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ABSTRACT

This report documents activities in preparation for the fourth follow-up of the sophomore cohort of the High School and Beyond (HSB) study in 1992. It describes the development and testing of the data collection systems. The HSB in 1992 is the fifth wave of the longitudinal study of the high school sophomore class of 1980. This longitudinal dataset is extremely rich, and contains past education, labor force activity, demographic, and attitudinal information obtained from the sophomores themselves and from school transcripts, school administrators, and, in some cases, sample members' parents. The fourth follow-up will include respondents' accounts of their life events since the last round of data in 1986. Academic transcripts will also be obtained for those who have attended postsecondary education. A field test began with interviews with 105 sample members, followed by a test of information gathering techniques conducted with 109 respondents from those eligible for the fourth follow-up. Twelve tables and one figure present field test results and follow-up plans. (SLD)

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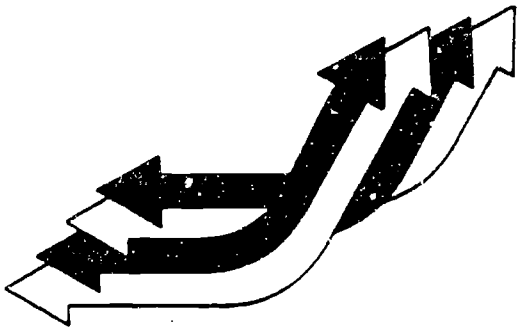
Methodology Report August 1992

High School and Beyond Fourth Follow-Up

Contractor Report



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National Center for Education Statistics

"The purpose of the Center shall be to collect, and analyze, and disseminate statistics and other data related to education in the United States and in other nations."—Section 406(b) of the General Education Provisions Act, as amended (20 U.S.C. 1221e–1).

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Foreword

This report documents the activities in preparation for the fourth follow-up of the sophomore cohort of the High School and Beyond (HS&B) study in 1992. It describes the development and testing of the data collection systems that will be used beginning in February 1992. Several components of these systems are innovative and should enhance data quality.

High School and Beyond is major longitudinal study within the National Center for Education Statistics' program. It provides a wealth of information about major transitions of young adults from high school into postsecondary education and the labor force. Comparisons with other longitudinal studies, such as the National Longitudinal Study of the High School Class of 1972 and the National Education Longitudinal Study of 1988 further enhance the utility of these data. With completion of the HS&B fourth follow-up in 1992, and the addition of postsecondary education academic transcript data in 1993, the HS&B data will span 1980 (when students were enrolled in the tenth grade in secondary schools) through 1992 (when the sample members were about 28 years old).

The HS&B data should be available in the spring of 1993. Information about obtaining HS&B data will be available from Roger Herriot, OERI/NCES, 555 New Jersey Avenue NW, Room 400J Capitol Place, Washington, DC 20208.

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This report was substantially improved by the careful and helpful reviews provided by Dr. Robert Willis, University of Chicago and Robert Burton, Edith McArthur, and Jeffrey Owings, National Center for Education Statistics.

Summary of Major Findings

This report documents the activities in preparation for the fourth follow-up of the sophomore cohort of the High School and Beyond (HS&B) study in 1992. It describes the development and testing of the data collection systems. HS&B in 1992 is the fifth wave of the longitudinal study of the high school sophomore class of 1980. This longitudinal dataset is extremely rich. It contains past education, labor force activity, demographic, and attitudinal information obtained from the 1980 sophomores themselves and from school transcripts, school administrators (school level information) and, in some cases, sample members' parents. The fourth follow-up will include respondents' accounts of their life events (primarily in terms of education and employment) since the last round of data was collected in 1986. In addition, academic transcripts will be obtained for respondents who have attended postsecondary institutions.

Field Test Development Products

- Integrated Control System (ICS), a new management tool designed for monitoring of all project tasks
- Electronic archive housing all project reports, deliverables, and documentation
- Instrument Development System (IDS), containing interconnected files of data elements, subelements, response categories, justifications, CATI specifications, and documentation, including comments from the Technical Review Panel
- CATI instrumentation that made use of preloaded data elements, recursive text fills, updatable screens suitable for conversational interviewing, an on-line coding
- On-line interviewer monitoring, with provision for statistical sampling of interviewer activities and provision for remote monitoring
- Development of simplified occupational and industry coding

Field Test Implementation

The HS&B field test was designed to test the functioning of the innovative systems in terms of the quality and quantity of the data collected, the burden on the respondent, the efficiency of the interviewer task, and the technical performance of the CATI application. The field test comprised two distinct data collection activities. First, iterative interviews on sections of the questionnaire were conducted with 105 respondents. Reinterviews were conducted with 25 respondents. The goal of this phase was to refine the parts of the CATI instrument so that it would work efficiently and would meet the targeted length for the second phase, in which the main data collection conditions were to be tested.

The field test utilized 109 respondents selected randomly from those eligible for the fourth follow-up. Its purpose was to test fully functioning systems, to capture the timing of the various sections in the CATI instrument, and to test data collection procedures, including the mailing of a personalized calendar to respondents as a memory aid. The field test also included an experiment to evaluate locating activities by NORC locating specialists versus the services of an outside vendor. At the end of all locating and interviewing activities, 80 respondents had been interviewed.

Results and Modifications for Main Study

- In general, the CATI instrument worked acceptably well and the overall timing was close to the target for the main survey; nevertheless, it was clear that small modifications in sections would make the instrument more efficient and reduce burden on respondents and interviewers.

- The use of preloaded data from past rounds for verification or for correction worked well technically. The verification/correction task for interviewers and respondents also worked well, though not as efficiently as possible, specifically in the section on previous employment.

- Conversational interviewing and the use of updatable screens, used to verify or correct the proloaded data, worked so well that its use will be extended to the introductory section of the CATI instrument.

- The calendar mailed to respondents as a memory aid was not found to be useful for those purposes. It will be eliminated for the main study.

- On-line FICE coding worked efficiently. The use of on-line coding will be extended to the modified occupation and industry coding developed for HS&B.

- On-line monitoring of interviewer activities, the statistical sampling for monitoring, and the remote monitoring feature worked acceptably. Minor improvements will be implemented for the main study.

- Locating activities were conducted more efficiently by NORC locating specialists than by the outside vendor. Locating of respondents will be the principal difficulty in achieving the targeted response rate for the main study. More resources will need to be dedicated to the locating activity that had been originally envisioned, and more extensive and expensive locating methods will need to be implemented on the main study than were used on the field test.

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1. Introduction

HS&B:92 is the fifth wave of the longitudinal study of the high school sophomore class of 1980. This longitudinal dataset is extremely rich. It contains past educational, circumstantial, and attitudinal information obtained from the 1980 sophomores themselves and from school transcripts, school administrators (school level information) and, in some cases, sample members' parents. The planned fourth follow-up, or fifth round, will add to the unprecedented richness of data by including respondents accounts of their life events (primarily in terms of education and employment) since the last round of data was collected in 1986. In addition, school transcripts will be obtained for respondents who have attended postsecondary institutions.

The National Center for Education Statistics (NCES) of the Office of Educational Research and Improvement (OERI), U.S. Department of Education is conducting this study in partial compliance with the mandate as stated in section 406(B) of the General Educational Provision Act (GEPA), as amended, (20 USC, 1221e-1):

> *The purpose of the Center shall be to collect, and analyze, and disseminate statistics and other data related to education in the United States and in other nations. The Center shall (1) collect, collate, and, from time to time, report full and complete statistics on the conditions of education in the United States: (2) conduct and publish reports on specialized analyses of the meaning and significance of such statistics;...*

PL 100-297, (Hawkins-Stafford Education Amendments of 1988) section 3001(k) further states:

> *The Center shall conduct a study of a statistically reliable sample of students enrolled in elementary and secondary school and postsecondary education training concerning educational progress, intellectual development, and economic prosperity. The study shall collect data on participation in higher education, including enrollment, persistence, and attainment.*

In HS&B:92, valuable information will be obtained on issues of **access to and choice of** undergraduate and graduate educational institutions, **persistence** in obtaining educational goals, **progress through the curriculum, rates of degree attainment** and other assessments of educational outcomes, and **rates of return** to the individual and society. The issues of postsecondary persistence and achievement; of excellence, equity, and choice in higher education; and of the economic and noneconomic rates of return of such education, are among the most important of the new issues explored in the 1984 and 1986 follow-ups of HS&B. The capacity to conduct more comprehensive and in-depth investigations of these issues in the forthcoming fifth round of this study is one of the more alluring prospects of this new addition to the HS&B database.

The base year data collection for this sample cohort was conducted in 1980, with follow-ups in 1982, 1984, and 1986. As the sample members move through their twenties it is important to evaluate the effects of their high school experiences on their lives as

young adults. As the 1980 sophomore cohort moves through young adulthood, the longer term effects of schooling--the later consequences of program and curricular choices, persistence or nonpersistence in school, academic achievement during high school, differential effects of various kinds of private and public schooling and of more and less effective schools--become prominent. For example, it becomes a critical task to determine how many dropouts have returned to school or have passed through equivalency programs, and to determine the occupational and other outcomes associated with each of the aforementioned patterns of behaviors and experiences.

While each successive wave of the HS&B longitudinal study provides continuing, longer-term answers to baseline questions, each successive wave also becomes, with maturation of the cohort, a further baseline for posing new questions that have become germane with the passage of time and advancement of the cohort into a new developmental or life stage. HS&B data have been used to monitor the critical transition from high school completion to labor force entry, postsecondary education, and family formation. However, the basic longitudinal strategy of tracking plans, decisions, behavior, and outcomes through repeated measurements of the same individuals over time is no less powerful a vehicle for exploring post-transition issues in each of these domains.

The fact that now--eleven years after completion of high school--many cohort members will have completed one or more programs of postsecondary education as well, serves pointedly to remind us that the mission and value of an integrated multipurpose panel design such as HS&B does not diminish with the end of traditional schooling. Education, in one or another form, is a lifelong process; and the consequences of educational antecedents are ineluctably manifested throughout the life-course of the individuals who have passed through the formal educational system. Indeed, the fourth follow-up of HS&B may usefully be viewed in the context of the Center's strong affirmation of the need for *comprehensive* statistical investigation of educational issues to fulfill the NCES charter to report on the condition and progress of American education in *all* its aspects. The inclusion of adult literacy and lifelong learning as one of six national education goals enunciated by the President serves to underline the importance of studies such as HS&B:92, which can help not only to measure achievement of certain aspects of such performance goals but can also help to uncover the relationship between the effects being measured and their principal determinants. This is a principal strength of such studies in comparison to even larger scale cross-sectional assessments of educational progress.

