1999 National Health Interview Survey (NHIS)
Public Use Data Release

NHIS Survey Description

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Centers for Disease Control and Prevention
U.S. Department of Health and Human Services

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The NCHS Web Page and NHIS Electronic Mail List

Data users can obtain the latest information about the National Health Interview Survey by periodically checking our web site:

http://www.cdc.gov/nchs/nhis.htm .

The web site features downloadable public use data and documentation for the 1999 NHIS, as well as important information about any modifications or updates to the data and/or documentation. Published reports from previous years' surveys are also available, as are updates about future surveys and data sets.

Researchers may also wish to join the NHIS electronic mail list. To do so, scroll down to "Related Links" on the NHIS web page, and then click on "NHIS Listserve". Fill in the appropriate information, and click the "National Health Interview Survey (NHIS) researchers" box, followed by the "Subscribe" button at the bottom of the page. The listserve is made up of over 3,000 NHIS data users located around the world who receive e-news about NHIS surveys (e.g., new releases of data or modifications to existing data), publications, and conferences.

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Introduction

The National Health Interview Survey (NHIS) is a multi-purpose health survey conducted by the National Center for Health Statistics (NCHS), Centers for Disease Control and Prevention (CDC), and is the principal source of information on the health of the civilian, noninstitutionalized, household population of the United States. The NHIS has been conducted continuously since its beginning in 1957. Data are released on an annual basis.

The NHIS Core questionnaire items were revised every 10-15 years, with the last major revisions occurring in 1982 and in 1997. The NHIS that was fielded from 1982-1996 consisted of two parts: (1) a set of basic health and demographic items (known as the Core questionnaire), and (2) one or more sets of questions (called Supplements) on current health topics. Despite periodic revisions to the Core questionnaire, Supplements played an increasingly important role in the survey as a means of enhancing topic coverage in the Core. Eventually, certain Supplements, such as "Family Resources" and "Childhood Immunization", were incorporated in the NHIS Core on an annual basis.

However, the unintended result was an increasingly unwieldy survey instrument and longer interviewing sessions: recent questionnaires (Core and Supplements combined) ran almost 300 pages, while interviews averaged two hours. This imposed an unacceptable burden on NCHS staff, NHIS interviewers, the data collection budget, and, most importantly, on the NHIS respondents. Furthermore, the excessive length of NHIS interviews contributed to declines in both response rates and data quality. For all of these reasons, NCHS initiated a redesign of the NHIS questionnaire that was implemented in 1997.

NHIS Redesign: Questionnaire Changes

The redesigned NHIS has three parts or modules: a Basic Module; a Periodic Module; and a Topical Module. The Basic Module functions as the new Core questionnaire. It will remain largely unchanged from year to year and will allow for trends analysis and for data from more than one year to be pooled to increase the sample size for analytic purposes. The Basic Module contains three components: the Family Core, the Sample Adult Core, and the Sample Child Core. The Family Core component collects information on everyone in the family, and its sample also serves as a sampling frame for additional integrated surveys, as needed. Information collected on the Family Core for all family members includes: household composition and socio-demographic characteristics, tracking information, information for matches to administrative data bases, and basic indicators of health status and utilization of health care services. The Family Core yields three data files: the Household-Level file, the Family-Level file, and the Person-Level file.

From each family in the NHIS, one sample adult and one sample child (if any children under age 18 are present) are randomly selected, and information on each is collected with the Sample Adult

Core and the Sample Child Core questionnaires. Because some health issues are different for children and adults, these two questionnaires differ in some items, but both collect basic information on health status, health care services, and behavior. These sections of the survey yield the Sample Adult, Sample Child, and Child Immunization files.

Data Collection Procedures

The U.S. Census Bureau, under a contractual agreement, is the data collection agent for the National Health Interview Survey. NHIS data are collected through a personal household interview by Census interviewers. Nationally, the NHIS uses about 400 interviewers, trained and directed by health survey supervisors in the 12 U.S. Census Bureau Regional Offices. The supervisors are career Civil Service employees whose primary responsibility is the NHIS, and they are selected through an examination and testing process. Interviewers (also referred to as Field Representatives, or "FRs") receive thorough training on an annual basis in basic interviewing procedures and in the concepts and procedures unique to the NHIS.

For the Family Core component of the Basic Module, all adult members of the household 17 years of age and over who are at home at the time of the interview are invited to participate and to respond for themselves. For children and those adults not at home during the interview, information is provided by a knowledgeable adult family member (18 years of age or over) residing in the household. For the Sample Adult questionnaire, one adult per family is randomly selected; this individual responds for him/herself to the questions in this section. Information for the Sample Child questionnaire is obtained from a knowledgeable adult residing in the household.

The NHIS interviews traditionally were conducted using paper and pencil. The redesigned NHIS fielded since 1997 is conducted using computer-assisted personal interviewing (CAPI). The CAPI version of the NHIS questionnaire is administered using laptop computers, which allow interviewers to enter responses directly into the computer during the interviews. This computerized mode offers distinct advantages in terms of timeliness of the data and improved data quality.

Sample Design

Traditionally, the sample for the NHIS is redesigned every ten years to better measure the changing U.S. population and to meet new survey objectives. The fundamental redesign structure of the 1995-2004 NHIS is similar to that of the 1985-1994 NHIS; however, there were two major changes to the sampling design. First, a state-level stratification increased the number of primary sampling units (PSUs) from 198 to 358. This enhanced the capability of using the NHIS for state estimation and *future* dual-frame surveys at the state level. (Users should note that the NHIS is currently not designed to provide state-level estimates; however, in some cases this can be done, particularly for those states with larger populations. Contact the NCHS Research Data Center for more information, or visit their web page: **http://www.cdc.gov/nchs/r&d/rdc.htm**.) Secondly, both the

black and Hispanic populations are now oversampled to allow for more precise estimation of health in these growing minority populations. In the previous design, only black Americans were oversampled.

Two other important features first implemented in the 1985-1994 design continue. NCHS survey integration and followback surveys are facilitated by an all-area frame with independent address lists; while the area frame is based on the preceding decennial Census, the address lists are not. Also, the NHIS sample is divided into four representative panels to further facilitate integration with other NCHS surveys. See NCHS Series 2, Number 130, for a description of the 1995-2004 survey design, the methods used in estimation, and general qualifications of the data obtained from the survey. This publication is available on-line at **http://www.cdc.gov/nchs/data/sr2_130.pdf** . (Users may also be interested in another Series 2 [Number 126] report, *National Health Interview Survey: Research for the 1995-2004 Redesign*, which is available at **http://www.cdc.gov/nchs/data/sr2_126.pdf** .)

Weighting Information

The sample is chosen in such a way that each person in the covered population has a known non-zero probability of selection. These probabilities of selection, along with adjustments for nonresponse and post-stratification, are reflected in the sample weights that are provided in the accompanying data files.

Since the NHIS uses a multistage sample designed to represent the civilian noninstitutionalized population of the United States, it is necessary to utilize the person's basic weight for proper analysis of person record data. In addition to the design and ratio adjustments included in the Person file's basic weight, the person weights are further modified by adjusting them to Census sex, age, and race/ethnicity population control totals (post-stratification).

Each file has one or more sets of weights based on the unit of analysis. Two sets of weights are provided on the Person-Level file:

> Weight - Final Annual [WTFA] is based on design, ratio, non-response and post-stratification adjustments. This should be used in most analyses of the Family/Person data. National estimates of all person-level variables can be made using these weights.
>
> Weight - Interim Annual [WTIA] does not include the post-stratification adjustment (age-sex-race/ethnicity adjustment to Census population control totals). It is required by some software packages for variance estimation for surveys with complex sample designs.

The Sample Adult data file contains two sets of weights:

> Sample Adult Weight - Final Annual [WTFA_SA] includes design, ratio, non-response and post-stratification adjustments for sample adults. National estimates of all adult sample variables can be made using these weights.

Sample Adult Weight - Interim Annual [WTIA_SA] does not include the post-stratification adjustment (age-sex-race/ethnicity adjustment to Census population control totals). It is required by some software packages for variance estimation for surveys with complex sample designs.

Two sets of weights are also included on the Sample Child data file:

Sample Child Weight - Final Annual [WTFA_SC] includes design, ratio, non-response and post-stratification adjustments for sample children. National estimates of all sample child variables can be made using these weights.

Sample Child Weight - Interim Annual [WTIA_SC] does not include the post-stratification adjustment (age-sex-race/ethnicity adjustment to Census population control totals). It is required by some software packages for variance estimation for surveys with complex sample designs.

Two sets of weights are provided on the Immunization (Child) data file from the Sample Child Core:

Weight - Final Annual [WTFA_IM] includes design, ratio, non-response and post-stratification adjustments for sample children under 18 years of age and additional children aged 12-35 months. This should be used in analyses for a full year of Immunization data.

Weight - Interim Annual [WTIA_IM] does not include post-stratification adjustment (age-sex-race/ethnicity adjustment to Census population control totals). It is required by some software packages for variance estimation for surveys with complex designs.

In addition, two sets of weights are provided on the Household file:

Weight - Final Annual Household [WTFA_HH] includes the probability of selection and non-response adjustments. This weight does not include a post-stratification adjustment to Census control totals for the number of civilian, non-institutionalized households in the U.S. because suitable control totals do not exist. Non-responding households have a zero weight in this field. WTFA_HH is the appropriate weight to use when analyzing only responding households.

Weight - Interim Annual Household [WTIA_HH] reflects the probability of household selection. It does not include non-response or post-stratification adjustments. WTIA_HH is the appropriate weight to use when analyzing all households in the file.

Lastly, the Family-Level weight is discussed in greater detail in that section of the document pertaining to the Family-Level file.

NOTE: Analysts should be aware that 327 persons are on the Person-Level file who were active duty members of the Armed Forces at time of interview, despite the fact that NHIS covers only the civilian noninstitutionalized household population. The value of WTFA for these persons is zero, so they will not be counted when making national (i.e., weighted) prevalence estimates. Data for these Armed Forces members are included in all relevant files in order to aid any analyses pertaining to family structure or relationships. No active duty Armed Forces members were selected as sample adults.

Recall Period and Weights

Some questions for particular events have recall periods referring to, for example, the "last 2 weeks" or "last 3 months". In general, annual estimates can be made using these types of variables. For example, for a variable with a two-week recall, (variable)(26)(WTFA) = annual estimate; for a variable with a three-month recall, (variable)(4)(WTFA) = annual estimate. This assumes that the average rate of occurrence is the same over the last year as over the last two weeks (or three months). Analysts are cautioned to check the accompanying file documentation and the questionnaire in order to insure that annual estimates for these kinds of event variables are possible and have intrinsic meaning.

Variance Estimation

The data collected in the NHIS are obtained through a complex sample design involving stratification, clustering, and multistage sampling. Because of this complex design and adjusted sampling weights, the direct application of standard statistical analysis methods for estimation and hypothesis testing may yield misleading results. If data are not weighted, severely biased estimators may result. For this reason, as indicated previously, it is necessary to use the weights that are included in the accompanying data file for analyses.

