

Baccalaureate and Beyond (B&B) Longitudinal Study

Website: <http://nces.ed.gov/surveys/b&b/>

1. OVERVIEW

The Baccalaureate and Beyond (B&B) Longitudinal Study provides information concerning education and work experiences following completion of the bachelor's degree. It provides both cross-sectional profiles of the enrollment, persistence, and financial aid receipt of bachelor's degree recipients in their final year of undergraduate education and longitudinal data on their entry into and progress through graduate-level education and the workforce. Special emphasis is placed on those graduates entering public service areas, particularly teaching, and the provision of information on their entry into the job market and career path.

B&B draws the base-year data for its cohorts from the National Postsecondary Student Aid Study (NPSAS, see [NPSAS chapter](#)). The first B&B cohort consisted of individuals who received a bachelor's degree in the 1992–93 academic year; the second cohort was formed from baccalaureate recipients in the 1999–2000 academic year; and, the third cohort consists of graduating seniors from the 2007–08 academic year (B&B:93, B&B:2000, and B&B:08, respectively). B&B expands on the efforts of the former Recent College Graduates Survey to provide unique information on educational and employment-related experiences of these degree recipients over a longer period of time. The 1992–93 cohort was followed three times over a 10-year period, in 1994, 1997, and 2003 (B&B:93/94, B&B:93/97, and B&B:93/03, respectively), so that most respondents who attended graduate or professional schools have completed (or nearly completed) their education and are established in their careers. The 1999–2000 cohort was followed only in 2001 (B&B:2000/01). The 2007–08 cohort was followed for the first time in 2009 (B&B:08/09). Eligible sample members will be interviewed again in 2012. B&B can address issues concerning delayed entry into graduate school, the progress and completion of graduate-level education, and the impact of undergraduate and graduate debt on choices related to career and family.

Purpose

To provide information on (1) college graduates' entry into, persistence and progress through, and completion of graduate-level education in the years following receipt of the bachelor's degree; and (2) the career paths of new teachers: retention, attrition, delayed entry, and movement within the educational system.

Components

B&B consists of base-year data collected from NPSAS: the 1992–93 NPSAS for the first B&B cohort; the 1999–2000 NPSAS for the second B&B cohort; and the 2007–08 NPSAS for the third B&B cohort (NPSAS:93, NPSAS:2000, and NPSAS:08, respectively). NPSAS data are collected in many components, including institutional records from postsecondary institutions, student interviews, and administrative federal financial aid record systems. For the first B&B cohort (consisting of 1992–93 baccalaureate recipients), the first follow-up, conducted in 1994, collected data from a student interview as well as from undergraduate

LONGITUDINAL SAMPLE SURVEY OF BACHELOR'S DEGREE RECIPIENTS; THREE FOLLOW- UPS OVER A 10-YEAR PERIOD:

B&B collects data from:

- Base-year NPSAS Data
- Student interviews
- Undergraduate transcripts
- Federal financial aid and loan records
- Identified newly qualified teachers

college transcripts. The second follow-up, conducted in 1997, combined a Student Interview with Department Aid Application/Loan Records data. The third follow-up, conducted in 2003, collected data on topics related to continuing education, degree attainment, employment, career choice, family formation, and finances. A second B&B cohort, consisting of 1999–2000 baccalaureate recipients, went to the field in 2000, and was followed in 2001. The first and only planned follow-up survey, it focused on time to degree completion, participation in post-baccalaureate education and employment, and the activities of newly qualified teachers. A third B&B cohort, consisting of 2007–08 baccalaureate recipients, was followed for the first time in 2009. When they are released in early 2011, the data for this follow-up will combine student interviews, undergraduate college transcript, and other administrative records. The research topics include the relationship between college graduates' coursetaking while in college and their subsequent paths into the labor market and/or through graduate school; accumulated educational debt burden of college graduates; and preparations graduates have made for elementary and secondary school teaching, particularly as compared to those of college graduates in other occupations.

Base-Year Data (from NPSAS). B&B obtains its base-year information from NPSAS. The NPSAS Student Record Abstracts (institutional records) provide major field of study; type and control of institution; attendance status; tuition and fees; admission test scores; financial aid awards; cost of attendance; student budget information and expected family contribution for aided students; grade point average; age; and date first enrolled. The base-year data also include information from NPSAS Student Interviews regarding educational level; major field of study; financial aid at other schools attended during the year; other sources of financial support; monthly expenses; reasons for selecting the school attended; current marital status; age; race/ethnicity; sex; highest degree expected; employment and income; community service; expectations for employment after graduation; expectations for graduate school; and plans to enter the teaching profession. For NPSAS:08, parental data previously collected from the Parent Interviews were captured in the Student Interview. These topics include marital status; age; highest level of education achieved; income; amount of financial support provided to the student; types of financing used to pay student educational expenses; and current employment (including occupation and industry).

B&B First Follow-up Survey. The first follow-up is conducted 1 year after the bachelor's degree is received

(e.g., 1994 for the 1992–93 cohort and 2001 for the 1999–2000 cohort). No other follow-up is being conducted of the 1999–2000 cohort. Data were collected in 2009 for the first follow-up of the 2007–08 cohort.

In the Student Interview portion of the survey, recent graduates provide information regarding employment after degree completion; job search activities; expectations for and entry into teaching; teacher certification status; job training and responsibilities; expectations/entry into graduate school; enrollment after degree; financial aid; loan repayment/status; income; family formation and responsibilities; and participation in community service. As part of the first follow-up of both the 1992–93 B&B and 2007–08 B&B cohorts, an undergraduate transcript study component collected transcripts providing information on undergraduate coursework; institutions attended; grades; credits attempted and earned; and academic honors earned. All transcript information is as reported by the institutions, converted to semester credits and a 4.0 grade scale for comparability.

