on the selected sample (using the design weights before adjustment). The second special case presented in this report is based on GEM. When allowing $l_k = 1$, $c_k = 2$, and $u_k \to \infty$, then $a_k(\lambda) \to 1 + e^{x_k\lambda}$; that is, the GEM solution approaches the solution obtained by fitting the logistic regression model.

Results from both special cases of GEM are presented below and compared with results from other nonresponse adjustment approaches.

2. Nonresponse Adjustment

The four nonresponse weight adjustment methods were compared using ELS:2002 data for students in public schools. No trimming of extreme weights is done in the initial comparisons of the methods. Section 3 describes the effect of weight trimming. Five different sets of variables were used to compare the four methods. Each of these five sets is described in the subsections below. For each of these four methods, the mean, minimum, median, and maximum adjustment factor and weight after adjustment were examined, as well as the unequal weighting effect (UWE). The relative root mean squared differences (RRMSD) between methods were also computed by squaring the difference of the weight for each observation from two methods, taking the average of this squared difference across all observations, and taking the square root of the average. This square root was then divided by the mean weight, which is approximately the same, regardless of adjustment method. The formula is

$$\text{RRMSD} = \frac{\sqrt{\sum_n \frac{(X_i - Y_i)^2}{n}}}{\overline{X}},$$

where:

Xi = nonresponse adjusted weight for student *i* using one adjustment method;

Yi = nonresponse adjusted weight for student *i* using a second adjustment method;

$\overline{X}$ = mean weight using any adjustment method; and

n = number of responding students on the file.

2.1 One Variable

When the nonresponse adjustment uses one variable, the four adjustment methodologies produced identical results, within rounding error, except for the logistic regression method. The variable sex (male and female) was used for the adjustment using one variable. Table 1 shows the mean, minimum, median, and maximum adjustment factor and weight after adjustment and the UWE for each of the four methods. Table 2 displays the RRMSD between methods.

2.2 Two Variables

When the nonresponse adjustment uses two variables, the four adjustment methodologies can produce identical results, within rounding error, except for the logistic regression method. The variables sex (male and female) and race/ethnicity (Hispanic, Asian, Black, and White/other) were used for the adjustment using two variables. Tables 3 and 4 display the results of each method. As mentioned in section 1, GEM can be run to either be similar to the logistic approach or to raking. Typically, GEM is run to be similar to the logistic approach. To run GEM in a raking mode is similar to poststratification in GEM with control totals being set for sample totals. To produce results identical to weighting class, the GEM model needs to include the two-

way interaction term. The logistic method is slightly different from the weighting class method even when the interaction term is included. When the interaction term is excluded from the model the results are slightly different. The GEM, logistic, and weighting class methods are slightly different from each other. Without the interaction terms, the ranges of the adjustment factor and weight are a little narrower than for the model including the interaction term. When GEM is run to be similar to raking, the results between the two methods are the same, within rounding. These results are not identical to weighting class because interaction terms are excluded. For raking to be identical to weighting class, the raking is done within cells and not at the margins. The UWEs are nearly identical for all methods with and without interaction terms. The RRMSDs are about 0 when comparing all of the methods.

Table 1. Summary statistics for one variable weight adjustments: 2005

Type of weight adjustment	Adjustment factor				Weight				Overall UWE
	Mean	Maximum	Minimum	Median	Mean	Maximum	Minimum	Median	
GEM—logistic	1.1487	1.1626	1.1350	1.1350	263.87	9514.80	5.70	241.45	1.5807
Logistic	1.1492	1.1631	1.1355	1.1355	263.98	9518.72	5.70	241.55	1.5807
GEM—exponential	1.1487	1.1626	1.1350	1.1350	263.87	9514.80	5.70	241.45	1.5807
Raking	1.1487	1.1626	1.1350	1.1350	263.87	9514.80	5.70	241.45	1.5807
Weighting class	1.1487	1.1626	1.1350	1.1350	263.87	9514.80	5.70	241.45	1.5807

NOTE: GEM = Generalized Exponential Model; UWE = unequal weighting effect.
SOURCE: Education Longitudinal Study of 2002 (ELS:2002).

Table 2. Relative root mean squared differences (RRMSDs) for one variable weight adjustments: 2005

Comparison	RRMSD
GEM—logistic vs. weighting class	0.00000
Logistic vs. weighting class	0.13652
Logistic vs. GEM—logistic	0.13652
GEM—logistic vs. raking	0.00000
Weighting class vs. raking	0.00000
Logistic vs. raking	0.13652

NOTE: GEM = Generalized Exponential Model.
SOURCE: Education Longitudinal Study of 2002 (ELS:2002)