In the fourth follow-up, the student interview will emphasize five areas pertinent to 1980 high school sophomores now in their middle twenties: undergraduate and graduate access and choice, persistence, progress through the curriculum, attainment and outcome assessment, and rate of return. These thematic topics serve to unify and complement other current and future NCES-sponsored postsecondary longitudinal studies. HS&B:92 is particularly well suited to examine each of these themes because:

(1) many items in prior rounds are related to these themes, thus providing a temporal context, and (2) the age of the respondents places them at a time when new information concerning the issues addressed by each of the themes would provide invaluable insights into the effects of secondary and postsecondary education.

The remainder of this report contains a description of the HS&B fourth follow-up field test. The field test was unique in a number of ways. One unique feature was that the field test procedures were tested on a small sample of main study respondents sample, rather than on a field test sample. This was necessary in order to adequately test procedures used to link information from prior rounds to the present interview. A second unique feature of the field test concerned the fact that interviewers were presented with several new data collection challenges, such as unscripted interviewing and on-line coding. Finally, a number of innovative features were developed for both project management and data collection.

In the sections that follow, we describe the field test systems and procedures in detail, and we present the results of the field test data collection effort. The second and third sections describe and evaluate the HS&B Integrated Control System (ICS), a new management tool developed especially for this project. Sections four and five discuss instrument development, including both substantive issues and technical issues associated with the computer assisted telephone interviewing (CATI) system.

Sections 6, 7, 8, and 9 discuss the data collection activities in the field test. The field test comprised two distinct data collection activities. First, iterative pretests on sections of the questionnaire were conducted. Results from the pretests were used to develop field test data collection procedures and to refine the field test CATI instrument. Second, a formal field test was conducted on 109 respondents in order to test the functioning of the full range of systems, and to obtain valid estimates of the instrument length and the extent of locating. The final sections of the report (sections 10 and 11) evaluate the CATI system and make recommendations for the main survey.

2. Description of ICS

The application of computer technology has allowed the development of increasingly complex survey designs. Samples can be constructed in more intricate ways, and each component can be tracked separately to ensure adequate response rates; instruments are designed for computer-assisted administration which will automatically follow branching and verify the consistency of data collected; field periods have been shortened making it necessary for more people to be involved in the survey process. All too frequently, the people working on a project are specialists who see no need to become acquainted with the full range of project activities, or who lack access to complete information even if they want it. All of this demands still more complex management tools to ensure that the many pieces are moving in concert.

NORC has developed an integrated management system, running on our local area network to accomplish this task. Rather than making a huge investment in software development, the system is composed largely of commercially available products. This provides a number of advantages:

- As new versions of components are developed, they can be quickly integrated into the system
- Continuous improvement of the system components is assured by competition in the marketplace
- When problems occur, the manufacturer's staff is responsible for finding quick solutions
- Training is readily available

The High School and Beyond fourth follow-up Integrated Control System (ICS) is such an integrated management system. It provides a single entry point for HS&B users to obtain the current status of the study, to access past information on the project, view the data collection instruments and monitor the progress of instrument development, review the project schedule, and conduct some data analysis. It must be emphasized that the development of the ICS is ongoing and will be a dynamic process. There is not a complete plan for the system--nor would it be appropriate to have one. The concept itself is still in development. The goal is the iterative, experimental development of a system that will meet the needs of the project, while staying within the project budget.

Major components are:

- The instrument development database
- The computer-assisted telephone interviewing system CATI)
- An on-line interviewer monitoring module
- An electronic codebook with data from prior rounds
- An electronic codebook with current data (starting with data collection)
- A data analysis tool
- Status reports (management, budget, data collection, monitoring, etc.)
- Current schedule and resource plans
- A document archive

Initial entry to all ICS modules is through a menu produced in the Novell Menuing System on a Novell network. Users simply highlight the desired module using

the arrow keys and launch the application by hitting "Enter." Through the menu, users also have access to standard applications such as *WordPerfect* and to a number of help screens. The menu also provides access to the following Modules.

Instrument development module. The data collection instrument has been developed with the help of a commercial text database called *askSam*. The database allows the development of a series of interconnected data files containing data elements; subelements; questions; range, type, and consistency checks; response categories; interviewer question-by-question instructions; data element, and question justifications; and instrument development history, notes, and documentation. Most of the linkages are bi-directional. As a result, it is possible to navigate through the system starting with any item and find all related items. This module has been used by project staff to completely define the field test data collection instrument. The files generated will be loaded into the electronic codebook and the CATI module.

CATI. The field test CATI system is controlled by a commercial product, *AutoQuest*. Once it is loaded, the field test CATI instrument is available through the ICS. During instrument development, this was the instrument version currently under testing. During field test data collection, a copy of the final field test CATI instrument was accessible, allowing users to conduct mock data collection, thus providing another level of instrument testing. To protect the actual field test data, any data generated by the mock interviews were be stored in a separate database.

On-line interviewer monitoring. An on-line monitoring module was developed to allow monitors to enter monitoring codes into the computer, rather than recording them on paper. Use of this program will enable the provision of timely data on interviewer performance.

Electronic codebook. The electronic codebook has been developed by NCES staff and staff from Pelavin Associates. As mentioned above, information from the instrument development module database is loaded into the electronic codebook. On a periodic basis during data collection, completed cases are extracted from the *AutoQuest* database and used to update the current data codebook database.

Data analysis. A standard commercial data analysis package (*SPSS-PC* and/or *SAS-PC*) is included in the ICS. Because most users will not have the capacity on their own PC's to do very large or sophisticated analyses using these packages, the ability to queue analyses jobs on a 486-based PC is provided through the ICS. Batch processing software, *PS-Batch Processor*, will be running on the 486. It accepts any MS-DOS batch file and sends a message to the submitter when the job is completed. The batch processor can be used for other large jobs from within the ICS.

Document archive. The document archive has been set up in a commercial product, *SoftSolution*. This product captures a profile of information on each document

including such items as document name, date, author, and location--whether stored electronically or as hard copy. The resultant database is fully indexed and can be searched using any combination of variables. Security is built in, potentially allowing different users varying levels of access (although this has not been done at present). When a document is selected for retrieval, the system launches the appropriate application (e.g., *WordPerfect* or *Lotus 1-2-3*) and loads the retrieved document. Documents are submitted for inclusion in this system through the NORC electronic mail system (cc:Mail). A mailbox has been established for the project and all substantial communications are copied to that mailbox. The system operator regularly empties the mailbox and feeds documents into SoftSolution. All project staff, whether at NORC, NCES, Pelavin, or elsewhere, have access to the electronic mail system. Users not housed at NORC or who are travelling use a package called *cc:Remote* over the telephone to send and receive messages with other project staff and to send items to the document archive.

Reports. Reports generated on a regular basis are available for viewing or printing through the ICS. A simple shareware list product is used to display these files on the screen. The reports are also stored in the document archive.

Current schedule and resource plans. NORC uses *Project Workbench* (PW) to plan project activities and schedule resources. Standard reports are generated and are available for viewing or printing through the ICS. They are also stored in the document archive. ICS users are able to use PW through the ICS to explore the effects of possible changes to the project plan on a duplicate database.

3. Evaluation of ICS

Specifications. The design of the ICS expanded from the notion of a high-powered data management system to an executive information system. The ICS was built in modules, and each module of the prototype was tested as it was developed and during a site visit.

Hardware/software decisions. Decisions about the hardware and software components of ICS were driven by considerations of availability and simplicity. Some components, such as *AutoQuest*, *WordPerfect*, and *Project Workbench*, are standard NORC tools. One challenge was determining the best method of permitting access to the different functions of the ICS. A unifying *Novell* menu was selected after hot-key and *WINDOWS* options were rejected as complex and error-prone.

Other software was needed for the documentation repository and the questionnaire development functions of the ICS. *SoftSolution* was chosen for the former. It was inexpensive, and already licensed to NORC. In retrospect, is proved to be

insufficiently flexible to provide a long-term solution to repository problems. It also requires a fair amount of (unbudgeted) maintenance to be useful.

A key function of the ICS was the Instrument Development System (IDS). The major problem presented by the questionnaire development function was creating a relational database of free-form text. The *askSam* program was chosen because staff had some experience in its application from a previous project. In practice, *askSam*'s functionality was not fully utilized. Instrument development staff tended to edit text using *WordPerfect* and then import the file into *askSam*, rather than working directly in the database.

A program was developed to export and convert questionnaire specifications into *AutoQuest* code. The program was able to generate about 55 percent of the code necessary to build the CATI instrument. While the effort was only partially successful due to limited time and resources even the partial success saved considerable time and expense in instrument development. As this component develops, a greater percentage of the *AutoQuest* programming will be automated.

An as yet undelivered function of the ICS is the capacity to run *SAS* and *SPSS-PC* analyses on questionnaire data. A major hurdle is the memory requirements of the statistical packages. A LAN batch processing system was developed as a step in providing this capacity.

4. Instrument Development

Preliminaries. Preliminary work on the HS&B fourth follow-up field test instrument began before the contract was awarded. Based on past rounds of HS&B, and on assessments of current and future information needs, NCES constructed a list of "data elements", or conceptual categories, which were to form the basis for the questions asked of HS&B fourth follow-up respondents. The data elements were presented with examples of questions used in various NCES studies, including the HS&B third follow-up, the National Postsecondary Aid Study (NPSAS), the Beginning Postsecondary Survey (BPS) and the National Longitudinal Study of the High School Class of 1972 (NLS-72).

As a first step in instrument development, HS&B:92 project staff examined the recommended items associated with each of the data elements and rated them for their appropriateness. Results of the ratings were sent to the COTR who evaluated NORC recommendations and added his own. A final list of data elements and associated questions was constructed and sent to members of the Technical Review Panel (TRP) with instructions to send preliminary feedback to NORC. A number of members responded and their comments were assembled into a document for discussion at the TRP meeting which was held in Washington, D.C. in February 1991.