B&B Second Follow-up Survey. The second follow-up of the 1992–93 B&B cohort was conducted in 1997, 4 years after the bachelor's degree was received. Participants provided information in the Student Interview regarding their employment history; enrollment history; job search strategies at degree completion; career progress; current status in graduate school; nonfederal aid received; additional job training; entry into/persistence in/resignation from teaching career; teacher certification status; teacher career path; income; family formation and responsibilities; and participation in community service.

The second follow-up of the 1992–93 B&B cohort also included a Department Aid Application/Loan Records component to collect information on the types and amounts of federal financial aid received, total federal debt accrued, and students' loan repayment status. One of the goals of B&B is to understand the effect that education-related debt has on graduates' choices concerning their careers and further schooling. Data will be collected in 2012 for the second follow-up of the 2007–08 cohort.

B&B Third Follow-up Survey. The 1992–93 cohort was followed for a third time in 2003. This final interview, which was conducted 10 years following degree completion, allowed further study of the issues already addressed by the preceding follow-up studies. The 2003 interview covered topics related to continuing education, degree attainment, employment, career choice, family formation, and finances.

Additionally, respondents were asked to reflect on the value that their undergraduate education and any other education obtained since receiving the bachelor's degree added to their lives now. It also contained a separate set of questions directed at new entrants into the teacher pipeline, as well as those who were continuing in or who had left teaching since the last interview.

Periodicity

The three B&B cohorts each have their own follow-up schedule,¹ as described above. B&B cohorts alternate with Beginning Postsecondary Students (BPS) Longitudinal Study cohorts in using NPSAS surveys as their base.

2. USES OF DATA

B&B covers many topics of interest to policymakers, educators, and researchers. For example, B&B allows analysis of the participation and progress of recent degree completers in the workforce, relationship of employment to degree, income and the ability to repay debt, and willingness to enter public service-related fields. B&B also allows analysis of issues related to access into and choice of graduate education programs. Here the emphasis is on the ability, ease, and timing of entrance into graduate school, and attendance/employment patterns, progress, and completion timing once entered.

The unique features of B&B allow it to be used to address issues related to undergraduate education as well as post-baccalaureate experiences. This information has been used to investigate the relationship between undergraduate debt burden and early labor force experiences, and between undergraduate academic experiences and entry into teaching. These and other relationships can be investigated both in the short term and over longer periods.

Because B&B places special emphasis on new teachers at the elementary and secondary levels, it can be used to address many issues related to teacher preparation, entry into the profession (e.g., timing, ease of entry), persistence in or defection from teaching, and career movement within the education system.

Major issues that B&B attempts to address include:

- length of time following receipt of degree after which college graduates enter the workforce;

- type of job which graduates obtain, compared with major field of undergraduate study;
- length of time to complete degree;
- length of time to obtain a job related to respondents' field of study;
- extent to which jobs obtained relate to educational level attained by respondent;
- extent to which level of debt incurred to pay for education influences decisions concerning graduate school, employment, and family formation;
- extent to which level of debt incurred influences decisions to enter public service professions;
- rates of graduate school enrollment, retention, and completion;
- extent to which delaying graduate school enrollment influences respondent's access to and progression through advanced degree programs;
- factors influencing the decision to enroll in graduate education;
- extent to which attaining an advanced degree influences short-term and long-term earnings;
- number of graduates qualified to teach;
- extent to which degree level/profession influences rate of advancement; and
- extent to which respondents change jobs or careers.

3. KEY CONCEPTS

Some of the concepts and terms used in the B&B data collection and analysis are defined below. For more information on these and others terms used in B&B, refer to *A Descriptive Summary of 1999–2000 Bachelor's Degree Recipients, 1 Year Later, With an Analysis of Time to Degree* (Bradburn et al 2003).

Degree-granting Institution. Any institution offering an associate's, bachelor's, master's, doctor's, or first-professional degree. Institutions that grant only certificates or awards of any length (less than 2 years, or 2 years or more) are categorized as nondegree-granting institutions.

¹ B&B:08 follow-up studies beyond 2009 will be conducted as funding permits.

First Postsecondary Institution. The first institution attended by the respondent following high school and in which the respondent was enrolled for a minimum of 3 months. Institutions attended before high school graduation are included if enrollment continued after high school graduation. The first institution may or may not be the institution that granted the bachelor's degree.

Status in Teacher Pipeline. This variable measures the extent of involvement with teaching, using variables from 1994 and 1997 interviews and composites. Respondents who taught were classified as having taught (1) with certification, (2) with student teaching experience, (3) without training, or (4) with training unknown. Respondents who did not teach were classified as (1) certified, (2) having student taught, (3) having applied for teaching jobs, (4) having considered teaching, or (5) having no interest in or taken no action toward teaching. An additional category of respondents who had become certified but whose teaching status was unknown was identified. All of these categories are combined in various ways throughout reports, depending on the context of the particular analysis.

Dependency Level. If a student is considered financially dependent, the parents' assets and income are considered in determining aid eligibility. If the student is financially independent, only the student's assets are considered, regardless of the relationship between student and parent. The specific definition of dependency status has varied across surveys. In the 1999-2000 NPSAS, a student is considered independent if (1) the institution reports that the student is independent or (2) the student meets one of the following criteria: (a) is age 24 or older as of 12/31/1999; (b) is a veteran of the U.S. Armed Forces; (c) is an orphan or ward of the court; (d) is enrolled in a graduate or professional program beyond a bachelor's degree; (e) is married; or (f) has legal dependents other than a spouse.

