2011–12 National Postsecondary Student Aid Study (NPSAS:12)

Data File Documentation

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Institute of Education Sciences

2011–12 National Postsecondary Student Aid Study (NPSAS:12)

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Executive Summary

The 2011–12 National Postsecondary Student Aid Study (NPSAS:12), conducted for the U.S. Department of Education's National Center for Education Statistics (NCES), is a comprehensive, nationwide study to determine how students and their families pay for postsecondary education. Data were collected from a student interview, institution records, and administrative databases. This report describes the methodology and findings of NPSAS:12.

Sample Design

NPSAS:12 was based on a sample of all students in Title IV[1] eligible postsecondary institutions throughout the United States during the 2011–12 academic year. The institution sample included all institution types—public, private nonprofit, and private for-profit institutions at the 4-year, 2-year, and less-than-2-year levels. NPSAS statisticians selected the institution samples for the field test and full-scale studies simultaneously, prior to the field test study, using stratified random sampling with probabilities proportional to a composite measure of size. The sample included 1,970 institutions from which field test and full-scale samples were drawn. The statisticians selected a field test sample of 300 institutions using statistical procedures, rather than purposively as had been done in previous NPSAS field tests. The full-scale sample included the remaining 1,670 institutions, plus 20 newly eligible institutions added after freshening the sample; resulting in a total of 1,690 sampled institutions.

NPSAS statisticians selected student samples for the full-scale study from institution enrollment lists provided by the sampled institutions. The final sample included a total of 128,120 students. Because NPSAS:12 serves as the base year for the Beginning Postsecondary Students Longitudinal Study[2] (BPS) cohort of first-time beginning (FTB) college students, an emphasis was placed on selecting undergraduate FTB students for NPSAS:12 sample. Information on the field test sample is provided in appendix O; unless otherwise noted, the remainder of the executive summary addresses only the full-scale study.

Institution Data Collection

NPSAS project staff initially contacted institutions for NPSAS:12 and asked them to provide enrollment lists for sampling. Ninety-four percent of chief administrators at sampled institutions agreed to participate and appointed an institution coordinator responsible for providing enrollment lists and student records. Institution coordinators from 1,480 of the 1,690 sampled institutions provided enrollment lists. After NPSAS staff selected the student sample, they contacted institutions a second time and asked them to provide student records data for the sampled students. A secure website was used to provide information on the project and options for uploading data. Institution coordinators provided student record data for 88 percent of the sampled students.

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[1] A Title IV eligible institution is an institution that has a written agreement (program participation agreement) with the U.S. Secretary of Education that allows the institution to participate in any of the Title IV federal student financial assistance programs other than the State Student Incentive Grant and the National Early Intervention Scholarship and Partnership programs.
[2] BPS follows a cohort of first-time beginning college students to collect data on student experiences, persistence, and degree attainment.

Student Interview

The NPSAS:12 student interview included core data elements used in previous NPSAS student interviews as well as new data elements developed in association with a redesign of the BPS longitudinal follow-up study, the conceptual framework of which is informed by human capital theory. The outcomes of the field test, focus groups, cognitive interviews, and input from the study's Technical Review Panel (TRP) further informed the interview design. The interview consisted of seven sections, grouped by topic: enrollment, education experiences, financial aid, current employment, income and expenses, background, and locating.

NPSAS project staff used a multistep data collection design for locating, tracing, and contacting sample members to encourage them to complete the interview. Project staff used several batch locating databases to update and confirm contact information for all sample members. For sample members that could not be located, NPSAS staff used intensive tracing techniques, which included more detailed review of student information and previous contact attempts and additional sources to attempt to find contact information. About 10 percent of the eligible sample (12,390 cases) required intensive tracing, and NPSAS staff located 71 percent of these cases. Overall, project staff successfully located 114,240 of the 128,120 NPSAS:12 sample members (about 89 percent).

Once located, NPSAS project staff sent sample members postal and electronic mail introducing them to the study and encouraging their participation. Project staff also provided a study website with information and guidance on completing the interview. Successful methods included matches to commercial services, such as PhoneAppend, Department of Education's Central Processing System (CPS),[3] as well as address update information that both sample members and their parents provided.

The NPSAS:12 interview was designed for both web and telephone administration. It included extensive help text to assist both respondents and telephone interviewers in completing the interview. The interview averaged 28.1 minutes to complete, with web interviews averaging 26.9 minutes and telephone interviews averaging 33.6 minutes. NPSAS staff attributes this difference to the time required for interviewers to read questions and other text aloud to respondents.

NPSAS project staff determined that of the 128,120 sample members in NPSAS:12 sample, 123,600 were eligible to complete the student interview. Of those, about 85,000 (69 percent) did so, with 82 percent completing by web and 18 percent by telephone.

Study Members

NPSAS project staff classified a sample member as a *study member* if data were available for him or her on a set of key variables. Those variables, identified across the student interview, student records, and administrative data, included those required to support the analytic objectives of the study. On completion of data collection, 91 percent of the eligible sample ($N = 111,060$) had sufficient data to meet the definition of study member. The unweighted study membership rate (among eligible students) varied by type of institution, ranging from 82 percent for students from public, less-than-2-year institutions to 95 percent for students from private, for-profit, less-than-2-year institutions. NPSAS survey staff calculated weighted study membership rates on the basis of the institution weights and student probabilities of selection.

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[3] CPS holds student data related to the Free Application for Federal Student Aid.

Administrative Records Matching

In addition to the student record collection and interview, NPSAS:12 data came from three administrative data sources. Two of the sources, CPS and National Student Loan Data System (NSLDS), provided information from federal financial aid applications, and loan and Pell Grant historical data. The overall CPS matching rate for the 2011–12 and 2012–13 academic years was 77 percent. CPS match rates varied by type of institution, ranging from 63 percent at private nonprofit 4-year doctorate-granting institutions to 92 percent for private for-profit 2-year institutions.

Successful matching to NSLDS can occur only for sample members who have received federal loans or Pell Grants. About 65,960 study members (59 percent) matched to NSLDS Pell records and 71,970 (65 percent) matched to NSLDS loan records. Approximately 65 percent of total undergraduate students matched to NSLDS, while about 31 percent of the graduate students had a match.

The National Student Clearinghouse (NSC) provides information on postsecondary enrollment, degree, and certificate records on behalf of participating postsecondary institutions. NSC matches for study members included their participating NPSAS sampled institution and any other participating institutions they attended during the 2011–12 year. In total, 79,450 study members (72 percent) matched to the NSC for their NPSAS sampled institution. About 30 percent of study members matched to the NSC for both their NPSAS institution and at least one other institution.

Analysis Weights and Variance Estimation

NPSAS staff computed statistical analysis weights for study members so that the study members would represent the NPSAS:12 target population. The statistical analysis weights compensated for the unequal probability of selection of institutions and students in the NPSAS:12 sample. The weights also adjusted for multiplicity at the institution and student levels, unknown student eligibility, nonresponse, and poststratification. Staff computed the institution weight and then used it as a component of the student weight.

Due to the complex survey design and the nonlinear statistics endemic in most probability-based sample surveys such as NPSAS:12, survey statisticians developed two procedures for estimating variances of survey statistics for NPSAS:12: Taylor-series linearization and bootstrap replication. Staff also computed design effects to measure the effect that complex sample design features had on the variances of survey estimates.

Products

The following reports and web tables will be available on the NCES website at http://nces.ed.gov/surveys/npsas/:

- *2011–12 National Postsecondary Student Aid Study (NPSAS:12): Student Financial Aid Estimates for 2011–12;*

- *2011–12 National Postsecondary Student Aid Study (NPSAS:12): Price Estimates for Attending Postsecondary Education Institutions;*

- *Web Tables—Undergraduate Financial Aid Estimates by Type of Institution in 2011–12;*

- *Web Tables—Student Financing of Undergraduate Education: 2011–12;*

- *What Is the Price of College? Total, Net, and Out-of-Pocket Prices in 2011–12;*

- *Web Tables—Profile of Undergraduate Students: 2011–12 ;*

- *Web Tables—Profile of Graduate Students and Graduate Financial Aid Estimates: 2011–12;*

- *Web Tables—Comparison of Original and Revised Student Financial Aid Estimates for 2007–08;*

- *Data Point—Out-of-Pocket Net Price for College;*

- *Web Tables—Trends in Student Financing of Undergraduate Education: Selected Years, 1995–96 to 2011–12;*

- *Borrowing at the Maximum: Undergraduate Direct Loan Borrowers in 2011–12;*

- *Web Tables—Trends in Graduate Student Financing: 1995–96 to 2011–12;*

- *Web Tables—Students With Nontraditional Characteristics: 2011–12;*

- *Military Service Members and Veterans: A Profile of Those Enrolled in Graduate and Undergraduate Education;*

- *Web Tables—Trends in the Pell Grant Program, 2000 to 2012;*

- *Contraction of Private Loans;*

- *Web Tables—Trends in Nonfederal Aid; and*

- *New Americans in Postsecondary Education.*

Survey data files and associated codebooks and file documentation are available to researchers who have obtained a restricted data license from NCES from the website: http://nces.ed.gov/statprog/instruct.asp. Information on obtaining a restricted data license is available in the NCES Restricted-Use Data Procedures Manual at https://nces.ed.gov/statprog/rudman/.

The general public may use NCES web tools, found at http://nces.ed.gov/datalab, to analyze NPSAS:12 restricted-use data. These tools permit analysis of the derived file without disclosing its contents to the user, and, as necessary, suppress or flag estimates that fail to meet reporting standards, or both. QuickStats allows casual users to generate simple tables and graphs quickly and easily. PowerStats is available for users who wish to generate complex tables or estimate simple linear or logistic regression models.

Acknowledgments

The authors are greatly indebted to the students who generously participated in the survey. Their willingness to take the time to share their information and experiences made NPSAS:12 a success.

The authors gratefully acknowledge the assistance of the staff members at postsecondary institutions who provided data for the student and transcript data collections. The authors also extend special thanks to members of the TRP who provided their expertise to help shape NPSAS:12.

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Chapter 1.
Overview

This report describes the methods and results for the 2011–12 National Postsecondary Student Aid Study (NPSAS:12), conducted for the U.S. Department of Education's National Center for Education Statistics (NCES), , Washington, DC. The following legislation authorizes this and previous cycles of NPSAS, as well as two longitudinal studies deriving from it—the Beginning Postsecondary Students Longitudinal Study (BPS) and the Baccalaureate and Beyond Longitudinal Study (B&B):

- the Higher Education Act of 1965, as amended by the Higher Education Opportunity Act of 2008, 20 U.S.C. § 1015(a) (2012);

- the Education Sciences Reform Act of 2002, 20 U.S.C. §§ 9541 to 9548 (2012);

- the Higher Education Act of 1965, as amended, 20 U.S.C. § 1070 et seq. (2012).

This cycle of NPSAS occurs 4 years after the last data collection (NPSAS:08) in response to the need to collect periodic information on financial aid programs. The large-scale and rapid changes in federal policy concerning postsecondary student aid necessitate such frequent studies. Eligibility restrictions change, size of grant and loan amounts fluctuate, and the balance between various aid options can change dramatically. Student loan programs create continued obligations for the federal government as long as the loans are being repaid, thus a recurring study like NPSAS is essential to help predict future costs for financial aid.

Chapter 1 of this report provides an overview of the background and purpose of NPSAS, as well as the study design and its schedule and products. Chapter 2 describes the sampling design and the steps NPSAS statisticians used to select institution and student samples. Chapter 3 describes the design, outcomes, and evaluation activities associated with institution data collection. Chapter 4 provides details on the student interview design, data collection, outcomes and evaluations. Chapter 5 includes information on the student administrative records matching activities and outcomes. Chapter 6 contains a description of postdata collection data file processing, including editing, weighting, imputation, bias analysis, and variance estimation.

1.1   Background and Purpose

The purpose of NPSAS is to serve as a comprehensive, nationwide study to determine how students and their families pay for postsecondary education; it features a nationally representative sample of both aided and nonaided students in postsecondary education institutions in the United States. The sample includes undergraduate and graduate students. These students attend all types and levels of postsecondary institutions that are eligible to distribute student aid authorized under Title IV of the Higher Education Act, including public and private institutions, for-profit and nonprofit institutions, and less-than-2-year institutions to 4-year colleges and universities.

NPSAS also serves as the base-year data collection for two longitudinal studies, BPS and B&B. The current NPSAS:12 serves as the base year for the BPS:12 cohort of first-time beginning (FTB) college students, with two follow-up studies planned over the subsequent 5 years. Consequently, a set of items in the NPSAS:12 student interview captured information about student experiences in the first year and their perceptions of the costs and benefits of education in order to support longitudinal analysis of student choices related to persistence and completion.

1.2 Overview of NPSAS:12 Study Design

Data for NPSAS:12 come from postsecondary institutions, students, and administrative data sources. The target population included all students enrolled in Title IV eligible postsecondary institutions in the 2011–12 academic year, in the 50 states and the District of Columbia. Within the sampled institutions, NPSAS statisticians selected a nationally representative stratified sample of students.

NPSAS staff asked institutions to provide information from student financial aid records and other institution sources. Much of the required student financial aid data contained in institution records is also available in the Central Processing System (CPS), which houses and processes data contained in the Free Application for Federal Student Aid (FAFSA) forms. NPSAS project staff obtained these data through file matching, reducing the data collection burden on sampled institutions. As in NPSAS:08, project staff asked institutions to verify institution characteristics and institution participation in Title IV financial aid programs and to provide enrollment lists for sampling purposes.

Once researchers selected students from enrollment lists, their data were collected using a multimodal web-based survey either self-administered via the Web or through a computer-assisted telephone interview.

Additional data for the NPSAS:12 student sample came from a variety of administrative data sources. These include the aforementioned queries of CPS, as well as the National Student Loan Data System (NSLDS), the National Student Clearinghouse, and undergraduate admissions testing companies.

1.3 Schedule and Products

Table 1 shows the schedule for the major activities for the full-scale study.

Table 1.   Schedule of major activities for the full-scale NPSAS:12: 2011–14

Activity	Start date	End date
Contacts with institutions to request enrollment lists	9/12/2011	7/16/2012
Select student sample	1/24/2012	7/16/2012
Collect student data from institution records	2/8/2012	10/17/2012
Self-administered web-based data collection	2/7/2012	10/17/2012
Conduct telephone interviews of students	2/7/2012	10/17/2012
Process data, construct data files	11/7/2011	7/30/2013
Prepare/update reports	3/8/2012	9/24/2014

SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

The following reports and web tables will be available on the NCES website at http://nces.ed.gov/surveys/npsas/:

- *2011–12 National Postsecondary Student Aid Study (NPSAS:12): Student Financial Aid Estimates for 2011–12* is a First Look publication that gives the percentages of students receiving various types of financial aid and average amounts received, by type of institution attended, attendance pattern, dependency status, and income level.

- *2011–12 National Postsecondary Student Aid Study (NPSAS:12): Price Estimates for Attending Postsecondary Institutions* is a First Look publication that provides data on the price of attendance, out-of-pocket net price, and net price by type of institution attended.

- *Web Tables—Undergraduate Financial Aid Estimates by Type of Institution in 2011–12* is focused on undergraduates and includes separate tables for those who attended public 4-year, those who attended private nonprofit 4-year, those who attended public 2-year, and those who attended private for-profit postsecondary institutions during the 2011–12 academic year. It gives average tuition and fees, average total price of attendance, and the percentages of undergraduates receiving various types and combinations of financial aid, together with average amounts received, with a particular focus on grants and loans.

- *Web Tables—Student Financing of Undergraduate Education: 2011–12* addresses undergraduate tuition and fees, net tuition, total price of attendance, net price of attendance, out-of-pocket net price of attendance, types and sources of financial aid received, and unmet financial need.

- *What Is the Price of College? Total, Net, and Out-of-Pocket Prices in 2011–12* is a report that describes the average price of education among undergraduates enrolled in U.S. postsecondary institutions in 2011–12 with an emphasis on those enrolled full time for 9 months or more. It provides total price of attendance (consisting of tuition and nontuition expenses), net price after grant aid (total price less grants), and out-of-pocket net price (total price less all financial aid including loans), broken down by type of institution and by family income.

- *Web Tables—Profile of Undergraduate Students: 2011–12* is a Web Tables publication that describes selected characteristics of undergraduate students, including demographic characteristics, enrollment status, degree program, major field of study, financial aid receipt, and employment while enrolled.

- *Web Tables—Profile of Graduate Students and Graduate Financial Aid Estimates: 2011–12* is focused on graduate students that provides selected demographic, enrollment, and employment characteristics and describes the types and amounts of financial aid the graduate students received.

- *Web Tables—Comparison of Original and Revised Student Financial Aid Estimates for 2007–08* compares the percentages of students receiving various types of financial aid and average amounts received, by type of institution attended, attendance pattern, dependency status, and income level as originally published and after the NPSAS:08 weights were revised in 2013.

- *Data Point—Out-of-Pocket Net Price for College* provides a snapshot about trend data on out-of-pocket net price for full-time undergraduates for 1999–2000 to 2011–12.

- *Web Tables—Trends in Student Financing of Undergraduate Education: Selected Years, 1995–96 to 2011–12* presents trends in financial aid that was awarded to undergraduate students attending postsecondary institutions in the United States. Data include price of attendance, tuition and fees, type of financial aid received from federal, state, and institution sources, net price of attendance (price minus all grants), out-of-pocket net price (price minus all aid), and financial need.

- *Borrowing at the Maximum: Undergraduate Direct Loan Borrowers in 2011–12* is a report that will show the extent to which undergraduate students borrowed the maximum possible

within the limits of the Direct Loan program, defined by students' individual eligibility for financial aid.

- *Web Tables—Trends in Graduate Student Financing: 1995–96 to 2011–12* will present trends in the proportion of graduate students who received financial aid and average amounts by type and source of aid grouped by enrollment and student characteristics. They will also display data trends on student employment while enrolled and average net price by enrollment and student characteristics.

- *Web Tables—Students with Nontraditional Characteristics: 2011–12* will describe nontraditional undergraduates in terms of their demographic characteristics, enrollment patterns, and ways of combining school and work.

- *Military Service Members and Veterans: A Profile of Those Enrolled in Graduate and Undergraduate Education* is a report that will examine the representation of military students in undergraduate and graduate education and to present how their demographic and enrollment characteristics compare with their nonmilitary peers.

- *Web Tables—Trends in the Pell Grant Program, 2000 to 2012* will examine trends in Pell Grant awards between 1999–2000 and 2011–12 and present information on the changes in the amount of Pell awarded and changes in the proportion of students' total cost of attendance met by Pell.

- *Contraction of Private Loans* is a report that will examine trends in borrowing from commercial lenders for postsecondary education, the characteristics of undergraduate and graduate private loan borrowers, and combining private and federal loans.

- *Web Tables—Trends in Nonfederal Aid* will examine trends in state and institution aid between 1999–2000 and 2011–12 by institution and student characteristics..

- *New Americans in Postsecondary Education* is a report that will describe the characteristics and undergraduate experiences of 2011–12 undergraduates who immigrated to the United States or who had at least one immigrant parent (second-generation Americans).

- Undergraduate PowerStats contains the data on a sample of about 95,000 undergraduates from about 1,690 institutions. The data represent all undergraduate students enrolled between July 1, 2011, and June 30, 2012, in postsecondary institutions in the 50 states and the District of Columbia that were eligible to participate in the federal financial aid programs under Title IV of the Higher Education Act.

- Graduate PowerStats contains the data on a sample of about 16,000 graduate students from about 1,690 postsecondary institutions. The data represent all graduate students enrolled between July 1, 2011, and June 30, 2012, in postsecondary institutions in the 50 states and the District of Columbia that were eligible to participate in the federal financial aid programs under Title IV of the Higher Education Act.

Survey data files and associated codebooks and file documentation, are available to researchers who have obtained a restricted data license from NCES from the website: http://nces.ed.gov/statprog/instruct.asp. Information on obtaining a restricted data license is available in the NCES Restricted-Use Data Procedures Manual at http://nces.ed.gov/statprog/rudman/.

The general public may use NCES web tools, found at http://nces.ed.gov/datalab, to analyze NPSAS:12 restricted-use data. These tools permit analysis of the derived file without disclosing its contents to the user, and, as necessary, suppress or flag estimates that fail to meet reporting standards, or both. QuickStats allows casual users to generate simple tables and graphs quickly and easily. PowerStats is available for users who wish to generate complex tables or estimate simple linear or logistic regression models.

Chapter 2.
Sampling Design

This chapter provides a detailed summary of the sampling design and sampling methods implemented for NPSAS:12. NPSAS statisticians developed sampling procedures and methods in consultation with a Technical Review Panel (TRP) composed of nationally recognized experts in higher education (see appendix A). This chapter includes a description of NPSAS:12 participant eligibility requirements and the multiple stages of sampling, including procedures for identifying the longitudinal cohort for BPS.

2.1 Respondent Universe

NPSAS statisticians constructed the institution sampling frame for NPSAS:12 using the 2008–09 Integrated Postsecondary Education Data System (IPEDS) universe. All eligible students from sampled institutions comprised the student sampling frame. A small number of institutions on the frame contained missing enrollment information which NPSAS project staff imputed using the latest IPEDS imputation procedures.

2.1.1 Institution Universe

To be eligible for NPSAS:12, students must have been enrolled in an academic program or course at aNPSAS-eligible institution at some point during the 2011–12 academic year. Institutions must have also met the following requirements:

- offer an educational program designed for persons who have completed secondary education;

- offer at least one academic, occupational, or vocational program of study lasting at least 3 months or 300 clock hours;

- offer courses that were open to more than the employees or members of the company or group (e.g., union) that administers the institution;

- be located in the 50 states or the District of Columbia;

- not be a U.S. service academy institution; and

- have signed the Title IV participation agreement with the Department of Education.[1]

NPSAS excluded institutions providing only avocational, recreational, or remedial courses, or only in-house courses for their own employees or members. U.S. service academies were also excluded because of the academies' unique funding base.

Institution eligibility conditions have changed since the inception of the NPSAS studies in three notable ways. First, beginning with NPSAS: 2000, an institution had to be eligible to distribute federal Title IV aid to be included. Next, institutions that offered only correspondence courses, provided these same institutions were also eligible to distribute federal Title IV student aid, were

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[1] A Title IV eligible institution is an institution that has a written agreement (program participation agreement) with the U.S. Secretary of Education that allows the institution to participate in any of the Title IV federal student financial assistance programs other than the State Student Incentive Grant and the National Early Intervention Scholarship and Partnership programs.

first included in NPSAS:04. Finally, institutions in Puerto Rico were not originally included in NPSAS in 1987, but subsequently were added to administrations of NPSAS between 1993 and 2008. Institutions in Puerto Rico are not included in the 2012 administration of NPSAS. Puerto Rican institutions enroll only about 1 percent each of undergraduate and graduate students nationally. These institutions have unique aid, enrollment, and demographic patterns that distinguish them from institutions in the 50 states and the District of Columbia.

2.1.2 Student Universe

The NPSAS:12 target population consisted of all eligible students enrolled at any time between July 1, 2011, and June 30, 2012, in eligible postsecondary institutions in the United States and who were:

- enrolled in either: (a) an academic program; (b) at least one course for credit that could be applied toward fulfilling the requirements for an academic degree; (c) exclusively noncredit remedial coursework but determined by the institution to be eligible for Title IV aid; or (d) an occupational or vocational program that required at least 3 months or 300 clock hours of instruction to receive a degree, certificate, or other formal award;

- not currently enrolled in high school; and

- not solely enrolled in a General Educational Development (GED) or other high school completion program.

2.2 Institution and Student Samples

The NPSAS:12 institution sample included all levels (less-than-2-year, 2-year, and 4-year) and controls (public, private nonprofit, and private for-profit) of Title IV eligible postsecondary institutions in the United States. NPSAS statisticians randomly selected the student sample from student enrollment lists provided by the sample institutions.[2]

2.2.1 Institution Sample

During the field test, NPSAS project staff constructed the NPSAS:12 full-scale institution sampling frame from the 2008–09 IPEDS Institution Characteristics (IC) Header, Fall and 12-Month Enrollment, and Completions components. For the small number of institutions on the frame that had missing enrollment information, NPSAS statisticians imputed the data using the latest IPEDS imputation procedures to guarantee complete data for the frame.

NPSAS statisticians selected the field test institution sample statistically, rather than purposively, as project staff had done in past NPSAS cycles. A statistical sample provides more control to ensure that the field test and the full-scale institution samples have similar characteristics, and allowed inferences to be made to the target population, supporting the analytic needs of the field test experiments. In order to accomplish this, project staff changed the process by which they selected the institution sample for NPSAS:12. Previous cycles selected the full-scale sample prior to selecting the field test sample from the complement. NPSAS:12 selected both institution samples simultaneously. First, NPSAS project staff selected a sample of 1,970 institutions, comprising the institutions needed for both the field test and full-scale studies, from the stratified frame. Then they

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[2] Institutions provided enrollment lists that covered the period of July 1, 2011 through April 30, 2012. The date of April 30 was selected to include virtually all students enrolled prior to the summer term without delaying data collection.

selected 300 of the 1,970 institutions for the field test using simple random sampling within institution strata. The remaining 1,670 institutions comprise the full-scale sample, prior to freshening. Figure 1 shows the flow of institution sampling activities.

Figure 1.   Institution sample flow, prior to freshening: 2012
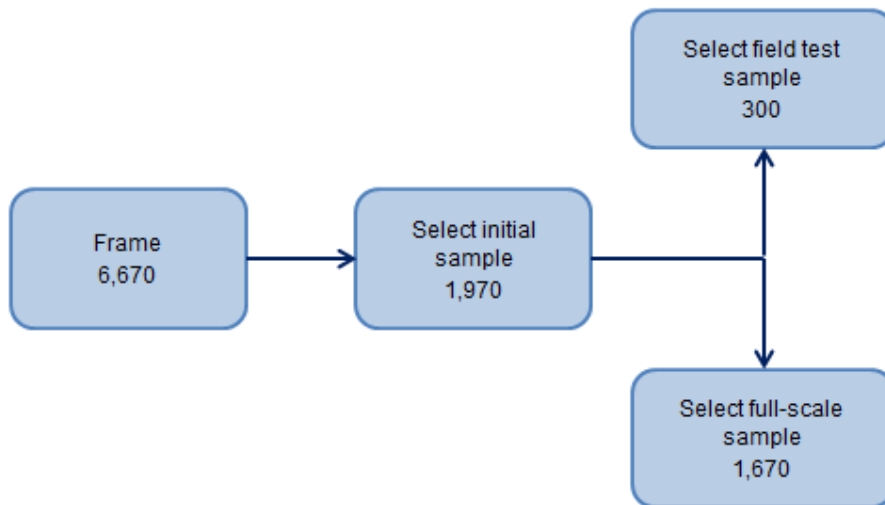
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

NPSAS statisticians selected institutions for the initial sample using sequential probability minimum replacement (PMR) sampling (Chromy 1979), which resembles stratified systematic sampling with probabilities proportional to a composite measure of size (Folsom, Potter, and Williams 1987). This is the same methodology that has been used since NPSAS:96. PMR allows institutions to be selected multiple times but, instead of that actually happening, all institutions with a probability of being selected more than once were included in the sample one time with certainty. NPSAS statisticians determined institution measures of size using enrollment data from the most recent IPEDS 12-Month and Fall Enrollment Components. This helps to ensure that NPSAS achieves target sample sizes within institution and student sampling strata, while also achieving approximately equal student weights across institutions. See appendix B for additional sampling details.

NPSAS statisticians freshened the institution sample in order to add newly eligible institutions to the sample and produce a sample that is representative of institutions eligible in the 2011–12 academic year. To do this, they used the newly available 2009–10 IPEDS IC header, 12-Month and Fall Enrollment, and Completions components to create an updated sampling frame of current NPSAS-eligible institutions. They then compared this frame with the original frame and identified 387 new or newly eligible institutions for the freshening sampling frame. NPSAS statisticians then determined the freshening sample size such that the freshened institutions would have similar probabilities of selection to the originally selected institutions within sector (stratum) in order to minimize unequal weights and subsequently variances. Statisticians selected 20 institutions and added them to the sample during the freshening process, resulting in a total of 1,690 sampled institutions. Table 2 shows institution sampling rates and the number of institutions sampled, by institution type.

Table 2.   Institution sampling rates and number of institutions sampled, by institution type: 2012

Institution type	Size of universe	Sampling rate	Sample size
Total	7,050	24.0	1,690
Public			
Less-than-2-year	270	8.1	20
2-year	1,110	34.4	380
4-year non-doctorate-granting	360	36.5	130
4-year doctorate-granting	310	74.4	230
Private nonprofit			
Less-than-4-year	260	7.6	20
4-year non-doctorate-granting	1,030	25.2	260
4-year doctorate-granting	560	39.8	220
Private for-profit			
Less-than-2-year	1,510	3.6	60
2-year	1,030	11.2	120
4-year	620	41.7	260

NOTE: Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

NPSAS categorized institutions into 10 strata based on institution level, control, and highest level of offering:[3]

1. public less-than-2-year

2. public 2-year

3. public 4-year non-doctorate-granting

4. public 4-year doctorate-granting

5. private nonprofit less-than-4-year

6. private nonprofit 4-year non-doctorate-granting

7. private nonprofit 4-year doctorate-granting

8. private for-profit less-than-2-year

9. private for-profit 2-year

10. private for-profit 4-year.

Although prior NPSAS administrations aggregated private for-profit 2-year and 4-year institutions into one sampling strata, NPSAS:12 split the two into separate strata to reflect the recent growth in enrollment in the for-profit sector.

Within each institution stratum, NPSAS statisticians accomplished additional implicit stratification by sorting the sampling frame within stratum by the following classifications:[4] (1) historically Black colleges and universities (HBCU) indicator; (2) Hispanic-Serving Institutions

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[3] The institution strata can be aggregated by control or level of the institution for the purposes of reporting institution counts.

[4] *Implicit stratification* is the process in which strata are created during the sampling process by sorting the data, rather than creating the strata prior to sampling and selecting an independent sample from each stratum.

(HSI) indicator;[5] (3) Carnegie classifications of degree-granting postsecondary institutions;[6] (4) 2-digit Classification of Instructional Programs code of the largest program for less-than-2-year institutions; (5) the Office of Business Economics Region from the IPEDS header file (Bureau of Economic Analysis of the U.S. Department of Commerce Region); (6) state and system for states with large systems, e.g., the SUNY and CUNY systems in New York, the state and technical colleges in Georgia, and the California State University and University of California systems in California; and (7) the institution measure of size. The objective of this implicit stratification was to approximate proportional representation of institutions on these measures.

Table 3 shows counts of sampled, eligible, and participating institutions, as well as weighted and unweighted participation rates, by institution stratum. Overall, almost all of the 1,690 sampled institutions met the eligibility requirements; of those, approximately 88 percent provided enrollment lists. The institution response rate is similar to what has been obtained for previous rounds of NPSAS.

Table 3.   Numbers of sampled and eligible institutions, and institutions providing enrollment lists, by institution characteristic: 2012

Institution characteristic	Sampled institutions	Eligible institutions	Eligible institutions providing enrollment lists		
			Number	Unweighted percent	Weighted percent[1]
All institutions	1,690	1,690	1,480	87.8	87.0
Institution level					
Less-than-2-year	80	80	70	79.5	79.8
2-year	510	510	430	83.9	83.6
4-year non-doctorate-granting	630	630	570	90.5	90.5
4-year doctorate-granting	470	470	420	89.9	89.2
Institution control					
Public	760	760	670	88.5	87.3
Private nonprofit	500	500	440	88.4	86.7
Private for-profit	430	430	370	85.9	85.6
Institution type					
Public					
Less-than-2-year	20	20	20	77.3	78.8
2-year	380	380	320	85.3	84.1
4-year non-doctorate-granting	130	130	120	93.8	92.3
4-year doctorate-granting	230	230	210	91.7	90.5
Private nonprofit					
2-year or less	20	20	20	75.0	77.7
4-year non-doctorate-granting	260	260	230	88.8	87.6
4-year doctorate-granting	220	220	200	89.1	86.4
Private for-profit					
Less-than-2-year	60	50	40	81.5	80.3
2-year	120	120	90	80.0	77.5
4-year	260	260	230	89.5	89.5

[1] The weight described in this column is a base weight.
NOTE: Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

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[5] The Hispanic-Serving Institutions (HSI) indicator no longer exists in IPEDS. An HSI proxy was created using IPEDS Hispanic enrollment data.
[6] NPSAS collapsed some Carnegie categories for the purposes of implicit stratification.

2.2.2 Student Sample

Once they verified each sampled institution as NPSAS-eligible, NPSAS staff asked the institutions to provide an electronic list of all students who satisfied all of the NPSAS eligibility conditions. Lists included identifying, classifying, and locating information for the students. NPSAS project staff requested the following data items for NPSAS-eligible students enrolled at each sampled institution, most of which past NPSAS studies had also collected:

- student's name;

- Social Security number;

- student ID number (if different than Social Security number);

- student level (undergraduate, masters, doctoral-research/scholarship/other, doctoral-professional practice, other graduate);

- FTB indicator;

- class level of undergraduates (first year, second year, etc.);

- date of birth;

- Classification of Instructional Program code or major;

- undergraduate degree program;

- high school graduation date (month and year); and

- contact information (local and permanent street address and telephone number and school and home e-mail address).

Because locating data were included in enrollment lists, web-based student record collection and interviewing could begin almost immediately after sample selection, helping to meet the tight schedule for data collection, data processing, and file development. For institutions unwilling to provide locating data for all students on enrollment lists, NPSAS project staff requested locating data only for sampled students immediately after NPSAS statisticians selected the sample.

The NPSAS:12 student sample included two subgroups which were intentionally sampled at rates different than their natural occurrence within the population in order to achieve specific analytic objectives. Subgroup one was made up of undergraduates at all award levels enrolled at for-profit institutions who received about 25 percent of disbursed federal aid. This subgroup only consisted of about 11 percent of the student population and, as such, precise estimates were desirable. Subgroup two was comprised of FTB undergraduates enrolled in certificate programs at all types of institutions. This second subgroup had important early labor market experiences that could only be explored through BPS if a sufficient starting sample was identified.

The 11 student sampling strata were:

1. FTB undergraduate students enrolled in certificate programs;

2. other FTB undergraduate students;

3. other undergraduate students;[7]

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[7] *Other undergraduate students* are defined as any undergraduate student not classified as a first-time beginner student.

4. master's degree students in Science, Technology, Engineering, and Mathematics (STEM) programs;

5. master's degree students in education and business programs;

6. master's degree students in other programs;

7. doctoral-research/scholarship/other students in STEM programs;

8. doctoral-research/scholarship/other students in education and business programs;

9. doctoral-research/scholarship/other students in other programs;

10. doctoral-professional practice students;[8] and

11. other graduate students.[9]

As NPSAS project staff received student lists from institutions, statisticians sampled students by means of stratified systematic sampling with predetermined sampling rates that varied by student stratum. To eliminate cross-institution duplication, they compared Social Security numbers of those selected from an institution with Social Security numbers of students who had already been selected from other institutions. Multiplicity adjustments in the sample weighting (described in more detail in section 6.3.3) accounted for the fact that any students who attended more than one institution during the NPSAS year had more than one chance of selection.

NPSAS statisticians calculated initial student sampling rates for each sample institution, using sampling rates designed to generate approximately equal probabilities of selection within the ultimate institution-by-student sampling strata (see appendix B). However, sometimes they modified these rates, as follows:

- NPSAS statisticians increased the student sampling rates so that the sample size for each sampled institution was at least 10 students (if possible) to ensure sufficient yield for variance estimation.

- NPSAS statisticians decreased student sampling rates if the sample size was greater than 300, so that no institution would have more than 300 sample members.

- To ensure that the desired student sample sizes were achieved, statisticians monitored sample yield throughout enrollment list collection and adjusted student sampling rates periodically for institutions for which sample selection had not yet been performed.

These adjustments to the initial sampling rates resulted in some additional variability in the student sampling rates and therefore in increased survey design effects (variance inflation; see section 6.5). Table 4 shows the target and achieved numbers of sample students by institution type.

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[8] In IPEDS, the term doctoral-professional practice has replaced the term first-professional, which had been used in previous NPSAS cycles.

[9] *Other graduate students* are those who are not enrolled in a degree program, such as students just taking graduate courses.

Table 4.   Target and achieved numbers of sample students, by institution type: 2012

	All students			Undergraduates									Graduate students		
				All			FTB			Other					
Institution type	Target	Achieved	Percent achieved	Target	Achieved	Percent achieved	Target	Achieved	Percent achieved	Target	Achieved	Percent achieved	Target	Achieved	Percent achieved
Total	124,650	128,120	102.8	108,930	110,790	101.7	54,360	59,740	109.9	54,550	51,050	93.6	15,720	17,330	110.1
Public															
Less-than-2-year	1,280	790	61.4	1,280	780	61.3	880	510	57.9	400	280	68.6	†	†	†
2-year	41,310	37,000	89.6	41,310	36,950	89.5	17,730	18,570	104.7	23,570	18,380	78.0	†	50	†
4-year non-doctorate-granting	8,290	8,180	98.7	6,920	6,870	99.4	2,200	2,560	116.3	4,720	4,320	91.5	1,370	1,310	95.4
4-year doctorate-granting	20,160	20,530	101.8	15,050	14,590	96.9	4,300	4,290	99.7	10,740	10,300	95.8	5,110	5,940	116.2
Private nonprofit															
2-year or less	1,650	1,090	65.9	1,650	1,090	65.9	1,150	630	54.9	500	450	91.5	†	†	†
4-year non-doctorate-granting	8,310	8,520	102.5	5,710	6,060	106.2	2,600	3,130	120.6	3,110	2,930	94.2	2,600	2,460	94.6
4-year doctorate-granting	8,870	10,070	113.5	3,830	4,710	123.0	2,470	3,440	139.3	1,370	1,280	93.4	5,040	5,360	106.3
Private for-profit															
Less-than-2-year	5,470	5,270	96.4	5,470	5,270	96.3	3,770	3,150	83.5	1,700	2,120	124.6	†	10	†
2-year	10,850	10,280	94.7	10,850	10,270	94.7	7,320	6,730	92.0	3,530	3,540	100.3	†	†	†
4-year	18,460	26,390	143.0	16,860	24,200	143.5	11,940	16,730	140.1	4,910	7,470	151.9	1,600	2,200	137.0

† Not applicable.
NOTE: FTB and other undergraduate counts are based on data from enrollment lists and matching to administrative data prior to sampling. FTB = first-time beginner. Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

Target and achieved sample sizes are reported by student type and level of offering in table 5. Also reported is the initial classification of the student sample by institution type and student type (table 6). The achieved sample size of 128,120 was higher than the targeted 124,650 because institution participation rates were higher than estimated, sampling continued longer than scheduled, and a higher sample size was desired to help meet interview yield targets. Overall, the sample included more FTB students, doctoral students, and other graduate students than planned, with fewer other undergraduate and master's students than planned (for details about sample allocation, see appendix B). Fewer other FTB students at less-than-2-year institutions appeared on enrollment lists than the NPSAS statisticians expected based on the targeting data.

Table 5.   Target and achieved numbers of NPSAS:12 student samples, by student type and institution level: 2012

Student type	Students sampled		
	Target	Achieved	Percent
Total	124,650	128,120	102.8
FTB students in certificate or diploma programs	22,940	20,330	88.6
Less-than-2-year	4,960	3,900	78.6
2-year	15,620	13,260	84.9
4-year	2,360	3,170	134.1
Other FTB students	31,420	39,410	125.5
Less-than-2-year	270	20	7.9
2-year	10,010	12,410	124.0
4-year	21,150	26,980	127.6
Other undergraduate	54,550	51,050	93.6
Less-than-2-year	2,350	2,450	104.3
2-year	27,350	22,320	81.6
4-year	24,850	26,290	105.8
Graduate students, 4-year	15,730	17,330	110.1
Master's students in STEM programs	2,000	1,730	86.3
Master's students in education or business programs	2,000	1,610	80.3
Master's students in other programs	4,000	3,780	94.5
Doctoral-research/scholarship/other students in STEM programs	1,600	2,100	131.0
Doctoral-research/scholarship/other students in education or business programs	1,600	2,020	126.3
Doctoral-research/scholarship/other students in other programs	2,030	3,390	166.8
Doctoral-professional practice	2,000	1,980	99.0
Other graduate	500	730	145.9

NOTE: The counts presented in this table are based on the sampling frame classification; student type was subject to change based on subsequent collection of administrative or interview data. FTB = first-time beginner. STEM = Science, Technology, Engineering, and Mathematics. Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

Table 6. **Initial classification of NPSAS:12 student sample, by institution characteristics and student type: 2012**

| | Total sample | | FTB[1] | | Other undergraduate | | Graduate | |
| | | | Student sampling type | | | | | |
Institution characteristics	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Total	128,120	100.0	59,740	100.0	51,050	100.0	17,330	100.0
Institution level								
Less-than-2-year	6,380	5.0	3,920	6.6	2,450	4.8	10	#
2-year	48,040	37.5	25,670	43.0	22,320	43.7	50	0.3
4-year non-doctorate-granting	37,530	29.3	20,260	33.9	13,130	25.7	4,150	23.9
4-year doctorate-granting	36,170	28.2	9,890	16.6	13,160	25.8	13,130	75.7
Institution control								
Public	66,500	51.9	25,930	43.4	33,270	65.2	7,300	42.1
Private nonprofit	19,680	15.4	7,200	12.1	4,660	9.1	7,820	45.1
Private for-profit	41,940	32.7	26,610	44.5	13,130	25.7	2,210	12.7
Institution type								
Public								
Less-than-2-year	790	0.6	510	0.9	280	0.5	#	#
2-year	37,000	28.9	18,570	31.1	18,380	36.0	50	0.3
4-year non-doctorate-granting	8,180	6.4	2,560	4.3	4,320	8.5	1,310	7.6
4-year doctorate-granting	20,530	16.0	4,290	7.2	10,300	20.2	5,940	34.3
Private nonprofit								
2-year or less	1,090	0.8	630	1.1	450	0.9	#	#
4-year non-doctorate-granting	8,520	6.7	3,130	5.2	2,930	5.7	2,460	14.2
4-year doctorate-granting	10,070	7.9	3,440	5.8	1,280	2.5	5,360	30.9
Private for-profit								
Less-than-2-year	5,270	4.1	3,150	5.3	2,120	4.2	10	#
2-year	10,280	8.0	6,730	11.3	3,540	6.9	#	#
4-year	26,390	20.6	16,730	28.0	7,470	14.6	2,200	12.7

Rounds to zero.
[1] The two FTB strata have been combined, and the three master's, four doctor's, and other graduate strata have been combined.
NOTE: The student sample was drawn from 1,480 eligible institutions that provided enrollment lists. The counts presented in this table are based on the sampling frame classification; student type was subject to change based on subsequent collection of administrative or interview data. FTB = first-time beginner. Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12)

2.3 First-Time Beginners Sample

To be eligible for BPS, students must have begun their postsecondary education for the first time, after completing high school, on or after July 1, 2011. NPSAS survey staff paid close attention to accurately identifying FTBs in NPSAS to avoid unacceptably high rates of misclassification as was observed in past BPS studies, particularly false positives. High rates of misclassification can, and have, resulted in (1) excessive cohort loss, (2) excessive cost to "replenish" the sample, and (3) an inefficient sample design (excessive oversampling of "potential" FTBs) to compensate for anticipated misclassification error.

The participating institutions and several administrative data sources provided data to aid in properly classifying FTBs. Key data the institutions provided included an FTB indicator, high school graduation date, and date of birth. Administrative data sources, including the NSLDS, CPS, and National Student Clearinghouse (NSC), provided data that was of particular use in identifying false positives.

NPSAS statisticians combined the FTB status indicator with class and student levels to identify and exclude misclassified FTB students in their third year or higher, as well as those who were not undergraduates. They used high school graduation date to remove students from the frame who did not meet the NPSAS eligibility requirement of high school completion. Statisticians combined date of birth with FTB status to identify students older than 18 to send for presampling matching to one of the administrative databases.

When institutions did not provide an FTB indicator, NPSAS statisticians sampled a student as an FTB if they were 18 years of age or younger and did not appear to be dually enrolled in high school. If the student was over the age of 18, then NPSAS statisticians sampled that student as an "other undergraduate." The "other undergraduate" students would only be included in the BPS cohort if they identified as an FTB during the student interview.

Administrative databases were used in a presample matching process. Prior to sampling, NPSAS statisticians matched all students listed as potential FTBs to NSLDS and CPS records, simultaneously, to determine if they had a federal financial aid history predating the NPSAS year (earlier than July 1, 2011). Since NSLDS maintains current records of all Title IV federal grant and loan funding, statisticians could reliably exclude any student with data showing student loan disbursements from a prior year from the sampling frame of FTBs. The CPS file contains an indicator of student type, including a status for first-time students. The limitation of both administrative data sources is that neither can identify false positives among students who did not obtain federal financial aid. However, about 60 percent of FTBs receive some form of Title IV aid in their first year, and the matching process improved the accuracy of the list prior to sampling, yielding fewer false positives.

After the NSLDS and CPS matching, a matching process was performed with NSC data. Statisticians limited the NSC matching to potential FTBs who were over the age of 18 and attending public 2-year and private for-profit institutions. Project staff also limited use of NSC data to potential false positives who received federal financial aid.

As shown in table 7, matching to NSLDS identified about 20 percent of cases as false positives, while matching to CPS identified about 17 percent as false positives. CPS also identified many of the false positives identified by NSLDS. Public less-than 2-year and private nonprofit less-than-4-year institutions had a high percent of false positives, but represent a small percentage of the total sample.