TRP/IRB reviews. This section documents the review of data elements conducted by the HS&B TRP during its meeting in February 1991. It also documents the review of the NCES Interdivisional Review Board (IRB). The first TRP Meeting for HS&B:92 was held by NORC on February 6 and 7, 1991, at NCES in Washington, D.C. Fifteen of 17 panel members attended the sessions. In addition, a number of staff members from NCES participated in the discussions. On February 8, the NCES IRB reviewed the data elements for HS&B:92.

One important issue examined by the TRP concerned cleaning and verification of education and employment data collected during prior rounds of data collection. For employment data it was agreed that it would *not* be cost effective to clean each employment spell collected in prior rounds. It would rather be more useful to analysts, and an easier task for respondents and interviewers, to collect *aggregate* employment and earnings data for the years of prior data collection. The same aggregate data will be collected for the years 1986-1992 in addition to data on some individual employment spells since 1986. For education data it was agreed that each prior education spell would be verified, and all new spells would be collected for the years 1986-1992.

The TRP recommended dropping specific items relating to the teaching profession. It was felt that other surveys are more appropriate for addressing issues related to the teaching profession, and that in the HS&B cohort there are not enough teachers to warrant collecting special items. The TRP panel recommended dropping questions about specific sources of financial aid since panel members felt that other datasets, such as NPSAS, address the issue more comprehensively and accurately than would be possible with HS&B:92 data. Aggregate questions about education loans will still be included.

Additional points regarding education contributed by the TRP included the need to distinguish proprietary schools, from nonprofit private schools, and the need to distinguish education spells where students attended half-time or more as opposed to either full-time or less than half-time. The IRB suggested that reasons for leaving postgraduate schooling in addition to collecting the index of progress be considered as items.

The panel discussed the importance of addressing the issue of employment-related training, employer-provided or otherwise. Both the TRP and IRB were interested in expanding the section on family and children. The TRP suggested an assessment of the respondent's financial support for others, such as parents or grandparents, who would not qualify as dependents. The IRB suggested questions about day care for children under five and about the nature and grade-level of schooling for children age five or more years.

After considerable discussion, the TRP recommended dropping the locus of control question, but retaining the questions on values and political participation, with modest enhancement of the political participation question.

The TRP was also interested in assessing indebtedness. Toward that end, data elements were added to ascertain mortgage balance on homes or condominiums, and the make, model, and year of respondents's automobiles as well as the remaining automobile loan balance. The TRP suggested gaining greater disaggregation regarding race/ethnicity, especially with regard to black respondents, and recommended including items asking about the nature and amount of interracial and interethnic experience.

Description of the High School and Beyond Field Test Instrument Development System (IDS). Another step in the HS&B:92 instrument development process involved the creation of an Instrument Development System (IDS) designed to achieve the following goals. The system was designed to be one that allows the linking of survey questions to data elements and associated documentation, such changes resulting from the OMB forms clearance process, and comments by the TRP and the NCES IRB.

The IDS consists of four parts:

1. A database that stores the attributes of each item in the instrument

2. A system for editing and querying the item database

3. A CATI Description Language (CDL) that allows non-programmers to describe CATI questions in terms of a small number of question attributes

4. A translator for converting the entries in the database into source code that is acceptable to NORC's CATI system

For instrument development we created five *askSam* question files that can be linked using the database package. These files are: 1) data element justifications file, 2) data subelement text file, 3) TRP notes file, 4) documentation file, and 5) question text file. The IDS can be used with files 1, 2, and 3 to quickly and easily see relationships between justifications, data elements, subelements, and TRP comments. The *askSam* program includes a full feature query language that is capable of performing queries on these elements.

It was our intention that the IDS should aid in the creation of a working HS&B:92 CATI instrument, in such a way that the path from data element, through TRP, NCES, and OMB recommendations, to question text and, finally, CATI screen was clearly documented. Files 4 and 5 are critical to this linkage. File 4 provides the instrument development team with a place to document ways in which data subelements were altered as they were turned into questions. File 4 also provides a vehicle for

documenting changes suggested by the TRP, NCES, or OMB. File 5 is a file that contains questions and response categories, along with symbols recognized by the CATI system NORC uses. Output from file 5 provides a basis for the input file to the CATI program.

Linkage of variables to the data elements has been extended to the electronic codebook and data file through variable naming. Consistent with HS&B convention, each variable name begins with "Y4" to indicate the fourth follow-up, young (i.e., 1980 sophomore as opposed to 1980 senior) cohort. Following this are three digits indicating to which data element and subelement (i.e., subcategory within data element) the item belongs. Finally, the variable name is made unique by following the fifth digit with sequential numbering within data subelement. The naming convention completes the loop between data elements and variables that will ultimately appear on the data file.

Link to CATI. A translator component of the IDS stores the description of each question in an *askSam* database using a simple syntax. The translator is used to convert the item description into the language supported by the CATI system used by NORC. The current version of the translator is capable of producing 55 to 60 percent of a finished CATI questionnaire from items stored in the IDS database. The remaining 40 to 45 percent must be done by a CATI programmer. Future versions of the translator and language will bring the efficiency up to about 75 percent.

Conversation mode interviewing. Data collection for this newest round of High School and Beyond represents an important departure from the four previous rounds--the shift from a self-administered mail questionnaire to CATI. CATI has a number of advantages over mail questionnaires that we believe will result in improved data quality. However, the concern was that a shift from a visual, respondent-paced method of data collection (the mail questionnaire) to a verbal, interviewer-paced method (CATI) would affect responses.

An important step taken to the collection of high-quality and comparable data was the careful attempt to make the CATI interview as natural a process as possible. We tried to accomplish this by writing questions that seemed to flow naturally, as if the interviewer and respondent were engaging in a conversation. Two techniques were used to accomplish this goal: (1) whenever possible, questions were written to be short with informal wording, and (2) whenever possible, questions were structured so that responses were captured naturally, as they would in a conversation. As an example of both of these techniques, rather than a question that asks "Tell me whether each of the following people lives in your household; your father, your mother, your spouse, etc.", we wrote "Who lives with you?". Rather than asking you to read each response category in this case, you are asked to code the respondent's free response to the question, ask clarification questions when necessary, and prompt with "who else?", when the respondent stops giving responses. We hope this conversational form of question writing

and response capturing will result in shorter, more pleasant, less tedious interviews with high-quality data.

In addition, in this round of High School and Beyond, employment, and income data from past rounds will be verified and cleaned. Because respondents' ability to recall their past experiences may be affected by both the passage of time and the use of a CATI format, respondents are provided with a calendar that tracks employment and education history as it appears in the data-file from previous rounds. These were sent to field test respondents, accompanied by a letter forewarning respondents of the interview, asking them to check the information on the calendar for accuracy and completeness before the interview, and asking them to have the calendar on hand so that it could be referred to during the interview.

Interviewers had the same information in the form of CATI summary screens described earlier. It was difficult and awkward to write scripted questions for verifying the information on the summary screens. Therefore, we asked interviewers to go over the information item-by-item with the respondent, without having a definite script, requesting only that their style is a natural, friendly, and pleasant one and that it includes asking about missing information.

As befits sound survey practice, the onus of conversational mode interviewing still rests upon the designers of the instrument. For the most part, interviewers were instructed to read questions and responses exactly as written. However, for the field test, we asked interviewers to keep track of question wordings that they found to be awkward, and to report these and suggested rewording to their supervisors, who would in turn advise project staff responsible for instrument development. Some of these recommendations are presented in other parts of this report.

Development of industry coding scheme. The coding scheme for industry developed for the field test and proposed for use on the main survey was a simplified version of the U.S. Department of Commerce, Bureau of the Census *Classified Index of Industries and Occupations 1970*, and the U.S. Department of Commerce, Bureau of the Census *Alphabetical Index of Industries and Occupations 1970*, which had been used on previous rounds of High School and Beyond. To simplify the coding task, the major headings were used as the coding categories with one exception, Manufacturing was split into Durable and Nondurable Goods. These headings are reproduced below.

Agriculture, Forestry, and Fisheries
Mining
Construction
Manufacturing--Durable Goods
Manufacturing--Nondurable Goods
Transportation, Communications, and Other Public Utilities
Wholesale Trade
Retail Trade

Finance, Insurance, and Real Estate
Business and Repair Services
Personal Services
Entertainment and Recreation Services
Professional and Related Services
Public Administration
Industry Not Reported

For researchers who wish to code at a more detailed level, the entire verbatim response will also be reported in the data file.

Development of occupation coding scheme. The coding scheme for occupation coding used in the field test, and proposed for use on the main survey, was adapted from the following question in the High School and Beyond third follow-up questionnaire.

Variable: TY15A DESCRIBE JOB AT 30 YRS OLD
Module: 3F4 Position: 31-32

Write in here the name of the job or occupation that you expect or plan to have when you are 30 years old. Even if you are not at all sure, write in your ONE best guess. Which of the categories below comes closest to describing that job?

CLERICAL such as bank teller, bookkeeper, secretary, typist, mail carrier, ticket agent

CRAFTSMAN such as baker, automobile mechanic, machinist, painter, plumber, telephone installer, carpenter

FARMER, FARM MANAGER

HOMEMAKER (without other job)

LABORER such as construction worker, car washer, sanitary worker, farm laborer

MANAGER. ADMINISTRATOR such as sales manager, office manager, school administrator, buyer, restaurant manager, government official

MILITARY such as career officer, enlisted man or woman in the Armed Forces

OPERATIVE such as meat cutter, assembler, machine operator, welder, or truck driver

PROFESSIONAL such as accountant, artist, registered nurse, engineer, librarian, writer, social worker, actor, actress, athlete, politician, but not including school teacher

PROFESSIONAL such as clergyman, dentist, physician, lawyer, scientist, college teacher

PROPRIETOR OR OWNER such as owner of a small business, contractor, restaurant owner

PROTECTIVE SERVICE such as detective, police officer or guard, sheriff, fire fighter

SALES such as salesperson, advertising or insurance agent, real estate broker

SCHOOL TEACHER such as elementary or secondary

SERVICE such as barber, beautician, practical nurse, private household worker janitor, waiter, waitress

TECHNICAL such as draftsman, medical or dental technician

NOT WORKING

Third follow-up item frequencies for this question were reviewed to determine which categories needed to be further subdivided. It was decided to add codes (from the list of standard occupation codes) within the following larger categories:

TABLE 4.1 -- Frequencies for large occupation code categories

Code	Frequency	Percent	Label
1	1213	9.0	CLERICAL
6	1638	12.2	MANAGER, ADMINISTRATOR
9	2823	21.0	PROFESSIONAL TYPE A
10	948	7.1	PROFESSIONAL TYPE B
11	1023	7.6	PROPRIETOR OR OWNER
16	902	6.7	TECHNICAL

The augmented list was then reviewed by several labor economists at the University of Chicago. The final list is reproduced below along with the mapping between these codes and the original SOC codes.

