

Chapter 14: Integrated Postsecondary Education Data System (IPEDS)

1. OVERVIEW

The Integrated Postsecondary Education Data System (IPEDS) is NCES' core postsecondary education data collection program, designed to help NCES meet its mandate to report full and complete statistics on the condition of postsecondary education in the United States. IPEDS is a single, comprehensive system that collects institutional data about all primary providers of postsecondary education. It is built around a series of interrelated surveys designed to collect institution-level data in such areas as enrollments, program completions, faculty, staff, and finances.

Beginning in 1993, survey completion became mandatory for all postsecondary institutions with Program Participation Agreements with the Office of Postsecondary Education, U.S. Department of Education. IPEDS surveys are mandatory for any institution that participates in or is eligible to participate in any federal student financial assistance program authorized by Title IV of the Higher Education Act of 1965, as amended (20 USC 1094(a)(17)). For institutions not eligible under Title IV, participation in IPEDS is voluntary. In recent years, these voluntary data were requested only through the Institutional Characteristics survey. Prior to 1993, only national-level estimates from a sample of institutions are available for private less-than-2-year institutions.

In 1998, due to several externally mandated changes and additions to IPEDS, changes in technology for data collection and dissemination, changes in postsecondary education issues, and new expectations for IPEDS, a Redesign Taskforce was charged with recommending changes for the system. The primary recommendation was to switch IPEDS from paper forms to a solely web-based reporting system, which was implemented with the 2000–2001 data collection. IPEDS had been mailing paper forms to institutions on an annual basis since 1986.

It was in 1986 that IPEDS replaced the Higher Education General Information Survey (HEGIS). HEGIS collected data from 1966 to 1986 from a more limited universe of approximately 3,400 institutions accredited at the college level by an association recognized by the Secretary of the U.S. Department of Education. The transition to the IPEDS program expanded the universe to include *all* institutions whose primary purpose is the provision of postsecondary education. The system currently includes about 9,500 postsecondary institutions—including many nonaccredited institutions, as well as schools not accredited at the college level but with vocational/occupational accreditation.

Note that the Office for Civil Rights (OCR) has collaborated with NCES since 1976 regarding the collection of data from postsecondary institutions through Compliance Reports mandated pursuant to Title VI of the Civil Rights Act of 1964, first through HEGIS and then through IPEDS.

SURVEY OF THE UNIVERSE OF POSTSECONDARY INSTITUTIONS

IPEDS collects data annually or biennially through these major components:

- ▶ Institutional Characteristics
- ▶ Completions
- ▶ Graduation Rate Survey
- ▶ Fall Enrollment
- ▶ Finance
- ▶ Fall Staff
- ▶ Faculty Salaries
- ▶ Institutional Price and Student Financial Aid

Purpose

To collect institution-level data from all primary providers of postsecondary education—universities and colleges, as well as institutions offering technical and vocational education beyond the high school level.

Components

The IPEDS program consists of several components that obtain information on who provides postsecondary education (institutions), who participates in it and completes it (students), what programs are offered, what programs are completed, and the human and financial resources involved in the provision of institution-based postsecondary education. To avoid duplicative reporting and thus enhance the analytic potential of the database, the various IPEDS data elements and component surveys are interrelated. Several of the surveys used to include different versions of the questionnaire tailored to specific sectors; with the web-based data collection, the tailoring is done through different screens. In general, the data collected from postsecondary institutions granting baccalaureate and higher degrees are the most extensive; the system requests less data from other types of institutions. This feature accommodates the varied operating characteristics, program offerings, and reporting capabilities of postsecondary institutions while yielding comparable statistics for all institutions.

The IPEDS program currently attempts to collect information from approximately 9,500 postsecondary institutions using one or more survey instruments. Because of the requirements for participation in Title IV federal financial aid programs, IPEDS focuses on the 6,600 Title IV institutions. Each of these instruments (or components) is described below; the abbreviation for the survey component is provided after the survey name.

Institutional Characteristics (IC). The core of the IPEDS system is the annual Institutional Characteristics (IC) survey—intended for completion by all currently operating postsecondary institutions in the United States and its outlying areas. As the control file for the entire IPEDS system, IC constitutes the sampling frame for all other NCES surveys of postsecondary institutions. It also helps determine the specific IPEDS screens that are shown to each institution (as it used to determine the specific survey forms that were mailed to each institution). This component collects the basic institutional data that are necessary to sort and analyze not only the IC database, but also all other IPEDS survey databases. The IC survey incorporates many data elements required by state Career Information Delivery Systems (CIDS), thereby

reducing or eliminating the need for these organizations to conduct their own surveys.

The number of survey forms used to collect IC data has varied over the years. The 1990–91 IC survey was expanded to incorporate data items previously collected through the IPEDS Institutional Activity (EA) survey, which was phased out in 1989–90; these items now comprise Part D of the Enrollment survey. The version of the survey that a specific institution received used to be a function of its control and program offerings. For the 1999–2000 survey year, which was the last paper collection, there were three versions: IC, IC3, and IC-ADD.

Through 1999, the IC form was mailed to all 4-year, 2-year, and public less-than-2-year institutions; the IC3 form was sent to private less-than-2-year institutions; and the IC-ADD form was sent to all *new* institutions, regardless of control or level. In 1995–96, a short form was developed for use in odd-numbered years to collect minimal data to help maintain the universe and to report on student changes; the full form was used in even-numbered years. Prior to the 1998–99 survey, institutions not eligible for federal financial aid received a different survey form than institutions eligible for federal aid.

IC data are collected for the academic year, which generally extends from September of one calendar year to June of the following year. Specific data elements currently collected for each institution include: institution name, address, telephone number, control or affiliation, calendar system, levels of degrees and awards offered, types of programs, application information, student services, and accreditation. The IC component also collects information on tuition and required fees, room and board charges, books and supplies and other expenses for release on the IPEDS College Opportunities On-Line (IPEDS COOL) web site. These data are made available to prospective students and their parents in order to help them make informed choices about postsecondary education institutions.

Prior to 2000–01, the Institutional Characteristics survey collected instructional activity and unduplicated headcount enrollment for the previous academic year. These data are now collected through the Enrollment (EF) component of IPEDS. The headcount and activity data may be used to compute a standardized, full-time equivalent (FTE) enrollment statistic for the entire academic year. An FTE measure is useful for gauging the size of the educational enterprise at the institution.

Completions (C). This survey collects data annually on recognized degree completions in postsecondary education programs by level (associate's, bachelor's, master's, doctor's, and first-professional) and on other formal awards by length of program. These data are collected by race/ethnicity and sex of recipient and by field of study, which are identified by 6-digit Classification of Instructional Programs (CIP) codes. From 1990 to 1994, racial/ethnic data (by sex and degree/award level) were collected at the 2-digit CIP level. In 1995, there was a major restructuring of the survey to collect race/ethnicity at the 6-digit CIP level and to add additional questions to collect numbers of completers with double majors and numbers of degrees granted at branch campuses in foreign countries. The additional questions were dropped in 2000–01, but a matrix to collect completions data on multiple majors was instituted for optional use in 2001–02 and became mandatory in 2002–03. Completions data on multiple majors will be collected by 6-digit CIP code, award level, race/ethnicity, and sex from those schools that award degrees with multiple majors. (OCR has provided support to collect Completions data since 1976.)

Graduation Rate Survey (GRS). This survey was added in 1997 to help institutions satisfy the requirements of the Student Right-to-Know legislation. The paper version of the annual GRS collected data on the number of students entering an institution as full-time, first-time, degree- or certificate-seeking in a particular year (cohort), by race/ethnicity and sex; length of time to complete; number still persisting; number transferred to other institutions; and number receiving athletically-related student aid and their time to complete. For the 1997–98 GRS, 4-year institutions reported on a 1991 cohort, and less than 4-year institutions reported on a 1994 cohort. The GRS used four different versions to collect data on paper forms. Now that the survey is web-based, institutions see different screens when they are entering data in the web-based data collection system based on a series of screening questions. Also, the number of data items has been reduced. Institutions now provide data on their initial cohort; the number completing within 150 percent of normal time; the number transferred to other institutions; and the number receiving athletically-related student aid. These data allow institutions to disclose and/or report information on the completion or graduation rates and transfer-out rates of these students. Worksheets automatically calculate rates within the web system.

Finance (F). The primary purpose of this annual survey is to collect data to describe the financial condition of

postsecondary education in the nation; to monitor changes in postsecondary education finance; and to promote research involving institutional financial resources and expenditures. Specific data elements include current fund revenues by source (e.g., tuition and fees, government, private gifts); current fund expenditures by function (e.g., instruction, research, plant maintenance and operation); physical plant assets and indebtedness; and endowment investments.

Over the years, the various versions of the Finance form have changed. The survey forms for public and private institutions were basically the same except that the public institution form contained three sections with questions pertaining to state and local government financial entities used by the U.S. Bureau of the Census.

The form for private institutions was revised in 1997 to make it easier for respondents to report their financial data according to new standards issued by the Financial Accounting Standards Board (FASB). In an attempt to address reporting issues of proprietary institutions, the form for private institutions was further revised to reflect the General Purpose Financial Statements of these institutions. Again, the reference codes were changed. In addition, with the web-based data collection, the number of data items requested from institutions was greatly reduced in fiscal year (FY) 2000. Due to new accounting standards issued by the Government Accounting Standards Board (GASB), NCES is offering public institutions the option of providing FY 2002 data using a new format that corresponds to the GASB 34/35 standards. This new format, as well as the old version, will be available to institutions as the GASB 34/35 standards are implemented over the next 3 years.

Student Financial Aid (SFA). This component began with a pilot test in 1999, and collected both Institution Price and Student Financial Aid data. The 2000–01 SFA data collection included questions regarding the average amount of financial assistance by type, number of students receiving financial assistance for the previous year, and some contextual items. The tuition and other cost items are now part of the fall Institutional Characteristics (IC) survey; the student financial aid questions are part of the Spring data collection.

Fall Enrollment (EF). This survey collects data annually on the number of full- and part-time students enrolled in postsecondary institutions in the United States and its outlying areas, by level (undergraduate, graduate, first-professional), and by race/ethnicity and sex of student.

Institutions report on students enrolled in courses creditable toward a degree or other formal award; students enrolled in courses that are part of a vocational or occupational program, including those enrolled in off-campus centers; and high school students taking regular college courses for credit. An item that asks for the total number of undergraduates in the entering class (including first-time, transfer, and nondegree students) was added in 2001.

Racial/ethnic data have been collected annually since 1990 (biennially in even-numbered years prior to then). Age distributions are collected in odd-numbered years by student level. Data on state of residence of first-time freshmen (first-time first-year students) and the number that graduated in the past 12 months are collected in even-numbered years (replacing an earlier survey on Residence of First-time Students). Additional questions were asked on students enrolled in branch campuses in foreign countries, those enrolled exclusively in remedial courses, and those enrolled exclusively at extension divisions; however these items are not included in the web-based system. Four-year institutions are also required in even-numbered years to complete enrollment data by level, race/ethnicity, and sex for nine selected fields of study—Education, Engineering, Law, Biological Sciences/Life Sciences, Mathematics, Physical Sciences, Dentistry, Medicine, and Business Management and Administrative Services. Prior to 1996, data were also collected for the fields of Veterinary Medicine and Architecture and Related Programs. The specified fields and their codes are taken directly from *Classification of Instructional Programs (CIP)*. (OCR has supported collection of these data since 1976.)

Fall Enrollment in Occupationally-specific Programs (EP). This survey was incorporated into the IPEDS system in response to the Carl Perkins vocational education legislation. Conducted biennially in odd-numbered years, this survey collected fall enrollment data on students enrolled in occupationally-specific programs at the sub-baccalaureate level, by race/ethnicity and sex of student and by field of study (identified by 6-digit CIP codes). Starting in 1995, total unduplicated counts of students enrolled in these programs were also requested. This survey was discontinued as of the 1999–2000 data collection.

Fall Staff (S). This survey is conducted biennially in odd-numbered years and collects data on the numbers of full- and part-time institutional staff. Specific data elements include: number of full-time faculty by contract

length and salary class intervals; number of other persons employed full-time by primary occupational activity and salary class intervals; part-time employees by primary occupational activity; tenure of full-time faculty by academic rank; and new hires by primary occupational activity. Prior to 2001, the survey also requested the number of persons donating (contributing) services or contracted for by the institution. With the exception of contributing/contracted persons, staff data were collected by sex and race/ethnicity.

Between 1987 and 1991, the Fall Staff data were collected in cooperation with the U.S. Equal Employment Opportunity Commission (EEOC). From 1976 through 1991, EEOC collected data on staff through its biennial Higher Education Staff Information (EEO-6) report from all postsecondary institutions within their mandate—that is, institutions that had 15 or more full-time employees. Through the IPEDS program, NCES collected data from all other postsecondary institutions, including all 2- and 4-year higher education institutions with fewer than 15 full-time employees, and a sample of less-than-2-year schools. The 1987–91 IPEDS Fall Staff data files contain combined data from the EEO-6 and the IPEDS staff surveys. Beginning in 1993, all schools formerly surveyed by EEOC were surveyed through the IPEDS Fall Staff survey. (OCR began supporting collection of these data in 1993.)

Employees by Assigned Position (EAP). Beginning with the Winter 2001–02 web-based collection, a new survey, Employees by Assigned Position (EAP), proposed by the National Postsecondary Education Cooperative focus group on faculty and staff, was instituted. This survey was optional the first year and became mandatory in 2002–03. The survey allows institutions to “assign” all faculty and staff to distinct categories. The EAP collects headcount information by full- and part-time status; by function or occupational category; and by faculty and tenure status. Institutions with medical schools are required to report their medical school data separately.

Salaries (SA) (formerly, Salaries, Tenure, and Fringe Benefits of Full-time Instructional Faculty). The primary purpose of this survey was to collect data on the salaries, tenure, and fringe benefits of full-time instructional faculty by contract length, sex, and academic rank; to analyze, from a national perspective, the number and tenure status of faculty members in relation to the number of enrollments and degrees granted for an indication of manpower demand; and to evaluate faculty compensation in relation to institutional financial resources for an

indication of the economic status of institutions and of the teaching profession. In previous years, institutions were excluded from the Faculty Salaries survey based on responses to the Institutional Characteristics survey. An institution was excluded if all of its instructional faculty (1) were employed on a part-time basis, (2) were military personnel, (3) contributed their services (e.g., members of a religious order), or (4) taught preclinical or clinical medicine.

Data collected included: total salary outlays (in whole dollars); total number of full-time instructional faculty paid those outlays; number of those faculty who have tenure; who are on tenure track; and who are not on tenure track. These data were collected by rank (professor, associate professor, assistant professor, instructor, lecturer, no academic rank) for men and women on 9/10-month and 11/12-month contracts. Salary outlays, total number of faculty, and tenure status were also collected for full-time faculty on contract schedules other than 9/10 and 11/12 months; however, these data were not collected by rank or sex. Fringe benefits (Part B of the survey) were collected for those full-time instructional faculty reported on Part A. Specific data elements included retirement, tuition, housing and medical dental plans, group life insurance, unemployment and worker's compensation, social security taxes, fringe benefit expenditures (in whole dollars) and the number of full-time faculty covered, by length of contract (9/10 and 11/12-month contracts). This survey was changed from biennial to annual in 1990, and data were not collected in 2000. However, the survey was redesigned for inclusion in the 2001–02 Winter web collection. Much of the same information is currently included except the web survey does not request numbers of faculty by tenure status, but instead collects numbers of faculty by length of contract (less than 9/10 months, 9/10 months, and 11/12 months), rank, sex, and total salary outlay; fringe benefits collection remains the same.

Academic Libraries. First administered in 1966, the Academic Libraries survey was designed to provide concise information on library resources, services, and expenditures for the entire population of academic libraries in the United States. In 1988, the Academic Libraries survey became a part of the IPEDS system and was conducted biennially in even-numbered years. From 1966 to 1988, the Academic Libraries survey was conducted on a 3-year cycle. As of September 2000, this survey ceased to be part of IPEDS. See chapter 11 for a full description of the Academic Libraries Survey.

Consolidated Form (CN and CN-F). A Consolidated Form was used to collect IPEDS data from the institutions eligible for Title IV programs that did not complete the full package of IPEDS surveys described above—that is, those accredited institutions granting only certificates at the sub-baccalaureate level. The Consolidated Form consisted of four or five parts designed to collect, on the same schedule as the regular IPEDS components, minimal data on enrollment (including occupationally-specific programs) and completions by race/ethnicity and sex, as well as data on finance, fall staff, and academic libraries. As of 1996, the “finance” part of the Consolidated Form was on a separate form (CN-F). The purpose and use of the Consolidated data were the same as for the full package of surveys so national data on all accredited institutions could be presented and analyzed. This survey is no longer needed since the web-based data collection system automatically tailors data items for institutions based on selected characteristics and screening questions.

Periodicity

The IPEDS program replaced the HEGIS program in 1986. IPEDS data were collected on paper forms between 1986 and 1999. Since the implementation of the web-based collection of IPEDS data in 2000, most of the surveys are completed by the institutions on an annual basis. However, the survey schedules vary slightly. Institutional Characteristics, Enrollment, Completions, Graduation Rate Survey, Employees by Assigned Position, and Finance are conducted annually. Salaries is an annual survey except for the 2000–01 collection. Fall Staff continues to be collected on a biennial basis in odd-numbered years.

2. USES OF DATA

IPEDS surveys provide a wealth of national-, state-, and institution-level data for analyzing the condition of postsecondary education institutions. For example, the data can be used (with the earlier HEGIS data) to describe long-term trends in higher education. NCES uses IPEDS data in annual reports to Congress on the condition of postsecondary education, statistical digests, profiles of higher education in the states, and other publications. In addition, many requests for information based on IPEDS surveys are received each year from Congress, federal agencies and officials, state agencies and officials, education associations, individual institutions, the media, and the general public. Federal program

staff use IPEDS data to address various policy issues. State policymakers use IPEDS data for planning purposes and comparative analysis. Institutional staff use the data for peer analysis.

IPEDS data respond to a wide range of specific educational issues and public concerns. Policymakers and researchers can analyze the types and numbers of postsecondary institutions; the number of students, graduates, first-time freshmen, and graduate and professional students by race/ethnicity and sex; the status of postsecondary vocational education programs; the number of individuals trained in certain occupational and vocational fields by race/ethnicity, sex, and level; the resources generated by postsecondary institutions; patterns of expenditures and revenues of institutions; changes in tuition and fees charged; completions by type of program, level of award, race/ethnicity, and sex; faculty salaries and composition; and many other topics of interest.

The IPEDS universe also provides the institutional sampling frame used in all NCES postsecondary surveys, such as the National Postsecondary Student Aid Study (NPSAS) and the National Study of Postsecondary Faculty (NSOPF). Each of these surveys uses the IPEDS institutional universe for its first-stage sample and relies on IPEDS survey results on enrollment, completions, or staff to weight its second-stage sample.

OCR supports the collection of IPEDS enrollment, completions, and fall staff data, and uses these data to produce such reports as *2001 U.S. Accredited Postsecondary Minority Institutions*.

3. KEY CONCEPTS

Described below are several key concepts relevant to the IPEDS program. For additional terms, refer to the *IPEDS Glossary* (NCES 95–822).

Postsecondary Education. The provision of a formal instructional program whose curriculum is designed primarily for students who are beyond the compulsory age for high school. Programs whose purpose is academic, vocational, or continuing professional education are included. Excluded are avocational and adult basic education programs.

Institution of Higher Education (IHE). Prior to 1996, an IHE was defined as an institution accredited at the college level by an accrediting agency or association recognized by the Secretary of the U.S. Department of

Education—and indicated as such in the database by the presence of a Federal Interagency Committee on Education (FICE) code. IHEs were legally authorized to offer at least a 1-year program of study creditable toward a degree.

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.

Branch Institution. A campus or site of an educational institution that is not temporary, that is located in a community beyond a reasonable commuting distance from its parent institution, and where organized *programs* of study (not just courses) are offered. This last criterion is the most important. It means that at least one degree or award program can be completed entirely at the site without requiring any attendance at the main campus or any other institution within the system.

OPEID Code. An 8-digit identification code developed by the U.S. Department of Education's Office of Postsecondary Education (OPE) for the Postsecondary Education Participants System (PEPS). Presence of a valid OPEID in the database indicates that the school has a Program Participation Agreement with the Department and is currently eligible to participate in Title IV federal financial aid programs (e.g., Pell Grants, Stafford Loans, College Work-study). The first 6 digits of the OPEID are the old FICE code and represent the ID of the institution. The last 2 digits identify the various campuses or additional locations. For the main campus, the last 2 digits will always be "00." If the last 2 digits are numeric (e.g., 01, 02, 03), the institution is a branch campus or other location of an eligible main campus and is listed separately in PEPS. If the last 2 digits of the OPEID are of the form A1, A2, etc., the entity is separately identified in IPEDS for reporting purposes.

Occupationally-specific Program. An instructional program below the bachelor's level, designed to prepare individuals with entry-level skills and training required for employment in a specific trade, occupation, or profession related to the field of study.

CIP Code. A 6-digit code, in the form xx.xxxx, that identifies instructional program specialties within educational institutions. The codes are from the NCES publication, *A Classification of Instructional Programs (CIP)*.

4. SURVEY DESIGN

Target Population

All institutions (in the 50 states, the District of Columbia, and outlying areas) whose primary purpose is the provision of postsecondary education. The IPEDS universe includes all institutions and branches that offer a full program of study (not just courses); freestanding medical schools, as well as schools of nursing, schools of radiology, etc., within hospitals; and schools offering occupational and vocational training with the intent of preparing students for work (e.g., a modeling school that trains for professional modeling, but not a charm school).

The IPEDS universe of postsecondary institutions does *not* include institutions that are not open to the general public (training sites at prisons, military installations, corporations); hospitals that offer only internships or residency programs, or hospitals that offer only training as part of a medical school program at an institution of higher education; organizational entities providing only noncredit continuing education; schools whose only purpose is to prepare students to take a particular test, such as the CPA or Bar exams; and branch campuses of U.S. institutions in foreign countries. Relevant data from such locations or training sites are to be incorporated into the data reported by the main campus or any other institution or branch campus in the system that is most appropriate.

Eligibility for Title IV federal financial aid, while not a requirement for inclusion in the universe, defines a major subset of all postsecondary institutions. Prior to 1996, aid-eligible institutions were self-identified as IHEs or were identified as aid-eligible from responses to items on the Institutional Characteristics survey. Beginning in 1996, the subset of aid-eligible institutions is validated by matching the IPEDS universe with the PEPS file maintained by OPE. OPE grants eligibility to institutions to participate in Title IV federal financial aid programs.

In establishing the PEPS file, the U.S. Department of Education discontinued its tradition of distinguishing institutions accredited at the college level from institutions accredited at the occupational/vocational level. Therefore, it is no longer possible for NCES to maintain a subset of accredited institutions at the college level (IHEs). Beginning with the 1997 IPEDS mailout and on the 1996 and subsequent data files, institutions are classified by whether or not they are eligible to participate in Title IV financial aid programs and whether or not they grant degrees (as opposed to awarding only certificates).