4. SURVEY DESIGN

Target Population

All postsecondary students in the 50 states, the District of Columbia, and Puerto Rico who completed a bachelor's degree in the 1992-93 academic year, spanning July 1, 1992, to June 30, 1993 (first B&B cohort); in the 1999-2000 academic year, spanning July 1, 1999, to June 30, 2000 (second B&B cohort) or in the 2007-08 academic year, spanning July 1, 2007, to June 30, 2008 (third B&B cohort). Students from U.S. Service Academies are excluded because they are

not part of NPSAS, from which B&B draws its samples.

Sample Design

Members of the B&B cohort are identified during the NPSAS year that serves as the base year for the longitudinal study: NPSAS:93 for the first B&B cohort, NPSAS:2000 for the second B&B cohort, and NPSAS:08 for the third B&B cohort. (See [NPSAS chapter](#) for a description of the NPSAS sample design.) The B&B cohorts consist of students who have completed the NPSAS interview and have been identified as baccalaureate recipients. The B&B:93 and B&B:08 cohorts also consist of those NPSAS:93 and NPSAS:08 nonrespondents, respectively, who are potentially eligible for B&B and for whom there are at least some data (either from institutional records or computer-assisted telephone interviewing [CATI]). The NPSAS sampling design is a two-stage design in which eligible institutions are selected first and then eligible students are selected from the eligible participating institutions.

Selection of Institutions

The institution-level sampling frames for NPSAS:93, NPSAS:2000, and NPSAS:08 were constructed from the 1990-91 Integrated Postsecondary Education Data System (IPEDS) file, the 1998-99 IPEDS file, and the 2005-06 IPEDS file, respectively. The resulting sampling frames contained 10,140 potentially eligible institutions for NPSAS:93, 6,420 institutions for NPSAS:2000, and 6,780 institutions for NPSAS:08.

Geographic areas defined by three-digit postal zip codes were used as the basis for creating primary sampling units (PSUs) of nearly equal sizes to ensure statistical efficiency (the three-digit code comes from the first three digits of a zip code, and designates either a sectional center facility or a main post office). All institutions within the sample PSUs were then combined into a single frame, stratified by 22 strata. The variables used to define the strata were institutional control, highest level of offering, and the percentage of baccalaureate degrees awarded in education.

For the NPSAS:93 sample, a sample of 1,360 institutions (720 from the certainty PSUs and 640 from the noncertainty PSUs) was selected for the primary sample from the IPEDS frame. For the NPSAS:2000 sample, a sample of 1,080 institutions (290 from the certainty PSUs and 800 from the noncertainty PSUs) was selected for the primary sample from the IPEDS frame. For the NPSAS:08 sample, the final sample

included 1,960 institutions, and of those, about 1,960 were selected to participate in NPSAS:08.²

Selection of Students

Base-Year Survey. To create the NPSAS student sampling frame, each sample institution was asked to provide a list of all students enrolled during the NPSAS year (July 1, 1992 to June 30, 1993 for the first B&B cohort; July 1, 1999 to June 30, 2000 for the second B&B cohort; and July 1, 2007 to June 30, 2008 for the third B&B cohort) and those eligible to receive a baccalaureate degree at some point during that year, according to criteria provided to the institutions. Stratified systematic sampling was used to facilitate sampling from lists. For each sample institution, student sampling rates were determined for each of five student sampling strata:

- business major baccalaureates;
- other baccalaureate recipients;
- other undergraduates, including enrollees at less-than-4-year institutions;
- graduate students; and
- first-professional students.

The sampling rates depended on the overall population sampling rates for the five types of students, the probability of selecting the institution, and a requirement for a minimum of 40 sample students per institution whenever possible. Sample institutions identified those students eligible to receive the bachelor's degree during the academic year for inclusion in each B&B cohort. In addition, those students who indicated in the CATI that they had received a baccalaureate degree during the 1992–93 academic year were also included in the B&B:93 cohort. From the NPSAS:93 sample, 16,320 baccalaureate degree recipients were identified for participation in B&B:93. From the NPSAS:2000 sample, 16,620 baccalaureate degree recipients were identified for participation in B&B:2000.³

*First Follow-up Survey.*⁴ About 16,320 baccalaureate degree recipients were identified for inclusion in the B&B:93 cohort from institutionally-provided lists of students who were eligible for graduation or who indicated in the CATI interview that they had

graduated in the 1992–93 academic year. All 11,810 of the identified students who completed the NPSAS:93 interview were retained for the B&B:93/94 sample. Also retained were 370 student nonrespondents for whom NPSAS parent data were available that indicated that the student received the bachelor's degree during 1992–93. Additionally, a 10 percent subsample of the remaining eligible cases with at least some data was included, for a total of 12,730 eligible cases. It became apparent during data collection that many of the nonrespondents and potentially eligible cases were actually ineligible. Because of the costs associated with the ineligible students, only a subsample of the nonrespondents and potentially eligible students was selected, reducing the sample size to 12,480 in B&B:93/94.

The respondent universe for the B&B:2000/01 follow-up survey consisted of all students who attended postsecondary educational institutions between July 1, 1999, and June 30, 2000, in the United States and Puerto Rico, and who received or expected to receive bachelor's degrees during this time frame. Approximately 11,700 confirmed and potentially eligible bachelor's degree recipients were selected for participation in B&B:2000/01. Of these, about 70 were determined during the follow-up survey to be ineligible. From the remaining nearly 11,630 eligible sample members, about 10,030 were located and interviewed in the follow-up survey.