Table 3. Summary statistics for two variables weight adjustments: 2005

Type of weight adjustment	Adjustment factor				Weight				Overall UWE
	Mean	Maximum	Minimum	Median	Mean	Maximum	Minimum	Median	
GEM—logistic with no interactions	1.1562	1.2430	1.1221	1.1472	263.87	9388.32	5.78	240.21	1.5692
Logistic with no interactions	1.1563	1.2432	1.1221	1.1472	263.87	9388.37	5.78	240.25	1.5692
GEM—exponential with no interactions	1.1562	1.2371	1.1210	1.1483	263.87	9397.71	5.78	240.38	1.5695
Raking with no interactions	1.1562	1.2371	1.1210	1.1483	263.87	9397.71	5.78	240.38	1.5695
GEM—logistic with sex*race interaction	1.1562	1.2536	1.1202	1.1491	263.87	9403.88	5.79	240.17	1.5696
Logistic with sex*race interaction	1.1563	1.2545	1.1202	1.1491	263.88	9403.88	5.79	240.18	1.5696
GEM—exponential with sex*race interaction	1.1562	1.2536	1.1202	1.1491	263.87	9403.88	5.79	240.17	1.5696
Raking with sex*race interaction	1.1562	1.2536	1.1202	1.1491	263.87	9403.88	5.79	240.17	1.5696
Weighting class	1.1562	1.2536	1.1202	1.1491	263.87	9403.88	5.79	240.17	1.5696

NOTE: GEM = Generalized Exponential Model; UWE = unequal weighting effect.
SOURCE: Education Longitudinal Study of 2002 (ELS:2002).

Table 4. Relative root mean squared differences (RRMSDs) for two variables weight adjustments: 2005

Comparison	RRMSD with no interaction in models	RRMSD with interaction in models
GEM—logistic vs. weighting class	0.00408	0.00000
Logistic vs. weighting class	0.00409	0.00007
Logistic vs. GEM—logistic	0.00007	0.00007
GEM—logistic vs. raking	0.00162	0.00000
Weighting class vs. raking	0.00316	0.00000
Logistic vs. raking	0.00162	0.00007

NOTE: GEM = Generalized Exponential Model.
SOURCE: Education Longitudinal Study of 2002 (ELS:2002).

2.3 Four Variables

When the nonresponse adjustment uses four variables, the four adjustment methodologies can produce identical results for all methods, except for the logistic regression method. In theory, if the four variables are fully interacted, the results are identical. In practice, however, the models have singularities when all the interactions are included, so the models cannot be fully interacted. The analytically important variables sex (male and female), race/ethnicity (Hispanic, Asian, Black, and White/Other), region (Northeast, Midwest, South, and West), and metropolitan status (urban, suburban, and rural) were used for the adjustment using four variables. Tables 5 and 6 display the results of each method. For the weighting class method, cells need to be collapsed due to small sample sizes. For the variable metropolitan status, the categories suburban and rural were collapsed, and for the variable region, the categories Northeast and Midwest were collapsed. The other methods do not need to be collapsed. However, if variables are collapsed and interaction terms included, then GEM produces the same results as the weighting class. The logistic method has more narrow bounds on the adjustment factors and a slightly higher UWE than do the GEM and weighting class approaches. When the interaction terms are excluded from the models, the GEM, logistic, and raking methods produce results that are slightly different from each other and from the weighting class method. Without the interaction terms, the ranges of the adjustment factor and weight are a little narrower than for the model including the interaction term.

When collapsing variables, the marginal totals of the collapsed variables do not equal the same values of the variables if not collapsed. Table 7 shows that weighting class and GEM with interactions and collapsing produce the same marginal totals. However, when compared with GEM without interactions and collapsing, the marginal totals differ, with relative differences ranging from 1 to 4 percent.

The RRMSDs are about 0.06 when comparing the weighting class approach with all three other methods without collapsing and without the interaction. The differences are closer to 0 when comparing the other approaches. Collapsing variables but still excluding the interaction term slightly reduces the differences. However, the addition of the interaction term causes the differences between GEM-logistic and weighting class to be about zero. The differences between the other approaches are between 0.04 and 0.05.

Table 5. Summary statistics for four variables weight adjustments: 2005

Type of weight adjustment	Adjustment factor				Weight				Overall UWE
	Mean	Maximum	Minimum	Median	Mean	Maximum	Minimum	Median	
GEM—logistic with no collapsing and no interactions	1.1542	1.4204	1.0739	1.1424	263.87	9603.32	5.60	238.96	1.5956
Logistic with no collapsing and no interactions	1.1543	1.4168	1.0747	1.1427	263.88	9590.39	5.60	238.88	1.5944
Raking with no collapsing	1.1540	1.3488	1.0595	1.1467	263.87	9621.10	5.59	239.21	1.5953
GEM—logistic with metro and region collapsed and no interactions	1.1549	1.3412	1.0865	1.1399	263.87	9571.47	5.57	240.41	1.5859
Logistic with metro and region collapsed and no interactions	1.1550	1.3410	1.0870	1.1399	263.88	9561.27	5.57	240.51	1.5852
Raking with metro and region collapsed	1.1548	1.3000	1.0759	1.1441	263.87	9598.77	5.56	240.67	1.5870
GEM—logistic with metro and region collapsed and interactions	1.1550	1.4647	1.0343	1.1289	263.87	10244.61	5.57	240.15	1.6065
Logistic with metro and region collapsed and interactions	1.1546	1.4290	1.0850	1.1306	263.92	10181.11	5.58	238.08	1.6091
Weighting class with metro and region collapsed	1.1550	1.4647	1.0343	1.1289	263.87	10244.61	5.57	240.15	1.6065