Weighted data used in standard software packages may provide unbiased estimators for commonly-computed first-order statistics like means or regression coefficients, but the computed standard errors of the estimates may be too small. Also, standard packages may produce hypothesis test results (such as p values) that are incorrect. Hence, it is recommended that users of NHIS data utilize computer software that provides the capability of variance estimation and hypothesis testing for complex sample designs. NCHS uses Taylor series linearization methods for NHIS variance estimation. Appendix III provides SUDAAN code and a description of its use to compute standard errors of means, percentages and totals with the 1999 NHIS database.

Analyses of large NHIS domains usually produce reliable estimates with stable variances, but analyses of small domains may yield unreliable estimates along with unstable variances. The

analyst should pay particular attention to the coefficient of variation for estimates of means, proportions and totals. In addition, small sample sizes, or small numbers of primary sampling units containing targeted data, may be an indication of variance estimate instability.

General Information About the 1999 Data

The interviewed sample for 1999 consisted of 37,573 households, which yielded 97,059 persons in 38,171 families. The interviewed sample for the Sample Adult component, which required self-response to all questions, was 30,801 persons 18 years or age and older. The interviewed sample for the Sample Child component, by proxy response from a knowledgeable adult in the family, was 12,910 children 0-17 years old. Lastly, the interviewed sample for the Immunization section, again, by proxy response from a knowledgeable adult in the family, was 13,881 children aged 17 and younger. Data were not collected on any infant who was born during the assignment week of the interview.

The total household response rate was approximately 87.6%: 9.2 percentage points of the noninterview rate (12.4%) were the result of respondent refusal, and the remaining 3.2 percentage points were primarily the result of failure to locate an eligible respondent at home after repeated calls or unacceptable partial interviews.

The conditional response rate for the Sample Adult component was 80.8% of persons identified as sample adults. The final response rate for the Adult Sample Person component is calculated as (Overall Family Response Rate)(Sample Adult Response Rate), or (86.1%)(80.8%) = 69.6%.

The conditional response rate for the Sample Child component was 90.8%, which was calculated by dividing the number of completed Sample Child interviews (12,910) by the total number of eligible sample children (14,217). The unconditional or final response rate for the Sample Child component was calculated by multiplying the conditional rate by the overall family response rate of 86.1%, yielding a rate of 78.2%.

The total noninterview rate for the Immunization (Child) section of the Sample Child component was 2.1% of persons asked to respond to the Immunization (Child) section. The final response rate for the Immunization (Child) file was 78.0%.

Additional information about NHIS response rates can be found in Appendix I.

Information About the 1999 Dataset Documentation

Along with the redesign of the NHIS questionnaire, other aspects of the data production process were also modified. As with the previous design, each data file has its own data documentation file (also known as a “codebook” or “data dictionary”). Beginning with the 1997

data (and continuing with subsequent years), the format and content of these files, henceforth referred to as Dataset Documentation, has changed. As a result, more specific information about each variable is now available to users. For most variables, the Dataset Documentation now provides the actual question that generated the data, questionnaire location information, universe, values, value labels, and frequency counts. Additional specific information is provided under "Sources", "Recodes", "Keywords", and "Notes". These terms are defined as follows:

Sources - If the variable in question is a recode, then all variables that were used to make this recode are listed.

Recodes - A *recode* is a variable derived from the reordering or collapsing of another variable, such as the family income recode (INCGRP) found in the Person-Level file. Alternatively, a recode may be constructed from two or more variables, as is the body mass index (BMI) variable included in the Sample Adult file. If a particular variable was used in making other recode variables, then those recode variables are listed. Users will note that a number of standardized variables appear in the data set. A *standardized variable* is a particular type of recode based on time unit information obtained during the course of the interview. When respondents are asked any questions pertaining to time – for example, how long the respondent has worked at his/her job – the answer is typically obtained in two parts. The respondent provides the number of time units ("1-365"), followed by the type of time unit (days, weeks, months, or years). During the course of data editing, this information is standardized into an appropriate time unit (in the case of job history, years on the job). Some of the standardized time unit recodes may also be top-coded (for confidentiality reasons).

Keywords - *Keywords* are descriptive words or phrases relevant to the topic of the variable; these can be used for word searches.

Notes - *Notes* provide unique information about a particular variable that analysts need to know, such as assumptions, limitations, caveats, differences between instrument versions, or other important information. Analysts are encouraged to read the notes for variables of interest. Currently, there are two generic notes that can appear in addition to specific information:

> 1) If the original questionnaire item was asked at the family level but resulted, after the editing process, in a person-level variable, this note is added: Family/person variable conversion
>
> 2) If other questions in the instrument ask about the same topic, or if similar questions appear in other sections of the instrument, this note is added: Refer to {variable name and section number} for a {family/person/child} level question on a related topic.

The universe refers to those respondents deemed eligible to answer a given question. For example, the universes for all Sample Adult variables are specified as "ASTATFLG = 1 and AGE = 18+", or "ASTATFLG eq 1 and AGE ge 18 ", followed by any other universe descriptors

specific to the variable. ASTATFLG = 1 refers to a variable on the Person file and indicates that the respondent was selected as a sample adult and answered at least the first three sections of the Sample Adult component (constituting a completed interview or an acceptable partial interview). Responses for persons who stopped answering key questions after the first three sections will appear as 8's (not ascertained) for the corresponding variables throughout the remaining Sample Adult variables.

The universes for all Sample Child variables are specified as CSTATFLG = 1 and AGE < 18 (or AGE lt 18), followed by any other universe descriptors specific to the variable. CSTATFLG = 1 refers to a variable on the Person file that indicates a selected Sample Child with a completed interview or an acceptable partial interview (completion at least through the CHS section, or about half of the questions). Again, responses from acceptable partial interviews have a code of "8", meaning "not ascertained", throughout the remaining, unanswered Sample Child sections.

The universes for the Immunization (Child) file from the Sample Child Core are specified as IMMUNFLG = 1 and AGE < 18 (or relevant sub-grouping thereof, to indicate younger children), followed by any other universe descriptors specific to the variable, including two categories: with a shot record (SHOTRC = 1) or without a shot record (SHOTRC = 2, 7-9). IMMUNFLG = 1 indicates a classification for a valid immunization record for children under 18 years of age. Additional variables include ICAGEMR, which refers to a recoded variable for age in months, and IMRESPNO, which refers to the person who was originally recorded as the respondent for the sample child. The NHIS does not record, specifically, whether this adult respondent answered the Child Immunization questions for the sample child, or for the additional children aged 12-35 months included in the file.

Within the NHIS, the same codes are used across all files to designate "Refused" and "Don't know" responses: refusals are coded as "7" (with leading 9's to the length of the field, as in 7, 97, 997, etc.), while "don't know" responses are "9" (again, with leading 9's to the length of the field, such as 9, 99, 999, etc.). A code of "8" is used to indicate "Not ascertained" responses, which typically occur when an in-the-universe respondent had a blank field or the field contained an impossible code. Lastly, in some limited situations (primarily recodes), the "Refused", "Don't know", and "Not ascertained" categories are collapsed into a single category called "Unknown", which is typically designated with a "9" (with leading 9's to fill out the field, if necessary).

Information About the 1999 CAPI Questionnaire

The NHIS CAPI questionnaire, also referred to as the CAPI Reference Questionnaire or CRQ, is an integral part of the NHIS documentation and should be consulted when analyzing data. Users desiring greater detail should also consult the 1999 NHIS Field Representative's Manual (available on the NHIS web site, **http://www.cdc.gov/nchs/nhis.htm**). Every effort was made to insure that the variable names in the data are consistent with the question items in the instrument. In a few cases, this was not possible. When there is a question about variable names, matching

the question number in the instrument to the variable number in the Dataset Documentation can resolve any discrepancies.

Because the questionnaire for the NHIS is administered by computer, the questionnaire exists as a long and complex computer program. While stringent quality control measures were applied, a few errors are known to have occurred in the program. The most common errors caused questions to be asked that were inappropriate in view of the respondent's previous answers. These errors are commonly referred to as "skip pattern errors". Various other instrument problems were identified over the course of the year, and efforts were taken to correct these errors. Some of these problems were resolved through correction of skip patterns, question wording changes, addition of questions, and other internal instrument corrections.

When errors were detected and diagnosed, and time permitted, the instrument was changed to correct for the errors. For example, there were two major versions of the instrument in 1998, fielded in quarters 1 and 3. In 1999, instrument changes were kept to a minimum, so that there was basically one version of the NHIS in the field across all four quarters of the survey year. Analysts are encouraged to read the notes in the Dataset Documentation for important information pertaining to specific variables.

Questionnaire Sections

The 1999 NHIS contained the annual Basic Module, which is broken into various sections that group questions into broad and specific categories. Each section is designated by a section title and corresponding three-digit acronym (or section code); questionnaire items are numbered sequentially (but not consecutively) within their respective sections, with the section acronym making up part of the item number. For example, the first item in the Household Composition section is identified as HHC.010; note that HHC.010 also has an associated variable name, RPNAME. The list on the following page details the various questionnaire sections, their acronyms and description titles.

Table 1. 1999 NHIS Core Questionnaire Sections and Topics

A. Household

Section No.	Section Code	Description
I	HHC	Household Composition

B. Family Core

Section No.	Section Code	Description
I	FID	Family Identification and Verification
II	FHS	Health Status and Limitation of Activity
III	FIJ	Injury
IV	FAU	Health Care Access and Utilization
V	FHI	Health Insurance
VI	FSD	Socio-demographic
VII	FIN	Income and Assets

C. Sample Adult Core

Section No.	Section Code	Description
I	AID	Identification and Verification
II	ACN	Conditions *including 1999 periodic questions* (see page 17)
III	AHS	Health Status and Limitation of Activity
IV	AHB	Health Behaviors
V	AAU	Health Care Access and Utilization *including 1999 periodic questions* (see page 17)
VI	ASD	Demographics
VII	ADS	AIDS

D. Sample Child Core

Section No.	Section Code	Description
I	CID	Identification and Verification
II	CHS	Conditions, Limitation of Activity and Health Status *including 1999 periodic questions* (see page 17)
III	CAU	Health Care Access and Utilization *including 1999 periodic questions* (see page 17)
IV	CIM	Immunization

E. Recontact

Section No.	Section Code	Description
I	RCI	Recontact Information and Follow-up

In addition to the three Core sections comprising the Basic Module, the 1999 NHIS contains several other data files: the Household- and Family-level files, the Injury Episode file, the Poison Episode file, and the Injury Verbatim file. The Household file is derived largely from the Household composition section of the Module and describes characteristics of each household. The variables contained in the Family-level file are reconstructions of the person-level data from the Basic Module sections at the family level. The Injury and Poison files are derived from the information obtained from the injury/poisoning questions in the Family Core section.

Changes/Additions/Deletions to 1999 Core

A number of changes were introduced to the Core sections of the 1999 NHIS, resulting in new, changed, or deleted variables (relative to 1998). Following is a brief summary. Users are strongly encouraged to check the notes in the Dataset Documentation, as well as the relevant sections in this document, for more information.