Second Follow-up Survey. B&B:93/94 included a transcript component, which was used to determine eligibility of the base-year nonrespondents for the B&B:93/97 follow up. After data collection was complete for the first follow-up, additional ineligible cases were found in the cohort based on information obtained from the transcript data. Sample members were retained for follow-up in later rounds if they were found to be eligible in either the CATI or the transcript component. In total, 11,190 cases were retained for the second follow-up (B&B:93/97). Specifically, B&B:93/97 included 10,080 CATI-eligible cases, 1,090 transcript-eligible cases, and 20 cases for which eligibility was unknown for both components.

Third Follow-up Survey. All 10,090 B&B:93/97 respondents were included in the B&B:93/03 sample. However, because it is more difficult and expensive to locate and interview prior nonrespondents, a subsample of only about one-third, or 360, of B&B:93/97 nonrespondents was included. After removing 10 cases identified as deceased, the final sample for B&B:93/03 was 10,440.

² Additional details on the NPSAS:08 sample will become available upon release of the relevant study data.

³ The final number of students in the B&B:08 sampling frame will be determined upon release of the relevant NPSAS:08 study data.

⁴ The discussion of the follow-up surveys pertains to the first two B&B cohorts only; the first follow-up of B&B:08 took place in 2009.

Data Collection and Processing

B&B surveyed its first cohort—1992–93 bachelor’s degree recipients—in 1994, approximately 1 year after graduation, and again in 1997. Both of these follow-up surveys were administered by the National Opinion Research Center (NORC) at the University of Chicago. The third follow-up was conducted in 2003 by Research Triangle Institute (RTI).

The first follow-up of the 1999–2000 cohort (B&B:2000/01) was conducted in 2001 by RTI. This cohort of students was first interviewed in NPSAS:2000, the base-year study for this cohort. B&B:2000/01 is the only planned follow-up of this cohort.

The first follow-up of the third cohort (B&B:2008/09) was conducted in 2009 by RTI. This cohort of students was first interviewed in NPSAS:08, the base-year study for this cohort.

Reference dates. In the first follow-up of the 1992–93 cohort, respondents were asked to provide their current enrollment status, employment status, and marital status as of April 1994. Similarly, respondents to the second and third follow-ups reported their status as of April 1997 and April 2003. For the follow-up of the 2000–01 cohort, respondents were asked to provide their current enrollment status, employment status, and marital status as of April 2001.

Data collection. Data are collected through student interviews and college transcripts. The data collection procedures for the follow-ups of the first and second B&B cohorts are described below.

Student interview. The first follow-up student interview (B&B:93/94) was administered between June and December 1994. Sample members were initially mailed a letter containing information about the survey and a toll-free number they could call to schedule interviews. CATI began approximately 1 week later and was conducted in two waves. Wave 1 consisted of students who were respondents in the 1992–93 NPSAS or for whom parent data were available. Wave 2 consisted of students who were nonrespondents in the 1992–93 NPSAS and for whom no parent data were available. NPSAS respondents who were identified as potentially eligible for B&B during the NPSAS data processing phase were also included in Wave 2.

Telephone interviewing continued for a period of 16 weeks. All cases still pending after this time were sent to field interviewers to gather in-person information. A 14-call maximum was set, with a call defined as contact with the sample member, another person in the sample member’s household, or an answering machine.

After 14 calls, attempts to contact the sample member by telephone were terminated and the case was sent to field interviewers.

Methods of refusal conversion were tailored to address the reasons each member had given for nonparticipation, as determined by reviewing the call notes. Letters were sent to sample members addressing the specific reasons for their refusal (too busy, not interested, confidentiality issues, etc.). Following these mailings, a final phone interview was attempted from the central CATI site. Continuing refusals were forwarded to the field to be contacted in person by a field interviewer. The field staff was successful in completing 3,050 (82 percent) of these cases.

The data collection procedures for the first (and only) follow-up of the second B&B cohort were similar to those for the first cohort, consisting almost exclusively of CATI interviews, and concluding with refusal conversion procedures to gain cooperation from telephone nonrespondents.

The second follow-up student interview (B&B:93/97) was administered between April and December 1997. Sample members were initially mailed a letter and informational leaflet containing information about the survey and a toll-free number and/or e-mail address through which they could obtain further information, schedule an interview, or provide an updated phone number. CATI began approximately 1 week later and continued for 16 weeks. Cases pending at the end of this time were sent to field interviewers and worked from July through December 1997. Phone interviewers made 13, rather than 14, attempts to contact sample members. If phone interviewers were not successful after 13 attempts, the case was forwarded to telephone case management specialists before being sent to field interviewers.

Slight modifications were also made to the methods used to locate sample members. Prior to the beginning of CATI, all cases had been sent to a credit bureau database service to obtain updated phone and address information about each sample member. Telephone numbers were also available from the previous interview (B&B:93/94 or NPSAS:93) and the National Change of Address (NCOA)/Telematch update service that NORC had used for all main survey respondent data in February 1996, prior to the start of the field test. The “best” phone number was assumed to be the number most recently obtained.

Additional information used by locating specialists (in order of use) was as follows: (1) all respondent-generated information (e-mails, address corrections from the U.S. Post Office, any previously acquired

respondent phone numbers); (2) the last known telephone number of the parent(s); (3) graduate schools (if applicable); (4) undergraduate institutions/alumni associations; (5) the other two credit bureau updating services; (6) a military locating service, if applicable; and (7) the Department of Motor Vehicles in the state that issued the respondent's last known driver's license.

A total of 1,680 respondents (15 percent of the total eligible sample) refused to complete the B&B:93/97 interview at some point in the process. After a 2-week "cooling off" period, these cases were contacted by trained interviewers experienced in refusal conversion. The CATI refusal converters were able to complete 340 of the refusal cases. Continuing refusals were forwarded to the field to be contacted in person by a field interviewer. A total of 3,990 cases (36 percent of the total sample) were sent to the field staff, which was successful in completing 2,950 (74 percent) of these cases.