NOTE: GEM = Generalized Exponential Model; UWE = unequal weighting effect.
SOURCE: Education Longitudinal Study of 2002 (ELS:2002).

Table 6. Relative root mean squared differences (RRMSDs) for four variables weight adjustments: 2005

Comparison	RRMSD with no collapsing and no interaction in models	RRMSD with collapsing but no interaction in models	RRMSD with collapsing and interaction in models
GEM—logistic vs. weighting class	0.05646	0.04784	0.00000
Logistic vs. weighting class	0.05642	0.04817	0.04446
Logistic vs. GEM—logistic	0.00145	0.00085	0.04446
GEM—logistic vs. raking	0.00886	0.00643	0.04853
Weighting class vs. raking	0.05637	0.04853	0.04853
Logistic vs. raking	0.00862	0.00648	0.04678

NOTE: GEM = Generalized Exponential Model.
SOURCE: Education Longitudinal Study of 2002 (ELS:2002).

Table 7. Comparison of distribution of variables with and without collapsing for four variables model: 2005

	GEM	GEM with variable collapsed and interactions	Relative difference	Weighting class	Relative difference
Metropolitan status					
Urban	889136.5	889136.5	0.0000	889136.5	0.0000
Suburban	1622840.0	1607308.0	0.0096	1607308.0	0.0096
Rural	664753.8	680285.6	-0.0234	680285.6	-0.0234
Region					
Northeast	573827.5	550670.8	0.0404	550670.8	0.0404
Midwest	764626.7	787783.4	-0.0303	787783.4	-0.0303
South	1098043.0	1098043.0	0.0000	1098043.0	0.0000
West	740232.6	740232.6	0.0000	740232.6	0.0000

NOTE: GEM = Generalized Exponential Model.
SOURCE: Education Longitudinal Study of 2002 (ELS:2002).

2.4 Six Variables

Next, larger models were explored to show how the various methods handle more complex weight adjustments. To choose a larger number of variables, all 23 variables known for both the respondents and nonrespondents were included in GEM. Then the six significant variables were kept in the model, and the remaining non-significant variables were dropped from the model. These six variables are

- sex (male and female)
- region (Northeast, Midwest, South, and West);
- number of part-time teachers (0-1; 2-3; 4-6; > 6);
- percentage of students with an IEP (< 6; 6-10; 11-15; > 15);
- school level (K-12, PreK-10, 1-12; PreK/1-9/12, PreK-12; middle grades but no elementary; only high school); and
- 10th-grade enrollment (0-99; 100-249; 250-499, > 499).

When the nonresponse adjustment uses six variables, the four adjustment methodologies can produce identical results, except for the logistic regression method. As with the four-variable model, singularity in the models prevents the results from being identical because the models cannot be fully interacted. For the weighting class method, cells need to be collapsed due to small sample sizes. Given six variables, the cell sizes are smaller; thus more collapsing is needed than in the four-variable model. The other methods do not need to be collapsed. Tables 8 and 9 display the results of each method. When all methods include collapsed variables, the mean adjustment factors are close. The UWEs are also close. The addition of the six-variable interaction term caused the GEM and logistic models to have larger mean and maximum adjustment factors and smaller UWEs than prior to adding the interaction. The adjustment factor ranges are narrower for the weighting class approach than for the other approaches. For all models, except the logistic models, the mean weights are equal within rounding.

The RRMSDs are between 0.07 and 0.08 when comparing the weighting class approach with all three other methods without collapsing and without the interaction term. The differences are about 0.02 when comparing raking with GEM-logistic and logistic and about 0.00 when comparing GEM-logistic and logistic. Collapsing variables but still excluding the interaction term decreases all of the differences. However, the addition of the interaction term causes some of the differences to increase. The difference between GEM-logistic and logistic is still about zero.

2.5 Eight Variables

As an alternative method for choosing a larger number of variables for a more complex nonresponse adjustment, all 23 variables known for both respondents and nonrespondents were included in a Chi-Squared Automatic Interaction Detection (CHAID), which is a tree analysis. With response as the dependent model variable, eight significant variables were identified and included in each nonresponse adjustment method. These eight variables are

- metropolitan status (urban, suburban, and rural);
- region (Northeast, Midwest, South, and West);

- number of full-time teachers (1-40; 41-70; 71-100; > 100);
- percentage of full-time teachers certified (0-90; 91-99; 100);
- number of part-time teachers (0-1; 2-3; 4-6; > 6);
- percentage of students with an IEP (< 6; 6-10; 11-15; > 15);
- total enrollment (< 601; 601-1,200; 1,201-1,800; > 1,800); and
- number of class periods (1-4; 5-6; 7; 8-9).