TABLE 4.2 -- Proposed Occupation Codes

Code	Description	Examples
01	Clerical--Secretarial:	secretary, typist, file clerk, receptionist
02	Clerical--Financial:	bookkeeper, bank teller
03	Clerical--Other:	ticket agent, mail carrier, etc.
04	Craftsman:	baker, automobile mechanic, machinist, painter, plumber, carpenter
05	Farmer/Farm Manager	
06	Homemaker (without other job)	
07	Laborer:	construction worker, car washer, sanitary worker, farm laborer
08	Manager/Administrator--Sales/Purchasing	sales manager, buyer
09	Manager/Administrator--Government:	local, state or federal
10	Manager/Administrator--Retail/Hospitality	store manager/assistant manager, restaurant manager/assistant manager, hotel manager/assistant manager
11	Manager/Administrator--Manufacturing /Construction	line supervisor, quality control supervisor
12	Manager/Administrator--Other	
13	Military:	career officer, enlisted personnel
14	Skilled Operative:	meat cutter, assembler, machine operator, welder, truck driver
15	Professional--Arts/Entertainment/Media	actor/actress, artist, writer, athlete
16	Professional--Medical: DOES NOT INCLUDE PHYSICIANS	registered nurses, medical assistant, social worker
17	Professional--Engineer:	mechanical engineer, electrical engineer
18	Professional--Physician:	dentist, neurologist, psychiatrist
19	Professional--Legal:	lawyer, judge
20	Professional--Other:	clergyman, scientist, college professor
21	Proprietor/Owner--Retail/Hospitality:	store owner, restaurant owner, hotel owner, motel owner
22	Proprietor/Owner--Manufacturing/Construction:	construction contractor
23	Proprietor/Owner--Other:	
24	Protective Services:	detective, police officer, fire fighter
25	Sales:	salesperson, advertising or insurance agent, real estate broker
26	School Teacher:	elementary or secondary school teacher
27	Service:	barber/beautician, janitor, waiter, waitress, practical nurse
28	Technical--Computer related:	computer programmer, computer technician
29	Technical--Non-computer related	draftsman, medical/dental technician
30	Not Working	

TABLE 4.3 -- Mapping of High School and Beyond 4th Follow-Up Survey
Proposed Occupation Codes to Standard SOC codes

Code	Description	Examples	SOC Mapping
01	Clerical-Secretarial:	secretary, typist, file clerk, receptionist	313-315, 319
02	Clerical-Financial:	bookkeeper, bank teller	337-344
03	Clerical-Other:	ticket agent, mail carrier, etc	316-336,345-389
04	Craftsman:	baker, automobile mechanic, machinist, painter, plumber, carpenter	505-549,563-617,634-699
05	Farmer/Farm Manager		473-499
06	Homemaker (without other job)	None	
07	Laborer:	construction worker, car washer, sanitary worker, farm laborer	563-599,864-889
08	Manager/Admin.-Sales/Purchasing:	sales manager, buyer	009,013,016,028-036
09	Manager/Admin.-Government:	local, state or federal	003-006
10	Manager/Admin.-Retail/Hospitality:	store manager/assistant manager, restaurant manager/ assistant manager, hotel manager/assistant manager	243,433
11	Manager/Admin.-Manufacturing/ Construction	line supervisor, quality control supervisor	553-558,
12	Manager/Admin.-Other		007,008,014,015,017-027,037,303-305,307,413-415,448,456,503,613, 633,803,863
13	Military:	career officer, enlisted personnel	590
14	Skilled Operative:	meat cutter, assembler, machine operator, welder, truck driver	703-779,804-859,
15	Professional-Arts/Entertainment/Media:	actor/actress, artist, writer, athlete	183-189
16	Professional-Medical:	DOES NOT INCLUDE PHYSICIANS registered nurses, medical assistant, social worker	095-106
17	Professional-Engineer:	mechanical engineer, electrical engineer	043-059
18	Professional-Physician:	dentist, neurologist, psychiatrist	084-089
19	Professional-Legal:	lawyer, judge	178,179
20	Professional-Other:	clergyman, scientist, college professor	063-[illegible]3,113-154,164-177,
21	Proprietor/Owner-Retail/Hospitality:	store owner, restaurant owner, hotel owner, motel owner	
22	Proprietor/Owner-Mfg/Construction:	construction contractor	553-558,
23	Proprietor/Owner-Other:		
24	Protective Services:	detective, police officer, fire fighter	413-427
25	Sales:	salesperson, advertising or insurance agent, real estate broker	253-285
26	School Teacher:	elementary or secondary school teacher	155-163
27	Service:	barber/beautician, janitor, waiter, waitress, practical nurse	403-407,434-469
28	Technical-Computer related:	computer programmer, computer technician	229,308,309
29	Technical-Non-computer related	draftsman, medical/dental technician	213-228,233-235
30	Not Working	None	

5. Description of High School and Beyond Field Test CATI systems

The CATI program used by NORC for the High School and Beyond fourth follow-up field test is *AutoQuest*, published by MicroTab of Australia. *AutoQuest* provides the following features:

- Display of interviewer instructions, survey questions, and response categories
- Display multiple questions per screen
- Screen displays of "fills" in text based on answers to prior questions or based on data from previous rounds
- Validity checking based on range, type, and comparison to previous answers
- Entry of open-ended or verbatim text
- Branching or skipping based on previous answers and/or on preloaded data
- Capacity to suspend an interview and restart it at another time
- Capacity to review and change a previous response
- A system for call scheduling (TNMS)

The questionnaire for HS&B fourth follow-up made innovative use of several of these features. For example, in order to present a more conversational style of interview, related groups of questions were presented together on one screen wherever possible. The effect was a more streamlined application. Also, response categories were frequently presented as point-and-shoot style menus rather than as lists of text with codes. Finally, over 100 data items were preloaded from previous rounds. These were often presented to the interviewer on a single screen. This form-based presentation allowed the interviewer to efficiently verify each piece of information and, if necessary, to replace erroneous information or fill missing fields.

The interview was implemented as two *AutoQuest* questionnaires. The first questionnaire was used to locate and verify the identity of the respondent. Final outcome codes were collected in this questionnaire. The second questionnaire contained all of the survey questions. The two questionnaires were linked so that with a few key strokes an interviewer could move easily between them. The primary advantage of this arrangement was one of performance. The most frequently used questionnaire was the locating questionnaire, which could quickly display case information. The larger, slightly slower instrument was not accessed until the interviewer had actually contacted the respondent and had obtained the respondent's consent to proceed with the interview.

Call scheduler. The call scheduling system that NORC normally uses for CATI studies, *AutoQuest*/TNMS, was not used in the HS&B field test for two reasons. First,

with small samples call schedulers do not perform efficiently. Second, a small sample does not provide a good test of the system as it functions under a heavy load. For these reasons, it was decided to test the TNMS separately.

A new release of *AutoQuest*/TNMS will be used for the main survey of HS&B. Several of its new features were designed specifically with HS&B in mind. The tests that will be made to insure that the TNMS will meet HS&B main survey needs are described below.

Testing will be done in three phases. The first phase will test the basic features of TNMS, both new and old. The second phase tests the scheduling algorithms, and evaluates TNMS performance under heavy load. The last phase examines side effects, the effects of unexpected keystrokes, and provides another load test.

Phase 1. For phase 1 testing, the existing HS&B questionnaire will be attached to the new version of *AutoQuest*/TNMS. All requested changes will then be made to these questionnaires. Finally, changes that allow access to new features will be made. This will test the downward compatibility of the new software.

Next, the basic features of the new version of *AutoQuest*/TNMS as they relate to our questionnaires will be tested one by one. These tests will include:

- An examination of completed cases for accuracy in data capture
- An examination of suspended (breakoff/retrieval) cases for accuracy in data capture
- A recreation of previous problems to see if they still exist
- A test of retrieving cases based on alternate indexes (new feature)
- A test of jumping from one questionnaire to another (new feature)
- An examination of the accuracy of TNMS reports

A database of these and many other tests has been prepared and will be used to record all test outcomes. Besides capturing test results, information in the database will be used to verify that all tests were actually made.

Phase 2. In Phase 2, two thousand dummy cases will be loaded into a very simple questionnaire. Each case will be loaded with only one piece of information, a value indicating how long to pause before storing the case. The pause times will be calculated to reflect our estimated usage for the main survey. Five testers will use 20 machines to test the behavior of the system under load. The testers will wait for the indicated period of time and then return the case to the system with a new disposition. The following observations will be made:

- Are appointments delivered to a station on time?
- Does the scheduling strategy hide cases in any way?
- Does every case have a fair chance of being worked?
- Are problem cases (such as refusals, language problems, etc.) diverted to the appropriate specialist?

Phase 2 will also be used to decide what the minimum number of free cases should be for the system to function smoothly.

Phase 3. Phase 3 tests the TNMS under field conditions. In Phase 3, five thousand dummy cases will be loaded into the questionnaire described in Phase 1. Twenty interviewers will enter cases all day over a number of days. A programmer will be on hand to record problems that arise.

6. Pretest

Field test data collection occurred in two parts: a pretest, in which the instrument was tested in modules, and a full-scale field test, in which the entire instrument was tested, along with the online coding, online monitoring, and locating procedures. The pretest and field test samples were drawn from among main study respondents. The field test CATI instrument was divided into three modules. Module 1 consisted of all questions on postsecondary education, Module 2 consisted of all questions on employment after high school, and Module 3 consisted of all other questions (e.g. demographics, values, political participation, etc.).

The pretest was divided into five phases. Iterative testing within four of the phases was conducted. For these four phases, part one constituted an initial test of the module, while part two was the test of modifications made as the result of interviewer or respondent comments about the module. Iterative testing was conducted for each module and then for the three modules together.