The third follow-up interview (B&B:93/03) started in February 2003. For the first time, respondents were offered the opportunity to conduct their own interview via the Internet. A single, web-based interview was designed and programmed for use as a self-administered interview, a telephone interview, and an in-person interview. In addition, a website was developed to launch the self-administered interview, to provide additional study information, and to collect updated student locating information.

Three weeks after the self-administered interview was made available to sample members in February 2003, telephone interviewing began with those sample members who had not yet completed the self-administered interview. About 3 months after the start of telephone interviewing, field interviewers began tracing and interviewing nonrespondents whose last known address was in one of 30 geographic clusters. From the starting sample of 10,440, about 40 individuals were found to be deceased and another 10 were determined to be ineligible. The unweighted locating rate among the remaining sample members was 93 percent. Of those located, 92 percent completed the interview, for an overall unweighted response rate of 86 percent. Among respondents, 38 percent completed the self-administered interview on the Internet, 57 percent completed a telephone interview, and the remaining 5 percent were interviewed in person.

Incentives were offered to sample members at two different points during data collection. First, sample members were offered a \$20 cash incentive for

completing the self-administered interview within the first 3 weeks of data collection, prior to the start of telephone interviewing. Of those who completed the self-administered interview, 47 percent did so during the incentive period. Additionally, an incentive was used to reduce nonresponse among four groups: those who refused to be interviewed, those who could not be reached by telephone, those for whom only a contact person could be reached, and those who started but did not finish the self-administered interview. Overall, 55 percent of sample members falling into one of the four groups completed the interview following the offer of a nonresponse incentive.

Among the telephone interviewers was a group of refusal conversion specialists trained in converting sample members who have refused to complete the interview. From the point when a sample member refused, the case was handled only by these conversion specialists. In B&B:93/03, slightly less than 10 percent of sample members ever refused to participate in the interview. Of these sample members, 49 percent eventually completed the interview.

Transcript component. In addition to data gathered from sample members, the first B&B follow-up included a transcript component that attempted to capture student-level coursetaking and grades for eligible sample members. Transcripts were requested for all sample members from the NPSAS schools that awarded them their bachelor's degrees.

Data collection for the transcript component began in August 1994, when request packets were mailed to all 720 NPSAS sample schools from which B&B sample members had graduated. In addition to student transcripts, schools were asked to provide a course catalog and information on their grading and credit-granting systems and their school term. A transcript was requested for all 12,480 students in the B&B sample, although not all transcripts were coded due to sample member ineligibility. Prompting of nonresponding schools began in September 1994 by the telephone center, and attempts were made to address any concerns of school staff regarding confidentiality or the release of transcripts.

The design of the transcript processing system capitalized on work done in previous NORC studies. The process and flow system, however, was changed in four significant areas. First, since the sample of schools from which transcripts were collected was known, the system was designed around the school as the primary unit rather than around the student. Second, transcripts were entered after all school-level information about schedule, grading, and credit-granting systems had

been collected and verified. The system enforced these parameters and ensured that the transcripts were internally consistent within the school. Third, the transcript coders worked with the full transcript when entering and coding courses. This allowed the coders to view each entry in context and make intelligent, informed decisions when they encountered difficult situations. Finally, the system was designed so that course-level information within schools was entered only once; subsequent duplicate course entries were selected by the coder from a dynamic school-level list of all courses entered from previous transcripts. If a course failed to match a preexisting entry, the coder searched the school-level table to see if other courses existed for the abbreviation. If a course was not in the table, the coder entered the full course title, the number of credits, and the grade.

Editing. Various edit checks, including CATI edits, have been used in processing B&B data; however, they have not been documented in B&B methodology reports for the base year and first two follow-ups of the B&B:93 cohort.

The coding and editing procedures for the B&B:93 cohort's third follow-up (B&B:93/03) fell into two categories: (1) online coding and editing performed during data collection and (2) post-data collection editing. All data collection for B&B:93/03 used one major system—a web instrument—that included edit checks to ensure that the data collected were within valid ranges. To the extent feasible, this system incorporated across-item consistency edits. Whereas more extensive consistency checks would have been technically possible, the use of such edits was limited to prevent excessive respondent burden.

Both during and after data collection, edit checks were performed on the B&B:93/03 data file to confirm that the intended skip patterns were implemented during the interview. Special codes were added after data collection, as needed, to indicate the reason for missing data. In addition, skip-pattern relationships in the database were examined by methodically running cross-tabulations between gate items and their associated nested items.

For the B&B:2000/01 data, the coding and editing procedures fell under the same two categories as above. During data collection, online coding and editing were performed, requiring CATI range and consistency checks. After data collection, edit checks were performed to verify that the database reflected appropriate skip patterns.

Estimation Methods

Weighting is used in B&B to adjust for sampling and unit nonresponse. Imputation is used to estimate baseline weights from NPSAS when these data are missing and to estimate values when the value is missing; however, no imputation was performed on data collected in the first and second follow-ups of B&B:93. Weighting procedures for the first and second cohorts are described below.

Weighting. For the first B&B cohort's first follow-up, the final weights were calculated by modifying baseline weights in NPSAS:93 to adjust for nonresponse in the B&B:93/94 survey and for tighter eligibility criteria in the B&B sample. NPSAS:93 sample development and weights calculation documentation can be found in the *Sampling Design and Weighting Report for the 1993 National Postsecondary Student Aid Study* (Whitmore, Traccarella, and Iannacchione 1995).