When the nonresponse adjustment uses eight variables, the four adjustment methodologies can produce identical results, except for the logistic regression method. As with the four- and six-variable models, singularity in the models prevents the results from being identical because the models cannot be fully interacted. For the weighting class method, cells need to be collapsed due to small sample sizes. The other methods do not need to be collapsed. Tables 10 and 11 display the results of each method. When all methods include collapsed variables, the mean adjustment factors are close. The UWEs are also close. The adjustment factor range is wider for the weighting class approach than for the other approaches, but the weight range is narrower. The addition of the eight-variable interaction term causes the GEM and logistic models to have the mean adjustment factor and weight range decrease but the maximum adjustment factor and UWE increase. For all models, except the logistic models, the mean weights are equal within rounding.

When collapsing variables, the marginal totals of the collapsed variables do not equal the same values of the variables if not collapsed. Many variables were collapsed. The marginal totals were examined for the metropolitan status categories of suburban and rural being collapsed together and the region categories of Northeast collapsed with Midwest, and South collapsed with West. Table 12 shows that weighting class and GEM with interactions and collapsing produce different marginal totals. Also, when compared with GEM without interactions and collapsing, the marginal totals differ, with relative differences ranging from 0.01 percent to 6 percent.

A benefit of both the logistic and GEM approaches is that adjustment factors can be constrained to not be too high. They can also be constrained to not be too low, although nonresponse adjustment factors typically have a lower bound of one. Without the constraints, the adjustment factors are not considered too high in this example. However, for illustration, upper bound constraints were added. As seen in table 10, the constraints have minimal effect on the bounds, weights, and UWEs.

The RRMSDs are about 0.14 when comparing the weighting class approach with all three other methods without collapsing and without the interaction term. The differences are about 0.02 when comparing raking with GEM-logistic and logistic, and about 0.00 when comparing GEM-logistic with logistic. Collapsing variables but still excluding the interaction term decreases the differences with weighting class but increases the differences between raking and both GEM-logistic and logistic. The addition of the interaction term increases the differences between raking and both GEM-logistic and logistic. The differences between the other methods do not change or do not change much.

Table 8. Summary statistics for six variables weight adjustments: 2005

Type of weight adjustment	Adjustment factor				Weight				Overall UWE
	Mean	Maximum	Minimum	Median	Mean	Maximum	Minimum	Median	
GEM—logistic with no collapsing and no interactions	1.1457	1.6071	1.0248	1.1293	263.87	8885.23	6.33	238.56	1.6025
Logistic with no collapsing and no interactions	1.1455	1.5840	1.0252	1.1300	263.84	8894.15	6.34	238.46	1.6020
Raking without collapsing	1.1457	1.4124	0.9620	1.1396	263.87	8811.27	6.30	239.01	1.5952
GEM—logistic with collapsed variables and no interactions	1.1463	1.2473	1.0480	1.1475	263.87	9628.45	5.86	239.28	1.5961
Logistic with collapsed variables and no interactions	1.1465	1.2472	1.0488	1.1478	263.90	9629.91	5.87	239.26	1.5959
Raking with collapsed variables	1.1462	1.2297	1.0217	1.1528	263.87	9644.53	5.87	239.01	1.5958
GEM—logistic with collapsed variables and interactions	1.1482	1.3333	1.0000	1.1381	263.87	9081.55	6.27	238.82	1.5866
Logistic with collapsed variables and interactions	1.1481	1.3333	1.0008	1.1381	263.86	9081.55	6.27	238.81	1.5867
Weighting class with collapsed variables	1.1469	1.2584	1.0037	1.1535	263.87	9087.17	5.80	238.44	1.5864

NOTE: GEM = Generalized Exponential Model; UWE = unequal weighting effect.
SOURCE: Education Longitudinal Study of 2002 (ELS:2002).

Table 9. Relative root mean squared differences (RRMSDs) for six variables weight adjustments: 2005

Comparison	RRMSD with no collapsing and no interaction in models	RRMSD with collapsing but no interaction in models	RRMSD with collapsing and interaction in models
GEM—logistic vs. weighting class	0.07836	0.03653	0.03828
Logistic vs. weighting class	0.07750	0.03669	0.03810
Logistic vs. GEM—logistic	0.00317	0.00069	0.00037
GEM—logistic vs. raking	0.02217	0.00730	0.05023
Weighting class vs. raking	0.07082	0.03877	0.03877
Logistic vs. raking	0.02136	0.00723	0.05009

NOTE: GEM = Generalized Exponential Model.
SOURCE: Education Longitudinal Study of 2002 (ELS:2002).