Sample design and selection. Because the focus of the pretest was on testing specific sections of the questionnaire--in particular the sections concerned with education (Module 1) and employment (Module 2)--we thought it was important for the pretest sample to include cases with differing employment and educational experiences. To meet this objective, we stratified respondents in the third follow-up sample into four groups: Group 1 included cases who reported two or more jobs and at least one education spell in the third follow-up; Group 2 included cases who reported two or more jobs but no education spells in the third follow-up; Group 3 included cases who reported one or more education spells but no jobs; Group 4 included those who reported no education spells and fewer than two jobs. Table 6.1 below shows how cases from these four groups were allocated across the five phases of the pretest. The sample sizes are given in terms of the number of selected cases, *not* the number completed.

TABLE 6.1 -- Distribution of Cases by Group and Pretest Phase					
Phase	Modules	Sample Size			
	Tested	Group 1	Group 2	Group 3	Group 4
Phase 1	Module 1 (Postsecondary Education)	10	10	10	10
Phase 2	Module 2 (Employment)	10	10	10	10
Phase 3	Module 1 & 2	7	8	8	7
Phase 4	Module 3 (Other Information)	8	7	7	8
Phase 5	Modules 1--3	15	15	15	15

Cases were selected randomly within each group and then assigned randomly to one of the five phases. Pretest plans called for completing interviews with about half of the selected cases, or a total of 100, with 25 in each of the four groups. To reduce the cost of the pretest, the pretest cases were selected from among the third follow-up respondents whose addresses had been updated or verified in 1989, during the most recent effort to obtain locating information. There were about 5,900 such cases.

Table 6.2 shows the number of respondents tested at each phase of the pretest. Phase 3 was combined with Phase 5, and the targeted number of cases were completed in all phases except Phase 2. Part 2 of Phase 2 was canceled when the first part revealed no problems with the employment module.

TABLE 6.2 -- Number of cases from phases of the pretest		
	Part 1	Part 2
	n	n
Phase 1	10	10
Phase 2	10	0
Phase 3	8	7
Phase 4	8	7
Phase 5	45	0

Reinterviews. Reinterviews were conducted with 25 of the Phase 5 respondents. The reinterviews were designed to elicit respondent comments concerning various aspects of the interview--such as length of interview and usefulness of the calendar--and to assess reliability of responses to selected items. Results are listed below:

- Nineteen (76%) of the respondents received the calendar and advance letter sent to them before the interview date.

- Of the nineteen that received the calendar before the interview date, only 9 (47%) found the calendar to be helpful during the interview. The other 10 respondents indicated that though they had received the calendar they did not have with them during the interview.

- Ten respondents (40%) said the interview was too long. However, only 2 of these said that the length affected their responses.

- Only 3 respondents found any portion of the interview to be offensive. In each case, respondents objected to a single item concerning either annual income or race.

Interviewer debriefing. At the conclusion of interviewing for Phase 5 of the pretest a formal interviewer debriefing was held to elicit interviewer comments on the data collection instrument. Interviewers and project staff discussed each question in the instrument to determine which ones were functioning properly and which ones required revision. Listed below are the items that were revised based on feedback from the interviewer debriefing.

TABLE 6.3 -- Results of interviewer debriefing		
Question Number	Subject Matter	Change
---	Introduction to questions concerning participation in extracurricular activities at postsecondary institutions.	Question was re-worded to include reference to most recent/current postsecondary institution.
Y4319A	Employer-provided training received by R during the past twelve months	Question was re-worded for clarification. New wording is "During the last twelve months have you received any employer-provided training?"
Y4601A	Sources of Income	Question was shortened to "I will now read a list of different sources of income. Please tell me if you received any income from each of these sources during the past twelve months."
Y4401A01	Marital Status	A response category was added for people who are separated.
Y4324D	Whether R participated in an English as a second language program since 1986	This question was dropped from the questionnaire.
---	Collection of school information prior to 1986	The pretest instrument did not accept data if R attended a school prior to 1986 that he/she had not informed us of in prior rounds. The instrument was revised to accept this information.
---	Collection of job information	The procedures for the collection of job information were altered somewhat. If R indicated that he/she held the same job in two consecutive years, some of the questions asked in subsequent years were repetitive. Steps were taken to implement a skip pattern that skipped the repetitive questions.

Data quality. The reinterview questionnaire repeated some of the questions that were asked in the Phase 5 pretest questionnaire, thus providing the basis for an assessment of data reliability. A number of measures of reliability were computed for the 25 cases. Five of the items and their reliability measures are presented in Table 6.4.

TABLE 6.4 -- Results of interview/reinterview analyses						
	1986 % Match	1986 Correlation	1986 Absolute % Deviation	1990 % Match	1990 Correlation	1990 Absolute % Deviation
Number of Jobs	92.3	---	---	96.2	---	---
Months Employed	84.6	.47	---	96.2	.88	---
Hrs/Week Worked	92.3	.82	---	92.3	.97	---
Months Unemployed	88.5	-.01	---	96.2	.69	---
Annual Income	53.8	.77	19.88	38.5	.99	6.3

It should be noted that the percent match statistic indicates the presence of an exact match. In general, data were more reliable for 1990 than for 1986. The relatively low correlation for reporting of months employed in 1986, along with its modest match quotient, suggests that respondents may have a difficult time recalling this information. Reliability for the same type of information for 1990 seems much better. For months unemployed in 1986, the low correlation is due to the item's extremely small variance and the presence of one or two large differences. For annual income, exact match is low for both years, but the correlations are high, probably indicating differences in the way the respondents rounded income amounts during the two interviews. Judging by the correlations, reliability for income reporting is higher in 1990 than in 1986.

Additional statistics were computed for income. An absolute percent deviation was calculated by dividing the absolute value of the difference between Phase 5 and reinterview income reports by the Phase 5 report. Results are shown in Table 6.4. On average, reports deviated by nearly 20 percent, in 1986 and by a little more than 6 percent in 1990. An average absolute deviation was also calculated. The average absolute deviation was $2,639 (standard deviation, $4594) for 1986, and $1,132 (standard deviation, $1449) for 1990. The deviation for 1990 may be viewed as acceptable when one considers that 68 percent of reinterview respondents indicated that their income reports were accurate to the nearest $1,000. However, the larger deviation for 1986 may indicate that the 1986 income reports are of poorer quality than those for 1990.

The straight difference in income reporting (pretest minus reinterview) is -$997 (standard deviation, $5,231) for 1986 and -$196 (standard deviation, $1,842) for 1990, suggesting either a positive bias during the pretest or a negative bias during the reinterview. Given the fact that the reinterview occurred without the benefit of substantial employment and income context set by numerous prior questions in the actual interview, it seems likely that problems in 1986 income reporting occurred during the reinterview.

During the reinterview, respondents were again asked whether or not they had taken courses for credit since March 1986 and the number of schools beyond high school they had attended since March 1986. For course taking all but three (88.5%) reinterview respondents gave the same response as during the Phase 5 pretest interview. Similarly, 92.3 percent of respondents indicated the same number of schools in the reinterview.

7. Field Test Training

Four field test interviewers received 8 hours of project specific training on September 5 and 6. The main focus of the training was to aid interviewers in developing the skills needed to conduct an interview in the conversational manner required by the High School and Beyond fourth follow-up interview, and to teach the new skills needed to carry out other specialized functions, such as conducting on-line Federal Interagency Committee on Education (FICE) coding and using on-line question-by-question help specifications.

The training was developed to include modules consisting of lecture, demonstration, and hands-on experience using the CATI system. Modules were developed to cover the following subjects: project overview, gaining cooperation, reviewing the question-by-question Specifications, using summary screens/developing conversational interviewing skills, on-line FICE coding. As part of the training, interviewers participated in two mock interviews.

8. Interviewer Monitoring

The HS&B:92 field test featured two innovations in interviewer monitoring: (1) optional remote site monitoring, and (2) a computerized monitoring system designed as a tool for statistical quality control. The remote site monitoring feature enabled NCES to monitor interviewers from Washington, and enabled HS&B management staff to monitor cases from their offices. This was in addition to the monitoring done by interviewer supervisors as part of the statistical quality control plan discussed in the following section.

The computerized monitoring/statistical quality control plan for the HS&B:92 field test had three components: (1) an on-line monitor coding module, (2) a program to randomly sample interviewer behavior, and (3) a coding system for capturing interviewer behavior.

On-line monitoring module. An on-line monitoring module was developed to allow monitors to enter monitoring codes into the computer, rather than recording them on paper. Use of this program will enable the provision of timely data on interviewer performance.

The first screen in this application allows the monitor to choose the mode of data collection. The second screen assigns an *AutoQuest* identification number to each monitoring session. The third screen asks monitors to enter their ID number and displays the current time and date. These are used to reconcile the monitoring assignments with the actual monitoring data collected. The fourth screen asks for the ID of the interviewer being monitored and the status of the station (HS&B interviewing, other HS&B activity, in use for another project, or vacant). The monitoring screens appear only when the monitor selects the HS&B interviewing option. When the other options are chosen the program terminates.

The fifth screen can be reached a number of times in the course of a single monitoring session. This screen captures the activity currently being monitored. Activities are one of four types: Interviewing (QUEX), Locating (LOC), or Gaining Access/Cooperation (CO-OP). Because a single monitoring period may see each of these, some more than once, the program is designed to bring the monitor back to this screen each time he or she finishes a monitoring activity. The monitor also returns to this screen at the end of the monitoring session to select EXIT to finish the session.

If Interviewing is selected as the current activity, the monitor receives a screen capturing the question number and judgments about the activity being monitored. Finally, when the monitor indicates that the monitoring session is finished, a screen capturing summary ratings appears.

Statistical sampling of interviewer behavior. Monitoring periods were arbitrarily set to be fifteen minutes in length. A computer program was developed to randomly select from among all CATI stations designated for HS&B use. The program selects stations and allocates them at random to fifteen minute time segments within a shift. In addition, the number of minutes between monitoring sessions was programmed to vary between eight and 15. The number of 15 minute monitoring periods selected corresponded to about 10 percent of the total amount of time interviewers were scheduled to work on HS&B during a given shift.

At the beginning of a shift, the monitor was given a list of the stations to monitor during each fifteen minute monitoring period selected for that shift. Figure 1 shows a sample monitoring assignment sheet. The assignment sheet assumes that the shift begins at 8:00 AM, ends at 4:30 PM, and that there are five stations available for High School and Beyond CATI interviewing. The first column allows the monitor to check off sessions as they are completed. The second column shows which station to monitor for each monitoring session. The third column provides the telephone number of the station, so that both the screen and the phone line can be monitored.