Table 7.   Potential first-time beginners' false positive rates, by source and institution type: 2012

	Total			NSLDS			CPS			NSC		
Institution type	Sent for matching	False positives	Percent false positive	Sent for matching	False positives	Percent false positive	Sent for matching	False positives	Percent false positive	Sent for matching	False positives	Percent false positive
Total	2,103,620	571,130	27.1	2,103,620	417,910	19.9	2,103,620	364,350	17.3	719,450	48,220	6.7
Public												
Less-than-2-year	3,690	2,030	54.9	3,690	1,720	46.5	3,690	1,520	41.2	†	†	†
2-year	816,150	276,500	33.9	816,150	188,630	23.1	816,150	153,150	18.8	584,950	45,300	7.7
4-year non-doctorate-granting	194,600	26,500	13.6	194,600	17,180	8.8	194,600	18,010	9.3	†	†	†
4-year doctorate-granting	517,380	53,870	10.4	517,380	28,000	5.4	517,380	42,840	8.3	†	†	†
Private nonprofit												
Less-than-4-year	2,570	1,020	39.6	2,570	750	29.0	2,570	640	24.8	†	†	†
4-year non-doctorate-granting	106,800	18,860	17.7	106,800	13,880	13.0	106,800	15,830	14.8	†	†	†
4-year doctorate-granting	152,450	13,940	9.1	152,450	8,680	5.7	152,450	11,850	7.8	†	†	†
Private for-profit												
Less-than-2-year	16,800	9,820	58.4	16,800	8,800	52.4	16,800	4,940	29.4	7,110	130	1.8
2-year	69,070	42,980	62.2	69,070	37,920	54.9	69,070	29,730	43.0	26,770	680	2.5
4-year	224,110	125,610	56.0	224,110	112,370	50.1	224,110	85,850	38.3	100,620	2,120	2.1

† Not applicable.
NOTE: NSLDS = National Student Loan Data System; NSC = National Student Clearinghouse; and CPS = Central Processing System. Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

Of the 719,450 students NPSAS staff sent to NSC, about 7 percent were false positives. The NSC matching appeared most effective among public 2-year and private for-profit institutions. Overall, matching to all sources identified about 27 percent of listed FTB students as false positives. False negatives were not identifiable during the sampling phase because they required interview data, as is discussed in section 4.4.7.

Since this presampling matching was new to NPSAS:12, statisticians set the FTB sample size high to ensure that NPSAS interviews would include a sufficient number of true FTBs. In addition, NPSAS statisticians set FTB selection rates taking into account the error rates observed in NPSAS:04 and BPS:04/06 within each sector. Additional information on NPSAS:04 methodology is available in the study methodology report, publication number NCES 2006180 (http://nces.ed.gov/pubs2006/2006180.pdf), and the BPS:04/06 methodology report, publication number NCES 2008184 (http://nces.ed.gov/pubs2008/2008184.pdf). NPSAS statisticians adjusted these rates to reflect the expected improvement in the accuracy of the frame from the NSLDS, CPS, and NSC record matching. Statisticians used sector-level FTB error rates from the field test to help determine the rates necessary for full-scale student sampling.

Chapter 3.
Institution Data Collection Design, Outcomes, and Evaluation

This chapter describes the design, implementation, and outcomes of institution data collection. NPSAS:12 project staff provided institutions selected for the NPSAS:12 sample with information on the study and encouraged participation. Trained institution contactors were available to assist the institution coordinators in providing enrollment lists and student records.

3.1 Institution Data Collection Design and Systems

NPSAS:12 institution data collection occurred in a stepwise fashion facilitated by institution contactors who made use of several technologies specifically designed to assist in the contacting and data collection processes. Project staff used an Institution Contacting System (ICS) to record data on institutions, including details of contacts made with institution staff. NPSAS staff also developed an institution website to support each step in the process by providing institutions with information on the study as well as methods for the secure transfer of student data.

3.1.1 Institution Contacting System

Project staff used the ICS to track the status of each institution and schedule appropriate follow-up. They recorded each interaction with the institution, including telephone, e-mail, and mail communication, in the ICS. A comment function allowed institution contactors and project staff to record the details of conversations and other interactions with each institution. Report functions allowed project staff to view the overall progress of institution recruitment and list collection.

3.1.2 Institutions Website

NPSAS staff designed the institution website to provide institutions with reliable, user-friendly access to all study documents and instructions, as well as a secure platform for providing the requested electronic enrollment lists and student record data. Visitors to the website found the following links:

- *Purpose of the Study*—information on the study purpose and research objectives of NPSAS, with a link to NCES reports from previous study cycles;
- *About This Website*—information on the content of the website and what tasks may be accomplished there;
- *Forms/Instructions*—forms and instructions for completing tasks as well as samples of letters and other information that were sent to institutions;
- *Frequently Asked Questions (FAQs)*—questions and answers concerning all stages of data collection for the institution component of NPSAS:12;
- *Contact Us*—e-mail and telephone contact information for the help desk, RTI project staff members, and the project officer at NCES;
- *Help*—help desk toll-free number and e-mail address and where to log in;
- *Endorsements*—national organizations that endorse NPSAS; and

- *Legal Authority*—sponsorship of the study and the laws that authorize NCES and its agents to collect data for NPSAS;
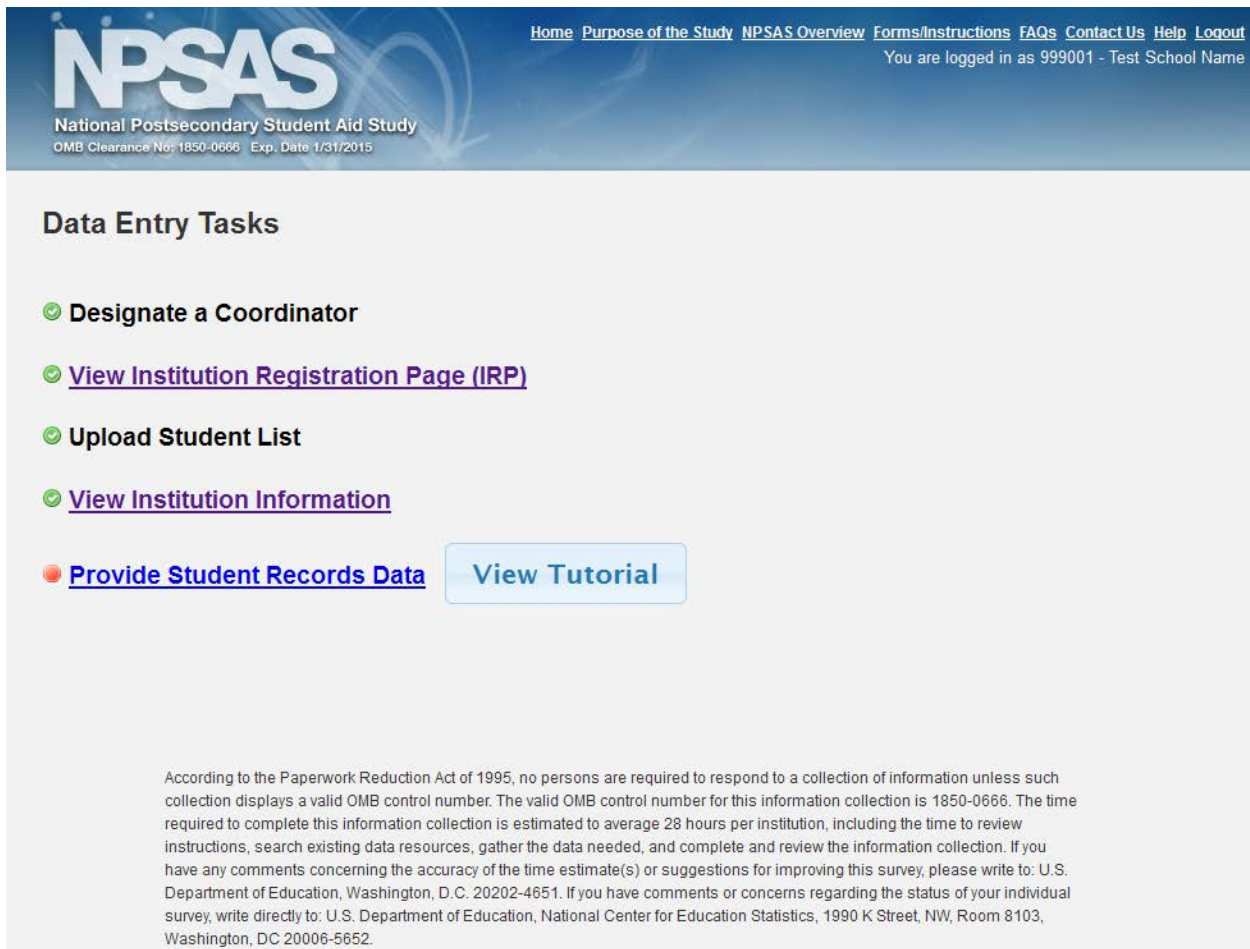
Data entry screens and confidential information, such as sampled students' names, required usernames and password-protected log in credentials. Figure 2 shows the home page of NPSAS:12 institution website.

Figure 2.   NPSAS institution website home page: 2012
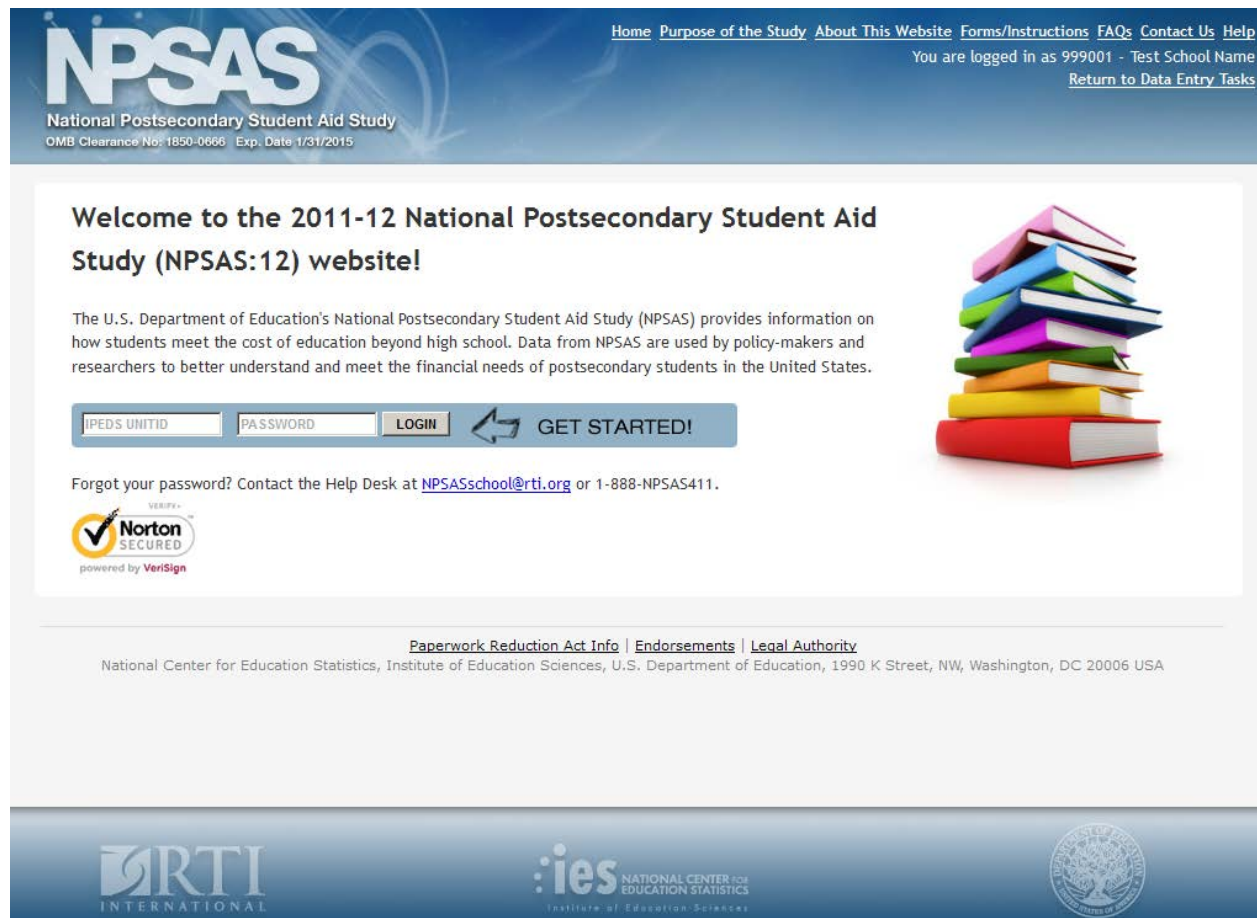
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

Institution staff used the website for the institution data entry tasks: completing the Designate a Coordinator form, completing the Institution Registration Page (IRP), uploading a Student List, providing Institution Information (step 1 of Student Records collection), and providing Student Records data. Once each task was completed, institution staff were no longer able to access the entry form, but could view the data they provided. A status screen (figure 3) for each institution indicated which stages of institution data collection the institution had completed, as denoted by a check mark.

Figure 3.   NPSAS institution website status screen: 2012

SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

3.1.3 Student Records Collection System

The institution website included a web-based student records data collection instrument. The overall content of NPSAS:12 student records instrument was similar to the instruments used in all NPSAS collections since NPSAS:96, which had been effective in obtaining the desired data from the institutions. NPSAS project staff created the system using ASP.NET technology combined with a structured query language server database.

The instrument consisted of four sections grouped by topic: (1) Contact Information; (2) Student Information and Budget, which collected student characteristics and need analysis information; (3) Enrollment, which collected degree program and progress, term, tuition and placement test information; and (4) Aid Awarded, which collected information about federal, state, institution, graduate, and government/private aid. Compared to past NPSAS implementations, NPSAS:12 added a small number of items (e.g., placement exams, dates taken and scores) and deleted a few others (e.g., country of origin for foreign/international students and major grade point average) and modified the instrument to collect items necessary to identify the Beginning Postsecondary Students (BPS) cohort. Appendix C provides a complete list of the student records data elements.

NPSAS:12 used four modes for student record abstraction: (1) Case Mode, in which institution staff entered data directly into the web-based system one student at a time, either by section or by student; (2) Grid Mode, in which institution staff entered data directly into the web-based system for multiple students at a time in a format resembling a grid; (3) Template Upload, in which institution staff downloaded an Excel template, entered data into it, then uploaded it back to the website; and (4) Data Files Upload, in which institution staff created data files following provided specifications. Users were able to use any combination of the four modes to provide their data. For added security, Secure Sockets Layer encryption protected the applications with an automatic "time out" feature, which automatically logged out of the system if a user was idle for 30 minutes or longer.

Italicized instructions indicated the applicability of items where necessary. "Save" and "Next" buttons indicated how to navigate the system. The student records instrument presented categories of aid items in the order in which financial aid is typically awarded—federal, state, and institution.

Because institutions with continuous enrollment have historically found it difficult to provide term information, NPSAS staff disabled the link to that page for such institutions, and the terms within the Enrollment section defaulted to one term for each month in the NPSAS year. The NPSAS:12 design did not use inter-item logic; users saw all items for all students, even if the item did not apply to a specific student (e.g., graduate aid items are shown for undergraduate students).

The student records instrument first asked institution coordinators to complete their institution-level information (e.g., term system, placement tests, and institution grants and scholarships). After providing these data, the institution coordinators could provide data for students by clicking on the "Provide Student Records Data" link. Figure 4 shows the Student Records Data main menu.

Figure 4.   Student records data website main menu: 2012

SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Study (NPSAS:12).

3.2   Institution Contacting, Recruitment, and Student Enrollment List Acquisition

At the outset of institution data collection, NPSAS staff contacted the sampled institutions to secure their participation in the study. They asked institutions to designate an institution coordinator to act as a primary point of contact for the submission of student enrollment lists. These activities are described in the following sections.

3.2.1   Institution Contacting and Recruitment

Notification of sampled institutions began in late September 2011, roughly 4 months before the earliest deadlines for student enrollment lists in January 2012. This early notification provided institutions with enough lead time to allocate the staff time and resources needed to complete the study within the study schedule, and to allow time for any required internal review and approval procedures. The advance notice also allowed institutions to address any potential obstacles to their participation.

NPSAS staff trained seven institution contactors to contact institutions, prompt for submission of requested data, and answer incoming calls pertaining to the study. Five of the institution contactors had experience from previous NPSAS studies, either from NPSAS:08 or the NPSAS:12 field test. Training included an overview of the study, guidance in gaining cooperation and building strong working relationships with institution staff, and detailed instruction in assisting institution coordinators with data collection tasks and responding to frequently asked questions.

Institution coordinators used the endorsement of NPSAS by organizations and associations concerned with postsecondary education to encourage institutions to participate and to confirm the legitimacy of the study. Twenty-six such organizations that had endorsed NPSAS in 2008 renewed their endorsement for NPSAS:12, for both the field test and the full-scale study. Project correspondence, including all letters and brochures, as well as the project website featured the list of endorsing organizations (see appendix D).

The first step in the institution contacting process was to verify the contact information for the chief administrator, to whom NPSAS staff would direct the initial mailing. Institution coordinators confirmed institution eligibility at this time as well. NPSAS staff reviewed institutions flagged as potentially ineligible—including closed institutions and institutions that indicated they were not Title IV eligible or open to the general public. They also reviewed instances of sampled institutions that had merged with other institutions (sampled or not sampled), possible mission changes that might have affected the institution's sampling strata, and changes in name or address.

Once NPSAS staff had verified contact information, chief administrators were sent a packet of information about the study, including the following materials, which can be found in appendix E:

- a cover letter printed on NCES letterhead providing background information on NPSAS and requesting that the chief administrator designate an Institution Coordinator on the NPSAS institution website;

- website access instructions;

- a NPSAS brochure that summarized the study's objectives and provided background information and key findings from past NPSAS cycles; and

- a schedule and flowchart of all NPSAS data collection activities.

Two days after NPSAS staff sent the chief administrator mailing, NPSAS institution contactors made follow-up calls to the chief administrators' offices to prompt for designation of institution coordinators. If the chief administrator was unable or unwilling to log in to the website to designate a coordinator, they could provide the information over the telephone.

Once the institution named the coordinator, the next step was for project staff to confirm the institution's study participation and set a deadline for the coordinator to submit the student enrollment list. NPSAS staff customized deadlines according to the institution's term structure. For institutions with distinct terms, NPSAS staff asked the institution coordinator to provide the start and end date for the term that included the date April 30, 2012. NPSAS staff set the institution's deadline for 2 weeks after the start of that term. For institutions with continuous enrollment, NPSAS staff asked the institution coordinator to provide the lists by May 15. Institution contactors followed up with each institution coordinator to prompt for completion of the list by the scheduled due date.

NPSAS staff then mailed the following materials to the institution coordinator by 2-day express mail:

- a cover letter describing the study with information on how to access the NPSAS website to complete the IRP;

- a brochure describing the study; and

- a schedule and flowchart of all NPSAS data collection activities.

NPSAS staff mailed packages on a flow basis as institutions designated their coordinators. Institution contactors followed up by telephone to confirm receipt and prompt for completion of the IRP. After the institution coordinator completed the IRP form, institution contactors then asked the institution coordinator to review the list of variables requested on the student list. NPSAS institution contactors encouraged institution coordinators to contact the NPSAS help desk at any time with questions or concerns.

Institution contactor staff continued their follow-up, as appropriate, to ensure timely completion of the request. All institution coordinators were prompted by telephone prior to their scheduled deadlines and sent a reminder prompt by e-mail. For convenience, the e-mail prompt contained the institution's log-in information and a link to the NPSAS website. Once logged in, an institution coordinator could review a status screen indicating the stages of institution data collection already completed (denoted by a check mark) as shown in figure 5. This allowed institutions to easily recognize and select the stages that were not yet completed.

Figure 5.   NPSAS institution website data entry tasks menu: 2012
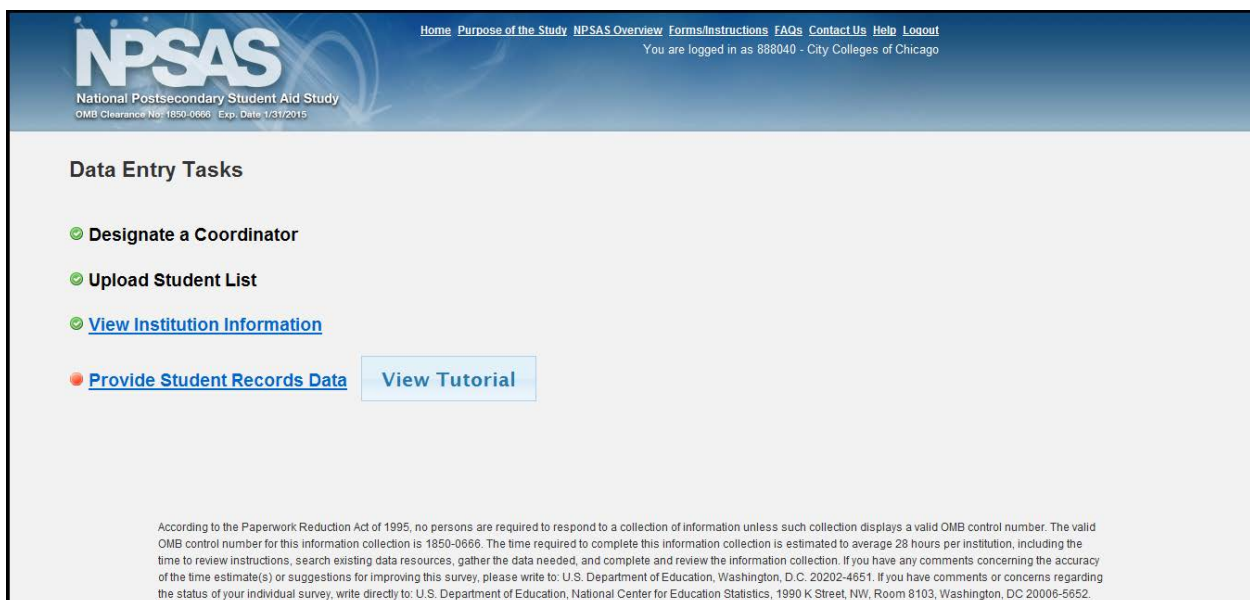
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

NPSAS project staff identified large campus systems with centralized record keeping at the start of data collection using IPEDS reporting data. Project staff gave these systems the option of reporting for their constituent institutions, whenever feasible, at the system level. This provision greatly increased the efficiency of data collection and reduced burden for individual institutions. Project staff worked with these systems directly to manage any unique requests.

3.2.2 Student Enrollment List Acquisition

NPSAS institution contactors asked institutions to provide enrollment list information for all students enrolled at any time between July 1, 2011, and April 30, 2012.[10] The NPSAS website provided institution coordinators with complete instructions for preparing a student list, and institution contactors clarified or elaborated these instructions in follow-up telephone conversations as necessary. NPSAS staff encouraged institutions to upload their student enrollment lists using the secure upload interface on the website. If an institution could not upload to the website due to firewall issues or other technical limitations, they could email enrollment lists as compressed, encrypted files. Because of the potential risk to data security, institutions were not given the option of mailing the list, and none of the institutions requested that option.

NPSAS institution contactors requested the following data items for each listed student:

- student's name;

- Social Security number;

- student ID number (if different than Social Security number);

- student level (undergraduate, masters, doctoral-research/scholarship/other, doctoral-professional practice, other graduate);

- FTB indicator;

- class level of undergraduates (first year, second year, etc.);

- date of birth;

- Classification of Instructional Program code or major;

- undergraduate degree program;

- high school graduation date (month and year); and

- contact information (local and permanent street address and telephone number and school and home e-mail address).

Once NPSAS staff received a student list, they performed several checks on the quality and completeness of the list before selecting the sample students. NPSAS staff contacted institutions whose lists failed these checks so the detected problems could be resolved.

NPSAS institution contactors encouraged multicampus systems with centralized record-keeping systems to submit a single student enrollment list encompassing all their sampled institutions. Twenty-seven system reporters, predominantly in the for-profit strata, provided student enrollment lists for a combined total of 325 institutions.

3.2.3 Institution Recruitment and Student List Acquisition Outcomes

Of the total institution sample of 1,690 eligible institutions, 94 percent initially agreed to participate by designating an institution coordinator and 92 percent completed the IRP. Approximately 88 percent of the eligible institutions provided usable student enrollment lists. Six

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[10] The NPSAS:12 target population consisted of all eligible students enrolled at any time between July 1, 2011, and June 30, 2012. However, institutions provided enrollment lists that covered the period of July 1, 2011 through April 30, 2012. The date of April 30 was selected to include virtually all students enrolled prior to the summer term without delaying data collection.

lists were rejected for having insufficient data were omitted from these counts. Approximately 38 percent of the lists arrived during the first 2 months of the year. Two lists received after the end of data collection were not processed or sampled. Section 2.2.1 includes list provision rates.

NPSAS project staff evaluated institution participation for potential effects of prior NPSAS participation. Table 8 presents summary results of these analyses. Among eligible institutions, the NPSAS:12 enrollment list provision rate among the 1,300 institutions that had previously participated in NPSAS was 89 percent, which is statistically different from the rate among institutions that had not previously participated (85 percent), $\chi^2(1, N = 1,690) = 3.99, p < .05$.

Table 8.   Number of eligible institutions and NPSAS participation rates, by institution characteristics: 2012

Institution characteristic	Eligible institutions	NPSAS participation					
		No prior participation			Participated at least once		
		Number	Provided lists		Number	Provided lists	
			Number	Percent		Number	Percent
Total	1,690	390	330	84.7	1,300	1,160	88.7
Institution level							
Less-than-2-year	80	50	40	75.5	30	30	86.7
2-year	510	140	120	81.6	370	310	84.7
4-year non-doctorate-granting	630	170	150	92.2	460	420	89.8
4-year doctorate-granting	470	20	20	70.8	440	400	91.0
Institution control							
Public	760	80	70	81.0	680	610	89.4
Private nonprofit	500	70	60	81.2	430	390	89.5
Private for-profit	430	230	200	87.1	200	170	84.6
Institution type							
Public							
Less-than-2-year	20	10	10	63.6	10	10	90.9
2-year	380	70	60	82.1	310	270	85.9
4-year non-doctorate-granting	130	10	10	100.0	120	120	93.5
4-year doctorate-granting	230	#	#	#	230	210	91.7
Private nonprofit							
2-year or less	20	10	10	70.0	10	10	80.0
4-year non-doctorate-granting	260	40	40	88.1	220	190	88.9
4-year doctorate-granting	220	20	10	70.6	200	190	90.7
Private for-profit							
Less-than-2-year	50	40	30	81.1	20	10	82.4
2-year	120	70	60	81.2	50	40	78.3
4-year	260	130	120	92.1	130	120	87.1

Rounds to zero.
NOTE: Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

Project staff also examined institution participation in terms of the 2005 Carnegie classification categories (table 9). Of the 1,480 institutions that provided enrollment lists in NPSAS:12, 170 did not have a Carnegie classification. Of those with known Carnegie classifications, participation ranged from 220 institutions classified as Masters (larger programs) to five classification categories with participation numbers that round to zero.

Table 9. **Distribution of participating NPSAS:12 institutions, by 2005 Carnegie institution classification: 2012**

2005 Carnegie institution classification	Number	Percent
All institutions	1,480	100.0
Not classified	170	11.3
Associate's–public rural-serving small	10	0.7
Associate's–public rural-serving medium	60	4.3
Associate's–public rural-serving large	60	4.2
Associate's–public suburban single campus	50	3.4
Associate's–public suburban multicampus	40	2.9
Associate's–public urban single campus	20	1.3
Associate's–public urban multicampus	80	5.1
Associate's–public special use	#	0.1
Associate's–private nonprofit	10	0.3
Associate's–private for-profit	70	4.9
Associate's–public 2-year under 4-year	10	0.7
Associate's–public 4-year primarily associate's	10	0.4
Associate's–private nonprofit 4-year primarily associate's	#	0.1
Associate's–private for-profit 4-year primarily associate's	30	2.0
Research (very high research activity)	70	4.7
Research (high research activity)	80	5.1
Doctor's/research universities	50	3.5
Master's (larger programs)	220	14.8
Master's (medium programs)	80	5.6
Master's (smaller programs)	50	3.4
Baccalaureate colleges–arts & sciences	60	4.3
Baccalaureate colleges–diverse fields	80	5.4
Baccalaureate/associate's colleges	40	2.8
Special focus–theological	10	0.7
Special focus–medical	20	1.0
Special focus–other health professions	10	0.9
Special focus–engineering	#	0.1
Special focus–other technology	30	1.8
Special focus–business/management	20	1.3
Special focus–art, music, and design	30	2.2
Special focus–law	10	0.3
Special focus–other special-focus	#	0.3
Tribal colleges	#	0.1

Rounds to zero.
NOTE: Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

Table 10 shows the number of HBCUs participating in the current and prior NPSAS rounds. Thirty HBCUs participated in NPSAS:12.

Table 10. Participation of Historically Black Colleges and Universities: 2012

	Historically Black Colleges and Universities	
Cycle participated	Number participating	Percent of total institutions participating
NPSAS:87	20	1.9
NPSAS:90	20	1.5
NPSAS:93	30	2.6
NPSAS:96	20	1.9
NPSAS:2000	20	2.3
NPSAS:04	30	2.1
NPSAS:08	40	2.3
NPSAS:12	30	2.0

NOTE: Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

3.3 Student Records Data Collection

Once institutions sent student enrollment lists, NPSAS project staff created the student sample as detailed in Chapter 2. The next step was to collect institution record data for sample members. The following section describes student records collection and outcomes.

3.3.1 Student Records Collection From Administrative Data Source

The first step in the student records collection effort was for NPSAS project staff to send the student sample to the CPS to obtain financial aid application data. Upon completion of CPS matching (typically a 24-hour turnaround), project staff loaded data elements retrieved from CPS into the student records database for use in edit checks. Project staff customized the student records system by loading names of institution financial aid programs and up to 12 state financial aid programs to assist in identifying common types of financial aid received by students.

3.3.2 Student Records Collection From Institutions

Once the student sample was selected for a particular institution, NPSAS staff sent the designated institution coordinators an informational packet on the student records collection process. These packets included instructions for accessing the NPSAS:12 institution website and a "Quick Guide to Providing Student Records Data" (see appendix E). The secure website contained a list of the sampled students, customized for each institution, as well as instructions and system requirements needed for web data entry or upload of files. Specific instructions on how to construct the requested data files (either by template or programming) were also available. Several features of the website—including help text, a help desk telephone number, and an e-mail generator for problem reports—assisted institutions with providing data. Help desk project staff were available to provide assistance if institution staff had questions or encountered problems.

3.3.3 Student Records Collection Outcomes

Of the 1,480 institutions from which students were sampled, 92 percent provided student records data for the sampled students. Table 11 shows the institution participation rate for student records and the method used, by institution characteristics. The high proportion of institutions

providing student records data suggests that there were no major hindrances to institution record abstraction.

Sixty-one percent of the institutions chose to upload data via the web-based student records application, whether by template or data file. The remaining 39 percent of the institutions keyed data into the web-based application, including 19 percent that used Case-Mode and 20 percent that used Grid-Mode as their primary mode. The average student sample size for institutions that keyed-in data were 60 students, while the average sample size for institutions that uploaded data were 90 students.

Table 11.   Student record collection methods, by institution characteristics: 2012

Institution characteristic	Institutions providing enrollment lists	Institutions providing student records		Student records collection method							
				Case mode		Grid mode		Template upload		Data files upload	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Total	1,480	1,360	92.0	260	19.4	270	20.1	510	37.1	320	23.6
Institution level											
Less-than-2-year	70	60	93.9	20	30.6	10	22.6	20	27.4	10	19.4
2-year	430	390	90.6	60	15.3	70	17.6	160	41.5	100	25.6
4-year non-doctorate-granting	570	510	89.8	110	20.9	100	19.3	160	30.5	150	29.5
4-year doctorate-granting	420	400	96.0	80	19.6	90	23.1	170	42.7	60	14.6
Institution control											
Public	670	640	95.0	110	16.7	120	18.9	290	45.3	120	19.1
Private nonprofit	440	420	95.2	120	27.6	130	29.8	160	38.8	20	4.0
Private for-profit	370	300	82.6	40	13.5	30	9.2	50	17.2	180	60.1

NOTE: All percentages are unweighted and based on the number of eligible institutions within the row under consideration. Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

Table 12 shows student records collection results, by institution characteristics and student type. From the 92 percent of institutions that provided student records data, NPSAS staff obtained student-level data for 88 percent of eligible sample members. This included approximately 87 percent of the total undergraduate students in the sample and 96 percent of the graduate/professional students. NPSAS staff collected student records for 87 percent of the FTB students.

Table 12. Student record collection results, by institution characteristics and student type: 2012

Institution characteristics and student type	Institutions providing enrollment lists	Institutions providing student records		Total eligible students[1]	Student records collected	
		Number	Percent		Number	Percent
Total	1,480	1,360	92.0	123,600	109,100	88.3
Institution level						
Less-than-2-year	70	60	93.9	5,910	5,450	92.3
2-year	430	390	90.6	45,680	40,010	87.6
4-year non-doctorate-granting	570	510	89.8	36,370	29,380	80.8
4-year doctorate-granting	420	400	96.0	35,650	34,260	96.1
Institution control						
Public	670	640	95.0	64,080	59,990	93.6
Private nonprofit	440	420	95.2	19,240	17,180	89.3
Private for-profit	370	300	82.6	40,280	31,930	79.3
Institution type						
Public						
Less-than-2-year	20	20	88.2	730	640	88.3
2-year	320	300	92.9	35,140	31,830	90.6
4-year non-doctorate-granting	120	120	96.7	7,930	7,620	96.1
4-year doctorate-granting	210	210	97.6	20,280	19,890	98.1
Private nonprofit						
Less-than-4-year	20	10	93.3	1,010	960	94.2
4-year non-doctorate-granting	230	220	96.5	8,300	7,290	87.8
4-year doctorate-granting	200	190	93.9	9,920	8,940	90.1
Private for-profit						
Less-than-2-year	40	40	95.5	4,900	4,530	92.5
2-year	90	80	82.6	9,800	7,490	76.5
4-year	230	190	80.1	25,580	19,910	77.8
Student type						
Total undergraduate	†	†	†	105,930	92,100	86.9
Potential FTB student	†	†	†	50,700	44,100	87.0
Other undergraduates	†	†	†	55,230	48,000	86.9
Graduate/professional	†	†	†	17,670	16,990	96.2

† Not applicable.
[1]Total eligible students sampled from 1,480 institution enrollment lists.
NOTE: FTB = First-time beginner student. Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

3.4 Institution Data Evaluation

NPSAS project staff evaluated institution data to assess the outcomes of the collection methods and the quality of the data. The following section contains a discussion of these evaluations.

3.4.1 Evaluation of Enrollment List Quality

Project staff evaluated enrollment lists for the presence of selected key variables, including contact information, SSN, and date of birth (DOB). The contact data included local and permanent addresses and telephone numbers. As shown in table 13, ninety-eight (98) percent of the enrollment lists used for sampling included some contact information. However, many institutions provided only one address, telephone number, and e-mail address and data labels did not always identify whether the contact information was local or permanent.

NPSAS staff also asked institutions to provide SSN and DOB on the student lists. Approximately 96 percent of lists contained SSNs for at least some of the students and approximately 99 percent included DOB.

For the first time in the administration of NPSAS, staff asked institutions to provide high school graduation date (month and year). NPSAS staff used these data to identify ineligible students on the enrollment lists, including students concurrently enrolled in high school who were identified as FTBs. About 83 percent of the lists used for sampling contained high school graduation date.

Table 13. Institutions providing student contact information, Social Security number, date of birth, and high school graduation date, by institution type: 2012

Institution type	Address		Social Security number		Date of birth	
	Number	Percent	Number	Percent	Number	Percent
Total	1,440	98.0	1,410	95.8	1,450	98.8
Public						
Less-than-2-year	20	100.0	10	87.5	20	100.0
2-year	320	99.4	310	94.1	320	99.1
4-year non-doctorate-granting	120	100.0	110	92.6	120	98.4
4-year doctorate-granting	210	99.5	200	93.8	210	98.6
Private nonprofit						
Less-than-4-year	20	100.0	20	100.0	20	100.0
4-year non-doctorate-granting	230	99.6	220	97.4	230	98.3
4-year doctorate-granting	200	99.5	180	93.4	190	98.0
Private for-profit						
Less-than-2-year	40	100.0	40	100.0	40	100.0
2-year	90	100.0	90	100.0	90	100.0
4-year	200	89.4	230	100.0	230	99.6

	E-mail address		Telephone number		High school graduation date	
	Number	Percent	Number	Percent	Number	Percent
Total	1,440	98.1	1,400	95.2	1,220	83.3
Public						
Less-than-2-year	10	75.0	10	87.5	10	75.0
2-year	320	98.5	300	93.5	300	93.2
4-year non-doctorate-granting	120	98.4	120	98.4	110	92.6
4-year doctorate-granting	210	98.6	200	96.2	180	85.3
Private nonprofit						
Less-than-4-year	20	100.0	10	86.7	10	93.3
4-year non-doctorate-granting	230	99.6	220	93.9	170	72.1
4-year doctorate-granting	200	99.5	180	92.4	140	71.4
Private for-profit						
Less-than-2-year	40	90.0	40	95.0	30	82.5
2-year	80	93.1	90	97.7	70	78.2
4-year	230	99.1	230	99.1	200	85.9

NOTE: Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

3.4.2 Evaluation of Student Records Collection Activities and Data Quality

The proportion of institutions providing student records suggests that there were no major hindrances for institutions providing student records. During the student records collection process, if institution staff provided feedback on systems and procedures NPSAS staff shared this feedback in weekly quality control meetings or in a debriefing held at the conclusion of data collection.

NPSAS project staff evaluated student records data submitted by institutions for item-level completeness. Table 14 shows student records completion rates for key data elements overall and by method of abstraction (case mode, grid mode, comma separated value upload, Excel upload). Variability in item-level response reflects the variability of institution record-keeping; not all data

elements are available at every institution. However, most of the key data elements have a high percentage of item-level completeness. Furthermore, all types of abstraction methods achieved high completion rates overall.

Marital status and having at least two telephone numbers were among the items with the lowest completion rates (47 percent and 16 percent, respectively). These low rates may be attributed to differing record-keeping practices among institutions. Whether students received any financial aid was indicated for about 100 percent of students. Coordinators who provided the data were often financial aid personnel. Thus, they were familiar with this type of information and knew how to access it quickly and accurately. Similarly, enrollment information such as type of degree program, student class level, and tuition jurisdiction classification are critical elements for financial aid administrators in determining aid program eligibility and award amounts. Table 14 shows high completion rates for these items (96 percent, 84 percent, and 91 percent, respectively).

Table 14.   Student records item-level completion rates for key data elements, by primary method of abstraction: 2012

| | | | Primary mode | | | | | | | |
| | Total | | Case mode | | Grid mode | | CSV upload | | Excel upload | |
Data element	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Total	112,760	100.0	15,730	13.9	18,030	16.0	36,850	32.7	42,150	37.4
Student characteristics										
Gender	108,100	95.9	14,820	94.2	17,230	95.6	36,210	98.3	39,840	94.5
Marital status	53,130	47.1	8,890	56.5	7,970	44.2	17,380	47.2	18,890	44.8
Citizenship	102,500	90.9	14,110	89.7	15,630	86.7	35,610	96.6	37,150	88.1
High school completion type	89,430	79.3	12,860	81.8	13,510	74.9	30,810	83.6	32,250	76.5
Race	78,810	69.9	11,910	75.7	12,480	69.2	24,560	66.7	29,860	70.8
Hispanic status	92,080	81.7	12,160	77.3	13,350	74.0	32,110	87.1	34,460	81.8
At least one telephone number	67,410	59.8	11,910	75.7	11,620	64.4	12,420	33.7	31,470	74.6
At least two telephone numbers	17,480	15.5	3,920	24.9	3,260	18.1	3,180	8.6	7,120	16.9
Enrollment										
Type of degree program	108,140	95.9	14,970	95.2	17,320	96.1	36,540	99.2	39,300	93.2
Type of advanced degree program	107,120	95.0	14,750	93.8	16,920	93.9	36,410	98.8	39,030	92.6
Student class level	95,120	84.4	12,750	81.1	13,360	74.1	34,820	94.5	34,190	81.1
Tuition jurisdiction classification	102,060	90.5	14,540	92.4	15,760	87.4	35,720	96.9	36,040	85.5
Total tuition amount	88,290	78.3	12,240	77.8	13,020	72.2	30,320	82.3	32,710	77.6
Any financial aid received	112,250	99.5	15,730	100.0	17,930	99.5	36,800	99.9	41,790	99.1

NOTE: All percentages are unweighted and based on the number of eligible students within the row under consideration. CSV = comma separated value. Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2012 National Postsecondary Student Aid Study (NPSAS:12).

3.5   Institution Data Collection Conclusions

Project staff conducted NPSAS:12 institution recruiting and contacting for student enrollment list acquisition from September 23, 2011 through July 15, 2012. The final enrollment list was sent to sampling on July 26th. The overall response rate of 88 percent was comparable to previous cycles.

High institution and student-level response rates for student records collection suggest that the design, systems, and data collection methods were effective. Of the 1,480 institutions from

which students were sampled, 92 percent provided student records data for the sampled students. The high proportion of institutions providing student records data indicates that there were no major hindrances for institution record abstraction.

Chapter 4.
Student Interview Design, Data Collection, Outcomes, and Evaluation

The NPSAS:12 student interview, which was administered between February and September 2012, included items that have been part of previous NPSAS cycles as well as new items intended for BPS, for which NPSAS:12 serves as the base year data collection. Chapter 4 will describe the interview design and systems, the locating and contacting of sample members, evaluation of the data and processes, and interview outcomes.

4.1 Student Interview Design and Systems

The design of the NPSAS:12 interview included the merging of core data elements from previous NPSAS interviews with new data elements informed by human capital theory. This section describes the seven interview sections and the systems used to support instrument development and data collection.

4.1.1 Student Interview Design

The core data elements maintained in the NPSAS:12 student interview included such long-standing NPSAS items as student high school characteristics, postsecondary enrollment and characteristics, field of study, financial aid sources and amounts, student employment and earnings, credit cards, parent and family characteristics, student demographic characteristics, and limiting mental or physical conditions. NPSAS project staff created new student interview items largely to collect base year data for the BPS follow-up study, the conceptual framework of which is informed by human capital theory. The new items included questions centering on students' anticipated labor market outcomes, foregone wages due to postsecondary attendance, probabilistic estimates of attainment, and other constructs suggested by behavioral economics. Project staff reviewed and refined interview items with input from the study's TRP, through feedback from focus groups and cognitive interviews, and based on experiences and observations from the field test. For a list of TRP members, see appendix A.

The NPSAS:12 student interview consisted of seven sections, grouped by topic. For a list of the final set of NPSAS:12 student interview data elements, see appendix F. The survey guided respondents through each section of the interview according to skip logic that took into account information recorded as the respondent progressed through the interview.

Following are descriptions of the seven interview sections:

1. *Enrollment* determined eligibility for NPSAS as well as BPS. The interview collected enrollment information at the sampled institution (referred to as the NPSAS institution) in the 2011–12 academic year including degree type, dates attended, enrollment intensity, undergraduate or graduate year or level, and expected date of degree completion. FTBs received questions about their expected likelihood of degree completion and enrollment in the next term. The section also captured high school completion information, dates of any previous degrees, types of additional postsecondary institutions attended, and enrollment information for all institutions attended in the 2011–12 academic year. The section concluded by collecting date of birth, marital status, and gender.
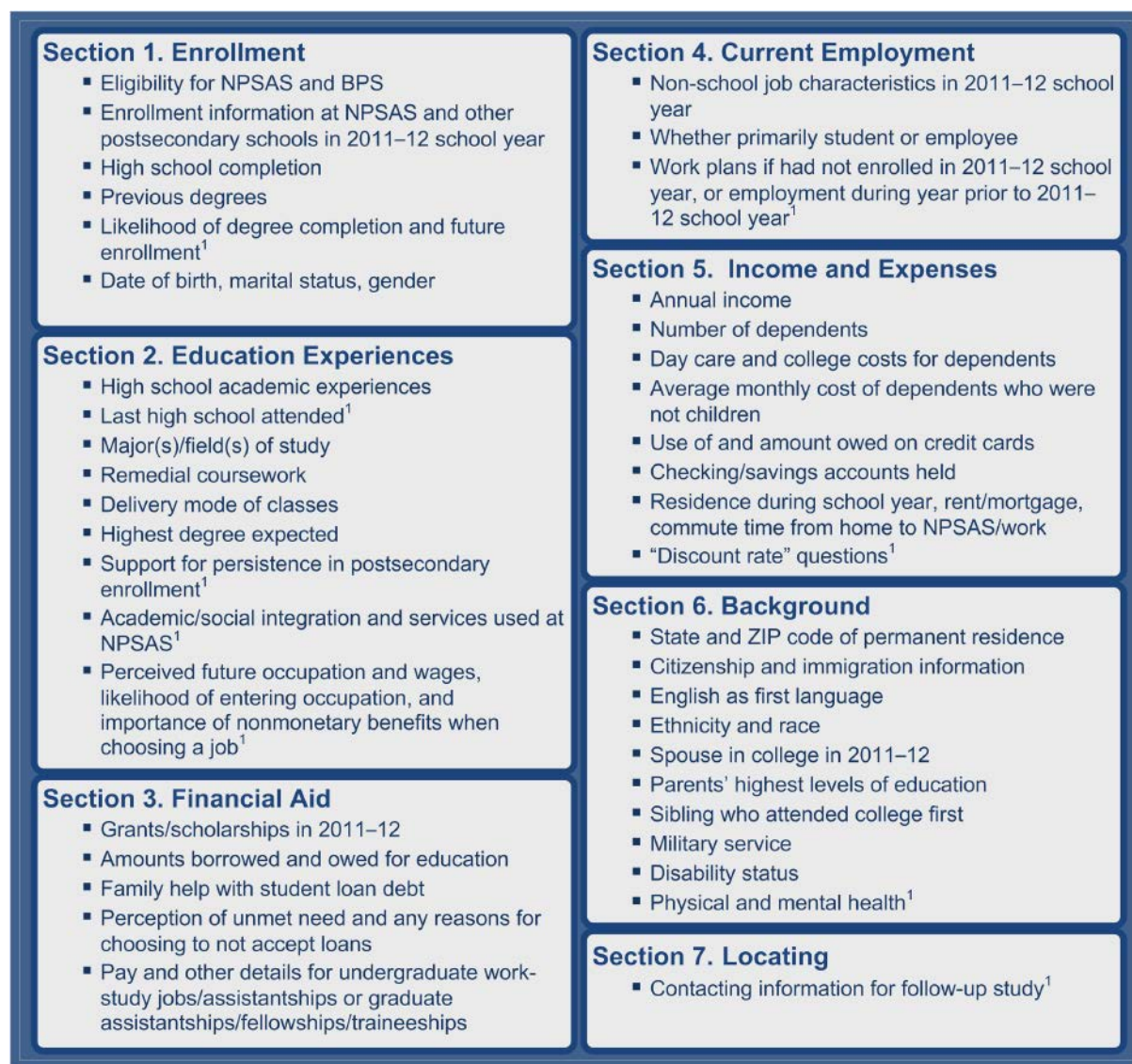
2. *Education Experiences* gathered information on high school experiences such as estimate of grades, highest math course, and SAT and ACT exam-taking. In addition, the survey collected college education experiences including major or field of study, grade point average, remedial coursework, delivery mode of classes, and highest degree ever expected. The survey asked FTBs to identify their last high school and asked them about family and friend support for persistence in postsecondary enrollment, academic and social integration and services used at the NPSAS institution, as well as likelihood of persistence without these services and without alternate delivery mode classes. At the end of the section, the survey asked FTBs to identify their anticipated future occupation and subsequent wages, likelihood of entering that occupation, and the significance of nonmonetary benefits when choosing a job.