Sample Design

Prior to 1993, data were collected from a representative sample of about 15 percent of the universe of private, for-profit, less-than-2-year institutions. However, the Higher Education Act of 1992 mandated the completion of IPEDS surveys for all institutions that participate or are applicants for participation in any federal student financial assistance program authorized by Title IV of the Higher Education Act of 1965, as amended. Thus, beginning with the 1993 IPEDS mailout, NCES surveys in detail *all* postsecondary institutions meeting this mandate.

Data Collection and Processing

The U.S. Bureau of the Census served as the data collection agent for the IPEDS surveys from 1990 through the 1999–2000 survey. Survey forms were either submitted directly to the Census Bureau by the institutions or through a central or state coordinating office. The web-based system was implemented with the 2000–01 survey, with different contractors developing the web site and managing the collection process.

The IPEDS institution-level data collection allows for aggregation of results at various levels and permits significant controls on data quality through editing. Attempts are made to minimize institutional respondent burden by coordinating data collection with the states and with other offices and agencies that regularly collect data from institutions.

Reference dates. Data for the IPEDS surveys are collected for a particular school year, term, or fiscal year, as follows:

- ▶ The Institutional Characteristics (IC) survey collects data for the entire academic year, generally starting in September or with the fall term if there is one. For example, data collected in 2002 pertain to the 2002–03 academic year, usually September 2002 through June 2003. In the case of schools operating on a 12-month calendar, the collection period runs from September 2002 through August 2003.
- ▶ The Completions survey collects data for an entire 12-month period, which is defined as July 1 through June 30; in some instances, start dates may vary slightly by institution.
- ▶ For the Graduation Rate Survey, the majority of institutions report on the status of students in their cohort (either a fall cohort or a full-year cohort) as of August 31. Section V requests data on students enrolled during the period September 1 through August 31 of the year prior to submission of the report.

- ▶ The Finance survey collects data for the institution's most recent fiscal year, generally ending before October 1 (although some institutions may have other ending dates). Thus, data collected in spring 2003 pertain to the fiscal year just ended, FY 2002.
- ▶ The Student Financial Aid survey collects the average amount of financial assistance and the number of students receiving financial assistance for the prior academic year.
- ▶ The Fall Enrollment survey (and previously the Fall Enrollment in Occupationally-specific Programs survey) collects data for a single point in time during the fall term, usually recorded as of the institution's official fall reporting date or October 15. If there is no fall term or class activity, institutions are asked to report zero enrollment. Part D of the survey now collects unduplicated headcount and instructional activity (formerly part of IC); these data are reported for the 12-month period that ended prior to September 1 of the reporting year.
- ▶ The Fall Staff survey collects data on employees who were on the payroll of the institution as of November 1 of the survey year and data on new hires from July 1 through October 30 of the survey year. Prior to the 2001 collection, institutions reported as of October 1.
- ▶ The Salaries survey (formerly Salaries of Full-time Instructional Faculty) collects data on the number of full-time instructional faculty as of November 1 (formerly October 1) of the survey year. Salaries and fringe benefits reflect the full academic year (e.g., academic year 2002–03, with data reported in winter 2002).
- ▶ The Student Financial Aid survey collects financial aid information (for the prior academic year) in the spring collection.

Data collection. Since institutions are the primary unit of data collection, institutional units must be defined as consistently as possible. The IPEDS program does not request separate reports from more than one component within an individual institution; however, separate branch campuses are asked to report as individual units. Following the HEGIS model, the IPEDS program is intended to collect data from each institution in a multi-institutional system and each separate branch in a multi-campus system.

Between 1993 and 1996, NCES began to examine the universe of accredited institutions in order to form a crosswalk between the IPEDS data files and those maintained by OPE for student financial aid purposes. During this period, OPE discontinued its policy of differentiating institutions by level of accreditation—that is, those accredited at the college level (formerly the HEGIS uni-

verse) versus those with occupational/vocational accreditation. Since the IPEDS system could no longer identify institutions with college-level accreditation, a new approach was developed to categorize institutions for mailout and analysis purposes. Beginning with the 1997 mailout, the IPEDS universe was subdivided according to: (1) accreditation status, (2) level of institution, and (3) degree-granting status. The current web-based system considers Title IV status rather than accreditation.

Prior to the development of the web-based data collection system, IPEDS survey forms were mailed to institutions based upon the information provided on the prior year's Institutional Characteristics survey—control and highest level of offering (which determined an institution's sector) combined with accreditation status. Institutions that were not accredited, and thus not eligible for federal student financial aid, were asked to complete only the Institutional Characteristics survey. All accredited institutions that either (1) grant an associate's or higher degree or (2) offer a certificate program above the baccalaureate level received a full packet of surveys—Institutional Characteristics; Completions; Fall Enrollment; Fall Enrollment in Occupationally-specific Programs; Fall Staff; Finance; Graduation Rate Survey; Salaries of Full-time Instructional Faculty; and Academic Libraries. All other accredited institutions (i.e., those granting only certificates at the sub-baccalaureate level) were required to complete the Institutional Characteristics survey, the Graduation Rate Survey (if applicable), and a Consolidated Form.

Institutions not in the IPEDS universe, but identified as "possible adds," received an IC-ADD survey. With the web system, these same "new" schools enter similar data directly into the system. Schools targeted as "possible adds" are identified from many sources, including a universe review done by state coordinators, a review of the PEPS data file from OPE, and information received from the institutions themselves. Institutions are added to the universe if they respond that their primary mission is the provision of postsecondary education as defined in the survey.

Prior to 2000–01, most of the data collection from the institutions that completed the full complement of IPEDS surveys was done through state-level higher education agencies. Coordinators were given the option of assisting NCES in various ways, including mailing packages to schools, coordinating nonresponse follow up, mailing survey forms back to NCES, resolving errors, and maintaining the universe. Beginning in 2000–01, an electronic

coordination system (or tree) is used to route institutional and/or state responses, as applicable, through the state coordinators. Coordinators may continue to choose the sectors and institutions they wish to monitor (e.g., they can identify “just 4-year schools” or almost specify on a one-by-one basis; coordinators can also still choose to “view” the data only, or actually review, approve, and “lock” the data). In many states, IPEDS institutional data are provided by the state higher education agency from data collected on state surveys. Alternatively, state agencies may extract data from IPEDS rather than conduct their own surveys.

To ease respondent burden, the Institutional Characteristics web screens include previously reported data, and survey respondents are instructed to update the previous data if necessary and to provide current information for items such as tuition and required fees, and room and board charges. (In earlier years, IC forms were preprinted with prior-year survey responses for those items that generally were not expected to change from year to year.) Questionnaires/screens for other IPEDS surveys contain selected preprinted information, such as CIP codes and program titles on the Completions and Enrollment surveys.

Prior to the Fall 2000 survey, institutions reported IPEDS data by mail on paper forms or diskettes, by fax, or electronically through the Internet. Two methods were available: the first method involved a predetermined ASCII record layout, available for all surveys except Institutional Characteristics. For Fall Enrollment and the Graduation Rate Survey, downloadable software was also available, allowing for data entry as well as preliminary editing of the data before transmission to the Census Bureau.

Mailouts of all applicable surveys took place in July of the survey year, except in 1998–99 when forms were not mailed until August. Due dates varied by survey. Extensive follow-up for survey nonresponse was conducted during the 6 months following each survey’s due date. Initially, reminder letters were mailed, encouraging nonresponding institutions to complete and return their forms. Subsequently, the Postsecondary Education Telephone System (PETS) was used to collect critical data by telephone from representatives of institutions for which IPEDS state coordinators are not responsible for follow-up. With the web system, institutions receive letters in mid-July containing IDs and passwords and instructions for registering their keyholders. Follow up is conducted either with the Chief Executive Officers (CEOs) if there is no registered keyholder, or directly with the keyholder.

Institutions found to be out-of-scope during data collection are deleted from the universe. These deletions result from formal notification from IPEDS state coordinators and follow-up telephone calls. Included in the deletions are: (1) duplicates of other institutions on the file; (2) institutions that closed or merged with another institution, and thus are no longer legitimate institutions or branches; (3) institutions that no longer offer postsecondary programs; and (4) schools that do not conform to the IPEDS definition of an institution or branch. The final IPEDS universe is also adjusted to reflect institutions that changed from one sector to another.

The following collection schedule was planned for the 2002–2003 academic year:

- ▶ Fall 2002—The Fall 2002 collection (September 9–November 5, 2002) included the Institutional Characteristics and Completions components.
- ▶ Winter 2002–03—The Winter 2002–03 collection (November 25, 2002–February 5, 2003) included Employees by Assigned Position, Salaries, Fall Staff (optional) and Enrollment. (Institutions may complete the Enrollment component in either winter or spring).
- ▶ Spring 2003—The Spring 2003 collection (March 5–April 30, 2003) included the collection of Enrollment (both fall and full year), Finance, Student Financial Aid information, and Graduation Rates data.

The current IPEDS universe includes approximately 9,600 postsecondary institutions and 80 administrative units.

Editing. IPEDS data are edited for reporting and processing errors. All data, whether received on paper forms, diskettes, electronically through the Internet, or through the PETS system, went through the same editing process to verify internal and inter-year consistency. Addition checks were performed by adding down or across columns and comparing generated totals with reported totals. If the reported total differed from the generated total but was within a designated range, the reported total was replaced by the generated total and the cell was flagged with the proper imputation code. Otherwise, institutions were contacted to resolve the discrepancies. Data collected on the web surveys are edited in a similar fashion except that the web system automatically generates all totals. In addition, all errors must be resolved prior to “locking” by the institution.

All program entries (submissions by field) on the Completions and Institutional Characteristics components are checked for CIP code validity against *A Classification of*

Instructional Programs. When possible, missing data items are identified during the edit process; formerly, they were resolved during telephone follow-up with institutions. Imputation is performed when certain key data items are not reported. For total nonresponding institutions, data are also imputed. Final quality control procedures are performed when all institutions have responded or been imputed. (See Estimation Methods below for the imputation methods used.)

Data also are compared between IPEDS survey components. For instance, if a change in award level on the Institutional Characteristics survey triggers a sector change, it is verified against the Completions survey or the Enrollment survey. All award levels and first-professional programs listed on the Institutional Characteristics survey are checked against the Completions survey. Checks are made to ensure the cohort reported on the Graduation Rate Survey is comparable to the data reported on the Fall Enrollment survey for the appropriate cohort year. Large discrepancies are flagged and all errors must be resolved before keyholders can lock their data. Data are also checked for consistency with prior-year responses (if available). If the differences are sufficiently large to trigger an edit flag, institutions must confirm or explain the discrepancy.

Estimation Methods

Imputation is done to compensate for nonresponding institutions—both total nonresponse and partial nonresponse to specific data items. Prior to 1993, all sectors were surveyed and a sample of private less-than-2-year institutions was conducted to obtain national estimates for fall enrollment, completions, finance and fall staff; these data were weighted and subject to sampling error. Starting in 1993, the IPEDS eliminated the sample of the private less-than-2-year institutions and continue to survey the entire universe of postsecondary institutions; therefore, no weighting is conducted.

Imputation. The IPEDS system used cold-deck (updated by ratio methods to reflect the change) and hot-deck imputation procedures to adjust for partial or total nonresponse to a specific survey instrument. Current imputation for missing data is performed after all editing is completed. IPEDS uses several methods of imputation depending on the availability of prior year data including a “carry forward” method, group means, and “nearest neighbor.” All IPEDS surveys use the same imputation flags. Institutions that are entirely imputed may be identified on the file by their response status and imputation type codes. For responding institutions that are edited or

partially imputed, the affected items may be identified by the associated item imputation flags.

Recent Changes

Key changes to the IPEDS program in the 1990s are summarized below:

- ▶ Beginning in 1995–96, Part D of the IC form includes questions about tuition previously asked in other IC form types. Institutions were asked their method(s) of charging tuition and, from that response, were directed toward the appropriate set of follow-up questions. Institutions that charge tuition both by program (for vocational/occupational programs) and by semester or term (for academic programs) were requested to report both methods in different questions. If the institution charges tuition by only one of the methods, it reports the amount charged in the appropriate question. Prior to 1995–96, different IC forms were used for program versus semester/term charges.
- ▶ The IPEDS program no longer differentiates between accredited college-level institutions and postsecondary institutions with occupational or vocational accreditation. Beginning with the 1997 IPEDS mailout and on the 1996 and subsequent data files, institutions are classified by whether or not they are eligible to participate in Title IV financial aid programs and whether or not they grant degrees, not by highest level of offering.
- ▶ As of 1996 in the Fall Enrollment survey, 4-year institutions are no longer required to report enrollment data by level, race/ethnicity, and sex for the fields of Veterinary Medicine and Architecture and Related Programs.
- ▶ In 1997, GRS was added to the IPEDS program to help institutions satisfy the requirements of the Student Right-to-Know legislation.
- ▶ Beginning with the 1998–99 Institutional Characteristics survey, data on credit and contact hour activity for the 12-month period and the fall term and data on the unduplicated count of students by level for the 12-month period are collected from all but new postsecondary institutions. In earlier years, data on credit and contact hour activity were collected only from institutions eligible for federal financial aid. Also, items on summer session and extension division activity were dropped from the 1998–99 IC survey.
- ▶ NCES added several new items for the 1999–2000 Institutional Characteristics survey.
- ▶ In 1999, NCES collected selected data items in a pilot test through a web-based survey: tuition and fees for entering students, room and board, books and supplies, and information on students receiving financial aid. These items have been incorporated, where appropriate, in the

redesigned IPEDS data collection, implemented in 2000–01.

- ▶ In 2000–01, NCES converted IPEDS to a totally web-based data collection system. The content of the survey “forms” was revised and reduced in scope and the procedures for collecting data vary considerably from those used in prior years. The first year, two collection cycles were implemented: Fall 2000 collected IC and Completions data and Spring 2001 included the Enrollment, Student Financial Aid, Finance, and Graduation Rates components. Subsequent years include a Winter cycle to collect Employees by Assigned Position, Salaries, and Fall Staff data.

Future Plans

IPEDS plans to continue with three separate data collections (fall, winter, and spring) in future years. Data items may be modified to better reflect current issues in postsecondary education as recommended by the IPEDS Technical Review Panel (TRP).

5. DATA QUALITY AND COMPARABILITY

Data element definitions have been formulated and tested to be relevant to all providers of postsecondary education and consistent among components of the system. A set of data elements has been established to identify characteristics common to all providers of postsecondary education, and specific data elements have been established to define unique characteristics of different types of providers. Interrelationships among various components of IPEDS have been formed to avoid duplicative reporting and to enhance the policy relevance and analytic potential of the data. Through the use of “clarifying” questions that ask what was or was not included in a reported count or total or the use of caveats that supplement the web collection, it is possible to address problems in making interstate and interinstitutional comparisons. Finally, specialized, but compatible, reporting formats have been developed for the different sectors of postsecondary education providers. This design feature accommodates the varied operating characteristics, program offerings, and reporting capabilities that differentiate postsecondary institutional sectors, while yielding comparable statistics for some common parameters of all sectors.

Sampling Error

Only the data collected prior to 1993 from a sample of private less-than-2-year institutions are subject to sampling error. With this one exception, the HEGIS and IPEDS programs include the universe of postsecondary institutions.

Nonsampling Error

IPEDS data are subject to such nonsampling errors as errors of design, reporting, processing, nonresponse, and imputation. To the extent possible, these errors are kept to a minimum by methods built into the survey procedures.

The sources of nonsampling error in IPEDS data vary with the survey instrument. In the Fall Enrollment survey, major sources of nonsampling error are classification problems, unavailability of needed data, misinterpretation of definitions, and operational errors. Possible sources of nonsampling error in the Finance survey include nonresponse, imputation, and misclassification. The primary sources of nonsampling error in the Completions survey are differences between the NCES program taxonomy and taxonomies used by colleges, classification of double majors and double degrees, operational problems, and survey timing.

Coverage error. Coverage error in the IPEDS system is believed to be minimal. For institutions that are eligible for Title IV federal financial aid programs, coverage is almost 100 percent. Schools targeted as “possible adds” are identified from many sources, including a universe review done by state coordinators, a review of the PEPS file from OPE, and the institutions themselves.

Nonresponse error. Since 1993, all institutions entering into Program Participation Agreements (PPAs) with the U.S. Department of Education are required by law to complete the IPEDS package of surveys. Therefore, overall unit and item response rates are quite high for all surveys for these institutions. Data collection procedures, including extensive mail and telephone follow-ups, also contribute to the high response rates. Imputation is performed to adjust for both partial and total nonresponse to a survey. Because response rates are so high, error due to imputation is considered small.

Unit nonresponse. Overall unit response rates are high for all surveys. For example, the percent of all institutions that responded to various IPEDS surveys are listed below:

1996–97 Institutional Characteristics	92.0
1996–97 Faculty Salaries	92.9
1996 Fall Enrollment	95.0

1995–96 Completions	94.5
1995 Fall Staff	86.9
FY 95 Finance	82.6

Since the implementation of the web collection, Title IV institutional response rates range from about 89 percent on the SFA survey to about 98 percent on IC. (See chapter 11 for response rates for the Academic Libraries Survey.)

By sector, the response rates are highest for public 4-year or higher institutions and lowest for private for-profit institutions, especially the less-than-2-year institutions. The 1994 Academic Libraries and the FY 95 Finance public use data files are limited to IHEs because the response rate for postsecondary institutions not accredited at the collegiate level was quite low (74.1 percent in the Finance survey and less than 50 percent in the Academic Libraries survey).

Item nonresponse. Most participating institutions provide complete responses on all items. Telephone follow up is used to obtain critical missing items. For the Fall Staff data, partial nonresponse is relatively rare.

Measurement error. NCES strives to minimize measurement error in IPEDS data by using various quality control and editing procedures. New questionnaire forms or items are field tested and/or reviewed by experts prior to use. To minimize reporting errors in the Finance survey, NCES uses national standards for reporting finance statistics. Wherever possible, definitions and formats in the Finance survey are consistent with those in the following publications: *College and University Business Administration*, *Administrative Services*, *Financial Accounting and Reporting Manual for Higher Education*, *Audits of Colleges and Universities*, and *HEGIS Financial Reporting Guide*.

The classification of students appears to be the main source of error in the Enrollment survey. Institutions have had problems in correctly classifying first-time freshmen, other first-time students, and unclassified students for both full-time and part-time categories. These problems occur most often at 2-year institutions (both public and private) and private 4-year institutions. In the 1977–78 HEGIS validation studies, misclassification led to an estimated overcount of 11,000 full-time students and an undercount of 19,000 part-time students. Although the ratio of error to the grand total was quite small (less than 1 percent), the percentage of errors was as high as 5 percent for detail student levels and even higher at

certain aggregation levels. (See also Data Comparability below.)

Data Comparability

The definitions and instructions for compiling IPEDS data have been designed to minimize comparability problems. However, survey changes necessarily occur over the years, resulting in some issues of comparability. Also, postsecondary education institutions vary widely, and hence, comparisons of data provided by individual institutions may be misleading. Specific issues related to the comparability of IPEDS data are described below.

Imputation. Imputed data are on file for institutions with partial or total nonresponse. *Caution should be exercised when comparing institutions for which data have been imputed since these data are intended for computing national totals and not intended to be an accurate portrayal of an institution's data. Users should also be cautious when making year-to-year enrollment comparisons by state.* In some cases, state enrollment counts vary between years as a result of imputation rather than actual changes in the reported enrollment data. To avoid misinterpretation, users should always check the response status codes of individual institutions to determine if a large proportion of data was imputed.

Classification of institutions. Beginning in 1996, the subset of IPEDS institutions eligible to participate in Title IV federal financial student aid has been validated by matching the IPEDS universe with the PEPS file maintained by OPE. Previously, institutions were self-identified as aid-eligible from the list of IHEs and responses to the Institutional Characteristics survey.

Another note of caution concerns the use of form type (e.g., EF1, EF2, or CN) versus institutional sector. Forms were mailed to institutions based on information provided on the *prior* year's IC survey. When schools returned forms that were inconsistent with the sector in which they were identified on the earlier IC survey, NCES attempted to determine their proper sector. Then, either the school's sector was adjusted or the data returned were adjusted to conform to the proper survey form. Even if the institution's characteristics change in the current IC survey, completions can properly be reported for the prior sector. However, the completions from any new programs will only be reported in subsequent years. For these reasons, *it is important to query the counts of completions for the degree levels needed rather than the sector; otherwise, legitimate completions will be missed in calculations or the*

number of schools identified for a specified highest offering (e.g., baccalaureate) may be over- or understated.

Fields of study. In analyzing Completions data by field of study, users must remember that the data represent programs, not schools, colleges, or divisions within institutions. For example, some institutions might have a few computer and information science programs organized and taught within a business school. However, for IPEDS reporting purposes, the degrees are classified and counted within the computer and information science discipline division.

Reporting periods. The data collected through IPEDS surveys for any one year represent two distinct time periods. The Institutional Characteristics, Enrollment (most parts), Fall Staff, and Salaries, and Employees by Assigned Position data represent an institution at one point in time, the fall of the school year; whereas, the Instructional Activity portion of the Enrollment survey, Student Financial Aid, Finance, and Completions data cover an entire 12-month period or fiscal year. For some indicators, fall data are used in conjunction with 12-month data in NCES reports, and readers should be cognizant of the differences in time periods represented.

Questionnaire changes. Over the years, the IPEDS survey forms have undergone revisions, which may have an impact on data comparability. Users should consider the following:

- ▶ The number of forms used to collect IC data has varied between survey administrations. However, form type is recoded in the IC data file to maintain prior types.
- ▶ As of the 1994–95 academic year, the Completions survey is substantially different from earlier surveys. The basic changes are: (1) there is only one survey form, collecting counts of degrees and other awards at all levels; (2) race/ethnicity data are collected by award level for detailed fields of study; and (3) data are/were collected in two clarifying questions to determine the extent of double majors and awards conferred at branch campuses in foreign countries.
- ▶ Beginning in 1995–96, institutions that charge tuition both by program and by semester or term report the amounts for each method in different questions on the same form. If the institution uses only one method, it reports the amount charged in the appropriate question. Prior to 1995–96, different IC forms were used for program versus semester/term charges. (Beginning in 1999–2000, the IC survey will request separate reporting of tuition, required fees, and per-credit-hour charge for in-district, in-state, and out-of-state students.)

- ▶ Beginning in fall 1995, the salary class intervals were revised for the Fall Staff survey; this may affect historical comparisons and analysis. In addition, a new Part C, “All Other Full-time Employees,” was added to the Fall Staff survey.
- ▶ To enhance the comparability and utility of the finance data, NCES has made several improvements in the reporting of IPEDS financial statistics: (1) information is requested on expenditures by object (salaries, employee benefits, library acquisitions, and utilities); (2) a series of clarifying questions determine what is included/excluded from reported current fund expenditures; (3) a section is included on expenditures for student scholarships and fellowships from federal, state, local, and institutional sources; and (4) appropriations for hospitals are separated from appropriations for the educational institution.
- ▶ The Finance F1-A form for private institutions was revised in 1997 to make it easier for respondents to report their financial data according to the new standards issued by the Financial Accounting Standards Board. In an attempt to address reporting issues of proprietary institutions, the F1-A was revised in 1999 to reflect the financial statements of these institutions. This split the F1-A into two forms: F2 for private, not-for-profit institutions and F3 for private for-profit institutions.