FIGURE 8.1 Example of a monitor assignment sheet.

Schedule for: MON001
Project: 4532
Date: Thursday August 15, 1991

	Station ID	Phone Ext	Start Time	Stop Time
__	0001	7021	08:12	08:27
__	0005	7025	08:38	08:53
__	0001	7021	09:10	09:25
__	0004	7024	09:36	09:51
__	0005	7025	10:07	10:22
__	0004	7024	10:33	10:48
__	0005	7025	11:02	11:17
	Lunch		11:27	12:14
__	0005	7025	12:15	12:30
__	0005	7025	12:45	13:00
__	0000	7020	13:16	13:31
__	0000	7020	13:44	13:59
__	0005	7025	14:10	14:25
__	0005	7025	14:36	14:51
__	0001	7021	15:03	15:18
__	0000	7020	15:33	15:48
__	0005	7025	16:02	16:17

The fourth and fifth columns show when to begin and when to end each monitoring session. According to the schedule presented in Figure 1, the monitor would begin monitoring station 0001 at 8:12 and end that monitoring session at 8:27. The monitor would have eleven minutes between the first and second monitoring periods before he or she had to monitor again. At 8:38, the monitor would begin monitoring station 0005, and continue to do so until 8:53. Monitoring would continue through the day with a pre-determined lunch period which randomly varied in length.

Coding interviewer behavior. Two basic types of interviewer activities were monitored--interviewing, and gaining respondent access and cooperation. Interviewing was further divided into two subactivities--interviewing from scripted questions (including during the locating module of the instrument), and interviewing from unscripted summary screens. The following dimensions formed the basis for evaluating the quality of interviewer performance on scripted questions: question reading, response category reading, question repetition, providing definitions, probing, and response recording.

For unscripted summary screens, the judgment dimensions were verification of information on the screen, verification of missing information, encouraging respondent use of their HS&B calendar, probing/clarification, and response recording. For gaining cooperation interviewers were judged on each of four dimensions: presentation of information about the study and it's sponsors, informing respondent about confidentiality safeguards, presentation of information about the contractor, and quality of interaction with the respondent. At the end of each monitoring session, interviewers were rated on their reading pace (too slow/just right/too fast), reading cadence (choppy versus fluid), and voice quality (stiff/formal/boring/uninteresting versus natural/conversational/interesting). Finally, interviewers were given an overall performance rating.

For each question, the monitor coded an N, indicating no problems on these dimensions, an E (for error), a D (for deviation), or B, indicating that both an error and a deviation occurred. The criteria for judging E was that the interviewer did not follow the script (or standard procedures) on at least one of the dimensions and as a result may have adversely affected the response. The criteria for judging D was that the interviewer did not follow the script (or standard procedures) on at least one of the dimensions but the response was not likely to be negatively affected (or may have been improved).

9. Field Test

Sample design and selection. The field sample consisted of 110 selections from the 14,659 cases who were eligible for the third follow-up. To test the new instrument on cases with varying employment and educational histories, we again stratified the third follow-up sample using data from the third follow-up questionnaire. As with the pretest sample, we classified cases into four groups: those with two or more jobs and at least one education spell in the third follow-up; those with two or more jobs but no education spells in the third follow-up; those with one or more education spells but no jobs; and those with no education spells and fewer than two jobs.

Prior to sampling, we sorted all 14,659 third follow-up respondents by group and, then within each group, we sorted the individual cases in a random order. We then selected a systematic sample of 110 cases from the sorted list. One case was subsequently dropped because it had already been selected for a pretest sample, leaving a total of 109.

Nonresponse analysis. One hundred and nine cases were selected for the field test sample, of which 73 (or 66.1 percent) completed the interview within the limited 4 weeks of the data collection period. After 8 weeks, 80 (or 73 percent) of the cases were completed. Even though a longer collection period is expected to substantially improve response rates, it is important to determine whether nonresponse bias is likely to distort the results. In particular, it is important to determine how estimates concerning the average time required for various sections of the questionnaire may be affected by nonresponse. This section examines the correlates of field test nonresponse based on the 73 cases completed within four weeks.

Table 9.1 below displays the response rates for various subgroups of the field test sample. The subgroups were defined using data from the third follow-up or earlier rounds. Two variables had a significant relation to nonresponse--educational attainment (Chi-square with 4 df= 10.14, $p<.05$) and whether information on the case's address had been obtained in the most recent updating effort (Chi-square with 1 df= 7.62, $p<.01$). The relation between field test nonresponse and educational attainment largely reflects the particularly low response rate among the nine cases who had still not received high school diplomas at the time of the third follow-up (1986); only two of these nine cases completed the field test interview. Apart from the high school dropouts, there was no apparent relation between nonresponse and educational attainment.

TABLE 9.1 -- Field Participation Rates by Selected Characteristics

Variable	Groups	Response Rate (in percent)	n
Sex	Male	58.7	46
	Female	66.1	63
Race	Black	61.9	21
	White	69.7	66
	Other	59.1	22
Child Flag	No children	65.0	100
	At least one child	77.8	9
SES Quartile	Lowest Quartile	72.0	25
	2nd Quartile	60.9	23
	3rd Quartile	78.9	19
	Highest Quartile	67.6	37
Educational Attainment	No HS Diploma	22.2	9
	HS Graduate	72.6	73
	License, AA Degree	71.4	14
	Bachelor's	70.0	10
Address Information	Updated	82.5	40
	Not Updated	56.5	69
Status in Third FU	Participant	69.3	101
	Nonparticipant	25.0	8
Marital Status	Never Married	70.1	77
	Married	73.7	19
	Separated	40.0	5

The field test completion rate was also markedly lower among cases whose addresses had not been updated during the most recent updating effort (56.5%) than among those whose addresses had been updated (82.5%). Finally, there was also a marginally significant relationship between nonparticipation in the third follow-up and in the field test (Chi-square = 7.23 with 3 df, $p < .07$); of the 8 cases who were nonparticipants in the third follow-up, only two completed the field test interview.

These results suggest that the field test results are likely to be representative of those for the fourth follow-up as a whole; the field test nonrespondents are exactly the same sorts of sample members (for example, dropouts, those with outdated locating information, and nonrespondents in earlier rounds) who are likely to be nonparticipants in the fourth follow-up.

The key issue is whether the field test respondents provide a representative cross-section of those likely to complete the final fourth follow-up interview--in particular, whether the field test respondents are similar to the sample as a whole in terms of the complexity of their educational and employment histories. The field test sample was selected to include persons who had reported different levels of employment and educational activity in the third follow-up. Among those who had reported two or more jobs and one or more education spells in the third follow-up, the completion rate was quite high--84.6 percent (of 39 such cases selected); at the opposite end of the spectrum, among those who had reported no more than one job and no education spells, the field test completion rate was much lower--48.0 percent (of 25 cases). Overall, there was a significant relation between field test participation and field test sampling stratum, which was based on the number of jobs and education spells reported in the third follow-up (Chi-square = 10.96 with 3 df, $p < .02$). Because the number of jobs and education will be a major determinant of the length of the fourth follow-up interview, this final result suggests that the field test sample may over-represent cases with relatively long interviews.

Cleaning of data collected in prior rounds. The field test included an initial trial of a new feature of the fourth follow-up questionnaire--the presentation to the respondent of a summary of education and employment data from earlier rounds. A calendar with summary data on education spells and year by year data on employment was sent to the respondent before the field test interview; during the interview itself, this information was displayed to the interviewer, who reviewed it with the respondent. The respondent was given an opportunity to correct errors, fill in missing items, and update information that had changed since the last interview. The summary had several purposes. First, data on education spells had been created by NCES by linking information across earlier rounds; the summary review provided an opportunity to correct any errors introduced by the linking algorithm. Second, key items from earlier rounds were sometimes missing or the values that were obtained were sometimes implausible (e.g., wages rates). The summary review allowed us to fill in missing values and to correct obvious errors. Finally, the summary was a useful recall aid for collecting

information on education and employment since the last round, reminding respondents of events they had already reported and allowing them to link continuing education spells with spells that had been reported in earlier rounds.

Was the summary review a useful data collection procedure? Table 9.2 suggests that it was; respondents often took the opportunity to change or add information in response to the summary review. For example, 63.5 percent of the respondents corrected information concerning their experiences at the first educational institution they attended after high school (see the third row below).

TABLE 9.2

Proportion of Respondents Changing Information During Summary Review

Item	Percent Reporting Corrections	n
Marital Status	58.5	41
Status as HS Graduate	0.0	65
Educational Experiences		
First Institution	63.5	52
Second Institution	54.2	24
Third Institution	40.0	10
Employment Data		
Job Information for '83	26.5	66
Job Information for '84	29.4	66
Job Information for '85	36.8	66

Educational data. To get a better sense of how the summary was used in the field test, we examined the type of changes made in the education data for the first institution attended after high school. The summary listed seven items for each institution--the location of the institution, the beginning and end date of the student's enrollment in the institution, enrollment status, field of study, degree sought, and whether that degree was obtained. A total of 35 respondents made changes in at least one of these items; altogether, these respondents made a total of 68 changes. Table 9.3 shows how these changes were distributed across the individual items.

TABLE 9.3

Number of Changes Made in First Education Institution Data During Summary Review

Item	Number of Changes
State/City	2
Start Date	3
Ending Date	17
Enrollment Status	1
Field of Study	11
Degree Sought	13
Degree Attained	21

These changes fall into three major types. In some cases, respondents appeared to be correcting an error in the earlier data. The two changes in the location of the institution and the three changes in start date fall into this category. In other cases, respondents were providing information about an item that had previously been missing. Six changes were of this type (three involving the field of study, one the degree sought, and two whether a degree was attained). However, the vast bulk of the changes--52 of them--appear to represent new information that brings the earlier information up to date. For instance, 17 respondents reported changes in "end" dates of their enrollment; these all appear to have respondents who were in school at the time of the third follow-up and who now report they have completed spells at the institution. Similarly, ther were 8 respondents who reported changes in the degree sought, 8 who reported changes in the field of study, and 19 who reported attaining a degree that had not yet been completed at the time of the third follow-up; all of these changes are likely to represent attempts to update the third follow-up data. (The five remaining changes were not readily classifiable into one of the three categories.) These results suggest that the summary review was used more often for collecting new information than for correcting or filling in gaps in the existing data.