Table 10. Summary statistics for eight variables weight adjustments: 2005

Type of weight adjustment	Adjustment factor				Weight				Overall UWE
	Mean	Maximum	Minimum	Median	Mean	Maximum	Minimum	Median	
GEM—logistic with no collapsing and no interactions	1.1473	1.6180	1.0328	1.1310	263.87	9509.80	6.35	238.52	1.6138
Logistic with no collapsing and no interactions	1.1468	1.5651	1.0341	1.1318	263.81	9486.97	6.36	238.66	1.6120
Raking with no collapsing	1.1471	1.4208	0.9769	1.1411	263.87	9652.46	6.31	238.85	1.6135
GEM—logistic with collapsed variables and no interactions	1.1461	1.2833	1.0713	1.1418	263.87	9705.91	5.98	238.08	1.6036
Logistic with collapsed variables and no interactions	1.1462	1.2832	1.0712	1.1415	263.90	9708.31	5.98	238.08	1.6037
Raking with collapsed variables	1.1459	1.2883	1.0338	1.1468	263.87	9684.50	5.70	238.03	1.6020
GEM—logistic with collapsed variables and interactions	1.1458	2.0000	1.0000	1.1600	263.87	9620.88	5.98	239.01	1.6042
Logistic with collapsed variables and interactions	1.1458	2.0000	1.0003	1.1602	263.87	9616.70	5.97	238.93	1.6040
Weighting class with collapsed variables	1.1473	1.6578	1.0000	1.1210	263.87	9077.16	6.03	238.00	1.5916
GEM—logistic with collapsed variables and interactions with tighter bounds	1.1458	2.0000	1.0000	1.1600	263.87	9623.41	5.98	239.03	1.6043

NOTE: GEM = Generalized Exponential Model; UWE = unequal weighting effect.
SOURCE: Education Longitudinal Study of 2002 (ELS:2002).

Table 11. Relative root mean squared differences (RRMSDs) for eight variables weight adjustments: 2005

Comparison	RRMSD with no collapsing and no interaction in models	RRMSD with collapsing but no interaction in models	RRMSD with collapsing and interaction in models
GEM—logistic vs. weighting class	0.13786	0.10087	0.10045
Logistic vs. weighting class	0.13755	0.10098	0.10044
Logistic vs. GEM—logistic	0.00471	0.00070	0.00049
GEM—logistic vs. raking	0.02204	0.03293	0.06289
Weighting class vs. raking	0.13826	0.09634	0.09634
Logistic vs. raking	0.02065	0.03300	0.06296

NOTE: GEM = Generalized Exponential Model.
SOURCE: Education Longitudinal Study of 2002 (ELS:2002).

Table 12. Comparison of distribution of variables with and without collapsing for eight variables model: 2005

	GEM	GEM with variable collapsed and interactions	Relative difference	Weighting class	Relative difference
Metropolitan status					
Urban	889136.5	889136.5	0.0000	889253.4	-0.0001
Suburban	1622840.0	1617380.0	0.0034	1616143.0	0.0041
Rural	664753.8	670213.4	-0.0082	671333.9	-0.0099
Region					
Northeast	573827.6	540789.5	0.0576	556090.6	0.0309
Midwest	764626.7	762542.1	0.0027	782363.6	-0.0232
South	1098043.0	1131081.0	-0.0301	1104378.0	-0.0058
West	740232.6	742317.2	-0.0028	733898.1	0.0086

NOTE: GEM = Generalized Exponential Model.
SOURCE: Education Longitudinal Study of 2002 (ELS:2002).

2.6 Summary

The four adjustment methods produce similar results. For the logistic and GEM methods to be close to the raking and weighting class methods, the *n*-way interaction term needs to be included, where *n* is the number of variables in the adjustment. GEM can be run to be similar to either the logistic or raking methods. As the number of variables included in the nonresponse adjustment grows, the weighting class method needs to collapse variables due to small cell sizes, where the other methods do not necessarily need collapsing. It can take a long time to determine the appropriate cells for collapsing and then to program the collapsing. Collapsing causes the marginal totals to differ from the sample totals. Different variable selection methods can produce different numbers of variables to include in the nonresponse adjustment and can affect how similar the methods are. Given a dataset with over 12,000 records, the mean, minimum, median, and maximum adjustment factors generally do not vary considerably between methods. The weight ranges and UWEs generally do not vary much either, but there are times when the range is larger for GEM and logistic than for raking and weighting class. The RRMSDs between the methods do increase as more variables are included in the adjustment. GEM-logistic and logistic usually produce similar, but not identical, results. Some additional differences between these methods arise during weight trimming, as described in section 3.

If the model is expanded to include all variables known for both respondents and nonrespondents, then the GEM and logistic methods without any interaction terms or collapsing produce results that are close to each other. Table 13 displays the results for the GEM and logistic full models. However, weighting class adjustment becomes too complex due to the large amount of collapsing necessary.