Family Core

Section	Variable	Brief Description of Change
HHC	HISPNR_P*	Replaces HISPAN_P; new response categories
HHC	MRACER_P*	Replaces MRACE_P; new response categories
HHC	RCIMPFGR	New variable for 1999
HHC	RACERECR*	Replaces RACEREC

Family Core, continued

Section	Variable	Brief Description of Change
HHC	RACERCBR*	Bridge variable for RACEREC
HHC	RACER*	Replaces RACE; new response categories
HHC	HISPCODR*	Replaces HISPCODE
HHC	HISPCDBR*	Bridge variable for HISPCODE
Note: Users should refer to Appendix II for more information on the Race/Ethnicity variables.		
HHC	FMRESP	New variable; identifies family's respondent
HHC	FMSTRP	Replaces FMSTRCP; see page 23
FHS	LA1AR	New response category; see documentation
FIJ	ICD9CTNI	New variable; identifies natural cause conditions in injury file
FHI	HIKINDG	This variable is now the Children's Health Insurance Program
FHI	HIKINDH	This variable is now Military health care / VA
FHI	HIKINDI	This variable is now CHAMPUS/TRICARE/CHAMP-VA
FHI	HIKINDJ	This variable is now Indian Health Service
FHI	HIKINDK	This variable is now State-sponsored health plan
FHI	HIKINDL	This variable is now Other government program
FHI	HIKINDM	New variable for single service plan
FHI	MCREF	Variable to ascertain the need for referral for Medicare plan (new for 1999)
FHI	MCPAYPRE	New variable to find out if individual with Medicare pays an additional premium for a more comprehensive health benefit plan (new for 1999)
FHI	SINGLE	Single service plan recode (new for 1999)
FHI	SSTYPEA	Single service accident plan
FHI	SSTYPEB	Single service AIDS care plan
FHI	SSTYPEC	Single service cancer treatment plan
FHI	SSTYPED	Single service catastrophic care plan
FHI	SSTYPEE	Single service dental care plan
FHI	SSTYPEF	Single service disability insurance plan
FHI	SSTYPEG	Single service hospice care plan
FHI	SSTYPEH	Single service hospitalization only plan
FHI	SSTYPEI	Single service long-term care plan
FHI	SSTYPEJ	Single service prescription plan
FHI	SSTYPEK	Single service vision care plan
FHI	SSTYPEL	Single service other type of plan
FHI	PLNPAY61, PLNPAY62, PLNPAY63, PLNPAY64	Health insurance plan paid for by CHIP (Children's Health Insurance Program) for private health insurance plans 1 - 4

Family Core, continued

Section	Variable	Brief Description of Change
FHI	HICOSTR1-HICOSTR4	Replaces HICOST1 - HICOST4; new response categories
FHI	MGPREF1-MGPREF4	Variable to ascertain the need for a referral to see a specialist for a private health plan
FHI	CHIP	Children's Health Insurance Program recode variable (new for 1999)
FSD	WHYNOWRK	Additional response category; see documentation
FIN	HOUSEOWN	Change in response categories; see documentation
FIN	FGAH	Change in location of question in instrument
FIN	PSSAPL, PSDAPL	Deleted from 1999 public use file
FIN	PWIC	New variable for 1999; WIC benefits

Sample Adult Core

Section	Variable	Brief Description of Change
ACN	LUPPRT	Replaces UPPERT and LOWERT; lost all upper and lower natural teeth
AHB	MET_FLG1	New variable for 1999; height reported in metric units
AHB	MET_FLG2	New variable for 1999; weight reported in metric units
AAU	APLKIND	New response category ("doesn't go to one place most often")
AAU	ADNLONGR	Replaces ADENLONG; change in response categories
AAU	AMDLONGR	Replaces AMDLONG; change in response categories
AAU	AHCPLKND	New response category ("doesn't go to one place most often")
AAU	AHCAFYR4	New variable for 1999; can't afford eyeglasses
AAU	SOURCELA	Change in response categories as a result of AHCPLKND; see Dataset Documentation

Sample Child Core

Section	Variable	Brief Description of Change
CHS	CPOX12MO	New variable for 1999; had chicken pox in the past 12 months

Sample Child Core, continued

Section	Variable	Brief Description of Change
CAU	CDNLONGR	Replaces CDENLONG; change in response categories
CAU	CMDLONGR	Replaces CMDLONG; change in response categories
CAU	CPLKIND	New response category added ("doesn't go to one place most often")
CAU	CHCPLKND	New response category added ("doesn't go to one place most often")
CAU	SOURCELC	Change in response categories as a result of CHCPLKND; see Dataset Documentation

* indicates a variable on multiple files (e.g., Person, Sample Adult, and/or Sample Child).

New NHIS Topics/Questions for 1999

In addition to the Core sections of the survey, the 1999 NHIS survey contains a number of periodic questions, which obtain even more detailed information on important topics. These questions are unique to the 1999 NHIS, but they may reappear periodically in future surveys (hence, the name of the question). The periodic questions are easily distinguished from the Core questions by their six digit item names (e.g., AAU.037.010; AAU.037.020). Periodic questions appear in four sections of the 1999 NHIS: Adult Conditions (ACN), Adult Access and Utilization sections (AAU), Child Conditions, Limitation of Activity and Health Status (CHS), and Child Access and Utilization (CAU). Additional information about these questions can be found in the relevant sections of this document.

1999 National Health Interview Survey
Household-Level File

Each record on the Household file represents a unique household included in the NHIS sample or sampling frame. Each household can be identified by using the household identification variable (HHX). Note that the Household file is considered as the base file from which all other files are built. That is, the main sampling unit in the NHIS is the household, and each record on the Household file represents an eligible sampling unit.

Some of the variables found only in this file include: month and year of interview completion, nature/reason for "Type A" non-responses, household telephone service, and number of responding and non-response families and persons. (For information about Type A non-response, see Appendix I.) Variables in other NHIS data files that may be appropriately analyzed at the household level can be merged with this file for analysis.

The universe for the Household file is all eligible households, including both responding households and non-responding (Type A) households. The Household file contains information on 42,882 households: 37,573 households were interviewed, while 3,939 refused to participate. The nature of refusals for Type A households is detailed in the variable NON_INTV.

The total non-interview rate for the Household file was 12.4% of households. The response rate for the Household file is calculated as the number of responding households divided by the total number of eligible households (responding + non-responding households), or 87.6%.

1999 National Health Interview Survey
Family-Level File

The Family-Level file contains variables that describe characteristics of the 38,171 families living in households that participated in the 1999 NHIS. Thus, each record in the file represents a unique family. The universe for all variables in this file is limited to all responding families in those households participating in the 1999 survey; this is specified as FM = ALL in the Family file Dataset Documentation. Users wishing to determine the number of responding and non-responding families in each household are referred to ACPT_FAM and REJ_FAM in either the Family or Household files.

Most NHIS families consist of a group of two or more related persons who are living together in the same occupied housing unit (i.e., household) in the sample. All relationships are recorded relative to the household and, in cases with more than one family per household, the family reference person, who is the person, or one of the persons, who owns or rents the housing unit. (If more than one person owns or rents the housing unit, the oldest among them is designated the household reference person; if none of the household members owns or rents the unit, then the oldest person in the household is designated the reference person.) In some instances, unrelated persons sharing the same household may also be considered as one family, such as unmarried couples (same-sex or opposite-sex couples) who are living together. In contrast, an individual living alone or, alternatively, each member of a group of unrelated individuals living in the same household as roommates would be considered as a separate family relative to the household reference person. Additional groups of persons living in the household who are related to each other, but not to the reference person, are also considered to be separate families; for example, a lodger and his/her family, or a live-in household employee and his/her spouse, or a single boarder with no one related to him/her living in the household. Hence, there may be more than one family living in a single household. If this is the case, the various NHIS questionnaires (e.g., Family Core, Sample Adult Core, etc.) will be administered separately to *each* family within the sampled household.

Family size may vary considerably. Table 2 shows a breakdown of the 38,171 families by number of family members. Again, note that multiple families may share one household; this information can be determined from ACPT_FAM and REJ_FAM, or HHX and FMX, in the Family file.

The first part of the Family file contains the technical variables that identify or describe the record type (all observations in this file have a record type value of "60"), the survey year, the household and family numbers, the interview quarter and week, characteristics of the family's housing unit, geographic information associated with the housing unit, variables used for variance estimation, and a family-level weight variable. The second part of the file consists of a series of recodes derived from the six family core sections of the NHIS that collapse the 98,000+ individual-level observations into information about their respective families. Generally, two types of recodes are possible. The first is a simple "yes-no" measure that indicates whether *any* family member falls into a particular category or exhibits a particular characteristic. These variables are equivalent to, but not directly derived from, the family-level questions in the instrument.

Table 2. Size of Family, 1999 National Health Interview Survey (unweighted counts)

Number of Members	Frequency	Percent
1	10,997	28.8
2	11,559	30.3
3	6,109	16.0
4	5,461	14.3
5	2,524	6.6
6	942	2.5
7	330	0.9
8	150	0.4
9	53	0.1
10	19	0.0
11	14	0.0
12	6	0.0
13	4	0.0
14	1	0.0
15	0	0.0
16	2	0.0

Every yes-no measure also has a corresponding counter that indicates the number of family members in that category or with that characteristic. Note that counters always consist of values from zero to 30; in addition, blanks are also possible if a family is not contained in the universe for a specific question. For example, FSALYN and FSALCT, two recodes from the Income and Assets section of the Family Core, are limited to families with at least one member aged 18 or older; families consisting solely of emancipated minor(s) are coded as blanks to indicate that they are out of the universe. The Family file also contains some counters that lack corresponding yes-no indicators. FHSTATEX, FHSTATVG, FHSTATG, FHSTATFR, and FHSTATPR (all derived from PHSTAT, FHS.310) provide counts of the number of family members in excellent, very good, good, fair, and poor health, respectively. Counters were also constructed to indicate the number of working adults in the family, the number of adults in the family looking for work, the number of adults working full-time, the number of children (under age 18) in the family, and the number of family members aged 65 and older.

Because most of the variables in the Family file are recodes of the person-level variables in the family core, the sum of the number of persons across all families in each family-level counter should be equivalent to the number of "yes" responses in its person-level source. Returning to our previous example, consider FSALCT: 14,748 families have one member receiving income from wages/salary, 11,464 families have two members (or 2(11,464) = 22,928 persons) with wage/salary income, 1,765 families have three members (or 3(1,765) = 5,295 persons), 410 families have four members (or 1,640 persons), 58 families have five members (or 290 persons), and 20 families have six members with wage/salary income in 1998 (120 persons). Thus, the sum of persons across the 28,465 families answering "yes" to FSALYN, the associated yes-no indicator, is 45,184 (14,748 + 22,928 + 5,295 + 1,640 + 290 + 120), which is equivalent to the 45,021 "yes" responses to the person-level source variable, PSAL. Users are advised to check the Dataset Documentation for each Family file recode in order to determine its person-level source variable.