Comparisons with HEGIS. *Caution must be exercised in making cross-year comparisons of institutional data collected in the IPEDS system with data collected in the HEGIS system.* The IPEDS surveys request separate reporting by all institutions and their branches as long as each entity offers at least one complete program of study. Under the HEGIS program, only separately accredited branches of an institution were surveyed as separate entities; branches that were *not* separately accredited were combined with the appropriate entity for purposes of data collection and reporting. Therefore, an institution may have several entities in the IPEDS system where only one existed in the HEGIS system.

Comparison with the Survey of Earned Doctorates. Like the IPEDS Completions survey, the Survey of Earned Doctorates (SED, see chapter 19) also collects data on doctoral degrees, but the information is provided by doctorate recipients rather than by institutions. The number of doctorates reported in the Completions survey is slightly higher than in SED. This difference is largely attributable to the inclusion of nonresearch doctorates (primarily in theology and education) in the Completions survey. The discrepancies in counts have been generally consistent since 1960, with ratios of IPEDS-to-SED counts ranging from 1.01 to 1.06. Differences in the number of doctorates within a given field may be greater

than the overall difference because a respondent to SED may classify his/her specialty differently than the institution reports the field in the Completions survey.

6. CONTACT INFORMATION

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7. METHODOLOGY AND EVALUATION REPORTS

General

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Chapter 15: National Study of Postsecondary Faculty (NSOPF)

1. OVERVIEW

The National Study of Postsecondary Faculty (NSOPF) is conducted to provide information on postsecondary faculty and instructional staff: their academic and professional background, sociodemographic characteristics, and employment characteristics such as institutional responsibilities and workload, job satisfaction, and compensation. Thus far, there have been three NSOPF administrations—one in the 1987–88 academic year, a second one in the 1992–93 academic year, and the third one in the 1998–99 academic year. The first cycle was conducted with a sample of institutions, faculty, and department chairpersons. The second and third cycles were limited to surveys of institutions and faculty, but with a substantially expanded sample of public and private, not-for-profit institutions and faculty.

Purpose

To provide a national profile of postsecondary faculty: their professional backgrounds, responsibilities, workloads, salaries, benefits, and attitudes.

Components

NSOPF consists of two surveys, one for institutions and the other for faculty. Institutions receive both an *Institution Survey* and a request to provide a faculty list. The *Faculty Survey* is sent to faculty and other instructional staff sampled from the lists provided by the institutions. The 1987–88 NSOPF also included a *Department Chairperson Survey*.

Institution Survey. The Institution Survey obtains information on: the numbers of full- and part-time instructional and noninstructional faculty, as well as instructional personnel without faculty status; tenure status of faculty members (based on definitions provided by the institution); institution tenure policies and changes in policies on granting tenure to faculty members; the impact of tenure policies on the influx of new faculty and on career development; the growth and promotion potential for existing nontenured junior faculty; the benefits and retirement plans available to faculty; and the turnover rates of faculty at the institution. The survey is completed by an institutional respondent designated by the Chief Administrative Officer (CAO) at each sampled institution.

Faculty Survey. This survey addresses the following issues as they relate to postsecondary faculty: background characteristics and academic credentials; workloads and time allocation between classroom instruction and other activities such as research, course preparation, consulting, public service, doctoral or student advising, conferences, and curriculum development; compensation and the importance of other sources of income such as consulting fees, royalties, etc., or income-in-kind; roles and differences, if any, between full- and part-time faculty in their participation in institutional policymaking

PERIODIC SURVEY OF A SAMPLE OF POSTSECONDARY INSTITUTIONS AND THEIR FACULTY

NSOPF includes:

- ▶ Institution Survey
- ▶ Faculty Survey
- ▶ Department Chairperson Survey (1987–88 only)

and planning; faculty attitudes toward their jobs, their institutions, higher education, and student achievement in general; changes in teaching methods and the impact of new technologies on teaching techniques; career and retirement plans; differences between individuals who have instructional responsibilities and those who have no instructional responsibilities (e.g., those engaged only in research); and differences between those with teaching responsibilities but no faculty status and those with teaching responsibilities and faculty status. Eligible respondents for this survey are faculty members sampled from lists provided by institutions involved in the study. These lists are compiled by the Institutional Coordinator designated by the CAO at each sampled institution.

Department Chairperson Survey. Conducted only in 1987–88, this survey collected information from over 3,000 department chairpersons on faculty composition in departments, tenure status of faculty, faculty hires and departures, hiring practices, activities used to assess faculty performance, and professional and developmental activities.

Periodicity

The NSOPF was conducted in 1987–88, 1992–93, and 1998–99. The next round is planned for 2003–04.

2. USES OF DATA

NSOPF provides valuable data on postsecondary faculty that can be applied to policy and research issues of importance to federal policymakers, education researchers, and postsecondary institutions across the United States. For example, NSOPF data can be used to analyze whether the postsecondary labor force is declining or increasing. NSOPF data can also be used to analyze faculty job satisfaction and how it correlates with an area of specialization, and also how background and specialization skills relate to present assignments. Comparisons can be made on academic rank and outside employment. Benefits and compensation can be studied across institutions, and faculty can be aggregated by sociodemographic characteristics. Because NSOPF is conducted periodically, it also supports comparisons of data longitudinally.

The Institution Questionnaire includes items about:

- ▶ the number of full- and part-time faculty (i.e. instructional and noninstructional), as well as instructional personnel without faculty status, and their distributions by employment (i.e. full-time, part-time) and tenure status (based on the definitions provided by the institution);
 - ▶ institutional tenure policies and changes in policies on granting tenure to faculty members;
 - ▶ the impact of tenure policies on the number of new faculty and on career development;
 - ▶ the growth and promotion potential for existing nontenured junior faculty;
 - ▶ the procedures used to assess the teaching performance of faculty and instructional staff;
 - ▶ the benefits and retirement plans available to faculty; and
 - ▶ the turnover rates of faculty at the institution.
- The Faculty Questionnaire addresses such issues as respondents' employment, academic and professional background, institutional responsibilities and workload, job satisfaction, compensation, sociodemographic characteristics, and opinions. The questionnaire is designed to emphasize behavioral rather than attitudinal questions in order to collect data on who the faculty are, what they do, and whether, how and why the composition of the nation's faculty is changing. The Faculty Questionnaire includes items about:
- ▶ background characteristics and academic credentials;
 - ▶ workloads and time allocation between classroom instruction and other activities such as research, course preparation, consulting, work at other institutions, public service, doctoral or student advising, conferences, and curriculum development;
 - ▶ compensation and the importance of other sources of income, such as consulting fees, royalties, etc. or income-in-kind;
 - ▶ the number of years spent in academia, and the number of years with instructional responsibilities;
 - ▶ roles and differences, if any, between full- and part-time faculty in their participation in institutional policymaking and planning;
 - ▶ faculty attitudes toward their jobs, their institutions, higher education, and student achievement in general;
 - ▶ changes in teaching methods, and the impact of new technologies on instructional techniques;
 - ▶ career and retirement plans;
 - ▶ differences between those who have instructional responsibilities and those who do not have instructional responsibilities, such as those engaged only in research; and

- ▶ differences between those with teaching responsibilities but no faculty status and those with teaching responsibilities and faculty status.

3. KEY CONCEPTS

Some key concepts related to NSOPF are described below:

Instructional Faculty/Staff (1998-99).

Faculty—all employees classified by the institution as faculty who were on the institution's payroll as of November 1, 1998. Included as faculty were:

- ▶ any individuals who would be reported as “Faculty (Instruction/Research/Public Service)” on the U.S. Department of Education Integrated Postsecondary Education Data System (IPEDS) Fall Staff Survey;
- ▶ any individuals with faculty status who would be reported as “Executive, Administrative, and managerial” on the IPEDS Fall Staff Survey, whether or not the person is engaged in any instructional activities; and
- ▶ any individuals with faculty status who would be reported as “Other Professionals (Support/Service)” on the IPEDS Fall Staff Survey, whether or not the person is engaged in any instructional activities.

Individuals who would be reported as “Instruction/Research Assistants” on the IPEDS Fall Staff Survey were excluded.

Instructional Staff—all employees with instructional responsibilities—teaching one or more courses, or advising or supervising students' academic activities (e.g., serving on undergraduate or graduate thesis or dissertation committees, supervising an independent study or one-on-one instructions, etc.)—who may or may not have faculty status. Includes as instructional staff were:

- ▶ any individuals with instructional responsibilities during the 1998 Fall Term who would be reported as “Executive, Administrative, and Managerial” on the IPEDS Fall Staff Survey (i.e., A finance officer teaching a class in the business school); and
- ▶ any individual with instructional responsibilities during the 1998 Fall Term who would be reported as “Other Professionals (Support/Service)” on the IPEDS Fall Staff Survey.

Individuals who would be reported as “Instruction/Research Assistants” on the IPEDS Fall Staff Survey were excluded.

Instructional Faculty/Staff (1992-93). All institutional staff (faculty and nonfaculty) whose major regular assignment at the institution (more than 50 percent) was *instruction*. This corresponds to the definition used in the Integrated Postsecondary Education Data System (IPEDS, see chapter 14), which defines faculty (instruction/research) as “all persons whose specific assignments customarily are made for the purpose of conducting instruction, research or public service as a principle activity (or activities) and who hold academic-rank titles of professor, associate professor, assistant professor, instructor, lecturer, or the equivalent of any of these academic ranks. If their principle activity is instructional, [this category also includes] deans, directors, or the equivalent, as well as associate deans, assistant deans and executive officers of academic departments . . .”

A dedicated instructional assignment was not required for an individual to be designated as instructional faculty/staff in the 1992-93 NSOPF. Included in the definition were: (1) administrators whose major responsibility was instruction; (2) individuals with major instructional assignments who had temporary, adjunct, acting, or visiting status; (3) individuals whose major regular assignment was instruction but who had been granted release time for other institutional activities; and (4) individuals whose major regular assignment was instruction but who were on sabbatical leave from the institution. Excluded from this definition were graduate or undergraduate teaching assistants, postdoctoral appointees, temporary replacements for personnel on sabbatical leave, instructional personnel on leave without pay or teaching outside the United States, military personnel who taught only ROTC courses, and instructional personnel supplied by independent contractors.

Noninstructional Faculty (1992-93). All institutional staff who had faculty status but were not counted as instructional faculty since their specific assignment was *not instruction* but rather conducting research, performing public service, or carrying out administrative functions of the institution.

Instructional Faculty (1987-88). Those members of the institution's instruction/research staff who were employed full-time or part-time (as defined by the institution) and whose assignment included instruction. Included were: (1) administrators, such as department chairs or deans who held full-time or part-time faculty rank and whose assignment included instruction; (2) regular full-time and part-time instructional faculty; (3) individuals who contributed their instructional services,

such as members of religious orders; and (4) instructional faculty on sabbatical leave. Excluded from this definition were teaching assistants; replacements for faculty on sabbatical leave; faculty on leave without pay; and others with adjunct, acting, or visiting appointments.

4. SURVEY DESIGN

Target Population

As of the 1998–99 NSOPF, the target population consists of all public and private, not-for-profit Title IV-participating, 2- and 4-year degree-granting institutions in the 50 states and the District of Columbia that offered programs designed for high school graduates and were open to persons other than employees of the institution, and instructional and noninstructional faculty and staff in these institutions. The 1992–93 and 1987–88 NSOPF institution-level population included postsecondary institutions with accreditation at the college level recognized by the U.S. Department of Education. The 1987–88 NSOPF faculty-level population included only instructional faculty, but the 1987–88 NSOPF also targeted department chairpersons.

Sample Design

The 1998–99 NSOPF used a two-stage sample design, with a sample of 960 institutions in the first stage and a final actual faculty sample of 19,973 faculty.

Institutions were sampled from the 1997–98 Integrated Postsecondary Education Data System (IPEDS) Institutional Characteristics (IC) data files and the 1997 and 1995 IPEDS Fall Staffing files. In the institution-level sampling stage, institutions were classified into eight strata by school type, based on their Carnegie Classifications. The eight strata were: (1) public master's (comprehensive) universities and colleges with at least 800 faculty; (2) public master's universities and colleges with fewer than 800 faculty; (3) private master's (comprehensive) universities and colleges; (4) public baccalaureate colleges, including liberal arts colleges, schools of engineering, nursing, and business, teacher's colleges, and other specialized schools; (5) private baccalaureate colleges, including liberal arts colleges, schools of engineering, nursing, and business, teacher's colleges, Bible colleges and theological seminaries, and other specialized schools; (6) medical schools and medical centers; (7) Associates of Arts colleges; and (8) research universities and other doctoral institutions.

In the faculty-level stage of sampling, faculty were grouped into five strata based on their demographic characteristics: (1) Hispanic faculty; (2) Non-Hispanic Black faculty; (3) Asian and Pacific Islander faculty; (4) Full-time female faculty (who were not Hispanic, Black, Asian or Pacific Islander); and (5) All other faculty. Stratifying the faculty in this way allowed for the oversampling of relatively small subpopulations (such as minority group members) to increase the precision of the estimates for these groups. The selection procedure allowed the sample sizes to vary across institutions but minimized the variation in the weights within the staff-level strata: the sampling fractions for each sample institution were made proportional to the institution weight.

To achieve an acceptable response rate for the faculty survey, a subsample of the remaining nonrespondents was drawn for intensive follow up. The design used to carry out this subsampling attempted to reduce the variation in the final cluster sizes by taking a higher fraction of nonrespondents within institutions that had a smaller number of initial faculty selections. Institutions were grouped into three categories: (1) within the sample institutions that had 15 or fewer initial faculty selections; (2) within the institutions with more than 15 initial faculty selections but fewer than 15 respondents at the time of sampling; and (3) within the remaining institutions (all those with at least 15 respondents by the time subsampling was carried out), subsampling was carried out at a lower rate. Altogether the subsample included 3,359 faculty selections. After subsampling, the actual faculty sample size was 19,973.

The 1992–93 NSOPF was conducted with a sample of 974 postsecondary institutions (public and private, not-for-profit 2- and 4-year institutions whose accreditation at the college level was recognized by the U.S. Department of Education) and over 31,000 faculty sampled from institution faculty lists in the second stage. Institutions were selected from IPEDS and then classified into 15 strata by school type, based on their Carnegie Classifications. The strata were: (1) private, other Ph.D. institution (not defined in any other stratum); (2) public, comprehensive; (3) private, comprehensive; (4) public, liberal arts; (5) private, liberal arts; (6) public, medical; (7) private, medical; (8) private, religious; (9) public, 2-year; (10) private, 2-year; (11) public, other type (not defined in any other stratum); (12) private, other type (not defined in any other stratum); (13) public, unknown type; (14) private, unknown type; and (15) public, research; private, research; and public, other Ph.D. institution (not defined in any other stratum). Within each stratum, the

institutions were further sorted by school size. Of the 962 eligible institutions, 817 institutions (85 percent) provided lists of faculty. The selection of faculty within each institution was random except for the oversampling of the following groups: Blacks (both non-Hispanics and Hispanics); Asians/Pacific Islanders; faculty in disciplines specified by the National Endowment for the Humanities; and full-time female faculty.

The 1987–88 NSOPF was conducted with a sample of 480 institutions (including 2-year, 4-year, doctoral-granting, and other colleges and universities), over 11,000 faculty, and more than 3,000 department chairpersons. Institutions were sampled from the 1987 IPEDS universe and were stratified by modified Carnegie Classifications and size (faculty counts). These strata were (1) public, research; (2) private, research; (3) public, other Ph.D. institution (not defined in any other stratum); (4) private, other Ph.D. institution (not defined in any other stratum); (5) public, comprehensive; (6) private, comprehensive; (7) liberal arts; (8) public, 2-year; (9) private, 2-year; (10) religious; (11) medical; and (12) “other” schools (not defined in any other stratum). Within each stratum, institutions were randomly selected. Of the 480 institutions selected, 449 (94 percent) agreed to participate and provided lists of their faculty and department chairpersons. Within 4-year institutions, faculty and department chairpersons were stratified by program area and randomly sampled within each stratum; within 2-year institutions, simple random samples of faculty and department chairpersons were selected; and within specialized institutions (religious, medical, etc.), faculty samples were randomly selected (department chairpersons were not sampled). At all institutions, faculty were also stratified on the basis of employment status—full-time and part-time. Note that teaching assistants and teaching fellows were excluded in the 1987–88 NSOPF.

Data Collection and Processing

The 1998–99 NSOPF allowed sample members to complete a paper self-administered questionnaire and mail it back or to complete the questionnaire via the Internet. Follow-up activities included e-mails, telephone prompting, and, for nonresponding faculty, computer-assisted telephone interviewing (CATI). As part of the study, an experiment was conducted to determine if small financial incentives could increase use of the web-based version of the questionnaire. Previously, NSOPF was a mailout/mailback survey with telephone follow up. The 1987–88 NSOPF was conducted by SRI International, the 1992–93 NSOPF by the National Opinion Research Center

(NORC) at the University of Chicago, and the 1998–99 NSOPF by The Gallup Organization.

Reference dates. Most of the information collected in the NSOPF pertains to the Fall Term of the academic year surveyed. For the 1998–99 NSOPF, the Fall Term was defined as the academic term containing November 1, 1998. The Institution Survey also asked about the number of full-time faculty/staff hired since the 1991 Fall Term; the number of tenured and tenure-track faculty in both the 1997 and 1998 Fall Terms; the consideration and granting of tenure during the 1997–98 academic year; and the number of faculty, granting of tenure and early/phased retirement in the previous 5 years. The 1998–99 NSOPF Faculty Survey asked faculty members about their gross compensation, household income, number in household, and number of dependents in calendar year 1998; their presentations and publications in the last 2 years; and the likelihood of leaving their current job in the next 3 years (and the reasons). Similarly, the 1992–93 and the 1987–88 NSOPF requested most information for the 1992 and 1987 Fall Term, respectively, but included some questions requiring retrospective or prospective responses.

Data collection. The 1998–99 NSOPF institution and faculty data collection offered both a paper and a web version of the questionnaire, with telephone (including computer-assisted telephone interviews) and e-mail follow up. The data collection procedure started with a prenotification letter to the institution’s CAO to introduce the CAO to the study, and secure the name of an appropriate individual to serve as Institution Coordinator (i.e., the individual at the school who would be responsible for the completing the data request). The data collection packet was then mailed directly to the Coordinator. The packet contained both the Institution Questionnaire and the list collection packet. The Coordinator was asked to complete and return all materials at the same time. The mailing was timed to immediately precede the November 1, 1998, reference date for the fall term.

The field period for the 1998–99 NSOPF Faculty Survey extended from February 1999 through March 2000. Questionnaires were mailed to faculty in batches or waves, as lists of faculty and instructional staff were received, processed, and sampled. Questionnaires were accompanied by a letter that provided the web address and a personal identification (PIN) code to be used to access the web questionnaire. The first wave of questionnaires was mailed on February 4, 1999; the seventh and final wave was mailed on December 1, 1999. Faculty sample

members in each wave received a coordinated series of mail, e-mail, and telephone follow up. Mail follow up for nonrespondents included a postcard and up to four questionnaire re-mailings; these were mailed to the home address of the faculty member if provided by the institution. E-mail prompts were sent to all faculty for whom an e-mail address was provided. Faculty received as many as six e-mail prompts. Telephone follow up consisted of initial prompts to complete the mail or web questionnaire. A CATI was scheduled for nonrespondents to the mail, e-mail, and telephone prompts.

The following efforts were made for the 1992–93 NSOPF Institution Survey: initial questionnaire mailing, postcard prompting, second questionnaire mailing, second postcard prompting, telephone prompting, third questionnaire mailing, and telephone interviewing. Similarly, the data for the 1992–93 NSOPF Faculty Survey were collected through an initial questionnaire mailing, postcard prompting, second questionnaire mailing, third questionnaire mailing, telephone prompting, and CATI. For both surveys, institutions and faculty who missed critical items and/or had inconsistent or out-of-range responses were identified for data retrieval. Extra telephone calls were made to retrieve these data. Data collection procedures for the 1987–88 NSOPF involved three mailouts for both the Institution Survey and the Department Chairperson Survey, and two mailouts and one CATI interview for the Faculty Survey.

Data processing. The three modes of questionnaire administration in the 1998–99 NSOPF each required separate systems for data capture. All self-administered paper questionnaires were optically scanned. The system was programmed so that each character was read and assigned a confidence level. All characters with less than a 100 percent confidence level were automatically sent to an operator for manual verification. The contractor verified the work of each operator and the recognition engines on each batch of every questionnaire to ensure that the quality assurance system was working properly. Also, 100 percent of written out responses (as opposed to check marks) were manually verified.

Each web respondent was assigned a unique access code, and respondents without a valid access code were not permitted to enter the web site. A respondent could return to the survey web site at a later time to complete a survey that was left unfinished in an earlier session. When respondents entered the web site using the access code, they were immediately taken to the same point in the survey item sequence that they had reached during their

previous session. If a respondent, re-using an access code, returned to the web site at a later time after completing the survey in a previous session, they were not allowed access to the completed web survey data record. Responses to all web-administered questionnaires underwent data editing, imputation, and analysis.

All telephone interviews used CATI technology. The CATI program was altered from the paper questionnaire to ensure valid codes, perform skip patterns automatically, and make inter-item consistency checks where appropriate. The quality control program for CATI interviewing included project specific training of interviewers, regular evaluation of interviewers by interviewing supervisors, and regular monitoring of interviewers.

In the 1992–93 NSOPF, both computer-assisted data entry (CADE) and CATI were used. The CADE/CATI systems were designed to ensure that all entries conformed to valid ranges of codes; enforced skip patterns automatically; conducted inter-item consistency checks where appropriate; and displayed the full question and answer texts for verbatim responses. As part of the statistical quality control program, 100 percent verification was conducted on a randomly selected subsample of 10 percent of all institution and faculty questionnaires entered in CADE. The error rate was less than 0.5 percent for all items keyed. Quality assurance for CATI faculty interviews consisted of random online monitoring by supervisors.

Coding of institution questionnaires. The 1998–99 NSOPF Institution Questionnaire had few “other specify” questions, and no coding was performed. For the 1992–93 NSOPF, coding was performed for verbatim definitions of full-time and part-time faculty (both instructional and noninstructional) and for permanent and temporary faculty. Six other institution questionnaire items were eligible for verbatim or “other specify” responses. Only two provided consistent verbatim responses; these questions asked for a description of “any other actions” taken to lower the percentage of tenured faculty for full-time instructional and for full-time noninstructional faculty.

Coding of faculty questionnaires. Four categories of open-ended questions required coding in the 1998–99 Faculty Questionnaire: academic discipline, IPEDS codes, country of educational institution or birth, and “other specify” questions. Academic discipline was partially precoded by either the respondent or the interviewer. All other coding was done as a post-processing step. Many open-ended responses were coded automatically using SAS

software, but county codes, “other specify,” and verbatim text were hand-coded by project staff.