Employment data. A similar analysis was conducted on employment data. Table 9.4 lists the employment information that was verified and the changes that were made by year.

TABLE 9.4

Number and Type of Changes Made in Employment Data During Summary Review by Year

Year	# Jobs	Months Employed	Hours per Week	Months Unemployed	Annual Income	All Data
1983	0	3	5	6	7	1
1984	0	3	3	5	9	3
1985	1	7	5	6	11	4
Total	1	13	13	17	27	8

For months employed/unemployed, in 5 instances changes were due to the enforcement of a rule in the CATI program that did not allow the sum of the number of months employed and the number of months unemployed to exceed twelve. For these 5 cases, the rule was violated in the preloaded data and corrected in the field test. It is also interesting to note that fifteen of the seventeen respondents who changed the number of months they were unemployed revised their reports downward. The pattern is not as clearly displayed among the changes to the number of months employed; nine of thirteen respondents revised their estimates downward.

For hours per week employed, one pattern was identified in the revisions made to this item. In about half of the cases (8 of 13) the data entered during the field test replaced data that had been either missing or refused in the data from previous rounds. Several other corrections were made to items that had been incorrectly entered in previous rounds (e.g., 51 hours was changed to 15).

For annual income, as reported in the field test CATI evaluation section, it appears that the wrong data may have been preloaded for this variable. We suspect that total household income was preloaded, rather than the respondent's individual income. The changes made to the preloaded data seem to support that hypothesis. About one half of the respondents (14 of 27) who changed the preloaded data for this item significantly reduced their reported income. Another four respondents provided income data for items that were either refused or missing in the preloaded data. The remaining respondents adjusted their annual income figures upward.

There were eight instances when respondents changed all of the data items for a particular year. Whenever this occurred, the preloaded data contained only 0s (as reported by the respondent during the 3rd follow up interview) or codes for item refusals, and the respondent provided updated data during the field test. Updates of this type were not included in the counts of updates to individual items.

Item frequencies. Item frequencies were examined with two major objectives in mind: (1) to assess item and response option usefulness, and (2) to spot problems with the CATI program. The ability to make item-by-item assessments of item usefulness was limited by the small number of respondents. Still, the following patterns were observed. First, the series of items on extracurricular activities in post-secondary institutions yielded only a few reports of participation in these activities (with the exception of employment). Second, the items that ask about the percentage of requirements fulfilled toward a graduate degree tends to elicit answers that are round numbers (e.g., 50 percent). This is a common problem with such items. Third, the items on ethnic composition also tend to elicit round numbers as answers. Fourth, as is commonly the case with such items, the items on job satisfaction are highly skewed toward the satisfied end. Fifth, the items on various forms of political involvement tend to be skewed to the "never" end of the scale. These results will be considered when deciding which items, if any, will be cut from the main survey.

Item frequencies were also examined to assess whether problems existed with the CATI program. A few minor puzzles were found. For example, the total number of people per household was captured as either 2 or missing. CATI program specifications for this item and for one or two other items with suspicious data will be carefully checked before the main survey.

Section timings. The CATI program was designed such that the number of seconds that elapsed since the beginning of the interview was recorded in a number of places. Median timings for 18 sections of the questionnaire were calculated. The median timings were adjusted to account for the fact that the field test interviewers were judged to be considerably faster than average. Adjusted timings are presented in the following table. More will be said about the implications of the timings for the main study instrument in the recommendations section.

TABLE 9.5 – Timings for sections of the CATI interview

Section	Adjusted Minutes	Topic(s)
1	0.853	What were you doing last week?
2	0.769	Household roster. marital status
3	2.897	High school diploma, review of past ed. spells.
4	2.667	New education spells
5	1.173	Extracurricular activities
6	0.583	Graduate and PSE studies
7	1.033	Educational aspirations. education loans
8	2.735	Review of past job information
9	15.410	Collection of new job information
10	0.203	Armed Forces experiences
11	3.751	Job training
12	2.324	Job satisfaction
13	2.337	Continuing education
14	1.442	Children
15	1.679	Values
16	3.603	Group membership, political participation
17	4.009	Income
18	0.666	Race, racial composition
Total	48.133	

Monitoring Results

For a number of reasons, the field test was not a good vehicle to use to conduct an extensive test of statistical monitoring. First, the sample was very small. Second, most of the cases were contacted and interviewed during the first weekend. During the remaining part of the field period in order to maximize coverage and accommodate appointments HS&B shop hours were scattered and irregular. Finally, cases worked after the initial weekend were difficult to locate and contact, making the likelihood that an interview would be conducted during the randomly selected monitoring period very small. Monitoring data were collected on a number of cases, but the number was quite small and, for the reasons listed above, the results are not indicative of overall quality of interviewing.

Nonetheless, the field test did provide a good test of the monitoring systems. The hardware and software assembled for monitoring performed very well. Shop supervisors found it very easy to generate monitoring schedules. There was no difficulty in connecting to either the video or the voice portions of the interview. The monitoring data collection instrument was found to be easy to use and adequate to the task. The one failure was in attempting to present the monitor with both the video portion of the interview and the monitoring instrument on a single computer. This failure was due to incompatibility between the different software components used in monitoring and interviewing. Monitors instead used two computers side-by-side to watch and simultaneously record data. Alternate software is being explored for the main survey so that monitoring can be conducted using only one computer.

One small improvement has been made to the monitoring instrument as the result of its trial in the field test. Rather than requiring the monitor to score each question as having either an error, a deviation, both, or neither, the program now only captures whether errors and/or deviations occurred. The "neither" category has been eliminated because it can be inferred by the absence of an error or deviation response.

Effectiveness of the Calendar

Results from the pretest reinterview indicated that about three-quarters of the reinterviewed respondents received the calendar, but less than half of those who received them thought that they were helpful during the interview. Questions about receipt of the calendar, its availability during the interview, and its usefulness were also included in the field test. Thirty-four of the seventy-three field test respondents (47%) said they received the calendar. Of those thirty-four who said they received the calendar, fifteen (44%) said they had it available during the interview and eighteen (52.9%) said they found the calendar to be useful. This low rate of availability is in spite of the fact that in the field test respondent letter we emphasized that respondents would need the calendars during interview. However, the judged usefulness of the calendar did not seem to depend on whether the respondent had it available during the interview. Of the

fifteen respondents who said they had received the calendar and had it available during the interview, 8 said it was useful and 7 said it was not useful. Of the nineteen respondents who said they had received the calendar but did not have it available to them during the interview, 10 said it was useful and 9 said it was not useful.

Crude measures of the number of changes in past education and employment spells were created by summing across the items indicating whether each summary screen was correct. These measures were compared for those who had and who had not received the calendars. For past education data virtually no difference in the average number of screen changes was found (received calendar, mean=.7647; did not receive calendar, mean=.7692). For past employment data slightly more changes were made by respondents who did not receive the calendar (received calendar, mean=.7353; did not receive calendar, mean=1.0513). This latter difference was not statistically significant ($F(1,71)=1.60$).

Locating

Evaluation of NCOA. When individuals, households, or businesses change locations, they usually complete a Change of Address form notifying the United States Postal Service (USPS) of the move. The USPS compiles these change of address forms into a master file, called the National Change of Address (NCOA) database. Address changes remain in the NCOA database for three years and the file is updated every two weeks. In August, NORC subcontracted with a firm that is licensed by USPS to access the NCOA database.

NORC provided the firm with the most recent names and addresses for every respondent, his/her parents, and up to 2 other contacts. In all, NORC submitted 53,128 records to be checked against the NCOA database.

The following summary statistics are based on all records submitted. Of the 53,128 records processed:

8.9% (or 4,758) records matched records in the NCOA database;
84.3% (44,811) did not match records;
6.6% (3,559) were identified as near matches.[1]

Before producing the field test case materials, NORC updated its records with information obtained from the 4,758 matches.

While the firm could not provide change of address information on near matches, it did provide reasons why information could not be returned. For instance, in 2,640

[1] For a match to occur, each name and address must meet specific criteria. As a licensee, the firm may not provide change of address information if those criteria are not met.

instances, a change of address could not be returned because the first name of the individual submitted by NORC did not match the first name of the individual in the NCOA database. In such a situation, a family member may have moved and is in the NCOA database, but the individual we seek is not. NORC plans to exhaust such leads with follow-up contacts to the local post office and former neighbors.

Locating experiment. The design of the field test incorporated an experiment designed to determine the cost effectiveness of using an outside vendor for some of the locating work on High School and Beyond. Each case received first stage locating (enumerated below) by the interviewers before being classified as an "unlocatable" case and sent to a locating specialist.

FIRST STAGE LOCATING:

- **Calls to the respondent number listed on locator sheet**
- **Calls to the parent number listed on locator sheet**
- **Calls to other numbers listed for relatives/friends on the locator sheet**
- **Calls to Directory Assistance to obtain information about the respondent**

At the end of the third week of field test data collection 41 cases remained unlocatable. These cases were divided at random into two groups; 21 were assigned to NORC locating specialists, and 20 were assigned to an outside vendor. At the beginning of the fourth week of data collection NORC locating specialists began to work on the "unlocatable" respondents in the NORC group. Respondents located by the locating specialists were immediately routed to an interviewer who attempted to contact and interview the respondent, thus the cases were worked on a flow basis.

The unlocatable cases assigned to the locating staff in NORC's Telephone Center received second-stage locating. The custom tailored locating strategy used for the High School and Beyond fourth follow-up consisted of the following steps:

SECOND STAGE LOCATING:

- **Calls to Directory Assistance to obtain information about the respondent's parents**
- **Calls to Directory Assistance to obtain information about the friends/relatives listed on the locator sheet**
- **Credit bureau address update services**
- **Library/CrissCross directories.**
- **Respondent's high school**

- **College alumni and registrars offices (if respondent attended a postsecondary school)**
- **Post office address update**
- **Department of Motor Vehicles**
- **Utility companies**
- **Board of registrar**
- **Social Security Administration**
- **Welfare office**

The second group of 20 unlocatable cases was sent to an outside vendor for locating. In order to make it difficult to determine which persons on the list were High School and Beyond respondents the list was "salted" with cases which did not belong to the High School and Beyond sample.