After verifying sample eligibility against transcript data, B&B sample members were stratified according to institutional type and student type. These strata reflected the categories used in NPSAS:93, with some modifications. NPSAS:93 categorized schools into 22 institutional strata based on highest degree offered, control (public or private), for-profit status, and the number of degrees the institution awarded in the field of education (with schools subsequently designated “high ed” or “low ed”). For weighting purposes, these 22 institutional strata were collapsed in B&B into the 16 that granted baccalaureate degrees. The six NPSAS strata representing 2-year or less-than-2-year institutions were reclassified in B&B according to control and included in the correlative “4-year, bachelor's, low ed” stratum. This affected a total of 19 cases. The five student types originally identified in the NPSAS were collapsed in B&B into three types: baccalaureate business majors, baccalaureate other majors, and baccalaureate field unknown, resulting in 48 total cells.

Baseline weights for all B&B-eligible students were adjusted for final degree totals. Control totals for baccalaureate degrees awarded were calculated based on the IPEDS Completions file for academic year 1992–93. The NPSAS institution sample frame was matched to the IPEDS file, and the total number of baccalaureate degrees awarded was calculated by institutional stratum. An adjusted weight was calculated for each case by multiplying the NPSAS base weight by the ratio of the sum of degrees awarded to the sum of the base weights for the appropriate institutional stratum. This weight became the B&B base weight.

In order to make nonresponse adjustments for weights, adjustment cells were created by cross-classifying cases by institutional stratum and student type. Each cell was checked to verify that it met two conditions: (1) the cell contained at least 15 students; and (2) the weighted response rate for the cell was at least two-thirds (67 percent) of the overall weighted response rate. Any cells that did not meet both conditions were combined into larger cells by combining two student-type cells (baccalaureate business majors and “all other degrees”) within the same institutional stratum. If this larger cell still did not meet the criteria specified above, all three student types from that institutional stratum were combined. Once all cells were defined, the B&B base weight variable (derived above) was multiplied by the inverse of the weighted response rate for the cell.

Final weights for the second follow-up (B&B:93/97) were calculated using a two-step process. First, the base weight calculated for the B&B:93/94 sample was adjusted for non-response to the B&B:93/97 survey. Next, the panel weight was calculated for respondents who participated in all three of the B&B surveys (NPSAS:93, B&B:93/94, and B&B:93/97). The 16 institutional-type and 3 student-type strata were used again, with the same process described previously.

The base weights for the third follow-up (B&B:93/03) were calculated adjusting for the subsample of nonresponding students from B&B:93/97 that were included in the B&B:93/03 survey. The cross-sectional weights for the third follow-up were developed by analyzing 8,970 respondents to the B&B:93/03 interview, using three steps of nonresponse adjustment: inability to locate the student, refusal to be interviewed, and other noninterview adjustments. All nonresponse adjustments were fitted using RTI’s proprietary generalized exponential modeling (GEM) procedure. To detect important interactions for the logistic models, a Chi-squared automatic interaction detection (CHAID) analysis was performed on the predictor variables. In addition, a longitudinal weight was constructed for analyzing students who participated in all four interviews—NPSAS:93, B&B:93/94, B&B:93/97, and B&B:93/03. This weight was constructed by applying an additional nonresponse adjustment to the final B&B:93/03 cross-sectional weight. As for the other models, CHAID was used to determine the interaction segments, and GEM was used to determine the adjustment factor.

For the second B&B cohort’s first follow-up (B&B:2000/01), weights were obtained in the following manner: the sample design included the first two stages of NPSAS:2000 sample design and an

additional B&B:2000/01-specific stage in which a subsample was selected from confirmed and potential baccalaureate recipients identified at the end of the NPSAS:2000 sample. All confirmed baccalaureate recipients were selected into the B&B:2000/01 sample, while nonresponding potential baccalaureate recipients were randomly selected according to probabilities based on a measure of size, which was the estimate of the NPSAS:2000 study weight at the time of sample selection. Once the B&B:2000/01 sample had been selected, initial weights were obtained by adjusting the NPSAS:2000 study weights for both the B&B subsample design and the presence of study-ineligible individuals in the B&B sampling frame. Similar to the first cohort, obtaining the final weights involved using CHAID to determine the interaction segments and GEM to determine the adjustment factor.

For the third B&B cohort’s first follow-up (B&B:08/09), weights were obtained in the following manner: the sample design included the first two stages of NPSAS:08 sample design and an additional B&B:08/09-specific stage in which a subsample was selected from confirmed and potential baccalaureate recipients identified at the end of the NPSAS:08 sample and the B&B transcript collection. All confirmed baccalaureate recipients were selected into the B&B:08/09 sample, while nonresponding potential baccalaureate recipients were randomly selected according to probabilities based on a measure of size, which was the estimate of the NPSAS:08 study weight at the time of sample selection. Once the B&B:08/09 sample had been selected, initial weights were obtained by adjusting the NPSAS:08 study weights for both the B&B subsample design and the presence of study-ineligible individuals in the B&B sampling frame. Obtaining the final weights involved using CHAID to determine the interaction segments and GEM to determine the nonresponse and calibration (poststratification) adjustment factors.

Imputation. The sample for the first B&B cohort (B&B:93) included 23 eligible cases in which the baseline weight from the 1992–93 NPSAS was equal to zero. Weights for these cases were imputed using the average of all nonzero baseline weights within the same institution at which the baccalaureate degree was attained. One of the cases with a missing weight happened to be the only representative of that institution. The baseline weight was imputed for this case by using the average across all nonzero weights within the same institutional stratum and student type cell.

There was no other imputation of data items in the base-year and first two follow-ups of B&B:93.