The 1999 NHIS Family file contains two variables describing family type and structure in both general and detailed terms. FMTYPE, which was first included in the 1997 Family file, consists of just four categories, and represents an initial classification of families according to the numbers of adults and children that are present. Based on FMTYPE, FMSTR2 further categorizes families according to familial relationships. If FMTYPE is equivalent to "1" (an adult and no children under age 18 present) then FMSTR2 is either "11" (living alone) or "12" (living with one or more roommates, all of whom would be distinct families). If FMTYPE is equal to "2" (multiple adults, no children present), then FMSTR2 is equivalent to either "21" (a married couple), "22" (an unmarried couple), or "23" (all other adult-only families). Note that the last category would include married or unmarried couples living with a related adult (a parent or adult sibling, for example). If FMTYPE is equal to "3" (one adult and at least one child present), then FMSTR2 is equal to either "31" (a single mother and her biological, adoptive, step, or foster child), "32" (a single father and his biological, adoptive, step, or foster child), or "33" (a single adult and unrelated child). Lastly, if FMTYPE is equivalent to "4" (multiple adults and at least one child under 18 present), then FMSTR2 is classified as either "41" (married parents and their biological or adoptive child(ren)), "42" (cohabiting parents and child(ren)), "43" (parent, step-parent, and child(ren)), "44" (at least one biological/adoptive parent and child(ren), and a related adult), or "45" (other related or unrelated adults and child(ren) who is/are not biological/adoptive son or daughter of the adults present, such as a child living with his grandparents, or a child living with his grandmother and her unmarried partner). Families that could not be classified according to this schema are coded "99". Finally, please note that emancipated minors are treated as adults with respect to both FMTYPE and FMSTR2, despite the fact that they may be under 18 years of age.

Users familiar with the 1998 Family file will recall that the family structure variable in that file was called FMSTRCT2. This variable coded married *and unmarried* parents living with their biological child (or children) in one category, parent/step-parent/child families in a second category, and parent/cohabiting partner/child families in a third category. A change was made in the way the 1999 NHIS obtained family relationship data, such that we are now unable to distinguish families with two cohabiting parents living with their biological child (or children) from families with a child and biological parent who are living with the parent's unmarried partner. As a result, the 1999 family structure variable includes all cohabiting couple families in the same category (FMSTR2 = 42), regardless of the adults' relationships to the child(ren) in the family. The 1999 family structure variable has a new name (FMSTR2) in order to distinguish it from the previous variable (FMSTRCT2).

The Family File Weight

The 1999 NHIS Family file can be thought of as a household-level file of sorts for all families; as such, it is very similar to a household-level file. The ideal situation for creating weights for such a family file would be to use independent estimates of the number of households or families from a reliable source, such as the U.S. Census Bureau, to perform post-stratification adjustments in a manner similar to what is done for the NHIS Person file weight. Unfortunately, no suitable independent estimates exist.

Due to the lack of appropriate independent estimates, a variation of the "principal person" method is used to create the 1999 NHIS Family file weight [WTFA_FAM]. This method is similar to that used in the Current Population Survey to create their household- and family-level weights. Briefly, a person-level ratio adjustment is used as a proxy for the NHIS family-level ratio adjustment. Use of the person weight with the *smallest* ratio adjustment within each family (that is, the smallest post-stratification factor between the interim and final person weights within each family) is believed to provide a more accurate estimate of the total number of U.S. families than either the use of other person weights in the family or the use of no ratio adjustments whatsoever.

Accordingly, the weight provided with the 1999 NHIS Family file, WTFA_FAM, corresponds to the 1999 NHIS person weight for one of the persons in the family. As a result, the Family weight contains factors for selection probabilities at the household level, household nonresponse adjustment, and several ratio adjustment factors that are applied to all person weights.

1999 National Health Interview Survey
Person-Level File

The Person-level variables are derived from the six substantive sections making up the Family Core of the 1999 NHIS. The information in the Family Core questionnaire is collected for all household members. Any adult household members who are present at the time of the interview may take part; information regarding adults not participating in the interview, as well as all household members under age 18, is provided by a knowledgeable adult member of the household. The six sections comprising the Family Core are discussed in greater detail below.

Beginning in 1998, the NHIS introduced a number of new variables describing family relationships; these are continued in 1999. The family structure variables developed for the Family file (i.e., FMTYPE and FMSTR2; please refer to page 21 of this document) were added to each person's record, and are called FM_TYPE and FM_STRP. Also included for 1999 are variables identifying the person number of the respondent's mother or father (called MOTHER and FATHER, respectively), if a mother or father is present in the household, or guardian (called GUARD), as well as variables describing the degree of relationship (biological, adoptive, step, foster, or in-law) between parents and children (i.e., MOM_DEG and DAD_DEG), and adult siblings (SIB_DEG). Note that in the case of the last variable, one sibling must be the family reference person. Lastly, PARENTS, MOM_ED, and DAD_ED are included on the Person file. PARENTS indicates the number of parents present in the family (regardless of the respondent's age), while MOM_ED and DAD_ED provide information on completed education of mother or father, respectively, for all children under 18 years of age. (Note that in 1997, PARENTS, MOM_ED, and DAD_ED were available only on the Sample Child file.)

I. Health Status and Limitation of Activity Section (FHS)

The Health Status and Limitation of Activity (FHS) section of the Family Core for the 1999 NHIS contains information addressing respondent-assessed disabilities, disability-associated conditions, and overall health status for all family members. Users should note that additional information on health status and disability is also included in other sections of the Sample Adult file, as well as the Sample Child file.

Limitation of Activity at the Person-Level

Information on activity limitations, including questions about work limitations, the need for personal assistance with personal care needs such as eating, bathing, dressing, getting around inside the home, and the need for personal assistance with handling routine needs such as everyday household chores, doing necessary business, shopping or running errands, is collected for each family member (with some exclusions for children and youth). If any limitations are identified, respondents are asked to specify the health condition(s) causing the limitation(s) and indicate how long they have had each condition. The questions in the 1999 NHIS Family Core regarding activity limitations due to physical, mental or emotional problems are comparable to the 1997 and 1998

NHIS (with minor exceptions discussed below) and are substantively comparable to previous NHIS surveys (with some noteworthy changes in question wording).

Since cognitive impairment is increasingly recognized as a source of activity limitations among older adults, a new question was added (beginning in 1997) to determine if anyone in the family is limited because of difficulty remembering or periods of confusion. Other indicators in this section identify family members who have difficulty walking without any special equipment, plus the section contains an array of questions about limitations with specific personal care needs. In addition, the section also contains measures indicating children who receive Special Education or Early Intervention Services. Limitations in play activities are also collected for young children.

The 1999 data on activity limitations differ from the 1997 and 1998 data in minor ways. (See the Survey Description documents from 1997 and 1998 for more information about the NHIS in those years.) In 1999 the information on the conditions that cause limitations in activity were collected slightly differently, but were processed in a similar fashion as comparable data from previous years, as described below.

Conditions

For each family member with a previously mentioned limitation, the respondent is asked about the condition or health problem associated with that limitation, as well as the amount of time he/she has had the condition. Respondents are then handed one of two flash card listing various condition categories. These categories are broad in scope, and vary according to age. Family members under age 18 were subject to the following fixed condition categories listed on the first flash card: “vision/problem seeing”, “hearing problem”, “speech problem”, “asthma/breathing problem”, “birth defect”, “injury”, “mental retardation”, “other developmental problem (e.g., cerebral palsy)”, “other mental, emotional, or behavioral problem”, “bone, joint, or muscle problem”, “epilepsy”, and two instances of “other impairment problem”. The fixed response categories in the instrument for adults were equally broad, and comprise the conditions listed on the second flash card: “vision/problem seeing”, “hearing problem”, “arthritis/rheumatism”, “back or neck problem”, “fractures, bone/joint injury”, “other injury”, “heart problem”, “stroke problem”, “hypertension/high blood pressure”, “diabetes”, “lung/breathing problem”, “cancer”, “birth defect”, “mental retardation”, “other developmental problem (e.g., cerebral palsy)”, “senility”, “depression/anxiety/emotional problem”, “weight problem”, and two instances of “other impairment problem”. Respondents could supply a verbatim response for the “other impairment problem”. Beginning in 1999 verbatim responses could be entered in a longer, 50-character field. Also in 1999, respondents were no longer restricted to listing only five conditions.

The verbatim responses recorded by FRs in one or both of the 50-character fields indicating “other impairment problem” were subsequently analyzed during data processing. While most respondents named conditions that did not fall into the fixed response categories as originally specified in the instrument, some respondents named conditions that could be included in one of the fixed categories. In the latter case, these respondents were assigned codes corresponding to the

original response categories (the first 11 for children, and the first 18 for adults). For adults, an additional 16 *ad hoc* categories were created during coding to group responses that fell outside the original 18 condition categories included in the instrument: these ad hoc categories were assigned numbers 19-34. Any verbatim conditions that could not be back-coded to one of the original categories or recoded to one of the new categories remained in the "other impairment problem" categories, were renumbered "90" and "91" for both children and adults. The resulting 36 categories for adults and 13 categories for children were generally informed by the International Classification of Diseases, Ninth Revision, Clinical Modification (see Table 3, below; note that the ICD-9-CM codes shown in this table are *not* included on the data file). These specific condition categories were subsequently transformed into variables indicating whether or not the condition was responsible for the respondent's difficulty with any activity (a "mention-not mention" format). Because the 16 adult *ad hoc* categories were not included on the flash cards given to respondents during the course of the interview, it is possible that frequencies obtained for these conditions causing limitations will be underestimated. Therefore, these variables should be analyzed with care. Moreover, none of the FHS condition variables (the 11 child variables, LAHCC1 through LAHCC11, and the 34 adult variables, LAHCA1 through LAHCA34) should be used to estimate prevalence for the conditions they represent, because only those persons with a previously reported limitation were eligible for the condition questions that followed. Analysts who are interested in estimating the prevalence of particular conditions are referred to the Sample Adult and Child Cores.

Recodes

The recode LA1AR is a summary measure that indicates household members reporting *any* limitation regarding one or more of the activities discussed during the course of the FHS section of the interview. In other words, individuals who answered "yes" to PLAPLYLM, PSPEDEIS, PLAADL, PLAIADL, PLAWKNOW, PLAWKLIM, PLAWALK, PLAREMEM, *or* PLIMANY are coded "1" for LA1AR. LACHRONR is based on LA1AR but adds the additional criterion of whether at least one of the reported causal conditions is a chronic condition. This recode corresponds most closely with the pre-1997 NHIS recode for Activity Limitation, although it has fewer response categories and does not allow for levels of limitation.

In response to analysts' requests that the LA1AR recode distinguish persons who are not limited from those with unknown disability status, this variable now includes three response levels: "1" for limited, "2" for not limited, and "3" for unknown if limited. (For comparability with previous years, level 3 may be combined with level 2.) Users can also utilize the information contained in LA1AR to control for "unknown if limited" cases with respect to LACHRONR (that is, when LACHRONR = 0).

Also, a series of age-group-specific recodes (e.g., under 18 versus 18 and over) regarding conditions limiting activity and duration of limiting conditions have been created. Because the questions about limitation of activity in the redesigned NHIS are asked in a different context, of differing age groups, and are more general (in some cases) or more specific (in other cases) than in pre-1997 years, the degree to which a respondent is limited cannot be determined. However, the use of these new questions and recodes should enable researchers at NCHS to define new categories identifying the extent of limitation.