For the 1992–93 NSOPF, coding was conducted using a computer-assisted coding system. Coding of academic discipline was performed online during interviewing or data entry. All other faculty questionnaire coding was performed after other processing. Coding was performed for the following: academic discipline for the respondent’s principal teaching field, principal area of research, degree fields, and courses taught (using codes supplied with the survey); institutions that awarded academic degrees (using IPEDS codes); country of birth and/or citizenship; country of foreign institution for institutions that could not be coded within the IPEDS codeframe (using codes compiled for the 1987–88 NSOPF); and “other specify” and verbatim text (in most cases, coded to existing codes).

Editing. Besides the procedures described above under “Processing,” the following editing procedures were implemented for the 1998–99 NSOPF:

- ▶ *Menu items.* Several procedures were instituted to clean responses to questions that had sub-items listed where the respondent was asked to give a response for each sub-item. If the main question had an “NA” (Not Applicable) check box and that box was checked, all of the sub-items were set to a value of “no” or “zero” depending on the wording of the question. If the respondent had filled out one or more of the sub-items with a “yes” response or a positive number but had left other sub-items blank, the missing sub-items were set to “no,” “zero,” or “don’t know” depending on the question wording. If all sub-items were missing and there was no “NA” box, or the “NA” box was not checked, the case was flagged and the data values were imputed for that question.
- ▶ *Inter-item consistency checks.* Many types of inter-item consistency checks were performed on the data. One procedure was to check groups of related items for internal consistency and to make adjustments to make them consistent. Another procedure checked “NA” boxes. If the respondent had checked the “NA” box for a question but had filled in any of the sub-items for that question the “NA” box was set to blank. A third procedure was to check filter items for which more detail was sought in a follow-up open-ended or closed-ended question. If detail was provided, then the filter question was checked to make sure the appropriate response was recorded.
- ▶ *Percent items.* All items where respondents were asked to give a percentage were checked to make sure they summed to 100 percent. The editing program also looked for any numbers between 0 and 1 to make sure that respondents

did not fill in the question with a decimal rather than a percentage. All fractions of a percent were rounded to the nearest whole percent.

Estimation Methods

Weighting was used in NSOPF to adjust for sampling and unit nonresponse at both the institution and faculty levels. Imputation was performed to compensate for item nonresponse.

Weighting. Three weights were computed for the 1998–99 NSOPF: full-sample institution weights, full-sample faculty weights, and a contextual weight (to be used in “contextual” analyses that simultaneously include variables drawn from the faculty and institution questionnaires). The formulas representing the construction of each of these weights are provided in the *1999 National Study of Postsecondary Faculty (NSOPF:99) Methodology Report* (NCES 2001–151).

The weighting of the 1992–93 and 1987–88 NSOPFs is described below.

1992–93 NSOPF. Three weights were computed for the 1992–93 NSOPF sample—first-stage institution weights, final institution weights, and final faculty weights. The first-stage institution weights accounted for the institutions that participated in the study by submitting a faculty sampling list that allowed faculty members to be sampled. The two final weights—weights for the sample faculty and institution weights for those institutions that returned Institution Surveys—were adjusted for nonresponse. The final faculty weights were poststratified to the “best” estimates of the number of faculty. The “best” estimates were derived following reconciliation and verification through recontact with a subset of institutions that had discrepancies of 10 percent or greater between the total number enumerated on the faculty list used for sampling and the total number reported on the Institution Survey. For more information on the reconciliation effort, refer to “Measurement error” in section 5 of this chapter. For more information on the calculation of the “best” estimates of faculty, refer to the *1993 National Study of Postsecondary Faculty: Methodology Report* (NCES 97–467).

1987–88 NSOPF. The 1987–88 NSOPF sample was weighted to produce national estimates of institutions, faculty, and department chairpersons by using weights designed to adjust for differential probabilities of selection and nonresponse at the institution, faculty, and department chairperson levels. The sample weights for institutions were calculated as the inverse of the probability of selection, based on the number of institutions

in each size substratum. Sample weights were adjusted to account for nonresponse by multiplying the sample weights by the reciprocal of the response rate. Sample weights for the 1987–88 faculty summed to the total number of faculty in the IPEDS universe of institutions, as projected from the lists of total faculty provided by participating institutions. Sample weights accounted for two levels of nonresponse, one for nonparticipating institutions and the other for nonresponding faculty. Sample weights for the departments in the 1987–88 NSOPF summed to the estimated total number of departments in the IPEDS universe of institutions. Sample weights accounted for nonresponse of nonparticipating institutions and nonresponding department chairpersons.

Imputation. Data imputation for the 1998–99 NSOPF Faculty Questionnaire was performed in four steps.

- (1) *Logical imputation.* The logical imputation was conducted during the data cleaning steps as explained under “Processing.”
- (2) *Cold deck.* Missing responses were filled in with data from the sample frame whenever the relevant data were available.
- (3) *Sequential hot deck.* Nonmissing values were selected from “sequential nearest neighbors” within the imputation class. All questions that were categorical and had more than 16 categories were imputed with this method.
- (4) *Regression type.* This procedure employed SAS PROC IMPUTE. All items that were still missing after the logical, cold-deck, and hot-deck imputation procedures were imputed with this method. Project staff selected the independent variables by first looking through the questionnaire for logically related items and then by conducting a correlation analysis of the questions against each other to find the top correlates for each item.

Data imputation for the Institution Questionnaire used three methods. Logical imputation was also performed in the cleaning steps described under “Processing.”

- (1) *Within-class mean.* The missing value was replaced with the mean of all nonmissing cases within the imputation class. Continuous variables with less than 5 percent missing were imputed with this method.
- (2) *Within-class random frequency.* The missing value was replaced by a random draw from the possible responses based on the observed frequency of nonmissing responses within the imputation class. All categorical questions were imputed with this method, since all categorical items had less than 5 percent missing data.

- (3) *Hot deck.* As with the faculty imputation, this method selected nonmissing values from the “sequential nearest neighbor” within the imputation class. Any questions that were continuous variables and had more than 5 percent missing cases were imputed with this method.

For a small number of items, special procedures were used. See the *1999 National Study of Postsecondary Faculty (NSOPF:99) Methodology Report* (NCES 2001–151).

In the 1992–93 NSOPF, two imputation methods were used for the Faculty Survey—PROC IMPUTE and the “sequential nearest neighbor” hot-deck method. PROC IMPUTE alone was used for the Institution Survey. All imputation was followed by a final series of cleaning passes that resulted in generally clean and logically consistent data. Some residual inconsistencies between different data elements remained in situations where it was impossible to resolve the ambiguity as reported by the respondent.

Although the 1987–88 NSOPF consisted of three surveys, imputations were only performed for faculty item nonresponse. The *within-cell random imputation method* was used to fill in most Faculty Survey items that had missing data.

Recent Changes

Data from the 1998–99 NSOPF administration will be released in 2001. As in 1992–93, the 1998–99 NSOPF was limited to surveys of institutions and faculty/instructional staff. It allows comparisons to be made over time and also examines critical issues surrounding faculty and instructional staff that have developed since the first two studies. While some aspects remained the same as in the 1992–93 NSOPF, others changed. These include providing a booklet of instructions to the Institutional Coordinator at each institution, separating mailings sent to the CAOs and Institutional Coordinators, requesting faculty lists and Institution Surveys at the same time, personalizing mailings, providing a glossary of terms with the surveys, providing consistent instructions, changing the reference date for faculty employment to November 1, making surveys available on the Internet, utilizing e-mail prompts to institutions and faculty, providing an NSOPF 1998–99 e-mail address for respondents, optically scanning survey responses, and offering institutions a peer report of findings.

Future Plans

NSOPF will be conducted again in the 2003–04 academic year.

5. DATA QUALITY AND COMPARABILITY

The 1998–99 NSOPF included procedures for both minimizing and measuring nonsampling errors. A field test was performed before the 1998–99 NSOPF, and quality control activities continued during interviewer training, data collection, and processing of survey data.

Sampling Error

Standard errors for all NSOPF data can be computed using a technique known as Taylor Series approximation. Individuals opting to calculate variances with the Taylor Series approximation method should use a “with replacement” type of variance formula. Specialized computer programs, such as SUDAAN, calculate variances with the Taylor Series approximation method. The Data Analysis System (DAS) available on CD-ROM calculates variances using the Taylor Series method.

Replicate weights are provided on the NSOPF data files (64 sets of replicates in the 1998–99 NSOPF and 32 replicate weights in the 1992–93 NSOPF). These weights implement the balanced half-sample (BHS) method of variance estimation. They have been created to handle the certainty stratum and to incorporate finite population correction factors for each of the 14 noncertainty strata. Two widely available software packages, WesVar and PC CARP, have capabilities to use replicate weights to estimate variances.

Analysts should be cautious about use of BHS-estimated variances that relate to one stratum or to a group of two or three strata. Such variance estimates may be based upon far fewer than the number of replicates; thus, the variance of the variance estimator may be large. Analysts who use either the restricted-use faculty file or the institution file should also be cautious about cross-classifying data so deeply that the resulting estimates are based upon a very small number of observations. Analysts should interpret the accuracy of the NSOPF statistics in light of estimated standard errors and the small sample sizes.

Nonsampling Error

To minimize the potential for nonsampling errors, the 1998–99 NSOPF Institution and Faculty Surveys (as well as the sample design, data collection, and data processing procedures) were field-tested with a national probability sample of 162 postsecondary institutions and 512 faculty members. Four methodological experiments were con-

ducted as part of the field test. These included experiments to increase unit response rates, speed the return of mail questionnaires, increase data quality, and improve the overall efficiency of the data collection process. The experiments involved the use of prenotification, prioritized mail, a streamlined instrument, and the timing of CATI attempts. Another focus of the field test was the effort to reduce discrepancies between the faculty counts derived from the list of faculty provided by each institution and those provided in the Institution Questionnaire. Changes introduced to reduce discrepancies included providing clearer definitions of faculty eligibility (with consistency across forms and questionnaires) and collecting list and institution questionnaire data simultaneously with the objective of increasing the probability that both forms would be completed by the same individual and evidence fewer inconsistencies.

During the 1992–93 NSOPF field test, a subsample of faculty respondents were reinterviewed to evaluate reliability. In addition, an extensive item nonresponse analysis of the field-tested surveys was conducted, followed by additional evaluation of the instruments and survey procedures. An item nonresponse analysis was also conducted for the full-scale surveys. Later, in 1996, NCES analyzed discrepancies in the 1992–93 faculty counts, conducting a retrieval, verification, and reconciliation effort to resolve problems.

Coverage error. Because the IPEDS universe is the institutional frame for the NSOPF, coverage of institutions is complete. However, there are concerns about the coverage of faculty and instructional staff. In an effort to decrease the discrepancies in faculty counts noticed in the 1992–93 NSOPF, the 1998–99 NSOPF asked the Institution Coordinators to provide counts of full- and part-time faculty and instructional staff at their institutions as of November 1, 1998, the same reference period used for the IPEDS Fall Staff Survey, asked them to return both the faculty list and the Institution Questionnaire at the same time, and—giving them explicit warnings about potential undercounts of faculty—asked them to ensure that the counts provided in the list and questionnaire were consistent. These efforts appear to have worked, since 73 percent of institutions provided questionnaire and list data that exhibited discrepancies of less than 10 percent, an improvement of 31 percentage points since 1993.

In the 1992–93 NSOPF Institution Survey, a discrepancy between the faculty counts and those provided on faculty lists by institutions at the beginning of the sam-

pling process necessitated the “best estimates” correction to the 1992–93 NSOPF faculty population estimates, as described earlier in section 4, Weighting.

Nonresponse error.

Unit nonresponse. Unit response rates have been similar over NSOPF administrations. (See table below.) Note that the overall faculty response rates are the percentage of faculty responding in institutions that provided faculty lists for sampling.

Table 5. Summary of weighted response rates for selected NSOPF surveys

Questionnaire	List participation rate	Questionnaire response rate	Overall
NSOPF 1992–93			
Institution	†	93.6	93.6
Faculty	84.4	83.4	70.4
NSOPF 1998–99			
Institution	†	92.8	92.8
Faculty	88.4	83.0	73.4

†Not applicable

SOURCE: Abraham, Steiger, Montgomery, Kuhr, Tourangeau, Montgomery, and Chattopadhyay, *1999 National Study of Postsecondary Faculty (NSOPF:99)* (NCES 2001–151). Selifa, Suter, Myers, Koch, Johnson, Zahs, Kuhr, and Abraham, *1993 National Study of Postsecondary Faculty (NSOPF) Methodology Report* (NCES 97–467).

In the 1987–88 NSOPF, the unweighted response rates (weighted response rates are not available) were: 88.3 percent for the Institution Survey; 76.1 percent for the Faculty Survey, and 80.1 percent for the Department Chairperson Survey.

Item nonresponse. For the 1998–99 NSOPF Institution Questionnaire, the mean item nonresponse rate was 4.3 percent (unweighted). Twenty-one items had item nonresponse rates greater than 10 percent; one item had a nonresponse rate greater than 20 percent. The situation is complicated for the Faculty Questionnaire because an abbreviated questionnaire (containing 202 of the total 369 items in the full questionnaire) was administered to most CATI respondents. For all questions the average nonresponse was 19.2 percent; with just the 202 items on the abbreviated questionnaire, the average nonresponse was 15.5 percent. For further details on item nonresponse, see the *1999 National Study of Postsecondary Faculty (NSOPF:99) Methodology Report* (NCES 2001–151).

For the 1992–93 Institution Survey, the mean item nonresponse rate was 10.1 percent, with the level of nonresponse increasing in the latter parts of the survey.

For the Faculty Survey, the mean item nonresponse rate was 10.3 percent.

Measurement error. For the 1998–99 NSOPF, NCES conducted an intensive follow up with 234 (28.6 percent of participating) institutions whose reports exhibited a variance of 5 percent or more between the list and questionnaire counts overall, or between the two part-time counts. The NSOPF survey system has experienced discrepancies in faculty counts among IPEDS, institution questionnaire, and the list of faculty across all cycles of the study. Even though the identical information is requested on the questionnaire as on the list (i.e., a count of all full-time and part-time faculty and instructional staff as of November 1, 1998), institutions have continued to provide discrepant faculty data to NSOPF requests. As in 1993, large discrepancies tend to be concentrated among smaller institutions, and 2-year institutions. Undercounting of part-time faculty and instructional staff without faculty status on the list remains the primary reason for the majority of these discrepancies.

However, procedures implemented in NSOPF:99 improved the consistency of the list and questionnaire counts when compared to previous cycles of NSOPF. The percent of institutions providing list and questionnaire data that had less than a 10 percent discrepancy increased from 42 percent in NSOPF-93 to 73 percent in NSOPF:99. A total of 43 percent provided identical data on the list and questionnaire in NSOPF:99 (compared to only 2.4 percent in 1993). Moreover, schools providing identical list and questionnaire data were shown to have provided more accurate and complete data on both the lists and questionnaire. These findings suggest that the changed procedures that were introduced in the 1998 field test and NSOPF:99 resulted in more accurate counts of faculty and instructional staff. Institutions may also be in a better position to respond to these requests for data. Their accumulated experience in handling NSOPF and IPEDS (and other survey) requests, their adoption of better reporting systems, more flexible computing systems and staff, and a general willingness to provide the information are probably also a factor in their ability to provide more consistent faculty counts although data to support these assertions are not available. For more detail, see *1999 National Study of Postsecondary Faculty (NSOPF:99) Methodology Report* (NCES 2001–151).

NCES conducted three studies to examine possible measurement errors in the 1992–93 NSOPF: (1) a reinterview study of selected faculty questionnaire items, conducted after the field test; (2) a discrepancy and trends analysis

of faculty counts in the full survey; and (3) a retrieval, verification, and reconciliation effort involving recontact of institutions. For detail on these studies, see *Measurement Error Studies at the National Center for Education Statistics* (NCES 97-464) and *1993 National Study of Postsecondary Faculty: Methodology Report* (NCES 97-467).

Reinterview study. A reliability reinterview study was conducted after the 1992-93 NSOPF field test for the purpose of identifying faculty questionnaire items that yielded low quality data and the item characteristics that caused problems, thus providing a basis for revising the questionnaire items prior to implementation of the full-scale survey. The analysis of the reinterview items was presented by item type—categorical or continuous variables—rather than by subject area. The level of consistency between the field test responses and the reinterview responses was relatively high: a 70 percent consistency for most of the categorical questions and a 0.7 correlation for most of the continuous variables. A detailed analysis of the question on employment sector of last main job was conducted because it showed the highest percentage of inconsistent responses (28 percent) and the highest inconsistency index (36.0). It was concluded that the large number of response categories and the involvement of some faculty in more than one job sector were plausible reasons for the high inconsistency rate. The items with the lowest correlations were those asking for retrospective reporting of numbers that were small fractions of dollars or hours and those asking for summary statistics on activities that were likely to fluctuate over time—the types of questions shown to be unreliable in past studies.

Discrepancy and trends analysis of faculty counts. This analysis compared discrepancies between different types of institutions to identify systematic sources of discrepancies in faculty estimates between the faculty list counts provided by the institution for sampling and faculty counts reported in the Institution Questionnaire. The investigation found that list estimates tended to exceed questionnaire estimates in large institutions, in institutions with medical components, and in private schools. Questionnaire estimates tended to be higher in smaller institutions, in institutions without medical components, and in public schools. Institutions supplied much higher questionnaire estimates for part-time faculty than list estimates. Faculty lists submitted early in the list collection process showed little difference in the magnitude of questionnaire/list discrepancies from faculty lists submitted later in the process.

Retrieval, verification, and reconciliation. This effort involved recontacting 509 institutions: 450 institutions (more than half of all institutions) whose questionnaire estimate of total faculty differed from the institution's list estimate by 10 percent or more, and an additional 59 institutions NCES designated as operating medical schools or hospitals. All institutions employing health sciences faculty and participating in the 1992-93 NSOPF were selected for recontact.

NCES accepted the reconciled estimates obtained in this study as the true numbers of faculty. More than one-half (56.9 percent) of the recontacted institutions identified the questionnaire teacher estimate as the most accurate response, while 24.8 percent identified the list estimate as the most accurate. Another 11.4 percent of the institutions provided a new estimate; 1 percent indicated that their IPEDS teacher estimate was the most accurate estimate; and 5.9 percent could not verify any of the estimates and thus accepted the original list estimate.

The majority of discrepancies in faculty counts resulted from the exclusion of some full- or part-time faculty from the list or questionnaire. Another factor was the time interval between the date the list was compiled and the date the questionnaire was completed. Downsizing also affected faculty counts at several institutions. Some of the reasons for the discrepancies were unexpected. For example, some institutions provided “full-time equivalents” (FTEs) on the Institution Survey instead of an actual headcount of part-time faculty.

Sometimes part-time faculty were overreported—often a result of confusion over the pool of part-time and temporary staff employed by or available to the institution during the course of the academic year versus the number actually employed during the fall semester. Another reason given for overreporting of part-time faculty was an inability to distinguish honorary/unpaid part-time faculty from paid faculty and teaching staff. This study also confirmed that a small number of institutions excluded medical school faculty from their lists of faculty. In those cases, the institutions considered their medical schools separate from their main campuses.

While these results indicate that there may have been some bias in the 1992-93 NSOPF sample, no measure of the potential bias, such as the net difference rate, was computed. Instead, the reconciliation prompted NCES to apply a poststratification adjustment to the estimates based entirely on the “best” estimates obtained during the reinterview study described above. Problems with

health science estimates, however, could only be partly rectified by the creation of new “best” estimates. For more information on the calculation of the “best” estimates and further discussion of the health science estimates, refer to the *1993 National Study of Postsecondary Faculty: Methodology Report* (NCES 97-467).

Data Comparability

The comparison of 1998–99 NSOPF faculty questionnaire data with 1992–93 NSOPF “best estimates” shows, overall, continuing growth in both full- and part-time faculty. Faculty growth varies widely by strata, however, and some strata report fewer faculty than in 1993 (e.g., public comprehensive faculty, private medical faculty) while others remain virtually unchanged (e.g., public and private 2-year faculty). In some instances, changes in individual strata may simply reflect changes in the institutional composition of individual strata since 1993, as well as shifts in the numbers of faculty employed at institutions within each stratum. (Moreover, some institutions included in the 1993 sample may have changed classification.) Despite shifts in the faculty counts of individual strata, the percentages of full and part-time faculty in each strata are closely comparable to what was reported as a “best estimate” in 1993.

Design changes. Each succeeding cycle of NSOPF has expanded the information base about faculty. The 1998–99 NSOPF is designed both to facilitate comparisons over time and to examine new faculty-related issues that have emerged since the 1992–93 study. The 1998–99 sample was designed to allow detailed comparisons and high levels of precision at both the institution and faculty levels. In the 1998–99 study, the definition of institutions changed to match the IPEDS definition. Since the 1992–93 study, the operant definition of “faculty” for NSOPF has included instructional faculty, noninstructional faculty and instructional personnel without faculty status.

The 1998–99 and 1992–93 NSOPF consisted of two surveys: an Institution Survey and a Faculty Survey. The 1987–88 NSOPF included a Department Chairperson Survey in addition to the Institution Survey and the Faculty Survey.

Definitional differences. *Comparisons among the three cycles must be made cautiously because the respondents in each cycle were different.* On the institution level, the 1998–99 NSOPF sample consists of all public and private, not-for-profit Title IV-participating, degree-granting institutions in the 50 states and the District of Colum-

bia. This change was made so that the NSOPF sampling universe conformed with that of IPEDS. In previous rounds of the study, the sample consisted of public and private not-for-profit 2- and 4-year (and above) higher education institutions.

The definition of faculty and instructional staff for each NSOPF cycle is given under key concepts. On the design level, note that the 1998–99 and 1992–93 NSOPF requested a listing of *all faculty (instructional and noninstructional) and instructional staff* from the institutions for purposes of sampling. For the 1987–88 NSOPF, institutions were asked to provide only the names of *instructional faculty*. Although not specifically stated, NCES expected that institutions would provide information on instructional staff as well. The term faculty was used generically. There is no way of knowing how many institutions that had instructional staff as well as instructional faculty provided names for both. Each institution was allowed to make its own decision about which faculty members belonged in the sample, thereby creating a situation that does not allow researchers to precisely match the *de facto* sample definition used by institutions in the 1987–88 NSOPF.

Content changes. For the purpose of trend analysis, as many of the 1992–93 items as were relevant and feasible were retained in the 1998–99 questionnaires. However, this goal had to be balanced with the need to address recent policy issues. In the Institution Questionnaire, 17 items were revised from the 1992–93 questionnaire, and 7 new items were added. In the Faculty Questionnaire, 44 items were revised, and 32 new items were added.

Comparisons with other surveys. Comparisons of 1992–93 NSOPF salary estimates with salary estimates from IPEDS and from the American Association of University Professors indicate that NSOPF data are consistent with these other sources. Most differences are relatively small and can be easily explained by methodological differences between the studies. The NSOPF estimates are based on self-reports of individuals, whereas the other two studies rely on institutional reports of salary means for the entire institution.