Table 13. Summary statistics for weight adjustments with all variables included: 2005

Type of weight adjustment	Adjustment factor				Weight				Overall UWE
	Mean	Maximum	Minimum	Median	Mean	Maximum	Minimum	Median	
GEM—logistic full model	1.1509	2.0415	1.0175	1.1314	263.87	9203.55	6.54	237.89	1.6003
Logistic full model	1.1505	1.8477	1.0192	1.1320	263.78	9219.11	6.54	237.62	1.5994

NOTE: GEM = Generalized Exponential Model; UWE = unequal weighting effect.
SOURCE: Education Longitudinal Study of 2002 (ELS:2002).

3. Weight Trimming

Extreme weights often occur in survey data due to small probabilities of sample selection or due to weight adjustments. These extreme weights (either very small or very large) can significantly increase the variance of estimates. One way to account for this and decrease the variance is to trim and smooth extreme weights within prespecified domains. Note that trimming weights has the potential to increase bias. However, the increase in bias is often offset by the decrease in variance due to weight trimming. As a result, this reduces the mean square error (MSE) of an estimate, defined as variance plus bias squared.

3.1 Determined by GEM

There are different techniques to identify extreme weights (outliers), including using the UWE, MSE, or interquartile range (IQR). GEM uses the median +/- X * IQR, where X is any number, typically between 2 and 3. There are also different points in the weight adjustment process where weight trimming can occur. GEM has options to make adjustments for extreme weights as part of the nonresponse and as part of the poststratification. For GEM, a variable or set of variables is selected to be used to identify extreme weights within each level of the variable(s).

The variable race/ethnicity (Hispanic, Asian, Black, and White/other) was chosen for GEM to use to identify outliers. Prior to running GEM, the unweighted and weighted percentages of extreme weights were examined for all four levels of race using various values to multiply by the IQR (2.0, 2.1, 2.2,…,4.0). The median +/- 2.5 multiplied by the IQR was used to identify 3.11 percent unweighted and 9.79 percent weighted of the students having extreme weights. Within each race category, the unweighted percentages ranged from 1.06 to 3.91, and the weighted percentages ranged from 3.07 to 12.00.

3.2 Determined by Interquartile Range (IQR)

For the weighting class, logistic, and raking methods, the median +/- 2.5 multiplied by the IQR was also used to identify extreme weights to be consistent with and allow comparisons to the GEM method. However, these methods could not adjust for the extreme weights while simultaneously adjusting for nonresponse. Instead, the adjustment for extreme weights was done prior to nonresponse adjustment.

3.3 Results

To compare the results among the four methods, the eight-variable model with collapsed cells and the eight-variable interaction term included was used. As shown with the nonresponse models, all four adjustment methodologies do not produce identical results. Tables 14 and 15 display the results of each method. The mean adjustment factors are close for all methods except the GEM method, which was larger. However, the ranges of the adjustment factors and weights vary, with the weighting class method having the widest weight range. GEM has a much lower minimum adjustment factor than the other methods, due to the trimming adjustment being part of the nonresponse adjustment. The GEM and logistic methods have the largest maximum adjustment factor. The mean weight is identical within rounding for all of the methods, except

for the logistic method. The UWEs are also close for all four of the methods. The RRMSDs are between 0.08 and 0.11 when comparing weighting class to the other methods.

A benefit of both the logistic and GEM approaches is that extreme weight and nonresponse adjustment factors can be constrained to not be too high or too low. Nonextreme nonresponse adjustment factors typically have a lower bound of one. Without the constraints, the adjustment factors are not considered too low or too high in this example. However, for illustration, constraints were added. As seen in table 14, the constraints have minimal effect on the bounds, weights, and UWEs.

Table 14. Summary statistics for weight adjustments with weight trimming: 2005

	Adjustment factor				Weight				
Type of weight adjustment	Mean	Maximum	Minimum	Median	Mean	Maximum	Minimum	Median	Overall UWE
GEM—logistic	1.1774	2.0000	0.0850	1.1859	263.87	846.95	6.20	245.48	1.2867
Logistic	1.1469	2.0000	1.0003	1.1630	263.87	750.37	6.16	246.10	1.2714
Weighting class	1.1478	1.6547	1.0000	1.1248	263.87	862.10	6.20	245.18	1.2761
Raking	1.1466	1.2855	1.0395	1.1457	263.87	697.31	5.88	247.10	1.2694
GEM—logistic with tighter bounds	1.1774	2.0000	0.0848	1.1859	263.87	846.95	6.21	245.70	1.2869

NOTE: GEM = Generalized Exponential Model; UWE = unequal weighting effect.
SOURCE: Education Longitudinal Study of 2002 (ELS:2002).