Chronic Conditions

Each condition reported as a cause of an individual's activity limitation has been classified as "chronic", "not chronic", or "unknown if chronic" based on the nature of the condition and/or the duration of the condition. Conditions that are not cured, once acquired (such as heart disease, diabetes, and birth defects in the original response categories, and amputee and "old age" in the *ad hoc* categories) are considered chronic, while conditions related to pregnancy are always considered not chronic. Additionally, other conditions must have been present three months or longer to be considered chronic. An exception is made for children less than one year of age who have had a condition "since birth", as these conditions are considered chronic. Because the presence of a limitation determined whether persons were eligible for the condition questions and the chronicity recodes, we caution data users that these variables should *not* be used to produce estimates of prevalence chronic conditions. These data should be analyzed and interpreted with care.

Table 3. FHS Categories with Approximate ICD-9-CM Ranges

A. Codes for Adults, aged 18+

NHIS Category	ICD-9-CM Codes
1 - Vision or seeing problem	360-379
2 - Hearing problem	387-389
3 - Arthritis / rheumatism	711-712, 714-716, 720.0, 721, 729.0
4 - Back or neck problem	722-724, 732.0, 737
5 - Fractures, bone or joint injury *Injury with specific mention of bone or joints*	800-848, 850-999
6 - Other injury *Injury without specific mention of bone or joints*	850-999
7 - Heart problem	410-417, 420-429, 745, 746, 785.0-785.3
8 - Stroke problem	430-438
9 - Hypertension or high blood pressure	401-405
10 - Diabetes	250
11 - Lung or breathing problem	460-461, 465-466, 470-471, 473, 477, 480-487, 490-496, 500-508, 510-519
12 - Cancer	140-208
13 - Birth defect *Excludes Down's syndrome and microcephalus*	740-742.0, 742.2-744, 747-757.9, 758.1-759
14 - Mental retardation *Includes Down's syndrome and microcephalus*	317-319, 742.1, 758.0

NHIS Category	ICD-9-CM Codes
15 - Other developmental problem *Includes learning disabilities*	315, 343, 783.4
16 - Senility (and other cognitive problems)	290
17 - Depression, anxiety or emotional problem *Includes neurotic disorders, personality disorders, and other nonpsychotic mental disorders, excluding alcohol and drug related problems and developmental problems*	300-302, 306-314, 799.2
18 - Weight problem *Indicates a problem with being overweight or obese*	
19 - Missing limbs (any part) / amputee *Indicates loss of a limb or digit*	
20 - Other musculoskeletal system conditions *Diseases of the musculoskeletal system and connective tissue not coded to 3, 4, 5*	710-739
21 - Other circulatory system conditions *Any diseases of the circulatory system not coded to 7, 8, 9*	390-459
22 - Other endocrine system, etc. conditions *Any Endocrine, Nutritional and Metabolic Diseases and Immunity Disorders not coded to 10 or 18*	240-279
23 - Other Nervous system conditions *Diseases of the nervous system and sense organs not coded to 1, 2, 15, 16*	320-389
24 - Digestive system conditions	520-579
25 - Genitourinary system conditions	580-629
26 - Skin & subcutaneous system conditions	680-709
27 - Blood & blood-forming organ conditions	280-289
28 - Tumors & cysts, benign & unspecified *Any mention of "tumor" without cancer, malignancy, etc.*	210-239
29 - Alcohol & drug related problems *Any mention of "alcohol", "drugs" (or specific drug types), or substance abuse*	291-292, 303-305
30 - Other mental conditions *Any mental disorders not coded to 14 or 15 or 17*	293-299
31 - After effects of surgery or other medical treatment *Any mention of "surgery" or "operation" or other treatment as the causal condition; includes ongoing or recent treatment (1 year or less) or specific and sole mention of surgery/medical procedure as specific cause of limitation*	
32 - Old age *Any mention of age as the only specified cause*	

NHIS Category	ICD-9-CM Codes
33 - Fatigue/Tiredness *Any mention of tiredness, stiffness, or weakness without referring to any specific part of the body*	
34 - Pregnancy related conditions *Any mention of "pregnancy" or "childbirth"*	
90 - Others NEC *1st other-specify verbatim, not elsewhere classified*	
91 - Others NEC *2nd other-specify verbatim, not elsewhere classified*	
B. Codes for Children, aged < 18	
1 - Vision or seeing problem	360-379
2 - Hearing problem	387-389
3 - Speech problem	307.0, 307.9, 315.3, 784.3, 784.5
4 - Asthma or breathing problem	460- 461, 465-466, 470-471, 473, 477, 480-487, 490-496, 500-508, 510-519
5 - Birth defect *Excludes Down's syndrome and microcephalus*	740-742.0, 742.2-757.9, 758.1-759
6 - Injury	800-999
7 - Mental retardation *Includes Down's syndrome and microcephalus*	317-319, 742.1, 758.0
8 - Other developmental problem *Includes learning disabilities*	315, 343, 783.4
9 - Other mental, emotional, or behavioral problem *Includes ADD, ADHD, and hyperactivity*	290-314, 799.2, V15.4
10 - Bone, joint or muscle problem	710-739
11 - Epilepsy and seizures	345, 779.0, 780.3
90 - Others NEC *1st other-specify verbatim that does not fit in any other category*	
91 - Others NEC *2nd other-specify verbatim that does not fit in any other category*	

II. Injury Section (FIJ)

The data from the Family Core Injury Section of the 1999 NHIS contain information about medically attended injuries and poisonings that occurred to any member of the family within a three-month reference period immediately prior to the interview. All injury and poisoning information is

provided by the family respondent. Injury information is found in three files:(A) the Injury Episode file, (B) the Injury Verbatim file, and (C) the Person file. Poisoning information is found in two files:(A) the Poison Episode file and (B) the Person file.

A. Injury and Poison Episode Files

The Injury Episode file is an episode-based file: each injury episode occurred during the three months prior to the interview, and resulted in one or more conditions. An injury episode refers to the traumatic event in which the person was injured one or more times from an external cause (e.g., a fall, a motor vehicle traffic accident). A condition is the acute condition or the physical harm caused by the traumatic event. A person may have up to four injury episodes and will appear in this file as many times as he/she has unique injury episodes. Each episode must have at least one condition classified according to the nature-of-injury codes 800-959 or 990-999 in the Ninth Revision of the International Classification of Diseases (ICD-9-CM). Other health conditions that were reported as occurring with the injury, even if they are not classified according to the nature-of-injury code numbers 800-959 or 990-999 (e.g. mononeuritis of unspecified site (355.9), other symptoms referable to back (724.8)), are also included in the Injury Episode file. The resulting file contains information about the cause of the injury episode, what the person was doing at the time of the injury episode, the date and place of occurrence, the elapsed time between the date of the injury episode and the date of the interview, whether the person was hospitalized, whether the person missed any days from work or school due to the injury, whether the injury episode caused any limitation of activity, ICD-9-CM diagnostic codes, and ICD-9-CM external cause codes. Information about how the injury happened, the body part injured, the type of injury, along with responses to questions about specific types of injury episodes, place of occurrence, and activity were used to assign ICD-9-CM diagnostic and ICD-9-CM external cause codes for all injury episodes.

During the editing process, some injury episodes were removed from the Injury Episode file. These included episodes with no information, episodes that did not occur within the reference period, duplicate episodes, and injury episodes consisting solely of health conditions that could not be classified according to nature-of-injury codes 800-959 or 990-999 of the Ninth Revision of the International Classification of Diseases (ICD-9-CM). In five instances, the respondent reported a person as having more than four injury episodes. Since the NHIS only collects detailed information on the four most recent injury episodes, the data file does not have any information on the additional injury episodes. This file only contains information about injury episodes. Other person-level information can be obtained by linking the Injury Episode file to other 1999 NHIS data files using the household serial number (HHX), family serial number (FMX), and person number (PX).

The Poison Episode file is also an episode-based file. A person may have up to four poisoning episodes and will appear in this file as many times as he or she has unique poisoning episodes. Included in this file is the cause of the poisoning, whether a poison control center was contacted, the date of the poisoning, the elapsed time between the date of the poisoning episode and the date of the interview, whether the person was hospitalized, and whether the person missed any days from work or school due to the poisoning.

During the editing process, some poisoning episodes were removed from the Poison Episode file. These included episodes with no information, episodes that did not occur within the reference period, duplicate episodes, and episodes that involved illnesses such as poison ivy or food poisoning (which are not considered to be poisonings despite their names).

After reviewing the data, it was discovered that 28 episodes coded "06" (Something else) for question FIJ.340 (POITP) did not meet the criteria for poisoning. Rather than remove these episodes, a new variable (POITPR2) was created that contained the original categories in variable POITP plus additional categories that could be used to classify the 28 episodes that were not poisonings. These 28 episodes were recoded to values "07" ("Allergic/adverse reaction to medication or other substance ") or "08" ("Something else - NOT poisoning "). The latter code includes such things as toothpaste and brushing teeth with nail polish. It is suggested that the 28 episodes that did not meet the criteria for poisoning be removed prior to calculating national estimates of poisoning.

This file only contains information about poisoning episodes and 28 episodes that respondents considered poisonings but, based on our criteria, are not poisonings. Other person-level information can be obtained by linking the Poison Episode file to other 1999 NHIS data files using the household serial number (HHX), family serial number (FMX), and person number (PX).

Recall Period and Weights

Questions in the Injury section of the 1999 NHIS have a recall period of the "last 3 months." To calculate estimates of the number of injuries or poisonings occurring annually, each three-month estimate should be multiplied by 4. It is, however, not possible to estimate the number of *people* injured or poisoned annually using the NHIS. Although the number of persons who were injured or poisoned during the three-month reference period is known, this number cannot be assumed to be uniform over a twelve-month period. On the other hand, it is appropriate to estimate the number of injuries or poisonings over the twelve-month period (by multiplying the three-month estimate by 4) because that figure is the same whether or not individuals had multiple injuries or poisonings. Analysts are cautioned to check the documentation and the specific item in the questionnaire in order to insure that annual estimates for these kinds of injury or poisoning episodes are possible and have intrinsic meaning.

Variance Estimation

The Injury Episode file and the Poison Episode file do not contain the design variables used in variance estimation. To obtain the necessary design information, the Injury Episode file and the Poison Episode file must be linked to the Person file.

Technical Notes

Two variables on the Injury Episode file, CAUS and ECAUS, describe the cause of the injury. CAUS is the actual item found in the questionnaire. For each injury, the interviewer selected

the category of CAUS that he/she felt best described the injury based on responses that were given to questions FIJ.050 (IJTYPE) and FIJ.070 (IJHOW). ECAUS is a recoded variable that describes the cause of the injury using categories based on ICD-9-CM external cause codes. The category into which an injury was placed was based entirely on the first ICD-9-CM external cause code listed for that injury. Appendix 1 in the Injury Episode Dataset Documentation contains a list of the ICD-9-CM external cause codes found in each category.