Results

The NORC Telephone Center locating staff spent a total of 22.25 hours on activities associated with locating the group of twenty-two unlocatable cases that they were assigned. Their total costs for all locating tasks was $163.43 (includes fringe but not overhead). During that time they were able to locate eleven cases (50%) and interview 7 (31.8%) of those cases. Thus, locating cases in the Telephone Center required the following level of effort:

Hours per located case: 2.0
Percent of cases located: 50%
Cost per case: $14.80

The locating effort conducted by the outside vendor fell very short of initial expectations. Although the vendor had promised approximately a seventy percent "hit rate", only two (10%) of the twenty cases they were sent were fully located (address and telephone number provided and confirmed). They were able to supply partial and unconfirmed data for other cases, but these cases then required additional locating work by the NORC Telephone Center.

The result is clear without even considering cost factors. The outside vendor was unable to deliver the level of service that they promised, and for this reason will not be considered for use on the main survey. Because the NORC Telephone Center was able to locate a larger proportion of cases than the outside vendor all locating work for the main High School and Beyond study will be conducted by the NORC Telephone Center.

10. Evaluation of Field Test CATI System

The CATI system establis' ed for use in the field test differed in several ways from other systems developed by NORC. First, in addition to collecting new data, interviewers were required to verify data collected in previous rounds of the study. As a result, the previously collected data was preloaded into the questionnaire so that it could be used by the interviewers. This process lead to the first of the innovations in the HS&B CATI system--reliance on a more conversational mode of interviewing. For the questions that verified past information, interviewers were not provided with a scripted question, but rather were asked to elicit responses in a more conversational manner. Also, the HS&B CATI program required the interviewers to assign appropriate FICE codes to each new school for which they collected data. Finally, the CATI program provided interviewers with online question-by-question specifications (q-by-q's) for questions that were difficult to administer.

At the conclusion of the field test data collection period, a formal debriefing session was held to solicit feedback about the CATI system and the interview process from the interviewers. During that debriefing, interviewers were asked to provide feedback about the interview in general, the new procedures (e.g., conversational interviewing, online FICE coding, etc.), specific items in the questionnaire, and the training procedures. The results of this debriefing are summarized below.

General CATI structure. The structure of the field test CATI instrument differed in some ways from the main instrument CATI system. As a matter of convenience, field test interviewers were asked to perform some tasks that will be automated for the main survey. For instance, the field test CATI instrument relied on the interviewer to move from a window containing the locating and respondent verification portions of the questionnaire to the window containing the actual body of the questionnaire.

All of the problems that interviewers reported with the general structure of the CATI instrument are problems that are easily resolved by the implementation of the main survey CATI instrument. For instance, the locator and respondent verification portions of the instrument will be contained in the Telephone Number Management System (TNMS) portion of the main survey CATI instrument. This greatly simplifies the process for moving between this portion of the questionnaire and the actual body of the questionnaire.

Conversation mode interviewing. Interviewers reported that they easily adapted to the conversation mode interviewing technique and that it aided the flow of the interview. In practice, the interviewers also adopted a more conversational form of interviewing in the locating and respondent verification portion of the questionnaire. Monitors of interviews reported improved rapport, better flow (than observed in other CATI systems), and low error rates.

Verification of previously collected employment data. Interviewers reported that much of the data in the preloaded employment questions were revised by the respondents in the field test. However, most of the changes were required in one particular data item--annual income. It appears as if the wrong variable was selected (i.e. the annual income for the respondent's entire household, rather than the respondent's individual annual income). However, interviewers found that procedures for changing data on these screens were very easy to follow and reported no problems in making the changes.

Verification of previously collected education data. Interviewers also reported that respondents did change a considerable amount of data on these screens. Again, the changes seemed to cluster into two variables. Respondents seldom changed data concerning a school name or location. The vast majority of the changes made were either in the dates of attendance or the major field of study. Once again, interviewers reported that the procedures for making such changes were simple and easy to follow.

FICE Coding. In general, interviewers reported no problems with their ability to properly assign FICE codes to the schools for which we received information. However, interviewers did report several problems with the procedures in place for performing on-line FICE coding of schools. While the software functioned properly the majority of the time there were times when mechanical problems (software interactions) were encountered. Steps are being taken to minimize these problems for the main survey.

Collection of new employment data. Generally speaking, this was the most problematic portion of the CATI instrument. Interviewers reported that the flow of the interview was greatly slowed when respondents were asked to provide information about jobs since 1986. Because respondents were being asked to recall employment data for the past five years, this trend is rather easy to explain. However, the structure of the CATI program also played a role in bogging down the interview at this point.

Because employment data is collected on an annual basis in the questionnaire, this section seemed very repetitive to respondents who have held the same job since 1986. This problem was identified during the pretest interviewing and makeshift improvements were made for the field test. These makeshift changes were only somewhat effective.

Preserving the data elements (employment status, earnings, industry/occupation, and training), the CATI screens for collection will be substantially streamlined (see chapter 11).

School data. Interviewers reported no problems collecting data either on schools that were attended by respondents since the date of last interviewer or were attended earlier, but missed at the time of the last interview. In either case, this information was simple for the interviewers to collect.

Other data. Although interviewers did report minor problems with other items in the questionnaire, they reported no general problems in the collection of data for other questions.

On-line question-by-question specifications (q-by-qs). As mentioned earlier, the CATI program also included on-line question-by-questions help screens for the interviewers to use as reference. Not every screen in the CATI program had a q-by-q attached. Rather, the q-by-q screens were available for the following types of question screens:

- Screens containing terms which needed clarification or definition.
- Screens which asked interviewers to perform more difficult or unusual procedures (i.e. "code all that apply" questions)
- Screens which contained questions that had set data collection rules to be enforced (i.e. in any given year the sum of number or months employed and number of months unemployed must be equal to or less than 12)

Interviewers found the on-line q-by-qs very easy to use. The only complaint was that the q-by-qs were not comprehensive enough. During the interviewer debriefing session information was collected which would be used to supplement the q-by-qs for the main study.

11. Modifications for Main Study

This section summarizes findings from the field test and presents modifications adopted for the main study.

Conversation mode interviewing. Both pretest and field test interviewers were unanimously comfortable with conversational mode. In addition to the flexibility needed to discuss data elements, the rapport with respondents seemed to be very positive. Finally, conversational mode interviews flowed well and were judged to be faster than rigid methods. These positive evaluations of the technique given by the interviewers were sufficient to extend its use beyond the main CATI to the introductory portion of the interview.

Identification of respondents will be shifted to conversational mode, improving the timeliness of the process.

Calendar. In addition to the extensive programming and production resources required to produce the calendars, they were infrequently used. Only about twenty percent of the field test sample had the calendar available during the telephone

interview. Further, findings concerning the accuracy of preload data on employment and earnings were disappointing. Therefore, the calendars were dropped from the main study.

Locating. Almost 40 percent of the field test cases required additional (second stage) locating. Based on this result, it appears that a substantial locating effort will be necessary for the main study. Resources allocated for calendars will be diverted to locating.

All locating work for the main survey will be completed by the staff in the NORC Telephone Center. The quality of the locating information received from the outside vendor during the field test locating experiment was inadequate and required further work by NORC staff. In contrast, the quality of the locating work performed by the NORC locators was very high.

Before full-scale data collection begins, NORC will identify cases that have been classified as unlocatable in past rounds. These cases will go directly to locating specialists for second stage locating. In addition, the CATI interviewing staff will work through the main survey sample in such a way as to ensure that cases requiring second stage locating are identified as early in the field period as possible.

Interview length and item refocusing. An important function of a field test was to assess the length of the interview. For HS&B:92 the target length for the interview was 45 minutes. Since the field test CATI averaged 48 minutes, the following modifications will assure a proper level of burden during the main survey.

Section:	**Verification and collection of postsecondary education spells**
Modifications and rationale:	Verify highest degree attained collected from all spell data.
Section:	**Verification of information about jobs and earnings before 1986**
Modifications and rationale:	Rather than verifying all preloaded aggregate information, collect only missing items, or correct and/or verify out-of-range responses. The field test results indicated that most non-missing, within range preload information was correct.
Section:	**Collection of information about jobs since 1986.**
Modifications and rationale:	Collect employment/unemployment spells for the years 1986 to 1992. Several of the attributes of the job held longest each year were refocused. On-line industry and occupational coding will be used. Training topics were limited to those that occurred with sufficient frequency.
Section:	**Extracurricular activities**
Modifications and rationale:	Participation in varsity athletics, receipt of athletic scholarship, and the on-campus jobs during spells of postsecondary education were combined with the education spells.

Section:	**Job satisfaction**
Modifications and rationale:	The section relating to opportunity for advancement, job security, and interpersonal relations were focused to make these items more pointed to current job.
Section:	**Values**
Modifications and rationale:	Refocus and reformat the value items to agreement with major factors in values set.
Section:	**Political participation**
Modifications and rationale:	Reconfigure the section to emphasize voter registration, voting behaviors in the 1988 Presidential election and the 1990 Congressional elections.
Section:	**Income**
Modifications and rationale:	Reconfigure questions asking about sources of income for respondent and respondent's spouse. Refocus the questions on automobiles to emphasize the more directly useful question on balance of automobile loans as a measure of indebtedness.

Preloads and recursive fills. With slight modifications the preloaded information proved to be relatively accurate for spells of education. The 1982-86 employment data were less accurate and verifications for missing and out-of-range values will be employed. Recursive fills within education and employment sections worked well and will be continued.

Skips. Additional skips will be implemented for the full-scale CATI. Based on the types of postsecondary institutions attended, data concerning extracurricular activities will be focused. Based on degree attainment, data concerning graduate/first-professional access and choice will be focused. Finally, based on labor force participation, data on employment will be focused.

Data quality. Other than locating problems, which limit response rates, data quality seemed to be higher than for prior HS&B collections. In light of the complexity of the data elements, the choice of CATI rather than paper and pencil procedures, was well-justified. The number of skips, preloads, and recursive fills within the CATI would require substantially more burden if paper and pencil questionnaires were used.

The location problems, due mainly to lack of contact with most respondents since 1986, are formidable. Fortunately, telephone coverage appears to be quite good for the complete set of tracking information. The relatively short field period limited the contact rates and the longer period for the full-scale should improve response rates. If location/tracking resources limit overall response rates, subsampling procedures will ensure adequate effective response rates.

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