The National Health Interview Survey Program: Report to the NCHS Board of Scientific Counselors and its NHIS Review Panel

Last updated (minor corrections only, to finalize) October 23, 2008
Previously updated April 25, 2008

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1. INTRODUCTION

Background

The National Health Interview Survey (NHIS) was created as a result of the 1956 National Health Survey Act, Public Law 652, which was signed by President Eisenhower on July 3, 1956. The Act stipulated that "The Surgeon General is authorized to make, by sampling or other appropriate means, surveys and special studies of the population of the United States to determine the extent of illness and disability and related information…and…in connection therewith, to develop and test new or improved methods for obtaining current data on illness and disability and related information."

The NHIS went into the field for the first time in July 1957. From the beginning, the survey was designed to serve a diverse community rather than focusing solely on selected policy or program needs. Topics presently covered by the relatively stable core of the survey include health status, utilization of health care services, health insurance coverage, health-related behaviors (such as use of tobacco and alcohol), risk factors, and demographic and socio-economic information. In addition, supplemental questions on special topics are added to the NHIS questionnaire each year, sponsored by government agencies other than NCHS.

Data are collected about all family members by the Family Section of the NHIS core, from one randomly selected adult by the Sample Adult Section, and about one randomly selected child by the Sample Child Section. To improve precision of estimates for certain minority subpopulations, the NHIS has been oversampling black persons since 1985, Hispanic persons since 1995, and Asian persons since 2006; extra households containing such persons are screened into the sample. Also, since 2006, the probability of selection as the sample adult has been increased for persons aged ≥65 who are Hispanic, black, or Asian; such persons are now twice as likely as other adults in the family to be selected as the sample adult.

The NHIS is in the field collecting data almost continuously, stopping interviewing only briefly for a couple of weeks each January so that the interviewers can participate in refresher training at which they learn about what is new in the next year's NHIS and brush up on difficult parts of the interview. Trained interviewers (officially called Field Representatives) from the U.S. Bureau of the Census conduct in-person interviews using computer-assisted personal interviewing. If the interview cannot be completed during the initial in-person visit, the interviewer returns to the household later; if necessary, the interviewer is permitted to complete the interview by telephone. The Census Bureau has been the contractor for fielding the NHIS since the inception of the survey.

The NHIS is administered in either English or Spanish; the interviewer can toggle back and forth between the two versions of the questionnaire in the survey instrument.

The NHIS sample is designed to be representative of the noninstitutionalized civilian population of the United States. Figure 1 is a graph of the number of persons in the NHIS sample from 1962/63 (the earliest survey year for which microdata files were permanently retained) to 2006. The sample size has ranged from a low of 62,052 persons in 1986 to a high of 139,196 persons in 1966. Table 1 shows the numbers of persons and the numbers of households in the sample in 2000-2007. Table 2 shows how, like most large surveys, NHIS has seen its response rates decrease over recent years.

Annually, DHIS releases NHIS microdata and documentation to the public free of charge on the NCHS Website. Prior to release, the data undergo careful editing, imputation (for selected variables), and

beta testing, and authorization to release is obtained from NCHS' Disclosure Review Board. DHIS staff members also analyze NHIS data, present their results at conferences and seminars, and publish their analyses in internal and external reports and articles.

The uncountable numbers of users of NHIS data and analytic products include researchers, policy makers, government and non-government programs, teachers, students, journalists, and the general public. Extensive NHIS documentation, NHIS microdata, and analytical NHIS products are available to them on the NHIS Website at http://www.cdc.gov/nchs/nhis.htm. In particular, see the 111-page 2006 Survey Description document at

ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Dataset_Documentation/NHIS/2006/srvydesc.pdf

and the various parts of the 2006 NHIS questionnaire at

ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Survey_Questionnaires/NHIS/2006/English.

Division structure

NCHS' Division of Health Interview Statistics (DHIS) conducts the NHIS and other interview surveys. According to the official Functional Statement describing DHIS, "The Division of Health Interview Statistics (DHIS) plans and administers complex data collection systems and analytic programs and conducts a program of methodologic and substantive public health research activities based on the collection of data from nationwide and special health interview surveys." DHIS is divided into an Office of the Director and three branches. See Appendix A for a staff list. Summaries of the functions of the Office of the Director and the three branches follow:

- Office of the Director (OD): The Office of the DHIS Director houses staff involved in activities that are cross-cutting across the division. Thus, the OD staff consists of the DHIS Director, Deputy Director, Acting Associate Director for Science, a Special Assistant for Data Quality and User Services (whose duties include managing the Data Requests program – see Section 6), a Public Health Analyst (who assists with managing the NHIS budget, organizing conferences and workshops, and outreach activities), a Mathematical Statistician, and the Division Secretary.
- Survey Planning and Special Surveys Branch (SPSSB): Major responsibilities of this branch include collaborating with NHIS survey sponsors to create questionnaire modules on special topics, identifying new sponsors and new topics for questionnaire modules, researching topical information to develop survey questions or identify existing questions and assess their use, working with the NCHS Questionnaire Design Research Lab to conduct cognitive testing of questions, working with the Census Bureau to develop field tests of questions and experiments involving procedures, providing training materials to Census and commenting on materials developed at Census, creating input specifications used to program the questionnaire, test CAPI programs for questionnaire administration, collaborate on the creation of output specifications by which the data files are created, review and analyze quality measures including contact history data and audit trail information, and analyze data and present findings in writing and at professional forums.

  Another major activity of SPSSB is to conduct surveys using the State and Local Area Integrated Survey (SLAITS) mechanism and to collaborate on the National Immunization Survey (NIS), which uses the same sampling frame as SLAITS. The SLAITS and NIS programs are being reviewed separately and will not be further described in this report.

- Data Production and Systems Branch (DPSB): The responsibilities of this branch include designing, developing, implementing, and administering survey and information technology systems used to collect, process, and disseminate the National Health Interview Survey data; ensuring that NHIS historical files and documentation are available to the user community; and ensuring that the NHIS complies with all federal mandates related to Security (Certification and Accreditation), Confidentiality and Capital Planning Investment Control (CPIC).
- Data Analysis and Quality Assurance Branch (DAQAB): The functions of this branch are as follows: (1) Conducts research and analysis on topics relevant to public health using National Health Interview Survey data; (2) Integrates, analyzes, and disseminates data from the National Health Interview Survey; (3) Facilitates linkages across the National Health Interview Survey components and with other data bases; (4) Prepares and presents scientific papers on health issues using data from the National Health Interview Survey; (5) Collaborates in the development and application of analytical and methodological techniques and guides for the division's data collection programs; (6) Identifies substantive, methodological, and technological research needs pertaining to health interview survey data; (7) Serves as the NCHS resource on health interview survey data and their use in assessing the prevalence and incidence of disease and associated disabilities, health status, health-related behaviors, health insurance status, and other health- and well-being-related topics; (8) Collaborates in the questionnaire development process for health interview surveys; (9) Provides consultation, technical assistance, and liaison to academia, other research groups, and state, federal, and international entities concerning data needs and the definitions and uses of health interview survey data.

2. SURVEY PLANNING AND QUESTIONNAIRE CONTENT

The core

Questions in the NHIS core are generally stable from year to year, the last major revision of the core questionnaire having been implemented in 1997. The core questions provide a rich assortment of multivariate data. Mindful of the trade-off between maintaining continuity of questions over time and maintaining appropriateness of questions as society and the health care system change, DHIS fine tunes or revises the core questions when necessary. For example, new questions were added late in 2004 about receipt of flu vaccination by the newly-available method of inhalation, to distinguish that from flu shots. Without such a change, the old questions on flu shots would have yielded ambiguous, unusable data. As another example, some of the refinements introduced by the 2006 Diabetes Supplement were adopted for the core beginning in 2007; additional terms were introduced that had been used increasingly to describe incipient diabetes. Also, new core questions were added in Quarter 1 of 2006 about participation in the new Medicare Part D drug benefit program that was implemented in January 2006. DHIS staff must maintain an awareness of changes in public health to ensure that the core questions remain relevant and useful.

Supplements

To complement the stable general health data provided by the NHIS core, supplements are added to the questionnaire each year to collect topical, specialized information. These supplements are co-sponsored on a cost-recovery basis by agencies outside NCHS. DHIS describes these agencies as "co-sponsors" because of the intense involvement of DHIS staff in working with the co-sponsors to develop the supplements and because of the substantial value to a supplement added by the NHIS infrastructure and the NHIS core's rich multivariate data. In any given year, an assortment of NHIS supplements generally utilize a total of about one-third of the one hour that it takes, on average, to conduct an NHIS interview. A few examples of supplements fielded in recent years follow.

- 2008 Balance and Dizziness Supplement
  Co-sponsor: National Center for Deafness and Other Communicative Disorders, NIH
  Topics include symptoms of balance/dizziness problem, difficulty with activities due to problem, duration of problem, causes of problem, treatments tried, severity of problem, limitations due to balance/dizziness problem, days of school/work missed, and number, cause, and severity of falls.
- 2008 Oral Health Supplement
  Co-sponsor: National Institute of Dental and Craniofacial Research, NIH
  Topics include the physical condition of mouth and teeth, being self-conscious or embarrassed about the condition of mouth/teeth, work hours missed for dental care, seeing dentist or doctor for dental problems, oral cancer screening exams, and various dental problems.
- 2007 Complementary and Alternative Medicine Supplement
  Co-sponsor: National Center for Complementary and Alternative Medicine, NIH
  Adult and child components collect information on 17 main categories of complementary and alternative medicine (CAM), e.g., acupuncture, natural herbs, yoga. Topics include costs of CAM use, reasons for using or not using CAM, disclosure to conventional health care providers, the relationship between CAM use and conventional care, and use of CAM for specific health problems or conditions.
- 2006 supplementary questions from the Healthy People 2010 Program
  Co-sponsors: CDC and NIH
  Topics included stroke, arthritis, and diabetes.
- 2005 Cancer Control Supplement
  Co-sponsors: National Cancer Institute, NIH & National Center for Chronic Disease Prevention and Health Promotion, CDC.
  Topics included diet and nutrition, physical activity, tobacco usage, cancer screening, genetic testing, family history, use of indoor tanning device by children, etc.
  This large supplement is scheduled to be repeated (with some modifications) in 2010.
- 2004 Children's Mental Health Supplement
  Co-sponsor: National Institute of Mental Health, NIH
  Contained the Strengths and Difficulties Questionnaire, Extended version (the SDQ-EX), which includes 32 questions asked of a parent/guardian about the child.

Lists of NHIS supplements and their co-sponsors are available at
http://www.cdc.gov/nchs/about/major/nhis/co-sponsors.htm.

The planning process

The Survey Planning and Special Surveys Branch often begins years in advance to solicit co-sponsors for adding supplementary questions to the NHIS. Supplements can be as brief as one or two questions, or they can be detailed and lengthy, lasting up to 20 minutes (and sometimes a bit longer). Some supplements are included on the NHIS for one year and never conducted again, some occur on an occasional basis, and some have an established periodicity such as every 5 years. Once a co-sponsor and funding are identified, planning staff meet with the co-sponsor to delineate the analytic goals of the supplement. Staff members conduct background research on the topic to become familiar with the science and to learn what previous research has shown. Previously-used questions on the topic are collected and reviewed, and a draft questionnaire is compiled and circulated. The co-sponsor has numerous opportunities to review and comment on the questionnaire as close interaction with the planning staff is highly supported.

Topics that have not been widely used in other in-person surveys usually undergo extra developmental work. Similarly, topics that are known to be problematic usually undergo additional testing. Testing can take several forms. Most commonly, planning staff work with the NCHS Questionnaire Design Research Lab (QDRL) to conduct cognitive interviews or focus group interviews. This testing is particularly useful for the initial question development. A more expensive and less often used approach is to conduct a pretest, which involves simulating an interview in the field, with observers or recordings used to identify problems. Regardless of the level of testing involved, it is led by planning staff and often observed by the sponsor.

Prior to testing and prior to the fielding of the actual survey, clearances are needed from the Office of Management and Budget and the NCHS Research Ethics Review Board (RERB, previously called the Institutional Review Board, or IRB). Preparing the clearance documents is a responsibility of the planning staff.

Once a supplement is final, planning staff compile input specifications, which define the universe, skip patterns, range of possible responses, and other criteria for each question. These specifications, along with the core specifications, are entered directly into the system used by the Census Bureau to produce the Computer Assisted Personal Interview (CAPI) questionnaire. Time must also be included in the schedule to translate the English version of a new supplement into Spanish. Testing the CAPI program using hypothetical scenarios takes several weeks of intense effort to ensure that all paths are working as expected. Similarly, the output specifications that define how the data will appear on the data file require testing to ensure that there are no flaws in the logic or programming.

Also in preparation for the debut of a new version of the NHIS, materials such as training scripts, training software, training videos, background information, and supplement-related materials for interviewers to hand out to respondents are identified, compiled, and/or created by planning staff and/or Census. "Refresher training" for experienced interviewers is conducted by the 12 Census Regional Offices in classrooms across the country during the first two weeks of January, which is why the NHIS is not in the field at that time. In these classes, interviewers receive instructions about new supplements and about other topics in need of review. All training materials developed by Census are reviewed by planning staff. In recent years, self-administered home-based training, a less preferable mode of instruction, has twice been substituted for classroom training because of tight fiscal constraints (see Section 7).

Planning staff also spend substantial time conducting qualitative and methodological research. Most of the data they analyze come from the survey's back end. NHIS paradata are rich sources of information, allowing analysts to examine the entire interview experience (see Section 4).

Recent improvements to questions on income and Social Security numbers

During 2006, DHIS conducted a field test of newly-developed questions with the objective of improving the existing NHIS income questions. As a result, new income questions were fielded on the 2007 NHIS that produced more useful income data and lower rates of item nonresponse. In 1997-2006, the follow-up questions asked respondents who initially did not answer an open-ended question about the amount of the family's income in the last calendar year to choose one of 44 pre-determined income intervals on a flash-card. The new approach implemented in 2007 updated the interval boundaries and utilized an unfolding bracket method; a series of questions ask the respondent to narrow down the family income within broad groupings (e.g., >$50,000 or ≤$50,000, and then if ≥$50,000, >$100,000 or ≤$100,000, etc.). The 2006 estimates showed that 29.5% (weighted) of persons had an unknown response for the ratio of the family's income to the federal poverty threshold. However, in the first two quarters of 2007, only 17.2% (weighted) of persons had a unknown response for that ratio.

Also field tested in 2006 was a new way to ask respondents for Social Security numbers: asking for only the last 4 digits of social security numbers. This approach was adopted on the 2007 NHIS, and it produced much lower item nonresponse rates, without (we anticipate) reducing the ability to link NHIS data to other files such as the National Death Index. In 2006, only 35.6% (weighted) of sample adults reported their nine-digit SSN, while 58.2% refused to provide the information. The latter figure is significant in that sample adults who refused were no longer eligible for having their survey data linked with health-related records of other government agencies. Through the first two quarters of 2007, 52.4% (weighted) of sample adults who received the new four-digit SSN question reported the partial identifier and gave consent to record linkage. An additional 17.8% who failed to report the partial identifier also gave consent to record linkage. Thus, in addition to higher (partial) SSN reporting rates, new consenting procedures implemented in 2007 have significantly increased the number of sample adults eligible for record linkage.

3. DATA PRODUCTION AND SYSTEMS

Re-engineering of NHIS data production systems

During 2001-2003, DHIS re-engineered the NHIS data production systems for the 2004 NHIS data collection year in order to capitalize on new technologies such as those used for computer assisted personal interviews (CAPI). Re-engineering positively affected many aspects of the survey, including data collection, post production, dissemination, and usability, resulting in streamlined procedures that generated better and more timely data. Activities of the NHIS re-engineering project included migrating the survey instrument from antiquated DOS-based CAPI software (CASES) to modern Windows-based CAPI software (Blaise), as well as adopting the use of data base technology. The Census Bureau partnered closely with DHIS on the re-engineering project. The NHIS re-engineering project was accomplished at a cost of $5,000,000 (excluding DHIS salaries) over the three-year period. During that time, NHIS staff and Census staff successfully juggled the simultaneous demands of re-engineering and normal, ongoing NHIS data production. End results included a substantial increase in

timeliness of the annual microdata release (see Section 4) and a higher quality product due to efficiencies gained through increased automation.

The data production process

NHIS data production for any given NHIS data collection year is about a two-and-a-half-year process, handled jointly by NCHS and the Census Bureau. Following the question development phase (see Section 2), NCHS staff are responsible for post production work (edits/clean-up, creating files and documentation, etc.). Census staff are responsible for putting together the NHIS sample, developing the survey instrument (executable Blaise software that is loaded onto the interviewers' laptop computers), survey operations (field training and data collection work), and some initial post production work. During Year 1, specifications for questionnaires (new supplements and changes to core components) are developed by NCHS staff and input into a database. Census staff review and enhance the specifications in preparation for instrument authoring, develop the Blaise survey instrument, integrate with the Census case management software, and test the executable programs prior to implementation. During Year 2, data are collected by interviewers located in 12 Census Regional Offices throughout the U.S. During Years 2 and 3, as the data come in from the field, Census processes them (applying generic edits such as valid code checks using automated processes) and transmits them to DHIS several times a year over a Secure Data Network (SDN). NCHS staff conduct the bulk of the post production work, which includes quality review and analysis, customized edit/clean-up procedures, creation of documentation, and reformatting the data into in-house and public-use files. Both analysts and programmers review the data and documentation, prepare ASCII files, and prepare prototype input statements for SAS, SPSS, and Stata users. An output specification database houses the documentation, such as variable layouts and frequencies, for the data files. NHIS public use data are now released in June of Year 3 (see Section 4).