However, the reader should be aware of differences in faculty definitions between NSOPF and IPEDS. The differences between the IPEDS definition and NSOPF’s is that a person in IPEDS has to be categorized according to their primary responsibility (administrator, faculty, or other professional); whereas, in NSOPF it is possible to categorize according to any of their responsibilities.

Because NSOPF includes all faculty and instructional staff, it is possible for an “other professional” to have instructional responsibilities and/or be a faculty member, and it is also possible for an administrator to have instructional responsibilities and/or be a faculty member. Therefore, NSOPF includes all faculty under IPEDS, some of the administrators under IPEDS, and some of the other professionals under IPEDS.

6. CONTACT INFORMATION

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Chapter 16: National Postsecondary Student Aid Study (NPSAS)

1. OVERVIEW

The National Postsecondary Student Aid Study (NPSAS) is a comprehensive nationwide study conducted by NCES to determine how students and their families pay for postsecondary education. It is designed to address policy questions resulting from the rapid growth of financial aid programs and the succession of changes in financial aid program policies since 1986. The first NPSAS was conducted during the 1986–87 academic year. The fifth in the series was administered during the 1999–2000 academic year.

NPSAS is based on a nationally representative sample of all students in postsecondary education institutions in the 50 states, the District of Columbia, and Puerto Rico. Institutions may be public or private, and they may be less than 2-year schools, community colleges (2–3 years), 4-year colleges, or major universities with graduate-level programs. Study participants include students who receive financial aid as well as those who do not. NPSAS data are obtained from administrative records of student financial aid, interviews with students, and interviews with a subsample of parents. Information has been gathered on more than 55,000 students in each study cycle.

NPSAS also provides baseline data for two longitudinal studies: the Beginning Postsecondary Students (BPS) Longitudinal Study and the Baccalaureate and Beyond (B&B) Longitudinal Study. (See chapters 17 and 18.) The 1990 and 1996 NPSAS studies served as baselines for BPS cohorts; the 1993 and 2000 NPSAS studies were the baseline for the two B&B cohorts.

Purpose

To produce reliable national estimates of characteristics related to financial aid for postsecondary students. The study also describes demographic and other characteristics of those enrolled. The study focuses on three topics: (1) how students and their families finance postsecondary education; (2) how the process of financial aid works, in terms of both who applies and who receives aid; and (3) the effects of financial aid on students and their families.

Components

There are four components to NPSAS, described below.

Student Record Abstract. The following information on students is obtained from institutional records: year in school; 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. An appointed Institutional Coordinator or a field data collector extracts the information from student records

SAMPLE SURVEY OF POST-SECONDARY INSTITUTIONS AND STUDENTS; CONDUCTED EVERY 3–4 YEARS

NPSAS collects information from:

- ▶ Student institutional record abstracts
- ▶ Department of Education administrative records
- ▶ Student interviews
- ▶ Parent interviews

and enters it into a customized computer-assisted data entry system.

Department of Education Administrative Records.

Beginning in 1995–96, the following information has been collected from Department of Education administrative records on financial aid applications and loans: types and amounts of federal financial aid received; cumulative loan amounts from the National Student Loan Data System; and loan repayment status.

Student Interview. Telephone interviews with students provide data on level (undergraduate, graduate, first-professional); major field of study; financial aid at other schools attended during the year; other sources of financial support; reasons for selecting the school they are attending; current marital status; age; race/ethnicity; sex; highest degree expected; employment and income; voting in recent elections; and community service.

Parent Interview. Telephone interviews with a limited sample of students' parents (through 1995–96) collect supplemental data, including parents' marital status; age; highest level of education achieved; income; amount of financial support provided to children; types of financing used to pay child's educational expenses; and occupation and industry. No parent interviews are planned after 1995–96.

Periodicity

Triennial from 1986–87 through 1995–96, and quadrennial beginning in 1999–2000.

2. USES OF DATA

The goal of the NPSAS study is to identify institutional, student, and family characteristics related to participation in financial aid programs. Federal policymakers use NPSAS data to determine future federal policy concerning student financial aid. With these data, it is possible to analyze special population enrollments in postsecondary education, including students with disabilities, racial and ethnic minorities, students taking remedial/developmental courses, students from families with low incomes, and older students. The distribution of students by major field of study can also be examined. Fields of particular interest are mathematics, science, and engineering, as well as teacher preparation and health studies. Data can also be generated on factors associated with choice of postsecondary institution, participation in postsecondary

vocational education, parental support for postsecondary education, and occupational and educational aspirations.

It is important that statistical analyses be conducted using software that properly accounts for the complex sampling design of NPSAS. NCES has developed a software tool called the Data Analysis System (DAS) for analysis of complex survey data. For information on other software packages and statistical strategies useful for analysis of complex survey data, see appendix F of *National Postsecondary Student Aid Study 1995–96 (NPSAS:96), Methodology Report* (NCES 98–073).

3. KEY CONCEPTS

Described below are several key concepts relevant to financial assistance for postsecondary education. For additional NPSAS terms, refer to the glossaries in published statistical analysis reports and database documentation.

Institution Type. A derived variable that combines information on the level and control of the NPSAS institution. Institution level concerns the institution's length of program and highest degree offering and is defined as less than 2-year, 2- to 3-year, 4-year nondoctorate, or 4-year doctorate (including first-professional degree). Institution control concerns the source of revenue and control of operations and is defined as public, private not-for-profit, or private for-profit.

Attendance Pattern. A student's intensity and persistence of attendance during the NPSAS year. Intensity refers to the student's full- or part-time attendance while enrolled. Persistence refers to the number of months a student is enrolled during the year. Students are considered to be enrolled for a full year if they are enrolled 8 or more months during the year. Months do not have to be contiguous or at the same institution, and students do not have to be enrolled for a full month to be considered enrolled for that month. In surveys prior to the 1995–96 NPSAS, full year was defined as 9 or more months.

Dependency Status. 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 1995–96 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 at the end of the fall term of the NPSAS year; (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; (f) has legal dependents other than spouse.

Expected Family Contribution (EFC). The amount of financial support for the student's undergraduate education that is expected to be provided by the student's family, or directly by the student if the student is financially independent. This amount is used to determine financial need and is based upon dependency status (see above definition), family income and assets, family size, and the number of children enrolled in postsecondary education. If this information is not available from the institution, it is gathered from the Department of Education's financial aid system (the Central Processing System, or CPS) or it is imputed from student income.

Title IV Financial Aid. Sum of the following types of federal aid: Pell Grants, Supplemental Educational Opportunity Grants, Perkins Loans, Stafford Loans, PLUS Loans, and Federal Work Study.

4. SURVEY DESIGN

Target Population

The *survey population* is defined as those students who are enrolled in any term that begins between May 1 of one year and April 30 of the next year, thus allowing the student lists needed for sample selection to be obtained in January or February for most institutions. This definition was used starting with the 1992–93 NPSAS, and provides substantial comparability with the survey populations for the 1986–87 and 1989–90 NPSAS studies. Nearly all members of the target population are also members of the survey population. The population includes both students who receive aid and those who do not receive aid. It excludes students who are enrolled solely in a GED program or are concurrently enrolled in high school.

To be eligible for inclusion in the NPSAS institutional sample, an institution must satisfy the following conditions: (1) offer an education program designed for persons who have completed secondary education; (2) offer an academic, occupational, or vocational program of study lasting at least 3 months or 300 clock hours; (3) offer courses to the general public; (4) offer more than just

correspondence courses; (5) be located in the 50 states, the District of Columbia, or Puerto Rico; (6) be other than a U.S. Service Academy.

Full-time and part-time students enrolled in academic or vocational courses or programs at these institutions, and not concurrently enrolled in a high school completion program, are eligible for inclusion in NPSAS.

Sample Design

The design for the NPSAS sample involves the selection of a nationally representative sample of postsecondary education institutions and students within those institutions. Prior to the 1995–96 study, NPSAS used a geographic-area-clustered, three-stage sampling design: (1) constructing geographic areas from three-digit postal zip code areas; (2) sampling institutions within the geographic sample areas; and (3) sampling students within sample institutions. The 1995–96 sample design eliminated the first stage of sampling (geographic area), thereby increasing the precision of the estimates. Over 950 postsecondary institutions, 50,000 students, and 8,800 parents were selected for participation in the 1995–96 NPSAS.

Institution sample. The institution-level sampling frame is constructed from the Integrated Postsecondary Education Data Systems (IPEDS) Institutional Characteristics (IC) file—see chapter 14. Although the institutional sampling strata have varied across NPSAS administrations, in all years the strata have been formed by classifying institutions according to control (public or private) and level (length of program and highest degree offering). A stratified sample of institutions is then selected with probabilities proportional to size (pps). School enrollment, as reported in the IPEDS, defines the measure of size; enrollment is imputed if missing in the IPEDS file. Institutions with expected frequencies of selection greater than unity are selected with certainty. The remainder of the institutional sample is selected from the other institutions within each stratum. Additional implicit stratification is accomplished within each institutional stratum by sorting the stratum sampling frame in a serpentine manner by: (a) institutional level of offering; (b) the IPEDS IC-listed Bureau of Economic Analysis of the U.S. Department of Commerce Region; and (c) the institution measure of size. This allows the approximation of proportional representation of institutions on these measures. Selected institutions are requested to verify the IPEDS classification (institutional control and highest level of offering) and the calendar system used (including dates that terms started).

As noted above, the 1995–96 NPSAS was the first to employ a single-stage institutional sampling design, no longer constructing geographic areas as the initial step. The sampling frame was the 1993–94 IPEDS IC file; 9,468 of the 10,651 institutions on the file were deemed eligible for the 1995–96 NPSAS. The eligible institutions were stratified into nine strata based on institutional control and highest level of offering.

For the 1995–96 study, 973 institutions were selected—131 with certainty and the remaining 842 probabilistically. A total of 73 (7.5 percent) of the selected institutions were subsequently found to be ineligible. Eligibility varied considerably with level of offering and control, being markedly lower for less than 2-year institutions and private for-profit institutions. However, these differences were expected and were directionally consistent with results from prior NPSAS studies.

Student sample. The sampled institutions are requested to provide student enrollment lists with the following information on each student: full name, identification number, Social Security Number, and educational level (and in the 1995–96 NPSAS, an indication of first-time beginning student (FTB) status). The student sample is drawn from these lists (provided by 836 of the 900 eligible institutions in the 1995–96 NPSAS). The 1986–87 NPSAS sampled only those students enrolled in the fall of 1986. Beginning with the 1989–90 NPSAS, students enrolled at any time during the year have been eligible for the study. This design change provides the data necessary to estimate full-year financial aid awards.

Basic student sample. Students are sampled on a flow basis (using stratified systematic sampling) from the lists provided by the institutions. Steps are taken to eliminate both within-institution and cross-institution duplication of students. NPSAS classifies students by educational level as undergraduate, graduate, or first-professional students. The 1995–96 NPSAS further stratified undergraduate students as (1) potential first-time, beginning students (FTBs) and (2) other undergraduates. The FTBs make up the second cohort of the Beginning Postsecondary Students Longitudinal Study. (See chapter 17.) For the purpose of defining the first cohort of the Baccalaureate and Beyond Longitudinal Study (see chapter 18), the 1992–93 NPSAS broke down undergraduates into: (1) business major baccalaureate recipients, (2) other baccalaureate recipients, and (3) other undergraduates.

The student sample is allocated to the combined institutional and student strata (e.g., graduate students in public, 4-year, doctorate institutions). Initial student sampling

rates are calculated for each sample institution using refined overall rates to approximate equal probabilities of selection within the institution-by-student sampling strata. These rates are sometimes modified to ensure that the desired student sample sizes are achieved.

In the 1995–96 NPSAS, adjustments to the initial sampling rates resulted in some additional variability in the student sampling rates and, hence, in some increase in survey design effects. However, these rate adjustment procedures were generally effective. The overall sample yield in the 1995–96 NPSAS was actually greater than expected (63,616 students vs. the target of 59,509). The student sample consisted of 23,612 FTBs; 27,536 other undergraduates; 9,689 graduate students; and 2,779 first-professional students. (See “Longitudinal samples” below for more detail on the sampling of FTBs.)

Student interview sample. Prior to collection of data from the students themselves, information is abstracted from institutional records for the sampled students. Students for whom no record abstracts are available or who are found to be ineligible during record abstraction are excluded from the interview data collection. Due to budget limitations, the 1995–96 NPSAS attempted computer-assisted telephone interviewing (CATI) for only a subsample of the basic student sample. These sampling procedures resulted in 51,195 students selected for Phase 1 of the 1995–96 CATI interviewing. A sample of nonrespondents to Phase 1 was selected for Phase 2 with specified rates based on the outcome of the Phase 1 efforts and the seven sampling strata; 25,766 students were selected for Phase 2.

Parent interview subsample. Of the students selected for the student interview, a subsample is selected for interviewing of their parents. In the Phase 1 CATI subsample of the 1995–96 NPSAS, students were designated for parent interviewing if they met one of the following criteria: they were dependent undergraduate students not receiving federal aid; they were dependent undergraduate students receiving federal aid, whose parents’ adjusted gross income was not available; or they were independent undergraduate students who were 24 or 25 years old on December 31, 1995. All 8,803 students who fell into one of these groups were sampled for parent interviews.

Longitudinal samples. In the 1989–90 NPSAS, a new longitudinal component collected baseline data for students who started their postsecondary education during 1989–90. These students are followed over time in the Beginning Postsecondary Students (BPS) Longitudinal Study. (See chapter 17.) Beginning postsecondary

students from NPSAS 1995-96 were followed in 1998. Similarly, the 1992-93 NPSAS provided baseline data for students who received baccalaureates during the 1992-93 year. These graduates are followed over time as part of the Baccalaureate and Beyond (B&B) Longitudinal Study. (See chapter 18.)

Full-time Beginning (FTB) sample. Prior to the 1995-96 NPSAS, a *pure FTB* was defined as a student who enrolled in postsecondary education for the first time after high school during the NPSAS year. This definition was refined for the 1995-96 NPSAS to include students who had previously enrolled but *had not completed a postsecondary course for credit* prior to July 1, 1995 (referred to as *effective FTBs*). This expanded definition shifted the requirement from the act of enrollment to successful completion of a postsecondary course.

FTB status was determined in three stages—during student list acquisition, CADE institutional record abstraction, and CATI interviewing.

First, FTBs were sampled from the student lists provided by the institutions. However, information available to institutions was often insufficient for determining an accurate count of FTBs; for example, students transferring from another institution without transfer credits might mistakenly have been counted as FTBs. FTB sampling rates in the 1995-96 NPSAS were based primarily on the field test results and the previous BPS experience in the 1989-90 NPSAS, which indicated that the number of students listed as potential FTBs who were not actual FTBs far exceeded the number of students not identified as potential FTBs who later proved to be FTBs. As in the past, the 1995-96 NPSAS longitudinal cohort was oversampled to support the next BPS survey.

The second stage of FTB determination involved the screening of FTB status during abstraction of institutional records. Students classified as undergraduates were identified as potential FTBs for CATI subsampling based on year of high school graduation, birth year, and year-in-school variables. In the third and last stage, a number of FTB-screening questions in the student CATI interview allowed final determination of FTB status.

Baccalaureate sample. Baccalaureate recipients were classified as business major or other major. Some of the students on the graduation lists provided by the sample institutions were not actually scheduled to receive their baccalaureate degrees during the defined NPSAS year.

Data Collection and Processing

NPSAS relies on an integrated system of computer-assisted data capture approaches: (a) electronic data interchange (EDI) with extant government databases, (b) computer-assisted data entry (CADE) of student financial aid records at institutions, and (c) computer-assisted telephone interviewing (CATI) of students and parents. Participating institutions designate Institutional Coordinators through which all communications are directed, including the provision of student enrollment lists for student sampling.

Reference dates. Data are collected for the financial aid award year, which spans from July 1 of one year through June 30 of the following year.

Data collection. NPSAS involves a multistage effort to collect information related to student aid. The 1995-96 study was the first to include an initial stage where Student Aid Report information from the Department of Education Central Processing System for federal aid applications was directly collected through EDI.

The second stage of data collection involves abstracting information from the student's records at the school from which he or she was sampled. Starting with the 1992-93 NPSAS, these data have been collected through a CADE system, which facilitates both collection and transfer of the information to subsequent electronic systems. To reduce respondent burden, several data elements are preloaded into CADE records prior to collection at the institution. These include student demographics, Student Aid Report information on federal financial aid applicants, and nonfederal aid common to a particular institution. Institutional Coordinators are given the option of having their staff or contractor field data collectors perform the data abstractions (guided by the CADE program). In the 1995-96 NPSAS, 57 percent of the institutions chose self-CADE.

In the third stage of data collection, information pertaining to family circumstances, background demographic data, and educational and work experiences and aspirations is obtained from students and a subsample of their parents. Student and parent questionnaires were used to collect this information in the first (1986-87) NPSAS. Beginning with the 1990-91 NPSAS, student and parent data have been collected by CATI. Unlike previous studies, the 1995-96 NPSAS interviewed only a subsample of students. Interviews were conducted in two phases, with potential first-time beginning students (FTBs) and federal aid applicants selected with certainty for Phase 1.

The principal form for the student interview contains 10 sections and is programmed for CATI administration. There are also three types of abbreviated interviews. One abbreviated form is for CATI administration to Spanish speakers with limited English proficiency. A second form is reproduced in Spanish and English language hardcopy for mailout to students who cannot be reached by phone, who indicate that they will only participate by mail, or who are hearing impaired (with eligibility established through Telephone Display for the Deaf). A third form is used for the reliability reinterview study, which is administered to a randomly selected subsample of students about 4 weeks after the full student interview. In addition, a minimal interview is used for CATI administration to sample members who have refused to participate on at least two different occasions, but who agree to answer a few questions in 5 minutes or less.

The parent supplement interview is maintained within the same record as the student interview (only in 1995–96), allowing the parent to be interviewed “on the spot” should that parent be contacted in attempting to locate the student.

Online coding is required for postsecondary education institution, major field of study, and industry/occupation. Institutions other than the sample institution are assigned their six-digit IPEDS identifier. Coding of major field of study and industry/occupation use a dictionary of word/code associations. When the interviewer enters the verbatim text provided by the respondent, standard descriptors associated with identified codes are displayed. The interviewer then selects one of the listed descriptors.

The final stage of data collection involves retrieval of additional Student Aid Report data (for the academic year beyond the NPSAS year) from the Central Processing System; data on Pell Grant applications for the NPSAS year from the Pell Grant file; and loan histories of applicants for federal student loans from the NSLDS (National Student Loan Data System). All of these files are maintained by the Department of Education.

Information has been collected on more than 55,000 students in every NPSAS administration.

Editing. Initial editing takes place during data entry. The CADE system has built-in quality control checks to notify the user of any student records that are incomplete (and the area of incompleteness) and any records that have not yet been accessed. A pop-up screen provides overall full and partial completion rates for institutional

record abstraction. Once the contractor receives an institution’s CADE package, every record is subjected to edit checks for completeness of critical items. Data from an institution fail the edit check if 50 percent or more of the student records fail all edit checks or if any anomalous data patterns are observed.

Following the completion of data collection, all CADE and CATI data are edited to ensure adherence to range and consistency checks. Range checks are summarized in the variable descriptions contained in the data files. Inconsistencies, either between or within data sources, are resolved in the construction of derived variables. The edit program also checks specific CATI items for validity by comparing the CATI responses to information available in institutional records. Missing data codes characterize blank fields as: don’t know/data not available; refused; legitimate skip; data source not available (not applicable to the student); or other.

Estimation Methods

Weighting is used to adjust NPSAS data to national population totals and to adjust for unit nonresponse. Imputation is used to compensate for item nonresponse.

Weighting. For the purpose of obtaining nationally representative estimates, sample weights are created for both the institution and the student. Additional weighting adjustments, including nonresponse and poststratification adjustments, compensate for potential nonresponse bias and frame errors (differences between the survey population and the ideal target population). Multiplicity and trimming adjustments are also performed.

The 1995–96 NPSAS database contains a total of eight analysis weights associated with the CADE respondents, CATI respondents, and Study respondents. Weights are included for separate analyses on all students, undergraduate students, graduate students, and first-time beginning students (FTBs).

The CADE and CATI weights apply, respectively, to student respondents with CADE institutional record abstracts and CATI interviews. The Study weights apply to students who responded to specified CADE or CATI data items.

Study and CATI weights. The 1995–96 NPSAS Study weights and CATI weights were calculated as the product of 14 weight components, each representing either a probability of selection or a weight adjustment. Since the Study

weights were restricted to students selected for CATI, the first nine weight components of the Study weights and CATI weights were identical; these represent the sample selection and adjustment components through the first phase of CATI. The remaining weight components followed the same steps, but calculations were performed separately because of the different response definitions.

FTB weights. FTBs whose first postsecondary institution was not the NPSAS sample institution were not to be included in the Beginning Postsecondary Students Longitudinal Study. To compensate for excluding these FTBs, the FTB weights were computed by making a final weighting class adjustment to the CATI weights by institution type. All adjustment factors were close to one, ranging from 1.00 to 1.02.

CADE weights. The development of the CADE weight components was similar to the development of the Study and CATI weight components—except that the CADE components applied to a different set of respondent data and did not include the CATI weight components.

Imputation. After the editing process (including logical imputations) is completed, the remaining missing values for several analysis variables (22 in the 1995–96 NPSAS) are statistically imputed in order to reduce the bias of survey estimates caused by missing data. Except for expected family contribution (EFC), which is imputed through a multiple regression approach, all variables are imputed using a weighted sequential hot deck procedure.

The respondent data for six key items are modeled using a Chi-squared Automatic Interaction Detector (CHAID) analysis to determine the imputation classes. These items are race/ethnicity, parent income (for dependent students only), student income, student marital status, dependents indicator, and number of dependents.

The other 15 items imputed by the weighted hot-deck approach in the 1995–96 NPSAS were: parent family size, parent marital status, student citizenship, student gender, student age, dependency status, local residence, type of high school degree, high school graduation year, fall enrollment indicator, attendance intensity in fall term, student level in last term, student level in first term, degree program in last term, and degree program in first term. Only four of these items had more than 5 percent of cases imputed: parent family size (18.0 percent); parent marital status (15.5 percent); high school degree (5.3 percent); and high school graduation year (5.3 percent).

As noted above, a regression approach is used to impute expected family contribution (EFC). The goal is to obtain the most parsimonious and best fitting equations using information likely to be available for nonaided students (those most likely to have a missing EFC). The general approach is to develop logistic regression models to estimate zero EFC cases, and then use ordinary least squares regression models to estimate the predicted EFC for nonzero EFC cases.