Table 15. Relative root mean squared differences (RRMSDs) for weight adjustments with weight trimming: 2005

Comparison	RRMSD with collapsing and interaction in models
GEM—logistic vs. weighting class	0.10916
Logistic vs. weighting class	0.09339
Logistic vs. GEM—logistic	0.05833
GEM—logistic vs. raking	0.08317
Weighting class vs. raking	0.08704
Logistic vs. raking	0.06142

NOTE: GEM = Generalized Exponential Model.
SOURCE: Education Longitudinal Study of 2002 (ELS:2002).

4. Poststratification

4.1 Control Totals

Poststratification to control totals is done in some surveys to adjust the weights to match known population totals. The ELS:2002 student data was not poststratified, because there were no known population totals. Logistic models cannot be used for poststratification, so an exponential model was used instead. For the sake of comparing the four methods, control totals were formed using the ELS:2002 final weights. These final weights differ from the weights generated by GEM in these examples because ELS:2002 used two nonresponse models and more variables in the nonresponse models. Appendix A and the ELS:2002 Base Year Data File Users Manual provide more details. Two sets of control totals were used to compare the methods. One set of control totals was for the separate variables sex and race/ethnicity. The second set was for the cross of sex and race/ethnicity (i.e., race*sex). Weighting class and raking used the interaction race*sex, whereas GEM and exponential control at the margins and could use either of the two sets.

4.2 Results

To compare the results among the four methods, the eight-variable model with collapsed cells and the eight-variable interaction term included was used. As shown with the nonresponse models, all four adjustment methodologies do not produce identical results. Tables 16 and 17 display the results for each method. The mean adjustment factors are close, with the raking method having the smallest mean. The UWEs range from 1.59 for weighting class to 1.73 for raking. The ranges of the adjustment factors and weights are largest for raking. The weighting class method has the smallest maximum weight. The mean weight is identical for all four methods. The RRMSDs are about 0.10 when comparing weighting class to GEM-exponential. When comparing raking to the other three methods, the RRMSDs are between 0.34 and 0.35.

For all models, the mean weights were equal. For the various collapsed and uncollapsed models with and without interactions, GEM-exponential and exponential produced similar adjustment factors and an RRMSD of about zero.

Table 16. Summary statistics for weight adjustments with postratification: 2005

	Adjustment factor				Weight				
Type of weight adjustment	Mean	Mini-mum	Maxi-mum	Median	Mean	Mini-mum	Maxi-mum	Median	Overall UWE
GEM—exponential with sex and race	1.0037	0.9817	1.0489	1.0022	263.87	5.94	9642.49	237.80	1.6001
Exponential with sex and race	1.0037	0.9818	1.0491	1.0022	263.87	5.94	9642.08	237.81	1.6001
Raking	1.0009	0.2939	1.1693	1.1331	263.87	3.82	9959.32	241.38	1.7279
GEM—exponential with sex*race	1.0038	0.9847	1.0543	0.9992	263.87	5.89	9613.46	238.53	1.5994
Exponential with sex*race	1.0038	0.9847	1.0543	0.9992	263.87	5.89	9613.46	238.53	1.5994
Weighting class	1.0043	0.9829	1.0543	0.9961	263.87	5.97	9041.97	237.07	1.5853

NOTE: GEM = Generalized Exponential Model; UWE = unequal weighting effect.
SOURCE: Education Longitudinal Study of 2002 (ELS:2002).

Table 17. Relative root mean squared differences (RRMSDs) weight adjustments with poststratification: 2005

Comparison	RRMSD with collapsing, interaction, and race and sex in models	RRMSD with collapsing, interaction, and race*sex in models
GEM—exponential vs. weighting class	0.10091	0.10060
Exponential vs. weighting class	0.10091	0.10060
Exponential vs. GEM—exponential	0.00008	0.00000
GEM—exponential vs. raking	0.33837	0.33841
Weighting class vs. raking	0.34685	0.34685
Exponential vs. raking	0.33837	0.33841

NOTE: GEM = Generalized Exponential Model.
SOURCE: Education Longitudinal Study of 2002 (ELS:2002).

5. Nonresponse Bias Analysis

5.1 Overview

Unit nonresponse causes bias in survey estimates when the outcomes of respondents and nonrespondents are different. For ELS:2002, student response is defined as the student completing at least a specified portion of the student questionnaire. The overall student response rate was above 85 percent overall. In addition to comparing the weight adjustment factors, weights, and UWEs across the four methods, the reduction in nonresponse bias was also analyzed. The nonresponse bias was estimated for 22 variables that were known for both respondents and nonrespondents (including the 8 variables used in the model) because one purpose of the nonresponse adjustments was to reduce or eliminate nonresponse bias for variables included in the adjustments. Variables not known for most respondents and nonrespondents could not be included in the nonresponse adjustments, and therefore nonresponse bias could not explicitly be reduced for these variables.