Health insurance coding: Health insurance is a key NHIS topic, with much attention devoted to that subject on the questionnaire and in the DHIS analytic program (see Section 5). The annual health insurance data coding process begins with updating the private health insurance plan names in the DHIS-developed health insurance plan name database, using information from about one dozen periodical health insurance directories that are regularly purchased by DHIS. The completed database consists of about 11,000 plan names, along with plan types, enrollment sizes, and other plan characteristics. The plan name database is used by the Constella Group, LLC, an outside contractor, to do supplementary coding of NHIS health-insurance-related variables on insurance coverage status and type of insurance coverage. Supplementary coding of variables pertaining to Medicare and Medicaid, HMOs, and other government plans are done by in-house DHIS staff. The health insurance coding process has been streamlined through automation over the past few years, greatly reducing the time needed to process these data.

Industry/occupation coding: Industry/occupation data are coded by the Census Bureau using a modified version of the North American Industry Classification System (NAICS) and the Standard Occupational System (SOC). The less detailed modified version is needed due to the level of granularity on industry and occupation in the NHIS survey. Occupation and industry information released on public use files is less detailed than on in-house files available in the NCHS Research Data Center due to confidentiality concerns.

Injury and poisoning coding: Injury and poisoning episode data are coded by the Constella Group, LLC, an outside contractor, using the International Classification of Diseases (OCD-9-CM) system and the External Cause coding system (E-codes).

Imputation

DHIS chooses to perform imputation on a limited number of variables. Race and ethnicity are imputed when responses are unknown because those variables are used to calibrate NHIS totals (when creating weights) to known population totals provided by the Census Bureau. Income is imputed because of its high nonresponse rate, a common problem for surveys. Dates of the occurrence of injuries and poisonings are imputed to provide more useful data for analysts. DHIS imputation activities are summarized below.

Race and ethnicity: Data on race and ethnic (Hispanic) origin are edited in the DHIS on a quarterly basis to produce the variables that appear on our data files. When the raw data are received by DHIS from the Census Bureau, responses that do not initially match any of the existing categories are back-coded where possible. After a basic check for valid responses, race and Hispanic origin recodes are created based on specifications developed by NHIS staff. Hot-deck imputation of selected race and ethnicity variables are done for persons with missing values. There are multiple stages for the imputation, based upon whether only some persons within a household had missing race or ethnicity information or all persons in a household were missing this information. Imputation flags are added to the data file to keep a record of which responses were imputed. Additional details about race and Hispanic origin editing can be found in Appendix II of the Survey Description Document at ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Dataset_Documentation/NHIS/2006/srvydesc.pdf.

Income: While item nonresponse rates for the vast majority of NHIS variables are low, nonresponse rates are high for two key items: total family income in the previous calendar year, and personal earnings from employment in the previous calendar year. Because income is strongly associated with health status, multiple imputation methods were developed by DHIS staff and other researchers to provide analysts with complete data for those variables. Imputed income data have now been released for data years back to 1997, and imputed income files are now produced and released each year within a few months of the annual NHIS microdata releases.

Dates of injury/poisoning episodes: Beginning in 2004, imputation was implemented for NHIS injury and poisoning episode data that did not have a valid month, day, and/or year of occurrence. Staff from DHIS and other NCHS divisions developed new imputation methods that are now applied before releasing injury/poisoning data each year. For each episode in the released injury/poisoning files, a specific elapsed time between the date of the episode and the date when the questions were asked is provided. Analysts can thus now calculate estimates based on their choice of the time period within which the episodes occurred. This is an important advantage because, for confidentiality reasons, DHIS is not able to release the full date of the injury/poisoning or the full date of the interview, so external analysts cannot calculate those elapsed times themselves. NCHS studies have shown that being able to choose the time period is important because the accuracy of respondents' recollection of injury/poisoning episode dates depends on the severity of the injury/poisoning and on the time period, so analysts need to tailor the choice of time period to their choice of which types of injuries/poisonings to analyze.

Geocoding

The data collected and produced by NCHS (including vital statistics and national health survey data) are the largest source of geographically referenced public health data in the nation. Most of the in-house NCHS survey data files include geographic variables to identify state, county, ZIP Code and/or areas defined by the Census Bureau, such as tract and block level variables.

The issue of geocoding NCHS survey records—determining and adding additional geographic identifiers to those obtained when the survey was administered—remains unsettled due to a piecemeal approach of using different vendors and different software to accomplish the task. Incompatibility among multiple versions of the same software, changing algorithms, or changing street centerline files have the potential to adversely impact analyses that are dependent upon standardized processing and location accuracy. National Health and Nutrition Examination Survey (NHANES) data were geocoded by the Department of Housing and Urban Development (HUD) in a pilot test, and the resulting geocoded data are expected to be accessible through the NCHS Research Data Center (RDC) in a few months. There are many advantages to the HUD geocoding system, including use of the most modern techniques for geocoding address data using latitude and longitude and ZIP Codes, currency of street centerline files, short turnaround (1-2 days for thousands of records), low cost (a fraction of the cost of industry services), and, most importantly from the science perspective, standardized processing and referencing applied to all data files.

Since the 1997 redesign of the NHIS questionnaire and instrument, all annual data files except the two most recent releases (2005 and 2006) have been geocoded to the Census tract level by NCHS staff or contractors. The NHIS has a strong interest in having all annual survey data geocoded. Much of the interest comes from outside users who primarily want to identify data by state, county, MSA/non-MSA, and/or urban/rural; however, none of those identifiers is currently in NHIS public use files for reasons of confidentiality. Outside analysts of NHIS data at those levels must use the NCHS Research Data Center, either in-person or remotely (see the RDC Website at http://www.cdc.gov/nchs/r&d/rdc.htm).
Generally, these lower-level geographic variables are used for policy-related studies and/or as a linking variable to append contextual data from an administrative source to NHIS data. Examples are relating enrollment in the State Children's Health Insurance Program (S-CHIP) to health, and using area-specific information such as median family income in a multivariate model.

Discussions among survey representatives, NCHS RDC staff, and HUD representatives are ongoing in efforts to establish standardized procedures for confidential geocoding of NCHS household surveys, address technical geocoding issues, identify data analysis needs, etc.

Compliance with federal mandates for confidentiality, security, and capital planning

The National Health Interview Survey is defined as a critical system in the Enterprise System catalog of the Department of Health and Human Services (DHHS). Because of this categorization and other federal laws, the NHIS is held to a very high standard of accountability for certain federal mandates: confidentiality, security, and capital planning and investment control (CPIC). Oversight to ensure NHIS compliance is handled by many different offices located in NCHS, CDC, DHHS, and the Office of Management and Budget (OMB). Since 2003, the DHIS workload to comply with the requirements of these federal mandates has been about two FTE's annually. Without extra funding, this work has

had to be absorbed by four existing DHIS staff members, primarily in the Data Production and Systems Branch, with additional help from other staff as needed. DHIS staff has successfully met the requirements of these federal mandates at the same time that they are engaged in meeting relentless annual deadlines for conducting the NHIS. Below is a brief description of each mandate.

Confidentiality: Safeguarding the confidentiality of NHIS data is of primary concern to NCHS, and that objective overlaps significantly with the need to safeguard security. NCHS operates under the authority and restrictions of Section 308(d) of the Public Health Service Act, which provides, in summary, that no information obtained in the course of NCHS activities may be used for any purpose other than the purpose for which it was supplied, and that such information may not be published or released in a manner in which the establishment or person supplying the information can be identified. The Confidentiality Information Protection and Statistical Efficiency Act of 2002 (CIPSEA) also mandates access restrictions for NHIS data. A Privacy Impact Assessment (PIA) for the NHIS is posted on the DHHS Website, informing the public about the security controls applied to personally identifiable information (PII) collected by the NHIS. Possible confidentiality and security breaches are handled in accordance with requirements set forth by the Office of Management and Budget (OMB) and must be reported to a centralized reporting system within one hour of receiving the information. The NCHS Research Ethics Review Board also monitors these breaches. Both NCHS and the Census Bureau operate under the same federal mandates. Policies and procedures related to access privileges for NHIS data, for both in-house (NCHS) and external data users, are constantly monitored and updated to meet new concerns related to ever-changing technology. DHIS staff working on NHIS data are constantly reminded of their need to safeguard confidentiality and security through training, reviews of work, and management oversight.

Security: Safeguarding NHIS security is a high priority for DHIS staff, with continuous evaluation and improvement of highly secure production systems. The NHIS undergoes a rigorous Security Certification and Accreditation (C&A) process every three years. This involves the preparation of extensive documentation to describe compliance with National Institute of Standards and Technology (NIST) standards related to security, and the process culminates in a System Test and Evaluation (ST&E) by staff authorized by the CDC Chief Information Security Officer. During the ST&E, documents are reviewed, staff are interviewed, and systems are tested for potential security breaches. In December 2003, the NHIS was one of the first CDC IT systems to receive full C&A approval, with an authority to operate (ATO) for one year. The NHIS was recertified and accredited in March 2005 for a period of two years and six months. Tom Madden, CDC Chief Information Security Officer, commended DHIS staff on "their diligence and responsibility demonstrated…in the successful completion of the contingency plan tabletop test and timely mitigation of plan of action and milestones (POA&M) documented weaknesses." From 2004 to 2007, DHIS staff worked diligently to obtain C&A approval for the re-engineered NHIS. Bureaucratic red tape administered by many masters contributed to the long time period needed to receive the ATO. The requirements for C&A (developed by NIST and applied by security officers in DHHS and CDC) were in a constant state of flux during this period. DHIS staff revised documentation numerous times to keep up with ever-changing standards. However, the determination and diligence applied to this process by DHIS staff ultimately paid off. During the ST&E, sixty of the sixty-one tests were passed the first time around. The re-engineered NHIS finally received C&A approval, with an authority to operate (ATO), on July 12, 2007. This ATO is in effect for three years, ending July 12, 2010.

One requirement for receiving C&A approval was the successful completion of an off-site Disaster Recovery Test (DRT). A team of seven DHIS staff members, in coordination with CDC's Information Technology Services Office (ITSO), which is responsible for NHIS IT infrastructure support, worked for six months to plan the test. In August 2006, a successful functional test of the NHIS Disaster

Recovery Plan was performed over a continuous 72-hour period at SunGard, a company based in the Philadelphia area. All critical NHIS systems were successfully restored at this site.

Capital Planning and Investment Control (CPIC): Over the last decade, Congress has enacted legislation (e.g., Government Performance and Results Act, Clinger-Cohen Act, Federal Acquisition Streamlining Act, Federal Information Security Management Act) intended to improve mission performance through more effective strategic, technical, financial, and acquisition management practices. Because of this, the NHIS is required to annually submit an Exhibit 300 business case to OMB that addresses the IT component of the investment's costs, benefits, risks, and mission support when compared with other investments. In addition, monthly Earned Value Management (EVM) reports are submitted to CDC and DHHS staff responsible for CPIC oversight. Since 2003, the first year of submission, the NHIS has received an acceptable "report card" on all aspects of the OMB-300 review, with many outstanding grades on various aspects of the review. This ensures and is required for continued funding at the DHHS level for the IT components of the NHIS.

4. DISSEMINATION OF MICRODATA

Remarkable timeliness of microdata releases

Prior to the 2001-2003 re-engineering of NHIS data production systems, NHIS microdata were released one year (or more!) after the end of the data collection year. Re-engineering dramatically improved the timeliness of the annual microdata release. The 2003 data were released in December 2004; the 2004 data were released in July 2005; and the 2005 and 2006 data were released, respectively, the following June, less than 6 months after the end of the data collection year. Such timeliness is a remarkable accomplishment, especially for a large, complex, in-person survey and with no increase in staff numbers.

Pioneering release of paradata

DHIS staff members regularly analyze "paradata" (data about the data collection process, a specific form of metadata) that are now collected by the NHIS as a means of studying the survey process and assessing and improving survey quality. Three sources of NHIS paradata are audit trails, the NHIS Contact History Instrument (CHI), and a section in the back end of the survey instrument that is reserved for questions asked of the interviewers.

Audit trails are keystroke histories of interviews, time stamps, and item-level interviewer notes produced by the NHIS Blaise instrument that has been in use since 2004. Audit trails have been used by DHIS researchers to identify occasional inappropriate, inaccurate entry of responses by interviewers. The CHI is a stand-alone Blaise-based instrument that first went into production with the 2004 NHIS. Interviewers are instructed to make a CHI entry each time an attempt is made to contact a household. CHI data have been used by DHIS researchers to explore survey contact and cooperation, and nonresponse bias. Questions asked of the interviewers include queries about whether any main sections of the interview were administered primarily by telephone. DHIS researchers have used this information to monitor the use of the telephone and to explore the impact of mode on key health estimates. As a result, NHIS questions are now designed with increased consideration of the fact that they may sometimes be administered by telephone.

A milestone in NHIS history occurred on January 14, 2008 when a 2006 paradata file was publicly released that is linkable to the 2006 public use data file that was released in June 2007. In the future, DHIS intends to release a paradata file with each regular annual release of health microdata. To our knowledge, the NHIS will be the first major survey to release extensive paradata on an ongoing basis. The first release of NHIS paradata was announced in an Amstat News article entitled *NHIS Paradata Released to Public* (American Statistical Association, April 2008, p. 22).

Public release of historic microdata files

DHIS has recently been preparing and releasing microdata files from the very early years of NHIS. The NHIS operated on a fiscal year basis (July 1 – June 30) from 1957/58 through 1967/68 and on a calendar year basis starting in 1968. Currently on the NCHS Website are files back to 1966/67, and DHIS is working to prepare and release in the near future the remaining historic files back to 1962/63. Data for earlier survey years than 1962/63 were not retained at the time and so are not available.

Integration of the NHIS with the Medical Expenditure Panel Survey

Half of the interviewed households from NHIS are reserved for subsequent follow-up by the Medical Expenditure Panel Survey (MEPS), which is conducted by the Agency for Healthcare Research and Quality. MEPS collects additional data from some of the NHIS respondents about health care use, health care expenses, and health insurance coverage. Linked NHIS-MEPS microdata provide rich multivariate data and short-term longitudinal data for an extensive array of variables.

Other microdata linked to NHIS microdata

NHIS microdata are periodically linked with three other microdata files: NCHS' mortality data, Medicare Enrollment and Claims data, and Social Security Benefit History data. The linkage operations are conducted by staff in NCHS' Office of Analysis and Epidemiology. These linked files cannot usually be publicly released for confidentiality reasons, in which case they are available to users of NCHS' Research Data Center. For more information, see "Data Linked to NHIS Data" on the NHIS Website, or access

http://www.cdc.gov/nchs/r&d/nchs_datalinkage/data_linkage_activities.htm

Medical Expenditure Panel Survey data can also be analyzed in conjunction with linked NHIS data because the former survey samples from the latter survey's respondents; see the previous subsection.

5. ANALYTIC PROGRAM AND PRODUCTS

Timely release of estimates through the NHIS Early Release Program

The NHIS Early Release Program releases three online reports periodically. The following Early Release reports were released in December 2007:

i. Early Release of Selected Estimates Based on Data From the January-June 2007 National Health Interview Survey

ii. Health Insurance Coverage: Early Release of Estimates from the National Health Interview Survey, January – June 2007 (released in December 2007)
iii. Wireless Substitution: Early Release of Estimates From the National Health Interview Survey, January – June 2007

The Early Release (ER) Program is so-named because of the timeliness of the three reports. The first- and second-listed reports are released quarterly and contain estimates that have been updated to incorporate data collected in the quarter ending only six months before release. The third-listed report is released semi-annually and contains estimates that have been updated to incorporate data collected in the half-year ending only six months before release.

The first report contains estimates and highlights for 15 key health indicators: lack of health insurance coverage and type of coverage, usual place to go for medical care, obtaining needed medical care, receipt of influenza vaccination, receipt of pneumococcal vaccination, obesity, leisure-time physical activity, current smoking, alcohol consumption, human immunodeficiency virus testing, general health status, personal care needs, serious psychological distress, diagnosed diabetes, and asthma episodes, and current asthma.

When the ER Program was first conceived, a meeting of experts was convened to assist in selecting topics on which the program should focus. Health insurance was the most desired topic. Thus, health insurance is one of the key topics covered in the first report, and in addition, the second report provides extensive additional detail about health insurance coverage.

The third ER report is about the use of cell phones and the characteristics of households with different telephone usage characteristics. Cell phone questions have been on the NHIS since 2003. One may well wonder what cell phone questions are doing on a health survey. In fact, this information is critically important for telephone survey researchers, including those at NCHS. Telephone surveys by definition do not call households without telephones, and in the United States, for operational, statistical, and legal reasons, telephone surveys also generally do not call cell phones. Therefore, researchers who use telephone survey data need to be concerned by findings that cell-only adults are different from the rest of the population. Health researchers are concerned if cell-only adults and their children have different health characteristics, just as telephone pollsters are concerned if cell-only adults vote differently, and market researchers are concerned if cell-only adults shop differently. The exclusion of cell-only adults from telephone surveys may lead to biased estimates. NHIS includes cell phone questions as a service to all those who conduct telephone surveys and who use telephone survey results so that they may track the potential for bias in their surveys and develop methods to reduce or adjust for bias.