In the third follow-up (B&B:93/03), key variables to be used in cross-sectional estimates were imputed. The imputations were performed in three steps. In the first step, the interview variables were imputed. Then, using the interview variables, including the newly imputed variable values, the set of derived variables was constructed. In the final step, the derived variables were imputed again. Only one continuous variable was imputed. Income from work in 2002 had a weighted mean of \$50,846 ($n = 8,540$) prior to imputation and a weighted mean of \$50,961 ($n = 8,810$) after imputation.

Weighted sequential hot deck imputation was selected for B&B:93/03 in part because it has the advantage of controlling the number of times a respondent record can be used for imputation and gives each respondent record the chance to be selected for use as a hot deck donor. To implement the procedure, imputation classes and sorting variables relevant to each item being imputed were defined. If more than one sorting variable was used, a serpentine sort was performed in which the direction of the sort (ascending or descending) changed each time the value of the previous sorting variable changed. The serpentine sort minimized the change in student characteristics every time one of the sorting variables changed its value.

Imputation classes for the B&B:93/03 interview variables, and some of the derived variables, were developed using a CHAID analysis where only respondent data were modeled. The CHAID segmentation process first divided the data into groups based on categories of the most significant predictor of the item being imputed, and then split each of the groups into smaller subgroups based on the other predictor variables. The CHAID process also merged categories for variables found not to be significantly different. This splitting and merging process continued until no additional statistically significant predictors were found. Imputation classes for B&B:93/03 were then defined from the final CHAID segments.

No imputations were performed for the second B&B cohort.

Imputations will be done for the third B&B cohort for the interview variables. The imputed values will then be used to form derived variables. Similar to B&B:93/03, weighted sequential hot deck will be used with imputation classes and serpentine sorting. SAS Enterprise Miner will be used to form the imputation classes using a tree algorithm similar to CHAID.

5. DATA QUALITY AND COMPARABILITY

Sampling Error

Taylor Series approximations and Balanced Repeated Replication (BRR) are used to estimate standard errors in the first and second cohorts of B&B and Taylor series approximations and bootstrap replication will be used for the third cohort.

Nonsampling Error

The majority of nonsampling errors in B&B can be attributed to nonresponse. Other sources of nonsampling error include the use of ambiguous definitions; differences in interpreting questions; an inability or unwillingness to give correct information; mistakes in recording or coding data; and other instances of human error that occur during the multiple stages of a survey cycle. Different types of nonsampling errors are described below.

Coverage error. The B&B sample is drawn from NPSAS. Consequently, any coverage error in the NPSAS sample will be reflected in B&B. (Refer to chapter 14 for coverage issues in NPSAS.)

Nonresponse error. Overall response rates were generally high for the follow-up surveys. Unit and item nonresponse data are broken down below.

Unit nonresponse. Of the 12,480 cases originally included in the first B&B sample, 1,520 were determined during the interview process to be ineligible or out of scope (primarily because their date of graduation fell outside the July 1–June 30 window). A total of 10,960 cases were considered to be eligible during the interviewing period of the first B&B follow-up, and interviews were completed with 10,080 of these respondents, representing a 92 percent unweighted response rate.

Response rates were even higher for transcript collection. In all, 630 of 640 eligible schools complied with the request for transcripts, providing transcripts for 10,970 of the 12,480 cases—a 98 percent response rate.

In the second follow-up, of the 11,190 cases identified as eligible B&B sample members, 30 were subsequently found to be out of scope or ineligible (29 were sample members who had died since 1993, and one case was identified as ineligible when it was determined the respondent had never received a baccalaureate degree). Interviews were completed with 10,970 of the 11,220 in-scope cases, for a final unweighted response rate of 90 percent. While

response rates were similar across many demographic subgroups, some distinctive differences exist. Response rates decreased slightly with age (93 percent of those under 26 compared to 91 percent of those over 30 participated), but participation among males and females was approximately equal. Response rates were also similar among Whites, Blacks, and American Indians (ranging from 90 percent to 92 percent), but substantially lower for Asians/Pacific Islanders (only 82 percent) and those identifying themselves as “other” (74 percent).

In the third follow-up, about 40 individuals from the starting sample of 10,440 were found to be deceased and another 10 were determined to be ineligible. Of the B&B:93/03 sample members who were eligible to participate, 8,970 were interviewed, for an overall unweighted response rate of 87 percent (83 percent weighted). The rate of population coverage varies by type of institution: the rate is higher for public institutions than for private institutions, and higher for institutions offering a master’s or doctoral degree than for those offering a bachelor’s or less or a first-professional degree.

In the second B&B cohort’s follow-up (B&B:2000/01), about 760 individuals from the starting sample of about 11,700 were not located, about 190 were considered “exclusions,” and about 70 were deemed ineligible. A total of about 10,030 (of the approximately 11,520 remaining cases after removing the exclusions) were interviewed. An unweighted CATI response rate for B&B:2000/01 was 86 percent. The weighted overall CATI response rate was 75 percent.

[Table 10](#) summarizes the unit-level (respondent-level) and overall-level (school-level) weighted response rates across B&B administrations.

Item nonresponse. Of the more than 1,000 variables included in the final dataset for the first cohort, 68 contain a response rate of less than 90 percent. The highest nonresponse rate was for items involving recollection of test scores and dates. Respondents also had difficulty recalling detailed information about undergraduate loans and loan payments when they had more than three loans. The two primary sections of the survey, concerning postbaccalaureate education and employment, had very low rates of nonresponse.

For the second cohort, efforts were made to encourage responses to all interview questions and to limit indeterminates, defined as a “don’t know” response or a refusal to answer a question. As a result of these efforts, item nonresponse throughout the interview was

low, with only 6 of 556 items having indeterminate response rates above 10 percent.