3. *Financial Aid* collected information on private organization and employer grants or scholarships, veteran's benefits, federal loans, private loans, and tuition refunds received during the 2011–12 academic year; overall amount borrowed for the 2011–12 academic year as well as for all of undergraduate or graduate education, including proportion of total loans still owed; and whether family or friends would assist in repaying loans. The survey asked those who did not apply for financial aid in the 2011–12 academic year why they had not. A related series of questions asked all respondents their perception of unmet need, and any reasons for choosing not to accept loans including associated accommodations to school or work plans. Questions asked those with undergraduate-level work-study jobs or graduate-level assistantships, fellowships, or traineeships about pay and other details related to these school jobs

4. *Current Employment* captured information about nonschool-related employment during the academic year, including number and location of jobs, earnings, hours worked, and whether the respondent primarily considered him or herself a student or an employee. Questions asked FTBs who completed high school a year or more before beginning their postsecondary education about any jobs held in the year prior to 2011–12. The survey asked all other FTBs about counterfactual work plans if they had not actually begun their postsecondary education in the 2011–12 academic year.

5. *Income and Expenses* collected information such as annual income, number and financial costs of dependents including day care and dependent college expenses, help from family or friends for respondent's own college expenses, use of and amount owed on credit cards, checking or savings accounts held, on- or off-campus residence during the academic year and monthly rent or mortgage amount, and receipt of untaxed benefits. The survey asked dependents about parents' marital status, income, and the number of other dependents supported by parents and in college. The survey asked FTBs a set of hypothetical questions based on the idea of "discount rate," which assessed their willingness to postpone monetary gift payments for a year to receive a greater future payment amount.

6. *Background* obtained information about student demographic characteristics, including state in which a permanent resident, ZIP code of permanent residence, citizenship, birth in the United States or age of immigration, whether English was first language or frequency of speaking first (foreign) language in high school, ethnicity and race, military service, and disability status. FTBs provided additional ratings and status of their physical and mental health. The section also collected information on family members of respondents, including parents' highest levels of education and whether born in the

United States, if spouse was also in college in the 2011–12 academic year, and whether any siblings attended college before the respondent did.

7. *Locating*, which only FTBs received, collected contacting information for the follow-up study.

NPSAS survey staff developed an abbreviated interview that asked a select group of items from all sections. (For more about administration of the abbreviated interview, see section 4.2.4.) For the complete NPSAS:12 instrument facsimile, see appendix G. The interview sections and principal topics in each section are summarized in figure 6.

Figure 6.   Interview sections and topics: 2012

Section 1. Enrollment
- Eligibility for NPSAS and BPS
- Enrollment information at NPSAS and other postsecondary schools in 2011–12 school year
- High school completion
- Previous degrees
- Likelihood of degree completion and future enrollment[1]
- Date of birth, marital status, gender

Section 2. Education Experiences
- High school academic experiences
- Last high school attended[1]
- Major(s)/field(s) of study
- Remedial coursework
- Delivery mode of classes
- Highest degree expected
- Support for persistence in postsecondary enrollment[1]
- Academic/social integration and services used at NPSAS[1]
- Perceived future occupation and wages, likelihood of entering occupation, and importance of nonmonetary benefits when choosing a job[1]

Section 3. Financial Aid
- Grants/scholarships in 2011–12
- Amounts borrowed and owed for education
- Family help with student loan debt
- Perception of unmet need and any reasons for choosing to not accept loans
- Pay and other details for undergraduate work-study jobs/assistantships or graduate assistantships/fellowships/traineeships

Section 4. Current Employment
- Non-school job characteristics in 2011–12 school year
- Whether primarily student or employee
- Work plans if had not enrolled in 2011–12 school year, or employment during year prior to 2011–12 school year[1]

Section 5. Income and Expenses
- Annual income
- Number of dependents
- Day care and college costs for dependents
- Average monthly cost of dependents who were not children
- Use of and amount owed on credit cards
- Checking/savings accounts held
- Residence during school year, rent/mortgage, commute time from home to NPSAS/work
- "Discount rate" questions[1]

Section 6. Background
- State and ZIP code of permanent residence
- Citizenship and immigration information
- English as first language
- Ethnicity and race
- Spouse in college in 2011–12
- Parents' highest levels of education
- Sibling who attended college first
- Military service
- Disability status
- Physical and mental health[1]

Section 7. Locating
- Contacting information for follow-up study[1]

[1] Only first-time beginners (FTBs) received these questions.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

Interview administration. Project staff developed a single instrument to be administered in two modes, web and telephone. For telephone interviews, the interviewer accessed the web instrument through RTI's computer-assisted telephone interviewing Case Management System

(CATI-CMS), which assigned cases to be called and provided the appropriate screens and scripts to be used during CATI. (For more information about CATI, see section 4.1.2.) To minimize mode effects, NPSAS project staff incorporated the following specific methodological features into the instrument to provide web respondents with the assistance normally provided by a trained interviewer:

- help text on every form to define key terms and clarify question intent,

- pop-up messages to correct responses that were out of range or in an incorrect format,

- conversion text to encourage responses to critical items when these items were left unanswered, and

- pop-up messages prompting sample members to provide a response when three consecutive questions were left unanswered.

Additionally, the survey included instructions on each screen for telephone interviewers, indicating how each question was to be administered (e.g., whether the response options were to be read aloud, when to probe) were included for telephone interviewers on each screen.

Coding systems. The interview used assisted coding systems (coders) to standardize the collection and coding of postsecondary institutions attended during the 2011–12 academic year, the respondent's last high school, major or field of study at the NPSAS institution, and prior and hypothetical occupations. The respondent or telephone interviewer entered text strings in each coder and a keyword search conducted on an underlying database returned a list of possible matches for selection. Following are descriptions of the individual coding systems and sources:

- NPSAS survey staff developed the *postsecondary institution coder* from the set of institutions contained in IPEDS, developed by NCES (http://nces.ed.gov/ipeds/); for this coder, data from prior years supplemented data from the 2010–11 Institution Characteristics Header file. This coder coded any postsecondary institutions the respondent attended, other than the NPSAS institution, during the 2011–12 academic year. For any institutions not listed in the database, the coder retained text strings and respondents were asked to provide the control (e.g., public or private) and level (e.g., 4-year or 2-year) of the institution.

- NPSAS survey staff developed the *high school coder* using the Private School Universe Survey for private schools (http://nces.ed.gov/surveys/pss/) and the Common Core of Data for public schools (http://nces.ed.gov/ccd/). For the private schools, data from prior years supplemented data from the 2009–10 school year file and, for the public schools, data from prior years supplemented data from the preliminary 2010–11 school year file. For schools not identified within the high school coder, the coder retained the entered text string, and asked respondents to supply the school type, district or county name, and the highest and lowest grade levels at the school. The high school coder was not used for students who identified themselves as home schooled or as last attending a foreign high school.

- NPSAS survey staff constructed the *major coder* using the 2010 Classification of Instructional Programs (CIP) taxonomy, also developed by NCES (http://nces.ed.gov/ipeds/cipcode). For any majors or fields of study not found in the CIP database, the coder asked respondents to select a general major area and a specific discipline.

- NPSAS survey staff built the *occupation coder* from the Occupational Information Network Online (O*NET OnLine) database (http://onetonline.org), Version 16.0. For any occupations not listed in the database, the coder asked respondents to provide a general area, specific area, and finally a detailed classification area for the occupation.

Survey Design System. NPSAS staff created the NPSAS:12 survey instrument using Hatteras, a web-based system in which staff developed, reviewed, tested, modified, and communicated changes to specifications and code for the instrument. Staff stored all information relating to the instrument in a structured query language (SQL) server database that they made accessible through web browser interfaces. Hatteras provided specification, programming, testing interfaces, and data transfer for the NPSAS instrument.

4.1.2 Data Collection Systems

The systems used to support NPSAS:12 data collection included the Integrated Management System (IMS), the Receipt Control System (RCS), CATI-CMS, and Intensive Tracing Operations (TOPS).

IMS. NPSAS staff monitored all aspects of the study using an IMS, a project management tool designed to give project staff and NCES access to reports, project information and deliverables. Daily reports and management information from all the major systems across the study resided in the IMS, accessible via the Web, and protected by Secure Sockets Layer (SSL) encryption and a password-protected login. The IMS contained the current project schedule, monthly progress reports, daily data collection reports and status reports (generated by the control system described below), project plans and specifications, project deliverables, instrument specifications, a link to the instrumentation system, staff contacts, the project bibliography, and a document archive. NPSAS staff also used a mobile version, mIMS, for daily report accessibility.

RCS. The RCS refers to the control system database and its integrated set of applications used to control and monitor all activities related to data collection, including tracing and locating. Project staff used RCS applications to email groups of sample members, prepare lead letters and follow-up mailings, execute batch tracing, review locating information, track case statuses, and view comments from telephone interviewers. NPSAS staff integrated the RCS with the CATI system and TOPS so that all systems had access to the same data for sample members. If student interview status changed, overnight processes automatically updated the RCS. Integration between the data collection systems improved the ability to identify problems early and implement solutions effectively.

CATI-CMS. The CATI-CMS scheduled telephone calls to be made by telephone interviewers and tracked call outcomes. It set sample members who could not be located to a 'need tracing' status, which made them available immediately for TOPS. Quality Control Supervisors and project managers used the CATI-CMS to manage and prioritize cases based on factors such as call frequency, call outcomes, and institution sector. Managers could transfer cases between telephone interviewers or put cases on hold and review them as necessary. Within the CATI-CMS, telephone interviewers had the ability to send reminder emails to callers who wished to use the web survey, and to create SMS text reminders for those who requested this service. As soon as data were entered into the CATI-CMS, the data were available to TOPS and RCS.

TOPS. The TOPS system assisted tracers in working with cases that were not located due to a lack of useable locating data from the institution enrollment lists, batch tracing, or other data sources. The TOPS system allowed tracers to access all the case data, including comments left by

telephone interviewers in CATI, and use additional search methods to try to find contact information for the student. When new locating data were found, tracers stored them in the RCS where they were available for subsequent reminder emails and letters and for CATI scheduling.

4.2   Student Interview Data Collection

The NPSAS:12 student interview data collection employed a study website and help desk to provide information and support to sample members. A variety of locating and tracing methods were used to locate sample members. Interviewers trained in CATI methods were available to assist sample members' completion of the survey, or sample members could complete the interview independently on the Web.

4.2.1 Study Website and Help Desk

Communications with NPSAS:12 sample members typically included a link to a NPSAS website that provided general information about NPSAS, including details about the study sponsor, how the data would be used, answers to FAQs, confidentiality assurances, and selected findings from earlier NPSAS studies. The website also included contact information for the study help desk and project staff at RTI, as well as links to the main NCES and RTI websites. Sample members were able to log in to the secure portion of the website to provide updated contact information and to complete the student interview.

Designed according to NCES web policies, the NPSAS:12 study website used a three-tier security approach to protect all data collected. The first tier of security included secure log-ins, with a unique study ID and strong password provided to sample members prior to the start of data collection. The second tier of security protected any data entered on the website with SSL technology, allowing only encrypted data to be transmitted over the Internet. The third tier of security stored collected data in a secured SQL Server database housed on a machine that was physically separate from the web server. Figure 7 shows the home page for the NPSAS:12 study website.
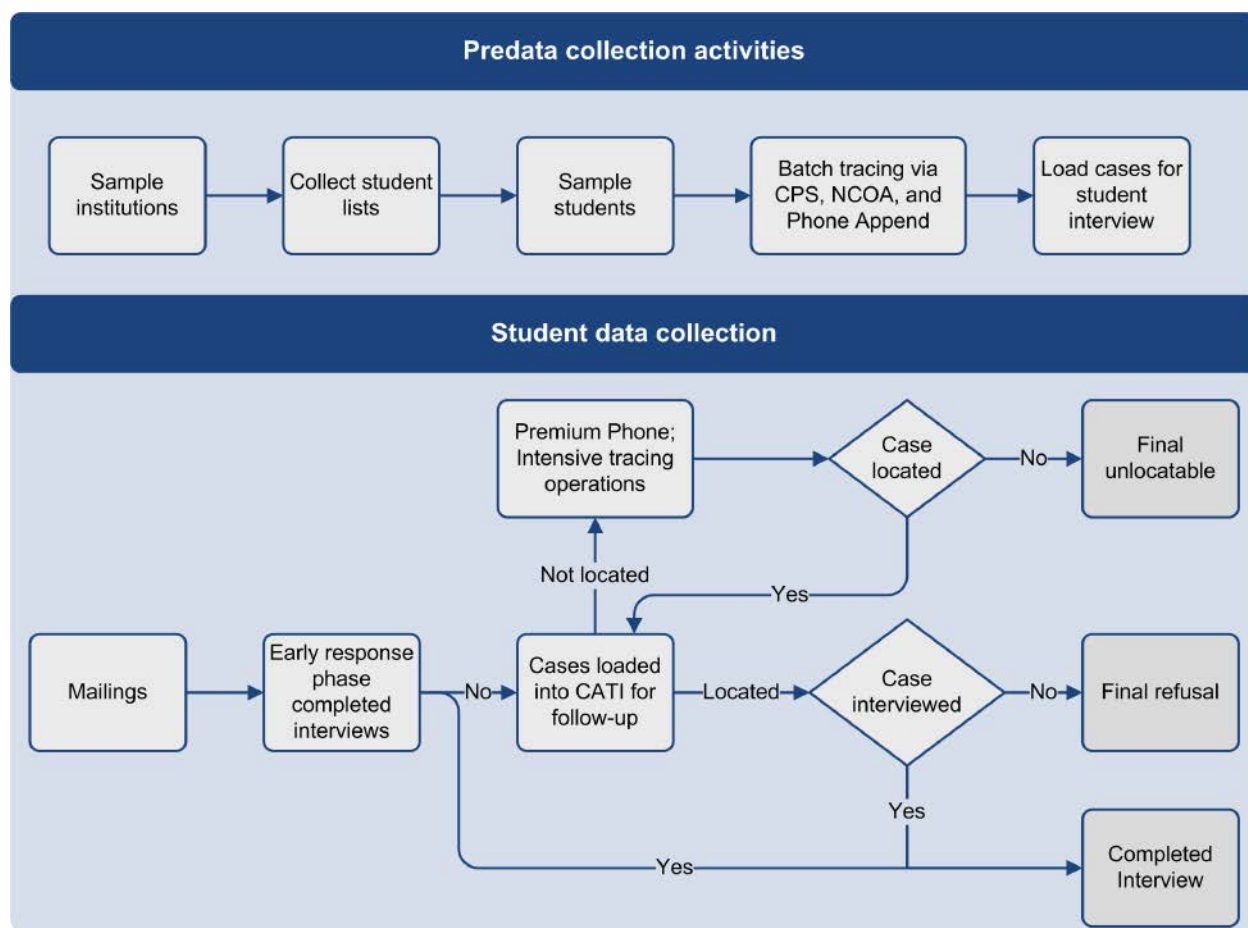
Figure 7.   Home page for NPSAS:12 study website: 2012

SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

In addition to the website, NPSAS: 12 used a help desk to respond to sample member questions and provide support for technical issues related to completion of the web interview. For each call received, staff confirmed contact information for the sample member and recorded a description of the problem and resolution. If technical difficulties prevented sample members from completing the web interview, telephone interviewers were available to help sample members complete a telephone interview rather than attempt the web interview. Two common types of help desk incidents were requests to retrieve login credentials and requests to complete the interview over the telephone. In order to minimize the need for telephone assistance, NPSAS included a "Forgot Password?" feature on the study website.

4.2.2 Locating, Tracing, and Contacting Sample Members

NPSAS:12 used a multistep process for locating, tracing, and contacting sample members. Prior to the start of data collection, NPSAS staff used several batch locating databases to update or confirm the contact information received from institutions on student enrollment lists. They sent sample members who were not successfully located in batch tracing to intensive tracing. Once NPSAS staff located sample members they contacted them and invited them to complete the interview (figure 8).

Figure 8.   Sample member locating activities: 2012

NOTE: CPS = Central Processing System. NCOA = National Change of Address database. CATI = computer-assisted telephone interviewing.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

Batch tracing. NPSAS staff sent cases with a valid Social Security number (SSN) to CPS for record matching. CPS contains information for students who have applied for financial aid using FAFSA. NPSAS staff compared records obtained from CPS to existing contact data and, when they found new or updated information, they loaded it into the database of locating information.

NPSAS project staff sent cases with at least one valid address to FirstData to access the U.S. Postal Service National Change of Address database (NCOA) for matching. The NCOA database contains 160 million change-of-address records submitted to the U.S. Postal Service. The NCOA maintains data for 4 years and updates it weekly. Survey staff compared records returned from NCOA to existing data, and they loaded new or updated addresses for sample members into the locating information database.

Because NCOA only provides address information, survey staff also submitted sample member information to FirstData's PhoneAppend service, which offers a residential telephone number search of over 170 million listings, including 6 million listings for recent relocates. PhoneAppend returns a telephone number based on a search by name, street address, and ZIP code.

NPSAS staff used FirstData's Premium Phone search for cases for which all known numbers resulted in no contact with the sample member. Premium Phone searches over 475 million landline, Voice over Internet Protocol, and wireless numbers in the U.S., Puerto Rico, and Canada.

Data collection mailings. Using the addresses updated in batch tracing, project staff sent notification mailing to all addresses for all sample members. They sent mailings on a flow basis, as institutions provided sample member information and as batch tracing procedures provided contact information. NPSAS staff sent the mailings by U.S. Postal Service mail. The mailings contained a lead letter and study brochure. The lead letter notified sample members of the start of data collection and the incentive they were eligible to receive for completing the survey. The letter also included their unique login information for the web survey instrument and encouraged them to participate during the early response period. The brochure provided information about the purpose of the study, confidentiality and security concerns, and contact information. NPSAS staff periodically sent sample members additional mailings, including postcards, letters, and a flyer, as reminders to complete the study. See appendix H for examples of all contact materials sent to sample members.

CATI locating. For sample members who did not complete the interview via the Web, telephone interviewers would attempt to conduct an interview over the telephone. Telephone interviewers called the number with the best likelihood of reaching the sample member, as determined by the CATI-CMS. If the interviewer could not reach the sample member at the number, the interviewer attempted to gather locating information from the contact who answered the call. If this approach was not successful, the interviewer used all other information available about the sample member and other contacts to locate the sample member. When the interviewer had exhausted all tracing leads available, survey staff sent the case to intensive tracing.

Intensive tracing. NPSAS survey staff sent cases that could not be located by other methods to TOPS for intensive tracing. These included cases that had no number to load into the CATI-CMS, or for whom all known numbers failed. Intensive tracing comprised a two-tier tracing approach, utilizing both public domain and proprietary databases.

The first tier of intensive tracing (TOPS-1) identified sample members in consumer databases (e.g., FirstData, Experian, and Accurint) using their SSNs. If this search resulted in a new telephone lead, TOPS sent the case back to CATI for follow-up by telephone interviewers. If the search resulted in a new address only, tracers used directory assistance searches to locate a telephone number for the contact. This approach minimized the effort required to locate cases and the time that cases were in TOPS and therefore unavailable to telephone interviewers.

If cases could not be located during TOPS-1, they went to the second tier of intensive tracing (TOPS-2), which was a more intensive level of tracing. Tracing staff conducted a thorough review of each case and determined the appropriate next steps based on the leads developed from prior tracing and contacting activities. Tracers again utilized consumer databases, such as FirstData, Experian, and Accurint's SSN search, as well as additional sources described below, to seek current contact information for a sample member or other contacts that could provide a potential lead to the sample member. On a case-by-case basis, tracing staff performed the following activities:

- Used directory assistance for telephone number searches based on address records of the sample member or other contacts;

- Contacted individuals associated with last known addresses, such as landlords, current occupants, tax assessors, and alumni affairs offices;

- Conducted internet searches using search engines and social networking websites to attempt to locate sample members and contacts; and

- Searched for sample members via institution websites.

Tracing staff finalized cases as unlocatable after exhausting all leads.

4.2.3 Training of Interview Data Collection Staff

The NPSAS:12 interview data collection team included telephone interviewers, quality control supervisors (QCSs), quality experts (QEs) and intensive tracing staff, all of whom completed a comprehensive training program prior to beginning work on NPSAS:12. Training sessions included instruction on the NPSAS:12 study and its purpose, confidentiality procedures, case management procedures, frequently asked questions, and hands-on activities designed to maximize active trainee participation. (See appendix I for a training agenda.) Prior to NPSAS:12-specific training, all interview data collection staff completed a general training program that covered call center procedures, an overview of the CATI-CMS, confidentiality procedures and sample member rights, and proper interviewing techniques, such as proper enunciation and pace of speech. The training schedule and number of data collection staff trained for each role are presented in table 15.

Table 15. Training schedule and number of staff trained, by data collection staff role: 2012

Data collection staff role	Time period	Number of staff trained
Quality control supervisors and quality experts	March 7, March 20, and June 7	40
Telephone interviewers	February 3–4, March 12–14, May 8–10, May 22–24, June 14–16, June 26–28, July 17–19, August 7–9, August 21–23, and August 28–30	302
Intensive-tracing staff	March 8, May 3, June 8, and July 10, 2012	44

SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

Telephone interviewers. Telephone interviewers were the primary point of contact with sample members. Their responsibilities included conducting telephone interviews, responding to sample member concerns, providing technical assistance for logging in to the web survey, gaining cooperation, and averting or converting refusals. Telephone interviewers were also trained as help desk agents. The telephone interviewer training lasted 12 hours and included an overview of NPSAS:12, a review of the survey instrument including training and practice specific to each coder, hands-on mock interviews, guidance on providing technical support to sample members, and instruction on conversational interviewing techniques. Training materials included a telephone interviewer manual and materials addressing conversational interviewing and frequently asked questions. Project staff certified telephone interviewers after they conducted a mock interview and after the interviewer provided appropriate and accurate responses to NPSAS: 12 frequently asked questions.

QCSs. QCSs monitored telephone interviewer performance and production, provided guidance to interviewers, and helped troubleshoot problems. The QCS training included the content covered in the telephone interviewer training plus additional training in case review, problem resolution, project-specific reports, and other procedures specific to NPSAS:12 QCS responsibilities. NPSAS project staff provided QCSs with a supervisor's manual and additional handouts on specific topics.

QEs. QEs monitored live and recorded interviews, and provided constructive feedback and coaching to interviewers. QEs attended interviewer training to learn survey basics and interviewing conventions. In addition, they were trained for general monitoring responsibilities, including the use

of RTI's monitoring interface, QUEST. Project staff provided QEs with an interviewing manual and a file of all screens and text in the CATI-CMS and interview, including help text.

Tracing staff. Tracers completed a 16-hour program on tracing procedures led by tracing managers within RTI's Call Center Services. Tracers then had an additional 2 hours of training, including an overview of NPSAS:12, review of NPSAS frequently asked questions, and tracing techniques most appropriate for locating NPSAS:12 sample members.

Concepts from training sessions were reinforced in bi-weekly quality circle meetings, where project staff reminded interviewers of proper administration of the survey and other topics as needed. Project staff encouraged trainees to ask questions, which helped identify needs for training topics for subsequent quality circle meetings. Selected staff received additional trainings on specific topics, including refusal conversion techniques.

4.2.4 Interviewing

Data collection for the NPSAS:12 interview consisted of two phases: the early response phase and the production phase (figure 9). Sample members had access to both the Web and telephone versions of the survey throughout the entire data collection, although NPSAS project staff encouraged them to complete the web survey during the early response period. The web and telephone versions of the survey were identical except that the telephone version included instructions for the telephone interviewer administering the survey.

Figure 9. Data collection phases: 2012
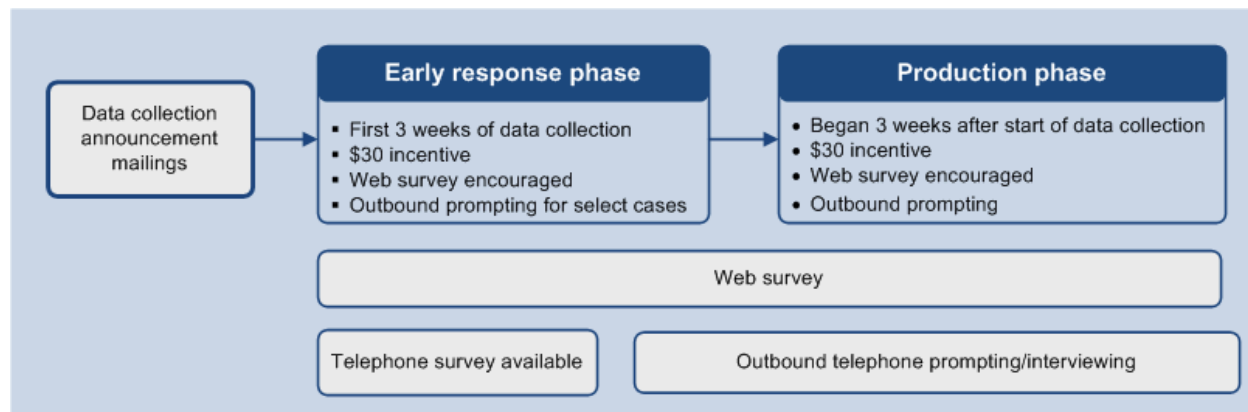
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

The early response phase began in February 2012 with a mailing or e-mail, or both, to sample members encouraging them to complete the NPSAS survey over the Web. Sample members who contacted the help desk had access to the telephone interview, but project staff limited outbound telephone contacts to cases in selected sectors during this phase. The early response phase began in waves, based on when sample member information was received from institutions and batch tracing procedures were completed, and lasted three weeks. The timing for the beginning of outbound contacting of sample members is shown in table 16. All sample members who completed the interview were eligible to receive a $30 incentive.

The production phase of data collection began approximately 3 weeks after the start of the early response phase. During the production phase, telephone interviewers called sample members

to encourage them to complete the interview by web or by telephone. All sample members who completed the interview during the production phase were eligible to receive the $30 incentive.

Table 16.   Beginning of outbound telephone calls, by institution type: 2012

Institution type	Beginning of outbound telephone calls to sample members
Public	
Less-than-2-year	Early response phase, 1 week after initial contact mailing
2-year	Early response phase, 2 weeks after initial contact mailing
4-year non-doctorate-granting	Production phase, 3 weeks + 1 day after initial contact mailing
4-year doctorate-granting	Production phase, 3 weeks + 1 day after initial contact mailing
Private nonprofit	
Less-than-4-year	Early response phase, 1 week after initial contact mailing
4-year non-doctorate-granting	Production phase, 3 weeks + 1 day after initial contact mailing
4-year doctorate granting	Production phase, 3 weeks + 1 day after initial contact mailing
Private for-profit	
Less-than-2-year	Early response phase, 1 week after initial contact mailing
2-year	Early response phase, 1 week after initial contact mailing
4-year	Early response phase, 1 week after initial contact mailing

SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

NPSAS staff announced the availability of the web interview through mail and email to sample members, which included the URL and the sample members' login credentials. Emails to sample members also included a link to the survey. The web interview was available 24 hours a day, 7 days a week throughout the entire data collection. Although the telephone interview was available throughout the entire data collection, the email and letters encouraged sample members to complete the web interview, particularly during the early response period.

Outbound calling for the telephone interview began at the start of the production phase, three weeks after the start of the early response phase for the sample members with the earliest early response expiration date. Telephone interviewers were tasked with attempting to locate sample members, gaining their cooperation, providing technical assistance, and conducting interviews. When they successfully reached sample members, interviewers encouraged them to complete the interview immediately over the telephone; however, the web interview was available for sample members who preferred that option. Interviewers followed up with sample members by telephone 5 days after they selected the web option if they had not yet completed the survey.

The CATI-CMS automated call scheduler assigned cases to interviewers by type and priority, best day and time to call, and scheduled appointments. The scheduler organized cases into queues based on a variety of factors, including prior contact status (e.g., cases that had been recently contacted, or had never been contacted), refusal status, and appointments set during a prior contact attempt. The CATI-CMS scheduler also automatically prioritized numbers to call by which lines were most likely to result in contacting and interviewing the sample member. New numbers were continuously added based on CATI, batch, and intensive tracing efforts and updates received through mailings, emails, or help desk call-ins. The call scheduler reprioritized telephone numbers based on the new information as it came in.

NPSAS project staff developed an abbreviated version of the interview and offered it to sample members late in data colletion. The abbreviated interview included fewer questions and

therefore required less time to complete. The abbreviated interview contained those questions that provided key data that could enable a sample member to be classified as a study member, as described in section 4.5. About 13 percent of the 85,000 NPSAS:12 interview respondents completed the abbreviated interview.

4.3 Student Interview Data Collection Quality Control

NPSAS staff conducted a number of quality control procedures throughout the course of NPSAS:12 student interview data collection. These procedures included frequent interview monitoring of telephone interviewers, quality circle feedback meetings, and interviewer debriefings at the conclusion of the study.

4.3.1 Interview Monitoring

Project staff regularly monitored telephone interviews during NPSAS:12 data collection to meet the following data quality objectives:

- identification of problem items in the interview;

- reduction in the number of interviewer errors;

- improvement in interviewer performance through reinforcement of effective strategies; and

- assessment of the quality of the data collected.

Staff monitored approximately 9 percent of interviews on all shifts. Interview monitors recorded their feedback on standardized monitoring forms that covered such topics as interviewer professionalism, question administration, and knowledge of the instrument. Interviewers received feedback from monitoring sessions, and quality circle meetings frequently incorporated issues identified during monitoring to improve the overall quality of telephone interviews. Staff also used segments of recorded interviews as training aids during project trainings and quality circle meetings.

4.3.2 Quality Circle Meetings

Quality circle meetings served as a tool for communication between project staff, call center staff, and telephone interviewers. Some of the topics covered during these meetings included:

- clarification of questions and item responses from the survey instrument,

- reinforcement of successful interviewing and refusal aversion techniques,

- guidelines for providing detailed case comments,

- strategies for gaining cooperation from sample members and other contacts,

- data security protocols, and

- study progress and team-building exercises.

Project staff prepared notes to summarize meeting discussions, and interviewers were responsible for reviewing all of the notes. The notes were a resource and reference for interviewers throughout the course of data collection.

4.3.3 Debriefing

At the conclusion of NPSAS:12 data collection, project staff held debriefing meetings with interviewers and call center supervisory staff to learn more about their experiences. Project staff also administered an anonymous survey to the interviewers. Comments and discussion from staff identified areas of success during training and data collection, and also identified areas needing improvement for future studies.

With regard to training, interviewers were appreciative of online training modules on study basics that could be completed prior to in-person training sessions. In response to feedback from prior studies, NPSAS:12 training included more "hands-on" activities for interviewers to gain experience with the CATI-CMS and the survey instrument. Based on their interactions with sample members and other contacts, interviewers also emphasized the use of refusal aversion skills and frequently asked questions as strategies to gain cooperation from reluctant sample members and "gatekeepers." "Gatekeepers" are identified as parents or other contacts who answered telephone call attempts to sample members. In addition, interviewers reported that the resources provided in the interview, such as help text and conversion text, coupled with strategies like refusal conversion and conversational interviewing, were helpful to them to administer the interview successfully. Interviewers reported that recorded interviews used during monitoring feedback sessions and quality circle meetings were helpful in improving their interviewing techniques. Project staff prepared a summary of the debriefing meetings for consideration when planning future studies.

4.4 Student Interview Data Collection Outcomes

NPSAS staff assessed student interview data collection outcomes by reviewing the number of NPSAS:12 sample members located and interviewed, the time required to complete the interview, the time spent contacting sample members, conversion of interview refusals, and the FTB identification. NPSAS staff located approximately 89 percent ($N = 114{,}240$) of NPSAS:12 sample members, and approximately 74 percent ($N = 85{,}000$) of those located responded (table 17). Of the 123,600 total eligible sample members, approximately 69 percent responded. The student weighted response rate was 73 percent.

Figure 10. Overall locating and interviewing results: 2012
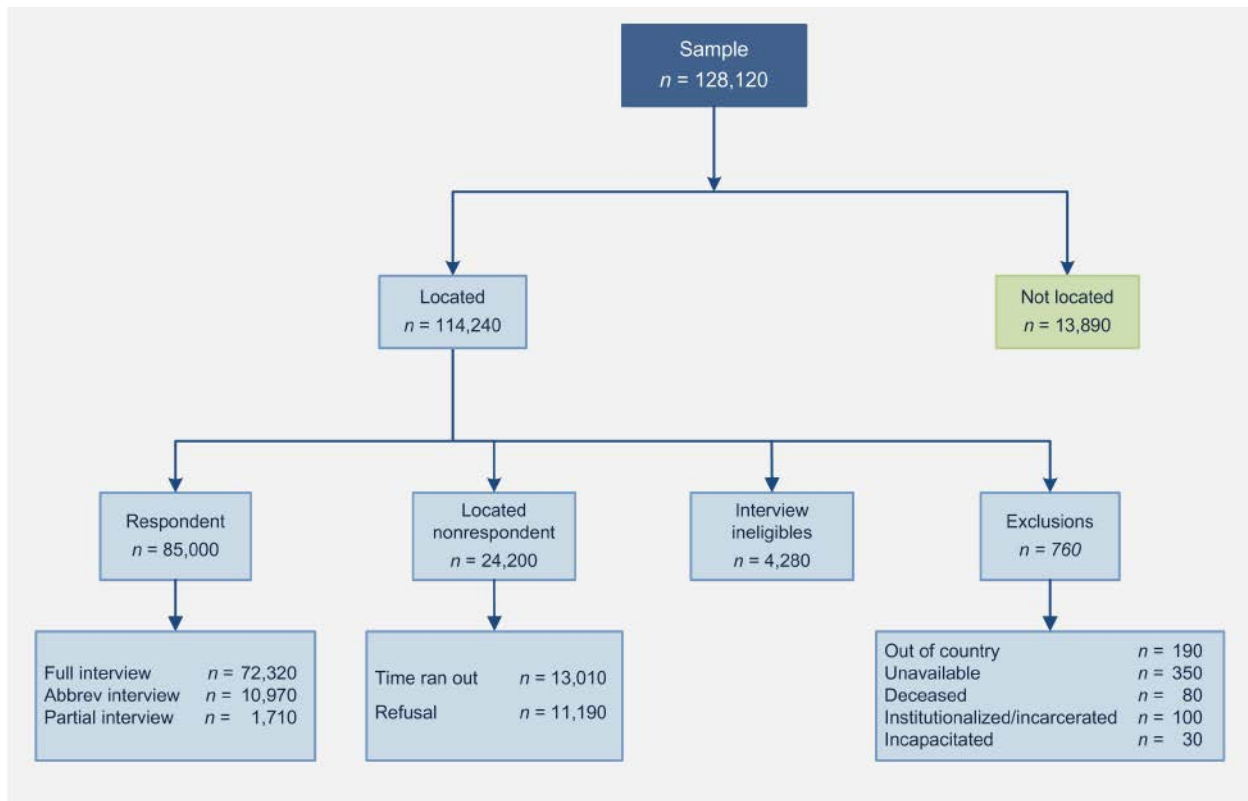
NOTE: Details may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

4.4.1 Student Locating Results

Locating rates, shown in table 17, ranged from 95 percent for students enrolled at both public and private nonprofit 4-year doctorate-granting institutions to 83 percent for students enrolled at private for-profit 2-year institutions. Among the total undergraduate students, survey staff located potential FTBs at a significantly lower rate than other undergraduate students (χ^2 (1, $N = 97,014$) = 724.05, $p < .001$). They located graduate students more often than undergraduate students overall (χ^2 (1, $N = 128,121$) = 850.75 $p < .001$).

Table 17.   Student locating, by institution characteristics and student type: 2012

Institution characteristics and student type	Total sample	Located Number	Located Percent of total sample
Total	128,120	114,240	89.2
Institution level			
Less-than-2-year	6,380	5,370	84.1
2-year	48,040	41,910	87.2
4-year non-doctorate-granting	37,530	33,030	88.0
4-year doctorate-granting	36,170	33,930	93.8
Institution control			
Public	66,500	60,490	91.0
Private nonprofit	19,680	18,460	93.8
Private for-profit	41,940	35,280	84.1
Institution type			
Public			
Less-than-2-year	790	670	85.8
2-year	37,000	32,730	88.5
4-year non-doctorate-granting	8,180	7,630	93.3
4-year doctorate-granting	20,530	19,460	94.8
Private nonprofit			
Less-than-4-year	1,090	950	87.1
4-year non-doctorate-granting	8,520	8,000	93.9
4-year doctorate-granting	10,070	9,520	94.5
Private for-profit			
Less-than-2-year	5,270	4,430	83.9
2-year	10,280	8,510	82.8
4-year	26,390	22,350	84.7
Student type			
Total undergraduate	110,070	97,010	88.1
Potential FTB	53,240	45,490	85.4
Other undergraduate	56,830	51,530	90.7
Graduate/first-professional	18,050	17,220	95.4

NOTE: Located sample members include those later determined to be ineligible. FTB = first-time beginner. Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

Batch tracing. The CPS database, which provides information for students who have applied for federal financial aid using FAFSA, resulted in updated or confirmed contact information for 77 percent of the cases submitted for batch tracing. NPSAS staff submitted all existing and updated contact information received from CPS to the NCOA database. Of the 126,830 cases sent to NCOA, NCOA returned 19,570 (15 percent) with an updated address (table 18).

As the next step, NPSAS staff submitted sample member information to PhoneAppend for telephone number updates. Of the 126,830 cases sent, PhoneAppend returned 51,200 (40 percent) with new or confirmed telephone numbers. Prior to intensive tracing, NPSAS staff submitted a small group of cases to Premium Phone after all other leads were exhausted in CATI. Of the 16,860

cases submitted, Premium Phone returned 7,300 (43 percent) with new or confirmed telephone numbers.

Table 18.   Batch processing record match rates, by tracing source: 2012

Method of tracing	Number of records sent	Number of records matched	Percent matched
CPS	117,440	90,650	77.2
NCOA	126,830	19,570	15.4
PhoneAppend	126,830	51,200	40.4
Premium Phone	16,860	7,300	43.3

NOTE: Matching results include sample members later determined to be ineligible. CPS = Central Processing System. NCOA = National Change of Address. Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

Intensive tracing. NPSAS staff selected for intensive tracing those sample members who were not located in batch tracing or CATI locating. Overall, 12,390 cases, or approximately 10 percent of the eligible sample, required intensive tracing (table 19). By type of institution, the rate requiring intensive tracing ranged from 6 percent of students at both public 4-year doctorate-granting and private nonprofit 4-year non-doctorate-granting institutions to 20 percent of students at public less-than-2-year institutions.

Table 19.   Cases requiring intensive tracing, by institution characteristics and student type: 2012

Institution characteristics and student type	Total sample	Cases requiring intensive tracing	
		Number	Percent
Total	128,120	12,390	9.7
Institution level			
Less-than-2-year	6,380	850	13.3
2-year	48,040	5,790	12.0
4-year non-doctorate-granting	37,530	3,350	8.9
4-year doctorate-granting	36,170	2,400	6.6
Institution control			
Public	66,500	6,550	9.9
Private nonprofit	19,680	1,470	7.4
Private for-profit	41,940	4,370	10.4
Institution type			
Public			
Less-than-2-year	790	160	20.4
2-year	37,000	4,630	12.5
4-year non-doctorate-granting	8,180	570	7.0
4-year doctorate-granting	20,530	1,200	5.8
Private nonprofit			
Less-than-4-year	1,090	160	14.3
4-year non-doctorate-granting	8,520	530	6.2
4-year doctorate-granting	10,070	780	7.8
Private for-profit			
Less-than-2-year	5,270	650	12.3
2-year	10,280	1,050	10.2
4-year	26,390	2,680	10.1
Student type			
Total undergraduate	110,070	11,160	10.1
Potential FTB	53,240	6,290	11.8
Other undergraduate	56,830	4,870	8.6
Graduate/first-professional	18,050	1,230	6.8

NOTE: Tracing results include sample members later determined to be ineligible. FTB = first-time beginner. Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

Intensive tracing located approximately 71 percent of the cases sent for intensive tracing and survey staff subsequently interviewed 3,550 of those cases (table 20). All 12,390 intensive tracing cases underwent TOPS-1 and 3,430 of those cases required TOPS-2.

Table 20. Located and interviewed rates of cases requiring intensive tracing, by intensive tracing method: 2012

		Located in TOPS		Interviewed	
Intensive tracing method	Total	Number	Percent of total	Number	Percent of located
Total	12,390	8,760	70.7	3,550	28.6
TOPS-1	12,390	8,380	67.7	2,980	24.0
TOPS-2[1]	3,430	2,360	68.7	570	16.6

[1] TOPS-2 cases are those that could not be located through TOPS-1.
NOTE: Locating results include sample members later determined to be ineligible. TOPS = tracing operations. Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

4.4.2 Interview Response Rates

Some 85,000 students, approximately 69 percent of the eligible sample of 123,600, completed the NPSAS: 12 interview (table 21). Across institution level and control, response rates ranged from 55 percent for private for-profit less-than 2-year institutions to 82 percent for private nonprofit 4-year doctorate-granting institutions. Potential FTBs were significantly less likely to respond than other undergraduates (60 percent compared with 73 percent) ($\chi 2$ (1, $N = 105,931$) $= 2075.23$, $p < .0001$). Graduate and professional students (83 percent) completed at a higher rate than undergraduate students (66 percent) ($\chi 2$ (1, $N = 123,601$) $= 2013.63$, $p < .0001$).

Table 21. Student interview completion rates, by institution characteristics and student type: 2012

Institution characteristics and student type	Eligible sample	Total respondents	
		Number	Unweighted percent
Total	123,600	85,000	68.8
Institution level			
Less-than-2-year	5,910	3,300	55.9
2-year	45,680	28,840	63.1
4-year non-doctorate-granting	36,370	24,600	67.6
4-year doctorate-granting	35,650	28,260	79.3
Institution control			
Public	64,080	45,480	71.0
Private nonprofit	19,240	15,350	79.8
Private for-profit	40,280	24,180	60.0
Institution type			
Public			
Less-than-2-year	730	460	62.4
2-year	35,140	22,800	64.9
4-year non-doctorate-granting	7,930	5,920	74.6
4-year doctorate-granting	20,280	16,300	80.4
Private nonprofit			
Less-than-4-year	1,010	650	64.4
4-year non-doctorate-granting	8,300	6,600	79.5
4-year doctorate-granting	9,920	8,100	81.6
Private for-profit			
Less-than-2-year	4,900	2,690	54.9
2-year	9,800	5,550	56.6
4-year	25,580	15,940	62.3
Student type			
Total undergraduate	105,930	70,290	66.4
Potential FTB	50,700	30,140	59.5
Other undergraduate	55,230	40,150	72.7
Graduate/first-professional	17,670	14,710	83.3

NOTE: Eligible students met the criteria for qualification as a student interview respondent, which required completing at least a partial interview. Excludes 4,520 cases determined to be ineligible for the study, using data obtained from one or more sources. FTB = first-time beginner. Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

Completion by phase and mode. As described in section 4.2.4, NPSAS staff initiated the student interview in two phases, an early response phase and a production phase, and in two modes, by web and by telephone. Of the 85,000 cases that completed the interview, 55 percent (47,070 cases) completed during the early response phase and 45 percent (37,930 cases) completed in the production phase (table 22).

Table 22. **Student interview completion rates, by data collection phase, institution characteristics, and student type: 2012**

Institution characteristics and student type	Eligible sample	Total respondents		Data collection phase			
				Early response		Production	
		Number	Percent of eligible	Number	Percent of respondents	Number	Percent of respondents
Total	123,600	85,000	68.8	47,070	55.4	37,930	44.6
Institution level							
Less-than-2-year	5,910	3,300	55.9	1,550	47.1	1,750	52.9
2-year	45,680	28,840	63.1	14,790	51.3	14,060	48.7
4-year non-doctorate-granting	36,370	24,600	67.6	13,520	55.0	11,080	45.0
4-year doctorate-granting	35,650	28,260	79.3	17,210	60.9	11,060	39.1
Institution control							
Public	64,080	45,480	71.0	24,690	54.3	20,790	45.7
Private nonprofit	19,240	15,350	79.8	9,360	61.0	5,990	39.0
Private for-profit	40,280	24,180	60.0	13,020	53.9	11,160	46.1
Institution type							
Public							
Less-than-2-year	730	460	62.4	220	49.2	230	50.8
2-year	35,140	22,800	64.9	11,800	51.8	10,990	48.2
4-year non-doctorate-granting	7,930	5,920	74.6	3,110	52.6	2,810	47.4
4-year doctorate-granting	20,280	16,300	80.4	9,550	58.6	6,750	41.4
Private nonprofit							
Less-than-4-year	1,010	650	64.4	340	51.5	320	48.5
4-year non-doctorate-granting	8,300	6,600	79.5	3,830	58.1	2,760	41.9
4-year doctorate-granting	9,920	8,100	81.6	5,190	64.0	2,920	36.0
Private for-profit							
Less-than-2-year	4,900	2,690	54.9	1,250	46.5	1,440	53.5
2-year	9,800	5,550	56.6	2,730	49.2	2,820	50.8
4-year	25,580	15,940	62.3	9,040	56.7	6,900	43.3
Student type							
Total undergraduate	105,930	70,290	66.4	37,890	53.9	32,400	46.1
Potential FTB	50,700	30,140	59.5	16,280	54.0	13,870	46.0
Other undergraduate	55,230	40,150	72.7	21,620	53.8	18,530	46.2
Graduate/first-professional	17,670	14,710	83.3	9,170	62.4	5,540	37.6

NOTE: Eligible students met the criteria for qualification as a student interview respondent, which required completing at least a partial interview. Excludes 4,520 cases determined to be ineligible for the study, using data obtained from one or more sources. FTB = first-time beginner. Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

While the web survey was available from the outset of data collection, telephone efforts began 1 to 3 weeks after sample members were notified of their inclusion in the study, depending on the sector of the institution where they were enrolled. Sample members were eligible to receive a $30 incentive for completing the interview through either mode. Among respondents, 82 percent ($N = 68,840$) completed the interview by web and the remaining 18 percent ($N = 14,820$) by telephone (table 23). Of web respondents, about 36,770 (54 percent) completed the interview without any telephone contact whatsoever, while 31,710 cases (46 percent) completed the interview with prompting from a telephone interviewer.