The Early Release Program achieves its remarkable timeliness by expediting the ER data production process; partway through the production line for processing NHIS microdata, the data to be used to produce the three ER reports are copied, and then they diverge to their own ER production line. The NHIS microdata and what will become the ER data begin production together; generic edits are applied, retainable records are selected, and initial demographic edits are applied. Then the NHIS production file and the data needed to produce the ER reports go through separate steps. The ER file passes through expedited health insurance and family income editing and basic section edits, and preliminary quarterly weights are applied. Meanwhile, the NHIS production file undergoes extensive quality assurance and editing checks of all microdata, and then in-house and public use files are created, confidentiality reviews are conducted, and documentation is developed. ER reports inform

users that the ER estimates may differ slightly from estimates produced from final microdata that have gone through the regular production line.

Computer programs and publications for the first and second ER reports remain relatively unchanged from quarter-to-quarter. Updating both program code and text is quick and easy. All results are exported automatically to data tables using SAS, but due to the format of the ER (data tables and figures are embedded in the text), we are able to link these items to their source files so that they update automatically. The stability of the format of the report and its release as a Web-only product enables an expedited editorial process without the usual print proofs or galleys. These qualities of the ER make it quicker to create and release than the typical statistical report or microdata product.

Present and past ER products are available at:
http://www.cdc.gov/nchs/about/major/nhis/releases.htm.

The analysis program

DHIS staff members are strongly encouraged to engage in analysis of NHIS and related data. Both subject-matter and methodological analyses are conducted, with results presented and published in various venues. The types of analyses conducted range from descriptive statistics to complex model fitting. Collaboration with others within NCHS and from other organizations is encouraged.

In order to assure wise investment of staff time in analysis and appropriate selection of topics, proposals to engage in new analytic projects are reviewed by a committee of division managers, and investigators who are engaged in ongoing analytic projects submit periodic progress reports that are reviewed by that committee.

Despite strong managerial support for staff engaging in analysis projects, the opportunity for staff to do so is limited by competing demands for data-production-related activities. The NHIS staff presently includes no full-time researchers.

Appendix B contains a list of selected publications (co-)authored by NHIS staff members.

6. OTHER USER SERVICES

Data requests program

An appointed team of staff members (the DAta Request Triage team, or DART team) responds to requests from outside DHIS for NHIS information, data, and analyses. Membership on the DART team is a part-time activity. Each month, a calendar is provided to DHIS staffers and others showing who on the DART team is responsible for responding to information requests based on the day of receipt of the request. Two programmers are also assigned to assist in responding to requests as needed. Generally, the DART team does not perform extensive custom runs for individuals, unless the requestor is a senior member of the government.

Some of these requests require more attention and expertise than others; team members refer the requests, when necessary, to more specialized staff members within and outside the division. The

DART team leader serves as advisor and trainer to team members. Guidelines for handling requests are as follows:

i. Respond as quickly as possible, even if only to say that more time is needed.
ii. Treat users "equally;" any data or information data given to one person should be available to anyone else who asks.
iii. Whenever possible, direct the user to the pertinent information on our Website.
iv. Be professional and polite even if the person clearly has made no attempt to consult existing documentation.
v. Refer users who need confidential data to the NCHS Research Data Center.

Requests for NHIS information arrive at DHIS by any of several means: from the centralized CDC-INFO Contact Center (available to users at 1-800-232-4636 or at cdcinfo@cdc.gov); via an email address (nhislist@cdc.gov) set up for members of the NHIS Listserv and others; via the NHIS Website's "Contact us" offer (which sets up an email to nchsquery@cdc.gov that is received by CDC-INFO); via the division's own information and data requests phone line (301-458-4901); and by email and telephone calls conveyed directly to individuals in the division. Requests that are received by DHIS staff who are not members of the DART team are forwarded as appropriate to the DART team member on duty on the day of receipt of the request. Requests for information about SLAITS and the National Immunization Survey are forwarded to those surveys' own information provision systems.

Recently, an Access database system was developed for recording information about individual requests such as the type of requester (e.g., student, non-profit), the response, the name(s) of the responder(s), the elapsed time to handle the request, and the amount of staff time spent handling the request. The system produces analytic reports as a management tool to help DHIS make its response system more efficient and effective and to monitor staff involvement. In particular, the DART team will be compiling a list of Frequently Asked Questions to put on the NHIS Website.

Websites on special topics

DHIS maintains on its Website the relatively new NHIS Race and Hispanic Origin Information Website, which provides NHIS users with in-depth information on race and Hispanic origin, two of the most important demographic variables that are collected in the survey. That site provides details on race and Hispanic origin data from the NHIS, including the wording of race and Hispanic origin questions from the NHIS, a brief history of race and Hispanic origin data collection in the survey, explanations of the editing and imputation process for the race and Hispanic origin data, frequently asked questions on the NHIS race and Hispanic origin data, and links to important information about collecting race and Hispanic origin data in federal surveys. Access the site at http://www.cdc.gov/nchs/about/major/nhis/rhoi/rhoi.htm.

Another topical Website provides NHIS users with in-depth Tobacco Related Information. Details on the wording of questions, a brief history of NHIS tobacco data collection, and explanations of the editing and creation of summary measures are among the materials included. Links to major publications as well as CDC's Office of Smoking and Health are provided. Detailed tables of questions by survey year are available, along with the wording of questions related to tobacco use from 1965 to the present.

These two Special Topics Websites can be accessed at
http://www.cdc.gov/nchs/about/major/nhis/nhis_spectopics.htm.

Additional Website materials are being developed on special topics including physical activity, poisoning and injuries, health insurance, chronic conditions, and industry and occupation.

Conferences and workshops for users

In addition making extensive NHIS information available to users online, by e-mail, and over the telephone, DHIS feels that it is important to provide live instruction, especially given the complex sample design of the NHIS and the resulting need to use specialized software to properly calculate variance estimates.

Users can attend the biennial NCHS Data Users Conference in Washington, D.C., which is aimed at current and potential users of NCHS—including NHIS—data. The conference, which has no registration fee, provides a forum for representatives from federal, state, and local governments, as well as from universities, professional associations, and the private sector to learn about recent NCHS products and services and share their knowledge and experience. The next Conference is scheduled for August 11-13, 2008.

Also, NHIS workshops are held periodically to assist data users. These workshops provide overviews of topics such as the development of the questionnaire; documentation, data products and other resources; NHIS data linkage; and sample design. In addition, information is provided on creating analytic files, merging multiple data sets, using imputed income files, and other topics. The workshops are taught by DHIS staff, including DHIS analysts who describe their own analyses of NHIS data. NHIS workshops have been offered at conferences such as the annual APHA and AcademyHealth conferences, at CDC in Atlanta, at other government agencies, and at NCHS on the day after the Data Users Conference. The next workshop is scheduled for August 14, 2008 at NCHS.

7. THE BUDGET

Paying the Census bills

Table 3 shows the (estimated) payments made by DHIS to the Census Bureau for fielding the NHIS in FY1997-FY2008, as well as the program funds received by DHIS in each of those fiscal years from the NCHS budget. The program funds shown cover normal division expenses (e.g., travel, supplies, nonstandard computer equipment, and contractors' salaries), as well as part of the Census costs, but excluding salaries for permanent employees and Fellows, and excluding the costs of conducting SLAITS. The remaining funds needed to pay the Census Bureau come from reimbursable funds paid to DHIS by outside agencies for fielding NHIS supplements.

The obvious downward trend in NHIS sample sizes seen in Figure 1 is due to the increasingly high costs of conducting an in-person survey and the failure of the available budget to keep up with these increasing costs. The dips in sample sizes in 1985 and 1986 occurred because budget considerations required the sample to be reduced. Another low NHIS sample size, in 1996 (63,402 persons), was the result of using a large number of the 1996 interviews for a pre-test of the new computer-assisted personal interview (CAPI) system (which replaced the old paper-and-pencil method of administering the questionnaire) and the new leaner and meaner questionnaire that were debuted in 1997.

In more recent years, DHIS has struggled to cut NHIS costs while maintaining data quality. In 2002, 2003, and 2004, the sample size was reduced by 3-5 weeks each year by cancelling some interviewing assignments. In 2005, DHIS managed to avoid a sample cut. Beginning in 2006, a new NHIS sample design was implemented, as happens about every 10 years, and the 2006 redesign indefinitely reduced the NHIS sample size—by about one-eighth from the 2005 sample size. On top of the reduction caused by the 2006 redesign, the 2006 and 2007 sample sizes were reduced by about another one-eighth, again by cancelling some interviewing assignments. Consequently, for example, the 2005 sample size was 98,649, the 2006 sample size was 75,716, and the 2007 sample size will be similar to that of 2006 (see Table 1).

Having to "live from hand to mouth" just to continue fielding the NHIS means that DHIS is rarely able to undertake new initiatives such as testing new methods to administer the survey. Budget problems have also been experienced by the co-sponsors and potential co-sponsors of NHIS supplements. For example, some of the children's mental health questions sponsored by the National Institute for Mental Health were discontinued with the 2007 NHIS after having been on the survey for several consecutive years.

Table 4 lists the cost-cutting measures taken by DHIS since 2002. Two methods for reducing the sample size were used, depending on the year. *Weekly sample cuts* were accomplished by cancelling all interviews across the country for a number of weeks. *Panel cuts* were accomplished by cancelling interviews for two of the four equally-representative subsamples (panels) during the last quarter of the fiscal year (July, August, and September). These sample size reductions were made in such a way that the representativeness of the NHIS sample was maintained, except that some seasonal representativeness was lost when weekly sample cuts took the NHIS totally out of the field for a period of weeks.

It has not been possible to entirely avoid reducing data quality when reducing costs. For example, the annual classroom refresher training of Census interviewers was very reluctantly cancelled in 2003 and 2008.

Also, in 2007, because of budget limitations, DHIS opted not to embark on a joint research project with the Census Bureau in which commercially-available address files ("vendor files") would be purchased and studied with the object of developing alternate systems for obtaining lists of households to sample. The current listing activity involves sending Census staff to selected geographical areas where they list all of the households in the area. The resulting addresses are sampled. This listing activity is ongoing, but it peaks about every ten years, a few years prior to the implementation of a new sample design.

Listing is extremely expensive, and it is duplicative, in that the Census Bureau already knows the addresses of households. However, because the NHIS operates under Title 15 government regulations, it is not permitted access to Census address lists (but it is permitted to use the Census area maps), and it is not permitted access to listing information obtained for surveys that operate under Title 13 government regulations. Title 13 surveys are permitted to use Census address lists, but the surveys' home organizations normally have very limited access to non-public-use survey microdata. Thus, for Title 13 surveys, the Census Bureau not only collects the data, but it must carry out much of the data processing, editing, and linkage on Census premises, and any follow-up surveys that recontact respondents/households must be conducted by the Census Bureau. In particular, if NHIS became a Title 13 survey, the Medical Expenditure Panel Survey (see Section 4) would not be able to be

conducted as it is today, with a non-Census contractor (currently Westat) conducting interviews of previous respondents to the NHIS using addresses and other recontact information gathered by the NHIS.

Some critical decisions about how to deal with listing issues and whether to become a Title 13 survey must be made by DHIS. Discussions have begun between NCHS and Census about the possibility of NHIS becoming a Title 13 survey with special arrangements being made for NCHS to have access to non-public-use NHIS data. Research into the use by household surveys of commercially available address lists is being conducted by Census, by various private survey-conducting companies, and to some extent by NCHS' NHIS Redesign Steering Committee. Census hopes to drastically reduce the amount of listing required for its surveys, to increase reliance by its surveys on vendor files, and to increase reliance by its Title 13 surveys on its Master Address File. Title 13 surveys may not share addresses obtained by listing with Title 15 surveys, but Title 13 and Title 15 surveys do share some of the costs of conducting listing. Thus, if the current NHIS listing operations continued (under Title 15) for the next NHIS sample design (currently targeted for 2013) but were discontinued for the Title 13 surveys, the NHIS listing costs would increase dramatically; in addition to paying the direct costs of the field listing, NHIS would have to pay the total infrastructure costs to support listing. For more details about Title 13, Title 15, listing, and vendor files, see Appendix D.

Many enhancements could be made to the NHIS if its budget were to increase significantly. For example, a larger sample size would permit enhanced analysis of state-level data, and some of the increased sample could be obtained by introducing a complementary telephone component to the NHIS. The Census Bureau recently estimated that it would cost DHIS about $2,800,000 in 2008 and 2009 to restore the NHIS in its current form to a sample size of 100,000 persons in 2009. Doing that in 2009 will have to remain an unrealized pipedream.

The total cost of conducting the NHIS

According to Table 3, the estimated total payments to be made by DHIS to the Census Bureau for fielding the NHIS in FY2008 will be $21,012,660. In this section, we estimate additional NHIS cost components to get a better idea of the total cost of conducting the NHIS in FY2008.

We totaled current grade-specific salary and benefit costs for the DHIS staff members (or fractions of staff members) identified in Appendix A as working on the NHIS. (We used the middle of the salary range for each grade.) The result is that salaries and benefits for the 38.85 persons working on the NHIS will total about $4,581,525 in FY2008.

We also added a cost component of $500,000 to estimate the average annual payment to Census (not included in the $21 million cost of fielding the survey) for sample redesign activities that are carried out after every Decennial Census.

Finally, we added a cost component of $324,000 to cover other NHIS costs including coding contractors, equipment, supplies, and travel.

We did not add salaries and benefits for work done by NCHS staff outside of DHIS, such as work performed on behalf of the NHIS by staff in NCHS' Office of Research and Methodology (ORM) or Office of Management and Operations (OMO). We also did not add cost components to cover NCHS infrastructure costs such as the cost of leasing and using the NCHS building, or centralized services

provided by CDC, such as from the Human Resources Management Office (HRMO), the Information Technology Service Office (ITSO), or the Financial Management Office (FMO).

Under the above assumptions, an estimate of the total cost of conducting the NHIS in FY2008 is as follows:

Annual payments to Census for fielding	$21,012,660
Annual salaries and benefits for NHIS staff in DHIS	$4,581,525
Average annual payment to Census for sample redesign	$500,000
Other program costs	$324,000
TOTAL	**$26,418,185**

8. OTHER ACTIVITIES

Committees

The NHIS Strategic Planning Group is a DHIS committee charged with developing longer-term (3-5 years) scenarios for the NHIS, addressing issues such as the content, structure, mode, contracting vehicle, and estimated funding levels required for the NHIS. Members of the committee include all DHIS branch chiefs and higher-level managers as well as one other representative from each branch and from the Office of the Director. The committee recently completed production of a survey inventory whose task was to gather into one database selected characteristics on every item on the NHIS. Field and processing characteristics include item non-response, median time to administer, the mode neutrality of the item, and the level of programming effort required to process an item into variables; the inventory also records the data products and health programs for which the item is used. The inventory has a number of uses. For example, analysts and managers can use it to investigate the relationship between the resource intensiveness of a particular portion of the survey and its "productivity." The inventory results could be used to decide which questions could be deleted temporarily or permanently to shorten the questionnaire and/or to make room for additional supplements. A recent and ongoing activity of the committee is to interview directors of other federal health surveys of household populations. These interviews elicit information about how other surveys are conducted, especially the similarities and differences between surveys conducted using all government operations and those conducted using the private sector. The strengths and weaknesses of both mechanisms are being explored and experiences are being shared in an effort to improve NHIS operations, efficacy, and cost efficiency.

DHIS staff members also participate in numerous other committees. Some examples of DHIS-based committees are the DHIS Social Committee, the now-retired NHIS 50th Anniversary Planning Committee, the NHIS Analytic Project Review Committee, the NHIS Data Production Review Committee, the DAta Request Triage team, the NHIS Paradata File Committee, the NHIS Strategic Planning Group, and the NHIS Website Committee. Some examples of externally-based committees on which DHIS staff members serve are the NCHS Associate Directors for Science committee, the NCHS Research Data Center Steering Committee, the NHIS Sample Redesign Steering Committee (which is Chaired by staff in NCHS' Office of Research and Methodology), the CDC QuickStats Editorial Board, the DHHS Data Council Working Group on Racial and Ethnic Data, Technical Advisory Committees for the California Health Interview Survey, the Technical Advisory Group for an ASPE-supported project on Assessing the Quality of Income Data Across Surveys, and various professional society groups.

Meetings

Some regularly-occurring NHIS-related meetings include a monthly all-hands division meeting, a weekly DHIS managers' meeting, a monthly meeting of DHIS managers with managers of the NCHS Office of Management and Operations, a monthly meeting of DHIS managers with Human Resources staff, a monthly meeting of DHIS managers with the DHIS Administrative Officer, a monthly meeting of DHIS managers with senior managers from the Office of the Center Director, a monthly meeting of NHIS staff with Census to review the current status of the NHIS and other issues, a monthly meeting of DHIS managers and budget staff with Census staff to review the current status of NHIS spending, a quarterly meeting of DHIS managers with senior Census managers, etc.

The Integrated Health Interview Series (IHIS)

The Integrated Health Interview Series (IHIS) is a harmonized set of data and documentation based on material originally included in the public use microdata files of the NHIS. Carried out at the University of Minnesota, this large and complex project periodically releases batches of harmonized NHIS data, consisting of subsets of variables taken from public use microdata files on the NCHS Website. The harmonized data complement the cross-sectional NHIS data on the NCHS Website by facilitating comparisons across time and trend analysis. This is possible because the harmonized variables are coded identically across time.

The IHIS provides detailed documentation covering comparability issues and on-line codes and frequencies for each harmonized variable. IHIS data are distributed via an interactive data extraction system.

Funding for the IHIS project is provided by grants from the National Institutes of Health. This is an important attestation to the value of NHIS data, in different forms, to data users.