First, for the 22 variables, the nonresponse bias was estimated prior to weight adjustments and tested to determine if the bias was significant at the 5 percent level. After the weights were computed, remaining bias for the 22 variables was estimated and statistically tested to check if there was any remaining significant nonresponse bias.

The bias in an estimated mean based on respondents, $\bar{y}_R$, is the difference between this mean and the target parameter, π; that is, the mean that would be estimated if a complete census of the target population was conducted. This bias can be expressed as follows:

$$B(\bar{y}_R) = \bar{y}_r - \pi .$$

The estimated mean based on nonrespondents, $\bar{y}_{NR}$, can be computed if data for the particular variable for most of the nonrespondents is available. The estimation of π is as follows:

$$\hat{\pi} = (1-\eta)\bar{y}_R + \eta\bar{y}_{NR},$$

where η is the weighted unit nonresponse rate. For the variables that are from the frame rather than from the sample, π can be estimated without sampling error. Therefore, the bias before weight adjustments can be estimated as follows:

$$\hat{B}(\bar{y}_R) = \bar{y}_R - \hat{\pi}$$

or equivalently

$$\hat{B}(\bar{y}_R) = \eta(\bar{y}_R - \bar{y}_{NR}) .$$

This formula shows that the estimate of the nonresponse bias is the difference between the mean for respondents and nonrespondents multiplied by the weighted nonresponse rate. The variance of the bias was computed using Taylor Series estimation in RTI's software package SUDAAN.

The bias after weight adjustments was computed as the difference between the estimate using nonresponse-adjusted (final) weights and the estimate using the design (base) weights prior

to nonresponse adjustment. This latter estimate is an estimate of π because it is the estimate of the target population using the design weights.

5.2 Results

Table 18 summarizes the nonresponse bias before and after weight adjustments for each method. The mean and median relative bias, as well as the percent significant, are shown across all 22 variables. Statistical tests (*t* tests) were used to test each level of the variables for significance of the bias at the $0.05/(c - 1)$ significance level, where c is the number of categories (levels) within the primary variable. The weight before weight adjustments did not depend on the adjustment method, so the before-weight adjustment numbers are identical across all four methods. The after-weight adjustment numbers are similar across all four methods with the GEM and logistic results almost identical. The weighting class percent significant bias is the lowest among the four methods, and the raking percent significant bias is the highest among the four methods.

Table 18. Summary of nonresponse bias analysis by weight adjustment method: 2005

Nonresponse bias statistics	GEM—logistic	Logistic	Weighting class	Raking
Before weight adjustments				
Mean estimated relative bias	-0.0006	-0.0006	-0.0006	-0.0006
Median estimated relative bias	-0.0003	-0.0003	-0.0003	-0.0003
Percent significant bias	35.5	35.5	35.5	35.5
After weight adjustments				
Mean estimated relative bias	0.0012	0.0012	0.0011	0.0020
Median estimated relative bias	0.0000	0.0001	-0.0002	-0.0001
Percent significant bias	5.3	5.3	2.6	6.6

NOTE: GEM = Generalized Exponential Model.
SOURCE: Education Longitudinal Study of 2002 (ELS:2002).

6. Summary

6.1 Advantages/Disadvantages of Each Method

As described in the sections above, all four of the weight adjustment methods generally produce similar results, with more differences in weights appearing as more variables are included in the adjustments. The weighting class and raking methods get more complex as more variables are added. Generally, depending on the sample size, the weighting class approach needs collapsing as cell sizes get small. The process of collapsing cells can be tedious and time consuming. The weighting class approach allows only the interaction term that includes all variables. The raking and GEM approaches control at the margins as opposed to controlling at the cell level. The logistic method does not force the weight sums to the marginal totals, but the weight sums are usually close to the marginal totals. Many variables, including main effects and any important interaction terms (two-way, three-way, etc.) can be included in the GEM and logistic approaches. These two models can be easily reduced if the model does not converge or if non-significant variables are not desired. The output from the programs shows the variables that are causing the convergence problems and variables that are not significant.

As the survey becomes more complex, (i.e. larger sample size and more candidate variables for nonresponse adjustment) then a modeling approach may be preferred. However, if the sample size is small or if only a small number of variables are known for both respondents and nonrespondents, then a weighting class or raking approach may be preferred to the more complex modeling methods.

The GEM approach incorporates specific lower and upper bounds separately for extreme and nonextreme weights. An important application of this feature is to identify at each adjustment step an initial set of cases with extreme weights and to use specific bounds to exercise control over the final adjusted weights. Thus, there is built-in control for extreme weights.

6.2 Suggestions for Future Work

The work presented in this report shows the similarities and difference among four weight adjustment methods. Additional models can be run with variations, including different numbers of variables, different bounds on adjustment factors, different control totals, and different techniques for variable selection and extreme weight identification. Additionally there may be other analyses for the results to compare the methods, including looking at the mean squared error (MSE) and a receiver operating curve (ROC) analysis.

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