Recent Changes

The 1995–96 NPSAS included important new features in sample design and data collection. It was the first NPSAS to employ a single-stage institutional sampling design (no longer using an initial sample of geographic areas and institutions within geographic areas). This design change increased the precision of study estimates. The 1995–96 study was also the first NPSAS to select a *subsample* of students for telephone interviews, and to take full advantage of extant government data files. Through Electronic Data Interchange (EDI) with the Department of Education's Central Processing System, the study obtained financial data on federal aid applicants for both the NPSAS year and the year after. Through EDI with the National Student Loan Data System, full loan histories were obtained. Cost efficiencies were introduced through a dynamic two-phase sampling of students for computer-assisted telephone interviewing, and the quality of collected institutional data was improved through an enhanced CADE procedure. New procedures were also introduced to broaden the base of postsecondary student types for whom telephone interview data could be collected: the use of Telephone Display for the Deaf technology to facilitate telephone communications with hearing-impaired students, and a separate Spanish translation interview for administration to students with limited English language proficiency. In addition, students were oversampled to yield enough FTBs to serve as the second cohort for the Beginning Postsecondary Students Longitudinal Study.

Future Plans

The next round of surveys for NPSAS is scheduled for 2003–04; this survey will also serve as the start of another BPS longitudinal cohort.

5. DATA QUALITY AND COMPARABILITY

Every major component of the study is evaluated on an ongoing basis so that necessary changes can be made and assessed prior to task completion. Separate training is provided for CADE and CATI data collectors, and interviewers are monitored during CATI operations for deviations from item wording and skipping of questions. The CATI system includes online coding of postsecondary education institution, major field of study, and industry/occupation so that interviewers can request clarification or additional information at the time of the interview. Quality circle meetings of interviewers, monitors, and supervisors provide a forum to address work quality, identify problems, and share ideas for improving operations and study outcomes. Even with such efforts, however, NPSAS—like every survey—is subject to various types of errors, as described below.

Sampling Error

Because NPSAS samples are probability-based samples rather than simple random samples, simple random sample techniques for estimating sampling error cannot be applied to these data. Two common procedures for estimating variances of such survey statistics are the Taylor Series linearization procedure and the Jackknife replicate procedure, which are both available for use with NPSAS data.

Taylor Series. For the 1995–96 NPSAS, analysis strata and replicates for three separate data sets were defined: all students, all undergraduate students, and all graduate/first-professional students.

Jackknife. In the 1995–96 NPSAS, the Jackknife analysis strata were defined to be the same as the analysis strata defined for the Taylor Series procedure. Based on the Jackknife strata and replicate definitions, seven replicate weight sets were created—one set for the CADE weights and three sets each for the Study and CATI weights. The Study and CATI sets included separate replicate weights for all students, undergraduates only, and graduates only.

Nonsampling Error

Coverage error. Because the institutional sampling frame is constructed from the IPEDS IC file, there is nearly complete coverage of the institutions in the target population. Student coverage, however, is dependent upon

enrollment lists provided by the institutions. In the 1995–96 NPSAS, 93 percent of the 900 eligible sample institutions provided student lists or databases that could be used for sample selection. As in prior NPSAS implementations, participation was highest among public institutions and lowest among private for-profit institutions.

Several checks for quality and completeness of student lists are made prior to actual student sampling. In the 1995–96 NPSAS, *completeness checks* failed if (1) FTBs were not identified (unless the institution explicitly indicated that no such students existed), or (2) student level (undergraduate, graduate, or first professional) was not clearly identified. *Quality checks* were performed by comparing the unduplicated counts (by student level) on institution lists with nonimputed unduplicated counts in IPEDS IC files. Institutions failing these checks were called to rectify the problems before sampling began. Almost half of the institutions provided lists with one or more problems. Well over one-third of the institutions had “suspect” counts, and more than one-tenth failed to identify FTBs.

Nonresponse error. The response rates described below refer to the 1995–96 NPSAS.

Unit nonresponse. There are several types of participation/coverage rates in NPSAS. For each type in the 1995–96 NPSAS, rates were generally lowest among for-profit institutions and institutions whose highest offering is less than a 4-year program.

In the 1995–96 NPSAS, 93 percent of eligible sample institutions provided student enrollment lists for student sampling. Of this group, 96 percent also provided full or partial CADE data from administrative records for at least one student (*institution CADE response rate*). The weighted and unweighted rates for institution CADE were quite comparable (90–100 percent), with a relatively small range of variation by institution type. The *student CADE coverage rate* was 93 percent (both unweighted and weighted). By institution type or student level, unweighted student coverage rates ranged from 88 to 96 percent, and weighted rates ranged from 81 to 97 percent.

For the subsample of students who were interviewed by telephone, the overall *student CATI response rate* was 76 percent weighted, with a range of 69 to 82 percent across domains (institutional type, student level, federal aid application status). Rates were uniformly higher for federal aid applicants than for nonapplicants. The *parent CATI*

response rate for the parent subsample was 67 percent unweighted. This lower rate (as compared to student interviews) reflects the lower priority of parent interviews.

To determine the adequacy of coverage for analyses, an *overall study student yield rate* was computed, based on the following definition of a “yielding case”: (1) the student CADE was effectively complete (Section 2 enrollment and tuition items were complete; the characteristics and subsection of Section 1 was complete; and either Section 3 was complete or comparable information was obtained from the Central Processing System, Pell Grant file, or the National Student Loan Data System), or (2) the Section A items of the student CATI were sufficiently complete to identify FTBs, or an abbreviated or minimal version of the student interview was completed. The overall study yield rate for the 1995–96 NPSAS was 97.0 percent unweighted and 96.3 percent weighted. Weighted and unweighted yield rates were quite consistent across domains (institutional type, student level), exceeding 92 percent in all cases.

The table below shows response rates across NPSAS administrations.

Table 6. Weighted response rates for selected NPSAS components

Component	List participation rate	Response rate	Overall
NPSAS 1989–90			
Student survey (analysis file)	86	84	72
Student survey (CATI resp.)	86	76	65
NPSAS 1992–93			
Student survey (analysis file)	88	75	66
Student survey (CATI resp.)	88	67	59
NPSAS 1995–96			
	*93	*81	*76

*Unweighted response rate

SOURCE: Seastrom, Salvucci, Walter, and Shelton (forthcoming), *A Review of the Use of Response Rates at NCES*.

Item nonresponse. Each NPSAS institution is unique with regard to the type of data maintained for its students. Because not all desired information is available at every institution, the CADE software allows entry of a “data not available” code. In the 1995–96 NPSAS, the percentage of missing responses was low for most CADE items, with only 12 items having nonresponse rates greater than 10 percent. More than half of these items pertained to undergraduate and graduate entrance examinations or higher institution degree. Four were demographic items: marital status, Hispanic ethnicity, race, and veteran status.

For student CATI interviews, item nonresponse rates were also fairly low. Only 54 of the more than 1,000 variables in the final CATI data set had more than 10 percent missing data (a combination of refusals and “don’t knows”). Items with the largest amount of nonresponse pertained to undergraduate and graduate entrance examination scores; two-thirds or more of the students reporting that they had taken the SAT or GRE were unable to recall their scores. Questions most likely to evoke explicit refusals concerned student and parent income, assets, and debt; these also had high rates of “don’t know.”

Measurement error. Due to the complex design of NPSAS, there are several possible sources of measurement error, as described below.

Sources of response. Each source of information in NPSAS has both advantages and disadvantages. While students and their parents are more likely than institutions to have a comprehensive picture of education financing, they may not remember or have records of exact amounts and sources. This information may be more accurate in student financial aid records and government databases since it is recorded at the time of application for aid. Other information is likely to be most accurate when obtained from a parent; this is especially true for parents’ finances.

Institutional records. While financial aid offices maintain accurate records of certain types of financial aid at that institution, these records are not necessarily inclusive of all support and assistance. They may not contain financial aid provided at other institutions attended by the student, and they may not include employee educational benefits and institutional assistantships, which are often treated as employee salaries. These amounts are assumed to be underreported.

Government databases. Federal aid information can only be extracted from federal financial aid databases if the institution can provide a valid Social Security Number for the student. It is likely that there is some undercoverage of federal aid data in NPSAS.

CATI question delivery. Any deviation from item wording that changes the intent of the question or obscures the question meaning can result in misinterpretation on the part of the interviewee and an inaccurate response. An interviewer’s skipping of questions adds to the

nonresponse rate. In the 1995–96 NPSAS, the cumulative question delivery error rate was less than 2 percent.

CATI data entry. CATI entry error occurs when the response to a question is recorded incorrectly. While these error rates were somewhat higher in the 1995–96 NPSAS than expected, problems were detected early and the CATI interviewers were retrained. Thus, the entry error rates show a consistent decline over the data collection period. The facility average error rate for the monitoring period was less than 2 percent.

Reinterview results. Reliability interviews are administered to a randomly selected subsample of students about 4 weeks after the full student interview. The reinterview questions broadly represent the student interview but are most heavily weighted to cover financial aid, financial support for educational expenses from family, educational status of family members, and student’s work experiences while enrolled in the institution. Reliability indices for the educational finance items in the 1995–96 NPSAS were generally acceptable but somewhat mixed. While all items showed a more than 80 percent agreement between the interview and reinterview, the relational statistic only exceeded 0.80 for two items. In addition, two of the three items on work experience showed only marginally acceptable reliability (less than 70 percent), although the third item showed good reliability. All but one of the items related to personal and family educational experiences were reliable. The results for the income items were somewhat mixed.

Data Comparability

As noted in section 4, important design changes were implemented in the 1995–96 NPSAS. While sufficient comparability in survey design and instrument was maintained to ensure that comparisons with past NPSAS studies could be made, the data from the last three studies are not comparable to the first (1986–87) NPSAS for the following reasons: (1) the 1986–87 NPSAS only sampled students enrolled in fall 1986, whereas the later studies sampled from enrollments covering a full year; and (2) the 1986–87 NPSAS did not include students from Puerto Rico, whereas the studies since 1989–90 have included a small sample of Puerto Rican students. However, users of NPSAS data files can produce estimates for the later studies comparable to 1986–87 by selecting only students enrolled in the fall and excluding those sampled from Puerto Rico. Note also that the method used to generate the lists of students from which to sample was changed for the 1992–93 and subsequent NPSAS surveys.

Comparisons with IPEDS data. NCES recommends that readers not try to produce their own estimates (e.g., the percentage of all students receiving aid or the numbers of undergraduates enrolled in the fall who received federal aid, state aid, etc.) by combining estimates from NPSAS publications with the IPEDS enrollment numbers. The IPEDS enrollment data are for fall enrollment only and include some students not eligible for NPSAS (e.g., those enrolled in U.S. Service Academies and those taking college courses while enrolled in high school).

6. CONTACT INFORMATION

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Chapter 17: Beginning Postsecondary Students (BPS) Longitudinal Study

1. OVERVIEW

The Beginning Postsecondary Students (BPS) Longitudinal Study was implemented in 1990 to complement the NCES longitudinal studies of high school cohorts and improve data on participants in postsecondary education. BPS draws its cohorts from the National Postsecondary Student Aid Study (NPSAS), an information system that regularly collects financial aid and other data on nationally representative cross-sectional samples of postsecondary students. (See chapter 16.) NPSAS provides the base year data for first-time beginning (FTB) postsecondary students; BPS then follows these students through school and into the workforce.

BPS includes nontraditional (older) students as well as traditional students and is, therefore, representative of *all* beginning students in postsecondary education. By starting with a cohort that has already entered postsecondary education and following it every 2–3 years for at least 6 years, BPS can describe to what extent, if any, students who start their education later differ in progress, persistence, and attainment from students who start earlier. In addition to the student data, BPS collects financial aid records covering the entire undergraduate period, providing complete information on progress and persistence in school.

The first BPS cohort identified about 8,000 first-time beginning students who began their postsecondary education in the 1989–90 academic year; this cohort was followed up in 1992 and 1994. The second BPS cohort, which followed about 10,200 students who started their postsecondary education in the 1995–96 academic year, was followed up in 1998 and 2001. A third BPS cohort is planned for 2003–04, in conjunction with that NPSAS data collection.

Purpose

To collect data related to persistence in and completion of postsecondary education programs; relationships between work and education; and the effect of postsecondary education on the lives of individuals.

Components

BPS consists of base year data obtained from NPSAS, follow-up data collected in BPS surveys, and student aid records from ED Pell grant and loan files.

Base Year Data (from NPSAS). Information includes data collected in NPSAS from students, parents, institutional records, and Department of Education financial aid records. This includes information such as: major field of study; type and control of institution; financial aid; cost of attendance; age; sex; race/ethnicity; family income; reasons for school selection; current marital status; employment and income; community service; background and preparation for college; college experience; future

LONGITUDINAL SAMPLE SURVEY OF FIRST-TIME BEGINNING POSTSECONDARY STUDENTS, INCLUDING BOTH TRADITIONAL AND NONTRADITIONAL STUDENTS

BPS includes:

- ▶ Base year NPSAS data
- ▶ Student interviews
- ▶ Financial aid records

expectations; parents' level of education; income; and occupation. These data represent the 1989–90 academic year for the first BPS cohort and the 1995–96 academic year for the second cohort.

BPS Follow-up Surveys. Follow-up data are obtained from student interviews and financial aid records: year in school; persistence in enrollment; academic progress; degree attainment; change in field of study; institution transfer; education-related experiences; current family status; expenses and financial aid; employment and income; employment-related training; community service; political participation; and future expectations. BPS follows each cohort twice at 2–3 year intervals.

Periodicity

BPS cohorts are followed at least twice after first entering postsecondary education (as determined in NPSAS). Follow ups take place at 2–3 year intervals.

2. USES OF DATA

BPS addresses persistence, progress, and attainment after entry into postsecondary education and also directly addresses issues concerning entry into the workforce. Its unique contribution is the inclusion of nontraditional (or older) students—a steadily growing segment of the postsecondary student population. Their inclusion allows analysis of the differences, if any, between traditional (recent high school graduates) and nontraditional students in aspirations, progress, persistence, and attainment.

Congress and other policymakers use BPS data when they consider how new legislation will affect college students and others in postsecondary education. BPS data can answer such questions as: What percentage of beginning students complete their degree programs? What are the financial, family, and school-related factors that prevent students from completing their programs, and what can be done to help them? Do students receiving financial aid do as well as those who do not? Would it be better if the amount of financial aid was increased? Additional questions that BPS can address include: Do students who are part-time or discontinuous attenders have the same educational goals as full-time, consistent attenders? Are they as likely to attain similar educational goals? Are students who change majors more or less likely to persist?

3. KEY CONCEPTS

Some of the key concepts in BPS are defined below.

Institution Type. Defined by level of degree offering and length of program at the postsecondary institution. Institutions are generally classified as: less-than-2-year (offers only programs of study that are less than 2 years in duration); 2- to 3-year, sometimes referred to in reports as 2-year (confers at least a 2-year formal award but not a baccalaureate, or offers a 2- or 3-year program that partially fulfills requirements for a baccalaureate or higher degree at a 4-year institution; includes most community and junior colleges); and 4-year (confers at least a baccalaureate degree and may also confer higher level degrees, such as master's, doctoral, and first-professional degrees; this category is often broken down into doctorate-granting vs. nondoctorate-granting).

Institution Control. Control of postsecondary institution, classified as follows: (1) public; (2) private, not-for-profit; and (3) private, for-profit.

First-time Beginning Students (FTBs). The target population for BPS. For the first BPS cohort, FTBs were defined as students who enrolled in postsecondary education for the first time after high school in the 1989–90 academic year (*pure FTBs*). Individuals who started postsecondary education earlier, left, and then returned were not included. The second BPS cohort comprised both students who enrolled for the very first time in the 1995–96 academic year *and* students who had previously enrolled but *had not completed a postsecondary course for credit* prior to July 1, 1995 (*effective FTBs*). This expanded definition shifted the requirement from the act of enrollment to successful completion of a postsecondary course.

Nontraditional Students. Primarily older students who delayed postsecondary enrollment; that is, did not enter postsecondary education in the same calendar year as high school graduation or received a general equivalency diploma (GED) or other certificate of high school completion.

Persistence. Continuous enrollment in postsecondary education with the goal of obtaining a degree or other formal award.

Attainment. Receipt of the degree or other formal award that was the student's objective while enrolled in postsecondary institutions.

Socioeconomic Status (SES). A composite variable combining parents' educational attainment and occupational status, dependent student's family income, and the existence of a series of material possessions in the respondent's home.

4. SURVEY DESIGN

Target Population

All students who first entered postsecondary education after high school in the 1989–90 academic year (the first BPS cohort) or in the 1995–96 academic year (the second BPS cohort). The definition of a first-time beginning student (FTB) was refined for the second BPS cohort to include students who had enrolled in postsecondary education prior to completion of high school as long as they had not completed a postsecondary course for credit before July 1, 1995 (the beginning of the 1995–96 academic year). BPS includes students in nearly all types of postsecondary education institutions located in the 50 states, the District of Columbia, and Puerto Rico: public, private not-for-profit, and private for-profit institutions; 2-year, 2- to 3-year, and 4-year institutions; and occupational programs that last for less than 2 years. Excluded are students attending U.S. Service Academies, institutions that offer only correspondence courses, or institutions that enroll only their own employees. BPS data are nationally representative by institutional level and control; the data are not representative at the state level.

Sample Design

Student eligibility for BPS is determined in two stages. The first stage involves selection for the base year NPSAS sample (the 1989–90 NPSAS for the first BPS cohort; the 1995–96 NPSAS for the second BPS cohort); see chapter 16 for a description of NPSAS sample design and determination of first-time beginning students (FTBs) who make up the BPS cohorts. All FTBs who complete interviews in NPSAS are considered eligible for BPS. The second stage of FTB determination involves a review of NPSAS data to see if any potential FTBs have been misclassified. FTB status for additional students may be determined through: (1) reports from NPSAS institutions; (2) responses of the sample member during the BPS interview; and (3) modeling procedures used following data collection.

First BPS cohort (1989–90). The first BPS cohort initially consisted of 11,700 students (from 1,092 institutions) who had been interviewed in the 1989–90 NPSAS.

In the second follow up of this cohort in 1994, a working sample of 7,914 individuals was initially used. It consisted of the first follow-up eligible respondents, plus those nonrespondents for whom FTB status had yet to be determined. Only 7,132 sample members could be located. Of these, 6,786 members were interviewed, either fully or partially. Some of those interviewed (169) were determined to be non-FTBs, leaving 6,617 eligible FTBs who were either fully (5,926) or partially (691) interviewed in the second follow up.

Second BPS cohort (1995–96). In the second BPS cohort, 12,410 confirmed and potential FTBs were selected (from 788 institutions) for continued follow up from a total NPSAS pool of 15,728 confirmed or potential FTBs. This pool included 3,743 who had not been interviewed in the 1995–96 NPSAS (of which 425 were selected for potential continued inclusion in BPS). This BPS-eligible sample of 12,410 individuals was further reduced when an additional 230 were determined to be ineligible. The final BPS-eligible sample contained 10,268 FTBs who were given full or partial interviews in the first follow up; 1,060 were not able to be contacted, and 852 did not respond.

The final sample for this cohort includes 10,367 individuals. This includes all respondents to earlier follow ups as well as a subsample of earlier nonrespondents and other individuals who were unavailable for earlier data collections.

Data Collection and Processing

Computer-assisted telephone interviewing (CATI) is the primary data collection tool in BPS. All locating, interviewing, and data processing activities are under the control of an Integrated Control System (ICS), consisting of a series of PC-based, fully linked modules. The various modules of the ICS provide the means to conduct, control, coordinate, and monitor the several complex, interrelated activities required in the study and to serve as a centralized, easily accessible repository for project data and documents. BPS is conducted for NCES by the Research Triangle Institute.

The following sections describe the procedures for BPS follow ups. Refer to chapter 16 for a description of data collection and processing for the base year data obtained from NPSAS.

Reference dates. The base year (NPSAS) survey largely refers to experiences in postsecondary schooling in the academic year covered by NPSAS (1989–90 for the first

BPS cohort; 1995–96 for the second BPS cohort). The follow ups cover the 2- to 3-year interval since the previous round of data collection. Some data are collected retrospectively for the previous survey.

Data collection. Data collection in BPS follow ups involves concerted mail and telephone efforts to trace potential sample members to their current location and to conduct a CATI interview both to establish study eligibility and collect data. Field location and computer-assisted personal interviewing (CAPI) were also used extensively with the second cohort.

Locating students begins with information provided by the BPS locating database, which is updated by a national change of address service before the locating effort. Cases not located during the previous round of the survey are forwarded to pre-CATI telephone tracing, and subsequently to field locating if intensive telephone tracing is unsuccessful. Prior to the start of CATI operations, a prenotification mailing is sent to the student, and the current contact information is provided to interviewers for basic CATI locating. In the event that CATI locating is unsuccessful, cases are sent to post-CATI central trace for telephone tracing and, again as necessary, field locating. During tracing operations, cases of “exclusion” are identified, such as those who are: (1) outside of the calling area; (2) deceased; (3) institutionalized or physically/mentally incapacitated and unable to respond to the survey; or (4) otherwise unavailable for the entire data collection period.

Throughout the data collection period, interviewers are monitored for delivery of questionnaire text and recognition statements, probing, feedback, and CATI entry errors.

Each coding operation is subjected to quality control review and recoding procedures by expert coders. Subsequent to data collection, all “other, specify” responses are evaluated for possible manual recoding into existing categories, or into new categories created to accommodate responses of high frequency through a process known as “upcoding.” Efforts are also made to convert several items with high rates of undetermined response (including refusal or “don’t know”). In order to reduce indeterminacy rates for personal, parent, and household income items, as well as for other financial amount items, specific questions are included in the survey to route initial “don’t know” responses through a series of screens seeking closer and closer estimates for the financial questions. In the second follow up of the first BPS cohort, amount ranges for the “don’t know” conversion screens

were based on frequencies obtained from the second follow-up field test for the same items. Indeterminacy conversion was attempted for five financial amount items (financial aid amount, total loan amount, respondent gross income, parents’ gross income, and household gross income) and was very successful for initial “don’t know” responses. Conversion rates were greater than 50 percent for every item attempted, with an overall success rate of 65 percent.

Editing. The CATI data are edited and cleaned as part of the preparation of the data file. Modifications to the data are made, to the extent possible, based on problem sheets submitted by interviewers which detail item corrections, deletions, and prior omissions. In addition, variables are checked for legitimate ranges and interim consistency. Coding corrections and school information from the IPEDS IC files (see above) are merged into the CATI files. Data inconsistencies identified during analyses are also corrected, as appropriate and feasible.

Estimation Methods

Weighting is used to adjust for unit nonresponse. Only minimal imputation is performed to compensate for item nonresponse.

Weighting. BPS follow ups involve further identification of FTB status for sample members who were in the earlier round of BPS. Further, post hoc modeling is implemented following the first follow-up data collection in an attempt to identify non-FTBs among nonrespondents.

Four sets of weights were computed for use with BPS data for the first (1989–90) cohort: (1) 1992 cross-sectional weights for cross-sectional analyses of the first cohort at the time of the first follow up, based on the first follow-up data collection; (2) 1994 cross-sectional weights for cross-sectional analyses of the first cohort at the time of the second follow-up data collection; (3) 1992 cross-sectional weights for the first follow up information which was collected either during the first follow up or retrospectively in the second follow up; and (4) longitudinal weights for comparison of the responses pertaining to the 1990, 1992, and 1994 cross-sectional populations (e.g., trend analyses), for those students who responded to each of the three surveys: the 1989–90 NPSAS, the BPS first follow up in 1992, and the BPS second follow up in 1994. For computation of these weights, see the technical report for the second follow up.