DHIS staff members have been assisting IHIS staff members in collecting and interpreting documentation needed to produce the IHIS. See the IHIS Website at www.ihis.us/ihis.

Fostering a close and productive international relationship

The 10th annual Interchange between NCHS and Statistics Canada will take place in Ottawa, Canada in November 2008. This invitation-only conference was initiated and is organized each year by DHIS staff members, jointly with Statistics Canada. The conference alternates venues between the home cities of the two federal statistics agencies. The Interchange has spawned and encouraged numerous other activities, including the Joint Canada/United States Survey of Health (see next section); Statistics Canada's new Canadian Health Measures Survey, patterned after NCHS' NHANES; Statistics Canada's Health Data Users' Conferences, inspired by NCHS' Data Users Conferences; and numerous joint presentations and publications. Staff members from the two national statistics agencies are now familiar with each other, and they interact frequently during the time between annual conferences. The quality of both countries' surveys and products has been improved as a result of the Interchanges.

The Joint Canada/United States Survey of Health

The 2002-03 Joint Canada/United States Survey of Health (JCUSH) was a one-time telephone survey that used questions taken from the NHIS and questions taken from Statistics Canada's ongoing national health surveys: the Canadian Community Health Survey and the National Population Health Survey. The JCUSH administered essentially the same questions in the same manner at the same time to both Canadian and United States residents so that accurate comparisons between the two populations could be made regarding health status and access to health care services. The survey was conducted jointly by DHIS and Statistics Canada's Health Statistics Division with the longer term objective of improving comparability of estimates based on data from the two federal governments' ongoing health surveys. Since the completion of the fielding of the JCUSH, numerous results of analyses of JCUSH data have been presented at conferences and published in journals. Analysis is ongoing. See http://www.cdc.gov/nchs/pressroom/04news/firstjointsurvey.htm for further information on the JCUSH.

Commemoration of the NHIS' 50th anniversary in 2007

To mark the 50th anniversary of the NHIS in 2007, numerous commemorative activities were organized and commemorative products produced, including a conference (for which proceedings will be published); a VIP reception at the U.S. Botanic Garden in Washington, D.C.; sessions and/or talks at the 2007 Joint Statistical Meetings, Interchange 2007 (a conference of NCHS and Statistics Canada), the American Public Health Association annual meeting, and the Association of Public Data Users 2007 conference; articles in AmStat News and CDC Connects; a paper in Chance entitled *The National Health Interview Survey: 50 Years and Going Strong* (by Jane F. Gentleman, 2008, Vol. 2, No. 2, Springer and American Statistical Association); numerous other presentations; proceedings papers; the NHIS Poster Contest (which produced 10 winning posters describing previous bodies of work using the NHIS); numerous anniversary souvenir items; and a commemorative quilt (which can be viewed on the 2nd floor of NCHS in the OD reception area). In the process of commemorating the 50th anniversary, the memories of old timers at NCHS were tapped and other historical information was collected. Appendix C lists selected major milestones in the NHIS' history.

Group award

Fittingly during the NHIS' 50th anniversary year, 47 present and recent members of the DHIS staff received the 2007 CDC and ATSDR Honor Award for Public Health Statistical Research and Services. The award citation reads as follows: "For exceptional and sustained contributions to planning and conducting the National Health Interview Survey and to processing, improving, disseminating, and analyzing NHIS data".

9. FUTURE NEEDS AND DECISIONS

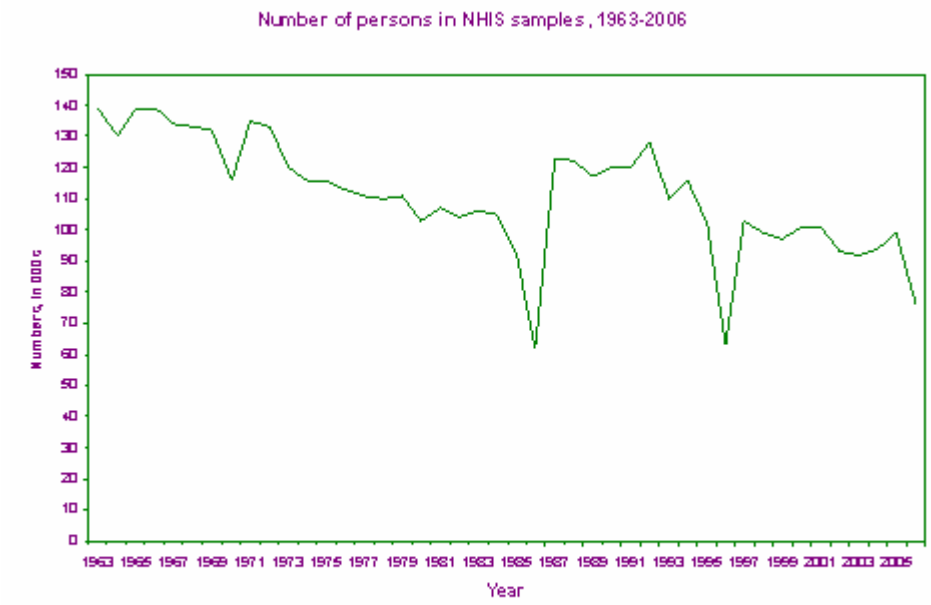
A number of topics discussed in this report are having or will have a great impact on the nature and welfare of the National Health Interview Survey. The NHIS' most critical need is for a stable budget that covers the cost of the survey and also provides for reasonable amounts of research, training, growth, and innovation. Recent years have provided inadequate funding even to conduct the basic survey as it was designed, with sample cuts being the most obvious resulting degradation. More subtle

losses due to purse tightening include the elimination of classroom refresher training for interviewers in some years and conducting very little research to improve survey methods. Related to the budget shortfalls are the rising Census Bureau costs, with which the NHIS budget has not kept pace.

Looking to the more distant future, NCHS must prepare for changing the methods of collecting NHIS data in 2013, the target date for implementation of the next sample redesign. In particular, the costs of household address listing will likely become unsustainable if the NHIS is left alone to cover them beginning in 2013. Thus, the NHIS has three choices: (1) Remain with the Census Bureau and become a Title 13 survey; (2) Remain a Title 15 survey with Census and work with Census to develop and apply new methods to obtain household addresses; and (3) Move to another contractor than Census, one that has other survey clients to share the costs of obtaining addresses.

The most important NHIS resources are the dedicated staff members who plan and conduct the NHIS, who process, document, and analyze the data, and who disseminate the analytic products. We look forward to working with the NCHS Board of Scientific Counselors and its NHIS Review Panel.

Figure 1. Number of persons in the NHIS samples, 1962/63 to 2006[a,b]



[a]The NHIS operated on a fiscal year basis (July 1 – June 30) from 1957/58 through 1967/68 and on a calendar year basis starting in 1968.
[b]The number of persons in the 2007 NHIS sample will be approximately the same as in the 2006 NHIS sample.

Table 1. Counts of interviewed persons and households in the 2000-2007 NHIS

Year	2000	2001	2002	2003	2004	2005	2006	2007 (est'd)
# persons	100,618	100,760	93,386	92,148	94,460	98,649	75,716	75,716
# households	38,633	38,932	36,161	35,921	36,579	38,509	29,204	29,204

Table 2. NHIS response rates,* conditional and unconditional, 1997-2006

A. Conditional rates:

Survey year	Household module (same as below)	Sample Child module	Sample Adult module
1997	91.8	93.1	89.0
1998	90.0	93.3	83.8
1999	87.6	90.8	80.8
2000	88.9	90.9	82.6
2001	88.9	92.0	84.2
2002	89.6	92.3	84.4
2003	89.2	92.3	84.5
2004	86.9	91.8	83.8
2005	86.5	90.1	80.1
2006	87.3	90.6	81.4

B. Unconditional rates:

Survey year	Household module (same as above)	Sample Child module	Sample Adult module
1997	91.8	84.1	80.4
1998	90.0	82.4	73.9
1999	87.6	78.2	69.6
2000	88.9	79.4	72.1
2001	88.9	80.6	73.8
2002	89.6	81.3	74.3
2003	89.2	81.1	74.2
2004	86.9	79.4	72.5
2005	86.5	77.5	69.0
2006	87.3	78.8	70.8

* See Appendix I. Calculation of Response Rates in the annual NHIS Survey Description document for definitions of conditional and unconditional response rates (e.g., see the 2006 report at ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Dataset_Documentation/NHIS/2006/srvydesc.pdf).

Table 3. Payments to the Census Bureau for fielding the NHIS, and DHIS program funds received from NCHS, 1997-2008

Fiscal year	Payments to Census Bureau	DHIS program funds received from NCHS
1997*	$16,156,963	$13,767,924
1998*	$14,752,818	$12,181,235
1999	$15,902,371	$13,963,242
2000	$15,775,986	$13,283,859
2001	$16,955,166	$15,649,304
2002	$17,687,282 (after weekly sample cuts)	$12,912,843
2003	$16,100,000 (after weekly sample cuts)	$12,065,843
2004	$17,980,722 (after weekly sample cuts)	$13,508,958
2005	$18,980,557	$15,474,318
2006	$18,421,608 (after ongoing sample size reduction and panel cuts)	$14,379,288
2007	$18,461,345 (after ongoing sample size reduction and panel cuts)	$13,791,424
2008	$21,012,660 (estimated, after ongoing sample size reduction, before panel cuts, after cancellation of interviewer training)	$14,602,548

* 1997 and 1998 figures do not include amounts paid to Census ($50,000 in FY1997 and $975,000 in FY98) to develop the new CAPI instrument that was implemented in January 1997

Notes:

Other NHIS costs not shown in the table include Blaise license, data coding, travel, books, equipment, and supplies, currently totaling about $325,000 per year.

Weekly sample cuts were accomplished by cancelling all interviews across the country for a number of weeks. *Panel cuts* were accomplished by cancelling interviews for two of the four equally-representative subsamples (panels) during the last quarter of the fiscal year. The *ongoing sample size reductions* induced by the 2006 sample redesign were accomplished by designing a smaller sample.

Table 4. Measures taken to reduce the costs of administering the National Health Interview Survey: 2002-2008

Calendar Year	Cost-cutting measure	Details	Estimated savings
2002	Weekly sample cuts (5 weeks)	Cuts in weeks beginning April 8, July 1 & 8, and Oct. 14 & 21	$720,000
2003	Weekly sample cuts (5 weeks)	Cuts in weeks beginning April 7, 14, & 21, and Dec. 15 & 22	$750,000
	Cancellation of annual refresher training	Cancelled annual training of interviewers during 1st 2 weeks of January	$600,000
2004	Weekly sample cuts (3 weeks)	Cuts in weeks beginning May 3, 10, & 17	$450,000
2005	[No sample reductions]		
	Postponement of implementation of new 10-year sample design to 2006	New sample design would normally have been implemented in 2005, 5 years after Decennial Census	No savings: expenditures were postponed and thus increased
2006	Implementation of new 10-year sample design	Sample size reduced by about 12.5% compared with 2005	[Planned ongoing cost reduction]
	Panel cuts	Interviewing canceled in 2 of 4 panels in July-Sept. 2006, i.e., did not interview an additional 1/8 of annual sample	$1,000,000
2007	Continuation of current sample design	Sample size reduced by about 12.5% compared with 2005	[Planned ongoing cost reduction]
	Panel cuts	Interviewing canceled in 2 of 4 panels in July-Sept. 2007, i.e., did not interview an additional 1/8 of annual sample	$1,100,000
	Postponement of purchase of address files	Postponed $300,000 purchase of commercially-available address files for use in researching new cost-saving listing methods	Additional cost of $300,000 avoided; once this multi-year project begins, total cost will be much more
2008	Continuation of current sample design	Sample size reduced by about 12.5% compared with 2005	[Planned ongoing cost reduction]
	Cancellation of annual classroom refresher training	Cancelled annual training of interviewers during 1st 2 weeks of January 2008	~$914,578
	[Decision pending on panel cuts in Oct-Dec 2008]	[Interviewing would be canceled in 2 of 4 panels in Oct-Dec. 2008, i.e., would not interview an additional 1/8 of annual sample]	[Could save ~$1,100,000]

Note: *Weekly sample cuts* were accomplished by cancelling all interviews across the country for a number of weeks. *Panel cuts* were accomplished by cancelling interviews for two of the four equally-representative subsamples (panels) during the last quarter of the fiscal year. The *ongoing sample size reductions* induced by the 2006 sample redesign were accomplished by designing a smaller sample.

Appendix A. Division of Health Interview Statistics, National Center for Health Statistics Staff list as of January 2008

OFFICE OF THE DIRECTOR (OD)

Last Name	First Name	Pay Plan	Series	Grade	Position Title
GENTLEMAN PHD	JANE	AD	1530	0	DIRECTOR (SENIOR RESEARCH SCIENTIST)
STRATTON	ANNE	GS	1530	15	DEPUTY DIRECTOR
POWELL-GRINER PHD	EVE	GS	1530	15	ACTING ASSOC DIR FOR SCIENCE
JACK	SUSAN	GS	1530	14	STAT'N (HEALTH)
MORIARITY PHD	CHRISTOPHER	GS	1529	14	MATHEMATICAL STAT'N
LAROCHELLE	BRENDA	GS	685	13	PUBLIC HEALTH ANALYST
CORNETT	JOAN	GS	318	8	SECRETARY

SURVEY PLANNING AND SPECIAL SURVEYS BRANCH (SPSSB)

Last Name	First Name	Pay Plan	Series	Grade	Position Title
*CYNAMON	MARCIE	GS	1530	15	CHIEF
*BLUMBERG PHD	STEPHEN	GS	601	14	HEALTH SCIENTIST
RIDDICK PHD	HOWARD	GS	1530	14	SURVEY STAT'N
*BRAMLETT PHD	MATTHEW	GS	1530	13	SURVEY STAT'N
DAHLHAMER PHD	JAMES	GS	1530	13	SURVEY STAT'N
HOWIE	L JEAN	GS	1530	13	SURVEY STAT'N
*LUKE	JULIAN	GS	1550	13	COMPUTER SCIENTIST
*OCONNOR	KATHLEEN	GS	1530	13	SURVEY STAT'N
SIMILE PHD	CATHERINE	GS	1530	13	SURVEY STAT'N
SIMPSON	GLORIA	GS	1530	13	SURVEY STAT'N
ΨSTUSSMAN	BARBARA	GS	1530	13	SURVEY STAT'N
TAYLOR	BETH	GS	1530	13	SURVEY STAT'N
*AVILA	ROSA		0	0	CONTRACTOR

*Assigned to SLAITS/NIS projects. Cynamon 50%, Blumberg 85%, and the others 100%.
ΨWorks 80% of full time.

DATA PRODUCTION AND SYSTEMS BRANCH (DPSB)

Last Name	First Name	Pay Plan	Series	Grade	Position Title
*STRATTON	ANNE	GS	1530	15	ACTING CHIEF
CHIU PHD	PEI LU	GS	1530	14	SURVEY STAT'N
COLES	RICHARD	GS	2210	13	IT SPEC (APPSW)
KOTULAK HAYS	KRISTINA	GS	1550	13	COMPUTER SCIENTIST
PAGE	JANE	GS	1550	13	COMPUTER SCIENTIST
PHAM	VINCENT	GS	1550	13	COMPUTER SCIENTIST
SHANKS	MIRA	GS	2210	13	IT SPEC (APPSW)
HAO	CATHY	GS	2210	12	IT SPEC (APPSW)
KING	VIOLA	GS	2210	12	IT SPEC (APPSW)
TONTHAT	LUONG	GS	2210	12	IT SPEC (APPSW)
ZHEN	LIBEI	GS	2210	12	IT SPEC (APPSW)
MITCHELL	KIMBERLYN	GS	2210	7	IT SPECIALIST

*Also listed in Office of the Director

DATA ANALYSIS AND QUALITY ASSURANCE BRANCH (DAQAB)

Last Name	First Name	Pay Plan	Series	Grade	Position Title
*POWELL GRINER PHD	EVE	GS	1530	15	CHIEF
BARNES	PATRICIA	GS	1530	13	STAT'N (HEALTH)
BLACKWELL PHD	DEBRA	GS	1530	13	STAT'N (DEMOGRAPHY)
ΨBLOOM	BARBARA	GS	1530	13	STAT'N (HEALTH)
ΨCOHEN PHD	ROBIN	GS	1530	13	STAT'N (HEALTH)
LETHBRIDGE CEJKU PHD	MARGARET	GS	601	13	EPIDEMIOLOGIST
LUCAS	JACQUELINE	GS	1530	13	STAT'N (HEALTH)
MARTINEZ	MICHAEL	GS	601	13	EPIDEMIOLOGIST
PLEIS	JOHN	GS	1530	13	STAT'N (HEALTH)
SCHILLER	JEANNINE	GS	1530	13	STAT'N (HEALTH)
ΨSCHOENBORN	CHARLOTTE	GS	1530	13	STAT'N (HEALTH)
ADAMS	PATRICIA	GS	1530	12	STAT'N (HEALTH)
FREEMAN	GULNUR	GS	1530	12	STAT'N (HEALTH)
VICKERIE	JACKLINE	GS	1530	12	STAT'N (HEALTH)
BENSON	VERONICA	GS	1530	11	STAT'N (HEALTH)
FREE	HEATHER	AD	1530	0	ASSOC SERVICE FELLOW
HEYMAN	KATHLEEN	AD	1530	0	ASSOC SERVICE FELLOW

*Also listed in Office of the Director
ΨWorks 80% of full time.