Graduate and professional students (91 percent) were more likely to complete the web survey than undergraduate students (80 percent; χ^2 (1, $N = 123,601$) = 1027.82, $p < .001$). Potential

first-time beginners were less likely to complete the web survey than other undergraduates, 79 percent compared to 81 percent, respectively (χ^2 (1, N = 105,931) = 2056.52, p < .001).

Table 23.   Student interview completion rates, by mode of administration, institution characteristics, and student type: 2012

Institution characteristics and student type	Eligible sample	Total completes		Mode of administration			
				Web		Telephone	
		Number	Unweighted percent of eligible	Number	Percent of total completes	Number	Percent of total completes
Total	123,600	83,300	67.4	68,480	82.2	14,820	17.8
Institution level							
Less-than-2-year	5,910	3,200	54.3	2,060	64.3	1,140	35.7
2-year	45,680	28,160	61.6	21,760	77.3	6,390	22.7
4-year non-doctorate-granting	36,370	24,050	66.1	19,500	81.1	4,550	18.9
4-year doctorate-granting	35,650	27,890	78.2	25,160	90.2	2,730	9.8
Institution control							
Public	64,080	44,740	69.8	37,790	84.5	6,950	15.5
Private nonprofit	19,240	15,120	78.6	13,780	91.2	1,330	8.8
Private for-profit	40,280	23,440	58.2	16,900	72.1	6,540	27.9
Institution type							
Public							
Less-than-2-year	730	450	61.3	320	72.5	120	27.5
2-year	35,140	22,320	63.5	17,790	79.7	4,530	20.3
4-year non-doctorate-granting	7,930	5,840	73.6	5,090	87.1	750	12.9
4-year doctorate-granting	20,280	16,140	79.6	14,590	90.4	1,550	9.6
Private nonprofit							
Less-than-4-year	1,010	630	62.5	490	77.0	150	23.0
4-year non-doctorate-granting	8,300	6,500	78.3	5,820	89.6	680	10.4
4-year doctorate-granting	9,920	7,980	80.5	7,480	93.6	510	6.4
Private for-profit							
Less-than-2-year	4,900	2,610	53.2	1,630	62.4	980	37.6
2-year	9,800	5,360	54.7	3,590	67.1	1,760	32.9
4-year	25,580	15,470	60.5	11,680	75.5	3,790	24.5
Student type							
Total undergraduate	105,930	68,730	64.9	55,160	80.3	13,570	19.7
Potential FTB	50,700	29,140	57.5	23,130	79.4	6,010	20.6
Other undergraduate	55,230	39,590	71.7	32,030	80.9	7,560	19.1
Graduate/first-professional	17,670	14,570	82.4	13,320	91.4	1,250	8.6

NOTE: The number of total completes excludes the 1,700 partial interviews because mode of completion is not determined until the full interview is completed. Excludes 4,520 cases determined to be ineligible for the study, using data obtained from one or more sources. FTB = first-time beginner. Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

Figure 11 shows the overall distribution of completed interviews by mode. Telephone interviews comprised 18 percent of all completed interviews while web interviews with telephone prompting were 38 percent of all interviews completed. Web interviews without telephone prompting represented 44 percent of completed interviews.

Figure 11. Distribution of completed interviews, by mode of administration: 2012
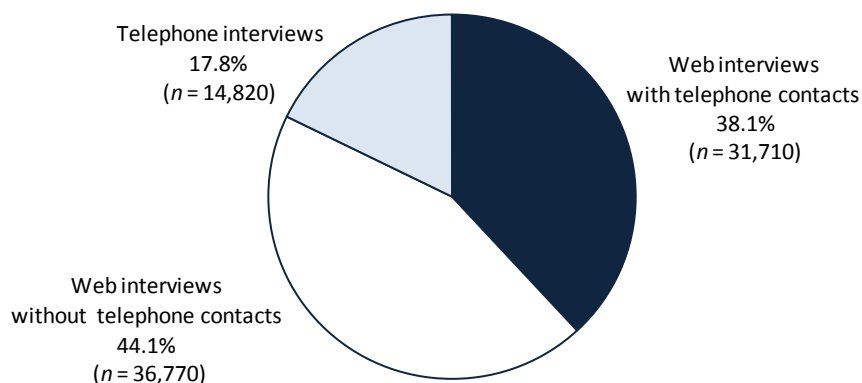
NOTE: Detail may not sum to totals because of rounding. Excludes partial completes.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

4.4.3 Interview Timing

NPSAS staff calculated and analyzed the time required to complete the NPSAS:12 student interview, paying special attention to differences in burden by interview administration mode and the timing required to navigate particular interview paths by respondent type. Staff also assessed interview forms (individual web screens) that consistently took respondents longer to answer.

To calculate form times and overall interview times, project staff embedded a time stamp on each form in the interview. A start timer recorded the clock time on a respondent's or interviewer's computer when a form was first loaded to get the start time on that form and an end timer recorded the clock time when the "Next" button on the form was clicked to get the end time on that form. NPSAS project staff calculated the time for each form by subtracting the start time from the end time. They calculated the total instrument time by summing across the times recorded for each form. Project staff excluded outliers, defined at the form and interview levels as exceeding two standard deviations from the mean, from the analysis, as well as cases that did not complete the interview in a single session.

Across modes, the NPSAS:12 interview averaged 28.1 minutes to complete. Web interviews, averaging 26.9 minutes, took significantly less time than telephone interviews which averaged 33.6 minutes ($t(14,974) = 60.54$, $p < .0001$).[11] Given the time required to read questions and other text aloud to respondents, telephone interviews required more time than web interviews for all sections, and all differences were significant [Enrollment ($t(16,844) = 61.91$, $p < .0001$); Education Experiences ($t(13,292) = 32.18$, $p < .0001$); Financial Aid ($t(18,756) = 33.34$, $p < .0001$); Current Employment ($t(55,118) = 23.98$, $p < .0001$); Income and Expenses ($t(19,423) = 59.55$, $p < .0001$); Background Section ($t(18,125) = 87.37$, $p < .0001$); and Locating ($t(6,155) = 47.09$, $p < .0001$)]. Table 24 shows the average section completion times and average times to complete each section by mode of administration.

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[11] The Satterthwaite (1946) degrees of freedom approximation was used in tests with unequal variances.

Table 24. Average time, in minutes, to complete each interview section, by mode of administration: 2012

| | All respondents | | Mode of administration | | | |
| | | | Web | | Telephone | |
Interview section	Number of cases	Average time	Number of cases	Average time	Number of cases	Average time
Total interview	55,120	28.1	45,640	26.9	9,480	33.6
Enrollment	55,120	5.7	45,640	5.4	9,480	7.0
Education Experiences	55,120	6.1	45,640	5.8	9,480	7.4
Financial Aid	55,120	3.7	45,640	3.6	9,480	4.3
Current Employment	55,120	1.8	45,640	1.7	9,480	2.2
Income and Expenses	55,120	4.9	45,640	4.7	9,480	5.9
Background	55,120	2.9	45,640	2.8	9,480	3.9
Locating	17,250	4.3	13,600	3.9	3,650	5.6

NOTE: The timing analysis included only cases that completed the interview in one session; partial interviews and outliers were excluded. Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

The time required to complete the NPSAS:12 interview also varied by the student's status as an FTB, other undergraduate (non-FTB), or graduate student. FTBs were administered more questions throughout the survey, particularly in the Education Experiences section which FTBs averaged 11.0 minutes to complete. FTBs were also the only group administered the Locating section. Because of the additional questions, FTBs averaged 36.3 minutes to complete the interview while other undergraduates averaged 25.5 minutes and graduate students averaged 20.9 minutes (table 25).

Table 25. Average time, in minutes, to complete each interview section, by student type: 2012

| | All students | | FTBs | | Other undergraduates | | Graduate students | |
Interview section	Number of cases	Average time	Number of cases	Average time	Number of cases	Average time	Number of cases	Average time
Total interview	55,120	28.1	17,250	36.3	27,300	25.5	10,570	20.9
Enrollment	55,120	5.7	17,250	5.9	27,300	5.9	10,570	4.7
Education Experiences	55,120	6.1	17,250	11.0	27,300	4.3	10,570	2.6
Financial Aid	55,120	3.7	17,250	3.0	27,300	3.9	10,570	4.2
Current Employment	55,120	1.8	17,250	2.5	27,300	1.5	10,570	1.4
Income and Expenses	55,120	4.9	17,250	5.4	27,300	5.0	10,570	3.6
Background	55,120	2.9	17,250	3.0	27,300	3.1	10,570	2.6
Locating	17,250	4.3	17,250	4.3	†	†	†	†

† Not applicable; did not receive the Locating section.
NOTE: The timing analysis included only cases that completed the interview in one session; partial interviews and outliers were excluded. FTB = first-time beginner. Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

Table 26 shows the average interview time for FTBs both overall and for each section, by mode of administration. The average FTB interview time was significantly longer by telephone (42.5 minutes) than by web (34.9 minutes; $t(7,972) = 52.39$, $p < .0001$). Each section of the interview was significantly longer for FTBs by telephone than by web: Enrollment ($t(7,547) = 35.46$, $p < .0001$); Education Experiences ($t(8,504) = 34.90$, $p < .0001$); Financial Aid ($t(7,385) = 26.99$, $p < .0001$);

Current Employment ($t(17,245) = 17.63$, $p < .0001$); Income and Expenses ($t(8,675) = 41.91$, $p < .0001$); Background ($t(7,284) = 55.79$, $p < .0001$); and Locating ($t(6,155) = 47.09$, $p < .0001$).

Table 26. Average time in minutes for first-time beginners to complete each interview section, by mode of administration: 2012

			Mode of administration			
	FTBs		Web		Telephone	
Interview section	Number of cases	Average time	Number of cases	Average time	Number of cases	Average time
Total interview	17,250	36.3	13,600	34.9	3,650	42.5
Enrollment	17,250	5.9	13,600	5.6	3,650	6.9
Education Experiences	17,250	11.0	13,600	10.6	3,650	12.6
Financial Aid	17,250	3.0	13,600	2.8	3,650	3.5
Current Employment	17,250	2.5	13,600	2.4	3,650	3.0
Income and Expenses	17,250	5.4	13,600	5.1	3,650	6.4
Background	17,250	3.0	13,600	2.8	3,650	3.8
Locating	17,250	4.3	13,600	3.9	3,650	5.6

NOTE: The timing analysis included only cases that completed the interview in one session; partial interviews and outliers were excluded. FTB = first-time beginner. Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

The group of other undergraduates averaged 25.5 minutes to complete the interview. Consistent with the other groups, the average telephone interview time for other undergraduates (28.7 minutes) was significantly longer than by web (24.8 minutes; $t(10,858) = 35.31$, $p < .0001$). Table 27 shows the average interview times for other undergraduates, by interview section and by mode of administration. Each section of the interview was significantly longer for the other undergraduate group by telephone than by web: Enrollment ($t(9,240) = 40.33$, $p < .0001$); Education Experiences ($t(11,398) = 8.87$, $p < .0001$); Financial Aid ($t(10,620) = 29.57$, $p < .0001$); Current Employment ($t(8,242) = 6.59$, $p < .0001$); Income and Expenses ($t(11,307) = 27.61$, $p < .0001$); and Background ($t(10,060) = 59.18$, $p < .0001$).

Table 27. Average time in minutes for other undergraduates to complete each section of the interview, by mode of administration: 2012

			Mode of administration			
	Other undergraduates		Web		Telephone	
Interview section	Number of cases	Average time	Number of cases	Average time	Number of cases	Average time
Total interview	27,300	25.5	22,260	24.8	5,050	28.7
Enrollment	27,300	5.9	22,260	5.7	5,050	7.3
Education Experiences	27,300	4.3	22,260	4.2	5,050	4.5
Financial Aid	27,300	3.9	22,260	3.7	5,050	4.6
Current Employment	27,300	1.5	22,260	1.5	5,050	1.6
Income and Expenses	27,300	5.0	22,260	4.9	5,050	5.7
Background	27,300	3.1	22,260	2.9	5,050	4.0
Locating	†	†	†	†	†	†

† Not applicable; did not receive the Locating section.
NOTE: The timing analysis included only cases that completed the interview in one session; partial interviews and outliers were excluded. Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

Overall, graduate students averaged 20.9 minutes to complete the interview, with the average interview time for the graduate student group significantly longer by telephone (24.7 minutes) than by web (20.5 minutes; $t(1,086) = 18.65$, $p < .0001$). Table 28 shows the average interview time for graduate students, by interview section and by mode of administration. The following sections were significantly longer for graduate students by telephone than by web: Enrollment ($t(994) = 20.07$, $p < .0001$); Financial Aid ($t(1,069) = 13.37$, $p < .0001$); Current Employment ($t(958) = 10.42$, $p < .0001$); Income and Expenses ($t(1,075) = 19.59$, $p < .0001$); and Background ($t(1,141) = 25.14$, $p < .0001$).

Table 28. Average time in minutes for graduate students to complete the interview, by interview section and mode of administration: 2012

| | Graduate students | | Mode of administration | | | |
| | | | Web | | Telephone | |
Interview section	Number of cases	Average time	Number of cases	Average time	Number of cases	Average time
Total interview	10,570	20.9	9,780	20.5	790	24.7
Enrollment	10,570	4.7	9,780	4.6	790	6.2
Education Experiences	10,570	2.6	9,780	2.6	790	2.6
Financial Aid	10,570	4.2	9,780	4.1	790	5.2
Current Employment	10,570	1.4	9,780	1.3	790	1.9
Income and Expenses	10,570	3.6	9,780	3.5	790	4.6
Background	10,570	2.6	9,780	2.5	790	3.5
Locating	†	†	†	†	†	†

† Not applicable; did not receive the Locating section.
NOTE: The timing analysis included only cases that completed the interview in one session; partial interviews and outliers were excluded. Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

The abbreviated version of the NPSAS:12 interview included the entire Enrollment section and selected questions from the other sections of the interview. On average, the abbreviated interview took 9.7 minutes. Abbreviated interviews completed online took 9.3 minutes and were significantly shorter than abbreviated telephone interviews at 10.8 minutes ($t(4,105) = 15.79$, $p < .001$). Table 29 shows the average abbreviated interview time by interview section and interview completion mode. The following sections of the abbreviated interview were significantly longer by telephone than by web: Enrollment ($t(5,163) = 22.24$, $p < .0001$); Financial Aid ($t(5,410) = 37.69$, $p < .0001$); Current Employment ($t(4,750) = 12.01$, $p < .0001$); Income and Expenses ($t(7,080) = 10.59$, $p < .0001$); Background ($t(4,102) = 16.32$, $p < .0001$); and Locating ($t(2,673) = 21.77$, $p < .0001$).

Table 29. Average time in minutes for students to complete the abbreviated interview, by interview section and mode of administration: 2012

	All students		Web		Telephone	
	Mode of administration					
Interview section	Number of cases	Average time	Number of cases	Average time	Number of cases	Average time
Total	8,770	9.7	6,550	9.3	2,220	10.8
Enrollment	8,770	4.1	6,550	3.9	2,220	4.7
Education Experiences	7,500	0.9	5,500	0.9	2,000	0.9
Financial Aid	8,770	0.9	6,550	0.8	2,220	1.3
Current Employment	8,770	0.4	6,550	0.4	2,220	0.5
Income and Expenses	8,770	0.2	6,550	0.2	2,220	0.2
Background	8,770	0.4	6,550	0.4	2,220	0.5
Locating	2,680	4.4	1,930	3.9	740	5.6

NOTE: The timing analysis included only cases that completed the abbreviated interview in one session; partial interviews and outliers were excluded. Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

NPSAS staff compared average times to administer each form across all forms in the instrument, except those forms in the Locating section, which required unavoidably long administration times, and assisted coding systems, or coders, which were analyzed separately. The forms with the highest average administration times are listed in table 30. The form with questions asking respondents their expected salary range after completing their education (N12FUTRWAGES) had the longest average form time at 78 seconds.

Table 30. Forms with the highest average interview times, in seconds, excluding coders, by form and item type: 2012

Form	Form description	Item type	Number	Mean
N12FUTRWAGES	Expected salary (full interview)	Textbox	19,330	78.2
N12GRLNNPSYR	Total borrowed for graduate student loans in NPSAS year	Textbox	19,310	44.4
N12EDBENEFTS	Importance of salary compared to other job factors	Ordinal table	5,030	44.3
N12EXPWGABB	Expected salary (abbreviated interview)	Textbox	3,140	43.7
N12NENRL	Months of enrollment at NPSAS	Check all	67,570	41.6
N12UGLNNPSYR	Total borrowed in all student loans in NPSAS year	Textbox	22,940	41.5
N12SEARN	Salary earned during NPSAS year	Textbox/unit	32,670	39.4
N12CLKNUM	Months or hours of instruction already completed at NPSAS	Textbox/unit	4,520	38.1
N12ALTWAGE2	Salary earned if had not attended NPSAS during NPSAS year	Textbox/unit	5,160	36.9
N12PRVAMT	Total borrowed in private loans in NPSAS year	Textbox	5,670	34.7

NOTE: The timing analysis included only cases that completed the interview in one session; partial interviews and outliers were excluded. For individual form time calculations, forms in the locating section were excluded. Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

The interview used coders to standardize the collection and coding of each respondent's last high school, major or field of study, prior and intended occupations, and postsecondary institutions attended during the NPSAS year. The respondent or telephone interviewer entered text strings in each coder, and a keyword search conducted on an underlying database returned a list of possible matches for selection. Among the coders shown in table 31, average times to complete coders ranged from approximately 98 seconds for the coder collecting expected occupation after degree

completion (N12EXOCC) to approximately 47 seconds for the coder for original declared major (N12OMJ1A).

Table 31. Average coder form interview times, in seconds, by form: 2012

Form name	Form description	Number	Mean
N12EXOCC	Expected occupation after degree completion	19,400	97.8
N12POCC	Occupation held before NPSAS year	4,650	84.7
N12MAJ1	First (or intended) major at NPSAS	53,520	77.1
N12HSCDR	High school attended	8,180	58.6
N12SCH01	Other institution attended during NPSAS year	5,830	56.5
N12MAJ2	Second major at NPSAS	1,620	56.2
N12OMJ1A	Original declared major at NPSAS	2,070	46.5

NOTE: The timing analysis included only cases that completed the interview in one session; partial interviews and outliers were excluded. For individual form time calculations, forms in the locating section were excluded. Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

4.4.4 Telephone Interviewer Hours

Throughout NPSAS:12 data collection, telephone interviewers logged about 54,055 hours, with 14,820 telephone interviews completed. Telephone interviewer hours were spent on case management activities, including locating and contacting sample members, prompting sample members to complete interviews, reviewing case events, scheduling appointments for callbacks, recording events in the case management system, and responding to incoming calls to the help desk. During NPSAS:12, telephone interviewers responded to 11,260 inbound calls and 410 voicemail messages for the help desk.

4.4.5 Number of Calls to Sample Members

On average, interviewers made eight calls per sample member during the interview period, excluding the early response phase during which no outbound calls were made. Average call counts for completed cases varied by mode of administration. Table 32 shows the average number of telephone calls by institution characteristics and student type.

Table 32. **Average number of calls to sample members, by institution characteristics and student type: 2012**

Institution characteristics and student type	Eligible cases	Number of calls	Average number of calls
Total	123,600	1,024,610	8.3
Institution level			
Less-than-2-year	5,910	64,470	10.9
2-year	45,680	444,070	9.7
4-year non-doctorate-granting	36,370	297,490	8.2
4-year doctorate-granting	35,650	218,580	6.1
Institution control			
Public	64,080	531,240	8.3
Private nonprofit	19,240	111,850	5.8
Private for-profit	40,280	381,510	9.5
Institution type			
Public			
Less-than-2-year	730	7,310	10.0
2-year	35,140	336,910	9.6
4-year non-doctorate-granting	7,930	59,090	7.5
4-year doctorate-granting	20,280	127,930	6.3
Private nonprofit			
Less-than-4-year	1,010	10,860	10.7
4-year non-doctorate-granting	8,300	51,560	6.2
4-year doctorate-granting	9,920	49,430	5.0
Private for-profit			
Less-than-2-year	4,900	53,990	11.0
2-year	9,800	99,470	10.2
4-year	25,580	228,060	8.9
Student type			
Total undergraduate	105,930	929,570	8.8
Potential FTB	50,700	476,310	9.4
Other undergraduate	55,230	453,260	8.2
Graduate/first-professional	17,670	95,040	5.4

NOTE: Eligible students met the criteria for qualification as a student interview respondent, which required completing at least a partial interview. Excludes 4,520 cases determined to be ineligible for the study, using data obtained from one or more sources. FTB = first-time beginner. Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

Respondents who completed an interview by telephone required approximately the same number of calls (eight) as cases who completed the interview by web with telephone prompting. Web interview respondents who completed the interview during the early response phase did not receive any calls. Table 33 shows the call counts by response status and mode of administration.

Table 33. Average number of calls to sample members, by response status and mode of administration: 2012

Response status and mode of administration	Eligible cases	Number of calls	Average number of calls
Total	123,600	1,024,610	8.3
Response status			
Full interview	72,320	184,510	2.6
Abbreviated interview	10,970	170,250	15.5
Partial interview	1,710	32,790	19.2
Nonrespondent or exclusion	38,600	637,060	16.5
Mode of administration[1]			
Web interviews	68,480	243,220	3.6
Web, with telephone contact	31,710	243,220	7.7
Telephone	14,820	111,540	7.5

[1] Count for mode of administration excludes the 1,710 partial interviews because mode is not determined until the full interview is completed.
NOTE: Excludes 4,520 cases determined to be ineligible for the study, using data obtained from one or more sources. Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

4.4.6 Refusal Conversion

NPSAS staff integrated refusal conversion techniques into telephone interviewer training and reinforced them throughout data collection in Quality Circle meetings. They encouraged interviewers to share their experiences avoiding sample member refusals, and seek guidance from the group with particularly difficult cases. Project staff put sample members who refused to complete the interview in a separate queue that was worked by a subset of interviewers who had received specialized refusal conversion training. Overall, 13 percent of eligible cases ever refused; of those, about 24 percent of cases subsequently completed the interview (table 34).

Table 34.   Refusal and refusal conversion rates, by institution characteristics and student type: 2012

Institution characteristics and student type	Eligible sample	Ever refused interview		Interviewed, given refusal		
		Number	Percent of total	Number	Percent of refused	Percent of total
Total	123,600	15,930	12.9	3,830	24.1	3.1
Institution level						
Less-than-2-year	5,910	920	15.6	200	21.2	3.3
2-year	45,680	6,640	14.5	1,490	22.5	3.3
4-year non-doctorate-granting	36,370	4,480	12.3	1,090	24.3	3.0
4-year doctorate-granting	35,650	3,880	10.9	1,050	27.1	3.0
Institution control						
Public	64,080	8,580	13.4	2,030	23.6	3.2
Private nonprofit	19,240	2,070	10.7	600	28.8	3.1
Private for-profit	40,280	5,290	13.1	1,210	22.9	3.0
Institution type						
Public						
Less-than-2-year	730	120	16.2	30	25.4	4.1
2-year	35,140	5,170	14.7	1,150	22.1	3.3
4-year non-doctorate-granting	7,930	1,010	12.8	230	22.9	2.9
4-year doctorate-granting	20,280	2,270	11.2	620	27.2	3.0
Private nonprofit						
Less-than-4-year	1,010	120	12.2	30	22.6	2.8
4-year non-doctorate-granting	8,300	940	11.3	290	31.3	3.5
4-year doctorate-granting	9,920	1,000	10.1	270	27.2	2.8
Private for-profit						
Less-than-2-year	4,900	770	15.8	160	21.1	3.3
2-year	9,800	1,380	14.0	320	23.5	3.3
4-year	25,580	3,140	12.3	730	23.1	2.8
Student type						
Total undergraduate	105,930	14,220	13.4	3,340	23.5	3.1
Potential FTB	50,700	7,680	15.1	1,550	20.2	3.1
Other undergraduate	55,230	6,540	11.8	1,780	27.2	3.2
Graduate/first-professional	17,670	1,710	9.6	500	29.1	2.8

NOTE: Eligible students met the criteria for qualification as a student interview respondent, which required completing at least a partial interview. Excludes 4,520 cases determined to be ineligible for the study, using data obtained from one or more sources. FTB = first-time beginner. Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

4.4.7 Potential FTB Identification

In past NPSAS studies, institutions have not always been able to identify FTB students accurately. Specifically, some institutions had difficulty differentiating students who were simply new to the institution from "true" FTBs, that is, students enrolling in postsecondary education for the first time after completing high school. As described in section 2.3, while presampling matching helped to identify true FTBs, interview staff determined in the interview that some students listed and sampled as FTBs were not FTBs (false positives). Likewise, the interview identified as true FTBs some students originally listed and sampled as "not FTBs" (false negatives).

As shown in table 35, of the 36,620 interview respondents sampled as potential FTBs, NPSAS staff confirmed that 28,550 were FTBs, for an unweighted false positive rate of 22 percent. Conversely, of the 48,380 interview respondents who staff sampled as other undergraduate or graduate students, about 1,590 were FTBs, for a false negative rate of 4 percent unweighted. With the help of the presampling matching, NPSAS reduced the observed false positives from the rate of over 50 percent observed in NPSAS:04.

Table 35. First-time beginner status determination, by student type: 2012

| | | Confirmed FTB eligibility | |
Student type	Students interviewed	Number	Unweighted percent
Total sample	85,000	30,140	35.5
Total undergraduate	71,000	30,140	42.4
Potential FTB	36,620	28,550	78.0
FTB in certificate program	10,900	7,670	70.3
Other FTB	25,720	20,880	81.2
Other undergraduate	34,380	1,580	4.6
Graduate	14,000	10	#

\# Rounds to zero.
NOTE: *Students interviewed* includes all eligible sample members who completed the interview. FTB = first-time beginner. Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

4.5 Study Members

As in NPSAS:04 and NPSAS:08, NPSAS:12 staff identified key variables across the various NPSAS:12 data sources—student records; student interviews; and administrative federal and private databases such as CPS, NSLDS, NSC, ACT files, and SAT files—to define a minimum set of requirements necessary to support the analytic objectives of the study. Sample members for whom those key variables were available were classified as *study members,* and these study members are the NPSAS:12 unit of analysis. Specifically, a study member was any sample member NPSAS staff determined to be study eligible, according to the criteria delineated in chapter 2, and who had, at a minimum, valid data from any source for the following:

- student type (undergraduate or graduate);

- date of birth or age;

- gender; and

- at least 8 of the following 15 variables:

  - dependency status;

  - marital status;

  - any dependents;

  - income;

  - expected family contribution;

– degree program;

– class level;

– FTB status;

– months enrolled;

– tuition;

– received federal aid;

– received nonfederal aid;

– student budget;

– race; and

– parent education.

The final sample numbered 128,120 students (table 36). Approximately 96 percent of the final sample (N = 123,600) was eligible for NPSAS. On completion of data collection, NPSAS staff determined 91 percent of the eligible sample had sufficient data to meet the definition of study member. The unweighted student response rates (among eligible students) varied by type of institution, ranging from 82 percent for students from public, less-than-2-year institutions to 95 percent for students from private, for-profit, less-than-2-year institutions. NPSAS statisticians calculated weighted response rates based on the institution weights and student probabilities of selection. The weighted rate of study membership was 91 percent across all institution types.

Table 36. Number of sampled and eligible students and rates of study membership, by institution characteristic: 2012

Institution characteristic	Sampled students	Eligible students	Study members[1] Unweighted Percent	Study members[1] Weighted Percent[2]
All institutions	128,120	123,600	89.9	91.0
Institution level				
Less-than-2-year	6,380	5,910	93.0	84.7
2-year	48,040	45,680	86.5	86.6
4-year non-doctorate-granting	37,530	36,370	88.6	93.2
4-year doctorate-granting	36,170	35,650	94.9	94.3
Institution control				
Public	66,500	64,080	89.5	90.0
Private nonprofit	19,680	19,240	92.9	94.7
Private for-profit	41,940	40,280	88.9	91.4
Institution type				
Public				
Less-than-2-year	790	730	81.5	88.3
2-year	37,000	35,140	86.1	86.3
4-year non-doctorate-granting	8,180	7,930	91.8	91.9
4-year doctorate-granting	20,530	20,280	94.8	94.3
Private nonprofit				
2-year or less	1,090	1,010	91.9	94.7
4-year non-doctorate-granting	8,520	8,300	92.4	95.9
4-year doctorate-granting	10,070	9,920	93.5	93.8
Private for-profit				
Less-than-2-year	5,270	4,900	94.8	84.1
2-year	10,280	9,800	87.5	90.0
4-year	26,390	25,580	88.3	93.7

[1] A study member is defined as an eligible sample member for whom key data were obtained from one or more sources.
[2] The weight described in this column is a base weight.
NOTE: Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

Most sample members exceeded the study member classification criteria. Overall, data completeness was high (table 37). Approximately 69 percent of the study members had both student interview and student record data from their institution. About 52 percent of study members had data from all three of the primary data sources: student interview, student record data, and CPS. Nearly all of the study members had student record data from their NPSAS institution (as shown in the first, second, third, and fifth rows of table 37). Additionally, almost three quarters of members had a federal aid application in the CPS database for the 2011–12 academic year (as shown in the first, third, and fourth rows of table 37).

Table 37.   Data completeness for NPSAS:12 study members, by data source: 2012

Sources of data	Study members	
	Number	Percent
Total	111,060	100.0
Interview, student record, and CPS	57,160	51.5
Interview and student record	19,300	17.4
Student record and CPS	22,460	20.2
Interview and CPS	6,860	6.2
Student record data only	3,730	3.4
Interview data only	1,540	1.4

NOTE: CPS = Central Processing System. Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

4.6   Evaluation of Student Interview

The NPSAS:12 student interview was evaluated both during and at the conclusion of data collection. Evaluation activities included recoding and upcoding of data collected in instrument coders, and analysis of help text access rates, item nonresponse, and conversion text success rates.

4.6.1 Instrument Coders

The NPSAS student interview used assisted coding systems, or "coders," to provide standardized codes for text string responses. NPSAS:12 used coders for postsecondary institutions attended in the 2011–12 academic year, last high school attended, majors or fields of study, and prior and anticipated occupations. For each, respondents entered text strings then matched their entry with options returned from a keyword search linked to an underlying database of standardized terms. For a detailed description of each coder and its underlying database, see section 4.1.1.

Recoding. Project staff randomly selected 10 percent of the major and occupation codes chosen in the student interview for *recoding*, a process in which expert coding staff reviewed the codes chosen in the interview and determined whether a different selection more accurately described the text string provided by the respondent. For both the major and occupation code reviews, expert coding staff agreed with the response chosen in the interview 97 percent of the time, recoding to a new value about 3 percent of the time.

Recode rates on both the major and occupation coders were significantly different between modes of interview administration. Project staff recoded major/field of study selections chosen by web respondents about 4 percent of the time compared to those chosen by telephone interviewers which project staff recoded 1 percent of the time (χ^2 (1, $N = 5,830$) $= 16.76$, $p < .001$). Project staff recoded occupation codes selected by web respondents 4 percent of the time, compared to 2 percent for telephone interviewer selections (χ^2 (1, $N = 2,129$) $= 4.08$, $p < .05$). Table 38 shows the rate of recoding for the major and occupation coders in the interview, by mode of interview administration.

Table 38.   Summary of recoding results, by coding system and administration mode: 2012

	Percent of recoded values			
	Recoded same as original		Recoded to a different value	
Coding system	Web	Telephone	Web	Telephone
Major	96.3	98.7	3.7	1.3
Occupation	96.0	97.8	4.0	2.2

SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

Upcoding. In a process known as *upcoding*, expert coding staff attempted to identify an appropriate standardized response option for any text strings for which a code had not been selected in the interview. Text strings from the major and occupation coders required the most upcoding, while text strings from the high school coder required the least amount of upcoding (table 39). NPSAS staff expected differences in upcoding rates between web and telephone interviews for the major and occupation coders given that telephone interviewers received special training on coders.

Table 39.   Percentage of text strings upcoded, by coding system and mode of administration: 2012

	Percent of text strings upcoded		
		Mode of administration	
Coding system	Total	Web	Telephone
IPEDS institutions	10.6	10.7	10.2
High school	3.5	3.4	3.7
Major	16.9	20.2	2.8
Occupation	12.7	15.7	2.8

NOTE: IPEDS = Integrated Postsecondary Education Data System.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

4.6.2   Help Text

During the NPSAS:12 interview, both web respondents and telephone interviewers were able to click a help button provided on each NPSAS:12 interview screen to obtain question-specific help text. In addition, some questions included term-specific help text hyperlinked from the question itself. Whether accessed through the help button or though the hyperlink, the question-specific help provided definitions of key terms and phrases used in question wording and response options, and provided any other explanations thought to help clarify and standardize meaning for respondents.

The number of times that respondents or telephone interviewers clicked the help button and help text hyperlink for the first time on each screen, relative to the number of respondents administered the question, determined the rate of help text access for that screen. This analysis excludes partial interview respondents and abbreviated interview completions. NPSAS staff analyzed the rate of help text access overall and by mode of interview administration to identify questions that may have been problematic for users. For forms administered to at least 10 respondents, the mean rate of help text hits per screen was approximately 1 percent. The mean rate of help text hits per screen on forms administered to at least 10 respondents for telephone interviews was approximately 2 percent compared with a mean rate of less than 1 percent for web interviews. Project staff encouraged telephone interviewers to access help text to provide clarification and

deliver standardized definitions, which may have contributed to the higher help text access during telephone interviews.

Eleven interview questions administered to at least 10 respondents had an overall help text access rate of 5 percent or greater. *Amount of graduate traineeship in the NPSAS year* (N12GRTRNAMT) had the overall highest observed rate at approximately 14 percent, and telephone interviewers accessed help text significantly more than web interview respondents (χ^2 (1, $N = 227$) = 56.8688, $p < 0.05$). The interview question with the second highest observed rate asked about *Credit card balance carried over each month* (N12CARRYBAL); however, there was no significant mode difference.

The remaining nine interview items with five percent or greater overall rates of help text access showed significantly higher rates of help text access during telephone interviews compared to web interviews, including: *Amount of graduate research assistantship for NPSAS year* (N12OTHAMT) (χ^2 (1, $N = 358$) = 85.0156, $p < 0.05$); *Expected future wages* (N12FUTRWAGES) (χ^2 (1, $N = 25,129$) = 223.2629, $p < 0.05$); *Completing high school while attending NPSAS* (N12HSCMP) (χ^2 (1, $N = 582$) = 4.8905, $p < 0.05$); *Amount of graduate teaching assistantship for NPSAS year* (N12GRTAAMT) (χ^2 (1, $N = 1,299$) = 96.2733, $p < 0.05$); *Took AP, IB, or college credit courses during high school* (N12APIBCOLL) (χ^2 (1, $N = 46,946$) = 3391.4135, $p < 0.05$); *Had work-study job in NPSAS year* (N12SCHJOB) χ^{2} (1, $N = 53,728$) = 30.1516, $p < 0.05$); *Amount of graduate fellowship in NPSAS year* (N12GRFELLAMT) (χ^2 (1, $N = 1,077$) = 43.4474, $p < 0.05$); *Amount of graduate research assistantship for NPSAS year* (N12GRRAAMT) (χ^2 (1, $N = 1,480$) = 16.2175, $p < 0.05$); *Other grant, and scholarship award amount in NSPAS year* (N12OTGRNTAMT) (χ^2 (1, $N = 7,332$) = 582.2065, $p < 0.05$).

Table 40 shows the interview questions administered to at least 10 respondents and for which help text was accessed at a rate of at least five percent overall.

Table 40. Interview questions with highest rates of help text access, by mode of administration: 2012

| | | Overall | | Mode of administration | | | |
| | | | | Web | | Telephone | |
Question	Question description	Number adminis-tered to	Percent of help text access	Number adminis-tered to	Percent of help text access	Number adminis-tered to	Percent of help text access
N12GRTRNAMT	Amount of graduate traineeship in NPSAS year	230	13.7	210	8.6	18	72.2
N12CARRYBAL	Credit card balance carried over each month	32,940	9.7	28,430	9.8	4,500	9.5
N12GROTHAMT	Amount of other graduate assistantship for NPSAS year	360	8.7	340	5.3	20	65.0
N12FUTRWAGES	Expected future wages	25,130	7.8	20,060	6.5	5,070	12.8
N12HSCMP	Completing high school while attending NPSAS	580	7.4	400	5.8	180	10.9
N12GRTAAMT	Amount of graduate teaching assistantship for NPSAS year	1,300	6.6	1,240	5.2	60	38.0
N12APIBCOLL	Took AP IB or college credit courses during high school	46,950	5.9	38,360	2.9	8,590	19.3
N12SCHJOB	Had work-study job in NPSAS year	53,730	5.3	43,823	5.0	9,900	6.4
N12GRFELLAMT	Amount of graduate fellowship in NPSAS year	1,080	5.2	1,040	4.3	40	28.2
N12GRRAAMT	Amount of graduate research assistantship for NPSAS year	1,480	5.1	1,430	4.6	50	17.0
N12OTGRNTAMT	Other grant, and scholarship award amount in NPSAS year	7,330	5.1	6,516	2.9	820	22.5

NOTE: Table is based on the rates of help text access for interviewer screens administered to a minimum of 1,000 respondents and for which help text was accessed at an overall rate of at least 5 percent. Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

4.6.3 Item-Level Nonresponse

NPSAS staff used rate of nonresponse to individual items to identify potentially troublesome interview items and to understand better the experiences of sample members completing the interview. Staff calculated total nonresponse rates for items with missing data (including *don't know* responses) that were administered to at least 10 respondents. Overall, the item-level nonresponse analysis showed that of 364 interview items, 11 items had more than 10 percent missing data.[12]

The interview items with the overall highest observed nonresponse rates were *NPSAS Enrollment: don't know* (N12NENDK), *estimate of age when arrived in the U.S.* (N12IMGEST), and *categorical age ranges* (N12LT30). These three items appeared only to respondents who earlier refused to provide a response to an original question and is likely the reason for high nonresponse rates on these items. Of respondents who received the item *NPSAS Enrollment: don't know* (N12NENDK), meaning they did not provide any months of enrollment, approximately 48 percent also did not affirmatively answer "don't know" for their months of enrollment. Similarly, of respondents who received the item *estimate of age when arrived in the U.S.* (N12IMGEST), meaning they did not indicate a value on the age when arrived in U.S. question, approximately 28 percent also did not provide an age range on the estimate form. Of respondents who received the question *categorical age ranges* (N12LT30), meaning that they first did not provide a month or year of birth when asked for date of birth, approximately 27 percent did not select an age range. The remaining eight items, administered

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[12] Partial and abbreviated interview completions were excluded from this analysis. For interview items with multiple iterations, this analysis evaluated the first administration of the item only.

to at least 10 respondents with more than 10 percent missing data, yielded item-level nonresponse rates between 10 and 15 percent.

Item-level nonresponse rates were also examined by mode of administration. There were significant differences in nonresponse rates between web and telephone modes for seven interview items. Notably, *NPSAS Enrollment: don't know* (N12NENDK) was the only item to show a higher nonresponse rate for telephone versus web mode. Approximately 68 percent of telephone respondents did not answer this item compared with 43 percent of web respondents (χ^2 1, $N = 213$) = 9.3989, $p < 0.05$). In contrast, the following six interview items showed significantly higher rates of nonresponse among web respondents than among telephone respondents: *taken any classes on the weekend during NPSAS year* (N12ALTWKND; χ^2 (1, $N = 29{,}587$) = 665.9086, $p < 0.001$); *estimated amount borrowed for entire undergraduate education* (N12ULNEST; χ^2 (1, $N = 1{,}538$) = 4.2131, $p < 0.05$); *teaching assistantship duties: leading discussion sections* (N12DISHRS; χ^2 (1, $N = 1{,}299$) = 7.7888, $p < 0.05$); *teaching assistantship duties: supervising lab sections*, (N12LABHRS; χ^2 (1, $N = 1{,}299$) = 6.2473, $p < 0.05$), and *teaching assistantship duties: answering student e-mail* (N12MSGHRS; χ^2 (1, $N = 1{,}299$) = 4.3687, $p < 0.05$).

Table 41 summarizes the item-level nonresponse for items administered to at least 10 respondents with a rate of more than 10 percent missing data.

Table 41. Item nonresponse for items with more than 10 percent of data missing, by mode of administration: 2012

| | | Total | | Mode of administration | | | |
| | | | | Web | | Telephone | |
Item	Item label	Number administered to	Percent missing	Number administered to	Percent missing	Number administered to	Percent missing
N12DRPCMP	Completed course during NPSAS year	480	12.4	330	12.9	150	11.3
N12NENDK	NPSAS Enrollment: don't know	210	48.4	170	42.8	50	68.1
N12LT30	Categorical age ranges	10	27.3	10	25.0	#	33.3
N12ALTWKND	Taken any classes on the weekend during NPSAS year	29,590	10.4	24,370	12.5	5,220	0.5
N12PRVEST	Estimated private loan amount in NPSAS year	260	13.4	180	15.8	80	7.8
N12ULNEST	Estimated amount borrowed for entire undergraduate education	1,540	12.9	1,270	13.8	270	9.2
N12GRLNYEST	Estimated amount borrowed in graduate loans for NPSAS year	100	11.2	90	10.0	10	25
N12DISHRS	Teaching assistantship duties: leading discussion sections	1,300	14.2	1,240	14.8	60	1.7
N12LABHRS	Teaching assistantship duties: supervising lab sections	1,300	14.9	1,240	15.4	60	3.4
N12MSGHRS	Teaching assistantship duties: answering student e-mail	1,300	12.2	1,240	12.7	60	3.4
N12IMGEST	Estimate of age when arrived in the U.S.	740	27.7	690	27.5	50	30.4

Rounds to zero.
NOTE: This table only includes those items that were administered to at least 10 respondents. Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

4.6.4 Conversion Text

To try to minimize item-level nonresponse in the NPSAS:12 interview, the survey used conversion text to encourage a reluctant respondent to provide an answer. Particularly when encountered in the web interview, conversion text essentially mimicked the refusal conversion strategy that would have been attempted by an interviewer. In the NPSAS:12 interview, a subset of

27 items included conversion text. If the respondent left the items blank, the survey displayed the items again, with additional text emphasizing the importance of the item and sometimes with the addition of a "don't know" option. The "don't know" option was available to respondents only on conversion text items.

To determine a conversion rate for items with conversion text, staff divided the total number of responses on each of the critical items after the survey displayed conversion text by the total number of cases where the conversion text was triggered. Table 42 displays the rates of conversion, overall and by mode, for the 26 items that triggered conversion text. Overall, responses triggered conversion text in the student interview 17,970 times throughout data collection. Seventy-three percent, or 13,130 of these cases, provided a response after the conversion text was displayed. Web interviews accounted for 79 percent of the total cases where conversion text was triggered, and 86 percent of the total converted cases. The remaining 3,770 cases occurred in telephone interviews, with 48 percent converted. The 80 percent conversion rate for web interviews was significantly higher than the 48 percent conversion rate for telephone interviews (χ^2 (1, N = 17,973) = 1,477.84, $p < .001$).

Conversion rates for individual items ranged from 100 percent to 42 percent. Of the 27 critical items in the student interview, only seven had conversion rates lower than 70 percent, most of which requested more sensitive information than other critical items, such as *parents' income in 2011* (N12PARNC), r*ace* (N12RAC1), e*arnings in calendar year 2011* (N12INCOM), s*pouse's earnings in calendar year 2011* (N12INCSP), and e*arnings at job held prior to NPSAS year* (N12PRVWAGE).

Four interview items triggered conversion text more than 1,000 times, all of which also showed significant differences in rates of conversion by mode of administration. For *expected salary range upon completion of education* (N12FUTRWAGES), 83 percent of web cases were converted compared with 45 percent of telephone cases *(*χ^2 (1, N = 2,780) = 325.81, $p < .001$). For *parents' income in 2011* (N12PARNC), 72 percent of web cases were converted compared with 64 percent of telephone cases (χ^2 (1, N = 1,910) = 14.52, $p < .001$). For *race* (N12RAC1), 76 percent of web cases were converted compared with 24 percent of telephone cases (χ^2 (1, N = 4,530) = 890.13, $p < .001$). For *earnings in calendar year 2011* (N12INCOM), 66 percent of web cases were converted compared with 55 percent of telephone cases *(*χ^2 (1, N = 1,280) = 15.48, $p < .001$). One item viewed only by abbreviated interview respondents, N12EXPWGABB, which was a simplified version of the future wages question, did not trigger conversion text at all.

Other items with significant differences in conversion rates by mode of administration included: *took out student loans in NPSAS year* (N12RCVLN; χ^2 (1, N = 510) = 12.50, $p < .001$); *hours worked per week during school year* (N12SBHRS; χ^2 (1, N = 260) = 39.64, $p < .001$); r*espondent of Hispanic or Latino origin* (N12HISP; χ^2 (1, N = 380) = 13.02, $p < .001$);s*pouse's earnings in calendar year 2011* (N12INCSP; χ^2 (1, N = 470) = 19.19, $p < .001$); *earnings at job held prior to NPSAS year* (N12PRVWAGE; χ^2 (1, N = 160) = 24.19, $p < .001$); *NPSAS enrollment: July 2011 through June 2012* (N12NENRL; χ^2 (1, N = 900) = 55.17, $p < .001$); a*mount of nonloan benefits in NPSAS year* (N12OTGRNTAMT; χ^2 (1, N = 590) = 6.92, $p < .01$); and o*ther school 1 enrollment: July 2011 through June 2012* (N12ENRL01; χ^2 (1, N = 500) = 9.36, $p < .01$).