Analysts are cautioned regarding their use of the variable RPCKDM, which indicates the elapsed time between the date of the injury episode and the date of the interview, and the variable RPCKDMP, which indicates the elapsed time between the date of the poisoning episode and the date of the interview. The date of the interview used in the calculation of these variables is actually the last date the interview was opened for examination or input of data. This means that if the interviewer was unable to complete the interview in one visit and had to return at a later date, the injury and poisoning questions may have been completed earlier than indicated by the date of the interview recorded by the CAPI instrument. If this occurred, the time elapsed between the date of the injury or poisoning episode and the date of the interview would actually be less than indicated by variables RPCKDM and RPCKDMP. It is for this reason that value "92" (92-105 days) was created and that four months before the date of the interview was included in value "96" (3 or 4 months before interview). Additionally, in the case of some injury and poisoning episodes, the respondent was only able to provide a month and year of occurrence. In these cases, it was only possible to determine whether the injury or poisoning episode occurred during the same month as the interview or within a certain number of months. For injury and poisoning episodes that occurred during the same month as the interview, this means that the amount of time between the date of the injury or poisoning episode and the date of the interview could be anywhere from one day to 30 days. For injury and poisoning episodes that occurred during the month before the interview, this means that the amount of time between the date of the injury or poisoning episode and the date of the interview could be anywhere from one day to 60 days. The amount of time between the date of the injury or poisoning episode and the date of the interview in months is only used when the day of the injury or poisoning episode was not given.

B. Injury Verbatim File

The Injury Verbatim file contains the edited narrative text descriptions of the injury provided by the respondent and includes the body part injured, the kind of injury, and a description of how the injury happened. (The pre-edited responses are "verbatim " only insofar as the interviewer could type the information and condense it to fit the field size.) Editing was done only to protect the injured person's confidentiality. Text descriptions used to replace the original text that could result in a breech of confidentiality are surrounded by arrows (<>). Grammatical and/or spelling errors were not corrected. The codes "R", which represents "Refused", "D" or "DK", which represent "Don 't know ", and "N", which represents "No more information ", have also been left in the file. The following changes were made to the file in order to protect the injured person 's confidentiality:

Person names (first, middle, and/or surnames or initials) were replaced with <He>, <She>,or <Injured>;

Names of commercial operations were replaced with a general category (i.e.,the name of a restaurant that serves fast food would be replaced with <fast food restaurant>);

All place names including cities, counties, states, and street addresses were removed;

The detailed description of an occupation was replaced with a more general category using the Standard Industrial Classification as a guide;

Brand names were replaced with a generic term for the product (i.e.,the brand name of a car would be replaced with <motor vehicle>);

Text that indicated unusual personal behavior or events was modified to make it less remarkable;

Any group or organization that has a register of its members was replaced with a generic term.

Technical Notes

Due to the way in which IJBODY1, IJBODY2, IJBODY3, IJBODY4 (all referring to the body part injured), IJKIND1, IJKIND2, IJKIND3, IJKIND4 (all referring to the kind of injury), and IJHOW1, IJHOW2, IJHOW3, IJHOW4 (all referring to how the injury happened) were recorded, the information contained in these variables may not correspond exactly to the ICD-9-CM diagnostic codes (ICD9_1, ICD9_2, ICD9_3, ICD9_4) and the ICD-9-CM external cause codes (ECODE_1, ECODE_2, ECODE_3) associated with a given injury episode. For example, the body part or body parts listed in IJBODY1 (question FIJ.050) may not be the one or ones listed in ICD9_1. When comparing verbatim injury episode information and ICD-9-CM diagnostic codes and ICD-9-CM external cause codes, it is better to look at all the information together rather than to try to match first body part field with first ICD-9-CM diagnostic code field, second body part field with second ICD-9-CM diagnostic code field, etc.

C. Person File

The Person file contains the number of times a person was injured by specific causes, the number of times a person was injured while doing specific activities, the number of times a person was injured in a specific place (e.g., at home, in school, at their place of work, etc.), the number of injury conditions a person has in the Injury Episode file (ICD9CT), the number of natural cause conditions a person has in the Injury Episode file (ICD9CTNI), and the number of injury episodes a person has in the Injury Episode file (INJCT). The Person file also contains the number of poisoning episodes the individual has in the Poison Episode file (POICT). The variable that indicates the number of poisoning episodes the individual has in the Poison Episode file also contains episodes that did not meet the criteria for poisoning.

Recall Period and Weights

Questions in the Injury section of the 1999 NHIS have a recall period of the “last 3 months.” In general, only three-month estimates should be made from the variables in the Person file. It is not possible to estimate the number of people injured or poisoned annually using the NHIS. Although the number of persons who were injured or poisoned during the three-month recall period is known, this number cannot be assumed to be uniform over a twelve-month period. For example, if 100

people responded that they were injured during the three-month reference period, it cannot be assumed that 400 different people were injured in a twelve-month period because some individuals may be injured multiple times while others may be injured once. On the other hand, it is appropriate to estimate the number of *injuries or poisonings* over the twelve-month period (by multiplying the three-month estimate by 4) because that figure is the same whether or not specific individuals had multiple injuries or poisonings. Because INJCT, ICD9CT, ICD9CTNI, and POICT represent counts (per person) of injury episodes, injury conditions, natural cause conditions, and poison episodes, respectively, annual estimates of the number of episodes and conditions can be obtained from these variables by multiplying:(variable)(4)(WTFA).

III. Health Care Access and Utilization Section (FAU)

The Health Care Access and Utilization (FAU) data from the Family Core of the 1999 NHIS contain information addressing access to health care and utilization services. The FAU section is basically identical to 1997 and 1998 and consists of three parts: Part A, Access to Care; Part B, Hospital Utilization; and Part C, Health Care Contacts. The data items for Access to Care from 1997 onward differ from earlier years, with the exception of two questions: delay in receiving medical care (FAU.020), and not receiving needed medical care due to cost (FAU.040). The data items for Hospital Utilization are similar to those questions from the Hospital Probe and Hospital Page contained in the core questionnaire prior to 1997. In addition, the data items for Health Care Contacts are similar to the 2-week doctor visit probe questions from years prior to 1997 and include visits from medical doctors as well as other health care professionals.

In National Health Interview Surveys prior to the 1997 redesign, questions about physician contacts, office visits, and home care included only contacts with and visits to medical doctors or health care professionals working with or for a medical doctor. In addition, previous surveys included home care visits in the same category -- and thus in the same question -- as contacts with or visits to a doctor's office, hospital, etc. In contrast, the 1999 (as well as the 1998 and 1997) NHIS distinguishes between home care and office visits, and includes separate questions for both. Moreover, beginning in 1997 the new instrument allowed respondents to consider an expanded list of health care professionals; respondents were instructed to consider "care from ALL types of medical doctors, such as dermatologists, psychiatrists, ophthalmologists, and general practitioners", as well as nurses, physical therapists, and chiropractors. Lastly, new for 1997 and continuing through 1999 is a question (FAU.210) asking about 10 or more visits to doctors or other health care professionals in the last 12 months.

Health care utilization estimates based on the 1999, 1998 and 1997 NHIS may differ from those for earlier years of the NHIS, at least in part due to changes in the questions and/or the context of the questions. Thus, estimates of health care utilization based on these data may not be comparable to estimates from previous years. For example, the estimated proportion of persons reporting one or more telephone contacts with a health professional in the past two weeks is higher than estimates from years prior to the 1997 NHIS. Users are advised to compare 1997-1999 NHIS questionnaire items pertaining to health care utilization to those used in previous NHIS surveys.

Technical Notes

Some changes in question wording were introduced in mid-1997 for the items asking about delays to medical care (FAU.010), hospitalizations in the last 12 months (FAU.050), 2-week telephone contacts with health care professionals (FAU.150), and number of 2-week telephone contacts (FAU.170). (Instrument version 3.1 was used during the first half of 1997 and thus contains the original questions, while version 3.5 was used in the latter half of 1997 and contains the modified questions.) These slight modifications in wording may affect respondents' answers to the questions. Analysts are therefore advised to read the notes in the Dataset Documentation for information pertaining to these changes. The modified questions used in version 3.5 of 1997 were used during the entire year in both 1998 and 1999.

IV. Health Insurance Section (FHI)

The Health Insurance section of the 1999 NHIS Family Core has a full range of data items addressing health insurance. The health insurance programs covered by this section are similar to those covered by the 1993-96 NHIS Health Insurance Supplements and the 1997 and 1998 NHIS Family Core.

The health insurance section (FHI) covers several different topic areas:

Type of health care coverage (Medicare, Medicaid, Children's Health Insurance Program [CHIP], military/VA, CHAMPUS/TRICARE/CHAMP-VA, State-sponsored health plan, other government programs, Indian Health Service, private insurance, and single service plans);

Managed care arrangement for those covered by Medicare and Medicaid and need for referrals;

Private insurance characteristics reported by the respondent (HMO, PPO, and POS status, source of coverage, existence of employer subsidies for premiums, amount paid by individual/family, managed care detail information, need for a referral);

Private insurance plan and HMO model types coded from private plan names;

Types of single service plans;

Periods of time without health insurance and reasons for no health insurance;

Out-of-pocket costs in past year (general categories).

The 1999 FHI data contain several modifications, as well as some new variables. Users will notice that the Children's Health Insurance Program (CHIP) is now HIKINDG, while single service coverage is HIKINDM and Military Health Care Coverage is HIKINDH. The categories (HIKINDI - HIKINDL) have been adjusted accordingly. Moreover, wording changes have been made to PLNPAY, STNAME and HICHECK to accommodate the CHIP program. Wording

changes were also made to HICHECK and HILAST to accommodate persons who had only reported a single service plan, and the second sentence of HIKIND was changed to accommodate the new single service plan category. Furthermore, two follow-up questions were asked of persons who indicated receipt of single service plans; the resulting variables are SSTYPE and SSOTHER.

Additionally, two new questions have been added to the Medicare detail (MCREF and MCPAYPRE). MCREF provides information on the need for a referral to see a specialist. MCPAYPRE provides information on whether persons with Medicare are paying an additional premium to receive a more comprehensive health benefit plan. A new question was also added to private plan detail (MGPREF), in order to obtain information on the need for a referral to see a specialist. Lastly, HICOST answer categories were modified so that premiums paid for by an individual or family are reported as a continuous variable. The variable names for these items have been changed from HICOST1 - HICOST4 to HICOSTR1 - HICOSTR4.

Technical Notes

Approximately 500 persons who initially indicated that they had health care coverage (PHICOV) did not indicate the type of health insurance or coverage they had in HIKIND. These persons are coded "8" (or "Not ascertained") for the following variables and recodes: HIKINDA through HIKINDM, MEDICARE, MEDICAID, PRIVATE, CHIP, IHS, MILITARY, OTHERPUB, OTHERGOV and SINGLE.