Appendix B. Selected publications (co-)authored by NHIS staff members, 2003-2007 and forthcoming*

Adams, Patricia and **Barnes, Pat** (2006). Summary Health Statistics for the U.S. Population: NHIS, 2004. Series 10 No. 229. National Center for Health Statistics.

Adams, Patricia and **Barnes, Patricia** (2005). Percentage of Adults Aged >18 Years Who Assessed Their Health as Excellent or Very Good, by Race - United States, 1999-2003. MMWR 2005;54:29, Centers for Disease Control and Prevention. (QuickStat).

Adams, Patricia; Barnes, Pat; and Schiller, Jeannine (2006). Percentage of adults with self-assessed symptoms of serious psychological distress, by sex and race – United States, 2000–2004 - Centers for Disease Control and Prevention. (QuickStat).

Adams, Patricia; Dey, Achintya; and **Vickerie, Jackline** (2007). Summary Health Statistics for the U.S. Population: National Health Interview Survey, 2005. National Center for Health Statistics. Vital Health Stat 10(233).

Adams, Patricia F and **Schoenborn, Charlotte A** (2006). Health behaviors of adults: United States, 2002-04. National Center for Health Statistics. Vital Health Stat 10(230).

Adams, Patricia; **Lucas, Jacquie**; and **Barnes, Patricia** (2007). Estimated Percentage of Adults with Daily Activity Limitations, by Age Group and Type of Limitation -- National Health Interview Survey, United States, 2006. MMWR 2007;56:40, Centers for Disease Control and Prevention. (QuickStat).

Adams, Patricia and **Schoenborn, Charlotte** (2007). Percentage of Adults Aged ≥18 Years Who Engaged in Selected Unhealthy Behaviors, by Race—National Health Interview Survey, United States, 2002-2004. MMWR 2007;56:04. Centers for Disease Control and Prevention. (QuickStat). February 2.

Adams, Patricia and **Vickerie, Jackie** (2007). Respondent-Assessed Health Status Among Persons Aged >25 Years, by Education Level - National Health Interview Survey, United States, 2005. MMWR 2007;56(18), Centers for Disease Control and Prevention. QuickStat.

Adams PF (2006). Reasons for No Health Insurance Coverage Among Uninsured Persons Aged <65 Years - National Health Interview Survey, United States, 2004. (QuickStat). http://www.cdc.gov/nchs/data/series/sr_10/sr10_229.pdf.

Adams, PF; Lucas, JW; and **Barnes, PM** (2007). Summary Health Statistics for the U.S. Population: National Health Interview Survey, 2006. Series 10 No. 236. Hyattsville, MD.

Barnes, P (2007). Physical Activity Among Adults, U.S. 2000 and 2005. Health E Stat. National Center for Health Statistics. http://www.cdc.gov/nchs/nhis.htm.

Barnes, Pat; Adams, Pat; and Schiller, Jeannine (2003). Summary Health Statistics for the U.S. Population: National Health Interview Survey, 2001. National Center for Health Statistics. Vital Health Statistics, Series 10, Number 217.

Barnes, Pat; **Heyman, Kathleen**; and **Schiller, Jeannine** (2007). Early release of selected estimates based on data from the January–March 2007 National Health Interview Survey. National Center for Health Statistics. http://www.cdc.gov/nchs/nhis.htm.

Barnes, Pat M and **Schoenborn, Charlotte A** (2003). Physical activity among adults: United States, 2000. Advance data from vital and health statistics; no. 333. Hyattsville, MD. National Center for Health Statistics.

Barnes, Patricia (2006). QuickStats: Percentage of adults who engaged in any leisure-time strengthening activity, by sex and age group, U.S., 2005. September 8, 2006 MMWR.

* Names of DHIS staff members (present and past) are bolded.

Barnes, Patricia (2007). Assistance Used to Quit Smoking by Adults Aged >18 Years During the Preceding 2 Years, by Type - National Health Interview Survey, United States, 2005. MMWR 2007;56(20), Centers for Disease Control and Prevention. QuickStat.

Barnes, Patricia; Adams, Patricia; and **Powell-Griner, Eve** (2005). Health Characteristics of the American Indian and Alaska Native Adult Population: United States, 1999-2003. Advance data from vital and health statistics; no 356. Hyattsville, Maryland: National Center for Health Statistics.

Barnes, Patricia; Adams, Patricia; and **Powell-Griner, Eve** (2008). Health Characteristics of the Asian Adult Population: United States, 2004-2006. Advance data from vital and health statistics; no 394. Hyattsville, Maryland: National Center for Health Statistics.

Barnes, Patricia M; Powell-Griner, Eve; McFann, K; Nahin, R (2004). Complementary and Alternative Medicine Use Among Adults: United States, 2002. Advance Data, Number 343.

Barnes, Patricia; Powell-Griner, Eve; McFann, K; and Nahin, Richard (2004). Complementary and alternative medicine use among adults: United States, 2002. Seminars in Integrative Medicine, vol. 2, no 2: 54-71.

Barnes, P and **Heyman, KM** (2007). Early release of selected estimates based on data from the January–June 2007 National Health Interview Survey. National Center for Health Statistics. http://www.cdc.gov/nchs/nhis.htm. December 2007.

Barnes P and **Schiller JS** (2006). Early release of selected estimates based on data from the January–June 2006. National Health Interview Survey. National Center for Health Statistics.

Bates, Nancy; **Dahlhamer, James**; and Singer, Eleanor (2008). Privacy Concerns, Too Busy, or Just Not Interested: Using Doorstep Concerns to Predict Survey Nonresponse. J. Official Statistics.

Blackwell, Debra L (2003). Domestic Violence and Child Abuse Sourcebook (book review). Social Science and Medicine 56: 427-428.

Blackwell, Debra and Lichter, DT (2004). Homogamy among dating, cohabiting, and married couples. The Sociological Quarterly, vol. 45, issue 4, pp. 719-737. December.

Blackwell, Debra L; **Martinez, M**; and **Gentleman, Jane F** (2008). Women's Compliance with Public Health Guidelines for Mammograms and Pap Tests in Canada and the United States: An Analysis of Data from the Joint Canada/U.S. Survey of Health. Accepted for publication in Women's Health Issues.

Blackwell, Debra L and **Tonthat, Luong** (2003). Summary Health Statistics for the US Population: National Health Interview Survey, 1999. Vital and Health Statistics Series 10, Number 211. August.

Blackwell, Debra L; Vickerie, Jackline L; and Wondimu, EA (2003). Summary Health Statistics for U.S. Children: National Health Interview Survey, 2000. Vital and Health Statistics, Series 10, Number 213. October 2003.

Blackwell, DL and **Tonthat, L** (2003). Summary health statistics for U.S. children: National Health Interview Survey, 1999. National Center for Health Statistics. Vital Health Stat 10(210).

Bloom, B; Cohen, RA; Vickerie, JL; and Wondimu, EA (2003). Summary health statistics for U.S. children: National Health Interview Survey, 2001. National Center for Health Statistics. Vital Health Stat 10(216).

Bloom, Bobbie and **Barnes, Patricia** (2006). Percentage of teens aged 14-17 years who used indoor tanning devices during the preceding 12 months, by sex and age – United States, 2005. MMWR 2006;55:40, Centers for Disease Control and Prevention. (QuickStat).

Bloom, Bobbie and **Cohen, Robin** (2007). Summary Health Statistics for U.S. Children: National Health Interview Survey, 2006. Series 10 No. 234. Hyattsville MD.

Bloom, Bobbie; and **Cohen, Robin** (2007). Estimated Percentage of Students Who Missed School During the Preceding 12 Months Because of Illness or Injury, by Number of Days Missed - National Health Interview Survey, United States, 2006. MMWR 2007;56:37, Centers for Disease Control and Prevention. (QuickStat).

Bloom, Bobbie and Dey, Achintya (2006), Summary Health Statistics for U.S. Children: NHIS, 2004. Series 10, No. 227. National Center for Health Statistics.

Bloom, Bobbie; Dey, Achintya; and **Freeman, Gulnur** (2006), Summary Health Statistics for U.S. Children: NHIS, 2005. Series 10, No. 231. National Center for Health Statistics.

Blumberg, SJ; Davis, K; Khare, M; and **Martinez, M** (2005). The effect of survey follow-up on nonresponse bias: Joint Canada / United States Survey of Health, 2002-03. Proceedings of the Survey Methods Section, Statistical Society of Canada.

Blumberg, SJ and **Dickey, WC.** (2003). Prevalence of HIV risk behaviors, risk perceptions, and testing among U.S. adults with mental disorders. Journal of Acquired Immune Deficiency Syndromes, 32, 77-79.

Blumberg, SJ and **Luke, JV** (2006). Wireless substitution: Preliminary data from the 2005 National Health Interview Survey. Health E-Stats. Centers for Disease Control and Prevention, National Center for Health Statistics.

http://www.cdc.gov/nchs/products/pubs/pubd/hestats/wireless/wireless2005.htm.

Blumberg, SJ; and **Luke, JV** (2007). Wireless substitution: Preliminary data from the January–June 2006 National Health Interview Survey. Health E-Stats. Centers for Disease Control and Prevention, National Center for Health Statistics.

Blumberg, SJ and **Luke, JV** (2007). Wireless substitution: Early release of estimates based on data from the National Health Interview Survey, July - December 2006. National Center for Health Statistics. http://www.cdc.gov/nchs/nhis/htm.

Blumberg, SJ, and **Luke, JV** (2007). Wireless substitution: Early release of estimates from the National Health Interview Survey, January – June 2007.

http://www.cdc.gov/nchs/data/nhis/earlyrelease/wireless200712.pdf

http://www.cdc.gov/nchs/products/pubs/pubd/hestats/wireless2006/wireless2006.htm.

Blumberg, SJ; **Luke, JV**; and **Cynamon, ML** (2004). Has cord-cutting cut into random-digit-dial health surveys? The prevalence and impact of wireless substitution. In S. B. Cohen and J. M. Lepkowski (Eds.), Eighth Conference on Health Survey Research Methods (pp. 137-142). Hyattsville, MD: National Center for Health Statistics.

Blumberg, Stephen J and **Luke, Julian V** (2007). Coverage bias in traditional telephone surveys of low-income and young adults. Public Opinion Quarterly, Vol. 71, 734-749.

Blumberg, Stephen J; Luke, Julian V; and **Cynamon, Marcie L** (2005). Telephone coverage and health survey estimates: Is concern about wireless substitution warranted? American Journal of Public Health.

Blumberg, Stephen J; Luke, Julian V; Cynamon, Marcie L; and Frankel, MR (2008). Recent trends in household telephone coverage in the United States. In J. M. Lepkowski et al. (Eds.), Advances in Telephone Survey Methodology (pp. 56-86). New York: John Wiley and Sons, Inc.

Bourdon, KH; Goodman, R; Rae, D; **Simpson, Gloria;** and Koretz, DS (2005). The Strengths and Difficulties Questionnaire: U.S. Normative Data and Psychometric Properties. J Am Acad Child Adolesc Psychiatry, 44:6, pp 557-564.

Cohen, RA and **Coriaty-Nelson, Z** (2004). Health insurance coverage: Estimates from the National Health Interview Survey, 2003. http://www.cdc.gov/nchs/nhis.htm, June 2004.

Cohen, RA; Hao, C; and Coriaty Nelson, Z (2005). Percentage of persons who lacked health insurance coverage for more than 1 year, by race/ethnicity – United States, January-June 2004. QuickStats, 1/28.

http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5403a6.htm

Cohen, RA and **Martinez, ME** (2005). Health Insurance Coverage: Estimates from the National Health Interview Survey, 2004.

http://www.cdc.gov/nchs/data/nhis/earlyrelease/insur200506.pdf.

Cohen, RA and **Martinez, ME** (2007). Health Insurance Coverage: Early Release of Estimates from the National Health Interview Survey, January-June 2007. http://www.cdc.gov/nchs/nhis.htm. December 2007.

Cohen, RA; Martinez, ME; and **Hao, C** (2006). Health Insurance Coverage: Estimates from the National Health Interview Survey, January – September 2005. March.
http://www.cdc.gov/nchs/data/nhis/earlyrelease/insur200603.pdf.

Cohen, RA; Ni, H; and **Hao C** (2003). Trends in health insurance coverage by poverty status among persons under 65 years of age: United States, 1997-2002. Health E-Stat. http://www.cdc.gov/nchs/products/pubs/pubd/hestats/insurance.htm.

Cohen, R and **Martinez, M** (2006). Health Insurance Coverage: Early Release of Estimates from the National Health Interview Survey, January - June 2006. http://www.cdc.gov/nchs/nhis.htm. December 20.

Cohen, Robin A and **Bloom Bobbie** (2005). Trends in health insurance and access to medical care for children under age 19 years: United States, 1998-2003. Advance data from vital and health statistics; no 355. Hyattsville, Maryland: National Center for Health Statistics.

Cohen, Robin A; Coriaty-Nelson, Zakia; and **Ni, Hanyu** (2004). Health Insurance Coverage: Estimates from the National Health Interview Survey, January-September 2003. http://www.cdc.gov/nchs/data/nhis/earlyrelease/insur200403.pdf.

Cohen, Robin A and **Martinez, Michael E** (2007). Health Insurance Coverage: Early Release of Estimates from the National Health Interview Survey, 2006. National Center for Health Statistics.

Cohen, Robin A and **Martinez, Michael E** (2007). Health Insurance Coverage: Early Release of Estimates from the National Health Interview Survey, January – September 2006. National Center for Health Statistics.

Cohen, Robin A; Martinez, Michael; and **Hao, Cathy** (2005). Health Insurance Coverage: Estimates from the National Health Interview Survey, January- September 2004. http://www.cdc.gov/nchs/nhis.htm

Cohen, Robin and **Martinez, Michael** (2005). Health insurance coverage: Estimates from the January-March 2005 National Health Interview Survey. National Center for Health Statistics. See http://www.cdc.gov/nchs/nhis.htm.

Cohen, Robin and **Martinez, Michael** (2005). Health Insurance Coverage: Estimates from the NHIS, January-June, 2005.

Cohen, Robin and Martinez, Michael (2005). Impact of Medicare and Medicaid probe questions on health insurance estimates from the National Health Interview Survey, 2004. Health E-Stat, 2005. See http://www.cdc.gov/nchs/products/pubs/pubd/hestats/impact.htm

Cohen, Robin and **Martinez, Michael** (2006). Health insurance coverage: Estimates from the National Health Interview Survey, 2005. National Center for Health Statistics. http://www.cdc.gov/nchs/nhis.htm

Cohen, Robin and **Martinez, Michael** (2006). Health Insurance Coverage: Early Release of Estimates from the NHIS, January-March 2006. National Center for Health Statistics. **http://www.cdc.gov/nchs/nhis.htm**.

Cohen, Robin and **Martinez, Michael** (2006). Impact of Medicare and Medicaid probe questions on health insurance estimates from the National Health Interview Survey, 2005. National Center for Health Statistics. Health E-Stat. http://www.cdc.gov/nchs/nhis.htm.

Cohen, Robin; and **Martinez, Michael** (2007). Health Insurance Coverage: Early Release Estimates from the National Health Interview Survey, January-March 2007. http://www.cdc.gov/nchs/nhis.htm.

Cohen, Robin and **Ni, Hanyu** (2004). Health insurance coverage: Estimates from the National Health Interview Survey, January–June 2003. http://www.cdc.gov/nchs/nhis.htm. January 2004.

Cohen, Robin; Hao, Cathy; and **Coriaty Nelson, Zakia** (2004). Health Insurance coverage: Estimates from the National Health Interview Survey, January-March 2004 http://www.cdc.gov/nchs/nhis.htm. September 2004.

Cohen, Robin; Hao, Cathy; and **Coriaty Nelson, Zakia** (2004). Health insurance coverage: Estimates from the National Health Interview Survey, January-June 2004. http://www.cdc.gov/nchs/nhis.htm. December 2004.

Coles, Richard H; Barnes, Patricia; Fingerhut, Lois A; **Gentleman, Jane F;** Schenker, Nathaniel Schenker; and Warner, Margaret (2006). Imputation of missing date information for injuries and poisonings reported in the National Health Interview Survey. Proceedings of the NorthEast SAS® Users Group Nineteenth Annual Conference.

Dahlhamer, James M and Cox, Christine S (2008). Respondent Consent to Link Survey Data with Administrative Records: Results from a Split-Ballot Field Test with the 2007 National Health Interview Survey. Proc. Federal Committee on Statistical Methodology Research Conference, Arlington, Virginia, November 5-7.

Dahlhamer, James M; **Simile, Catherine M**; and **Taylor, Beth** (2007). Exploring the Impact of Participant Reluctance on Data Quality in the National Health Interview Survey. Proc. 23nd Statistics Canada International Methodology Symposium, Gatineau, Quebec, Canada.

Dahlhamer, James M; **Stussman, Barbara J**; **Simile, Catherine M**; and **Taylor, Beth** (2006). Modeling Survey Contact in the National Health Interview Survey (NHIS). Proc. 22nd Statistics Canada International Methodology Symposium, Ottawa, Ontario, Canada.

Dahlhamer, JM; Meyer, PS; and **Pleis JR** (2007). Questions People Don't Like to Answer: Wealth and Social Security Numbers. 2006 Proc. American Statistical Association, Survey Research Methods Section [CD-ROM], Alexandria, VA: American Statistical Association.

Davis, Karen and **Moriarity, Chris** (2007). Assessing Population Coverage in a Health Survey. Proc. ASA Survey Research Methods Section, 2006 Joint Statistical Meetings.