Table 42.   Conversion rates for critical items, by mode of administration: 2012

		Total				
Item	Item description	Number of cases	Number converted	Total percent converted	Percent converted to a valid response	Percent converted to a "don't know"
N12ELIG	Attended NPSAS during NPSAS year	270	270	100.0	100.0	†
N12HSCMP	Currently completing high school requirements	10	10	100.0	100.0	†
N12PRDG	Earned prior degree/certificates	340	320	96.1	92.0	4.2
N12NFST	NPSAS was first institution attended after high school	240	240	97.1	97.1	†
N12CDTCHK	First attended postsecondary institution on/after July 1, 2011	10	10	83.3	83.3	†
N12NENRL	NPSAS enrollment months: July 2011 through June 2012	900	770	86.3	72.1	14.2
N12ENRL01	Other institution 1 enrollment months: July 2011 through June 2012	500	210	41.5	41.5	†
N12CMPDGN	Completed degree requirements	170	160	93.0	93.0	†
N12EXNCONF	Likelihood of completing degree by expected date	430	340	78.1	78.1	†
N12EXNCONF2	Likelihood of completing degree at all	730	670	91.1	91.1	†
N12GENDR	Gender	230	210	88.9	88.9	†
N12APIBCOLL	Took AP, IB, or college level courses while in high school	260	240	92.6	92.6	†
N12REMEVER	Taken any remedial courses since high school	220	210	91.9	91.9	†
N12FUTRWAGES	Expected salary range upon completion of education	2,780	2,100	75.7	75.7	†
N12OTGRNTAMT	Amount of nonloan benefits in NPSAS year	590	300	50.8	50.8	†
N12RCVLN	Took out student loans in NPSAS year	510	460	91.1	91.1	†
N12NUMJOB	Number of nonschool jobs during NPSAS year	140	130	94.2	94.2	†
N12SBHRS	Hours worked per week during academic year	260	220	83.5	83.5	†
N12PRVWAGE	Earnings at job held prior to NPSAS year	160	100	58.5	58.5	†
N12INCOM	Earnings in calendar year 2011	1,280	780	61.0	42.1	18.9
N12INCSP	Spouse's earnings in calendar year 2011	470	280	59.5	36.0	23.6
N12DEPS	Had dependent children	450	400	89.3	89.3	†
N12PARNC	Parents' income in 2011	1,910	1,310	68.7	32.9	35.7
N12DPNUM	Number of other dependents in college	220	190	89.0	89.0	†
N12HISP	Respondent of Hispanic or Latino origin	380	310	81.4	81.4	†
N12RAC1	Race	4,530	2,920	64.4	64.4	†
		Web				
N12ELIG	Attended NPSAS during NPSAS year	240	240	100.0	100.0	†
N12HSCMP	Currently completing high school requirements	10	10	100.0	100.0	†
N12PRDG	Earned prior degree/certificates	310	300	96.5	92.7	3.8
N12NFST	NPSAS was first institution attended after high school	220	210	97.3	97.3	†
N12CDTCHK	First attended postsecondary institution on/after July 1, 2011	#	#	100.0	100.0	†
N12NENRL	NPSAS enrollment months: July 2011 through June 2012	790	700	89.4	75.2	14.2
N12ENRL01	Other institution 1 enrollment months: July 2011 through June 2012	430	190	44.2	44.2	†
N12CMPDGN	Completed degree requirements	160	140	92.9	92.9	†
N12EXNCONF	Likelihood of completing degree by expected date	410	320	77.6	77.6	†
N12EXNCONF2	Likelihood of completing degree at all	690	630	91.1	91.1	†
N12GENDR	Gender	220	190	88.4	88.4	†

See notes at end of table.

Table 42.   Conversion rates for critical items, by mode of administration: 2012—Continued

Item	Item description	Number of cases	Number converted	Total percent converted	Percent converted to a valid response	Percent converted to a "don't know"
				Web—Continued		
N12APIBCOLL	Took AP, IB, or college level courses while in high school	250	230	92.4	92.4	†
N12REMEVER	Taken any remedial courses since high school	210	200	92.4	92.4	†
N12FUTRWAGES	Expected salary range upon completion of education	2,270	1,880	82.6	82.6	†
N12OTGRNTAMT	Amount of nonloan benefits in NPSAS year	430	230	54.0	54.0	†
N12RCVLN	Took out student loans in NPSAS year	470	440	92.4	92.4	†
N12NUMJOB	Number of nonschool jobs during NPSAS year	130	120	93.8	93.8	†
N12SBHRS	Hours worked per week during academic year	210	190	90.2	90.2	†
N12PRVWAGE	Earnings at job held prior to NPSAS year	110	80	71.4	71.4	†
N12INCOM	Earnings in calendar year 2011	740	480	65.6	47.8	17.8
N12INCSP	Spouse's earnings in calendar year 2011	250	170	68.8	51.6	17.2
N12DEPS	Had dependent children	420	370	89.9	89.9	†
N12PARNC	Parents' income in 2011	1,150	830	72.0	38.7	33.3
N12DPNUM	Number of other dependents in college	190	170	89.1	89.1	†
N12HISP	Respondent of Hispanic or Latino origin	340	280	83.8	83.8	†
N12RAC1	Race	3,560	2,680	75.5	75.5	†
				Telephone		
N12ELIG	Attended NPSAS during NPSAS year	30	30	100.0	100.0	†
N12HSCMP	Currently completing high school requirements	#	#	100.0	100.0	†
N12PRDG	Earned prior degree/certificates	20	20	91.3	82.6	8.7
N12NFST	NPSAS was first institution attended after high school	20	20	95.7	95.7	†
N12CDTCHK	First attended postsecondary institution on/after July 1, 2011	#	#	66.7	66.7	†
N12NENRL	NPSAS enrollment months: July 2011 through June 2012	110	70	63.3	49.5	13.8
N12ENRL01	Other institution 1 enrollment months: July 2011 through June 2012	70	20	24.6	24.6	†
N12CMPDGN	Completed degree requirements	20	20	93.8	93.8	†
N12EXNCONF	Likelihood of completing degree by expected date	20	20	86.4	86.4	†
N12EXNCONF2	Likelihood of completing degree at all	40	40	92.7	92.7	†
N12GENDR	Gender	20	20	94.4	94.4	†
N12APIBCOLL	Took AP, IB, or college level courses while in high school	10	10	100.0	100.0	†
N12REMEVER	Taken any remedial courses since high school	10	10	83.3	83.3	†
N12FUTRWAGES	Expected salary range upon completion of education	510	230	44.6	44.6	†
N12OTGRNTAMT	Amount of nonloan benefits in NPSAS year	160	70	41.9	41.9	†
N12RCVLN	Took out student loans in NPSAS year	40	30	75.0	75.0	†
N12NUMJOB	Number of nonschool jobs during NPSAS year	10	10	100.0	100.0	†
N12SBHRS	Hours worked per week during academic year	50	20	52.2	52.2	†
N12PRVWAGE	Earnings at job held prior to NPSAS year	50	20	30.8	30.8	†
N12INCOM	Earnings in calendar year 2011	550	300	54.7	34.5	20.3
N12INCSP	Spouse's earnings in calendar year 2011	220	110	48.8	18.0	30.9
N12DEPS	Had dependent children	30	30	80.6	80.6	†
N12PARNC	Parents' income in 2011	760	490	63.7	24.2	39.4

See notes at end of table.

Table 42.   Conversion rates for critical items, by mode of administration: 2012—Continued

Item	Item description	Telephone—Continued				
		Number of cases	Number converted	Total percent converted	Percent converted to a valid response	Percent converted to a "don't know"
N12DPNUM	Number of other dependents in college	30	20	88.0	88.0	†
N12HISP	Respondent of Hispanic or Latino origin	40	20	59.5	59.5	†
N12RAC1	Race	970	230	23.8	23.8	†

† Not applicable.
# Rounds to zero.
NOTE: Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

4.7   Student Interview Conclusions

The NPSAS:12 student interview was based in part on core data elements used in previous NPSAS student interviews, and in part on base-year items for BPS informed by human capital theory. Staff conducted NPSAS:12 interviews from February 7, 2012, to September 28, 2012. Of the 128,120 sample members in the NPSAS:12 sample, NPSAS staff successfully located 114,240 (89 percent). Overall, 12,390 cases, or 10 percent of the eligible sample, required intensive tracing, and tracing staff located 71 percent of these cases. Successful locating methods included batch searches, such as CPS and PhoneAppend, and address update information provided by both sample members and their parents. Locating methods attempted during NPSAS:12 data collection also included text message reminders and frequent e-mail contacts.

Of the 123,600 eligible sample members in NPSAS:12 sample, 85,000 (69 percent) completed an interview. In the early response phase 47,070 (55 percent) completed, and the remaining 37,930 (45 percent) completed in the production phase. Respondents completed 68,480 (82 percent) interviews on the Web, and they completed 14,820 (18 percent) interviews by telephone. All sample members who completed the interview received $30.

The NPSAS:12 interview averaged 28.1 minutes to complete, with web interviews averaging 26.9 minutes and telephone interviews taking significantly longer at 33.6 minutes ($t(14,974) = 60.54$, $p < .0001$). The time required to complete the interview varied by student's status as an FTB, *other undergraduate*, or graduate student. FTBs, who received additional questions, required an average of 36.3 minutes to complete the interview. The *other undergraduate* group took an average of 25.5 minutes to complete the interview, and graduate students took an average of 20.9 minutes to complete the interview.

An evaluation of the quality of the data provided by NPSAS:12 student interview showed that methodological features built into the instrument such as the design of assisted coding systems, as well as training and supervision of interviewing staff, aided in the successful administration of the interview. Overall, expert coding staff agreed with major and occupation codes chosen in the interview 97 percent of the time. The appearance of conversion text in the instrument appeared to improve question response. Seventy-three percent of the cases where conversion text was triggered in the interview were converted to a response after the conversion text was displayed. Help text on individual interview screens was accessed approximately 1 percent of the time. The item-level nonresponse analysis yielded just ten out of 364 interview items with more than 10 percent missing data.

Chapter 5.
Administrative Records Matching Overview and Outcomes

A portion of the student data for the NPSAS:12 came from administrative databases, including two U.S. Department of Education databases: CPS and NSLDS. Other data sources included the NSC, ACT, and the College Board. These additional data sources were useful in several ways. First, they provided information that could not be collected from institutions or students. Second, they enabled the project staff to obtain certain data items that were usually obtained from institution record abstraction or the student interview but were missing for individual sample members (e.g., demographics). Overlapping data sources sometimes served to check or confirm the accuracy of similar information from other sources.

5.1 Administrative Records Matching

CPS. To reduce institution and student burden, NPSAS staff obtained information related to student applications for federal financial aid from the CPS. Students entered financial status information about themselves and their family on a FAFSA form. CPS then analyzed the information and provided it to requesting institutions for the purpose of determining students' eligibility for federal financial aid.

The CPS matching process began after the student sample was selected for an institution but before data collection activities for the student interview and student records. One advantage to this process was that some data elements collected in the interview could be skipped if those data were already obtained from the FAFSA data. The match for NPSAS was against the CPS data for the 2011–12 financial aid year using a sample member's SSN concatenated with the first two letters of the last name as the CPS ID. Sample members for whom a Social Security number was not available were not submitted to the CPS for matching. NPSAS staff performed a second match to CPS near the end of data collection in order to utilize any newly obtained SSNs.

NSLDS. NPSAS: 12 obtained student-level data on the nature and amount of Pell Grants and federal student loans received from the NSLDS database. NPSAS staff performed an electronic data interchange with NSLDS twice during the data collection period in order to obtain preliminary data and then once more following data collection in order to submit the most up-to-date data possible for matching and receive the most current data. The contractor responsible for NSLDS performed matching at the request of ED, using names, SSNs and dates of birth. A successful match with the NSLDS database required that the student have a valid grant or loan record within the database. The accessed NSLDS Pell Grant and loan files included both information for the year of interest and a complete federal grant or loan history for each student. NPSAS staff developed a new secure automated process for obtaining NSLDS data during the NPSAS:12 field test, and used this process again for the full-scale study. NPSAS staff uploaded a request file in a specific format, which NSLDS processed automatically within one to two days, and then downloaded resulting loan and Pell Grant data upon request.

NSC. NPSAS staff obtained data on institutions attended, enrollment dates, and degree completions for the student sample from the NSC StudentTracker service. An individual student record would match with the NSC only if the student's institution was a participant in the NSC.

Staff requested StudentTracker once toward the end of data collection to use the most updated personally identifying data for the match. StudentTracker returned multiple records per student matched, including historical records, although the period of interest for NPSAS was only the 2011–12 academic year. Project staff established an account with NSC that permitted secure delivery and receipt of files over encrypted Secure File Transfer Protocol connections. Personally identifying data provided for the match included name, SSN, and date of birth.

ACT. To obtain admissions test data, NPSAS staff performed a file merge with ACT. Staff received student ACT scores and survey data from the most recent test record between the 2005–06 and 2010–11 academic years. NPSAS staff performed the data match after data collection in order to send the most updated personally identifying data (name, SSN, date of birth, and gender) to use as matching criteria. An NCES system that required a login and SSL technology provided security for the data transfer.

SAT Reasoning Test. To obtain SAT test scores and questionnaire data, NPSAS staff performed a file merge with the College Board. Recovered database records spanned high school graduation years 2009–11. If the file merge produced multiple test records in the database, it returned only the most recent record. As with ACT, staff performed this file merge toward the end of data collection using name, date of birth, SSN, and gender, and the file transfers were secured through an NCES system that required a login and used SSL technology.

5.2   Administrative Records Matching Outcomes

CPS. Table 43 summarizes the results of matching and downloading student data from the CPS overall and by institution and student characteristics. The overall matching rate for the 2011–12 academic year was about 77 percent. Match rates varied by type of institution, ranging from 63 percent for private nonprofit 4-year doctorate-granting institutions to about 92 percent at private for-profit 2-year institutions.

Table 43. Central Processing System matching results for 2011–12, by institution characteristics and student type: 2012

Institution characteristics and student type	Eligible students	Sent to CPS		Matched to CPS	
		Number	Percent	Number	Percent
All students	123,600	117,550	95.1	90,960	77.4
Institution level					
Less than 2-year	5,910	5,860	99.2	5,040	86.0
2-year	45,680	43,160	94.5	33,390	77.4
4-year non-doctorate-granting	36,370	35,090	96.5	29,610	84.4
4-year doctorate-granting	35,650	33,440	93.8	22,920	68.5
Institution control					
Public	64,080	59,920	93.5	42,290	70.6
Private nonprofit	19,240	17,810	92.6	12,500	70.2
Private for-profit	40,280	39,830	98.9	36,160	90.8
Institution type					
Public					
Less-than-2-year	730	710	97.3	470	66.2
2-year	35,140	32,750	93.2	23,810	72.7
4-year non-doctorate-granting	7,930	7,380	93.1	5,180	70.2
4-year doctorate-granting	20,280	19,080	94.1	12,830	67.2
Private nonprofit					
Less-than-4-year	1,010	910	80.1	790	86.8
4-year non-doctorate-granting	8,300	7,900	95.2	6,080	77.0
4-year doctorate-granting	9,920	9,000	90.7	5,640	62.7
Private for-profit					
Less-than-2-year	4,900	4,890	99.8	4,370	89.4
2-year	9,800	9,770	99.7	9,000	92.1
4-year	25,580	25,180	98.4	22,800	90.5
Student type					
Total undergraduate	105,930	101,220	95.6	82,460	81.5
Potential FTB	50,700	48,400	95.5	42,660	88.1
Other undergraduate	55,230	52,810	95.6	39,810	75.4
Graduate/first-professional	17,670	16,340	92.5	8,500	52.0

NOTE: CPS = Central Processing System. FTB = first-time beginner. Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

Approximately 82 percent of all undergraduate students matched to the 2011–12 CPS, including 88 percent of potential FTBs and 75 percent of other undergraduates, while only about 52 percent of graduate students matched to CPS. As part of the undergraduate aid packaging process, nearly all institutions require undergraduate aid applicants to file a FAFSA to determine their eligibility for federal Pell Grants, federal campus-based aid, and federal loans. Graduate students are not usually required to file a FAFSA unless they are specifically applying for federal loans, the only type of federal aid generally available to graduate students. Graduate students often apply directly through their institution or department for fellowships and assistantships, which are usually not need-based and do not require the completion of the federal financial aid forms on which CPS matching is based.

NSLDS. Only sample members who have received federal loans and/or Pell Grants can be successfully matched to NSLDS. NSLDS files are historical; thus, information about receipt of such loans and grants was available not only for the NPSAS study year, but also for prior years (where

applicable). Table 44 shows historical match rates for study members, which does not necessarily mean that the match was for the current NPSAS year.

Table 44. National Student Loan Data System matching results, by institution characteristics and student type: 2012

Institution characteristics and student type[1]	Study members	Matched to NSLDS loan[2]		Matched to NSLDS Pell[2]	
		Number	Percent	Number	Percent
All students	111,060	71,970	64.8	65,960	59.4
Institution level					
Less-than-2-year	5,490	4,560	83.1	4,580	83.4
2-year	39,510	20,310	51.4	26,570	67.2
4-year non-doctorate-granting	32,230	24,710	76.7	20,840	64.7
4-year doctorate-granting	33,830	22,390	66.2	13,980	41.3
Institution control					
Public	57,360	28,810	50.2	30,880	53.8
Private nonprofit	17,880	11,880	66.4	6,650	37.2
Private for-profit	35,820	31,280	87.3	28,440	79.4
Institution type					
Public					
Less-than-2-year	590	270	45.5	410	68.5
2-year	30,250	12,150	40.2	18,920	62.5
4-year non-doctorate-granting	7,280	4,210	57.8	3,740	51.4
4-year doctorate-granting	19,230	12,180	63.3	7,810	40.6
Private nonprofit					
Less-than-4-year	930	680	72.7	650	69.4
4-year non-doctorate-granting	7,670	5,550	72.4	3,430	44.7
4-year doctorate-granting	9,280	5,650	60.9	2,570	27.7
Private for-profit					
Less-than-2-year	4,650	4,110	88.4	3,980	85.6
2-year	8,580	7,670	89.4	7,190	83.8
4-year	22,600	19,510	86.3	17,270	76.4
Student type					
Total undergraduate	94,200	60,620	64.4	60,780	64.5
Potential FTB student	44,670	27,430	61.4	29,120	65.2
Other undergraduate	49,530	33,190	67.0	31,660	63.9
Graduate/first-professional	16,860	11,340	67.3	5,180	30.7

[1] Both institution and student classifications were verified to correct classification errors on the sampling frame. Institution characteristics were identified using the institution stratum at the time of sampling.
[2] Matching was completed on historical files that include awards made in 2011–12 and prior years.
NOTE: NSLDS = National Student Loan Data System. FTB = first-time beginner. Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

In total, NPSAS staff matched almost 72,000 study members (65 percent of all study members) to the NSLDS historical loan database. NSLDS match rates for institution types ranged from about 40 percent for public 2-year institutions to 89 percent for private for profit 2-year institutions; for institution control they ranged from 50 percent of public institutions to 87 percent of private, for-profit institutions; and for institution level they ranged from 51 percent for 2-year institutions to 83 percent for less-than-2-year institutions. Approximately 64 percent of undergraduate students matched to the loan database, while about 67 percent of the graduate students had a match.

NPSAS staff obtained NSLDS Pell Grant matches for 65,960 study members (59 percent of all study members). The Pell Grant match rate ranged from 28 percent for private nonprofit, 4-year doctorate-granting institutions to 86 percent for private for-profit less-than-2-year institutions. Approximately 65 percent of undergraduate students matched to the Pell Grant database, while about 31 percent of graduate students had a match.

NSC. NSC provides information on postsecondary enrollment, degree, and certificate records on behalf of participating postsecondary institutions (table 45). Match results are based on enrollment and degree records for the 2011–12 academic year. An individual student record was able to match to the NSC only if an institution the student attended was a participant in the NSC. NSC matches for study members included their NPSAS sampled institution and any other participating institutions they attended during the 2011–12 year.

Table 45. National Student Clearinghouse matching results, by institution characteristics and student type: 2012

Institution characteristics and student type[1]	Study members	Matched for the NPSAS institution		Matched for another institution		Matched to both		Matched to either	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent
All students	111,060	79,450	71.5	41,470	37.3	32,840	29.6	88,080	79.3
Institution level									
Less-than-2-year	5,490	1,440	26.2	1,680	30.6	500	9.2	2,620	47.6
2-year	39,510	27,360	69.2	11,950	30.2	8,720	22.1	30,580	77.4
4-year non-doctorate-granting	32,230	21,540	66.8	12,720	39.5	9,230	28.6	25,030	77.7
4-year doctorate-granting	33,830	29,110	86.1	15,130	44.7	14,390	42.5	29,850	88.2
Institution control									
Public	57,360	48,810	85.1	21,650	37.7	20,050	35.0	50,410	87.9
Private nonprofit	17,880	14,520	81.2	7,450	41.7	6,820	38.1	15,150	84.7
Private for-profit	35,820	16,120	45.0	12,370	34.5	5,980	16.7	22,520	62.9
Institution type									
Public									
Less-than-2-year	590	10	1.3	170	29.1	#	0.7	180	29.8
2-year	30,250	24,940	82.4	9,130	30.2	7,780	25.7	26,280	86.9
4-year non-doctorate-granting	7,280	6,580	90.3	2,970	40.8	2,920	40.1	6,630	91.0
4-year doctorate-granting	19,230	17,290	89.9	9,380	48.8	9,350	48.6	17,320	90.1
Private nonprofit									
Less-than-4-year	930	360	38.5	320	33.9	170	18.2	510	54.2
4-year non-doctorate-granting	7,670	6,320	82.4	3,340	43.5	2,960	38.5	6,700	87.4
4-year doctorate-granting	9,280	7,830	84.5	3,800	41.0	3,690	39.8	7,940	85.6
Private for-profit									
Less-than-2-year	4,650	1,430	30.8	1,430	30.8	500	10.8	2,360	50.9
2-year	8,580	2,060	24.0	2,580	30.0	770	9.0	3,870	45.1
4-year	22,600	12,630	55.9	8,360	37.0	4,710	20.8	16,280	72.1
Student type									
Total undergraduate	94,200	65,500	69.5	33,520	35.6	25,500	27.1	73,510	78.0
Potential FTB student	44,670	29,060	65.0	9,770	21.9	6,600	14.8	32,220	72.1
Other undergraduate	49,530	36,440	73.6	23,750	48.0	18,900	38.2	41,290	83.4
Graduate/first-professional	16,860	13,950	82.8	7,950	47.2	7,340	43.6	14,560	86.4

Rounds to zero.
[1] Institution characteristics were identified using the institution stratum at the time of sampling.
NOTE: Sample members matched to only the NPSAS year enrollment period (July1, 2011–June 30, 2012). FTB = first-time beginner. Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

In total, about 79,450 study members (72 percent) matched to the NSC for their NPSAS sampled institution. By institution type, the match rate ranged from one percent for public less-than-2-year institutions to 90 percent for public 4-year, both non-doctorate-granting and doctorate-granting, institutions; by institution level match rates ranged from 26 percent for less-than-2-year institutions to 86 percent for 4-year doctorate-granting institutions; and by institution control match rates ranged from 45 percent from private, for-profit institutions to 85 percent for public institutions. NPSAS staff obtained matches to institutions other than the sample members' NPSAS institutions for 41,470 study members (37 percent). The match rate ranged from 29 percent at public less-than-2-year institutions to 49 percent at public 4-year doctorate-granting institutions. About 30 percent of study members matched to the NSC for both their NPSAS institution and at least one other institution.

ACT and SAT reasoning test. ACT survey data and scores came from the most recent test record for each matched sample member between the 2005–06 and 2010–11 academic years. In total, about 24,120 study members (22 percent) matched to the ACT database (table 46). The match rate ranged from 11 percent for students sampled from private for-profit, 2-year and 4-year institutions to 34 percent for students sampled from public 4-year, doctorate-granting institutions. Match rates also varied by student type: about 25 percent of undergraduate students had an ACT record on file for the matched years, whereas only five percent of the graduate students had a similar record in the database.

NPSAS staff obtained the most recent student records of SAT, and questionnaire data were obtained for high school graduation years 2006–11. As shown table 46, staff obtained SAT data records for 17,450 study members (16 percent). Rates of matched records ranged from less than 4 percent of students from public, less-than-2-year institutions to 28 percent of students from private nonprofit, 4-year, non-doctorate-granting institutions.

Table 46 also shows rates for study members matching to both SAT and ACT or to either SAT or ACT. In total, about 6,630 study members (6 percent) matched to both test databases, and 34,940 (32 percent) matched to either one or the other. Matching rates for SAT by institution level ranged from approximately 5 percent for less-than-2-year institutions to approximately 19 percent for 4-year doctorate granting institutions; by institution control, the rates ranged from approximately 8 percent for private for-profit institutions to approximately 26 percent for private nonprofit institutions. Matching for ACT by institution level ranged from approximately 12 percent for less-than-2-year institutions to approximately 27 percent for 4-year doctorate granting institutions; by institution control the rates ranged from approximately 11 percent for private for-profit institutions to approximately 28 percent for private nonprofit institutions.

Table 46.   ACT and SAT matching results, by institution characteristics and student type: 2012

Institution characteristics and student type[1]	Study members	Matched to ACT[2]		Matched to SAT[3]		Matched to both		Matched to either	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent
All students	111,060	24,120	21.7	17,450	15.7	6,630	6.0	34,940	31.5
Institution level									
Less-than-2-year	5,490	680	12.4	290	5.2	60	1.0	910	16.6
2-year	39,510	7,190	18.2	4,920	12.5	1,250	3.2	10,860	27.5
4-year non-doctorate-granting	32,230	6,970	21.6	5,700	17.7	2,010	6.2	10,670	33.1
4-year doctorate-granting	33,830	9,270	27.4	6,550	19.3	3,320	9.8	12,500	36.9
Institution control									
Public	57,360	15,130	26.4	10,080	17.6	3,960	6.9	21,250	37.0
Private nonprofit	17,880	5,050	28.3	4,620	25.8	2,170	12.1	7,500	41.9
Private for-profit	35,820	3,940	11.0	2,750	7.7	500	1.4	6,190	17.3
Institution type									
Public									
Less-than-2-year	590	90	15.8	20	3.9	10	1.0	110	18.7
2-year	30,250	6,170	20.4	4,130	13.6	1,090	3.6	9,200	30.4
4-year non-doctorate-granting	7,280	2,240	30.8	1,710	23.5	720	9.9	3,230	44.4
4-year doctorate-granting	19,230	6,620	34.4	4,220	22.0	2,140	11.1	8,710	45.3
Private nonprofit									
Less-than-4-year	930	120	13.2	210	22.0	30	3.4	300	31.8
4-year non-doctorate-granting	7,670	2,490	32.5	2,180	28.4	970	12.6	3,700	48.2
4-year doctorate-granting	9,280	2,440	26.3	2,230	24.1	1,170	12.6	3,500	37.8
Private for-profit									
Less-than-2-year	4,650	580	12.5	250	5.4	50	1.1	780	16.9
2-year	8,580	910	10.6	600	7.0	120	1.4	1,380	16.1
4-year	22,600	2,450	10.8	1,900	8.4	330	1.5	4,020	17.8
Student type									
Total undergraduate	94,200	23,210	24.6	17,350	18.4	6,590	7.0	33,970	36.1
Potential FTB student	44,670	11,930	26.7	11,090	24.8	4,090	9.2	18,940	42.4
Other undergraduate	49,530	11,280	22.8	6,250	12.6	2,500	5.1	15,030	30.3
Graduate/first-professional	16,860	910	5.4	100	0.6	40	0.2	970	5.8

[1] Institution characteristics were identified using the institution stratum at the time of sampling.
[2] Study members were matched to the 2005–06 through 2010–11 academic years for ACT.
[3] Study members were matched to high school graduation years 2009–11 for SAT.
NOTE: FTB = first-time beginner. Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

Chapter 6.
Postdata Collection Data File Processing and Preparation

The data files for NPSAS:12 contain student-level and institution-level data collected from institution records, student interviews, governmental databases, and administrative databases. These files are fully documented and are available as a set of restricted-use, micro-level data files. The public may generate tables of estimates and simple regressions based upon restricted-use data via PowerStats and other publicly facing web tools available on the NCES website. This chapter describes each file and details the editing and documentation process applied to them.

6.1   Data File Design and System

The primary analysis (derived) file contains data for approximately 111,060 study members. It includes more than 500 variables, developed from multiple sources. Throughout the data collection period, NPSAS staff processed and examined the data for quality. Staff began editing student data shortly after the start of web-interview data collection, when they first developed procedures and programs for this purpose. Similarly, they began editing institution record data shortly after student records data collection began. Project staff investigated and resolved anomalous values, where appropriate, using data corrections and logical recodes. Throughout data collection, NPSAS staff sent interim files to NCES for review.

Complete data for NPSAS:12 are located in the restricted-access files and are documented in detailed codebooks. The restricted files are available to researchers who have applied for and received authorization from NCES to access the restricted data use file. Researchers may obtain authorization by contacting the IES Data Security Office. The restricted-use NPSAS:12 files are listed below:[13]

- **NPSAS analysis (derived) file.** Contains analytic variables derived from all NPSAS:12 data sources, as well as selected direct student interview variables.

- **Student base data file.** Contains data collected from institution records and the student interviews of the study members.

- **Student interview school data file.** Contains institution data obtained from the student interviews for all study members. (A student can have more than one record in the file; a separate record exists for each student for each postsecondary institution the student attended during the study year, for a maximum of five institutions.)

- **Institution file.** Contains selected institution-level variables for the sampled institutions and can be linked to the Student base data file by the IPEDS UNITID number.

- **CPS 2011–12 data file.** Contains data received from CPS for the study members who matched to the 2011–12 financial aid application files.

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[13] NPSAS staff only used the SAT, ACT, and National Student Clearinghouse data files for the creation of derived variables in combination with similar data from other sources. These data files are not available in raw form.

- **CPS 2012–13 data file.** Contains data received from CPS for the study members who matched to the 2012–13 financial aid application files.

- **NSLDS file.** Contains loan-level data received from NSLDS for the eligible sample members who received loans. This is a history file with separate records for each transaction in the loan files and, therefore, can include multiple records per case spanning several academic years.

- **Pell Grant data file.** Contains grant-level data received from the NSLDS for the eligible sample members who received Pell Grants during the 2011–12 year or prior years. This is a history file with separate records for each transaction in the Pell system and, therefore, can include multiple records per case.

- **Weights file.** Contains all the sampling and analysis weights created for NPSAS:12 (contains a separate record for each study member).

- **Weight history file.** Contains all intermediate weight adjustment factors, as well as the final institution and student weights created for NPSAS:12 (contains a separate record for each study member).

The web-based Instrument Development and Documentation System (IDADS) module of the Integrated Management System contains the finalized version of all instrument items, their question wording, and variable and value labels, most of which NPSAS staff imported directly from the instrument development system, Hatteras, for the student interview. NPSAS staff used this system for compiling all documentation for both the interview and student records. IDADS also includes the more technical descriptions of items, such as variable types (alpha or numeric), to whom the item was applied, and frequency distributions for response categories based on completed interview and student records data. NPSAS staff used the IDADS documentation module to facilitate the generation of the final deliverable documentation for the codebooks.

The general public may use NCES web tools, found at http://nces.ed.gov/datalab, to analyze NPSAS:12 restricted-use data. These tools permit analysis of the derived file without disclosing its contents to the user, and, as necessary, suppress or flag estimates that fail to meet reporting standards, or both. QuickStats allows casual users to generate simple tables and graphs quickly and easily. PowerStats is available for users who wish to generate complex tables or estimate simple linear or logistic regression models.

6.2   Postdata Collection Editing

NPSAS staff edited the NPSAS:12 data using procedures developed and implemented for previous studies sponsored by NCES, including NPSAS:08. Following data collection, staff subjected the information collected in the student instrument and student institution records to various quality control checks and examinations. For example, for the student interview, staff conducted these checks to confirm that the collected data reflected appropriate item routing (skip patterns). Another evaluation for both the student interview and student records involved examination of all variables with missing data and substitution of specific values to indicate the reason for the missing data (table 47). For example, an item may not have been applicable to particular students or, as in the interview, a respondent may not have known the answer to the question or might have skipped the item entirely.

Table 47.   Description of missing data codes: 2012

Missing data code	Description
−1	Don't know
−3	Not applicable
–6	Value out of range
–7	Not administered in the abbreviated interview
–8	Item was not reached due to an error
–9	Data missing, reason unknown

SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

NPSAS staff examined skip-pattern relationships in the interview database by methodically cross-tabulating gate items and their associated nested items. In many instances, gate-nest relationships spanned multiple levels within the instrument. Items nested within a gate question may themselves have been gate items for additional items. Consequently, validating the gate-nest relationships often required several iterations and many multiway cross-tabulations to ensure the survey captured the proper data. NPSAS staff also preserved gate-nest relationships and edited them appropriately in the student records data files, although fewer of these relationships exist in that data. Although no items were "skipped" for any students in the student record application, some items were only applicable to specific students.

The data cleaning and editing process for the data files involved a multistage process that consisted of the following steps:

1. NPSAS staff replaced blank or missing data with -9 for all variables in the student interview and student records databases. Staff reviewed a one-way frequency distribution of every variable to confirm that no missing or blank values remained. Assigning labels to the expected values revealed any categorical outliers. Staff provided descriptive statistics for all continuous variables. Staff temporarily recoded all values that were less than zero to missing, and examined the minimum, median, maximum, and mean values to assess reasonableness of responses. Staff also investigated anomalous data patterns and corrected them as necessary.

2. NPSAS staff identified legitimate skips for the interview items using instrument source codes and flowcharts. Staff defined gate-nest relationships to replace -9s (data missing, reason unknown) with -3s (not applicable), as appropriate. Staff evaluated two-way cross-tabulations between each gate-nest combination; they investigated high numbers of nonreplaced -9 codes to ensure skip-pattern integrity. They further checked nested values to reveal instances in which the legitimate skip code overwrote valid data, which typically occurred if a respondent answered a gate question and the appropriate nested items, but then reverted to change the value of the gate to one that opened up an alternate path of nested items. Because responses to the first nested items remained in the database, they required editing. For student records, explicit gate-nest relationships did not exist in the application; however, staff set inapplicable items to -3 codes. For example, if a student was enrolled in a bachelor's degree program, then staff gave the master's degree type variable a -3 code.

3. NPSAS staff formatted variables (e.g., they formatted dates as YYYYMM) and standardized time units for some items that collected amounts of time in multiple units. In addition, they merged back into the interview data file any new codes assigned by

expert coders reviewing IPEDS, high school, occupation, and major codes from the interview (including those strings interviewers or respondents could not code during the interview). Staff reviewed string data collected in occupation title and duty variables, as well as major, and sanitized strings by removing any inappropriate or revealing information. At this stage, they performed logical recodes in the interview data when they could determine the value of missing items from answers to previous questions or preloaded values. For example, if the instrument preloaded a student's date of birth from another source (the enrollment list or CPS), then the instrument skipped the date of birth interview question and copied the preloaded value into the interview variable. For student records, expert coders reviewed and coded major strings when major codes were missing.

4. NPSAS staff examined descriptive statistics for all continuous variables for out-of-range, or outlier, values and replaced them with the value -6 (i.e., out-of-range data).

5. For student records, NPSAS staff also reviewed data at the institution level to identify any anomalous data issues or consistently missing key items and, as appropriate, edited data at an institution level.

Concurrently with data cleaning, staff developed documentation for both interview and student records data to detail question text, response options, logical recoding, and the "applies to" text for each delivered variable. (For interview documentation, see the student instrument facsimile in appendix G).

6.3 Weighting

NPSAS staff computed statistical analysis weights for *study members* (defined in section 4.5) so that the study members would represent the target population described in section 2.1. The statistical analysis weights compensated for the unequal probability of selection of institutions and students in the NPSAS:12 sample. The weights also adjusted for multiplicity at the institution and student levels, unknown student eligibility, nonresponse, and poststratification. Staff computed the institution weight and then used it as a component of the student weight. Staff computed weights for study members as the product of the following 12 weight components:

1. institution sampling weight (WT1);

2. institution subsampling weight (WT2);

3. institution multiplicity adjustment (WT3);

4. institution nonresponse adjustment (WT4);

5. institution poststratification adjustment (WT5);

6. student sampling weight (WT6);

7. student multiplicity adjustment (WT7);

8. student unknown eligibility adjustment (WT8);

9. student not located adjustment (WT9);

10. student refusal adjustment (WT10);

11. student other nonresponse adjustment (WT11); and

12. student poststratification adjustment (WT12).

Each weight component, described in the following sections, represents either a probability of selection or a weight adjustment. Staff computed all nonresponse and poststratification adjustments using the procedure WTADJUST in SUDAAN (RTI 2012). The WTADJUST procedure uses a constrained logistic model to predict response. A key feature and advantage of this procedure is that the weight adjustments and weight trimming and smoothing are all accomplished in one step.

Initially, NPSAS staff set upper and lower bounds on the weights themselves going into the weight adjustment procedure. This adjustment trims extremely large and/or extremely small weights prior to adjusting for nonresponse. Specifying a minimum and/or maximum value for the weight will result in SUDAAN's trimming the weight prior to the weight adjustment. In general, NPSAS staff set these bounds equal to median ± 2.5 times the interquartile range, where the median and interquartile range were defined for each level of an analysis variable such as institution sector. This allowed staff to set different bounds for weights that are considered high extreme, low extreme, or not extreme.

Then, NPSAS staff set upper and lower bounds on the weight adjustment factors coming out of the weight adjustment procedure. For the nonresponse adjustment, staff initially set the lower bound at 1; for the poststratification adjustment, staff initially set the lower bound at 0.01. During model refinement, staff ran the WTADJUST procedure with no upper limit. Once they achieved convergence of the model, they tightened weight adjustment bounds to reduce the magnitude of the weight adjustment factors and the unequal weighting effects (UWEs).

In this way, staff controlled the extreme weights and reduced the design effect due to unequal weighting. The WTADJUST procedure is designed so that the sum of the unadjusted weights for all eligible units equals the sum of the adjusted weights for the respondents.

The exact formula for the weight adjustment factors calculated by the SUDAAN WTADJUST procedure is in the *SUDAAN User's Manual* (RTI 2012).

6.3.1 Initial Institution Weights

NPSAS staff calculated the institution weights through a series of five steps. After the first step, creating the initial sampling weight, they performed weight adjustments including subsampling, multiplicity, nonresponse, and poststratification adjustments to create the final institution weight. Project staff computed the final institution weight and then used it as a component of the final student weight.

There were three initial institution weight components. The first two weight factors were associated with the selection process of the NPSAS:12 institution sample, and the third component was a weight adjustment factor for institution multiplicity. The process of selecting the institution sample is described in section 2.2.1.

Institution sampling weight (WT1). The sampling weight for each sample institution was the reciprocal of its probability of selection when the field test and full-scale institutions were selected together. As described in appendix B, the probability of selection for institution i was

$$\pi_r(i) = \begin{cases} \dfrac{n_r S_r(i)}{S_r(+)} & \text{for noncertainty selections} \\[2ex] 1 & \text{for certainty selections,} \end{cases}$$

where

n_r = the sample size in stratum r,

$S_r(i)$ = the measure of size for the ith school in stratum r, and

$S_r(+)$ = the total measure of size of all schools in stratum r.

Therefore, staff assigned the institution sampling weight as follows: WT1 = $1/\pi_r(i)$.

Institution subsampling adjustment (WT2). The subsampling weight for each full-scale sample institution, excluding the freshened-sample institutions, was the reciprocal of its probability of selection for the full-scale subsample of 1,670 institutions from the original sample of 1,970. The probability of selection for institution i was

$$\pi_{r2}(i) = \begin{cases} \dfrac{n_{r|fs}}{n_r} \end{cases}$$

where:

$n_{r|fs}$ = the full-scale subsample size in stratum r, and

n_r = sample size for stratum r.

Therefore, staff assigned the institution subsampling adjustment as follows: WT2 = $1/\pi_{r2}(i)$.

Since the freshened sample was not subsampled, the 20 institutions included in the freshened sample had WT2 = 1. The subsampling weight adjustment factors met the following constraints:

- minimum: 1.00;
- median: 1.18;
- maximum: 1.35; and
- mean: 1.18.

Institution multiplicity adjustment (WT3). Each institution on the sampling frame initially had one chance of selection and an associated probability of selection; however, during institution contacting and enrollment list collection, NPSAS staff identified some institutions as having multiple chances of selection. That is, for about 10 sample institutions, the institutions provided student enrollment lists that represented more than one institution without clearly identifying which institution or campus each student attended. NPSAS staff selected the sample of students from the one list. Staff treated these institutions as having multiple chances of being selected into the sample because each institution had an initial probability of selection, but the additional institutions represented on the list also had probabilities of selection. Therefore, the weight of the sample institution, which is based on the initial probability of selection, needed to be adjusted to account for the actual probability of selection for the group of institutions represented by the list. The number of chances of the institution's being selected was based on the number of institutions that were represented on the enrollment list.

Some sample institutions had multiple chances of selection because the lists for some sample institutions came from a system office or a main campus, and these lists contained students from the sample institution as well as one or more additional institutions. Some of these lists clearly identified the campus that each student attended, and each campus was treated as a separate institution. Hence, no adjustment was necessary in that case because each institution had its own probability of selection. However, other lists did not clearly identify the campus that each student attended. Also, some sample institutions had merged with another institution, and the lists for these institutions contained students from the original institution and the institution with which they had merged.

When an institution had two chances of selection, staff performed a multiplicity adjustment by first estimating, as if the selections were independent, the probability that either record could be selected:

$$p(A \text{ or } B) = p(A) + p(B) - p(A)p(B).$$

Then, staff calculated the new sampling weight as the reciprocal of this probability:

$$\text{NEW\_WT2} = 1/p(A \text{ or } B).$$

When an institution had three chances of selection, staff performed a multiplicity adjustment by first estimating the probability that any record could be selected:

$$p(A \text{ or } B \text{ or } C) = (p(A) + p(B) + p(C)) - (p(A)p(B) + p(A)p(C) + p(B)p(C)) + p(A)p(B)p(C).$$

Then, the new sampling weight was calculated as the reciprocal of this probability:

$$\text{NEW\_WT2} = 1/p(A \text{ or } B \text{ or } C).$$

When an institution had four or more chances of selection, staff performed a multiplicity adjustment by first estimating the probability that any record could be selected:

$$p(A \text{ or } B \text{ or } C \text{ or } D \ldots) \approx 1 - (1 - p(A)) * (1 - p(B)) * (1 - p(C)) * (1 - p(D)) * \ldots.$$

Then, staff calculated the new sampling weight as the reciprocal of this probability:

$$\text{NEW\_WT2} = 1/p(A \text{ or } B \text{ or } C \text{ or } D \ldots).$$

Finally, staff derived the multiplicity adjustment factor by dividing the new sampling weight by the old sampling weight, WT3 = NEW_WT2/(WT1*WT2), for the institutions with positive multiplicity, and by setting it to unity (1.00) for all other institutions. Consequently, the product of WT1, WT2, and WT3 equals NEW_WT2 for the institutions with positive multiplicity, and it equals WT1*WT2 for all other institutions.

The multiplicity weight adjustment factors for the 12 institutions with positive multiplicity met the following constraints:

- minimum: 0.41;

- median: 0.77;

- maximum: 1.00;[14] and

- mean: 0.72.

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[14] Two of the institutions with multiplicity were sampled with certainty and have a multiplicity adjustment factor of 1.

6.3.2 **Adjusting Institution Weights**

There were two additional institution weight components.

Institution nonresponse adjustment (WT4). An *institution respondent* is an institution that provided a student enrollment list that was sufficient for selecting student samples. NPSAS staff performed a weighting adjustment using the SUDAAN WTADJUST procedure to compensate for nonresponding institutions and significantly reduce or eliminate nonresponse bias for variables included in the models. Staff selected predictor variables that were thought to predict response status and were nonmissing for most respondents and nonrespondents. The candidate predictor variables were those used in the nonresponse bias analysis, with the addition of sector and state. Staff knew these variables for most respondents and nonrespondents. Any missing data were minimal, and staff put them into a "missing" category.

Predictors used in the nonresponse modeling included all the candidate predictor variables identified, as well as certain potentially important two-way and three-way interactions. To identify these interactions, staff used the chi-square automatic interaction detection (CHAID) algorithm (Kass 1980). CHAID is a hierarchical clustering algorithm that successively partitions individuals according to categorical predictors for a categorical dependent variable. The algorithm begins with all study individuals as a whole and cycles over each predictor, finding for each predictor an optimal partition of the individuals according to its levels. NPSAS staff retained the most significant optimal partition and applied the CHAID algorithm to the members of that partition to find further partitions, using the remaining predictors. Staff stopped the algorithm after a specified number of partitioning steps or if the algorithm failed to find statistical significance among any of the partitions at a given step.

NPSAS staff used the β-parameters of the exponential model, the weight trimming factors, the lower and upper bounds set on the factors, and the centering constant to determine the institution nonresponse adjustment (WT4) and all other weight adjustment factors computed by the SUDAAN WTADJUST procedure. The exact formula for the weight adjustment factors calculated by the SUDAAN WTADJUST procedure is in the *SUDAAN User's Manual* (RTI 2012). Table 48 shows the response rates and the resulting adjustment factors, by the model variables. The weight adjustment factors met the following constraints:

- minimum: 1.00;
- median: 1.04; and
- maximum: 2.00.

Table 48. Weight adjustment factors for institution nonresponse adjustment: 2012

Model predictor variables	Number of respondents	Weighted response rate[1]	Average weight adjustment factor (WT4)[2]
Total	1,480	87.0	1.15
Institution type[3]			
Public			
Less-than-2-year	20	76.8	1.32
Public 2-year	320	83.9	1.19
Public 4-year non-doctorate-granting	120	92.3	1.07
Public 4-year doctorate-granting	220	90.8	1.09
Private nonprofit			
Less-than-4-year	20	79.5	1.23
Private nonprofit 4-year non-doctorate-granting	210	88.7	1.13
Private nonprofit 4-year doctorate-granting	220	86.0	1.16
Private for-profit			
Less-than-2-year	40	79.9	1.26
Private for-profit 2-year	90	78.2	1.28
Private for-profit 4-year	230	89.0	1.11
Carnegie classification code			
Associate's	470	83.8	1.20
Research and Doctoral	200	87.6	1.17
Master's	380	94.5	1.06
Baccalaureate	190	89.7	1.13
Special focus and other	140	87.3	1.10
Unavailable or unknown	100	75.5	1.31
Institution region[4]			
New England	100	92.6	1.10
Mideast	250	91.2	1.11
Great Lakes	240	92.0	1.11
Plains	130	82.7	1.18
Southeast	340	88.7	1.16
Southwest	150	90.2	1.15
Rocky Mountains	60	99.1	1.00
Far West	210	71.9	1.27
Percent receiving federal grant aid			
1–36	360	83.4	1.19
37–52	360	89.0	1.12
53–71	360	87.1	1.16
72 or more	350	89.1	1.13
None or unknown	50	87.2	1.14
Percent receiving state/local grant aid			
1–6, or None/unknown	420	89.4	1.15
7–24	360	84.8	1.17
25–43	350	88.0	1.13
44 or more	350	85.8	1.15

See notes at end of table.