During the course of data editing, it was determined that some respondents indicated plans (in response to the questions HIPNAM, NEXTPNM, NEXTPNM2, and NEXTPNM3) that were not private health insurance plans, or single service plans that were excluded from the private health insurance coverage category. These respondents were reassigned to the appropriate response category with the enrollment recodes for MEDICARE, MEDICAID, CHIP, IHS, MILITARY, OTHERPUB, OTHERGOV and SINGLE. Similarly, in looking at the verbatim responses to the question STNAME asking respondents for the name of their CHIP, state sponsored or other government coverage, it was found that some respondents indicated plans and names of programs that were clearly private health insurance, Medicare, Medicaid, military coverage, Indian Health Service, single service plans or no coverage at all. Persons with these forms of coverage were reassigned to the appropriate enrollment recodes for MEDICARE, MEDICAID, PRIVATE, IHS, MILITARY and SINGLE. Additionally, respondents who answered "other state sponsored" or "other government coverage" and who were subsequently determined through the STNAME field to be on the Children's Health Insurance Program were assigned to the CHIP recode. Also, some respondents offering an "other" response to the survey item (HISTOP@SPC) that inquired about the reason(s) their coverage stopped subsequently indicated in their verbatim responses that they did in fact have health insurance. These persons were reassigned to the appropriate response category with the enrollment recodes for MEDICARE, MEDICAID, CHIP, PRIVATE, IHS, MILITARY, OTHERPUB and OTHERGOV. Analysts are therefore advised to use the recodes MEDICARE, MEDICAID, PRIVATE, CHIP, IHS, MILITARY, OTHERPUB, OTHERGOV, and SINGLE for types of health care coverage, because these take into account the above-mentioned back edits. In contrast, the data contained in PHICOV and the HIKINDA - HIKINDM variables were not back-edited and reflect the respondents' original replies. Lastly, a recode (NOTCOV) is provided on the

data file that reflects the definition of non coverage as used in *Health, United States* (i.e., persons with *only* Indian Health Service coverage are considered uninsured)

As a result of the complicated editing process that takes place in the FHI section, the variables HILAST and HINOTYR, which reflect periods of non coverage, cannot be used to estimate the rate of uninsurance. Users should derive such estimates from NOTCOV (if they do not count IHS as coverage or, alternatively, the health insurance recodes (MEDICARE, MEDICAID, PRIVATE, CHIP, IHS, MILITARY, OTHERPUB, AND OTHERGOV).

V. Socio-demographic Section (FSD)

The Socio-demographic (FSD) section of the Family Core in the 1999 NHIS collects information on place of birth, citizenship status, and educational attainment for all family members, regardless of age. In addition, family members 18 years of age or older are asked if they were working last week, and if not, their main reason for not working. For those working, additional questions inquired about the number of hours they worked during the previous week, how many months they worked in 1998, an estimate of their earnings from wages in 1998, and whether their employer provided health insurance.

Analysts may also refer to the Adult Core socio-demographic section (ASD) for additional occupational and employment data regarding those individuals selected as sample adults.

Technical Notes

Editing procedures have reconciled inconsistencies between DOINGLW and the relevant occupation and work-related variables in the Sample Adult Demographics section (ASD), but no such corrections are possible for non-sample adults. Moreover, data captured in DOINGLW have not been reconciled with other variables of the same subject matter within other sections of the data file. The "major activity" variable available in pre-1997 versions of the NHIS is now roughly approximated by a recode, MAJR_ACT, which sorts adults (persons aged 18 and older) into five categories: working at a job or business, keeping house, going to school, "something else" (e.g., retirement), and unknown. Users are advised that MAJR_ACT is derived in an entirely different fashion than the major activity variable available prior to 1997; comparable frequencies should not be expected. In particular, the frequency for those "keeping house" is low relative to data obtained prior to the 1997 NHIS redesign. The earlier instrument asked respondents for their majority activity very early in the interview, and well before the work/employment section; also, "keeping house" was an acceptable response category, along with "working". With the redesign, however, respondents could only "keep house" if they had previously said that they were not working. In effect, "keeping house" is a residual category of sorts: as a result of this change, the count of persons keeping house according to the redesigned NHIS is much lower.

Respondents who were not born in the United States were asked the year in which they came to the United States to stay. Respondents who could not recall or refused to answer were subsequently asked to estimate the number of years they had been in the United States. This information was combined to create a recode that indicates how long these respondents have been

living in the United States (YRSINUS). Regarding USBORN_P, respondents born in Puerto Rico, Guam, and other outlying territories of the United States are included in response category "2"; that is, they were not born in one of the fifty United States or the District of Columbia. The 1999 data also contain a citizenship recode that distinguishes between U.S. citizens and non-citizens.

The NHIS does obtain information on respondents' place of birth: in the case of persons born in the United States, state of birth; in the case of persons born outside of the U.S., country of birth. In order to protect the confidentiality of NHIS respondents, these variables will not be publicly available to users. However, users may gain limited, supervised access to these variables through the NCHS Research Data Center. For more information, please refer to the Research Data Center web page:

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

VI. Income and Assets Section (FIN)

The Income and Assets (FIN) section of the Family Core contains information regarding a variety of income sources, as well as estimates of total combined family income and home tenure status. Many of the Income and Assets questions in this section have appeared in previous NHIS supplements (e.g., Family Resources). However, with the redesign of the 1997 NHIS, "Income and Assets" is now a permanent part of the Basic Module.

Respondents were first asked whether anyone in the family received income from a particular source. If a "yes" answer was obtained for any source, the respondent was then asked to name the member(s) receiving income from that source. The section also includes questions about the family's total income from all sources in 1998, and their home tenure status. The basic universe for most questions is "All families"; however, note that some universes for several questions (most importantly, PSAL, PSEINC, and PWIC) are further limited with respect to age (of family members). All variables in the Income and Assets section were converted from the family level to the person level during the editing process (i.e., the information in the respondent's record was transferred to the records for each family member).

Sources of Income

The first two questions in the section ask about income from wages and salary, and from self-employment (business or farm) for family members 18 years of age and older. Subsequent questions are not limited to adult family members. Respondents were asked about income from Social Security or Railroad Retirement (including that which was received as a disability benefit); other pensions; Supplemental Security Income (SSI); Welfare/Temporary Assistance to Needy Families (TANF); other kinds of government assistance (e.g., job training or placement, transportation assistance, or child care); interest from savings or other bank accounts; dividends from stocks, mutual funds, and/or net rental income from property, royalties, estates or trusts; child support payments; and other income sources (the question asked of respondents specifically mentioned alimony, contributions from family or friends, VA payments, Worker's Compensation, and Unemployment Compensation as possible sources of "other" income). Respondents are told at the start of the Income and Assets section that all questions are seeking information about possible income sources in the previous calendar year (i.e., 1998).

It should be noted that the responses to FIN.166, POWBEN, are only shown for interview quarters 2 - 4. During quarter 1 only those respondents who indicated that income was received from TANF were asked the POWBEN question. Users wishing to derive national estimates based on POWBEN should use the annual weight variable (WTFA) multiplied by 4/3. (Note that such an approach is based on the assumption of little or no seasonality in the degree to which Americans utilized other kinds of governmental assistance in 1998.)

Amounts and Home Ownership

In previous years, NHIS obtained information about the amount of income received from each financial source, but that was dropped in the redesigned NHIS in favor of a single overall estimate of combined family income. And, unlike previous NHIS surveys, the redesigned instrument contained three questions to elucidate the family's combined income from all sources during the previous calendar year, including a question (FIN.250) that allowed the respondent to supply a specific dollar amount (up to $ 999,995). Any family income responses greater than $ 999,995 were entered as $ 999,996. Respondents who did not know or refused to give a dollar amount to this question were then asked if their total combined family income for the previous year was $20,000 or more, OR less than $20,000 (FIN.260). If the respondent answered this question, he/she was then given a flash card and asked to indicate which income group listed on the card best represented the family's combined income during the previous year (FIN.270). Information from these three variables was combined into an income recode (INCGRP) that uses 13 categories to describe the family's income, as well as a second recode (AB_BL20K) that indicates all families at or above $20,000 or below $20,000.

Additionally, a more detailed indicator of poverty status was created by utilizing published information from the U.S. Census Bureau regarding 1998 poverty thresholds (see *Poverty in the United States, 1998*; U.S. Census Bureau, Appendix A, Table A-2). A ratio of the 1998 income value reported by respondents to the poverty threshold for the same year was constructed, given information on the family's overall size as well as the number of children aged 17 and under present in the family. The resulting ratio was subsequently ordered into a poverty gradient consisting of 14 categories (RAT_CAT). Users should note that the universe for this variable is considered to be all families, because the initial income question was asked of all families. However, the income-to-poverty ratios and resulting RAT_CAT values could not be calculated in two cases: when families simply did not supply adequate income information (e.g., those who would only indicate that their income was above or below $20,000, as well as those who declined to give any income information whatsoever), or those families where the number of children aged 17 or under *equaled* the overall number of family members (these observations are coded "99" and "96", respectively, on RAT_CAT). Respondents were also asked whether the family's house or apartment was owned or being bought, rented, or occupied by some other arrangement. If the family was renting the current residence, the question asked was whether the family was paying lower rent due to governmental rental assistance (FIN.282) .

Program Participation

Respondents were asked in the final part of the FIN section if any family members were authorized to receive food stamps in 1998, and if so, which members. In addition, respondents

were asked whether any family member(s) had *ever* applied for Supplemental Security Income (SSI) or Social Security disability benefits (even if the claim(s) had been denied). If one or more family members had received food stamps or Temporary Assistance to Needy Families (TANF), the respondent was asked, in two separate questions, for how many months during the last calendar year food stamps and/or TANF were provided.

There was also one (1) new Program Participation question for 1999. FIN.384, or FINWIC, asked respondents if any family member received benefits from the Women, Infants, and Children (WIC) program (during the last calendar year), and FIN.385, or PWIC, asked which family members received these benefits. During the editing process, the universe of PWIC was specifically restricted to children under 6 years of age or females aged 12 to 55 years.

It should be noted that the responses to FIN.385, PWIC, are only shown for interview quarters 2 - 4. During quarter 1 only those respondents who indicated that income was received from food stamps were asked the PWIC question. Users wishing to derive national estimates based on PWIC should use the annual weight (WTFA) multiplied by 4/3. (Note that such an approach is based on the assumption of little or no seasonality in the degree to which Americans utilized WIC benefits in 1998.)

1999 National Health Interview Survey
Sample Adult File

The Sample Adult section of the 1999 NHIS covers many of the subject areas included in the Family Core. However, the questions in the Sample Adult section are more specific, and are intended to gather more detailed information. More importantly, proxy responses are not acceptable in this section: each person chosen as the sample adult for a particular household must answer for himself/herself. The six sections comprising the Sample Adult section are discussed below.

I. Adult Conditions Section (ACN)

Prior to 1997, the NHIS covered 133 conditions across six condition lists and contained ICD-9 codes; each NHIS family was randomly assigned one of the six different condition lists. With the redesign, the six lists have been combined into a single, shorter list for adults and a single, shorter list for children, each consisting of several domains. Additionally, the current NHIS data files contain no ICD-9 codes. The domains for adults are now organized by organ system or health topic and include the following: cardiovascular disease, emphysema and asthma, ulcers, cancer, diabetes, other respiratory conditions, renal conditions, liver conditions, joint symptoms, sensory impairments, pain, hearing, vision, oral health, and mental health. Table 5 shows the specific health-related conditions covered in the redesigned NHIS, as well as the various reference periods covered by the questions.