Devlin, Susan (Chair); Boardman, Tom; Gage, Linda; **Gentleman, Jane**; Lakshminarayanan, Mani; Phipps, Polly; and Cobb, George (2006). Final Report of the ASA Task Force on Committee Organization & Management. 52-pages. Report produced for the American Statistical Association Board of Directors.

Dey, Achinta Dey and **Bloom, Bobbie** (2005) Summary health statistics for U.S. children: National Health Interview Survey, 2003. National Center for Health Statistics. Vital Health Stat 10(223

Dey, Achinta N; Schiller, Jeannine; and **Tai, Diane A** (2004). Summary Health Statistics for U.S. Children, National Health Interview Survey, 2002. National Center for Health Statistics. Vital Health Stat (10) 221.

Dickey, Wayne and **Blumberg, Stephen J** (2004). Mental disorder prevalence and contacts with mental health professionals among adults in the United States: National Health Interview Survey, 1999. In R. W. Manderscheid & M. L. Henderson (Eds.), Mental Health, United States, 2002 (pp. 92-104). Rockville, MD: Center for Mental Health Services.

Dickey, Wayne and **Blumberg, Stephen J** (2004). Revisiting the factor structure of the Strengths and Difficulties Questionnaire: United States, 2001. Journal of the American Academy of Child and Adolescent Psychiatry, 43, 1159-1167.

Dodge, Yadolah (Ed.). The Oxford Dictionary of Statistical Terms (2003). Oxford University Press, 506 pages. **Jane Gentleman** was a contributor of contents and a member of the Editorial Board.

Federal Interagency Forum on Child and Family Statistics (2005). Parental Reports of Children's Emotional and Behavioral Difficulties. America's Children: Key National Indicators of Well-being 2005.. Federal Interagency Forum on Child and Family Statistics, Washington, DC: U.S. Government Printing Office. Acknowledged contributors include **Gloria Simpson** and **Robin Cohen**.

Federal Interagency Forum on Child and Family Statistics. America's children in brief: Key national indicators of well-being (2006). Government Printing Office: Washington, DC. (**Gloria Simpson** is the DHIS representative.)

Freeman, Gulnur and **Lethbridge-Cejku, Margaret** (2006). Access to health care among Hispanic or Latino women: United States, 2000-2002. Advance Data from Vital and Health Statistics; No. 368. National Center for Health Statistics. Hyattsville, MD.

Gentleman, Jane F (2003). Coordinated efforts involving the National Center for Health Statistics and its survey co-sponsors, stakeholders, and data users. Proceedings of Federal Committee on Statistical Methodology's Statistical Policy Seminar on Challenges to the Federal Statistical System in Fostering Access to Statistics Enhancing the Design, Access and Analytical Utility of Federal Surveys Through Coordinated Efforts Between Sponsors, Stakeholders and Data Users, Bethesda, Maryland, 2002. Appears as an OMB Working Paper and on the FCSM Website.

Gentleman, Jane F (2003). Enhancing Comparability of National Health Survey Data from the United States and Canada Via a Bi-national Survey. 2003 Proc. ASA, Health Policy Statistics Section [CD-ROM], 2003 Joint Statistical Meetings.

Gentleman, Jane F (Chair); Madansky, Albert; Scott, David W; Stokes, S Lynne; Wegman, Edward J; Zaslavsky, Alan; and Precup, Veronica (2004). Report of the ASA Task Force on the ASA-SIAM Series on Statistics and Applied Probability. ("Book Series Task Force"). 64-pages. Report produced for the American Statistical Association.

Gentleman, Jane F (Contact person) (2004). Improving the U.S./Canadian Comparability of Health Survey Statistics. Grant Results Report provided to grantor Robert Wood Johnson Foundation. Available at http://www.rwjf.org/reports/grr/044179.htm

Gentleman, Jane F (2007). The 50th Anniversary of the National Health Interview Survey in 2007. PowerPoint presentation posted at
http://www.apdu.org/conference/2007/agenda2s1.htm
from Association of Public Data Users (APDU) annual conference, October 2007, Washington, D.C., October 2007.

Gentleman, Jane F (2008). Happy 50th anniversary to the National Health Interview Survey! Forthcoming in Chance. Vol. 2, No. 2. Springer and American Statistical Association.

Gentleman, Jane F (2008). Uses of National Health Interview Survey (NHIS) data by winners of the NHIS poster contest. Joint Statistical Meetings, Salt Lake City, 2007. To appear in Proceedings of the 2007 Joint Statistical Meetings. Also to be published as an addendum to Proc. of NCHS' June 24, 2007 conference to commemorate the National Health Interview Survey's 50th anniversary.

Gentleman, Jane F and Hetrick, Karin (2008). Stories from the Field: Tales of what it's like to be an NHIS interviewer. To appear in proceedings of conference to commemorate the National Health Interview Survey's 50th anniversary, Hyattsville, Maryland, June 2007.

Gentleman, Jane F and **Jack, Susan** (2007). The National Health Interview Survey. Encyclopedia of Health and Aging, 401-403. Sage Publications.

Gentleman, Jane F and **Jack, Susan S** (2007). The National Health Interview Survey: Fifty years of surveying the health of the United States household population. Article in Encyclopedia of Survey Research Methods. Sage Publications.

Gentleman, Jane F and **Jack, Susan** (2008). Some historical tidbits from the National Health Interview Survey. To appear in proceedings of conference to commemorate the National Health Interview Survey's 50th anniversary, Hyattsville, Maryland, June 2007.

Gentleman, Jane F; Blackwell, Debra L; and **Martinez, Michael E** (2007). Obesity rate differences between U.S. and Canadian women and between U.S. and Canadian men: Findings from the Joint Canada/United States Survey of Health. Proc. of Statistics Canada's International Methodology Symposium on Methodological Issues in Measuring Population Health, Gatineau, Quebec, November 2006.

Gentleman, Jane F; Blackwell, Debra; and **Martinez, Michael** (2005). Women's Compliance with Public Health Guidelines for Getting Mammograms and Pap Tests in Canada and the United States: An Analysis of Data from the Joint Canada/U.S. Survey of Health. Proc. From Invited Talk at 55th meeting of the International Statistical Institute, Sydney, 2005. On CD.

Gentleman, Jane F; Blackwell, Debra; and **Martinez, Michael** (2006). Obesity rate differences between American and Canadian adults. Proceedings of the Survey Methods Section, Statistical Society of Canada Annual Meeting, Saskatoon, Saskatchewan, 2005.

Gentleman, Jane F; Blackwell, Debra; Martinez, Michael; Sanmartin, Claudia; and Berthelot, Jean-Marie (2005). A comparative analysis of health care service utilization in the United States and Canada: Findings from the Joint Canada/United States Survey of Health. Proc. ASA Health Policy Statistics Section, 2004 Joint Statistical Meetings.

Gentleman, Jane F and **LaRochelle, Brenda** (Eds.) (2008). Proceedings of conference to commemorate the National Health Interview Survey's 50th anniversary, Hyattsville, Maryland, June 2007.

Gentleman, Jane F; Simile, Catherine; Miller, Kristen; Bailie, Lorna; Lavigne, Mylène; Madans, Jennifer (2003). Examining Comparability: A Joint Bi-national Population Health Survey in the United States and Canada. Proceedings of the International Conference on Improving Surveys, Copenhagen, 2002. Proceedings available at www.icis.dk/papers.htm and on CD-ROM. Paper available at www.icis.dk/ICIS_papers/D_3_2. pdf.

Jones, J and **Cohen, RA** (2007). A Comparison of Estimates of Health Insurance Coverage, by Type of Coverage from the National Survey of Family Growth (2002) and the National Health Interview Survey (April 2002 – March 2003). Health E-Stats. Hyattsville, MD: National Center for Health Statistics. Released June 21.

Lethbridge-Cejku, Margaret; Rose, Deborah; and Vickerie, Jackie (2006). Summary Health Statistics for U.S. Adults: National Health Interview Survey, 2004. Vital Health Stat 10(228). National Center for Health Statistics. Hyattsville, MD.

Lethbridge-Cejku, Margaret and **Vickerie, Jackie** (2005). Summary Health Statistics for U.S. Adults: National Health Interview Survey, 2003. National Center for Health Statistics. Vital Health Stat 10(225).

Lethbridge-Cejku, Margaret; Schiller, Jeannine; and **Bernadel, Luther** (2004). Summary health statistics for U.S. Adults: National Health Interview Survey, 2002. Vital Health Statistics 10(222). National Center for Health Statistics. Hyattsville, MD.

Lethbridge-Cejku, Peggy and **Vickerie, Jackie** (2005). Average number of bed days during the preceding 12 months among persons aged >18 years, by age group: United States, 2003. MMWR 2005;54(32);803. QuickStat. Centers for Disease Control and Prevention.

Lucas, Jacqueline W; Barr-Anderson, DJ; and Kington, RS (2003). Health Status, Health Insurance, and Health Care Utilization Patterns of Immigrant Black Men. American Journal of Public Health 2003; 93:1740-1747. October 2003.

Lucas, Jacqueline W; Barr-Anderson, DJ; and Kington, RS (2005). Health Status of Non-Hispanic U.S.-Born and Foreign-Born Black and White Persons: United States, 1992-95. National Center for Health Statistics. Vital Health Stat 10(226).

Lucas, Jacqueline W; Schiller, Jeannine S; and **Benson, Veronica** (2004). Summary Health Statistics for U.S. Adults: National Health Interview Survey, 2001. National Center for Health Statistics. Vital Health Stat 10(218). 2004.

McPherson, M; Weissman, G; Strickland, BB; van Dyck, PC; **Blumberg, Stephen J;** and Newacheck, PW (2004). Implementing community-based systems of services for children and youths with special health care needs: How well are we doing? Pediatrics, 113, 1538-1544.

McQuillan, Geraldine M; Kruszon-Morna, Deanna; Kotiri, Benny J; Curtin, Lester R; **Lucas, Jacqueline W**; and Kington, Raynard S (2004). Racial and Ethnic Differences in the Seroprevalence

of Six Infectious Diseases in the United States: Data from NHANES III, 1988-1994. American Journal of Public Health.

Meyer, PS; Dahlhamer, JM; and **Pleis JR** (2007). Developing New Methods and Questions for Improving Response and Measurement on Sensitive Questions on the National Health Interview Survey (NHIS). 2006 Proceedings of the American Statistical Association, Survey Research Methods Section [CD-ROM], Alexandria, VA: American Statistical Association.

Moscicki, Eve; Bourdon, Karen; and **Simpson, Gloria** (2004). A mental health indicator for America's children. Reporting Committee of the Federal Forum on Child and Family Statistics Meeting. Washington, DC.

Nahin, Richard L; **Dahlhamer, James M; Taylor, Beth L; Barnes, Patricia M; Stussman, Barbara J; Simile, Catherine M;** Blackman, Marc R; Chesney, Margaret A; Jackson, Morgan; Miller, Heather; and McFann, Kim K (2007). Health behaviors and risk factors in those who use complementary and alternative medicine. BMC Public Health, 7:217.

Nelson, DE; **Powell-Griner, Eve;** Town M; and Kovar, MG (2003). A Comparison of National Estimates from the National Health Interview Survey and the Behavioral Risk Factor Surveillance System. American Journal of Public Health. Vol. 93, No. 8:135435-1341. August 2003.

Nelson, Zakia; Schiller, Jeannine; and **Scott, Gulnur** (2004). Rates of 4:3:1 vaccination among U.S. children aged 19–35 months, National Health Interview Surveys, 2002–2003. Health E Stat. Available online at ww.cdc.gov/nchs/.

Ni, H; Barnes, P; and **Cohen, R** (2003). Early Release of selected estimates based on data from the January-September 2002 NHIS. http://www.cdc.gov/nchs/about/major/nhis/released200303.htm.

Ni, Hanyu; Coriaty-Nelson, Zakia; Schiller, Jeannine; Cohen, Robin; and **Barnes, Pat** (2003). Early Release of selected estimates based on data from the January-June 2003 National Health Interview Survey. National Center for Health Statistics. December 2003. http://www.cdc.gov/nchs.htm.

Ni, Hanyu; Coriaty-Nelson, Zakia; Schiller, Jeannine; Cohen, Robin A; and Barnes, Patricia (2004). Early release of selected estimates based on data from the January-September 2003 National Health Interview Survey. National Center for Health Statistics.
http://www.cdc.gov/nchs/nhis.htm. March 2004.

Ni, Hanyu; Schiller, Jeannine; Hao, Cathy; Cohen, Robin A; and **Barnes, Pat** (2003**).** Early release of selected estimates based on data from the 2002 National Health Interview Survey. National Center for Health Statistics. http://www.cdc.gov/nchs/nhis.htm. June 2003.

Ni, H; Schiller, J; Hao, C; Cohen, RA; and **Barnes, P** (2003)**.** Early release of selected estimates based on data from the January-March 2003 National Health Interview Survey. National Center for Health Statistics. Available at: http://www.cdc.gov/nchs/nhis.htm. September.

Pastor, P; Reuben, C; Duran, K; **Simpson, Gloria;** and Nelson Z (2005). QuickStats: Percentage of Children Aged 5-17 Years Ever Having Diagnoses of Attention Deficit/Hyperactivity Disorder (ADHD) or Learning Disability (LD), by Sex and Diagnosis - United States, 2003. Morbidity and Mortality Weekly Report. November 4, 2005 / Vol. 54 / No. 43.

Pleis, John R and **Coles, Richard** (2003). Summary Health Statistics for U.S. Adults: National Health Interview Survey, 1999. National Center for Health Statistics. Vital Health Stat 10(212). August 2003.

Pleis, John R; Benson, Veronica; and **Schiller, Jeannine** (2003). Summary Health Statistics for U.S. Adults: National Health Interview Survey, 2000. National Center for Health Statistics. Vital Health Statistics, Series 10, Number 215.

Pleis, JR and **Cohen, RA** (2007). Impact of Income Bracketing on Poverty Measures Used in the National Health Interview Survey's Early Release Program: Preliminary Data from the 2007 NHIS. National Center for Health Statistics, Division of Health Interview Statistics. http://www.cdc.gov/nchs/data/nhis/income.pdf.

Pleis JR and **Dahlhamer JM** (2004). Family Income Nonresponse in the National Health Interview Survey (NHIS): 1997-2000". 2003 Proceedings of the American Statistical Association, Survey Research Methods Section [CD-ROM], Alexandria, VA: American Statistical Association.

Pleis JR and **Dahlhamer JM** (2005). "Ecological Correlates of Family Income Nonresponse in the National Health Interview Survey (NHIS), 2002-2003". 2004 Proceedings of the American Statistical Association, Survey Research Methods Section [CD-ROM], Alexandria, VA: American Statistical Association.

Pleis, JR; Dahlhamer, JM; and **Meyer**, PS (2007). Unfolding the Answers? Income Brackets and Income Nonresponse in the National Health Interview Survey (NHIS). 2006 Proceedings of the American Statistical Association, Survey Research Methods Section [CD-ROM], Alexandria, VA: American Statistical Association.

Pleis, JR and **Lethbridge-Cejku, M** (2006). Summary Health Statistics for U.S. Adults: National Health Interview Survey, 2005. Series 10 No. 232. Hyattsville, MD.

Pleis, JR and **Lethbridge-Cejku, M** (2007). Summary Health Statistics for U.S. Adults: National Health Interview Survey, 2006. Series 10 No. 235. Hyattsville, MD.

Powell-Griner, **Eve; Blackwell, Debra; Martinez, Martinez;** and **Schiller, Jeannine** (2005). Percentage of U.S. and Canadian Women Aged 50-69 Years Who Were Screened in Accordance with National Screening Guidelines for Papanicolaou (Pap) Tests and Mammograms, by Country and Health Insurance Status, 2002-2003. MMWR 2005;54:35. QuickStat. CDC.

Powell-Griner, Eve; Blackwell, Debra L; and **Martinez, Michael** (2005). Percentage of Adults Aged ≥50 Years Told by a Health-Care Professional That They Had Diabetes, by Age Group - United States and Canada, 2002--2003. Nov. 18, 2005, MMWR, QuickStats.

Pratt, LA; **Dey, Achintya N**; and Cohen AJ (2007). Characteristics of Adults with Serious Psychological Distress as Measured by the K6 Scale: U.S., 2001-04. Advance Data 382. National Center for Health Statistics.

Qiu, Yue and **Ni, Hanyu** (2003). Utilization of dental care services by Asian American and native or other Pacific Islanders: United States, 1997-2000. Advanced Data from Vital and Health Statistics; no 336. Hyattsville, Maryland: National Center for Health Statistics.

Riddick, Howard; Stussman, Barbara; and **Taylor, Beth L** (2005). Partial Interviews, Polling America Encyclopedia, Vol 2, 486-490.

Rose, Deborah (2004). Guideline implementation: Translating a new Canadian/U.S. health survey into Spanish. Proceedings of the 2003 Research Conference, Federal Committee on Statistical Methodology (FCSM). Arlington, VA. CD-ROM

Rose, Deborah and **Howie, Jean** (2007). The National Health Interview Survey Tobacco History Information. Website providing in-depth information on tobacco related variables collected in the NHIS.

Sanmartin, Claudia; Berthelot, Jean-Marie; Ng, Edward; Murphy, Kellie; **Blackwell, Debra, Gentleman, Jane; Martinez, Michael;** and **Simile, Catherine** (2006). Comparing Health and Health Care Use in Canada and the United States. Health Affairs, 25(4), 1133-1142.

Sanmartin, Claudia; Ng, Edward; **Blackwell, Debra; Gentleman, Jane; Martinez, Michael; and Simile, Catherine** (2004). Joint Canada/United States Survey of Health, 2002-03. http://www.cdc.gov/nchs/data/nhis/jcush_analyticalreport.pdf.