Table 48.   Weight adjustment factors for institution nonresponse adjustment: 2012—Continued

Model predictor variables	Number of respondents	Weighted response rate[1]	Average weight adjustment factor (WT4)[2]
Percent receiving institution grant aid			
1–5	340	82.2	1.21
6–26	360	88.1	1.13
27–67	360	89.3	1.13
68 or more, or None/unknown	420	88.9	1.13
Percent receiving student loan aid			
1–36	340	82.2	1.22
37–64	360	89.3	1.14
65–82 or None/unknown	430	91.1	1.11
83 or more	360	89.5	1.13
Percent enrolled: Hispanic			
1–3 or None/unknown	460	87.7	1.16
4–6	340	90.1	1.10
7–15	330	88.3	1.14
16 or more	350	82.8	1.19
Percent enrolled: Asian or Pacific Islander			
1 or None/unknown	490	87.9	1.16
2	300	94.0	1.06
3–5	380	88.9	1.13
6 or more	320	79.7	1.24
Percent enrolled: Black, non–Hispanic			
1–4	390	84.5	1.16
5–9 or None/unknown	410	89.5	1.11
10–20	340	90.4	1.11
21 or more	340	82.3	1.22
Total undergraduate enrollment			
1–1,601	340	83.8	1.17
1,602–4,474	380	88.7	1.13
4,475–13,842	370	89.3	1.12
13,843 or more	370	85.8	1.17
None or unknown	30	94.6	1.07
Total male undergraduate enrollment			
1–646	340	85.2	1.16
647–1,908 or None/unknown	400	89.0	1.13
1,909–5,918	370	88.5	1.13
5,919 or more	370	86.0	1.17
Total female undergraduate enrollment			
1–950	330	82.1	1.19
951–2,562 or None/unknown	410	88.6	1.12
2,563–7,625	380	90.2	1.11
7,626 or more	370	85.7	1.18
Total graduate enrollment			
1–626	200	94.2	1.08
627–1,820	190	93.8	1.10
1,821–4,414	190	90.7	1.13
4,415 or more	190	88.0	1.15
None or unknown	710	83.7	1.19

See notes at end of table.

Table 48. Weight adjustment factors for institution nonresponse adjustment: 2012—Continued

Model predictor variables	Number of respondents	Weighted response rate[1]	Average weight adjustment factor (WT4)[2]
Total male graduate enrollment			
1–204	200	94.4	1.08
205–632	190	92.8	1.11
633–1,677	200	92.5	1.11
1,678 or more, or None/unknown	900	85.0	1.18
Total female graduate enrollment			
1–407	200	92.8	1.10
408–1,098	190	92.9	1.10
1,099–2,586	190	91.0	1.11
2,587 or more, or None/unknown	900	85.3	1.18
Average net price among students receiving grant or scholarship aid			
$1–$8,672	360	86.5	1.15
$8,673–$15,229	360	88.4	1.13
$15,230–$21,352	350	85.0	1.21
$21,353 or more	360	87.5	1.11
None/unknown	60	86.5	1.14
Degree of urbanization			
Large city	390	84.2	1.18
Mid-size city	190	88.6	1.12
Small city	200	87.1	1.16
Large suburb	310	86.3	1.15
Mid-size suburb	30	87.2	1.14
Small suburb	30	90.2	1.17
Urban area on fringe of town or distant from town	120	93.2	1.06
Urban area remote from town	60	88.8	1.15
Rural area on fringe of town	140	87.1	1.18
Rural area distant or remote from town	30	94.0	1.08
Historically Black college or university			
Yes	30	95.2	1.07
No or Unavailable or unknown	1,450	86.8	1.15
Hispanic-Serving Institution			
Yes	200	81.3	1.20
No	1,290	88.0	1.14
CHAID segments			
In Far West region, and Carnegie classification of Master's, or Special focus and other	80	97.4	1.01
In New England, Mideast, Great Lakes, Southeast, or Southwest region, and Carnegie classification of Unavailable or unknown	70	72.0	1.39
In New England, Mideast, Great Lakes, Southeast, or Southwest region, and Carnegie classification of Research and Doctoral, or Master's, and 1 percent or None/unknown enrolled Asian or Pacific Islander students	120	87.7	1.15
In New England, Mideast, Great Lakes, Southeast, or Southwest region, and Carnegie classification of Research and Doctoral, or Master's, and 2 percent enrolled Asian or Pacific Islander	110	99.4	1.00

See notes at end of table.

Table 48.   Weight adjustment factors for institution nonresponse adjustment: 2012—Continued

Model predictor variables	Number of respondents	Weighted response rate[1]	Average weight adjustment factor (WT4)[2]
In New England, Mideast, Great Lakes, Southeast, or Southwest region, and Carnegie classification of Research and Doctoral, or Master's, and 3 percent or more enrolled Asian or Pacific Islander	220	93.1	1.08
In New England, Mideast, Great Lakes, Southeast, or Southwest region, and Carnegie Classification of Associate's, Baccalaureate, or Special focus or other, and Public less-than-2-year, Public 2-year, Public 4-year non-doctorate-granting, Public 4-year doctorate-granting, Private nonprofit 4-year non-doctorate-granting, Private for-profit 4-year. Or, in Far West region, and Carnegie classification of Associate's, Research and Doctoral, Baccalaureate, or Unavailable or unknown. Or, in Plains or Rocky Mountains region.	810	84.2	1.16
In New England, Mideast, Great Lakes, Southeast, or Southwest region, and Carnegie Classification of Associate's, Baccalaureate, or Special focus or other, and Private nonprofit less-than-4-year, Private nonprofit 4-year doctorate-granting, or Private for-profit 2-year	80	72.7	1.36

[1] The response rate is expressed as a percentage.
[2] The average weight adjustment is expressed as a number.
[3] The institution type variable (SECTOR10) used for institution weighting was based on the 2011–12 IPEDS files.
[4] New England = Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont; Mideast = Delaware, District of Columbia, Maryland, New Jersey, New York, Pennsylvania; Great Lakes = Illinois, Indiana, Michigan, Ohio, Wisconsin; Plains = Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota; Southeast = Alabama, Arkansas, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, West Virginia; Southwest = Arizona, New Mexico, Oklahoma, Texas; Rocky Mountains = Colorado, Idaho, Montana, Utah, Wyoming; Far West = Alaska, California, Hawaii, Nevada, Oregon, Washington.
NOTE: Categories for undergraduate enrollment were formed from continuous variables based on quartiles. Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

Institution poststratification adjustment (WT5). To ensure population coverage, NPSAS staff adjusted the institution sampling weight for subsampling, multiplicity, and nonresponse using the SUDAAN WTADJUST procedure, to control totals for enrollment by institution type and size (*small* vs. *large*). The enrollment totals came from the 12-month unduplicated headcount from the 2011–12 IPEDS IC header component, fall and 12-month enrollment file.

Table 49 shows the variables associated with the control totals and the average weight adjustment factors, by these variables. The weight adjustment factors met the following constraints:

- minimum: 0.24;

- median: 1.00; and

- maximum: 2.17.

Table 49. Weight adjustment factors for institution poststratification: 2012

Model predictor variables[1]	Control total[2]	Average weight adjustment factor (WT5)
Total	29,442,765	1.00
Public		
Less-than-2-year	91,257	0.80
2-year, small	1,608,706	1.07
2-year, large	9,375,950	0.96
4-year non-doctorate-granting, small	520,643	0.94
4-year non-doctorate-granting, large	2,448,848	0.98
4-year doctorate-granting, small	1,500,820	1.07
4-year doctorate-granting, large	5,151,484	0.96
Private nonprofit		
Less-than-4-year	100,661	0.98
4-year, non-doctorate-granting, small	237,185	1.40
4-year, non-doctorate-granting, large	1,542,029	1.04
4-year doctorate-granting, small	247,558	1.04
4-year doctorate-granting, large	2,674,336	0.97
Private for-profit		
Less-than-2-year	516,573	1.00
2-year, small	107,189	0.75
2-year, large	728,130	1.10
4-year, small	202,884	1.00
4-year, large	2,388,512	0.99

[1] Size for poststratification weighting classes was based on the median enrollment within sector or state for the institutions on the sampling frame.
[2] Control totals are the sum of enrollment across institutions based on IPEDS:11 enrollment data.
NOTE: IPEDS = Integrated Postsecondary Education Data System. Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

6.3.3 Initial Student Weights

There were three initial student weight components, including the initial sampling weight and weight adjustment factors for student multiplicity and student unknown eligibility. Each of these components is described in this section. As discussed in appendix B, NPSAS staff designed the institution-specific rates to obtain the desired sample sizes and achieve nearly equal weights within the overall student strata.

Student sampling weight (WT6). NPSAS staff defined the overall student sampling strata by crossing the institution sampling strata with the student strata within institutions. (For the overall sampling rates for these sampling strata, see appendix B.) They systematically selected the sample students from the enrollment lists at institution-specific rates that were inversely proportional to the institution's probability of selection. Specifically, the institution-specific sampling rate was the overall stratum sampling rate divided by the institution's probability of selection, or

$$f_{s|i} = \frac{f_s}{\pi_r(i)},$$

where f_s = the overall student stratum sampling rate and $\pi_r(i)$ = the institution's probability of selection.

If the institution's enrollment list was larger than expected on the basis of the IPEDS data, the preloaded student sampling rates would yield larger-than-expected sample sizes. Likewise, if the enrollment list was smaller than expected, the sampling rates would yield smaller-than-expected sample sizes. To maintain control on the sample sizes and meet stratum yield targets, staff adjusted the sampling rates, when necessary, so that the number of students selected within an institution usually did not exceed 300. NPSAS staff imposed a minimum sample size constraint of 10 students to ensure sufficient yield for variance estimation.

NPSAS staff calculated the student sampling weight as the reciprocal of the institution-specific student stratum sampling rates, or

$$WT6 = 1/f_{s|i}.$$

Student multiplicity adjustment (WT7). Students who attended more than one eligible institution during the 2011–12 academic year had multiple chances of being selected; that is, they could have been selected from any of the institutions they attended. These students therefore had a higher probability of being selected than was represented in their sampling weight.

Staff adjusted this multiplicity by dividing these students' sampling weight by the number of institutions attended that were eligible for sample selection. Specifically, staff defined the student multiplicity weight adjustment factor as

$$WT7 = 1/M,$$

where M is the multiplicity, or number of eligible institutions attended. Staff determined the multiplicity from the student interview, the Pell Grant payment file, and the National Student Loan Data System.

The weight adjustment factors met the following constraints:

- minimum: 0.20;
- median: 1.00; and
- maximum: 1.00.

Student unknown eligibility adjustment (WT8). NPSAS staff could not determine final eligibility status for nonresponding students. Staff treated these staff as eligible and adjusted their weights to compensate for the small portion of students who were actually ineligible (as described below).

Staff defined weighting classes by the intersection of institution type with the students' matching status to financial aid files (CPS, Pell Grant, and Stafford Loan). Table 50 shows the weight adjustment factors applied to the students with unknown eligibility. NPSAS staff based these weight adjustment factors on the estimated rate of eligibility among students with known eligibility status. For the known-eligible students, they set the weight adjustment factor equal to 1.

Table 50.   Weight adjustment factors for unknown student eligibility status: 2012

Weighting class (institution level, by student type, by matching status to financial aid files)	Number adjusted for unknown eligibility	Weight adjustment factor (WT8)
Total	12,380	†
Public less than 2-year		
Receiving Pell Grant or Stafford Loan in 2011–12 academic year	10	0.98
Matched CPS file only	#	0.96
No matches	90	0.88
Public 2-year		
Receiving Pell Grant or Stafford Loan in 2011–12 academic year	550	0.97
Matched CPS file only	220	0.95
No matches	4,050	0.88
Public 4-year non-doctorate-granting, undergraduate		
Receiving Pell Grant or Stafford Loan in 2011–12 academic year	50	0.98
Matched CPS file only	10	0.97
No matches	450	0.94
Public 4-year non-doctorate-granting, graduate		
Receiving Pell Grant or Stafford Loan in 2011–12 academic year	10	0.99
Matched CPS file only	#	0.97
No matches	70	0.92
Public 4-year doctorate-granting, undergraduate		
Receiving Pell Grant or Stafford Loan in 2011–12 academic year	70	0.99
Matched CPS file only	10	0.99
No matches	770	0.98
Public 4-year doctorate-granting, graduate		
Receiving Pell Grant or Stafford Loan in 2011–12 academic year	20	0.99
Matched CPS file only	#	0.98
No matches	240	0.97
Private nonprofit less-than-4-year		
Receiving Pell Grant or Stafford Loan in 2011–12 academic year	20	0.95
Matched CPS file only	#	0.93
No matches	60	0.95
Private nonprofit 4-year non-doctorate-granting, undergraduate		
Receiving Pell Grant or Stafford Loan in 2011–12 academic year	290	0.99
Matched CPS file only	50	0.96
No matches	150	0.96
Private nonprofit 4-year non-doctorate-granting, graduate		
Receiving Pell Grant or Stafford Loan in 2011–12 academic year	10	0.99
Matched CPS file only	#	0.95
No matches	120	0.87
Private nonprofit 4-year doctorate-granting, undergraduate		
Receiving Pell Grant or Stafford Loan in 2011–12 academic year	80	0.99
Matched CPS file only	40	0.99
No matches	260	0.95

See notes at end of table.

Table 50.   Weight adjustment factors for unknown student eligibility status: 2012—Continued

Weighting class (institution level, by student type, by matching status to financial aid files)	Number adjusted for unknown eligibility	Weight adjustment factor (WT8)
Private nonprofit 4-year doctorate-granting, graduate		
Receiving Pell Grant or Stafford Loan in 2011–12 academic year	30	0.99
Matched CPS file only	#	0.97
No matches	240	0.95
Private for-profit less-than-2-year		
Receiving Pell Grant or Stafford Loan in 2011–12 academic year	130	0.95
Matched CPS file only	#	0.90
No matches	70	0.90
Private for-profit 2-year		
Receiving Pell Grant or Stafford Loan in 2011–12 academic year	440	0.97
Matched CPS file only	40	0.95
No matches	200	0.89
Private for-profit 4-year, undergraduate		
Receiving Pell Grant or Stafford Loan in 2011–12 academic year	2,270	0.98
Matched CPS file only	480	0.94
No matches	740	0.96
Private for-profit 4-year, graduate		
Receiving Pell Grant or Stafford Loan in 2011–12 academic year	10	0.99
Matched CPS file only	#	0.95
No matches	50	0.97

† Not applicable.
# Rounds to zero.
NOTE: CPS = Central Processing System. Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

The weight adjustment factors met the following constraints:

- minimum: 0.87;

- median: 1.00; and

- maximum: 1.00.

6.3.4 Adjusted Student Weights

There were four additional student weight components. NPSAS staff further adjusted the student weights for nonresponse in three stages—inability to locate the student, interview refusal, and other nonresponse—because the predictors of response propensity were potentially different for each of these nonresponse outcomes. Using these three stages of nonresponse adjustment achieved greater reduction in nonresponse bias to the extent that different variables were significant predictors of response propensity at each stage.

Student not located adjustment (WT9). The first type of adjustment for student nonresponse was an adjustment for the inability to locate the student. Staff made this weight adjustment to compensate for the potential study nonresponse bias. They chose predictor variables that were thought to predict response status and were nonmissing for both study members and nonstudy members. The candidate predictor variables included the following:

- institution type;
- institution region;
- institution enrollment from IPEDS file (categorical);
- student type;
- FTB status;
- Pell Grant receipt (yes/no);
- Pell Grant amount (categorical);
- Stafford Loan receipt (yes/no);
- Stafford Loan amount (categorical);
- Parent Loan for Undergraduate Students (PLUS) amount (categorical);
- federal aid receipt (yes/no);

- institution aid receipt (yes/no);
- state aid receipt (yes/no);
- any aid receipt (yes/no);
- CPS record indicator (yes/no);
- student records data indicator;
- NPSAS:12 interview respondent status;
- age group (three levels);
- sampled student type (three levels);
- Social Security number indicator (yes/no);
- telephone number count;
- e-mail address count; and
- mailing address count.

Predictors used in nonresponse modeling included all the candidate predictor variables identified, as well as certain potentially important interactions. NPSAS staff used CHAID to identify these interactions (see the description in section 6.3.2). Application of the CHAID algorithm provided interaction terms for each of the nonresponse adjustment models. For each model, staff ran CHAID for up to three segments, resulting in identification of two-way and three-way interactions. Staff retained segments if they were both statistically and practically significant.

Staff computed the weight adjustments using SUDAAN's PROC WTADJUST procedure.[15]

Table 51 shows the final predictor variables used in the model to adjust the weights and the average weight adjustment factors resulting from these variables. The weight adjustment factors met the following constraints:

- minimum: 0.72
- median: 1.00; and
- maximum: 19.24.

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[15] See the description of the SUDAAN procedure at the beginning of this chapter.

Table 51.   Weight adjustment factors for student location nonresponse adjustment: 2012

Model predictor variables	Number of located respondents	Weighted response rate	Average weight adjustment factor (WT9)
Total	118,880	97.1	1.04
Institution type			
Public			
Less-than-2-year	560	95.4	1.07
2-year	33,030	95.8	1.05
4-year non-doctorate-granting	7,600	98.1	1.02
4-year doctorate-granting	20,630	97.9	1.02
Private nonprofit			
Less-than-4-year	1,140	97.5	1.06
4-year non-doctorate-granting	7,290	98.8	1.02
4-year doctorate-granting	10,560	97.6	1.03
Private for-profit			
Less-than-2-year	4,670	94.2	1.02
2-year	8,240	96.7	1.03
4-year	25,170	97.3	1.05
Institution region[1]			
New England	6,100	97.2	1.04
Mideast	17,960	97.0	1.04
Great Lakes	18,350	97.4	1.04
Plains	8,480	98.7	1.02
Southeast	27,320	98.0	1.03
Southwest	16,870	95.8	1.04
Rocky Mountains	5,230	97.9	1.03
Far West	18,570	95.6	1.05
Institution total enrollment[2]			
0–2,628	28,940	96.6	1.05
2,629–10,233	30,010	98.0	1.02
10,234–26,884	29,770	97.1	1.03
26,885 or more	30,170	96.7	1.03
Student type			
Undergraduate	102,430	96.9	1.04
Graduate (excluding doctoral-professional practice)	14,470	98.2	1.02
Doctoral-professional practice	1,980	98.9	1.01
First–time beginner (FTB) status (sampled)			
FTB	54,850	97.6	1.04
Not FTB	64,030	97.0	1.03
Age as of December 31, 2011			
15–23	66,270	97.2	1.03
24–29	22,930	96.9	1.04
30 or more	29,680	97.0	1.04
Sampled student type			
Undergraduate	102,210	96.9	1.04
Graduate (excluding doctoral-professional practice)	14,740	98.2	1.02
Doctoral-professional practice	1,930	98.4	1.02

See notes at end of table.

Table 51.   Weight adjustment factors for student location nonresponse adjustment: 2012—Continued

Model predictor variables	Number of located respondents	Weighted response rate	Average weight adjustment factor (WT9)
Social Security number indicator			
Yes	114,810	97.5	1.03
No	4,070	87.4	1.20
CPS record available			
Yes	89,030	99.3	1.01
No	29,850	92.5	1.10
Pell Grant status			
Received	56,610	99.1	1.02
Did not receive	62,280	95.8	1.05
Total Pell Grant amount received[2]			
$0 or unknown	62,280	95.8	1.05
$1–$2,774	17,530	98.8	1.03
$2,775–$5,549	22,390	99.2	1.01
$5,550 or more	16,680	99.3	1.01
Stafford Loan status			
Received	64,070	99.3	1.02
Did not receive	54,820	95.2	1.06
Total Stafford Loan amount received[2]			
$0 or unknown	54,820	95.2	1.06
$1–$4,699	15,800	99.0	1.02
$4,700–$6,500	17,250	99.4	1.01
$6,501–$9,500	18,840	99.3	1.01
$9,501 or more	12,180	99.5	1.01
Parent loan for undergraduate students (PLUS) amount[2]			
$0 or unknown	111,440	97.0	1.04
$1–$5,477	1,840	99.0	1.02
$5,478–$9,817	1,840	99.7	1.01
$9,818–$15,908	1,870	99.7	1.01
$15,909 or more	1,890	99.8	1.00
Federal aid status			
Received	73,860	99.9	1.00
Did not receive	28,350	99.3	1.01
Unknown	16,670	79.6	1.23
Institution aid status			
Received	21,090	99.5	1.01
Did not receive	82,510	97.4	1.02
Unknown	15,270	89.5	1.14
State aid status			
Received	14,670	99.8	1.00
Did not receive	91,850	97.4	1.03
Unknown	12,370	88.4	1.15

See notes at end of table.

Table 51. Weight adjustment factors for student location nonresponse adjustment: 2012—Continued

Model predictor variables	Number of located respondents	Weighted response rate	Average weight adjustment factor (WT9)
Telephone number count			
0	2,740	76.9	1.33
1	51,570	97.0	1.03
2	48,310	98.1	1.02
3 or more	16,270	97.9	1.03
E-mail address count			
0	3,740	85.6	1.13
1	44,890	94.9	1.06
2	63,220	98.6	1.02
3 or more	7,030	99.7	1.00
Mailing address count			
0	2,240	75.6	1.32
1	55,670	95.9	1.05
2	42,860	98.8	1.01
3 or more	18,120	99.3	1.01
Student record complete indicator			
Complete data	106,930	97.8	1.02
Partial data	480	90.0	1.13
No data	11,480	87.5	1.15
Interview data indicator			
Yes	85,000	100.0	1.02
No	33,880	89.3	1.09
CHAID segments in not located adjustment model			
Received federal aid	73,860	99.9	1.00
Did not receive federal aid	28,350	99.3	1.01
Federal aid status unknown, and CPS record available, and sampled student type of graduate or professional	300	96.9	1.04
Federal aid status unknown, and CPS record available, and sampled student type of undergraduate	9,860	90.4	1.13
Federal aid status unknown, and CPS record not available, and telephone number count 0 or 1	3,880	70.3	1.45
Federal aid status unknown, and CPS record not available, and telephone number count 2	2,170	78.1	1.28
Federal aid status unknown, and CPS record not available, and telephone number count 3 or more	460	70.1	1.44

[1] New England = Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont; Mideast = Delaware, District of Columbia, Maryland, New Jersey, New York, Pennsylvania; Great Lakes = Illinois, Indiana, Michigan, Ohio, Wisconsin; Plains = Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota; Southeast = Alabama, Arkansas, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, West Virginia; Southwest = Arizona, New Mexico, Oklahoma, Texas; Rocky Mountains = Colorado, Idaho, Montana, Utah, Wyoming; Far West = Alaska, California, Hawaii, Nevada, Oregon, Washington.
[2] Enrollment, Stafford Loan, and PLUS categories were defined by quartiles. Pell Grant categories for students receiving less than $5,550 in Pell Grants were defined by computing the median of all students receiving Pell Grants of less than $5,550, then all students receiving Pell Grants of $5,550 are in a single category.
NOTE: CPS = Central Processing System; CHAID = chi-square automatic interaction detection; PLUS = parent loan for undergraduate students. Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

Student refusal nonresponse adjustment (WT10). The second stage of the student nonresponse adjustment was an adjustment for refusal, given that the student was located. NPSAS staff made this additional type of nonresponse adjustment to compensate further for the potential student nonresponse bias. They used the same SUDAAN procedure as was used in the adjustment for not locating students (WT9). Candidate predictor variables were the same as those used in the location nonresponse adjustment, as was the CHAID analysis used on the predictor variables to detect important interactions. Table 52 shows the final predictor variables used in the model to adjust the student weights and the average weight adjustment factor resulting from these variables. The weight adjustment factors met the following constraints:

- minimum: 1.00;

- median: 1.00; and

- maximum: 3.78.

Table 52. Weight adjustment factors for student refusal nonresponse adjustment: 2012

Model predictor variables	Number of nonrefusal respondents	Weighted response rate	Average weight adjustment factor (WT10)
Total	115,070	96.3	1.03
Institution type			
Public			
Less-than-2-year	530	93.4	1.08
2-year	31,390	94.1	1.05
4-year non-doctorate-granting	7,380	96.3	1.03
4-year doctorate-granting	20,210	97.2	1.02
Private nonprofit			
Less-than-4-year	1,120	99.2	1.01
4-year non-doctorate-granting	7,100	98.3	1.03
4-year doctorate-granting	10,350	97.8	1.02
Private for-profit			
Less-than-2-year	4,610	97.1	1.01
2-year	8,090	96.8	1.03
4-year	24,310	97.4	1.04
Institution region[1]			
New England	5,880	96.1	1.04
Mideast	17,450	96.3	1.03
Great Lakes	17,720	96.7	1.04
Plains	8,290	97.5	1.02
Southeast	26,600	97.2	1.03
Southwest	16,320	95.6	1.03
Rocky Mountains	5,070	96.4	1.04
Far West	17,750	94.4	1.04
Institution total enrollment[2]			
0–2,628	27,970	97.4	1.03
2,629–10,233	29,190	96.7	1.03
10,234–26,884	28,720	95.9	1.04
26,885 or more	29,190	95.9	1.03
Student type			
Undergraduate	98,900	95.9	1.04
Graduate (excluding doctoral-professional practice)	14,220	98.2	1.02
Doctoral-professional practice	1,950	98.7	1.01
First-time beginner (FTB) status (sampled)			
FTB	53,060	96.8	1.03
Not FTB	62,010	96.2	1.03
Age as of December 31, 2011			
15–23	64,270	96.5	1.03
24–29	22,240	96.5	1.03
30 or more	28,570	95.7	1.04
Sampled student type			
Undergraduate	98,690	95.9	1.04
Graduate (excluding doctoral-professional practice)	14,460	98.0	1.02
Doctoral-professional practice	1,920	98.8	1.01

See notes at end of table.

**Table 52.   Weight adjustment factors for student refusal nonresponse adjustment: 2012—
Continued**

Model predictor variables	Number of nonrefusal respondents	Weighted response rate	Average weight adjustment factor (WT10)
Social Security number indicator			
Yes	111,400	96.6	1.03
No	3,670	89.2	1.11
CPS record available			
Yes	87,980	99.5	1.01
No	27,100	89.7	1.10
Pell Grant status			
Received	55,880	99.3	1.01
Did not receive	59,190	94.4	1.05
Total Pell Grant amount received[2]			
$0 or unknown	59,190	94.4	1.05
$1–$2,774	17,250	99.2	1.02
$2,775–$5,549	22,130	99.2	1.01
$5,550 or more	16,500	99.5	1.01
Stafford Loan status			
Received	63,370	99.5	1.01
Did not receive	51,700	93.5	1.06
Total Stafford Loan amount received[2]			
$0 or unknown	51,700	93.5	1.06
$1–$4,699	15,560	99.1	1.02
$4,700–$6,500	17,100	99.4	1.01
$6,501–$9,500	18,650	99.5	1.01
$9,501 or more	12,070	99.7	1.01
Parent loan for undergraduate students (PLUS) amount[2]			
$0 or unknown	107,720	96.1	1.03
$1–$5,477	1,810	98.3	1.02
$5,478–$9,817	1,820	99.4	1.01
$9,818–$15,908	1,850	99.8	1.01
$15,909 or more	1,880	99.7	1.01
Federal aid status			
Received	73,790	99.9	1.00
Did not receive	28,130	99.3	1.01
Unknown	13,150	73.4	1.27
Institution aid status			
Received	21,000	99.3	1.00
Did not receive	80,510	96.1	1.02
Unknown	13,570	90.6	1.13
State aid status			
Received	14,610	99.5	1.00
Did not receive	89,570	96.3	1.02
Unknown	10,890	89.9	1.14

See notes at end of table.

**Table 52.   Weight adjustment factors for student refusal nonresponse adjustment: 2012—
Continued**

Model predictor variables	Number of nonrefusal respondents	Weighted response rate	Average weight adjustment factor (WT10)
Telephone number count			
0	2,700	96.6	1.02
1	49,570	95.3	1.04
2	46,870	96.8	1.03
3 or more	15,930	97.5	1.02
E-mail address count			
0	3,420	86.4	1.09
1	42,830	93.8	1.05
2	61,830	97.8	1.02
3 or more	6,990	99.6	1.01
Mailing address count			
0	1,980	84.7	1.12
1	52,740	94.2	1.06
2	42,290	98.3	1.01
3 or more	18,070	99.5	1.00
Student record complete indicator			
Complete data	104,580	96.7	1.02
Partial data	420	88.7	1.13
No data	10,070	89.4	1.15
Interview data indicator			
Yes	84,980	100.0	1.00
No	30,100	85.9	1.13
CHAID segments in refusal adjustment model			
Received federal aid, and did not receive institution aid, and total Stafford Loan amount received $0 or unknown	13,360	99.6	1.00
Received federal aid, and did not receive institution aid, and total Stafford Loan amount received $1 or more	44,740	100.0	1.00
Received federal aid, and received institution aid or institution aid status unknown	15,690	99.9	1.00
Did not receive federal aid	28,130	99.3	1.01
Federal aid status unknown, and CPS record available, and student record complete	770	100.0	1.00
Federal aid status unknown, and CPS record available, and student record not complete or unknown	8,340	91.4	1.13
Federal aid status unknown, and CPS record not available	4,050	61.5	1.61

[1] New England = Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont; Mideast = Delaware, District of Columbia, Maryland, New Jersey, New York, Pennsylvania; Great Lakes = Illinois, Indiana, Michigan, Ohio, Wisconsin; Plains = Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota; Southeast = Alabama, Arkansas, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, West Virginia; Southwest = Arizona, New Mexico, Oklahoma, Texas; Rocky Mountains = Colorado, Idaho, Montana, Utah, Wyoming; Far West = Alaska, California, Hawaii, Nevada, Oregon, Washington.
[2] Enrollment, Stafford Loan, and PLUS categories were defined by quartiles. Pell Grant categories for students receiving less than $5,550 in Pell Grants were defined by computing the median of all students receiving Pell Grants of less than $5,550, then all students receiving Pell Grants of $5,550 are in a single category.
NOTE: CPS = Central Processing System; CHAID = chi-square automatic interaction detection. Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

Student other nonresponse adjustment (WT11). The third, and final, stage of adjustment for student nonresponse was an adjustment for other nonresponse, given that the student was located and did not refuse. NPSAS staff made this additional type of student nonresponse adjustment to compensate further for the potential student nonresponse bias. As with WT9 and WT10, staff used the same WTADJUST SUDAAN procedure and candidate predictor variables. As in the other nonresponse adjustments, staff performed a CHAID analysis on the predictor variables to detect important interactions. Staff then included the resulting segment interactions and all the main effect variables included in the model.

Table 53 shows the final predictor variables used in the model to adjust the student weights and the average weight adjustment factor resulting from these variables. The weight adjustment factors met the following constraints:

- minimum: 1.00;

- median: 1.00; and

- maximum: 62.83.

Table 53.   Weight adjustment factors for student other nonresponse adjustment: 2012

Model predictor variables	Number of respondents	Weighted response rate	Average weight adjustment factor (WT11)
Total	111,060	92.8	1.07
Institution type			
Public			
Less-than-2-year	500	89.7	1.14
2-year	29,790	88.3	1.12
4-year non-doctorate-granting	7,180	93.5	1.06
4-year doctorate-granting	19,880	95.1	1.05
Private nonprofit			
Less-than-4-year	1,100	96.4	1.03
4-year non-doctorate-granting	6,910	96.6	1.05
4-year doctorate-granting	10,180	96.4	1.03
Private for-profit			
Less-than-2-year	4,550	89.2	1.04
2-year	7,860	93.3	1.07
4-year	23,110	95.2	1.08
Institution region[1]			
New England	5,690	93.5	1.07
Mideast	16,960	93.3	1.06
Great Lakes	17,040	94.4	1.07
Plains	8,130	96.4	1.03
Southeast	25,770	94.8	1.06
Southwest	15,740	90.3	1.09
Rocky Mountains	4,900	93.3	1.07
Far West	16,840	87.9	1.12
Institution total enrollment[2]			
0–2,628	26,610	93.3	1.09
2,629–10,233	28,430	94.3	1.05
10,234–26,884	27,770	92.5	1.07
26,885 or more	28,250	91.8	1.08
Student type			
Undergraduate student	95,100	91.9	1.08
Graduate (excluding doctoral-professional practice)	14,030	97.8	1.02
Doctoral-professional practice	1,930	98.3	1.01
First-time beginner (FTB) status (sampled)			
FTB	51,120	93.6	1.08
Not FTB	59,940	92.6	1.07
Age as of December 31, 2011			
15–23	62,170	92.7	1.08
24–29	21,380	93.1	1.07
30 or more	27,510	92.7	1.07
Sampled student type			
Undergraduate	94,910	92.0	1.08
Graduate (excluding doctoral-professional practice)	14,250	97.2	1.02
Doctoral-professional practice	1,900	97.8	1.02

See notes at end of table.

**Table 53. Weight adjustment factors for student other nonresponse adjustment: 2012—
Continued**

Model predictor variables	Number of respondents	Weighted response rate	Average weight adjustment factor (WT11)
Social Security number indicator			
Yes	107,820	93.5	1.07
No	3,240	76.6	1.32
CPS record available			
Yes	86,480	98.7	1.03
No	24,570	80.6	1.23
Pell Grant status			
Received	54,830	98.3	1.04
Did not receive	56,230	89.3	1.11
Total Pell Grant amount received[2]			
$0 or unknown	56,230	89.3	1.11
$1–$2,774	16,840	98.0	1.04
$2,775–$5,549	21,750	98.4	1.03
$5,550 or more	16,240	98.6	1.03
Stafford Loan status			
Received	62,320	98.6	1.03
Did not receive	48,740	87.7	1.13
Total Stafford Loan amount received[2]			
$0 or unknown	48,740	87.7	1.13
$1–$4,699	15,210	98.0	1.04
$4,700–$6,500	16,880	98.6	1.03
$6,501–$9,500	18,350	98.8	1.03
$9,501 or more	11,880	98.9	1.03
Parent loan for undergraduate students (PLUS) amount[2]			
$0 or unknown	103,810	92.5	1.08
$1–$5,477	1,770	97.0	1.10
$5,478–$9,817	1,790	98.9	1.03
$9,818–$15,908	1,820	99.5	1.03
$15,909 or more	1,870	99.5	1.01
Federal aid status			
Received	73,740	99.9	1.00
Did not receive	27,950	99.3	1.18
Unknown	9,370	46.6	1.34
Institution aid status			
Received	20,900	98.8	1.01
Did not receive	78,760	92.7	1.06
Unknown	11,400	80.6	1.29
State aid status			
Received	14,570	99.3	1.01
Did not receive	87,600	93.1	1.06
Unknown	8,890	76.1	1.35

See notes at end of table.

**Table 53.   Weight adjustment factors for student other nonresponse adjustment: 2012—
Continued**

Model predictor variables	Number of respondents	Weighted response rate	Average weight adjustment factor (WT11)
Institution aid status			
Received	20,900	98.8	1.01
Did not receive	78,760	92.7	1.06
Unknown	11,400	80.6	1.29
State aid status			
Received	14,570	99.3	1.01
Did not receive	87,600	93.1	1.06
Unknown	8,890	76.1	1.35
Telephone number count			
0	2,500	80.2	1.18
1	47,550	91.6	1.09
2	45,460	94.1	1.06
3 or more	15,550	95.1	1.06
E-mail address count			
0	3,000	66.0	1.37
1	40,740	88.2	1.11
2	60,380	95.9	1.04
3 or more	6,940	99.2	1.01
Mailing address count			
0	1,670	65.5	1.60
1	49,610	88.7	1.12
2	41,800	97.1	1.03
3 or more	17,970	98.8	1.01
Student record complete indicator			
Complete data	102,560	94.0	1.05
Partial data	320	67.4	1.59
No data	8,170	75.0	1.35
Interview data indicator			
Yes	84,860	99.9	1.08
No	26,190	73.0	1.06
CHAID segments in other nonresponse adjustment model			
CPS record available, and did not receive institution aid, and sampled institution in institution region Mideast	8,660	100.0	1.00
CPS record available, and received institution aid. Or CPS record available, and did not receive institution aid, and sampled institution in institution region New England, Great Lakes, Plains, Southeast, Southwest, Rocky Mountains, Far West. Or CPS record not complete, and mailing address count 0, and student type of undergrad	69,660	99.1	1.01
CPS record available, and institution aid status unknown, and student record complete or not complete	1,770	96.2	1.05
CPS record available, and institution aid status unknown, and student record status unknown	6,600	79.2	1.32
CPS record not complete, and mailing address count 0, and student type of graduate or professional	130	88.6	1.11

See notes at end of table.

Table 53.   Weight adjustment factors for student other nonresponse adjustment: 2012—Continued

Model predictor variables	Number of respondents	Weighted response rate	Average weight adjustment factor (WT11)
CPS record not complete, and mailing address count 1, and student type of professional	190	89.7	1.09
CPS record not complete, and mailing address count 1, and student type of graduate	3,900	95.4	1.04
CPS record not complete, and mailing address count 1, and student type of undergraduate	8,440	69.0	1.48
CPS record not complete, and mailing address count 2, and e-mail address count 0	230	56.0	1.77
CPS record not complete, and mailing address count 2, and e-mail address count 1	4,650	89.7	1.11
CPS record not complete, and mailing address count 2, and e-mail address count 2	3,560	94.0	1.06
CPS record not complete, and mailing address count 2, and e-mail address count 3 or more	130	98.1	1.02
CPS record not complete, and mailing address count 3 or more	3,140	95.0	1.05

[1] New England = Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont; Mideast = Delaware, District of Columbia, Maryland, New Jersey, New York, Pennsylvania; Great Lakes = Illinois, Indiana, Michigan, Ohio, Wisconsin; Plains = Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota; Southeast = Alabama, Arkansas, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, West Virginia; Southwest = Arizona, New Mexico, Oklahoma, Texas; Rocky Mountains = Colorado, Idaho, Montana, Utah, Wyoming; Far West = Alaska, California, Hawaii, Nevada, Oregon, Washington.
[2] Enrollment, Stafford Loan, and PLUS categories were defined by quartiles. Pell Grant categories for students receiving less than $5,550 in Pell Grants were defined by computing the median of all students receiving Pell Grants of less than $5,550, then all students receiving Pell Grants of $5,550 are in a single category.
NOTE: CPS = Central Processing System; CHAID = chi-square automatic interaction detection. Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

Student poststratification adjustment (WT12). To ensure population coverage, NPSAS staff used SUDAAN to further adjust the student weights to known population control totals (control totals) for key variables. Because the random sample of students selected for NPSAS:12 may have had a distribution that differed from the population distribution, poststratification reduces the standard errors by adjusting estimates to external data, or control totals. Control totals were established for the following:

- number of Stafford Loan undergraduate student recipients, by subsidized/unsubsidized loan type by institution type;
- number of Stafford Loan graduate student recipients, by subsidized/unsubsidized loan type by institution type;
- total amount of total Stafford Loans disbursed to undergraduate students, by subsidized/unsubsidized loan type by institution type;
- total amount of total Stafford Loans disbursed to undergraduate students, by subsidized/unsubsidized loan type by institution type;
- Pell Grant amounts awarded, by institution type;
- PLUS amounts disbursed to graduate students, by institution type;
- fall undergraduate student enrollment, by institution type;

- fall graduate student enrollment, by institution type;

- full-year undergraduate student enrollment, by institution type;

- full-year graduate student enrollment, by institution type; and

- full-year student enrollment, by gender, within institution type.

NPSAS staff obtained the PLUS, Stafford Loan, and Pell Grant control totals from the U.S. Department of Education. Staff obtained fall and full-year enrollment counts from the 2012 IPEDS Fall and 12-Month Enrollment Components (Preliminary) for the 2011–12 academic year. Using those data, NPSAS staff poststratified weights to the control totals, truncating and smoothing high-extreme weights.

To ensure population coverage, NPSAS staff used SUDAAN to further adjust the student weights to known population control totals (control totals) for key variables. Because the random sample of students selected for NPSAS:12 may have had a distribution that differed from the population distribution, poststratification reduces the standard errors by adjusting estimates to external data, or control totals.

Student enrollment control totals were determined using IPEDS data, which can be downloaded from the online IPEDS data center at http://nces.ed.gov/ipeds/datacenter/DataFiles.aspx. The IPEDS data files used to construct the student enrollment control totals included the following five files:

- EF2011A: 2011 Fall Enrollments– Race/ethnicity, gender, attendance status, and level of student: Fall 2011

- EFFY2012: 2012 Full-year Enrollments–12-month unduplicated headcount: 2011–12

- HD2012: 2012 Institution Characteristics–Directory information

- IC2012: 2012 Institution Characteristics–Educational offerings, organization, admissions, services and athletic associations

- IC2012PY: 2012 Institution Characteristics–Student charges by program (vocational programs)

Institution characteristics data from the HD2012, IC2012 and IC2012PY files were used in determining which schools were in the NPSAS population of institutions and were also used create the SECTOR10 (institution type) variable. The EF2011A and EFFY2012 files were used to determine the enrollment totals for fall and full year, respectively. Student enrollment control totals were established for the following:

- fall undergraduate student enrollment, by institution type;

- fall graduate student enrollment, by institution type;

  Both fall undergraduate and graduate student totals were revised based on the following formula:

  NPSAS control total = (1/mean student multiplicity)*IPEDS Fall enrollment total

  Where NPSAS control total, mean student multiplicity, and IPEDS control total are all for fall enrollees for the given sector and student level of interest.

- full-year undergraduate student enrollment, by institution type;

- full-year graduate student enrollment, by institution type; and

> *Both full-year undergraduate and graduate student totals were revised based on the following formula:*
>
> *NPSAS full year control total = (1/mean student multiplicity)*IPEDS Full year enrollment total*
>
> *Where NPSAS control total, mean student multiplicity, and IPEDS enrollment total are for the given sector and student level of interest.*

- full-year student enrollment, by gender, within institution type.

  NPSAS Female control total =NPSAS full year control total * Proportion Female

  Where:

  Proportion female= IPEDS Female full year enrollment total / IPEDS full year enrollment total

  NPSAS Female control total, NPSAS full year control total, Proportion Female, IPEDS Female full year enrollment total, and IPEDS full year enrollment total are all for the sector of interest and all totals include undergraduate and graduate students.

Stafford loans, for which there are several control totals, is the largest single loan program—in terms of the number of students affected as well as the dollars involved. Therefore, having accurate data on Stafford loans by loan type, institution type, and level (undergraduate or graduate) is crucial for weighting Stafford borrowing in the survey. Prior to NPSAS:08, the dollars used for poststratifying student weights were the gross loan commitments—the amounts that schools and lenders expect to award to students based on their loan applications—collected by the Department of Education (ED). For NPSAS:08 and NPSAS:12, staff used net disbursements—the amounts that the students actually receive—for poststratification instead because they more accurately reflect the amount of money students are actually borrowing. NPSAS staff also considered using the amount of Pell Grants awarded by class level as a poststratification weight adjustment factor, but importing and matching those data for the entire population of 9.5 million 2011–12 Pell grant recipients was cost prohibitive.

For NPSAS:12, staff revised student poststratification adjustment procedures to use current year (i.e., 2011–12), rather than prior year, 12-month enrollment totals as was done in NPSAS:08. Given the significant enrollment shifts that occurred in some sectors between 2006–07 and 2007–08, NCES revised the weights accompanying NPSAS:08 to use 2007–08, rather than 2006–07, 12-month enrollment totals. This revision greatly improves estimates for students enrolled in the private for-profit sector, where the enrollment shifts resulted in inflated estimates of the incidence of certain types of financial aid.

After poststratification, NPSAS staff compared weighted estimates for key variables with other estimates, such as estimates from NPSAS:08 and found the NPSAS:12 estimates to be reasonable. Table 54 shows the variables associated with the control totals and the average weight adjustment factors for these variables. The weight adjustment factors from SUDAAN are summarized below and met the following constraints:

- minimum: 0.03;

- median: 1.08; and

- maximum: 73.6.

After this last weight adjustment was performed, NPSAS staff computed the final student weight (WTA000) as the product of the 12 weight components described in section 6.3.

Table 54.   Weight adjustment factors for student poststratification: 2012

Model predictor variables	Control total	Average weight adjustment factor (WT12)
Fall undergraduate student enrollment, by institution type		
Public		
Less-than-2-year	56,211	1.56
2-year	6,390,190	1.00
4-year non-doctorate-granting	1,953,801	1.01
4-year doctorate-granting	4,059,039	1.03
Private nonprofit		
Less-than-4-year	61,883	1.18
4-year non-doctorate-granting	1,165,409	1.07
4-year doctorate-granting	1,292,691	1.14
Private for-profit		
Less-than-2-year	277,296	0.78
2-year	464,743	1.43
4-year	1,185,899	0.87
Fall graduate student enrollment, by institution type		
Public		
4-year non-doctorate-granting	150,122	1.07
4-year doctorate-granting	1,216,062	1.09
Private nonprofit		
4-year non-doctorate-granting	174,663	0.88
4-year doctorate-granting	983,711	1.00
Private for-profit 4-year	285,339	1.31
Full-year undergraduate student enrollment, by institution type		
Public		
Less-than-2-year	87,505	3.19
2-year	9,948,913	2.61
4-year non-doctorate-granting	2,513,529	1.70
4-year doctorate-granting	4,587,830	1.16
Private nonprofit		
Less-than-4-year	95,536	2.13
4-year non-doctorate-granting	1,376,241	2.84
4-year doctorate-granting	1,501,320	2.67
Private for-profit		
Less-than-2-year	493,849	1.32
2-year	803,084	3.46
4-year	2,019,069	3.50
Full-year graduate student enrollment, by institution type		
Public		
4-year non-doctorate-granting	242,084	1.84
4-year doctorate-granting	1,519,423	1.49
Private nonprofit		
4-year non-doctorate-granting	270,586	2.02
4-year doctorate-granting	1,229,291	1.64
Private for-profit 4-year	437,521	2.38

See notes at end of table.

Table 54.   Weight adjustment factors for student poststratification: 2012—Continued

Model predictor variables	Control total	Average weight adjustment factor (WT12)
Full-year student enrollment, by gender, within institution type		
Male		
Public		
Less-than-2-year	37,371	3.68
2-year	4,348,857	2.90
4-year non-doctorate-granting	1,162,745	1.84
4-year doctorate-granting	2,774,833	1.26
Private nonprofit		
Less-than-4-year	32,949	1.52
4-year non-doctorate-granting	669,986	2.89
4-year doctorate-granting	1,167,213	2.03
Private for-profit		
Less-than-2-year	123,430	1.53
2-year	278,056	2.42
4-year	929,926	3.17
Female		
Public		
Less-than-2-year	50,133	2.84
2-year	5,600,056	2.39
4-year non-doctorate-granting	1,592,868	1.62
4-year doctorate-granting	3,332,420	1.26
Private nonprofit		
Less-than-4-year	62,588	2.69
4-year non-doctorate-granting	976,841	2.49
4-year doctorate-granting	1,563,398	2.18
Private for-profit		
Less-than-2-year	370,419	1.25
2-year	525,028	4.13
4-year	1,526,664	3.60
Amount of Pell Grants awarded, by institution type		
Public		
Less-than-2-year	$171,399,110	3.04
2-year	$10,968,665,208	1.95
4-year non-doctorate-granting	$3,540,565,092	1.64
4-year doctorate-granting	$6,882,644,087	1.26
Private nonprofit		
Less-than-4-year	$170,809,538	1.76
4-year non-doctorate-granting	$2,024,975,377	4.12
4-year doctorate-granting	$1,879,009,914	3.16
Private for-profit		
Less-than-2-year	$1,293,209,706	1.31
2-year	$1,440,382,987	2.89
4-year	$4,159,190,069	3.49

See notes at end of table.