Measurement error. Three sources of measurement error identified in B&B are respondent error, interviewer error, and error in the coding of course data from transfer schools where no school-level data were available.

Respondent error. Several weeks after the first follow-up interview of the 1992–93 cohort (B&B:93/94), a group of 100 respondents was contacted again for a reinterview. These respondents were asked a subset of the items included in the initial interview to help assess the quality of these data. The results indicate that the questions elicited similar information in both interviews. Ninety-two percent of respondents gave consistent responses when asked if they had taken any courses for credit since graduating from college. Among the 8 percent with inconsistent responses, most had a short enrollment spell that they mentioned in the initial interview but not in the reinterview.

Ninety-six percent of respondents gave consistent information in both interviews when asked whether they had worked since graduation. Almost three-quarters of respondents gave the same number in both interviews when asked about the number of jobs they held since graduation; 26 percent gave inconsistent responses. Upon scrutiny, many of these discrepancies resulted from jobs held around the time of graduation that were reported in just one of the interviews. Although respondents were asked to include jobs that began before graduation if they ended after graduation, confusion over whether to include such jobs accounted for many of the inconsistencies noted in the reinterview. The 1993–94 B&B field test also included a reinterview study (see [Measurement Error Studies at the National Center for Education Statistics](#) [Salvucci et al. 1997]).

Interviewer error. The monitoring procedure for statistical quality control used in B&B extends the traditional monitoring criteria (which focus specifically on interviewer performance) to an evaluation of the data collection process in its entirety. This improved monitoring system randomly selects active work stations and segments of time to be monitored, determines what behaviors will be monitored and precisely how they will be coded, and allows for real-time performance audits, thereby improving the timeliness and applicability of corrective feedback and enhancing data quality. Results for the first follow-up of the 1992–93 B&B cohort revealed a low rate of interviewer error, about three errors for every 100 minutes monitored.

Quality control procedures are also established for field interviewing. The first two interviewer-administered completed questionnaires are sent to a field manager for editing. These cases are edited, logged, and reported weekly, and appropriate feedback is given to the interviewer. Additionally, 10 percent of these cases, whether administered over the phone or in person, are validated by field managers. When deemed necessary, the field managers continue to edit additional cases to monitor data quality. The need for additional monitoring is based on the field manager's subjective judgment of the field interviewer's skill level. As with the edited cases, validated cases are logged and reported weekly.

Transfer school course coding. The first follow-up of the 1992–93 B&B cohort included a transcript data collection. Although transcripts were requested only from the institution awarding the baccalaureate degree, transcripts from previous transfer schools were often attached. Course data from these transfer school transcripts were coded, but no attempt was made to collect additional information from these schools. Due to the lack of school-level information on the 1,938 transfer schools involved, data from these transcripts are not of the same quality as data coded from the baccalaureate institution's transcripts.

Table 10. Unit-level and overall-level weighted response rates for selected B&B surveys, by data collection wave and cohort

	Unit-level weighted response rate				
	Base year Inst. level ¹	Base year Student level	1st follow- up	2nd follow- up	3rd follow- up
1992–93 student cohort	88	76	92 ²	90 ²	83
1999–2000 student cohort	91 ³	72 ³	82	†	†
2007-08 student cohort	90	64	†	†	†
	Overall-level weighted response rate				
	Base year Inst. level ¹	Base year Student level	1st follow- up	2nd follow- up	3rd follow- up
1992–93 student cohort	88	67	81 ²	80 ²	74
1999–2000 student cohort	91 ³	66 ³	74	†	†
2007-08 student cohort	90	86 ⁴	†	†	†

†Not applicable.

¹ Base year institutional response rates for student sampling lists.

² Unweighted response rate.

³ NPSAS:2000 response rate (includes less-than 4-year institutions).

⁴ Response rates calculated for study respondents as defined for NPSAS:08

NOTE: Follow-up response rates are for student interviews.

SOURCE: Loft, J.D., Riccobono, J.A., Whitmore, R.W., Fitzgerald, R.A., and Berkner, L.K. (1995). *Methodology Report for the National Postsecondary Student Aid Study, 1992–93* (NCES 95-211). U.S. Department of Education, National Center for Education Statistics. Washington, DC: U.S. Government Printing Office. Green, P.J., Meyers, S. L., Giese, P., Law, J., Speizer, H.M., and Tardino, V.S. (1996). *Baccalaureate and Beyond Longitudinal Study: 1993/94 First Follow-up Methodology Report* (NCES 96-149). U.S. Department of Education, National Center for Education Statistics. Washington, DC: U.S. Government Printing Office. Green, P., Meyers, S., Veldman, C., and Pedlow, S. (1999). *Baccalaureate and Beyond Longitudinal Study: 1993/97 Second Follow-up Methodology Report* (NCES 1999-159). U.S. Department of Education, National Center for Education Statistics. Washington, DC: U.S. Government Printing Office. Riccobono, J.A., Cominole, M.B., Siegel, P.H., Gabel, T.J., Link, M.W., and Berkner, K.L. (2002). *National Postsecondary Student Aid Study 1999–2000 (NPSAS:2000) Methodology Report* (NCES 2002-152). National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education. Washington, DC. Charleston, S., Riccobono, J., Mosquin, P., and Link, M. (2003). *Baccalaureate and Beyond Longitudinal Study: 2000–01 (B&B:2000/01) Methodology Report* (NCES 2003-156). National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education, Washington, DC. Wine, J.S., Cominole, M.B., Wheelless, S., Dudley, K., and Franklin, J. (2005). *1993/03 Baccalaureate and Beyond Longitudinal Study (B&B:93/03)* (NCES 2006-166). National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education. Washington, DC.

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