Saraiya, Mona; Hall, H Irene; Thompson, Trevor; Hartman, Anne; Glanz, Karen; Rimer, Barbara; and **Rose, Deborah** (2004). Skin cancer screening among US adults from 1992, 1998, and 2000 National Health Interview Surveys. Prev Med. Vol 39(2):308-14. Aug 2004.

Schenker, Nathaniel; Raghunathan, Trivellore E; **Chiu**, **Pei-Lu;** Makuc, Diane M; Zhang, Guangyu; and Cohen, Alan J (2005). Multiple Imputation of Missing Income Data in the National Health Interview Survey. J. American Statistical Assn, 10(475):924-933.

Schieve, LA; Rice, C; Boyle, C; Visser, SN; and **Blumberg, SJ** (2006). Parental report of diagnosed autism in children aged 4-17 years—United States, 2003-2004. MMWR: Morbidity and Mortality Weekly Report, 55, 481-486.

Schiller, J; Coriaty-Nelson, Z; Hao, C; Cohen RA; and **Barnes, P** (2004). Early release of selected estimates based on data from the 2003 National Health Interview Survey. National Center for Health Statistics. Available at: http://www.cdc.gov/nchs/nhis.htm. June.

Schiller, Jeannine (2005). Uninsured persons under age 65 years, by length of time without health insurance, United States, 2003. MMWR 2005;54:14, Centers for Disease Control and Prevention. (Quick Stat).

Schiller, Jeannine (2007). Estimated Percentage of Persons Who Delayed or Did Not Receive Medical Care During the Preceding Year Because of Cost, by Respondent-Assessed Health Status - National Health Interview Survey, United States, 2005. MMWR 2007;56:21, Centers for Disease Control and Prevention. QuickStat.

Schiller, Jeannine (2007). Percentage of Adults Aged >18 Years Who Reported Ever Being Tested for Human Immunodeficiency Virus (HIV), by Sex and Race/Ethnicity - National Health Interview Survey, United States, 2006. MMWR 2007;56:31, Centers for Disease Control and Prevention. (QuickStat).

Schiller, Jeannine and **Barnes, Patricia** (2005). Percentage of Adults Aged ≥ 18 Years Who Used Complementary and Alternative Medicine (CAM) During the Preceding 12 Months - United States, 2002. MMWR 2005;54:283. Centers for Disease Control and Prevention.

Schiller, Jeannine and **Dey, Achintya** (2005). Percentage of Children Aged <18 Years Who Regularly Took Prescription Medication, by Health Insurance Coverage Status: United States, 2003. MMWR 2005;54:17, Centers for Disease Control and Prevention. (QuickStat)

Schiller, Jeannine and **Dey, Achintya** (2005). Percentage of Children Aged <18 Years Who Have Ever Had Asthma Diagnosed, by Age Group: United States, 2003. MMWR 2005;54:16, Centers for Disease Control and Prevention. (QuickStat)

Schiller, Jeannine S and **Barnes, Patricia** (2007)**.** Early Release of Selected Estimates based on data from the National Health Interview Survey, 2006. National Center for Health Statistics.

Schiller, Jeannine S and **Barnes, Pat** (2007). Early Release of Selected Estimates based on data from the January-September 2006 NHIS. National Center for Health Statistics.

Schiller, Jeannine S and **Bernadel, Luther** (2004). Summary Health Statistics for the U.S. Population: National health Interview Survey, 2002. Series 10, Number 220.

Schiller, Jeannine S. and Ni, Hanyu Ni (2006). Cigarette smoking and smoking cessation among persons with chronic obstructive pulmonary disease. Am J Health Promot. May-June; 20(5):319-25.

Schiller, Jeannine S; Coriaty Nelson, **Zakia; Hao, Cathy;** and **Barnes, Patricia** (2004). Early release of selected estimates based on data from the January-March 2004 National Health Interview Survey. National Center for Health Statistics. http://www.cdc.gov/nchs/nhis.htm. September 2004.

Schiller, Jeannine S; Gentleman, Jane F; and **Powell-Griner, Eve** (2006). The Early Release Program of the National Health Interview Survey. Proc. ASA Health Policy Statistics Section, 2006 Joint Statistical Meetings.

Schiller, Jeannine S; Martinez, Michael; and **Barnes, Patricia** (2006). Early Release of selected estimates based on data from the 2005 National Health Interview Survey. National Center for Health Statistics. http://www.cdc.gov/nchs/nhis.htm.

Schiller, Jeannine; Martinez, Michael; and **Barnes, Patricia** (2006). Early Release of selected estimates based on data from the January–March 2006 NHIS. National Health Interview Survey. National Center for Health Statistics. http://www.cdc.gov/nchs/nhis.htm.

Schiller, Jeannine S; Martinez, Michael; Hao, Cathy; and **Barnes, Patricia** (2005). Early release of selected estimates based on data from the January-September 2004 National Health Interview Survey. National Center for Health Statistics. http://www.cdc.gov/nchs/nhis.htm.

Schiller, Jeannine; Adams, Pat; and **Coriaty-Nelson, Zakia** (2005). Summary health statistics for the U.S. population: National Health Interview Survey, 2003. Vital Health Stat 10(224).

Schiller, Jeannine; Coriaty Nelson, Zakia; Hao, Cathy; and **Barnes, Patricia** (2004). Early Release of selected estimates based on data from the January-June 2004 National Health Interview Survey. National Center for Health Statistics. http://www.cdc.gov/nchs/nhis.htm. December 2004.

Schiller, Jeannine; Kramarow, Ellen; and **Dey, Achintya** (2006). Annual rate of nonfatal, medically attended fall injuries among adults aged >65 years - United States, 2001-2003. MMWR 2006;55:31, Centers for Disease Control and Prevention. QuickStat.

Schiller, Jeannine; Martinez, Michael; and **Barnes, Pat** (2005**).** Early release of selected estimates based on data from the January-March 2005 National Health Interview Survey. National Center for Health Statistics. http://www.cdc.gov/nchs/nhis.htm.

Schiller, Jeannine; Martinez, Michael; and **Barnes, Patricia** (2005). Early release of selected estimates based on data from the 2004 National Health Interview Survey. National Center for Health Statistics. http://www.cdc.gov/nchs/about/major/nhis/released200506.htm

Schiller, Jeannine; Martinez, Michael; and Barnes, Patricia (2005). Early Release of Selected Estimates Based on Data from the January-June 2005 NHIS.

Schiller, JS; Link, MW; **Adams, PF;** Euler, GW; and **Powell-Griner, E** (2007). An Assessment of Intranasal Influenza Vaccination Coverage Data Based on Two National Surveys. Health E-Stat. NCHS Internet publication. Hyattsville, MD.

Schiller, JS; Martinez, M; and **Barnes, P** (2006). Early release of selected estimates based on data from the January-September 2005 National Health Interview Survey. National Center for Health Statistics. http://www.cdc.gov/nchs/nhis.htm. March.

Schoenborn, CA (2005). Percentage of Young Adults Aged 18-24 Years Who Never Smoked Cigarettes - United States, 1998-2004. (Quickstats) MMWR 54(44):1135. Nov.11.
http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5444a8.htm.

Schoenborn, CA (2005). Percentage of Adults Who Reported an Average of ≤6 hours of Sleep per 24-hour period, by sex and age group – United States, 1985 and 2004. (Quickstats) MMWR 54(37):933. Sept 23, 2005.
http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5437a7.htm.

Schoenborn, CA (2006). Cigarette Smoking Prevalence among Adults Aged ≥18 Years Who Have Ever Spent >24 Hours on the Streets, in a Shelter, or in a Jail or Prison, by Sex - United States. (Quickstats) MMWR 55(10):287. March 17.
http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5510a7.htm.

Schoenborn, CA; Vickerie, J; and **Barnes, P** (2003). Cigarette smoking behavior of adults: United States, 1997-98. Advance Data Number 331.

Schoenborn, CA; **Vickerie, JL**; and **Powell-Griner E** (2006). Health characteristics of adults 55 years and over: United States, 2000-03. Advance data from vital and health statistics; no 370. Hyattsville, Maryland: National Center for Health Statistics. April 11.

Schoenborn, Charlotte (2004). Marital status and health: United States, 1999-2003. Advance Data 351. National Center for Health Statistics. December 15, 2004.

Schoenborn, Charlotte (2005). Percentage of Adults Who Reported an Average of <6 Hours of Sleep per 24-Hour Period, by Sex and Age Group – United States, 1985 and 2004;54:37. QuickStat. Centers for Disease Control and Prevention.

Schoenborn, Charlotte A; Adams, Pat F; Barnes, Pat M; Vickerie, Jackie L; and **Schiller, Jeannine S** (2004). Health Behaviors of Adults: United States, 1999-2001. National Center for Health Statistics Vital Health Stat. 10(219) 2004.

Schoenborn, Charlotte A.; Adams, Pat F; and Schiller, Jeannine (2003). Summary Health Statistics for the U.S. Population: National Health Interview Survey, 2000. National Center for Health Statistics. Vital Health Statistics, Series 10, Number 214. October 2003.

Scott, Gulnur and Ni, Hanyu (2004). Access to health care among Hispanic/Latino children: United States, 1998-2001. Advance Data from vital and health statistics; no 344. Hyattsville, Maryland: National Center for Health Statistics.

Scott, Gulnur and **Simile, Catherine** (2005). Access to dental care among Hispanic or Latino subgroups: United States, 2000-03. Advance data from vital and health statistics; no. 354. Hyattsville, MD: National Center for Health Statistics.

Simile, Catherine M and **Dahlhamer, James M** (2006). Evaluating High Effort Measures for Studying Nonresponse Bias. Proc. 22nd Statistics Canada International Methodology Symposium, Ottawa, Ontario, Canada.

Simile, Catherine M; **Stussman, Barbara**; and **Dahlhamer, James M** (2007). Exploring the Impact of Mode on Key Health Estimates in the National Health Interview Survey. Proc. 23rd Statistics Canada International Methodology Symposium.

Simile, Catherine and Rama, Ed (2005). Operational and methodological lessons learned from the 2003 Joint Canada United States Survey of Health. Proc. Joint Statistical Meetings, 2004.

Simpson, GA; Bloom, B; Manderscheid, R; and Henderson, M (2002). Utilization of Mental Health Services by U. S. Children, 2001. Proc. A System of Care for Children's Mental Health. Newman C, Liberton, CJ, Kutash K, and Friedman RM (eds.), Louis de la Parte Institute, Tampa, FL, pp: 417-422.

Simpson, GA; **Cohen, RA**; Pastor, PN; and Reuben, CA (2006). U.S. children 4-17 years of age who received treatment for emotional or behavioral difficulties: Preliminary data from the 2005 National Health Interview Survey.Health E-Stats. NCHS.

Simpson, G; Bloom, B; Cohen, RA; Blumberg, S; and Bourdon, KH (2005). Percentage of children aged 4-17 years with emotional or behavioral difficulties who used mental health services, by type of service - United States: 2003. QuickStat, 09/02.
http://www.cdc.gov/mmwr/mguide_qs.html.

Simpson, G; Colpe, L; and Greenspan S. (2003). Measuring functional developmental delay in infants and young children: prevalence rates from the NHIS-D. Paediatric and Perinatal Epidemiology. 17(1): 68-80.

Simpson, Gloria (2006). A Special Feature for America's Children–Key National Indicators of Well-being: Parental Reports of Emotional and Behavioral Difficulties (2006). Proc. A System of Care for Children's Mental Health: Expanding the Research Bar. Newman CC and Liberton CJ (eds.), p:387-390, University of South Florida, Tampa, FL.

Simpson, Gloria A; Bloom, Barbara; Manderscheid, R; and Hendershot, G (2004). Utilization of Mental Health Services by U. S. Children, 2001. 16th Annual Research Conference Proceedings: A System of Care for Children's Mental Health. March 2004.

Simpson, Gloria; Bloom, Bobbie; Cohen, Robin; Blumberg, Stephen; and Bourdon, KH (2005). U.S. Children with Emotional and Behavioral Difficulties: Data from the 2001, 2002, and 2003 National Health Interview Surveys. Advance Data No. 360. National Center for Health Statistics.

Simpson, Gloria and **Schiller, Jeannine** (2005). Percentage of Children Aged 4-17 Years with Emotional or Behavioral Difficulties Who Used Mental Health Services, by Type of Service – United States, 2003. MMWR 2005;54:34. QuickStat. Centers for Disease Control and Prevention.

Simpson, Gloria; Scott, Gulnur; Henderson, MJ; and Manderscheid RW (2004). Estimates of attention, cognitive and emotional problems and health service use by U. S. school-aged children. Chapter 9 in Mental Health U. S. 2002. (Manderscheid RW and Henderson MJ eds.) Center for Mental Health Services, Substance Abuse and Mental Health Services Administration. Rockville, MD, pp. 105-119.

Stussman, Barbara; Dahlhamer, James; and **Simile, Catherine** (2005)**.** How Interviewer Strategies Relate to Contact and Cooperation in the NHIS, 2004. Proc. 2005 Research Conference, Federal Committee on Statistical Methodology (FCSM). Arlington, VA, CD-ROM.

Stussman, Barbara; Simile, Catherine; and Dahlhamer, James (2007)**.** Interviewer-Reported Reasons for Conducting Interviews by Telephone in the National Health Interview Survey, 2005. Proc. 2007 Research Conference, Federal Committee on Statistical Methodology (FCSM). Arlington, VA, CD-ROM.

Stussman, Barbara and **Taylor, Beth** (2003)**.** Partials and Break-offs in the National Health Interview Survey, 2002. Proc. 2003 Research Conference, Federal Committee on Statistical Methodology (FCSM). Arlington, VA, CD-ROM.

Tsui J; Saraiya M; Thompson T; **Dey A;** and Richardson L (2007). Cervical Cancer Screening among Foreign-Born Women by Birthplace and Duration in the United States. Journal of Women's Health,Volume 16, Number 10, 2007.

Vickerie, Jackie and **Blackwell, Debbie** (2007). Estimated Percentage of Adults Aged >18 Years With Asthma, by Sex and Race/Ethnicity - National Health Interview Survey, United States, 2006. MMWR 2007;56:45, Centers for Disease Control and Prevention. (QuickStat).

Vickerie, Jackie and **Blackwell, Debbie** (2007). Percentage of Adults Aged ≥18 Years Who Reported Some Form of Arthritis or a Related Condition, by Sex and Race/Ethnicity - National Health Interview Survey, United States, 2006. MMWR 2007;56:29, Centers for Disease Control and Prevention. (QuickStat).

Appendix C. Selected major milestones in the history of the National Health Interview Survey: 1957-2008

Survey year*	NHIS event
1957/58	First went into the field in July 1957
1959/60	First asked about health insurance
1961/62	First asked about occupation and industry
1962/63	First microdata files created and permanently retained
1962/63	First annual Current Estimates report (descriptive statistics)
1966/67	Largest sample (139,196 persons)
1973	New sample design, utilizing new information from the 1970 Census
1976	First collection of respondent-reported race and Hispanic origin information
1976	First identification of multiple races (for adults only until 1981)
1985	New sample design, utilizing new information from the 1980 Census
1985	First oversampling of blacks
1986	Smallest sample (62,052 persons)
1995	New sample design, utilizing new information from the 1990 Census
1995	First oversampling of Hispanics. (Oversampling of blacks continues.)
1995	First supplement to track progress toward achieving national health objectives of the Healthy People program (this one for Healthy People 2000)
1997	First use of computer assisted personal interviewing (CAPI)
1997	Questionnaire completely revised
1997	First set of 3 annual Summary Health Statistics reports (on population, adults, & children), replacing annual Current Estimates report
2001	First quarterly release of estimates for key health indicators via Early Release (ER) Program
2001	First release of public use microdata files on the Internet
2003	First questions about cell phone usage
2004	Blaise software replaces CASES software in laptops
2004	Implementation of Contact History Instrument (CHI) to record characteristics of interviewers' attempts to contact household occupants
2004	First annual microdata files to be released less than one year after the end of the survey year
2004	First quarterly release of detailed health insurance estimates via Early Release (ER) Program
2005	First annual microdata files to be released less than seven months after the end of the survey year
2006	New sample design, utilizing new information from the 2000 Census
2006	First oversampling of Asians. (Oversampling of blacks and Hispanics continues.)

*Two consecutive NHIS years separated by a slash indicate one fiscal year of the survey, which operated on a fiscal year basis through 1967/68.

Survey year*	NHIS event
2006	First oversampling of certain persons aged ≥65: increased probability of selection as the sample adult for persons aged ≥65 who are Hispanic, black, or Asian
2006	First annual microdata files to be released less than six months after the end of the survey year
2007	First semi-annual release of report on cell phone usage via Early Release (ER) Program
2007	Revamped income and Social Security number questions
January 2008	Release of first microdata file of paradata (metadata about the data collection process)

Appendix D. U.S. Census Bureau responses to questions raised by Jane F. Gentleman in February-April 2008

1. *Can you please provide a brief description of what is meant by Title 13 and Title 15?*

   The differences between Title 13 and Title 15 are the dispensation of data and whether or not the data can be shared with sponsors. Title 13 data can only be shared with Census Bureau employees or special sworn status (SSS) employees. Title 15 data can be shared with sponsors.