Table 54.   Weight adjustment factors for student poststratification: 2012—Continued

Model predictor variables	Control total	Average weight adjustment factor (WT12)
Number of Stafford Loan undergraduate student recipients, by subsidized/unsubsidized loan type within institution type		
Subsidized		
Public		
Less-than-2-year	14,918	0.55
Public 2-year	1,499,428	1.76
Public 4-year non-doctorate-granting	805,932	1.64
Public 4-year doctorate-granting	2,193,536	1.33
Private nonprofit		
Less-than-4-year	39,750	1.77
4-year non-doctorate-granting	752,736	7.72
4-year doctorate-granting	801,303	5.80
Private for-profit		
Less-than-2-year	344,797	2.31
2-year	418,351	4.49
4-year	1,394,868	6.52
Unsubsidized		
Public		
Less-than-2-year	13,731	1.33
2-year	1,185,633	1.38
4-year non-doctorate-granting	752,784	1.32
4-year doctorate-granting	2,124,671	1.21
Private nonprofit		
Less-than-4-year	37,023	1.44
4-year non-doctorate-granting	757,597	2.16
4-year doctorate-granting	805,074	1.93
Private for-profit		
Less-than-2-year	321,562	1.13
2-year	390,751	2.14
4-year	1,343,511	3.17
Number of Stafford Loan graduate student recipients, by subsidized/unsubsidized loan type within institution type		
Subsidized		
Public		
4-year non-doctorate-granting	65,608	1.35
4-year doctorate-granting	528,986	1.37
Private nonprofit		
4-year non-doctorate-granting	102,615	1.94
4-year doctorate-granting	544,310	0.95
Private for-profit 4-year	246,580	1.18
Unsubsidized		
Public		
4-year non-doctorate-granting	53,186	1.09
4-year doctorate-granting	453,565	1.16
Private nonprofit		
4-year non-doctorate-granting	98,264	1.26
4-year doctorate-granting	516,634	1.27
Private for-profit 4-year	247,602	2.21

See notes at end of table.

Table 54. Weight adjustment factors for student poststratification: 2012—Continued

Model predictor variables	Control total	Average weight adjustment factor (WT12)
Total amount of total Stafford Loans disbursed to undergraduate students, by subsidized/unsubsidized loan type		
Subsidized		
Public		
Less-than-2-year	$41,718,854	0.55
2-year	$4,322,235,647	1.76
4-year non-doctorate-granting	$2,886,967,737	1.64
4-year doctorate-granting	$8,464,692,964	1.33
Private nonprofit		
Less-than-4-year	$123,284,803	1.77
4-year non-doctorate-granting	$2,886,131,604	7.72
4-year doctorate-granting	$3,162,310,743	5.80
Private for-profit		
Less-than-2-year	$956,794,752	2.31
2-year	$1,247,298,870	4.49
4-year	$4,574,058,839	6.52
Unsubsidized		
Public		
Less-than-2-year	$53,152,050	1.33
2-year	$4,014,251,456	1.38
4-year non-doctorate-granting	$2,938,265,195	1.32
4-year doctorate-granting	$8,392,497,685	1.21
Private nonprofit		
Less-than-4-year	$145,566,294	1.44
4-year non-doctorate-granting	$2,966,993,114	2.16
4-year doctorate-granting	$3,087,028,476	1.93
Private for-profit		
Less-than-2-year	$1,198,324,828	1.13
2-year	$1,536,954,697	2.14
4-year	$5,991,645,595	3.17
Total amount of total Stafford Loans disbursed to graduate students, by subsidized/unsubsidized loan type		
Subsidized		
Public		
4-year non-doctorate-granting	$437,031,726	1.35
4-year doctorate-granting	$3,988,636,197	1.37
Private nonprofit		
4-year non-doctorate-granting	$718,691,369	1.94
4-year doctorate-granting	$4,278,722,135	0.95
Private for-profit 4-year	$1,700,041,175	1.18
Unsubsidized		
Public		
4-year non-doctorate-granting	$427,779,992	1.09
4-year doctorate-granting	$5,550,992,911	1.16
Private nonprofit		
4-year non-doctorate-granting	$862,253,710	1.26
4-year doctorate-granting	$6,777,825,875	1.27
Private for-profit 4-year	$2,177,263,236	2.21

See notes at end of table.

Table 54.   Weight adjustment factors for student poststratification: 2012—Continued

Model predictor variables	Control total	Average weight adjustment factor (WT12)
PLUS loan amounts disbursed to graduate students, by institution type		
Public		
4-year non-doctorate-granting	$15,369,311	0.64
4-year doctorate-granting	$1,590,465,348	0.98
Private nonprofit		
4-year non-doctorate-granting	$180,994,377	1.12
4-year doctorate-granting	$4,579,387,497	1.14
Private for-profit 4-year	$384,977,283	0.99

NOTE: PLUS = parent loan for undergraduate students. Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

6.3.5 Weighting Adjustment Performance

Institution weighting adjustment performance. Table 55 summarizes the institution weight distributions and the variance inflation caused by unequal weighting (i.e., UWE, by institution type). The median institution weights range from 1.3 for public 4-year doctorate-granting institutions to 13.9 for private for-profit less-than-2-year institutions. The mean institution weight ranges from 1.5 for public 4-year doctorate-granting institutions to 30.7 for private for-profit less-than-2-year institutions. The UWE is 8.7 overall and ranges from 1.5 for public 4-year doctorate-granting institutions to 6.7 for private for-profit 2-year institutions.

Table 55.   Institution weight distribution and unequal weighting effects, by type of institution: 2012

Type of institution	Minimum	First quartile	Median	Third quartile	Maximum	Mean	Unequal weighting effect[1]
Total	1.12	1.28	1.91	3.65	311.91	4.71	8.74
Public							
Less-than-2-year	1.63	5.14	7.06	23.88	68.89	16.07	2.25
2-year	1.13	1.43	2.04	3.33	56.02	3.41	3.42
4-year non-doctorate-granting	1.15	1.25	1.95	3.42	13.32	2.75	1.63
4-year doctorate-granting	1.12	1.14	1.26	1.47	14.07	1.54	1.54
Private nonprofit							
Less-than-4-year	2.00	4.27	6.69	13.84	82.65	13.17	2.93
4-year, non-doctorate-granting	1.22	1.91	2.84	4.69	58.32	4.48	2.68
4-year doctorate-granting	1.14	1.25	1.56	2.23	53.43	2.74	4.35
Private for-profit							
Less-than-2-year	2.09	6.35	13.87	42.32	159.16	30.72	2.63
2-year	1.40	3.91	6.40	13.20	311.91	14.79	6.68
4-year	1.16	1.21	1.54	2.38	29.59	2.67	2.79

[1] Unequal weighting effect calculated as sample size multiplied by the sum of the squared weights, divided by the sum of the weights squared.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

To assess the overall predictive ability of the institution nonresponse model, NPSAS staff used a Receiver Operating Characteristic (ROC) curve (Hanley and McNeil 1982). The ROC

provides a measure of how well the model correctly classified individuals of known response type—in other words, how well the model predicts an institution's response propensity.[16] NPSAS staff developed the ROC curve in the following manner. For any specified probability, c, staff calculated two proportions:

- the proportion of respondents with a predicted probability of response greater than c, and

- the proportion of nonrespondents with a predicted probability of response greater than c.

The plot of the first probability against the second, for c from zero to 1, resulted in the ROC curve shown in figure 12. The area under the curve equals the probability that the fitted model correctly classifies two randomly chosen individuals—one of whom is a true respondent, while the other is a true nonrespondent—where the individual with the higher predicted probability of response is classified as the respondent. An area of 0.5 under an ROC curve indicates that a correct classification is made 50 percent of the time, with the model providing no predictive benefit. An area of 1.0 indicates that the true respondent always has the higher predicted probability of response, so the model always classifies the two individuals correctly. In Figure 12, the area under the ROC curve is 0.86, so the predicted probabilities give the correct classification 86 percent of the time. Researchers can also interpret predictive probabilities from ROC curves in terms of the nonparametric Wilcoxon test statistic, where the ROC area of 0.86 equals the value of the Wilcoxon test statistic. Viewed in this way, the Wilcoxon test rejects the null hypothesis of no predictive ability. Analysts can interpret this result to mean that the variables used in the model are definitive predictors of a sample institution's overall response propensity.

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[16] For a more detailed example of the ROC curve used in nonresponse modeling, see Iannacchione (2003).

Figure 12. Receiver Operating Characteristic (ROC) curve for overall institution response propensity: 2012
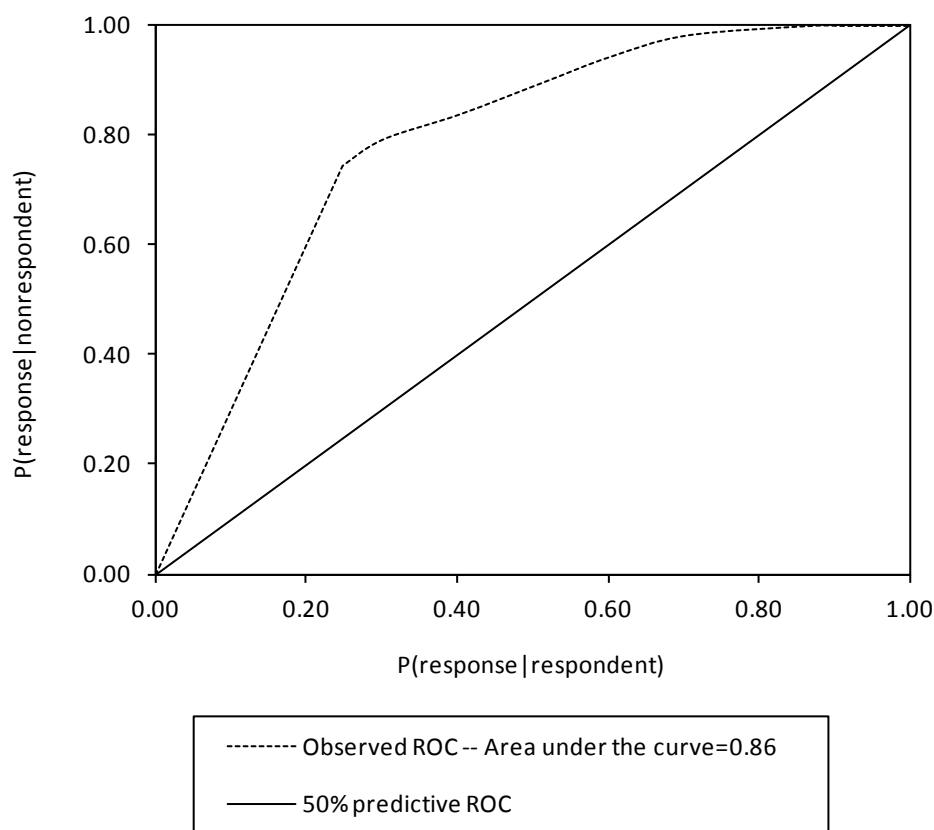
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

Student weighting adjustment performance. Table 56 summarizes the student weight distributions and the variance inflation due to the UWE, by student type and type of institution. The median student weight ranges from 17 for students in private for-profit 4-year institutions to 329 for students in public 4-year non-doctorate-granting institutions. The mean student weight ranges from 79 for students in private nonprofit less-than-4-year institutions to 371 for students in public 4-year non-doctorate-granting institutions.

The UWE is 2.8 overall and ranges from 1.4 for doctoral professional students to 6.2 for students in private for-profit 4-year institutions. The UWEs are caused to some extent by the oversampling of FTB certificate seeking students due to greater differential sampling rates. Certificate seekers were sampled at higher rates than planned for some schools because fewer certificate seekers were identified on the enrollment lists than expected based on IPEDS data. This caused greater differences in sampling rates among the FTB certificate seekers and between the FTB certificate seekers and the other student strata.

Table 56.   Student weight distribution and unequal weighting effects: 2012

Analysis domain	Minimum	First quartile	Median	Third quartile	Maximum	Mean	Unequal weighting effect [1]
Total	0.50	29.81	129.56	345.97	9409.82	240.76	2.84
Institution type							
Public							
Less-than-2-year	1.53	29.32	71.75	145.47	2765.66	173.90	3.93
2-year	0.53	56.63	196.94	438.09	9409.82	323.04	2.52
4-year non-doctorate-granting	1.12	153.14	328.69	496.20	3171.34	370.58	1.73
4-year doctorate-granting	1.36	154.32	283.20	414.93	2888.05	316.83	1.61
Private nonprofit							
Less-than-4-year	3.12	17.75	34.75	103.94	985.72	79.29	2.80
4-year non-doctorate-granting	1.01	84.69	139.11	343.75	2784.23	236.11	2.36
4-year doctorate-granting	0.90	42.81	110.25	309.67	5648.57	273.94	3.42
Private for-profit							
Less-than-2-year	2.06	20.95	70.04	151.85	813.41	103.39	2.08
Private for-profit 2-year	0.95	9.68	25.61	101.22	2143.25	89.92	4.80
Private for-profit 4-year	0.50	5.59	16.83	82.01	5952.25	103.12	6.18
Student type							
Undergraduate	0.50	25.21	138.76	357.97	9,409.82	242.44	2.77
Graduate (excluding doctoral-professional practice)	0.90	41.98	89.46	277.86	5,952.25	236.21	3.46
Doctoral-professional practice	2.99	133.49	175.59	229.69	1,941.23	191.05	1.39

[1] Unequal weighting effect calculated as sample size multiplied by the sum of the squared weights, divided by the sum of the weights squared.
NOTE: Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

To assess the overall predictive ability of the student nonresponse model, analysts developed an ROC curve as described in the previous section. Figure 13 shows that the area under the ROC curve is 0.89, so the predicted probabilities give the correct classification 89 percent of the time. Predictive probabilities from ROC curves can also be interpreted in terms of the nonparametric Wilcoxon test statistic, where the ROC area of 0.89 is equivalent to the value of the Wilcoxon test statistic. Viewed in this way, the Wilcoxon test rejects the null hypothesis of no predictive ability. This result can be interpreted to mean that the variables used in the model are highly informative predictors of a sample student's overall response propensity. The predicted probabilities of response (c_i) are the product of the predicted response probabilities obtained at each of the three nonresponse adjustment steps. Note that for the second and third nonresponse adjustments (refusal and other nonresponse adjustments) predicted probabilities were not directly available for students who had already been dropped from the model because they were adjusted for in the first nonresponse adjustment. For these students, their predicted probability was set equal to the mean of the predicted probabilities of students still in the model.

Figure 13. Receiver Operating Characteristic (ROC) curve for overall student response propensity: 2012
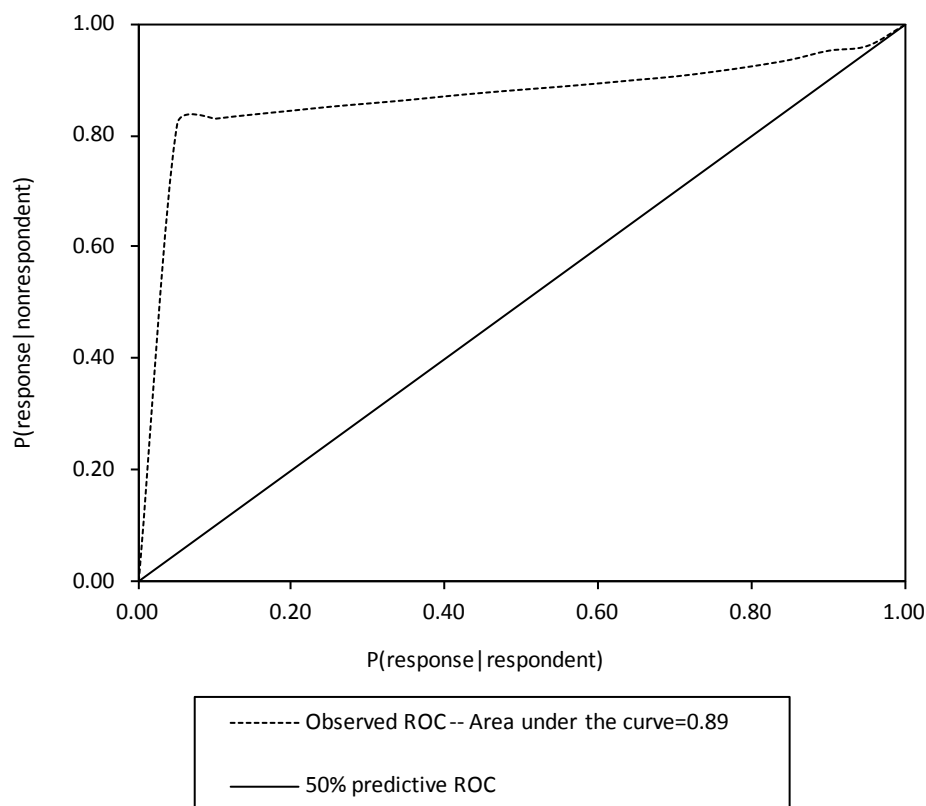
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

6.4   Nonresponse Bias Analysis

NPSAS staff conducted nonresponse bias analyses for institutions and students overall and by institution sector, regardless of response rate, because they had included all sectors in the nonresponse weight adjustments. For items with a response rate less than 85 percent overall or for any sector, staff conducted a nonresponse bias analysis.[17] Staff conducted student bias analyses separately for study members and interview respondents.

The bias in an estimated mean based on respondents, $\bar{y}_R$, is the difference between this mean and the target parameter, π (i.e., the mean that would be estimated if one conducted a complete census of the target population and everyone responded). Analysts can express this bias as follows:

$$B(\bar{y}_R) = \bar{y}_R - \pi.$$

Analysts can compute the estimated mean based on nonrespondents, $\bar{y}_{NR}$, if they have data for the particular variable for most of the nonrespondents. They can estimate the true target parameter, π, for these variables as follows:

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[17] See *NCES Statistical Standards* for a discussion of nonresponse bias analysis (U.S. Department of Education 2003).

$$\hat{\pi} = (1-\eta)\bar{y}_R + \eta\bar{y}_{NR},$$

where η is the weighted unit (or item) nonresponse rate. For the variables that are from the frame, rather than from the sample, analysts can estimate π without sampling error. They can then estimate bias 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 that for nonrespondents, multiplied by the weighted nonresponse rate.

The relative bias estimate is defined as the ratio of the estimated bias divided by the sample mean based only on respondent cases, using the base weight, as follows:

$$\mathrm{Re}l\hat{B}(\bar{y}_R) = \hat{B}(\bar{y}_R)/\bar{y}_R.$$

This definition of relative bias provides a measure of the magnitude of the bias relative to the respondent weighted mean.

Staff also examined the differences in weighted means comparing the means for respondents using the final weights to the means of respondents using the nonresponse adjusted weight and to the means of the full sample using the base weight.

Summary tables of the nonresponse bias analysis results and the mean comparisons are included in each section below. Detailed tables showing the estimated bias before and after nonresponse weight adjustments and the mean comparisons overall and for each sector are included in appendix J.

6.4.1 Institution

As shown in table 3, there were 1,480 respondent institutions from among the 1,690 eligible sample institutions (88 percent unweighted and 87 percent weighted). The institution weighted response rate is less than 85 percent for five of the ten institution types:

1. public less-than-2-year institutions;
2. public 2-year institutions;
3. private, nonprofit, less-than-4-year institutions;
4. private, for-profit, less-than-2-year institutions; and
5. private for-profit 2-year institutions.

The weighted response rates, by type of institution, range from 78 percent for private nonprofit less-than-4-year institutions and private for-profit 2-year institutions to 92 percent for public 4-year non-doctorate-granting institutions.

NPSAS staff conducted a nonresponse bias analysis overall and for each institution sector. They estimated the nonresponse bias and compared the differences in means for variables known—that is, nonmissing—for most respondents and nonrespondents, and added some variables that were not included in the nonresponse weight adjustment. Bias estimates and differences were suppressed

for variable categories with fewer than five institution-level nonrespondents. Extensive data are available for all institutions from the Integrated Postsecondary Education Data System (IPEDS). NPSAS staff used the following variables:

- institution type;
- Carnegie classification code;
- degree of urbanization;
- institution region;
- historically black college or university;
- Hispanic-Serving Institution;
- percentage receiving federal grant aid;
- percentage receiving state/local grant aid;
- percentage receiving institution grant aid;
- percentage receiving student loan aid;
- average net price among students receiving grant or scholarship aid;
- percentage enrolled: Black, non-Hispanic;
- percentage enrolled: Asian or Pacific Islander;
- percentage enrolled: Hispanic;
- total undergraduate enrollment;
- total male undergraduate enrollment;
- total female undergraduate enrollment;
- total graduate enrollment;
- total male graduate enrollment;
- total female graduate enrollment;
- percentage of full-time, first-time degree/certificate-seeking undergraduate students who received any grant aid;
- graduation rate of full-time, first-time degree/certificate-seeking undergraduates within 150 percent of normal time to completion;
- public institution tuition and fees as percent of core revenues (GASB reporting);
- private institution tuition and fees as percent of core revenues (FASB reporting);
- public institution instructional expenses per FTE enrollment (GASB reporting); and
- private institution instructional expenses per FTE enrollment (FASB reporting).[18]

For the institution-level variables listed above, NPSAS staff first estimated the nonresponse bias by comparing base weighted respondents to both nonrespondents and the full sample and

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[18] For the continuous variables, categories were formed based on quartiles.

testing to determine whether it significantly differed from zero at the 5 percent level. The two comparisons yield identical bias estimates but not always the same significance testing results. Second, staff computed nonresponse adjustments to significantly reduce or eliminate nonresponse bias for key variables included in the models. Third, using base weights adjusted for nonresponse, staff re-estimated bias and performed statistical tests to check for any remaining significant nonresponse bias. Finally, to better understand the effect of poststratification on efforts to reduce nonresponse bias, they created two additional sets of estimates. The first, the difference in respondent means before and after poststratification, represents the effect of poststratification on nonresponse adjustments. The second, the difference in base weighted full sample means and the poststratified respondent means, represents the cumulative effect of all weighting and adjustment steps.

As shown in table 57, the institution nonresponse weighting adjustment eliminated some, but not all, significant bias on the observable characteristics (estimates for sectors with fewer than 30 institutions excluded). Before weighting, the percentage of variable categories that were significantly biased ranged from 0 percent for four institution sectors to 14.6 percent for public 4-year doctorate-granting institutions. After the nonresponse weight adjustment, the percentage of variable categories that remained significantly biased ranged from 0 percent overall and for three institution sectors to 15.6 percent for private for-profit 4-year institutions. As shown in appendix J, in four of the five sectors with remaining significant bias (ranging from -10.6 to 5.1), the bias remained in one or two categories of the variables: percentage of students receiving state/local grant aid, percentage of students receiving institution grant aid, and percentage of Hispanic students enrolled. In the private for-profit 4-year sector, the bias (ranging from -2.5 to 5.1) remained in one or two categories of the variables: percentage of students receiving student loan aid, total and female undergraduate enrollment, graduation rate, and tuition and fees.

As shown in table 58, the mean and median absolute differences between means for respondents before and after poststratification adjustment ranged from zero (mean) for private for-profit less-than-2-year institutions to 1.9 and 1.8 (median) for private for-profit 2-year institutions (estimates for sectors with fewer than 30 institutions excluded). The mean and median absolute differences between means for the full sample and respondents after poststratification adjustment ranged from 0.5 and 0.4 (mean) for public 4-year non-doctorate-granting institutions to 6.5 to 4.7 (median) for private for-profit less-than-2-year institutions. See appendix J for detailed institution nonresponse bias tables.

Table 57. Summary of institution nonresponse bias analysis, by type of institution: 2012

Nonresponse bias statistics[1]	Overall	Public				Private nonprofit			Private for-profit		
		Less-than-2-year	2-year	4-year non-doctorate-granting	4-year doctorate-granting	Less-than-4-year	4-year non-doctorate-granting	4-year doctorate-granting	Less-than-2-year	2-year	4-year
Before weight adjustments											
Mean percent relative bias across characteristics	6.06	‡	6.59	0.95	3.04	‡	4.28	8.69	17.01	8.01	12.63
Median percent relative bias across characteristics	5.00	‡	4.60	0.61	1.94	‡	3.37	5.99	11.96	5.80	2.58
Percentage of characteristics with significant bias	10.74	‡	10.91	#	14.63	‡	1.96	#	#	#	6.67
After nonresponse weight adjustments											
Mean percent relative bias across characteristics	5.07	‡	4.67	1.05	1.74	‡	4.42	10.44	15.46	12.93	13.13
Median percent relative bias across characteristics	3.47	‡	2.97	0.58	1.16	‡	3.04	8.76	12.89	11.19	3.19
Percentage of characteristics with significant bias	#	‡	1.82	#	2.44	‡	3.92	#	7.14	#	15.56

‡ Reporting standards not met (too few cases for a reliable estimate).
# Rounds to zero.
[1] Relative bias and significance calculated on respondents vs. full sample. Relative bias is defined as the ratio of estimated bias to the weighted mean of the respondent cases.
NOTE: Variable categories with fewer than five nonrespondents were suppressed for calculations in this table.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

Table 58.   Summary of institution differences between means, by type of institution: 2012

Summary statistics	Overall	Public				Private nonprofit			Private for-profit		
		Less-than-2-year	2-year	4-year non-doctorate-granting	4-year doctorate-granting	Less-than-4-year	4-year non-doctorate-granting	4-year doctorate-granting	Less-than-2-year	2-year	4-year
Difference between means for respondents before and after poststratification adjustment[1]											
Mean absolute difference across characteristics	0.68	‡	0.48	0.08	0.79	‡	1.02	0.37	#	1.91	0.03
Median absolute difference across characteristics	0.44	‡	0.38	0.08	0.43	‡	0.68	0.30	#	1.80	0.02
Difference between means for full sample and respondents after poststratification adjustment[2]											
Mean absolute difference across characteristics	1.10	‡	1.18	0.53	0.95	‡	1.16	2.37	6.46	2.44	1.42
Median absolute difference across characteristics	0.74	‡	0.93	0.40	0.67	‡	0.88	1.71	4.71	1.80	1.23

‡ Reporting standards not met (too few cases for a reliable estimate).
# Rounds to zero.
[1] Respondents before poststratification adjustment are weighted using the base weight, adjusted for multiplicity and nonresponse. Respondents after poststratification adjustment are weighted using the base weight, adjusted for multiplicity, nonresponse, and poststratification.
[2] Full sample is weighted using the base weight, adjusted for multiplicity. Respondents after poststratification adjustment are weighted using the base weight, adjusted for multiplicity, nonresponse, and poststratification.
NOTE: Variable categories with fewer than five nonrespondents were suppressed for calculations in this table.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

6.4.2 Study Member

A study member is defined as any student sample member who is determined eligible for the study and has valid data from any source for a selected set of key analytical variables. While these were the minimal data requirements, the vast majority of study members had considerably more complete data.

Of the 123,600 eligible students, the unweighted and weighted rates of study membership were 90 and 91 percent, respectively. The rate of study membership was below 85 percent for 1 of the 10 types of institutions: private for-profit less-than-2-year. The weighted study membership rates, by type of institution, ranged from 84 percent for students in private for-profit less-than-2-year institutions to 96 percent for students in private nonprofit 4-year non-doctorate-granting institutions.

Using the procedure described above, NPSAS staff conducted a nonresponse bias analysis overall and within each institution sector, including each sector regardless of response rate since all sectors were included in the nonresponse weight adjustments. Staff estimated the nonresponse bias and differences in means for variables known—that is, nonmissing—for most respondents and nonrespondents, and they added some variables that were not included in the nonresponse weight adjustment. Staff suppressed bias estimates and differences for variable categories with fewer than 30 student-level nonrespondents. They used the following variables to assess student-level nonresponse bias:

For all sample members,

- institution type;
- institution region;
- student type (undergraduate, graduate, or first professional);
- sampled FTB status (FTB/not FTB);
- student age as of December 31, 2011;
- major (2-digit CIP code);
- degree program (undergraduates only);
- class level (undergraduates only);
- CPS match (yes/no);
- federal aid recipient (yes/no);
- Pell Grant recipient (yes/no);
- Stafford Loan recipient (yes/no);
- institution aid recipient (yes/no);
- state aid recipient (yes/no);
- institution total enrollment;
- institution percentage of undergraduates who received any grant aid;
- public institution tuition and fees as percent of core revenues (GASB reporting);

- private institution tuition and fees as percent of core revenues (FASB reporting);

- public institution instructional expenses per FTE enrollment (GASB reporting); and

- private institution instructional expenses per FTE enrollment (FASB reporting)

For federally aided students,

- Pell Grant amount; and

- Stafford Loan amount.[19]

As shown in table 59, the student nonresponse weighting adjustment eliminated some, but not all, study member significant bias on the observable characteristics. Before weighting, the percentage of variable categories that were significantly biased ranged from 0 percent for students in private nonprofit less-than-4-year institutions to 68.8 percent for students in private for-profit less-than-2-year institutions. The percentage of variable categories that remained significantly biased after the nonresponse weight adjustment ranged from 5.2 percent for students in private for-profit 2-year institutions to 28.1 percent for students in private for-profit less-than-2-year institutions. As shown in appendix J, overall, significant bias remained in one category of the variable tuition and fees; two categories of federal aid status, major, and degree program; and three categories of class level. Significant bias was -5.1 and 5.1 for the federal aid status categories and ranged from -0.6 to 0.5 for the other variables. For each sector, all variables had remaining significant bias for at least one category, except for CPS record available and instructional expense. Bias for federal aid status was significant for one or two categories in nine of the ten sectors and ranged from -8.6 to 8.7. Major had one to five categories with significant bias in five sectors, and degree program and class level had one or two categories with significant bias in six and five sectors, respectively. The remaining variables had one to four categories with significant bias in one or two sectors. Significant remaining bias for variables other than federal aid status ranged from -3.3 to 1.3, with the majority between1.0 and 1.0.

As shown in table 60, the mean and median absolute differences between means for respondents before and after poststratification adjustment ranged from 0.5 and 0.3, respectively, for students in public 4-year doctorate-granting institutions to 8.2 and 4.6, respectively, for students in private for-profit less-than-2-year institutions. The mean and median absolute differences between means for the full sample and respondents after poststratification adjustment ranged from 0.6 and 0.3, respectively, for students in public 4-year doctorate-granting institutions to 7.9 and 3.4, respectively, for students in private for-profit less-than-2-year institutions. See appendix J for detailed study member nonresponse bias tables.

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[19] For the continuous variables, categories were formed based on quartiles.

Table 59.   Summary of student-level bias analysis, by type of institution: 2012

Nonresponse bias statistics[1]	Overall	Public				Private nonprofit			Private for-profit		
		Less-than-2-year	2-year	4-year non-doctorate-granting	4-year doctorate-granting	Less-than-4-year	4-year non-doctorate-granting	4-year doctorate-granting	Less-than-2-year	2-year	4-year
Before weight adjustments - study member											
Mean percent relative bias across characteristics	5.29	46.21	8.73	8.16	4.43	8.69	5.01	4.07	13.35	8.30	6.86
Median percent relative bias across characteristics	2.91	9.68	4.02	1.67	0.91	3.34	1.45	1.59	10.68	3.37	3.38
Percentage of characteristics with significant bias	64.10	40.00	53.75	36.21	32.84	#	43.33	38.18	68.75	34.48	57.14
Before weight adjustments - interview											
Mean percent relative bias across characteristics	8.45	23.77	7.88	8.01	5.08	16.95	7.44	4.85	7.68	8.37	9.97
Median percent relative bias across characteristics	6.54	12.44	4.31	4.07	2.00	8.09	3.60	2.86	6.17	4.58	4.87
Percentage of characteristics with significant bias	76.42	30.56	50.00	50.62	41.76	14.55	50.65	34.62	21.05	33.33	47.56
After nonresponse weight adjustments											
Mean percent relative bias across characteristics	1.49	10.64	3.10	4.34	2.72	6.43	2.77	1.59	2.86	1.89	2.19
Median percent relative bias across characteristics	0.20	3.67	1.06	1.06	0.42	2.68	0.92	0.82	1.66	1.35	0.99
Percentage of characteristics with significant bias	8.55	10.00	13.75	13.79	10.45	5.56	11.67	9.09	28.13	5.17	12.86

\# Rounds to zero.
[1] Relative bias and significance calculated on respondents vs. full sample. Relative bias is defined as the ratio of estimated bias to the weighted means of the respondent cases.
NOTE: Variable categories with fewer than 30 nonrespondents were suppressed for calculations in this table.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

Table 60. Summary of student-level differences between means, by type of institution: 2011–12

Summary statistics	Overall	Public				Private nonprofit			Private for-profit		
		Less-than-2-year	2-year	4-year non-doctorate-granting	4-year doctorate-granting	Less-than-4-year	4-year non-doctorate-granting	4-year doctorate-granting	Less-than-2-year	2-year	4-year
Difference between means for respondents before and after poststratification adjustment[1]											
Mean absolute difference across characteristics	1.09	6.64	1.44	1.31	0.54	3.95	1.45	0.81	8.23	3.07	1.15
Median absolute difference across characteristics	0.54	2.54	0.41	0.80	0.35	1.69	0.73	0.63	4.60	1.31	0.68
Difference between means for full sample and respondents after poststratification adjustment[2]											
Mean absolute difference across characteristics	1.15	6.50	1.51	1.39	0.62	4.66	1.44	0.86	7.94	3.08	1.18
Median absolute difference across characteristics	0.54	3.34	0.42	0.69	0.29	2.64	0.69	0.70	3.45	1.27	0.70

[1] Respondents before poststratification adjustment are weighted using the base weight, adjusted for multiplicity, unknown eligibility, and nonresponse. Respondents after poststratification adjustment are weighted using the base weight, adjusted for multiplicity, unknown eligibility, nonresponse, and poststratification.
[2] Full sample is weighted using the base weight, adjusted for multiplicity and unknown eligibility. Respondents after poststratification adjustment are weighted using the base weight, adjusted for multiplicity, unknown eligibility, nonresponse, and poststratification.
NOTE: Variable categories with fewer than 30 nonrespondents were suppressed for calculations in this table.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

6.4.3 Interview

Finally, analysts conducted an additional nonresponse bias analysis in which they compared interview respondents and interview nonrespondents, following the same procedures outlined above. As shown in table 59, the nonresponse weighting adjustment eliminated some, but not all, student interview significant bias. Before weighting, the percentage of variable categories that were significantly biased on the basis of *t*-tests ranged from 14.5 percent for students in private nonprofit less-than-4-year institutions to 76.4 percent overall. Because study members, not interview respondents, are the unit of analysis in NPSAS:12, only a study member weight was created. As a result, analysts could not compare nonresponse bias analyses after weight adjustments. More information about remaining nonresponse bias after the nonresponse weight adjustment and the poststratification adjustment is available in tables 59 and 60, respectively. See appendix J for detailed student interview nonresponse bias tables.

6.4.4 Item

NCES Statistical Standard 4-4-3A states: "For an item with a low total response rate, respondents and nonrespondents can be compared on sampling frame and/or questionnaire variables for which data on respondents and nonrespondents are available. Base weights must be used in such analysis. Comparison items should have very high response rates. This approach may be limited to the extent that items available for respondents and nonrespondents may not be related to the low response rate item being analyzed" (ED 2003).

Moreover, NCES Statistical Standard 1-3-5 states: "Item response rates (RRI) are calculated as the ratio of the number of respondents for whom an in-scope response was obtained (I^x for item x) to the number of respondents who are asked to answer that item. The number asked to answer an item is the number of unit level respondents (I) minus the number of respondents with a valid skip item for item x (V^x). When an abbreviated questionnaire is used to convert refusals, the eliminated questions are treated as item nonresponse. . . . In the case of constructed variables, the numerator includes cases that have available data for the full set of items required to construct the variable, and the denominator includes all respondents eligible to respond to all items in the constructed variable" (ED 2003). The item response rate is calculated as

$$RRI^x = I^x / (I - V^x).$$

A student was defined to be an item respondent for an analytic variable if that student had data for that variable from any source, including logical imputation. Item nonrespondents for analytic variables were study members who did not have data for that variable from any source. As shown in table 61, the weighted item response rates for items that went through the imputation process for all students ranged from 27 percent to 100 percent.

Table 61.   Weighted item response rates for all students, by type of institution: 2011–12

Variable	Variable label	All students	Public				Private nonprofit			Private for-profit		
			Less-than-2-year	2-year	4-year non-doctorate-granting	4-year doctorate-granting	Less-than-4-year	4-year non-doctorate-granting	4-year doctorate-granting	Less-than-2-year	2-year	4-year
AGE	Age as of 12/31/11	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
AGEGROUP	Age groups as of 12/31/07	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
ALTANY	Alternative courses: took online, night, or weekend classes at NPSAS	66.8	64.2	64.7	65.4	71.5	50.1	71.1	73.4	49.0	50.4	63.6
ALTNIGHT	Alternative courses: took classes at night in 2011–12	66.2	50.7	64.0	65.4	70.7	27.7	71.8	71.4	35.3	50.2	64.6
ALTONLN	Alternative courses: took classes only online in 2011–12	66.2	50.7	64.0	65.4	70.7	27.7	71.8	71.5	35.4	50.2	64.6
ALTONLN2	Alternative courses: program at NPSAS was entirely online	70.9	29.4	55.4	78.1	51.0	6.9	55.7	73.3	19.0	60.8	96.0
ALTWKND	Alternative courses: took classes on the weekend in 2011–12	66.2	50.7	64.0	65.4	70.8	27.7	71.8	71.4	35.3	50.2	64.6
ATTEND	Attendance intensity in fall	98.4	99.6	97.5	99.1	98.8	98.6	99.2	98.8	98.4	97.4	98.9
ATTENDMR	Main reason for attending NPSAS	45.6	9.2	52.9	27.3	44.1	14.8	35.7	18.1	2.6	1.2	11.7
BANK1	Bank accounts: had checking or savings account	66.0	63.9	63.8	64.5	70.8	48.6	70.3	72.6	48.0	49.5	62.0
BANK2	Bank accounts: individual or shared	65.8	63.5	63.4	63.9	70.2	50.4	69.5	72.2	45.1	49.3	61.7
BAYEAR	Year received bachelor degree	78.9	†	†	77.4	81.0	†	78.5	78.9	†	†	72.6
CITIZEN2	Citizenship (max noncitizen)	98.6	100.0	97.7	99.2	99.3	97.9	98.5	98.9	99.5	98.8	99.3
CRBALCR	Credit cards: balance carried over each month	66.0	61.2	64.0	64.0	70.2	44.0	69.3	72.0	37.5	46.8	61.9
CRBALDUE	Credit cards: balance due on all credit cards	63.7	59.2	61.7	65.1	66.9	40.0	67.9	69.1	47.7	44.6	61.3
CRNUMCRD	Credit cards: number of credit cards in own name	65.9	63.8	63.7	64.5	70.7	48.4	70.1	72.4	47.9	49.5	61.8
CRTUIT	Credit cards: used credit cards to pay tuition and fees in 2011–12	65.9	56.7	63.8	64.0	70.1	44.0	69.6	71.9	37.6	46.5	62.0
CRTUIT2	Credit cards: only source available to pay tuition and fees in 2011–12	66.0	44.4	65.4	65.3	69.5	31.7	70.6	71.7	33.9	35.8	60.0
DEGPR	Prior degree earned since high school	78.5	76.3	76.5	79.1	83.4	61.9	83.5	84.2	60.1	63.2	72.0
DEGPRAA	Prior degree: associate's degree	67.3	62.0	64.4	65.2	72.5	46.0	69.0	71.4	45.5	52.4	64.2
DEGPRBA	Prior degree: 4-year bachelor's degree	67.3	62.0	64.4	65.2	72.5	46.0	69.0	71.4	45.5	52.4	64.2
DEGPRCRT	Prior degree: undergraduate certificate/diploma	67.3	62.0	64.4	65.2	72.5	46.0	69.0	71.4	45.5	52.4	64.2
DEGPRDOT	Prior degree: doctor's degree, other	67.3	62.0	64.4	65.2	72.5	46.0	69.0	71.4	45.5	52.4	64.2

See notes at end of table.

Table 61.   Weighted item response rates for all students, by type of institution: 2011–12—Continued

Variable	Variable label	All students	Public				Private nonprofit			Private for-profit		
			Less-than-2-year	2-year	4-year non-doctorate-granting	4-year doctorate-granting	Less-than-4-year	4-year non-doctorate-granting	4-year doctorate-granting	Less-than-2-year	2-year	4-year
DEGPRDPP	Prior degree: doctor's degree-professional practice	67.3	62.0	64.4	65.2	72.5	46.0	69.0	71.4	45.5	52.4	64.2
DEGPRDRS	Prior degree: doctor's degree-research/scholarship	67.3	62.0	64.4	65.2	72.5	46.0	69.0	71.4	45.5	52.4	64.2
DEGPRMS	Prior degree: master's degree	67.3	62.0	64.4	65.2	72.5	46.0	69.0	71.4	45.5	52.4	64.2
DEGPRPTB	Prior degree: postbaccalaureate certificate	67.3	62.0	64.4	65.2	72.5	46.0	69.0	71.4	45.5	52.4	64.2
DEGPRPTM	Prior degree: post-master's certificate	67.3	62.0	64.4	65.2	72.5	46.0	69.0	71.4	45.5	52.4	64.2
DEPANY	Dependents: Has any dependents	89.3	93.6	87.9	88.0	89.6	84.7	90.8	88.7	92.4	92.8	93.7
DEPCARE	Dependents: children in paid childcare	60.7	51.8	61.3	59.6	64.5	52.0	65.6	64.3	53.5	45.4	59.6
DEPCHILD	Dependents: Has dependent children	93.1	96.1	92.3	92.8	93.9	86.6	93.7	92.2	93.9	95.0	94.4
DEPCOL	Number of dependents in college	86.7	93.8	85.9	86.6	85.3	86.7	86.4	82.1	91.9	93.4	89.7
DEPCOLCS	Amount contributed to college costs for dependents in 2011–12	58.1	86.1	55.1	67.2	61.1	38.6	61.6	69.2	38.5	33.2	51.2
DEPCOST	Dependents: children in paid childcare - monthly costs	59.4	49.1	59.8	58.0	63.4	45.2	59.0	61.8	50.4	45.4	59.3
DEPEND	Dependency status	86.2	91.1	83.0	84.1	84.0	92.7	87.3	89.6	93.9	92.8	98.7
DEPINC	Dependent parent income (cont)	68.6	73.3	60.8	69.0	70.4	74.3	77.5	73.4	83.2	80.2	90.3
DEPINCX	Dependent parent income (cat)	88.2	88.5	85.0	87.3	89.9	87.5	91.2	91.7	91.6	87.9	94.6
DEPNUM	Dependents: Has any dependents (number)	87.9	93.1	86.4	86.5	88.5	83.2	89.3	87.5	91.6	91.5	92.3
DEPNUMCH	Dependents: Has dependent children (number)	92.3	94.7	91.4	91.9	93.6	85.7	93.2	91.8	92.9	93.4	92.4
DEPNUMOT	Dependents: Has dependent(s) other than children (number)	87.2	91.7	85.5	85.6	88.2	82.3	88.9	87.1	90.5	90.0	90.3
DEPOTCST	Dependents: monthly cost of supporting dependents other than children	50.7	62.1	51.0	49.4	52.0	26.2	50.3	60.2	41.0	40.6	49.0
DEPOTHER	Dependents: Has dependent(s) other than children	88.0	93.1	86.4	86.5	88.5	83.2	89.5	87.5	91.5	91.5	92.3
DEPYNG	Dependents: Children, age of youngest	61.2	59.8	61.7	60.1	65.6	42.7	66.4	66.9	44.6	46.3	60.0
DIS16A	Disability: deaf or serious difficulty hearing	66.1	63.8	63.9	64.8	70.9	48.6	70.6	72.8	48.1	49.6	62.1
DIS16B	Disability: blind or serious difficulty seeing	66.1	63.9	63.9	64.8	70.9	48.7	70.4	72.6	48.2	49.5	62.1
DIS17A	Disability: serious difficulty concentrating, remembering, making decisions	66.1	63.9	63.9	64.8	70.8	48.6	70.4	72.7	48.1	49.5	62.0

See notes at end of table.