The 1994 cross-sectional weights can also be used for longitudinal analyses involving data items collected

retrospectively in the second follow up because those data items are available for 1992, either directly from the first follow up or retrospectively from the second follow up if the student responded in 1994. Each set of weights consists of an analysis weight for computing point estimates of population parameters, plus a set of 35 replicate weights for computation of sampling variances using the Jackknife replication method of variance estimation. All weight adjustments were implemented independently for each set of replicate weights. (See section 5, Sampling Error, for further detail on replicate variance estimation.)

Imputation. Imputation is performed on a small number of variables in BPS. These variables relate to the student's dependency status and family income in each survey round. For example, the variable containing dependency status for aid in academic year 1989–90 was derived by examining all applicable variables used in the federal definition of dependency for the purpose of applying for financial aid. If information was not available for all variables, dependency status was imputed based on age, marital status, and graduate enrollment. Similarly, the variable containing the 1988 family adjusted gross income used imputed values if responses were not available.

Future Plans

The second BPS cohort (1995–96 FTBs) was followed up for the first time in 1998; a second follow up took place in 2001. A third BPS cohort is planned for 2003–04, in conjunction with a new round of NPSAS data collection.

5. DATA QUALITY AND COMPARABILITY

Sampling Error

Because the NPSAS sample design involves stratification, disproportionate sampling of certain strata, and clustered (i.e., multistage) probability sampling, the standard errors, design effects, and the related percentage distributions for a number of key variables in BPS have been calculated with the software package SUDAAN. These variables include: sex, race/ethnicity, age in the base year, socioeconomic status, income/dependency in the base year, number of risk factors in the base year, level and control of the first institution, and aid package at the first institution in the base year. These estimates provide an approximate characterization of the precision with which BPS survey statistics can be estimated.

Several specific procedures are available for calculating precise estimates of sampling errors for complex samples. Taylor Series approximations, Jackknife repeated replications, and balanced repeated replications produce similar results.

Nonsampling Error

Nonsampling error in BPS is largely related to nonresponse bias caused by unit and item nonresponse and to measurement error.

Coverage error. The BPS sample is drawn from NPSAS. Consequently, any coverage error in the NPSAS sample will be reflected in BPS. (Refer to chapter 16 for coverage issues in NPSAS.)

Nonresponse error. Unit nonresponse is reported in BPS in terms of *contact rates* (the proportion of sample members who were located for an interview) and *interview rates* (the proportion of sample members who fully or partially completed the interview). Item nonresponse has not been fully evaluated, although the numbers of nonrespondents are in the electronic codebook (ECB) on an item-by-item basis.

Unit nonresponse. The results for the second follow up of the first BPS cohort show a *contact rate* of 91.6 percent. The rate was substantially lower for individuals who did not respond to the first follow up (75.1 percent) than for those who did respond (95.1 percent). Contact rates also varied by institutions. The rate was highest for sample members who attended 4-year colleges (95.1 percent); in contrast, contact was made with only 80.8 percent of sample members attending private for-profit institutions with programs of less than 2 years.

Among those students who were contacted for the second follow up, the *interview rate* was 95.2 percent. The rate was higher for respondents to the first follow up than for nonrespondents by almost 8 percentage points (96.3 percent vs. 88.6 percent, respectively). Interview rates were fairly similar across institutions—ranging from 90.5 percent for students attending less than 2-year private not-for-profit institutions to 96.0 percent for students attending 4-year private not-for-profit colleges.

The table below summarizes the unit level and overall level weighted response rates across BPS administrations.

Table 7. Unit level and overall level weighted response rates for selected BPS surveys

Survey	Unit level weighted response rates			
	Base year 1 st level	Base year 2 nd level	1 st wave	2 nd wave
Students	86	84	*82	91
	Overall level weighted response rates			
	Base year 1 st level	Base year 2 nd level	1 st wave	2 nd wave
Students	86	72	*71	78

*Unweighted response rate

SOURCE: Seastrom, Salvucci, Walter, and Shelton (forthcoming), *A Review of the Use of Response Rates at NCES*.

Item nonresponse. Overall item nonresponse rates have been low across surveys (only 10 of the 363 items in BPS:96/98 contained over 10 percent missing data). Items with the highest rates of nonresponse were those pertaining to income. Many respondents were reluctant to provide information about personal and family finances and, among those who are not, many simply do not know this information.

Measurement error. While comprehensive psychometric evaluations of BPS data have not been conducted, issues of data quality are addressed during data collection.

Cross-interview data verification. During data collection, information from a prior interview (or from base year NPSAS data) is verified or updated to ensure compatibility across survey waves. In the first follow up of the first BPS cohort, demographic information covered in NPSAS (e.g., sex, race, and ethnicity) was verified or updated. The results indicated high reliability of these items. Prior to the full-scale second follow up, another set of items covered in earlier rounds was verified or updated, including high school graduation status, schools attended prior to the base year, and jobs held prior to the base year. These data were also found to be reliable across survey waves. Agreement approached 100 percent on high school graduation status, 99 percent on previous attendance of postsecondary schools, and 96 percent on previous jobs.

Reinterview. All BPS interview activities have involved a reinterview of a subsample of respondents to the main interview for the purpose of evaluating consistency of responses to the two interviews. The interval between the initial interview and the reinterview was 7–14 weeks.

Across BPS data collections, each new reinterview is designed to build on previous analyses by targeting revised items, new items, and items not previously

evaluated. The second follow-up reinterview design and analysis focused on items that were revised in the full-scale study questionnaire based on first follow-up field test reinterview results. Reinterview analyses focused on data items that were expected to be stable for the time period between the initial interview and the reinterview. These items covered education experience; work experience (e.g., employee primary role, future career plans, principal job's relation to education, satisfaction with principal job, and factors affecting employment goals); education finances; and living arrangements.

Reliability, as measured by rates of agreement between the two interviews, showed considerable variation. Items on education experience had relatively high rates of agreement between interviews, ranging from 86.6 to 96.6 percent. Items on work experience and its relation to postsecondary school and future plans had moderate agreement, ranging from 66.7 to 95.8 percent. The greatest variation was for the items on principal job in relation to education; agreement between the two interviews ranged from 42.1 to 90.3 percent. The reliability of measures of satisfaction with the most recent job, employment goals, and education finances was moderate, ranging from 63 to 96 percent. Items about living arrangements showed the highest agreement, with several items reaching 100 percent.

Item order effects. The second follow up of the first BPS cohort also included a field test of the item order effects, that is, the sequence in which questionnaire items are presented to the respondents and the resulting response patterns. Discrepancies were examined and adjustments were made, as required, in the full-scale data collection. Also analyzed were discrepancies of online coding procedures for postsecondary institutions, fields of study, and combined and separate industry and occupations. To achieve high data quality, expert coding personnel recoded items that had been identified as inconsistent.

6. CONTACT INFORMATION

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7. METHODOLOGY AND EVALUATION REPORTS

General

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Survey Design

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Chapter 18: Baccalaureate and Beyond (B&B) Longitudinal Study

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 bachelor's degree recipients 1 year after degree award and longitudinal data concerning 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 provides 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 chapter 16). The first B&B cohort consists of individuals who received a bachelor's degree in the 1992–93 academic year; a second cohort was formed from baccalaureate recipients in the 1999–2000 academic year, and went to the field in 2001. B&B expands 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 1993 cohort will be followed several times over a 12-year period so that most respondents who attend graduate or professional schools will have completed (or nearly completed) their education and be established in their careers. B&B can address issues concerning delayed entry into graduate school, progress and completion of graduate level education, and the impact of undergraduate and graduate debt on choices related to career and family.

Purpose

To (1) provide information on 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) provide information on the career paths of new teachers: retention, defection, delayed entry, and movement within the educational system.

Components

B&B consists of base year data culled from NPSAS. NPSAS data are collected in three components: the Student Record Abstract, the Student Interview, and the Parent Interview. The first B&B follow-up survey in 1994 collected data from a Student Interview as well as from college transcripts for their undergraduate program. The second follow up, conducted in 1997, combined a Student Interview with Department Aid Application/ Loan Records data. A second B&B cohort, consisting of 1999–2000 baccalaureate recipients, went to the field in 2001.

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

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. Data taken from the NPSAS Parent Interviews include: marital status; age; highest level of education achieved; income; amount of financial support provided to children; types of financing used to pay child's 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 was received (e.g., 1994 for the 1992–93 B&B 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. This is the only follow up planned for the 2000 cohort (in 2001). As part of the first follow up of the 1992–93 B&B cohort, the Undergraduate Transcript Study component collected transcripts providing the following information: 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 for the 1992–93 B&B cohort was conducted 4 years after the bachelor's degree was received, in 1997. 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 education-related debt has on graduates' choices concerning their careers and further schooling.

B&B Additional Follow-up Surveys. The 1993 cohort will be followed for a third time in 2003. The 2000 cohort was followed only in 2001.

Periodicity

The two B&B cohorts each have their own follow-up schedule, as described above.

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 ability to repay debt, and willingness to enter public service-related fields. B&B also allows analysis of issues related to access and choice into graduate education programs. Here emphasis is on 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 postbaccalaureate 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 terms and others used in B&B, refer to *A Descriptive Summary of 1992–93 Bachelor's Degree Recipients 1 Year Later With an Essay on Time to Degree* (NCES 96–158).

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.

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 extent of involvement with teaching, using variables from 1994 and 1997 interviews and composites. Respondents who taught were classified as having taught with certification, with student teaching, without training, or with training unknown. Those who did not teach were classified as certified, having student taught, applied for teaching jobs, considered teaching, or having no interest or action in teaching. An additional category of cases who had become certified but whose teaching status was unknown was identified. All of these categories were combined in various ways throughout the report, 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 1995–96 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 at the end of the fall term of the NPSAS year; (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 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 academic year 1992–93, spanning July 1, 1992 to June 30, 1993 (first B&B cohort) or in the academic year 1999–2000, spanning July 1, 1999 to June 30, 2000 (second B&B cohort). Students from United States Service Academies are excluded because they are not part of NPSAS, from which B&B draws its samples.

Sample Design

B&B cohorts are subsamples of the NPSAS samples. (See chapter 16 for description of the NPSAS sample design.) Students in a given NPSAS sample are considered potentially eligible for a given B&B cohort if there is information indicating that the student had received, or expected to receive, a baccalaureate degree in the NPSAS year (e.g., between July 1, 1992 and June 30, 1993 for the first B&B cohort). Eligibility is determined in two ways: first, by confirming with respondents the date they received their baccalaureate degrees, and second, by examining student transcripts received from baccalaureate institutions. All NPSAS sample persons who satisfy the subsample requirements are designated as eligible for the B&B sample irrespective of whether they were respondents or nonrespondents in NPSAS.

In order to provide a base year sample for the first B&B cohort (1992–93 bachelor's degree recipients), NCES introduced several design modifications into the 1992–93 NPSAS. First, the number of sample institutions offering only programs of less than 4 years was reduced relative to the number of sample institutions offering 4-year undergraduate and postgraduate programs. Second, the number of sample students in 4-year institutions was increased by 20 percent. Finally, the sample sizes of graduate students and professional students were slightly reduced. These three changes in the NPSAS sample design reflect the goal of following a large sample of bachelor's degree recipients through postgraduate experiences. Based on these changes, approximately 16,300 potential bachelor's degree recipients were identified for the first B&B cohort. These students were identified using institutionally provided lists of students who filed for graduation in the 1992–93 academic year.

All B&B-eligible sample members who completed the NPSAS interview were retained for future follow up. Of the 11,810 cases considered to be NPSAS completes, 11,254 were delivered with the first wave of data (designated as sample type 1). The remaining 556 were identified later as potentially eligible for B&B and were delivered as part of sample type 4. A subsample of approximately 10 percent of the remaining eligible cases with at least some data (either partial computer-assisted telephone interview (CATI) data, institution data, or parent data) was also identified and delivered as sample types 2 and 3. Additional NPSAS sample members (who were not part of the B&B cohort) were identified as potential bachelor's degree completers in the 1992–93 academic year based on review of the completed NPSAS institution information from the CATI nonrespondents.

All student NPSAS respondents (sample type 1) were included in the final B&B sample. The subsample selection was carried out by constructing a file of all B&B-eligible nonrespondents in sample types 2, 3, and 4. Complete cases, cases with pending interviewer appointments, sample members determined to be ineligible, and cases finalized as noninterviews were excluded from the subsampling file. This file was then sorted by institution stratum, student stratum, and student sample type in order to affect stratification in the selection process. A systematic sample of 200 persons was selected from approximately 450 in the file. At the start of interviewing, the final sample for the first B&B cohort numbered 12,478 recent graduates, consisting of: 11,254 NPSAS respondents classified as sample type 1; 300 student nonrespondents with NPSAS parent data (sample type 2); 164 other NPSAS nonrespondents (sample type 3); and 760 NPSAS respondents identified during the data processing phase as potentially eligible for B&B (sample type 4).

Transcripts for all sample members were requested from the NPSAS schools that awarded the bachelor's degrees. A total of 1,094 respondents who were either NPSAS noninterviews or who were otherwise deemed ineligible for B&B based on the telephone interview were reclassified as eligible based on transcript data.

After data collection for the first follow up was complete for both the interview and transcript components, additional cases in the initial sample were found to be ineligible for B&B. People were retained for follow up in later rounds if they were found to be eligible in either the CATI or the transcript component. Therefore, 10,080 CATI-eligible cases were retained for follow up plus an additional 1,094 transcript-eligible cases. In addition, 18 cases for which eligibility was unknown for both components were retained. All together, 11,192 cases were retained for future rounds.

Of these 11,192 B&B-eligible cases, 10,773 completed the 1992–93 NPSAS, 10,080 completed the first follow up (B&B:93/94), 10,976 had transcripts in B&B:93/94, 10,093 completed the second follow up (B&B:93/97). There were 9,274 cases which responded to all three CATI interviews through the second follow up.

Data Collection and Processing

B&B surveyed its first cohort—1992–93 bachelor's degree recipients—approximately 1 year after graduation, in 1994, and again in 1997. Both follow-up surveys were

administered by the National Opinion Research Center (NORC) at the University of Chicago. The third follow up will be conducted in 2003 by Research Triangle Institute (RTI).

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 follow up reported their status as of April 1997.

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

Student interview. The first follow-up student interview 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 initiated 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 maximum of 14 calls 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 second follow-up student interview 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 had no success in the first 13 attempts, the case was forwarded to telephone case management specialists before being sent to field interviewers.

There were also slight modifications to the methods used to locate sample members. Prior to the beginning of the 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 in 1997 or NPSAS in 1994) and the NCOA/Telematch update service 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 locating information used by locating specialists (in the order of their use) were: (1) all respondent-generated information (e-mails, address corrections from the U.S. Post Office, any previously acquired respondent phone numbers); (2) last known telephone number of the parent(s); (3) graduate schools (if applicable); (4) undergraduate institutions/alumna associations; (5) the other two credit bureau updating services; (6) military locating service if applicable; and (7) the Department of Motor Vehicles in the state which issued the respondent's last known driver's license.

A total of 1,679 respondents (15 percent of the total eligible sample) refused to complete the 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 335 of the refusal cases. Continuing refusals were forwarded to the field to be contacted in person by a field interviewer. A total of 3,993 cases (36 percent of the total sample) were sent to the field staff, which was successful in completing 2,954 (74 percent) of these cases.

Transcript component. In addition to data gathered from sample members, the B&B first follow up included a transcript component which 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 their bachelor's degrees.

Data collection for the first follow up began in August 1994, when transcript request packets were mailed to all 715 NPSAS sample schools from which B&B sample members 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 12,478 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 was 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 pre-existing 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, these have not been documented in B&B methodology reports.

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. No imputation is performed on data collected in B&B follow ups. Procedures for the first B&B cohort are described below.

Weighting. Weights were modified from baseline weights in the 1992–93 NPSAS to adjust for nonresponse and the tighter eligibility criteria of the B&B sample. The 1992–93 NPSAS sample development and weights calculation documentation can be found in the *Sampling Design and Weighting Report for the 1993 National Postsecondary Student Aid Study*. (See section 7, Methodology and Evaluation Reports.)

After verifying sample eligibility against transcript data, sample members were stratified according to institutional type and student type. These strata reflected the categories used in the 1992–93 NPSAS, with some modifications. The 1992–93 NPSAS 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 to 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 within the correlative “4-year, bachelor’s, low ed” stratum. This affected a total of 19 cases. The five student types originally identified in the 1992–93 NPSAS were collapsed to three in the B&B: 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 Integrated Postsecondary Education Data Systems (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 by making a nonresponse adjustment to the baseline B&B weight calculated for B&B:93/94. The 16 institutional-type and 3 student-type strata were used again, with the same process described previously.

Imputation. The sample for the first B&B cohort included 23 eligible cases for 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 three data collections of the first B&B cohort.

Future Plans

The next follow up of the first B&B cohort (1992–93 bachelor’s degree recipients) will be conducted in 2003.

5. DATA QUALITY AND COMPARABILITY

Sampling Error

Taylor Series approximations are used to estimate standard errors in B&B.

Nonsampling Error

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

Coverage error. The B&B sample is drawn from NPSAS. Consequently, any coverage error in the NPSAS sample will be reflected in the B&B. (Refer to chapter 16 for coverage issues in NPSAS.)

Nonresponse error. Overall response rates were very high for both follow ups of the 1992–93 B&B cohort. Data for unit and item nonresponse are broken down below.

Unit nonresponse. Of the 12,478 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 10,958 cases were considered to be eligible during the interviewing period of the B&B first 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, 626 of 635 eligible schools complied with the request for transcripts, providing transcripts for 10,970 of the 12,478 cases—a 98 percent response rate.

In the second follow up, of the 11,192 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 (93.1 percent of those under 26 compared to 90.4 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 89.5 percent to 91.6 percent) but are substantially lower for Asians/Pacific Islanders (only 82.2 percent) and those identifying themselves as “other” (73.8 percent).

Table 8 summarizes the unit level and overall level weighted response rates across B&B administrations.

Item nonresponse. Of the more than 1,000 variables included in the final data set, 68 contain more than 10 percent missing data. The largest nonresponse was for items involving recollection of test scores and dates. Respondents also had difficulty recalling detailed information about undergraduate loans and loan payments when the respondent had more than three loans. The two primary sections of the survey, concerning postbaccalaureate education and employment, had very low rates of nonresponse.

Measurement error. Three sources of measurement error identified in B&B are respondent error, interviewer error, and error involved 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, a group of 100 respondents was contacted again for a reinterview. These respondents were asked a subset of items included in the initial interview to help assess the quality of those data. 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*

Table 8. Unit level and overall level weighted response rates for selected B&B surveys

	Unit level weighted response rate			
	Base year 1 st level	Base year 2 nd level	1 st wave	2 nd wave
B&B – students	88.2	73.6	83.4	90.4
	Overall level weighted response rate			
	Base year 1 st level	Base year 2 nd level	1 st wave	2 nd wave
B&B – students	88.2	67.1	79.1	79.7

SOURCE: Seastrom, Salvucci, Walter, and Shelton (forthcoming), *A Review of the Use of Response Rates at NCES*.

Error Studies at the National Center for Education Statistics, NCES 97–464.)

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 and logged, 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 the same quality as data coded from the baccalaureate institution's transcripts.

Data Comparability

At present, data are only available for the B&B first and second follow-up surveys conducted in 1994 and 1997. There are no current comparable data available.

6. CONTACT INFORMATION

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7. METHODOLOGY AND EVALUATION REPORTS

General

Baccalaureate and Beyond Longitudinal Study: 1993/94 First Follow-up Methodology Report, NCES 96-149, by P.J. Green, S.L. Meyers, P. Giese, J. Law, H.M. Speizer, and V.S. Tardino. Washington, DC: 1996.

Baccalaureate and Beyond Longitudinal Study: 1993/97 Second Follow-up Methodology Report, NCES 1999-159, by P. Green, S. Myers, C. Veldman, and S. Pedlow. Washington, DC: 1999.

Survey Design

Baccalaureate and Beyond Longitudinal Study: Second Follow-up Field Test Report, 1996, NCES 97-261, by C. Veldman, P.J. Green, S. Myers, L. Chuchro, and P. Giese. Washington, DC: 1997.

Baccalaureate and Beyond First Follow-up Field Test Report, 1993 (B&B:93/94), NCES 94-371, by P.J. Green, H.M. Speizer, and B.K. Campbell. Washington, DC: 1994.

Sampling Design and Weighting Report for the 1993 National Postsecondary Student Aid Study, by R.W. Whitmore, M.A. Traccarella, and V.G. Iannacchione. Research Triangle Park, NC: Research Triangle Institute, 1995.

Data Quality and Comparability

Measurement Error Studies at the National Center for Education Statistics, NCES 97-464, by S. Salvucci, E. Walter, V. Conley, S. Fink, and M. Saba. Washington, DC: 1997.

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Chapter 19: Survey of Earned Doctorates (SED)

1. OVERVIEW

The Survey of Earned Doctorates (SED) is an annual census of new doctorate recipients from accredited colleges and universities in the United States. SED is funded by five federal agencies: the National Science Foundation (lead sponsor), the Department of Education, the Department of Agriculture, the National Institutes of Health, and the National Endowment for the Humanities.

Only research doctorates—primarily Ph.D.s, Ed.D.s, and D.Sc.s—are counted in SED. Professional doctorates (e.g., M.D., J.D., Psy.D.) are excluded. While the graduate schools are responsible for distributing SED forms to students, the surveys are completed by the doctorate recipients themselves. Collected information includes demographic characteristics of recipients, educational history from high school to doctorate, sources of graduate school support, debt level, and postgraduation plans.

The first SED was conducted during the 1957–58 academic year. In addition to housing the results of all surveys, the Doctorate Records File (DRF)—the survey database—contains public information on earlier doctorate recipients back to 1920. Thus, the DRF is a virtually complete data bank on more than 1.3 million doctorate recipients. The DRF also serves as the sampling frame for the biennial Survey of Doctorate Recipients (SDR), a longitudinal survey of science, engineering, and humanities doctorates employed in the United States.

Purpose

To obtain consistent, annual data on individuals receiving research doctorates from U.S. institutions for the purpose of assessing trends in Ph.D. production.

Components

There is one component to SED.

Survey of Earned Doctorates. The doctorate institution is responsible for distributing the surveys to research doctoral candidates and collecting the surveys for mailback to the contractor. The doctorate recipients themselves complete the surveys. The following information is collected in SED: all postsecondary institutions attended and years of attendance; all postsecondary degrees received and years awarded (although only the *first* baccalaureate, master's, first-professional, and doctorate degrees are entered in the database); years spent as a full-time student in graduate school; specialty field of doctorate; type of financial support during graduate school; level of debt incurred in undergraduate and graduate school; employment/study status in the year preceding doctoral award; postgraduation plans (how definite, study vs. employment, location); high school location and year of graduation; demographic characteristics (sex, race/ethnicity, date and place of birth, citizenship status, country of citizenship for non-U.S.