   Title 13
   Title 13 includes the laws that are specific to the Census Bureau and is sometimes referred to as the "Census Act." The Census Act authorizes the Secretary of Commerce to carry out census-related functions and duties. In turn, the Secretary has delegated his responsibilities to the Director of the Census Bureau. The Census Act provides the authority for data collections. For example, the decennial census is authorized by section 141, the economic censuses by section 131, the census of governments by section 161, foreign trade data collection by section 301, intercensal population estimates by section 181, and current demographic and economic surveys by section 182. Additionally, when the source of a survey's sample is from a Title 13 collection, such as survey samples drawn from the Census' Master Address File (MAF), the survey information collected is protected under Title 13. Title 13 also authorizes the Census Bureau to collect data on behalf of other federal agencies.

   Under Title 13 it is against the law for individuals to disclose or publish any private information that identifies an individual or business, such as names, addresses, social security numbers, employer identification numbers, and telephone numbers. Additionally, the information collected must be used for statistical purposes only. Personal information cannot be used against a respondent by any government agency or court. Furthermore, every person with access to Title 13 information is sworn for life to protect the confidentiality of the data. If anyone violates this law, it is a federal crime and they will face severe penalties, including a federal prison sentence of up to five years, a fine of up to $250,000, or both.

   Title 15
   Title 15 contains much of the Department of Commerce's legislative authority. Like Title 13, Title 15 permits the Secretary of Commerce to collect statistical information and conduct special studies for other organizations. Thus, the Census Bureau uses this authority to conduct non-Title-13 reimbursable surveys and acts as a contractor for sponsoring agencies. Section 1525 authorizes the Census Bureau to provide services and receive payment for services rendered to other agencies; however, any data acquired under Title 15 must be used solely for a Title 15 purpose. They may not be commingled with any data collected or acquired under Title 13 nor used for any Title 13 purpose. When the Census Bureau conducts non-Title-13 surveys for other Federal sponsors, those surveys usually are conducted under the other agency's data collection authority but Census Bureau authorities may also be cited, such as sections 8 and 9 or section 1525 of Title 15, which authorizes the Secretary of Commerce to collect data. When the Census Bureau does work for another federal agency under Title 15, identifiable data may be returned to the sponsoring agency because the data are subject to the sponsoring agency's legislation and confidentiality requirements - not Title 13.

2. *What is supposed to happen in the year 2013? What is special about 2013? That is, why will things change in 2013, when the next NHIS redesign would not normally be scheduled for implementation until 2015?*

With the existence of a continually updated MAF and the continued availability of the American Community Survey (ACS) data across the country, the Census Bureau has an opportunity to assess, and potentially revamp and vastly improve, its approach to designing and selecting future samples for demographic household surveys. As we will no longer be limited to implementing new samples based on the once-a-decade availability of census information, we could possibly begin implementation of the 2010 Redesign* as early as 2013. The current plan is to investigate the positives and negatives of implementing the redesigned samples early. For example, some of the positive aspects of starting early include more recent data yielding more accurate samples, and cost savings from the reduction or elimination of area frame listing. Some of the negative aspects include earlier training costs for new field representatives, and unused sample from the 2000 Redesign.* If the Census Bureau's research appears to favor starting earlier than in past decades, then we would negotiate the start date with the sponsor agencies based upon their needs and requirements. If the sponsors agree and the redesigned samples begin early, the Current Population Survey (CPS) would be the first redesigned survey, followed by the other surveys in the same order as under the 2000 Redesign. However, the NCHS would still have the option to wait until 2015 to implement the NHIS redesigned sample if so desired.

In previous Redesigns, it was impossible to even consider starting early because the required decennial census long-form data were not available early. In the 2010 Redesign, we will be using the ACS data that are available on an annual basis. As designing and implementing the new samples takes several years, the 2010 Redesign cannot occur any earlier than 2013.

3. *Besides NHIS, which Census-fielded surveys now use Title 15?*

In addition to the NHIS and other health-related surveys sponsored by the National Center for Health Statistics (NCHS) and conducted by the Census Bureau, the following surveys are currently (or have been recently) conducted within Census' Demographic Surveys Division under Title 15:

- Library Media Center Questionnaire/Schools and Staffing Survey
- National Ambulatory Medical Care Survey (NAMCS)
- National Hospital Ambulatory Medical Care Survey (NHAMCS)
- National Hospital Discharge Survey (NHDS)
- National Long-Term Care Survey (NLTCS)
- National Prisoners Statistics (NPS) Program
- National Survey of Ambulatory Surgery (NSAS)
- National Survey of Recent College Graduates (NSRCG)
- Private School Survey (PSS)
- Schools and Staffing Survey (SASS)
- Schools Survey on Crime and Safety (SSOCS)
- Survey of Inmates of Local Jails (SILJ)
- Teacher Followup Survey (TFS)
- Telephone Point-of-Purchase Survey (TPOPS)

* The term "2010 Redesign" refers to the redesign of the samples of surveys that are conducted by Census on behalf of "sponsor agencies," where the new design is to be implemented subsequent to the 2010 Decennial Census. Similarly for the term "2000 Redesign." NHIS redesigns were implemented in 1973, 1985, 1995, and 2006, following, respectively, the 1970, 1980, 1990, and 2000 Decennial Censuses.

Also, there are a number of surveys conducted by other divisions within the Census Bureau that are collected under Title 15. They include the following:

- F-33 School Finance Format (2008)
- Pilot Teacher Compensation Survey
- National Public Education Finance Survey
- SRD 1-Survey of State Research and Development
- Common Core of Data - Nonfiscal
- Academic Library Surveys
- Public Libraries Survey
- State Library Agencies Survey
- Juvenile Residential Facility Census
- Census of Juveniles in Residential Placement
- National Juvenile Directory Program
- Juvenile Probation Survey/Census
- Criminal Justice Expenditure and Employment
- National Judicial Reporting Program
- National Prisoner Statistics Program
- Annual Survey of Jails
- Deaths in Custody - Local
- Deaths in Custody - State
- Census of Adult Probation and Parole Survey
- Survey of Sexual Violence - Adult
- Survey of Sexual Violence - Juvenile
- Survey of Sexual Violence - Web Development
- Single Audit - Cost Collection
- Single Audit - Special ED
- Single Audit - GSA
- Consolidated Federal Funds Report - Cost Collection
- Federal Assistance Awards Data System
- Consolidated Federal Funds Report

4. *Can you please provide brief definitions of Demographic Area Address Listing (DAAL) and Permit Address Listing (PAL)?*

DAAL and PAL are listing operations performed by the Census Bureau's field staff.

DAAL

The purpose of DAAL is to validate, collect, and provide address and map updates that are eventually applied to the Master Address File. In the field, representatives verify that all of the address information on the ground is correct in the address list and the mapspot (which is the mark on the map representing the location of the unit within the block). In addition to verifying existing addresses, representatives will add and delete addresses.

PAL

The purpose of PAL is to provide representation of new construction in our current surveys. It includes a sample of addresses from building permits issued for units completed after the last Decennial Census (2000) in each of our current surveys. The field staff visit the selected permit offices to obtain (on a laptop computer) necessary address and geography information for the individual permits issued by the office. As a result of gathering this information, specific new construction housing units/addresses in sample for the various surveys are identified and permit segment listing and interviewing files/materials are prepared for the appropriate survey.

5. *Besides NHIS, which Census-fielded surveys now use listing to obtain addresses?*

As most of our major demographic reimbursable surveys use housing units as the primary base for sampling, the method used to create the housing unit frame is determined by the law (Title 13 or Title 15) under which the survey is conducted. Under Title 13, the creation of the frame can take advantage of and utilize information from the MAF or other Title 13 sources to create and/or enhance the sampling frame. However, sample data collected from this frame cannot be shared with the sponsoring agency. In contrast, if the survey is conducted under Title 15, the sampling frame cannot be developed from Title 13 sources (MAF, ACS, etc.). The NHIS is one of the reimbursable surveys conducted under Title 15 and is unique in that its sample frame is entirely area frame. Besides the NHIS, other surveys such as the CPS, the National Crime Victimization Survey (NCVS), the Consumer Expenditure Survey (CE), the Survey of Income and Program Participation (SIPP), and the American Housing Survey (AHS) use area listings to create their area frame sample universe.

The NHIS cannot use any of the listings for the Title 13 surveys. For example, if a Title 13 survey and a Title 15 survey are in the same block, there have to be two listings: an independent listing and a MAF-based dependent listing. The NHIS is responsible for all of the independent listings.

Demographic Area Address Listing (DAAL)/Permit Address Listing (PAL)

The current DAAL/PAL system is used for our Title 13 surveys to improve or enhance the sampling frames. For these surveys, the primary source for frame development is the MAF, which is covered by Title 13. However, because the NHIS is a Title 15 survey, the DAAL/PAL system is used to create the entire sampling frame with no assistance from the MAF or any other Title 13 sources. Within the DAAL/PAL system, procedures and safeguards are implemented to ensure compliance to Title 13 and Title 15 regulations.

The following surveys use the DAAL/PAL listings:

- American Housing Survey (AHS)
- Consumer Expenditure Quarterly and Diary Surveys (CEQ and CED)
- Current Population Survey (CPS)
- National Crime Victimization Survey (NCVS)
- National Health Interview Survey (NHIS)
- Survey of Income and Program Participation (SIPP)
- State Children's Health Insurance Program (SCHIP) - included with CPS listings

All the surveys listed above are covered by Title 13 with the exception of the NHIS (covered by Title 15).

Why is the NHIS different?

The NHIS is covered by Title 15, allowing the Census Bureau to give address information to the NCHS. The NHIS blocks are listed independently from the other surveys mentioned above. Because the NHIS is not a Title 13 survey, the Census Bureau cannot use dependent listings for the NHIS. The use of dependent listings would mean pulling in Title 13 information, which is prohibited by law. All of the Title 13 surveys listed above use dependent listings based on the MAF.

6. *With what other surveys does NHIS now share the costs of listing?*

Although the CPS, NCVS, CE, SIPP, AHS, and NHIS use area listings to create their area frame sample universe, these surveys do not share the cost of listing. Each survey contributes their fair share for the staffing infrastructure to conduct the work and to list the number of blocks for their survey(s). Each survey's contribution is based on their proportion of all blocks being listed each fiscal year. As mentioned previously, unlike the other major demographic surveys, the NHIS is a Title 15 survey and thus requires an independent listing operation of which the survey bears the full cost of this operation. Cost savings would be realized if the NHIS used Title 13 protected address files, but the deliverables would be tabulations and public use files. Note: There has been some discussion about setting up an offsite location (away from Census) for NCHS that would allow SSS* access to Title 13 data.

7. *Can you please provide a brief description of the MAF? What are the current and anticipated roles of the MAF?*

The MAF is the Census Bureau's inventory of all known living quarters, whether occupied or vacant, in the United States, Puerto Rico, and associated island areas and therefore, it is the most accurate, comprehensive, and updated source of address information available. It covers housing units and group quarters, and contains approximately 150 million records. Each address record contains a large amount of detailed information, such as geocode data, address source, historical field operations results, alternate address representations, locator information, and many more data elements. The MAF is for internal Census Bureau use only and the individual address data it contains are restricted from public use by Title 13.

The foundation of the MAF is the 100 percent address canvassing operation done before every decennial census that provides ground truth. The MAF is then updated at least annually via several sources. The primary source of updates is the U.S. Postal Service's Delivery Sequence File, a comprehensive list of all mailable addresses, with smaller updates coming from operations like

* Individuals with Special Sworn Status (SSS) are defined as non-Census Bureau personnel who require access to census information or confidential data, and, in the majority of cases are working in Census Bureau space. All individuals who seek SSS must go through the Census Bureau's security clearance process. This process entails completing online training, submitting several required investigation forms, and being fingerprinted. No person(s) may begin work, or be allowed access to sensitive data until they have completed these requirements. Also, as part of the SSS process, individuals must take a confidentiality oath.

DAAL. The MAF has a net coverage rate of nearly 100 percent (Census 2000 Topic Report No. 4, February 2004, available at:
http://www.census.gov/pred/www/rpts/TR4.pdf).

The MAF provides a highly accurate and up-to-date resource of address list information. It supports most of the censuses and surveys the Census Bureau conducts. Currently, the major uses of the MAF are as the basis for the decennial census address list, the sampling frame for the ACS, and other core activities of the Census Bureau that rely on address list and map feature information. Furthermore, we anticipate that the MAF will also serve as the continually-updated sampling frame for the Title 13 current surveys, eliminating the need to build a completely new address list for future census and surveys. We are currently conducting several evaluations of the suitability of the MAF as a sampling frame for the current surveys. Also, another anticipated role of the MAF would be as a source to evaluate the coverage and content of vendor files [commercially available address files].

8. *What are Census' anticipated uses of commercial address files (a) for its own needs, and (b) for NHIS needs? Which of those needs overlap between Census and NHIS, and which don't?*

   The NHIS, under its current Title 15 authority, would need the vendor files to form the foundation of the sampling frame. The MAF would become the evaluation source for the vendor files. As significant coverage or content gaps are identified, the Census Bureau and the NCHS would need to acquire additional file sources or create operations to fill in those gaps. An NHIS sampling frame based on vendor files would also require research and development of operations, such as geocoding and filtering, to make the frame as complete as possible and to make it suitable for implementation in field interviewing and other processes.

9. *What are Census' plans to continue research in the use of commercial address files (a) for its own needs, and (b) for NHIS needs? How can research for those two purposes overlap?*

   The needs of the Census Bureau with respect to research on vendor files are to evaluate and possibly to improve the coverage of the MAF. The need of the NHIS, as a Title 15 survey, is for the vendor files to form the foundation of the sampling frame. If the NHIS becomes a Title 13 survey, then its needs would become the same as the Census Bureau's needs.

   The vendor files provide an independent and large source of addresses that can be compared to the MAF. This evaluation, a 1-time project occurring over the next year, would highlight the needs for coverage improvement for a Title 13 survey sampling frame based on the MAF. This leads to the second potential use of vendor files: to improve the coverage of the sampling frame. Previous research has shown that the MAF has very high coverage rates. The Census Bureau may look to vendor files to fill in coverage gaps that are small but nonetheless important to survey sponsors, if the sponsors agree that the files are sufficiently valuable for this use. Alternatively, the Census Bureau and the sponsors may decide to implement an operation to fill in the MAF coverage gaps. If the MAF/vendor file updates fill the coverage gaps, DAAL/PAL could be eliminated.

   If the DAAL and PAL operations continued (under Title 15) for the next NHIS sample design but were discontinued for the Title 13 surveys, the NHIS DAAL and PAL costs would increase dramatically. In addition to paying the direct costs of the field listing, NHIS would have to pay the total infrastructure costs to support DAAL and PAL.

10. *Would NHIS use of commercial address files be different for NHIS as a Title 13 survey than for NHIS as a Title 15 survey?*

    Whether or not the NHIS continues under Title 15 or moves to Title 13, the Census Bureau and its MAF provide the most efficient means for the NHIS to meet its requirements. If the NHIS remains a Title 15 survey, then the vendor files will likely become the primary source of addresses for the NHIS sampling frame. The MAF, with its nearly complete address coverage, can be used to evaluate the coverage and content of the vendor files. As significant coverage or content issues are identified, the Census Bureau and the NCHS would need to acquire additional file sources or create operations to alleviate those issues. If the NHIS moves to Title 13, then the MAF will likely be the sampling frame and the vendor files will help to evaluate and possibly improve the coverage of the MAF.

11. *If NHIS were to become a Title 13 survey, could NHIS still oversample selected minorities? How would that be done? In particular, how would geographical areas with high-density minority populations be identified in selecting areas for oversampling?*

    The current plan for sample design research in the Redesign program includes oversampling research for each survey, including the NHIS. As a Title 13 survey, the NHIS could continue to oversample selected minorities using information available from sources like the 2010 Census, the ACS, and possibly administrative records. These sources provide race and ethnicity data at the person level, which can be summarized to a number of geographic levels, including the census block or the Primary Sampling Unit. The Census Bureau could work with the NCHS to develop the specific requirements for the NHIS for defining areas with high-density minority populations, and to determine the oversampling rates. It is highly likely that the NHIS oversampling process of the previous Redesign could also continue to work, with the Census Bureau creating non-Title-13 demographic tabulations for the NCHS.

12. *I have been told that address files available to NHIS from Census now have and/or will in the future have especially high quality and accuracy, for example because of the use of information from the MAF. What specifically are those advantages?*

    As previously mentioned, the MAF is the most accurate, comprehensive, and updated source of address information available with a net coverage rate of nearly 100 percent. It is the Census Bureau's perpetual housing unit inventory. The MAF aims at improving the accuracy of censuses and surveys since it documents nearly every living quarters in the U.S., therefore producing a stronger and more representative sample. Also, retaining an up-to-date repository of addresses embodies a certain cost-saving advantage. Because locating new construction is coordinated with U.S. Postal Service efforts, the MAF streamlines some of the canvassing procedures used for enumeration which can be quite costly (Olejownik & Loudermilk, Evaluating the Use of the Master Address File for the American Community Survey, 1999).

    The NCHS is facing a major decision regarding the NHIS: to continue the survey under Title 15 or move to Title 13. Under either option, the Census Bureau and its MAF provide the most efficient means for the NHIS to meet its requirements. If the NHIS remains a Title 15 survey, then the vendor files will likely become the primary source of addresses for the NHIS sampling frame. The MAF, with its nearly complete address coverage, can be used to evaluate the coverage and content of the vendor files. As significant coverage or content issues are identified, the Census Bureau and the NCHS would need to acquire additional file sources or create operations to alleviate those

issues. If the NHIS moves to Title 13, then the MAF will likely be the sampling frame and the vendor files will help to evaluate and possibly improve the coverage of the MAF.