Table 61.   Weighted item response rates for all students, by type of institution: 2011–12—Continued

Variable	Variable label	All students	Public				Private nonprofit			Private for-profit		
			Less-than-2-year	2-year	4-year non-doctorate-granting	4-year doctorate-granting	Less-than-4-year	4-year non-doctorate-granting	4-year doctorate-granting	Less-than-2-year	2-year	4-year
DIS17B	Disability: serious difficulty walking or climbing stairs	66.1	63.9	64.0	64.8	70.9	48.6	70.4	72.5	48.2	49.6	62.0
DISTANCE	Distance from student's home to NPSAS school	89.7	87.8	88.3	90.7	93.0	77.2	91.7	90.8	84.2	88.7	87.5
DISTYPES	Disability: main type of condition or impairment	62.8	50.1	61.7	66.6	64.9	39.9	74.8	62.5	59.2	48.7	60.5
DSTUINC	Dependent student income (cont)	68.6	73.3	60.7	69.0	70.5	74.3	77.6	73.5	83.2	80.3	90.1
DSTUINCX	Dependent student income (cat)	89.5	92.6	87.1	88.2	90.6	88.9	92.0	92.8	91.7	88.1	95.3
EFCCPS	EFC (CPS)	63.5	73.9	57.6	63.1	62.1	70.3	70.9	59.8	84.1	82.1	80.7
EMPLWAIV	Institution tuition waivers for staff	93.7	94.9	92.2	97.4	96.8	92.9	94.9	90.6	89.5	84.3	94.0
EMPLYAM3	Employer aid (student & parents)	76.1	73.3	74.2	77.6	80.7	61.7	81.0	80.7	58.3	63.1	70.1
ENR01	Monthly enrollment status 2011/07	99.0	99.4	98.7	99.5	99.3	99.3	99.3	99.3	98.5	97.4	98.9
ENR02	Monthly enrollment status 2011/08	98.5	99.7	97.8	99.1	98.8	98.8	99.0	99.0	98.4	97.3	98.9
ENR03	Monthly enrollment status 2011/09	98.4	99.6	97.6	99.1	98.8	98.6	99.2	98.8	98.4	97.4	99.0
ENR04	Monthly enrollment status 2011/10	98.4	99.6	97.6	99.1	98.8	98.7	99.2	98.8	98.5	97.4	99.0
ENR05	Monthly enrollment status 2011/11	98.4	99.6	97.6	99.1	98.8	98.7	99.3	98.9	98.5	97.5	98.8
ENR06	Monthly enrollment status 2011/12	98.4	99.6	97.7	99.1	98.8	98.7	99.3	98.9	98.5	97.5	98.7
ENR07	Monthly enrollment status 2012/01	98.3	99.7	97.6	98.8	98.8	98.7	99.2	98.8	98.5	97.5	98.8
ENR08	Monthly enrollment status 2012/02	98.2	99.6	97.4	98.7	98.8	98.7	99.2	98.8	98.5	97.2	98.5
ENR09	Monthly enrollment status 2012/03	98.3	99.6	97.5	98.7	98.8	98.7	99.2	98.8	98.5	97.2	98.4
ENR10	Monthly enrollment status 2012/04	98.3	99.4	97.6	98.7	98.8	98.7	99.1	98.8	98.6	97.2	98.7
ENR11	Monthly enrollment status 2012/05	98.4	99.4	97.7	98.9	98.9	98.9	99.1	98.9	98.6	97.5	98.7
ENR12	Monthly enrollment status 2012/06	98.9	99.1	98.5	99.2	99.4	99.4	99.2	99.3	98.5	97.3	98.8
EVER2PUB	Ever attended community college	80.7	64.3	100.0	65.1	70.5	39.9	71.5	73.6	49.4	49.4	63.5
EVER4YR	Ever attended 4-year institution	82.0	64.3	63.8	100.0	100.0	50.1	100.0	100.0	49.3	50.5	100.0
FAMHELP	Other financial support received	66.5	63.9	64.4	65.1	71.2	48.8	70.7	73.1	48.3	49.8	62.5
FAMHPAM	Help from family and friends: total amount in 2011–12	66.4	67.0	63.5	63.5	72.5	51.0	74.7	71.5	51.3	46.4	60.8
FEDBEN	Received federal benefit: Any	87.6	92.9	85.7	86.3	88.3	82.8	89.4	87.3	91.4	91.0	91.9
FEDBENA	Received federal benefit: Food Stamp Benefit	77.9	78.9	73.6	78.4	82.4	73.9	82.0	81.8	77.6	77.6	76.0
FEDBENB	Received federal benefit: Free/Reduced Price School Lunch	77.9	78.9	73.6	78.4	82.4	73.9	82.0	81.8	77.6	77.6	76.0
FEDBENC	Received federal benefit: Supplemental Security Income	77.9	78.9	73.6	78.4	82.4	73.9	82.0	81.8	77.6	77.6	76.0

See notes at end of table.

Table 61. Weighted item response rates for all students, by type of institution: 2011–12—Continued

Variable	Variable label	All students	Public				Private nonprofit			Private for-profit		
			Less-than-2-year	2-year	4-year non-doctorate-granting	4-year doctorate-granting	Less-than-4-year	4-year non-doctorate-granting	4-year doctorate-granting	Less-than-2-year	2-year	4-year
FEDBEND	Received federal benefit: TANF Benefits	77.9	78.9	73.6	78.4	82.4	73.9	82.0	81.8	77.6	77.6	76.0
FEDBENE	Received federal benefit: WIC Benefits	77.9	78.9	73.6	78.4	82.4	73.9	82.0	81.8	77.6	77.6	76.0
FLACMAX	Federal loans: accepted maximum amount of federal loans offered in 2011–12	53.5	42.6	49.4	52.8	56.4	39.1	59.6	61.7	35.4	39.6	54.4
FLAVDL1	Way to avoid taking out additional federal loans: attend less costly school	27.4	22.7	28.3	29.4	34.4	14.5	24.1	27.2	12.2	13.6	15.2
FLAVDL2	Way to avoid taking out additional federal loans: fewer classes	27.7	22.3	28.6	29.4	34.7	14.3	24.1	28.0	12.3	13.5	15.4
FLAVDL3	Way to avoid taking out additional federal loans: work more	27.8	22.0	28.6	29.6	35.1	14.5	24.8	28.1	12.4	14.0	15.5
FLDENY	Federal loans: turned down any federal loans in 2011–12	57.5	56.6	54.3	58.5	62.1	46.7	63.0	63.3	47.0	48.4	56.9
FLDENYRS	Federal loans: main reason for not accepting additional loans	57.9	46.8	53.8	60.3	61.4	36.9	64.4	64.3	34.8	48.1	58.1
GAINSUR	Graduate assistantship: included health insurance	78.6	†	†	74.5	83.8	†	69.8	72.2	†	†	2.5
GPA	Grade point average	93.4	74.0	92.2	95.7	96.6	81.8	93.2	94.9	69.4	88.1	96.2
GRADLVL	Graduate class level	92.4	†	†	92.7	93.3	†	87.6	92.1	†	†	92.6
GRADPYR	Year began graduate degree	70.5	†	†	68.0	73.2	†	66.4	71.5	†	†	62.4
GRADTAA	Teaching assistantship duties: answered student emails	72.5	†	†	77.0	79.8	†	30.2	61.6	†	†	2.2
GRADTAB	Teaching assistantship duties: assisted faculty with grading	72.6	†	†	77.0	80.0	†	33.7	61.6	†	†	2.2
GRADTAC	Teaching assistantship duties: assumed teaching responsibility	72.5	†	†	77.0	79.9	†	30.2	61.6	†	†	2.2
GRADTAD	Teaching assistantship duties: held office hours	72.6	†	†	77.0	80.0	†	30.2	61.6	†	†	2.2
GRADTAE	Teaching assistantship duties: led discussions	72.5	†	†	77.0	79.8	†	33.7	61.6	†	†	2.2
GRADTAF	Teaching assistantship duties: supervised lab sections	72.6	†	†	77.0	80.0	†	30.2	61.6	†	†	2.2
GRGRDAMT	Other graduate assistantship amount	82.4	†	†	79.1	84.0	†	83.4	84.6	†	†	71.7
GRINFEL	Graduate fellowship amount	99.9	†	†	99.7	99.9	†	100.0	99.7	†	†	100.0
GRJOBHR	Graduate school job: hours worked per week	87.5	†	†	95.8	86.8	†	87.0	83.8	†	†	96.4

See notes at end of table.

Table 61.   Weighted item response rates for all students, by type of institution: 2011–12—Continued

Variable	Variable label	All students	Public Less-than-2-year	Public 2-year	Public 4-year non-doctorate-granting	Public 4-year doctorate-granting	Private nonprofit Less-than-4-year	Private nonprofit 4-year non-doctorate-granting	Private nonprofit 4-year doctorate-granting	Private for-profit Less-than-2-year	Private for-profit 2-year	Private for-profit 4-year
GRJOBWK	Graduate school job: proportion of weeks worked	46.2	†	†	58.8	56.9	†	20.7	34.9	†	†	8.4
GRRESAMT	Graduate research assistantship amount	82.2	†	†	80.3	83.5	†	83.4	84.5	†	†	71.7
GRTEAAMT	Graduate teaching assistantship amount	82.3	†	†	80.6	83.6	†	83.0	84.9	†	†	71.7
GRTRNAMT	Graduate traineeship amount	99.9	†	†	99.8	99.9	†	100.0	99.8	†	†	100.0
HCHONORS	Number of honors subjects	46.7	27.3	35.2	51.0	62.1	30.3	62.2	66.9	20.9	26.1	27.9
HCMATHHI	Highest level of math completed/planned	67.9	58.8	61.8	70.3	78.0	45.5	79.6	80.6	46.0	47.9	51.6
HCTKBIOL	Took/planned to take Biology	52.0	33.1	38.9	57.7	70.9	31.1	71.3	70.6	24.6	28.5	27.0
HCTKCHEM	Took/planned to take Chemistry	50.4	27.6	37.1	55.8	69.6	29.8	70.0	69.4	23.1	26.8	24.8
HCTKPHYS	Took/planned to take Physics	45.4	21.5	33.0	49.6	63.0	25.4	64.6	64.7	20.9	23.8	20.9
HCYSENGL	Years completed/planned English	51.7	32.7	38.8	57.8	70.3	31.8	70.2	69.9	23.9	28.2	27.1
HCYSLANG	Years completed/planned foreign languages	44.4	24.6	33.3	49.5	60.2	27.5	59.0	61.3	19.8	24.9	24.6
HCYSMATH	Years completed/planned math	72.1	62.8	65.7	74.9	82.8	47.7	83.6	83.9	49.3	52.5	56.0
HCYSSCIE	Years completed/planned science	51.3	32.5	38.5	57.2	70.0	31.2	70.1	69.3	23.7	28.3	26.4
HCYSSOCI	Years completed/planned social studies	51.4	32.6	38.6	57.2	70.1	31.9	69.8	69.5	23.5	27.9	26.8
HISPANIC	Race/ethnicity: Hispanic or Latino origin	96.1	93.6	95.9	96.5	97.8	85.4	95.2	96.0	92.7	94.3	94.1
HISPTYPE	Race/ethnicity: Type of Hispanic origin	91.5	89.1	90.3	90.8	95.0	74.5	93.0	93.8	79.4	83.3	89.7
HOMELESS	Homeless or at risk of homelessness	59.1	57.6	51.5	61.2	63.5	53.4	72.2	61.8	64.4	60.4	55.4
HOMESTUD	Student owns home or pays mortgage	63.9	64.3	63.6	61.9	68.6	47.4	61.9	68.8	47.9	48.7	61.9
HSCRDAP	Took AP courses while in high school	64.7	63.9	62.4	64.0	69.3	50.9	70.7	73.9	48.7	49.1	58.3
HSCRDCOL	Took college-level courses while in high school	62.9	61.1	61.2	62.4	66.6	50.0	68.1	70.0	48.0	48.3	57.9
HSCRDIB	Took IB courses while in high school	61.6	61.3	60.1	60.3	65.3	49.1	66.6	69.1	47.7	48.0	56.7
HSDEG	High school degree type	98.1	99.9	98.2	98.1	98.6	100.0	97.7	97.2	98.9	98.2	97.3
HSGPA	Grade point average in high school	54.0	32.9	40.5	60.6	73.1	32.9	73.5	74.3	24.7	28.7	28.5
HSGRADYY	High school graduation year	86.7	82.4	88.7	89.7	86.8	81.6	85.7	84.4	79.1	72.9	82.5
HSTYPE	Type of high school attended	67.2	68.1	65.4	66.4	70.7	66.6	72.8	74.7	52.0	52.1	65.5
IMMIAGE	Age when arrived in the United States	65.9	97.1	66.1	64.8	70.9	31.8	61.2	70.3	40.4	47.7	55.5
INATHAMT	Athletic scholarships	93.3	94.9	92.2	97.4	96.5	92.9	94.1	89.9	89.5	84.3	92.7
INJURIS	Tuition jurisdiction (in/out of area)-NPSAS inst	99.6	100.0	99.3	99.9	99.8	†	†	†	†	†	†
INLNAMT	Institution loans	93.7	94.9	92.2	97.4	96.8	92.9	94.9	90.6	89.5	84.3	94.0

See notes at end of table.

Table 61. Weighted item response rates for all students, by type of institution: 2011–12—Continued

Variable	Variable label	All students	Public				Private nonprofit			Private for-profit		
			Less-than-2-year	2-year	4-year non-doctorate-granting	4-year doctorate-granting	Less-than-4-year	4-year non-doctorate-granting	4-year doctorate-granting	Less-than-2-year	2-year	4-year
INSMERIT	Institution merit-only grants	93.3	94.9	92.2	97.4	96.5	92.9	94.1	89.9	89.5	84.3	92.7
INSTNEED	Institution need-based grants	93.3	94.9	92.2	97.4	96.5	92.9	94.1	89.9	89.5	84.3	92.7
INSTWRK	Institution work-study	93.9	94.9	92.3	97.6	97.0	93.3	95.5	91.3	89.5	84.6	94.2
INSWAIV	Institution tuition & fee waivers	93.7	94.9	92.2	97.4	96.8	92.9	94.9	90.6	89.5	84.3	94.0
ISTUINC	Independent student income (cont)	60.8	74.7	57.0	58.5	53.5	69.1	62.9	51.6	84.8	83.9	79.9
ISTUINCX	Independent student income (cat)	86.4	93.2	85.2	84.4	85.6	80.6	85.8	83.9	91.3	92.8	91.7
JOBANY	Nonschool job: had nonschool job in 2011–12	77.6	76.0	75.6	78.3	82.5	60.2	82.7	83.0	58.7	61.9	70.7
JOBEARN	Nonschool job: total earnings	68.0	62.7	65.2	67.2	73.6	55.4	73.5	74.1	52.7	53.7	62.2
JOBHOUR	Nonschool job: hours worked per week	76.1	72.6	74.0	77.2	81.4	59.8	80.9	81.4	57.7	60.4	68.8
JOBNUM	Nonschool job: number of nonschool jobs	70.3	69.0	67.7	68.8	75.3	56.2	76.0	77.0	54.2	55.5	65.0
JOBONOFF	Nonschool job: located primarily on or off campus	64.2	55.8	62.3	63.4	68.8	41.7	68.7	69.5	42.5	47.2	62.2
JOBROLE	Nonschool job: primary role as student or employee	64.1	55.2	62.1	63.2	68.5	41.0	68.6	69.6	42.2	46.9	62.2
LNREPAY	Expect help with repaying student loans	59.2	53.5	49.9	58.0	65.4	45.1	65.3	69.5	44.7	46.1	57.7
LOCALRES	Housing	87.1	93.2	82.4	84.6	88.9	98.9	96.2	94.2	95.3	92.1	92.2
MAJCHGFQ	Majors: frequency of formally changed	53.7	†	44.9	56.3	63.9	38.9	64.5	65.9	†	40.6	55.2
MAJORNSF	Major supported by National Science Foundation	99.0	100.0	98.5	98.7	99.4	99.1	99.1	99.4	99.9	99.9	99.7
MAJORS	Field of study/major (detailed)	99.0	100.0	98.5	98.6	99.3	99.1	99.1	99.4	99.9	99.9	99.7
MILTYPE	Military service type	99.5	99.3	99.2	99.8	99.7	99.8	99.9	99.3	98.9	98.3	99.6
MNTRENT	Monthly mortgage or rent amount	63.0	61.9	62.7	61.1	67.7	46.9	60.8	67.4	47.2	48.2	60.7
ORPHAN	Orphan, ward of court, emancipated minor, or in legal guardianship	79.4	72.6	77.1	81.2	83.1	65.9	86.8	79.1	73.0	69.6	62.4
OTHFDGRT	Other federal grants (not Title IV)	93.7	94.9	92.2	97.4	96.8	92.9	94.9	90.6	89.5	84.3	94.0
PAGI	Dependent student parents AGI	68.4	74.4	60.0	68.7	70.7	72.8	78.2	74.7	81.0	79.0	89.4
PARBORN	Parent born in US, PR, or US Territory	66.1	63.8	64.0	64.8	70.8	48.8	70.5	72.7	48.0	49.5	62.1
PARHELP	Help from parents: housing, tuition, and other expenses	67.8	75.5	64.0	66.8	71.1	56.3	72.9	77.0	50.2	48.8	58.3
PARHPAMT	Help from parents: amount parents helped pay for expenses in 2011–12	66.9	67.0	63.0	64.5	70.4	49.9	71.9	76.1	43.6	44.1	57.6
PDADED	Father highest education level	81.2	88.5	80.8	80.2	80.6	75.1	81.4	80.2	83.6	83.4	85.4
PFAMNUM	Family size (dependent)	88.9	90.8	86.1	88.2	90.3	86.7	92.1	91.8	91.2	87.7	94.7

See notes at end of table.

Table 61.   Weighted item response rates for all students, by type of institution: 2011–12—Continued

Variable	Variable label	All students	Public				Private nonprofit			Private for-profit		
			Less-than-2-year	2-year	4-year non-doctorate-granting	4-year doctorate-granting	Less-than-4-year	4-year non-doctorate-granting	4-year doctorate-granting	Less-than-2-year	2-year	4-year
PFEDTAX	Dependent student parents federal tax paid	64.9	64.5	56.8	64.9	67.1	71.7	74.6	72.0	77.4	75.7	82.7
PHSLOAN	Federal health professions loans	97.1	97.6	98.1	98.6	98.3	99.7	96.3	94.2	92.5	88.0	95.3
PINCOL	Number of family members in college (dependent)	81.1	80.0	75.3	80.7	83.6	81.6	86.9	85.4	88.3	83.9	93.1
PMARITAL	Marital status (parents)	89.3	91.0	86.5	88.5	90.6	87.0	92.2	92.5	91.7	87.9	94.9
PMOMED	Mother highest education level	79.9	86.7	79.3	78.7	80.1	73.4	80.0	79.9	80.4	80.2	83.4
PRIMLANG	English primary language spoken	66.2	63.8	64.0	64.9	70.9	48.4	70.6	72.9	48.1	49.7	62.1
PRIMLGFQ	Frequency of speaking non-English language with primary caregiver	66.1	78.8	65.9	61.8	72.1	31.9	65.3	72.2	45.5	48.6	55.5
PRIVAID	Private sources grants	99.7	99.8	99.7	99.9	99.6	99.8	99.7	99.6	99.8	99.6	99.8
PRIVLOAN	Private (alternative) loans	77.3	74.6	75.0	78.3	82.8	64.3	82.8	82.6	59.3	63.4	69.9
PROGSTAT	Completed degree program in 2011–12	98.7	99.9	98.1	98.6	99.1	95.9	99.7	100.0	93.5	96.9	99.8
PSECTYR	Year first enrolled in postsecondary education	70.1	66.9	68.9	71.1	75.6	54.8	76.4	76.8	51.4	53.5	63.4
PTAXFILE	Dependent student parents federal tax filed	68.6	73.3	60.8	69.1	70.5	74.3	77.6	73.5	83.2	80.3	90.3
RAASIAN	Race–Asian	93.5	91.2	92.9	94.3	96.1	88.1	95.7	95.4	85.0	85.3	88.7
RABLACK	Race–Black or African-American	93.5	91.2	92.9	94.3	96.1	88.1	95.7	95.4	85.0	85.3	88.7
RAINDIAN	Race–American Indian or Alaska Native	93.5	91.2	92.9	94.3	96.1	88.1	95.7	95.4	85.0	85.3	88.7
RAINDTRB	Race–American Indian or Alaska Native recognized tribe	71.9	58.9	71.0	70.8	78.9	91.1	84.2	75.3	75.4	57.7	61.0
RAISLAND	Race–Native Hawaiian/other Pacific Islander	93.5	91.2	92.9	94.3	96.1	88.1	95.7	95.4	85.0	85.3	88.7
RAWHITE	Race–White	93.5	91.2	92.9	94.3	96.1	88.1	95.7	95.4	85.0	85.3	88.7
REANOAPA	Reason for not applying: did not want to take on the debt	59.0	70.0	61.4	52.4	61.6	28.3	52.5	59.6	35.0	25.5	43.9
REANOAPB	Reason for not applying: forms were too much work	59.0	70.0	61.4	52.4	61.6	28.3	52.5	59.6	35.0	25.5	43.9
REANOAPC	Reason for not applying: no information about how to apply	59.0	70.0	61.4	52.4	61.6	28.3	52.5	59.6	35.0	25.5	43.9
REANOAPD	Reason for not applying: no need	59.0	70.0	61.4	52.4	61.6	28.3	52.5	59.6	35.0	25.5	43.9
REANOAPE	Reason for not applying: thought ineligible	59.0	70.0	61.4	52.4	61.6	28.3	52.5	59.6	35.0	25.5	43.9

See notes at end of table.

Table 61. Weighted item response rates for all students, by type of institution: 2011–12—Continued

Variable	Variable label	All students	Public				Private nonprofit			Private for-profit		
			Less-than-2-year	2-year	4-year non-doctorate-granting	4-year doctorate-granting	Less-than-4-year	4-year non-doctorate-granting	4-year doctorate-granting	Less-than-2-year	2-year	4-year
REANOAPF	Reason for not applying for aid in NPSAS year: other	59.0	70.0	61.4	52.4	61.6	28.3	52.5	59.6	35.0	25.5	43.9
REFUND1	Received a refund of scholarships or grants from NPSAS	66.5	63.9	64.4	65.0	71.3	48.9	70.8	73.1	48.1	49.7	62.9
REFUND2	Method of receiving refund from NPSAS	67.5	58.7	63.6	68.9	72.1	53.3	72.4	75.9	32.9	43.3	64.9
REMENGL	Remedial courses: number taken in English in 2011–12	60.6	61.5	59.3	61.5	67.5	45.8	52.8	65.1	46.5	52.4	71.5
REMETOOK	Remedial courses: took in 2011–12	64.8	65.4	63.8	63.1	72.3	51.4	58.6	72.8	47.8	53.0	65.3
REMEVER	Remedial courses: ever taken	76.4	76.2	74.4	78.2	82.1	60.4	82.6	81.5	59.6	61.3	71.3
REMMATH	Remedial courses: number taken in math in 2011–12	62.1	61.5	60.8	63.1	69.0	43.5	55.2	68.7	46.8	52.0	71.2
REMREAD	Remedial courses: number taken in reading in 2011–12	59.2	61.5	58.0	60.7	66.3	40.9	52.2	63.1	46.7	49.7	68.4
REMWRITE	Remedial courses: number taken in writing in 2011–12	59.6	61.5	58.1	61.2	66.0	42.6	53.4	65.9	46.4	51.5	70.7
SAGI	Independent student AGI	60.0	76.1	56.1	58.4	53.0	67.6	63.0	51.1	82.3	83.0	79.3
SAMESTAT	Attend institution in state of legal residence	98.7	98.1	97.9	99.4	98.8	96.9	99.2	98.7	99.5	99.5	99.5
SEOGAMT	Federal Supplemental Educational Opportunity Grant (SEOG)	97.4	99.2	97.9	99.3	98.5	95.0	96.4	97.2	92.6	90.5	94.7
SFEDTAX	Independent student federal tax paid	55.9	65.8	51.7	53.7	50.8	64.4	58.9	49.4	79.0	76.1	71.5
SIBCOLFT	First sibling to go to college	66.1	63.9	64.0	64.9	70.8	48.7	70.5	72.8	48.1	49.5	62.0
SINCOL	Number of family members in college (independent)	91.7	94.7	90.8	89.6	91.9	89.7	91.8	91.5	94.0	95.5	93.8
SJEARN	Work-study job: total earnings	73.3	100.0	67.9	75.6	79.9	60.2	79.6	79.7	100.0	57.7	69.5
SJHOURS	Work-study job: hours worked per week	73.4	100.0	68.1	75.7	80.1	60.3	79.9	79.8	100.0	58.0	69.6
SJMAJOR	Work-study job: related to major or coursework	64.6	†	48.8	64.5	54.4	58.9	86.0	86.0	†	65.3	33.1
SJONOFF	Work-study job: located primarily on or off campus	64.5	†	48.6	64.2	54.3	58.9	86.3	85.6	†	65.3	33.1
SJSCHOOL	Work-study job: for NPSAS or another institution or organization	64.2	†	47.8	63.8	54.4	58.9	86.1	85.7	†	65.5	30.9
SJWKST	Work-study job: had work-study job in NPSAS year	72.6	†	66.6	76.0	80.5	54.9	81.8	81.5	†	59.1	69.9
SMARITAL	Student's marital status	96.0	98.7	95.2	95.9	95.7	92.4	98.1	96.2	99.3	98.4	97.0
SPINCOL	Spouse attending college	80.1	81.8	79.7	75.5	80.8	73.4	81.0	79.9	85.0	85.1	82.2

See notes at end of table.

Table 61. Weighted item response rates for all students, by type of institution: 2011–12—Continued

Variable	Variable label	All students	Public				Private nonprofit			Private for-profit		
			Less-than-2-year	2-year	4-year non-doctorate-granting	4-year doctorate-granting	Less-than-4-year	4-year non-doctorate-granting	4-year doctorate-granting	Less-than-2-year	2-year	4-year
SPSINC	Independent student spouse income (cont)	49.1	65.9	45.0	43.9	41.5	62.8	52.8	44.0	75.4	75.1	69.8
SPSINCX	Independent student spouse income (cat)	82.7	88.4	82.1	76.9	81.6	76.7	85.2	82.4	87.2	90.0	87.5
STATNEED	State need-based grants	93.7	94.9	92.2	97.4	96.8	92.9	94.9	90.6	89.5	84.3	94.0
STAXFILE	Independent student federal tax filed	60.8	74.7	57.1	58.5	53.5	69.1	62.9	51.6	84.8	83.9	79.9
STLNAMT	State loans	96.8	97.5	97.9	98.4	98.1	99.6	96.1	93.8	91.3	87.1	94.9
STMERIT	State merit-only grants	93.7	94.9	92.2	97.4	96.8	92.9	94.9	90.6	89.5	84.3	94.0
STNOND1	State non-need grants	93.7	94.9	92.2	97.4	96.8	92.9	94.9	90.6	89.5	84.3	94.0
STUSTATE	State of legal residence (student)	98.7	98.1	98.0	99.4	98.9	96.9	99.3	98.8	99.5	99.6	99.5
STWKAMT	State work-study total	93.9	94.9	92.3	97.6	97.0	93.3	95.5	91.3	89.5	84.6	94.2
TEACTDER	ACT derived composite score	68.9	54.8	57.7	73.5	81.7	47.8	83.7	83.3	38.2	45.9	44.4
TESATDER	SAT derived combined score	68.9	54.8	57.7	73.5	81.7	47.8	83.7	83.3	38.2	45.9	44.4
TESATMDE	SAT derived math score	68.9	54.8	57.7	73.5	81.7	47.8	83.7	83.3	38.2	45.9	44.4
TESATVDE	SAT derived verbal score	68.9	54.8	57.7	73.5	81.7	47.8	83.7	83.3	38.2	45.9	44.4
TETOOK	Took SAT or ACT exams	84.3	76.1	79.3	86.6	93.1	65.0	92.5	94.6	62.1	64.8	71.9
TFEDWRK	Federal work-study	99.8	100.0	99.9	99.9	99.8	99.9	99.9	99.8	100.0	99.1	99.7
TRLNPAVT	Traveling from residence to NPSAS: average minutes per day	60.4	65.4	62.3	60.7	65.7	47.0	58.3	60.4	48.5	47.6	43.3
TRLNPDAY	Traveling between residence and NPSAS: days per week	59.8	65.2	61.6	59.3	65.4	47.2	58.2	60.2	47.8	48.0	44.3
TRLWKAVT	Traveling from residence to work: average minutes per day	62.8	61.0	62.4	61.7	65.6	41.3	63.3	66.4	43.2	48.5	62.0
TRLWKDAY	Traveling between residence and work: days per week	63.9	61.5	63.5	62.8	66.4	41.7	64.1	66.9	44.1	49.5	63.7
UGDEGAA	Associate's degree types	98.5	100.0	97.0	99.4	100.0	99.7	99.9	100.0	100.0	97.5	99.4
UMNEED1	Would have borrowed more money in NPSAS year	64.9	64.0	63.1	64.6	69.8	48.2	70.8	72.4	48.2	49.6	62.2
UMNEED2	Additional amount would have borrowed in NPSAS year	65.1	69.0	62.8	67.5	69.6	57.9	72.0	73.7	57.5	51.9	62.2
USBORN	Born in the U.S. (student)	66.1	63.9	64.0	64.8	70.8	48.4	70.5	72.8	48.1	49.5	62.0

See notes at end of table.

Table 61.   Weighted item response rates for all students, by type of institution: 2011–12—Continued

Variable	Variable label	All students	Public				Private nonprofit			Private for-profit		
			Less-than-2-year	2-year	4-year non-doctorate-granting	4-year doctorate-granting	Less-than-4-year	4-year non-doctorate-granting	4-year doctorate-granting	Less-than-2-year	2-year	4-year
VADODAMT	Veteran's benefits and DOD	92.9	94.8	91.2	96.8	96.6	92.5	94.2	89.9	88.7	83.0	92.8
VETBEN	Veteran's benefits	99.2	99.8	98.9	99.5	99.8	99.6	99.4	99.2	99.2	98.6	98.7
VETERAN	Veteran status	99.6	99.3	99.5	99.9	99.9	99.9	99.9	99.4	99.0	98.5	99.6
VOCHELP	Vocational rehabilitation and training	93.3	94.9	92.2	97.4	96.5	92.9	94.1	89.9	89.5	84.3	92.7

† Not applicable.
NOTE: Nonresponse bias analysis was conducted only for each item with a weighted response rate less than 85 percent. Nonresponse bias analysis was based on the student-level variables known for both respondents and nonrespondents (described in section 6.4.4). While values for many variables are derived from multiple sources, including the student interview, student record data, and administrative data sources, some variables are obtained from only one source. Given that the response rate to the student interview was about 73 percent, items obtained solely from the student interview have 31 percent nonresponse, even when all student interview respondents provided an answer. AGI = adjusted gross income. cat = categorical variables. cont = continuous variables. CPS = Central Processing System. EFC = expected family contribution. SAT = SAT Reasoning Test. TANF = Temporary Assistance for Needy Families. WIC = Special Supplemental Nutrition Program for Women, Infants, and Children.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12).

While NPSAS staff derived values for many variables from multiple sources, including the student interview, student record data, and administrative data sources, they obtained some variables from only one source. Because the weighted response rate for the student interview was about 73 percent, items obtained solely from that source have 27 percent nonresponse, even when all interview respondents provided an answer.

Analysts conducted a nonresponse bias analysis for all items with a weighted response rate less than 85 percent for all students or for students in a particular sector. They estimated the nonresponse bias for variables known for study members and nonstudy members. The procedures used for the item-level nonresponse bias analysis are the same as those used for the student-level nonresponse bias analysis presented above, and for the item-level analysis, study staff used a subset of the variables used for the student-level analysis.[20] Staff suppressed bias estimates for variable categories with fewer than 30 item-level nonrespondents.

NPSAS staff estimated bias before imputation for about 170 variables with item response rates less than 85 percent for students in one or more sectors. Staff found a large range for the percent of variable categories with significant bias across all items analyzed prior to imputation. A goal of imputation (described in section 6.6) is the reduction or elimination of item-level nonresponse bias. Imputation is thought to reduce nonresponse bias by replacing missing data with statistically plausible values. Staff use carefully constructed imputation classes, donor-imputee matching criteria, and random hot-deck searches within imputation cells to ensure that imputed data are plausible and that the nonresponse bias is ignorable within the imputation classes. In so doing, replacing missing data with reasonable values within an imputation class is hoped to reduce nonresponse bias. Appendix J includes tables that illustrate estimated bias before imputation for all items undergoing item-level nonresponse bias analysis.

While item-level bias before imputation is measurable, such bias after imputation is not, so analysts cannot directly evaluate whether the imputation affected the bias. Therefore, NPSAS staff compared the item estimates before and after imputations to determine whether the imputation changed the biased estimate. To the extent that imputation procedures accurately replace missing data, staff assume that any change in estimates indicates a reduction in bias.

For continuous variables, NPSAS staff estimated the difference between the mean before imputation and the mean after imputation. For categorical variables, they computed the estimated difference for each of the categories as the percentage of students in that category before imputation minus the percentage of students in that category after imputation. They suppressed differences for variable categories with fewer than 30 item-level nonrespondents. Then analysts tested these estimated differences for statistical significance at the 5 percent level. As noted above, a significant difference in the item means after imputation represents a potential reduction in bias due to imputation. A nonsignificant difference suggests that imputation may not have reduced bias, that the sample size was too small to detect a significant difference, or that there was little bias to be reduced.

Significant differences exist between estimates computed before and after imputation for about 50 percent of the variables (i.e., those with statistically significant [starred] percent differences in pre and postimputation means) analyzed for all students and for about 87 percent of the variables analyzed for at least one sector. These results indicate a potential reduction in bias for these variables. NPSAS staff found that approximately 15 percent of the variables they analyzed had no

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[20] NPSAS staff did not include in the item-level nonresponse bias analysis those variables that were added to the student-level nonresponse bias analysis and not included in the nonresponse weight adjustment.

significant differences. While some of these variables may be biased, others have a small amount of bias prior to imputation or have small sample sizes if they are only applicable to graduate and first-professional students or to a subset of students. Analysts should use the potentially significantly biased items with caution.

6.5 Variance Estimation

For probability-based sample surveys, most estimates are nonlinear statistics. For example, a mean or proportion, which is expressed as $\Sigma wy/\Sigma w$, is nonlinear because the denominator is a survey estimate of the (unknown) population total. In this situation, the variances of the estimates cannot be expressed in closed form. Two procedures for estimating variances of survey statistics are the Taylor-series linearization procedure and the bootstrap replication procedure, which are both available for the NPSAS data files. The analysis strata and replicates created for the Taylor-series procedure are discussed in section 6.5.1, and section 6.5.2 contains a discussion of the replicate weights created for the bootstrap procedure. Section 6.5.3 presents the computation and use of design effects to measure the effects that complex sample design features had on the variances of survey estimates.

6.5.1 Taylor Series

The Taylor-series variance estimation procedure is a well-known technique used to estimate the variances of nonlinear statistics. The procedure takes the first-order Taylor-series approximation of the nonlinear statistic and then substitutes the linear representation into the variance formula appropriate for the sample design. Woodruff (1971) presented the mathematical formulation of this procedure.

For stratified multistage surveys, the Taylor-series procedure requires analysis strata and analysis primary sampling units (PSUs), also called *replicates*, as defined from the sampling strata and PSUs used in the first stage of sampling. For NPSAS:12, NPSAS staff defined analysis strata and analysis PSUs for all students combined; these are available for analyses of any domain.

The first step was to identify the PSUs used at the first stage of sample selection. As discussed in chapter 2, the PSUs included the 970 participating noncertainty institutions. NPSAS staff also treated the 510 participating certainty institutions as PSUs due to institution nonresponse, even though the students represent the first stage of sampling. The next step was to sort the PSUs by the 10 institution strata, then by certainty versus noncertainty, and then by the selection order for the noncertainty institutions and by IPEDS ID for the certainty institutions. Each analysis PSU contained at least four respondents, which ensured stable variance estimates. Staff then paired analysis PSUs to form analysis strata. This process resulted in 738 analysis strata. The names of the analysis strata and analysis PSU variables are ANALSTR and ANALPSU, respectively.

The procedure described above may overestimate the variance because it does not always account for the finite population correction (FPC) at the institution stage of sampling. Alternatively, the Taylor-series procedure can account for the FPC if analysts consider the secondary sampling units (SSUs) and PSU counts in addition to the analysis strata and analysis PSUs. These variable names are FANALSTR, FANALPSU, FANALSSU, and PSUCOUNT for the analysis strata, PSUs, and SSUs and the PSU counts, respectively. NPSAS staff created these variables as part of the process for creating the bootstrap replicate weights (described below).

6.5.2 Bootstrap Replicate Weights

NPSAS staff chose the variance estimation strategy for NPSAS:12 to satisfy the following requirements:

1. recognition of variance reduction due to stratification at all stages of sampling;

2. recognition of effects of unequal weighting;

3. recognition of possible increased variance due to sample clustering;

4. recognition of effects of weight adjustments for nonresponse and for poststratification of selected total estimates to known external totals;

5. satisfactory properties for estimating variances of nonlinear statistics and percentages, as well as for linear statistics;

6. ability to apply finite population corrections at the institution stage of sampling and reflect the reduction in variance due to the high sampling rates in some first-stage sampling strata; and

7. ability to test hypotheses about students based on normal distribution theory by ignoring the finite population corrections at the student level of sampling.

Commonly applied bootstrap variance estimation techniques satisfy requirements 1 through 5. To meet requirements 6 and 7 as well, NPSAS staff applied a method adapted from Kott (1988) and Flyer (1987). The following notation is used in the steps delineated below:

n_h = the number of institutions selected and responding from stratum *h;*

$\hat{N}_h$ = the frame count of institutions in stratum *h*;

m_{hi} = the number of second-stage units selected from institution *i* in stratum *h;*

n_h^* = the bootstrap sample size of PSUs in stratum *h* when bootstrap sampling is at the PSU level in stratum *h;*

n_{hi}^* = the number of times PSU *hi* is selected in the bootstrap sample when bootstrap sampling is at the PSU level;

m_{hi}^* = the bootstrap sample size of SSUs in PSU *hi* when bootstrap sampling is at the SSU level in stratum *h;*

m_{hij}^* = the number of times SSU *hij* is selected in the bootstrap sample when bootstrap sampling is at the SSU level; and

w_{hijk}^* = the additional weight adjustment factor for student *hijk,* due to bootstrap sampling.

The process of forming replicates and computing replicate weights is as follows:

1. Approximate the stratum-level first-stage FPC for the selected stratum sample, using Kott's model-based approximation (Kott 1988):

$$\text{FPC}_h = \frac{\hat{N}_h - n_h}{\hat{N}_h}.$$

2. Generate a uniform $(0, 1)$ random number R_h for each stratum h.

3. If $R_h \le \text{FPC}_h$, form a replicate sample in stratum h by randomly selecting
    $n_h^* = n_h - 1$ institutions with equal probability and with replacement after each selection.
    When n_h^* is greater than 1, a PSU may be selected more than once; in essence, n_{hi}^* may
    take on values of $0, 1, \ldots, n_h^*$. Adjust the weights by the factor

    $$w_{hijk}^* = n_{hi}^* \frac{n_h}{n_h^*}.$$

4. Otherwise, form a replicate sample in stratum h by randomly selecting
    $m_{hi}^* = m_{hi} - 1$ second-stage units within each institution in stratum h. In this case, m_{hij}^*
    may take on values of $0, 1, \ldots, m_{hi}^*$. Adjust the weights by the factor

    $$w_{hijk}^* = m_{hij}^* \frac{m_{hi}}{m_{hi}^*}.$$

5. Repeat steps 3 and 4 in all strata to form one replicate sample.

6. Steps 1 through 5 should then be repeated 200 times to form 200 replicate samples.

This method uses random switching between PSU bootstrap sampling and SSU bootstrap sampling to represent the proper mix (in expectation) of the first- and second-stage variance components when an FPC is applied at the first stage of sampling. It extends the general method described by Flyer (1987) for half-sample replication to a more general bootstrap.

This method incorporated the FPC factor only at the first stage, where sampling fractions were generally high. At the second stage, where the sampling fractions were generally low, analysts set the FPC factor to 1.00.

NPSAS staff used the Flyer-Kott methodology to develop a vector of bootstrap sample weights that they added to the analysis file. These weights are zero for units not selected in a particular bootstrap sample; analysts inflate weights for other units for the bootstrap subsampling. Staff included initial analytic weights for the complete sample for the purpose of computing the desired estimates. The vector of replicate weights allows for computation of additional estimates for the sole purpose of estimating a variance. Assuming B sets of replicate weights, analysts can estimate the variance of any estimate, $\hat{\theta}$, by replicating the estimation procedure for each replicate and computing a simple variance of the replicate estimates, as follows:

$$\text{var}(\hat{\theta}) = \frac{\sum_{b=1}^{B} (\hat{\theta}_b^* - \hat{\theta})^2}{B},$$

where $\hat{\theta}_b^*$ is the estimate based on the bth replicate weight (where $b = 1$ to the number of replicates) and B is the total number of sets of replicate weights.

Once analysts have the replicate weights, most survey software packages can produce this estimate (e.g., SUDAAN computes this estimate by invoking the DESIGN = BRR option). (For an example of SUDAAN code, see appendix K.)

NPSAS staff set the number of replicate weights to 200. For the 200 replicate weights included on the analysis file (WTA001–WTA200), staff repeated the poststratification process so that the variance would account for the poststratification weight adjustment. For some of the replicates, NPSAS staff had to loosen the bounds on the poststratification adjustment factor because of model convergence problems (i.e., there was no solution to satisfy all model equations simultaneously).

6.5.3 Variance Approximation

The survey design effect for a statistic is defined as the ratio of the design-based variance estimate over the variance estimate that would have been obtained from a simple random sample of the same size (if that were practical). It is often used to measure the effects that sample design features have on the precision of survey estimates. For example, stratification tends to decrease the variance, but multistage sampling and unequal sampling rates usually increase the variance. In addition, weight adjustments for nonresponse (performed to reduce nonresponse bias) and poststratification increase the variance by increasing the weight variation. Because of these effects, most complex multistage sampling designs, like NPSAS:12, result in design effects greater than 1.0. That is, the design-based variance is larger than the simple random sample variance.

Specifically, NPSAS staff define the survey design effect for a given estimate, $\hat{\theta}$, as

$$\text{Deff}(\hat{\theta}) = \frac{Var_{design}(\hat{\theta})}{Var_{srs}(\hat{\theta})}.$$

The square root of the design effect is another measure which analysts can express as the ratio of the standard errors, or

$$\text{Deft}(\hat{\theta}) = \frac{SE_{design}(\hat{\theta})}{SE_{srs}(\hat{\theta})}.$$

Appendix L presents design effect estimates for important survey domains and estimates among undergraduate and graduate students, in order to summarize the effects of stratification, multistage sampling, unequal probabilities of selection, and the weight adjustments. NPSAS staff estimated these design effects using SUDAAN and the bootstrap variance estimation procedure described in section 6.5.2 and appendix K. While not recommended, those who must perform a quick analysis of NPSAS:12 data without using one of the software packages for analysis of complex survey data can use the design effect tables in appendix L to make approximate adjustments to the standard errors of survey statistics computed with the standard software packages that assume simple random sampling designs. However, one cannot be confident about the actual design-based standard errors without performing the analysis with one of the software packages specifically designed for analysis of data from complex sample surveys. (For details about the use of such software packages, see appendix K.)

Large design effects imply large standard errors and relatively poor precision. Small design effects imply small standard errors and good precision. In general terms, a design effect less than 2.0 is low, from 2.0 to 3.0 is moderate, and greater than 3.0 is high. Moderate and high design effects

often occur in complex surveys such as NPSAS. Unequal weighting causes large design effects and is often due to nonresponse and poststratification adjustments; however, in NPSAS, the unequal weighting is also due to the sample design and different sampling rates between institution strata, as well as to the different sampling rates between student strata.

6.6   Imputations

NPSAS staff imputed missing data in all variables included in the restricted-use derived file (also used in PowerStats) in accordance with mass imputation procedures described by Krotki, Black, and Creel (2005). After replacing missing data in those cases where values could be deduced with certainty based upon logical relationships among observed variables, the weighted sequential hot deck (WSHD) method was used to replace missing data by imputing plausible values from statistically selected donor cases (Cox 1980; Iannacchione 1982).

The first stage in the imputation procedure was the identification of vectors of variables that, due to their substantive similarity or shared pattern of missingness, could be imputed simultaneously. Then, variables/vectors of variables were prioritized for imputation based upon their level of missing data, imputing those variables/vectors of variables with low levels of missingness prior to imputing variables where the rate of missingness was greater. For each variable/vector of variables, NPSAS staff identified imputation classes from which donor cases for the hot deck procedure would be selected. To develop those classes, nonparametric classification or regression trees were used to identify homogeneous subgroups of item respondents (Breiman et al. 1984) using complete response variables and any previously imputed variables as possible predictor variables. Finally, missing data were replaced using the WSHD procedure with each of the imputation classes.

In the second stage of imputation, missing data were replaced using the WSHD procedure. T to improve imputation quality, this previously described procedure using trees and WSHD was combined with implemented with the cyclic *p*-partition hot deck (Marker, Judkins, and Winglee 2002) technique, as discussed in Judkins (1997).[21] This technique begins by replacing identifying initial imputations for each missing variable (ordered from least missingness to most missingness), based upon variables with complete responses and any imputed variables as possible predictors to form the imputation classes, within which the WSHD is used. The result is a complete data set containing the variable/vector of variables being reimputed and variables related to the development of imputation classes. Then, in each of n iterations, imputed data in each variable (ordered from least missingess to most missingness) was erased and a new response imputed based upon the otherwise complete data set.

This approach reinforces existing patterns within the data, avoiding the need to make strong assumptions about distribution shapes or about prior distributions for parameters. Instead, NPSAS staff members were able to make deliberate choices about which features of the covariance structure deserve the best preservation efforts (Marker, Judkins, and Winglee 2002, p. 334). Typically, the result of cycling is a convergence to plausible values, maintaining relationships that already exist. Rarely, cycling fails to converge, introducing errors because of the missing data pattern and the random nature of the imputations.

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[21] David Judkins is currently (2012 Joint Statistical Meetings) referring to this as *p*-cyclic partition hot deck. He changed from *n* to *p* because *n* is often used to denote the number of observations and *p* the number of variables.

To reduce error due to imputation, NPSAS staff performed quality checks throughout the imputation process. In particular, staff compared the distribution of variable values pre and postimputation, examining the data as needed to resolve apparent anomalies. Selected results from the imputation process are in appendix M, which shows the percentage missing for each variable subject to imputation for all students, undergraduate students, and graduate students, and pre and postimputation distributions for eight key variables.

6.7 Composite and Derived Variable Construction

NPSAS staff derived the analytic variables by examining the data available for each student from the various data sources, prioritizing the data sources on an item-by-item basis, and reconciling discrepancies within and between sources. In some cases, staff created the derived or composite variables by simple assignment of a value from the available source with the highest priority. In other cases, they recoded interview items or otherwise summarized them to create a derived variable (for a listing of the set of analysis variables derived for NPSAS:12, see appendix N). Details about the creation of each variable appear in the variable descriptions contained in the PowerStats documentation and codebooks for the restricted files.

6.8 Data Disclosure

To protect the confidentiality of information about specific individuals, NPSAS staff performed perturbation procedures on NPSAS:12 data to minimize disclosure risk. Perturbation procedures, which the NCES Disclosure Review Board reviewed and approved, preserve central tendency estimates but may result in slight increases in nonsampling errors.

In a study like NPSAS, there are multiple sources of data for some variables (CPS, student records, student interview, etc.), and reporting differences can occur in each. Data swapping and other forms of perturbation, implemented to protect respondent confidentiality, can lead to inconsistencies as well.

All respondents were given a positive probability of being selected for swapping. Perturbation was carried out under specific targeted, but undisclosed, swap rates. In data swapping, the values of the variables being swapped are exchanged between carefully selected pairs of records: a target record and a donor record. Swapping variables were selected from questionnaire and student record items.

Because perturbation of the NPSAS:12 data could have changed the relationships between data items, an extensive data quality check was carried out to assess and limit the impact of swapping on these relationships. For example, a set of correlations for a variety of variables was evaluated pre and posttreatment to verify that the swapping did not greatly affect the associations.

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