ANNUAL CENSUS OF NEW RESEARCH DOCTORATE RECIPIENTS

SED collects self-reported data on:

- ▶ Demographic characteristics
- ▶ Educational history from high school to doctorate
- ▶ Mechanisms of financial support in graduate school
- ▶ Debt related to education
- ▶ Postgraduation plans

citizens, marital status, number of dependents, disability status, educational attainment of parents); and personal identifiers (name, Social Security Number, and permanent address). The following information is keyed as verbatim text but only coded upon special request: dissertation title, dissertation field, and department (or interdisciplinary committee, center, etc.) that supervised the doctoral program.

Periodicity

Annual since inception of SED in the 1957–58 academic year. The database also includes basic information (obtained from public sources) on doctorates for the years 1920 to 1957.

2. USES OF DATA

The results from SED are used by government agencies, academic institutions, and industry to address a variety of policy, education, and human resource issues. The survey is invaluable for assessing trends in doctorate production and the characteristics of Ph.D. recipients. SED data are used to monitor the educational attainment of women and minorities, particularly in science and engineering. The increasing numbers of foreign citizens earning doctorates in the United States are studied by country of origin, field of concentration, sources of graduate school support, and U.S. “stay” rate after graduation. Trends in time-to-doctorate are also analyzed by field, type of support received, and personal characteristics such as marital status. The data on postdoctoral plans provide insight into the labor market for new Ph.D.s, and the careers of new Ph.D.s can be followed in the longitudinal Survey of Doctorate Recipients, whose sample is drawn from SED.

There is also substantial interest in the institutions attended by Ph.D.s. Doctorate-granting institutions frequently compare their survey results with peer institutions, and undergraduate institutions want to know their contribution to doctorate production. The availability of Carnegie Classifications in the DRF facilitates meaningful comparisons of the institutions attended by the different demographic groups (e.g., men vs. women). Separate indicators for historically Black colleges and universities can allow researchers to examine the roles these play in the educational attainment of Blacks.

3. KEY CONCEPTS

Some of the key terms and analytic variables in SED are described below.

Research Doctorate. Any doctoral degree that (1) requires the completion of a dissertation or equivalent project of original work (e.g., musical composition), and (2) is not exclusively intended as a degree for the practice of a profession. While the most typical research doctorate is the Ph.D., there are more than 50 other degree types (e.g., Ed.D., D.Sc., D.P.A., D.B.A.). Not included in this definition are professional doctorates: M.D., D.D.S., D.V.M., O.D., D.Pharm., Psy.D., J.D., and other similar degrees.

Doctorate-granting Institution. Any postsecondary institution in the United States that awards research doctorates (as defined above) and that is accredited at the higher education level by an agency recognized by the Secretary of the U.S. Department of Education. There are about 400 doctorate-granting institutions.

Field of Doctorate. Specialty field of doctoral degree, as reported by the doctorate recipient. There are about 280 fields on the SED Specialties List, grouped under the following umbrellas: agricultural sciences; biological sciences; health sciences; engineering; computer and information sciences; mathematics; physical sciences (subdivided into astronomy, atmospheric science and meteorology, chemistry, geological and related sciences, physics, and miscellaneous physical sciences); psychology; social sciences; humanities (subdivided into history, letters, foreign languages and literature, and other humanities); education; and professional fields (subdivided into business management and administrative services, communications, and other professional fields). Because field of doctorate is designated by the doctorate recipient, the classification in SED may differ from that reported by the institution in the NCES IPEDS Completions Survey. (See chapter 14.)

Time-to-doctorate. There are two standard, published measures of time-to-doctorate. *Total time-to-degree (TTD)* measures the total elapsed time between baccalaureate and doctorate, including time not enrolled in school. TTD can only be computed if baccalaureate year is known. *Registered time-to-degree (RTD)* gauges the time in attendance at all colleges and universities between receipt of the baccalaureate and doctoral award, including years of attendance not related to the doctoral program. RTD can only be computed if all years of attendance after the baccalaureate have been provided. Both of these

measures are computed from several items in the educational history section of the questionnaire.

Source of Support. Any source of financial support received during graduate school. Doctorate recipients are asked to mark all types of support received and also to indicate the primary and secondary sources of support. For most SED years, sources are categorized as own/family resources; university-related (teaching and research assistantships, university fellowships, college work-study); federal research assistantships (by agency); other federal support (by mechanism and agency); nonfederal U.S. nationally competitive fellowships (by funding organization); student loans (Stafford, Perkins); and other sources (business/employer, foreign government, state government).

In 1997–98, the number of source options was reduced from 35 to 13. Sources are no longer identified by the specific provider (e.g., federal agency, foundation, type of loan) since students do not always have that knowledge. Only the mechanism of support (e.g., fellowship, research assistantship, loan) is now requested. Most current categories are aggregates of multiple categories on previous questionnaires (e.g., the new category “research assistantship” (RA) combines five earlier categories—university-related RA, NIH RA, NSF RA, USDA RA, and other federal RA). The following three categories are new as of 1997–98: dissertation grant, internship or residency, and personal savings.

4. SURVEY DESIGN

Target Population

All individuals awarded research doctorates from accredited colleges and universities in the United States between July 1 of one year and June 30 of the following year. There are currently about 43,000 research doctorates awarded annually by nearly 400 institutions located in the 50 states and Puerto Rico. Institutions in other U.S. territories do not grant research doctorates.

Sample Design

SED is a census of all recipients of research doctorates.

Data Collection and Processing

The data collection and editing process spans an 18-month period ending 6 months after the last possible graduation date (i.e., June 30). The update of the database and preparation of tables for first data release generally require another 4–6 months. From inception of SED in 1957–

58 through the 1995–96 cycle, the survey was conducted by the National Research Council (NRC) of the National Academy of Sciences. The 1996–97 SED was collected by the NRC and processed by the new contractor, the National Opinion Research Center (NORC) of Chicago. NORC will conduct future administrations through the 2000–01 SED. The 1996–97 and 1997–98 administrations are considered a *transition period*. Not all NRC procedures were implemented during this period, and NORC continues to develop and test new procedures.

Reference dates. The data are collected for an academic year, which includes all graduations from July 1 of one year through June 30 of the following year.

Data collection. In advance of each survey, the contractor staff reviews the listings of accredited U.S. institutions in the *Higher Education Directory* to confirm that past participants are still doctorate-granting and identify accredited institutions that are newly doctorate-granting. As further confirmation of doctorate-granting status, the degree levels offered are checked on the IPEDS Institutional Characteristics (IC) File. (See chapter 14.) By July of each year, questionnaires are mailed to the institutions for distribution to doctoral candidates who expect to receive their degree between July 1 and June 30 of the following year. Institutional Coordinators are responsible for the distribution, collection, and return of the surveys. They are asked to provide official graduation lists or commencement programs along with the questionnaires, and to provide addresses for students who did not complete questionnaires.

Upon receipt of a graduation batch, the contractor staff compares the names of students on completed questionnaires (“self-reports”) with the names in the commencement program or on the official graduation list. Any discrepancies are followed up with the institution for confirmation of graduation. If an address for a nonrespondent is provided by the institution or found through other means, a letter and questionnaire are mailed to the individual to request completion of the survey. A second attempt is made to elicit participation if a response is not received within a month. In recent years, these efforts have yielded enough completed surveys to increase the survey’s overall self-report rate by 5–7 percentage points.

For doctorate recipients still missing survey returns after these mailings, “skeleton” records are created from information contained in commencement programs or on graduation lists: name; doctorate institution, field, and year; similar information for baccalaureate and

master's degrees; and sex (if it can be positively assumed from the name). Skeleton records have accounted for 4.1 to 8.2 percent of the records each year during the 1990s. In addition, a small percentage of surveys every year (usually less than 1 percent) are classified as "institutional" returns, having been completed by the institutions with whatever information was available to them. While institutional returns may contain more information than is available from commencement programs, the information is minimal compared to the self-reported surveys.

Staff undergo intensive training in the complexities of coding and checking procedures, and are monitored throughout the collection cycle.

Data processing. SED processing includes two special efforts to increase response rates for key items. The data entry procedures used by both the NRC and NORC include triggers if any of eight "critical" items is missing: date of birth, sex, citizenship status, country of citizenship (if foreign), race/ethnicity, baccalaureate institution, baccalaureate year, and postdoctoral location. If any of these items is absent, a "missing information letter" (MIL) is generated and sent to the respondent. For these cases, five noncritical items (if missing) are also requested: birth place, high school graduation year, high school location, master's institution, and year of master's degree.

A second follow-up effort requests the same critical items from the doctorate-granting institutions, both for individuals who never completed a survey (skeletons) and for individuals who completed a survey (self-reports) but did not return the MIL. Because of the lower MIL yield during the transition period, more information was requested from institutions in 1996–97 and 1997–98.

Editing. Records are processed through a multilayered edit routine that checks all variables for valid ranges of values and reviews the interrelationships among variables. The NRC performed these edits and the correction of errors online during data entry; then the full data file was processed a second time through selected edits after survey closure. NORC's CADE system also includes built-in range edits, but the interrelationship (consistency) edits are done after CADE is completed and after derived variables are created. There are more than 200 edit tests for SED: about 85 range edits (all hard, mandatory edits that cannot be overridden), and nearly 120 interrelationship edits. About two-thirds of the interrelationship edits are hard edits. The remaining third are soft edits, which can be overridden after the responses are double-checked and verified as accurate.

The entire battery of edit tests was reviewed during the 1994–95 SED cycle. A large set of interrelationship tests was developed at this time to verify the accuracy of foreign-country coding for the various time frames covered in the survey. Other interrelationship tests check for reasonable time frames in the doctorate recipient's chronology, from date of birth through date of doctoral award. Still others verify that the appropriate items are answered in a skip pattern (e.g., study vs. employment postdoctoral plans).

Estimation Methods

No weighting is performed since SED is a census. Some logical assumptions are made during coding and updating of the database. For example, U.S. citizenship is assumed for Ph.D.s who designate their ethnicity as Puerto Rican since, legally, Puerto Ricans are U.S. citizens. Entries of "China" in country of citizenship may be recoded to either Taiwan or the People's Republic of China, based on the locations of birth place, high school, baccalaureate institution, and master's institution. Postdoctoral plans are assumed to be employment if items in the employment section are answered and the postdoctoral study section is blank. Postdoctoral study is assumed if the opposite scenario is indicated.

Recent Changes

During the 1990s, the National Science Foundation asked NRC to implement several new procedures in an effort to improve both the quantity and quality of SED data. Beginning with the 1989–90 SED, there has been rigorous follow-up of complete nonrespondents and respondents who did not answer key data items. Race/ethnicity, postdoctoral location, and country of citizenship (if foreign) were first followed up in the 1989–90 cycle, increasing the completeness of these items from that time forward. In the mid-1990s, more than 100 new edit tests were implemented to check the coding of certain foreign countries for specific time frames. In the 1995–96 cycle, the survey instrument was reformatted to make it more respondent-friendly; although content remained the same, the survey form was expanded from 4 to 12 pages.

During the 1996–97 cycle, the contract for conducting SED was transferred from the NRC to NORC; this has brought some changes in procedures, as documented in earlier sections. In addition, the 1997–98 questionnaire included a major revision to the source of support question; the response set has been changed from specific providers *and* mechanisms of support to only mechanisms. The marital status question was also changed in

1997–98 to (1) separate “widowed” from “separated/divorced” and (2) add a new category for “living in a marriage-like relationship.”

Future Plans

Additional changes to SED are under consideration, both to capture new data relevant to current issues in graduate education and to collect better data through existing questions.

5. DATA QUALITY AND COMPARABILITY

The 1990s brought a reexamination of all operational processes, introduction of state-of-the-art technologies, evaluations of data completeness and accuracy, and renewed efforts to attain even higher response rates for every item in the survey. A Technical Advisory Committee was established to guide the conduct of SED with a look toward the future. A Validation Study was conducted to assess the limitations of SED data, and data user groups were convened to advise on survey content. The survey instrument was reformatted to make it more respondent-friendly, and questions are now being revised to collect more complete and accurate information. While the transition from one contractor to another has caused some reduction in the completeness of the data, efforts are underway to return response rates to their earlier levels and to further enhance the quality of the available data.

Sampling Error

SED is a census and, thus, is not subject to sampling error.

Nonsampling Error

The main source of nonsampling error in SED is measurement error. Coverage error is believed to be very limited. Unit and item response rates have been very high and relatively stable since the first survey in 1957–58 (although somewhat lower during the transfer of SED administration to the new contractor).

Coverage error. SED is administered to a universe of research doctorates identified by the universe of research doctorate-granting institutions. Therefore, undercoverage might result from (1) an incomplete institution universe, and/or (2) an incomplete enumeration of research doctorates. SED coverage has been evaluated and found to be less than 1 percent, due to the high visibility of doctorate-granting institutions and a comprehensive approach to data collection.

Every year, the universe of institutions is reviewed and compared to the institutional listings in the *Higher Education Directory* and other sources to determine the current list of doctorate-granting institutions. Any institutions newly determined to be doctorate-granting are contacted for verification of doctorate-granting status and then invited to participate in SED. A few qualifying institutions refuse to participate, but it is known from the IPEDS Completions Survey that these institutions contribute minimally to the overall doctorate population.

Individual doctorate recipients are enumerated through (1) survey forms completed by the new Ph.D.s and returned by the institution; (2) transmittal rosters that provide the official count of doctorates, the number of surveys completed and returned, and the names of individuals who did not complete surveys; and (3) commencement programs covering every graduation at an institution over the course of a year. Comparisons of the number of research doctorates in SED with the total number of doctorates reported by institutions in NCES' IPEDS Completions Survey show that SED's coverage differs by less than 1 percent.

Nonresponse error. Targets have been set for both unit and item response in SED. While the target rates are not always attained, response has been unusually high for a mail survey throughout the 40+ years of SED.

Unit nonresponse. Basic information on nonrespondents can be obtained from institutions or commencement programs, so records exist for all recipients of research doctorates. However, response to SED is measured by the percentage of doctorate recipients who complete the surveys themselves (*self-report rate*), thus providing details that are not available from any other source. SED's goal is a stable self-report rate of 94–95 percent. This rate has been achieved or surpassed in all but 14 of the 41 surveys processed to date (through the 1997–98 SED). Response first fell below the target rate in 1986 and stayed low throughout the rest of the 1980s, at which time site visits and intensive follow-up procedures were initiated in an effort to increase the percentage of self-reported questionnaires. Response achieved the target level from 1990 to 1995 but has since fallen below target (92.8 percent in 1996 and about 91.5 percent in 1997 and 1998).

Because SED is administered through the doctorate-granting institutions, the self-report rate is dependent upon their overall cooperation and survey practices. In the 1997–98 SED, nearly one-third (31 percent) of the 387 institutions had self-report rates below 90 percent, which

is the target rate for institutions. Nonresponse tends to be concentrated in a small group of institutions. In the 1997–98 SED, the 10 institutions with the largest numbers of doctorate nonrespondents (ranging from 51 to 131) accounted for 40.4 percent of the total self-report nonresponse that year.

To improve tracking of institution response rates, NORC has devised an “early warning system” to identify institutions whose self-report rates lag behind the goal of 90 percent. Estimates for each seasonal graduation are developed, based on the numbers for an institution’s graduations in previous years. This system also allows monitoring of institutions with specific substantive interest for SED (e.g., engineering schools, institutions awarding doctorates to large numbers of racial/ethnic minorities).

Item nonresponse. Certain items are available for all doctorate recipients, whether or not they completed a questionnaire: name, doctorate institution, field of doctorate, month and year of doctoral award, and type of doctorate. This information is always provided by the institution in its commencement program or graduation list.

A 95 percent target is set for eight “critical” items: date of birth, sex, citizenship, country of citizenship (if foreign), race/ethnicity, baccalaureate institution, baccalaureate year, and postdoctoral location. From the 1989–90 SED (when rigorous follow up of these items began) to the 1995–96 SED, all items but postdoctoral location achieved response rates above 95 percent. Rates for all critical items except sex and foreign country of citizenship fell below goal in the 1996–97 and 1997–98 SED administrations, the transition period between contractors. Decreases in item response during this period ranged from 2.5 percentage points for race/ethnicity to 4.8 points for baccalaureate year. These decreases stemmed in part from parallel decreases in the overall self-report rates for these two survey cycles and in part from less intensive follow-up efforts during the transition period. However, the higher level of valid data in the 1997–98 SED, as compared to the previous year, suggests a return to increased item response.

“Critical” items are followed up through letters to self-reporting survey respondents and through requests to institutions for Ph.D.s who did not complete questionnaires. Thus, the response rates for these items often exceed the overall self-report rate for the survey. Because information can be obtained from sources other than the doctorate recipients, item response rates for SED are

computed on the universe of recipients, whether or not they responded to the survey.

The target rate for all “noncritical” survey items is 90 percent. During much of the past decade, most noncritical items achieved goal or were within 2 percentage points. Fewer items attained a 90 percent response during the recent transition period between contractors. The results for the 1997–98 SED showed 27 of the 49 noncritical items achieving the 90 percent target and 22 items with response rates below target. Throughout SED’s history, a few items have had, and will continue to have, lower response rates because they are not applicable to all individuals (e.g., master’s degree information, secondary work activity). Other items with lower-than-average response rates relate to timelines from college entrance to doctoral graduation, the most complex segment of the questionnaire.

Some items with below-goal response in the first half of the 1990s surpassed the 90 percent target once the questionnaire was reformatted for the 1995–96 SED. The 1995–96 survey form was expanded from 4 to 12 pages, allowing instructions to be clarified and multipart questions to be broken out into separate, more distinguishable questions.

Although the questionnaire reformat has been successful in many areas, declines in response to key demographic items (citizenship, foreign country of citizenship, and race/ethnicity) and Social Security Number (the critical linking variable) are of concern. Decreases in response rates were relatively small in the 1995–96 SED, but response subsequently dropped to the levels of the 1980s during the transition from one contractor to another. As of the 1995–96 SED, the demographic items are asked at the end of the survey; these items were located at the beginning of the survey in all earlier years.

Measurement error. Most measurement error in SED results from respondents’ misinterpretation of questions or limited recall of past events. The 1994 Validation Study sought to determine the limitations of SED data. Think-aloud interviews were conducted with recent Ph.D. recipients, who were asked to complete a second survey form within a few months of their original survey submission. The question on sources of support caused the most difficulty; few Ph.D.s responded exactly the same as in the initial survey. Problems with this item were confirmed by focus group discussions and comparisons of SED results with raw data obtained from organizations that fund the various types of support. The source of support question was revised in the 1997–98 SED to

request only the mechanism of support (e.g., research assistantship, fellowship, loan) rather than the actual source of funding (e.g., NSF, NIH), which some students do not know.

Interviewees were sometimes confused about the educational history section of the survey, thinking that short-term attendance at a school or attendance not leading to a degree was not required. Others were unsure about whether or not to include the time spent working on the dissertation. Such inconsistencies have an impact on time-to-doctorate computations. To address these issues, several new questions on time to degree were added to the 2001 SED.

Several interviewees also had difficulty responding to the questions on postgraduation plans because, although they currently had a job, they wanted to indicate that they were still seeking a position that would satisfy their aspirations. These comments led to discussions among sponsors and other data users about the intent of the postdoctoral questions and what information is most relevant for policymaking.

Data Comparability

Because a prime use of SED data is trend analysis, tremendous efforts have been made to maintain continuity of survey content. Only three new items have been added since 1973: disability status, number of years as a graduate student, and debt level at time of doctorate receipt. However, occasional changes have been made to the response categories for an item, sometimes affecting the comparability of the data over time. For the items on disability status and debt level, such changes occurred frequently enough to make comparisons for the early years unreliable.

The second modification to the 1997–98 questionnaire affects the sources of support item. The response set was overhauled to request information on only the mechanism of support (e.g., research assistantship, fellowship, loan) rather than mechanism *and* funder (e.g., NIH RA, NSF RA, university fellowship, NSF fellowship, Ford Foundation fellowship, Stafford loan, Perkins loan). As noted under Measurement Error above, focus groups and interviews revealed that students do not always know the actual source of their support, particularly when the funder is the federal government. The 1997–98 response set for the item on sources of support also includes three new categories: dissertation grant, internship/residency, and personal savings.

This major change has broken the time series for the sources of support item except for selected sources. NORC mapped the pre-1998 response categories to the new response set and then compared the 1997–98 distribution of responses to earlier distributions back to 1990. Significant shifts were observed in the proportions for some categories—raising concerns about whether the new code frame accurately captures the desired information on sources of support (e.g., tuition remission), and also suggesting the need for more cognitive work in this area. Therefore, *users should be cautious about making generalizations regarding the financing of doctoral education over time.*

Another comparability issue for SED involves changes (generally additions) over the years to the survey's Specialties List, which is used to code fields for degrees, postdoctoral study, and employment. Because any specialties added to the list would have been coded into an "other" category (e.g., other biological sciences) in previous surveys, users should be careful in their interpretation of time-series field data at the most disaggregated level. The historical changes in the Specialties List are documented in *Science and Engineering Doctorates: 1960–91* (NSF 93–301), and the subsequent series, *Science and Engineering Doctorate Awards* (NSF 00–304).

While both unit and item response rates in SED have been relatively stable through the years, fluctuations can affect data comparability. This is especially important to consider when analyzing data by citizenship and race/ethnicity, where very small fluctuations in response may result in increases or decreases in counts that do not reflect real trends. New procedures implemented in the early 1990s had a significant positive impact on response to these two items, as well as to the items on foreign country of citizenship and postdoctoral location, making the data from 1990 to 1996 better in both quantity and quality than data from the late 1980s. Item response for citizenship and race/ethnicity have fallen to the level of 1990 and earlier years, and item response for postdoctoral location is lower than most years in the 1990s. However, while response to country of citizenship among non-U.S. citizens fell 3 percentage points in the first transition year (the 1996–97 SED), it returned to pretransition levels in the 1997–98 SED.

The reformat of the questionnaire in 1995–96, described in earlier sections, resulted in substantial increases in response to primary source of support, postdoctoral work activity, and postdoctoral employment field. Users should take these changes into account when analyzing trends.

Comparisons with IPEDS. The IPEDS Completions Survey also collects data on doctoral degrees, but the information is provided by institutions rather than by doctorate recipients. The number of doctorates reported in the IPEDS Completions Survey is slightly higher than in SED. This difference is largely attributable to the inclusion in the IPEDS Completions Survey of nonresearch doctorates, primarily in the fields of theology and education. The differences in counts have been generally consistent since 1960, with ratios of IPEDS-to-SED counts ranging from 1.01 to 1.06. Because a respondent to SED may not classify his/her specialty identically to the way the institution reports the field in the IPEDS Completions Survey, differences between the two surveys in the number of doctorates for a given field may be greater than the difference for all fields combined.

6. CONTACT INFORMATION

The National Science Foundation is the Systems Manager of Record for the Survey of Earned Doctorates. The micro-data can be used by institutions that enter into Licensing Agreements with NSF. The persons to contact concerning this are:

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7. METHODOLOGY AND EVALUATION REPORTS

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