Given the previous NHIS questionnaire design, most condition analyses were carried out at the condition-level; person-level analyses were possible, but cumbersome. The redesigned NHIS makes person-level analyses much easier to carry out. Moreover, there are several notable differences in the way information on conditions is collected in the redesigned NHIS. As mentioned, all data in the redesigned Sample Adult component were required to be self-reported; proxy respondents were not allowed. In addition, most questions in the 1997, 1998, and 1999 NHIS now ask about conditions diagnosed by a doctor or health professional. Finally, while many of the condition questions are very similar to, if not identical to, those asked in the previous NHIS, questions are quite different for several conditions, notably asthma, hearing impairments, and vision impairments. All of these changes must be considered when attempting to compare condition prevalence estimates derived from either 1997, 1998, or 1999 data with those from earlier years.

Regarding the ACN data on colds and intestinal illnesses, analysts should keep in mind that the questions are measuring fairly broad symptoms and illnesses. Furthermore, these may be a result of either acute or chronic conditions (e.g., irritable bowel syndrome or respiratory allergies). These data are best used to measure trends over time.

Table 5. Sample Adult File: Conditions and Reference Periods

Reference Period in 1999 NHIS							
CRQ #	**Condition**	**Ever**	**Last 12 months**	**Last 3 months**	**Last 30 days**	**Last 2 weeks**	**Now**
ACN.010	High blood pressure	X					
ACN.031	Coronary heart disease	X					
ACN.031	Angina	X					
ACN.031	Heart attack	X					
ACN.031	Other heart condition	X					
ACN.031	Stroke	X					
ACN.031	Emphysema	X					
ACN.080-ACN.090	Asthma; Episode attack	X	X				
ACN.110-ACN.120	Ulcer	X	X				
ACN.130	Cancer (Any type plus specific questions on 30 types)	X					
ACN.160	Diabetes	X					
ACN.201	Hay fever		X				
ACN.201	Sinusitis		X				
ACN.201	Chronic bronchitis		X				
ACN.201	Weak or failing kidneys		X				
ACN.201	Liver condition		X				
ACN.250	Joint pain		X				
ACN.300	Neck pain			X			
ACN.310-ACN.320	Low back pain, with or without leg pain			X			
ACN.331	Facial pain			X			
ACN.331	Severe headaches			X			
ACN.350	Head or chest cold					X	
ACN.360	Stomach or intestinal illness					X	

Reference Period in 1999 NHIS							
CRQ #	**Condition**	**Ever**	**Last 12 months**	**Last 3 months**	**Last 30 days**	**Last 2 weeks**	**Now**
ACN.370	Pregnancy						X
ACN.410-ACN.420	Hearing impairment	X					X
ACN.430-ACN.440	Vision impairment						X
ACN.451	Lost all upper/lower teeth						X
	Emotional health:						
ACN.471	Sad				X		
ACN.471	Nervous				X		
ACN.471	Restless				X		
ACN.471	Hopeless				X		
ACN.471	Everything an effort				X		
ACN.471	Worthless				X		

The cancer questions were asked in a format that allowed a respondent who reported having had cancer to specify up to three kinds of cancer or to indicate that he/she had had more than three kinds. This is referred to as a "Mentioned/Not mentioned" format. The responses were recorded with the codes indicated in the questionnaire and were then transformed into "mentioned /not mentioned" variables during editing. These variables assign to every sample adult who reported having had cancer either a "Mentioned", if he/she specified that particular type of cancer, a "Not mentioned", if he/she did not specify that type of cancer, or a "Refused", "Don't know", or "Not ascertained", if there was no information for any of the cancers. Thus, a sample adult may have a code in each of the cancer variables, but can have only up to three "mentions", with a fourth mention possible for the variable "More than 3 kinds".

1999 Periodic Questions

The 1999 ACN section included a number of periodic questions. In most instances, these questions obtained additional, detailed information on questions posed in the Core part of the ACN section. For example, ACN.020 asks respondents if they had been told on two or more different visits that they had hypertension (high blood pressure). Periodic question ACN.020.010 follows: "Was any medication ever prescribed by a doctor to help you lower your blood pressure?" Additional questions ask respondents whether they are currently taking any prescribed medication for their high blood pressure, and how long it has been since their blood pressure was checked by a doctor, nurse, or health professional.

In addition, more detailed information was obtained regarding heart attack, congestive heart failure, osteoporosis, Parkinson's disease, asthma (number of attacks in the past year, overnight stays in the hospital as a result of an asthma attack, use of asthma medications and inhalers, courses

on asthma management, occurrence of whistling and/or wheezing, sleep disturbances due to whistling and/or wheezing, etc.), ulcers, Crohn's disease or ulcerative colitis, diabetes (diagnosis in the past 12 months, courses on diabetes management, knowledge of and testing for glycosylated hemoglobin in the past 12 months, checked for sores/irritations on feet in the past 12 months, last time pupils were dilated for an eye exam), kidney stones, carpal tunnel syndrome, causes of joint problems (e.g., rheumatoid arthritis, bursitis, gout, etc.), use of prescription medication containing steroids like prednisone in the past 12 months, and the occurrence of head/chest colds, and stomach/intestinal illnesses. Female sample adults aged 18 and older were asked whether they had had a natural menstrual period in the past 12 months, and also in the past three months, the length of time between periods, their menstrual flow, their age at last period (for those not menstruating in the last three or 12 months), occurrence of hysterectomy, removal of ovaries, occurrence of menopause, whether their doctor had ever discussed hormone replacement therapy with them, whether they had ever taken estrogen and/or progestin, and whether they are currently taking estrogen and/or progestin.

Users should be aware that the data from the periodic questions pertaining to menopause (MNYR through OVARYAGE) contains some questionable responses. In particular, responses to the MENAGE question, which asked female respondents for their age at last natural period, had the greatest number and variety of problems. A few respondents may have given their age at first period, while others may have given the number of years since their last period. Others supplied an age at last natural period that was older than their age at the time of their hysterectomy or ovariectomy. Finally, some respondents gave ages that were too high for a "natural" menstrual period, and thus may represent women taking hormone replacement therapy.

Unreasonable or implausible responses to MENAGE (less than or equal to 10 years, greater than 60 years) were changed to "98" (not ascertained). In cases where MENAGE was greater than 60 years, MNAGE2 was also changed to "07", indicating that the respondent's last natural period took place when she was 55 years of age or older. In a very few cases, the response given for HYSTAGE (age at the time of a hysterectomy) and OVARYAGE (age when both ovaries were removed, or when the second ovary was removed) were apparently the years since the surgery took place; when values for these variables were 10 years or less, they were changed to "98" (not ascertained). Despite these changes, the data still contain some cases in which MENAGE, HYSTAGE, and OVARYAGE are inconsistent; when there was no clear evidence indicating the correct response, the inconsistent responses were left in the data. Researchers are strongly encouraged to examine these responses and devise a solution that meets the needs of their research objectives.

A core question in the ACN section (ACN.420) asks all sample adults to describe their hearing without a hearing aid. Follow-up periodic questions have been added that obtain more detailed information about hearing loss in each ear and the age at which this loss occurred. Additional periodic questions in this section obtain detailed information about their eyesight and their ability to perform everyday activities. In particular, respondents are asked whether they have been told by a doctor or other health professional that they have cataracts, glaucoma, and/or macular degeneration, and the degree of difficulty they experience when reading a newspaper, when doing work that requires them "to see well up close" (such as cooking, sewing, using hand tools, etc.),

going down stairs, steps, or curbs in dim light or at night, driving during daytime in familiar places, noticing objects off to the side while walking, and finding something on a crowded shelf.

In conjunction with the core questions on mental health (regarding feelings of sadness, nervousness, hopelessness, restlessness, etc), sample adults were asked an extensive series of questions to determine if they had experienced these feelings more or less often in the past 30 days, the number of days in the past month that they were "totally unable" to work or carry out their usual activities because of these feelings, the number of days in the past month that they had to "cut down" on what they did because of these feelings (apart from the "totally unable" days), whether they had felt depressed for two weeks in a row during the past 12 months, and how they felt on these days (e.g., more tired or low on energy, difficulty concentrating, etc.). In addition, respondents were asked whether they had more trouble falling asleep than usual during this two week period, and if they had lost or gained weight without trying. Lastly, sample adult respondents who reported such problems were asked if they had spoken with a doctor and/or any other health professional (including a psychologist, social worker, counselor, nurse, clergy, etc.), and whether they had used drugs or alcohol more than once for these problems. Respondents were also asked a series of questions that focused on the extent to which they worried and/or experienced anxiety attacks.

Some of the periodic questions pertaining to the mental health form include a slightly modified index based on the Composite International Diagnostic Interview - Short Form (CIDI-SF; Kessler et al. 1997) that measures the probability of psychiatric illness within the past twelve months (i.e., major depression, generalized anxiety disorder, and panic attack). Users seeking more information on these mental health items should refer to Appendix IV in this document, as well as to the references cited therein. The results from the diagnostic algorithms will be released in a supplement to these data. Use of these item-level questions in their current form should be undertaken with caution. It is suggested that these item-level data should not be combined in an effort to create summary scores on the probability of diagnosis. Users will be notified of this future release via the NHIS listserve and the NCHS web page.

II. Adult Health Status and Limitation of Activity Section (AHS)

The Adult Health Status and Limitation of Activity component of the Sample Adult file contains information from respondents on illness behavior, health status, special equipment, limitations in functional activities, and the conditions underlying such limitations. While the AHS section may seem similar to the FHS section in the Person file, the questions in these sections have a somewhat different focus. For example, both sections asked about the ability to walk without special equipment. However, the walking limitation question in the FHS section (FHS.210) only captured whether a person has difficulty walking without using special equipment. In contrast, the Sample Adult question on walking (AHS.091) asked about the degree of difficulty the respondent has walking a specified distance (a quarter mile - about three city blocks) by him/herself and without using any special equipment.

Health Indicators: Illness Behavior and Health Status

The first questions in this section determined the number of days off from work and days spent in bed due to illness or injury during the 12 months prior to the interview. In addition, respondents were asked to compare their health now (is it better, worse, or the same) to their health 12 months ago.

Limitation of Functional Activities

The functional limitation questions in the AHS section asked the respondent to indicate the *degree of difficulty* he/she would have in performing specific physical tasks (e.g., walking a quarter of a mile, walking up ten steps, standing for two hours, carrying a ten pound object, etc.) and engaging in social activities and recreation (e.g., going shopping, attending club meetings, visiting friends, sewing, reading, etc.) without the assistance of another person or using special equipment. This is in sharp contrast to the questions in the FHS section, which allow only *"yes" or "no"* responses to questions inquiring whether household members needed help from another person with personal care needs (e.g., bathing, dressing, eating, etc.) or in handling routine tasks (doing everyday chores or shopping).

For three activities (i.e., shopping, participating in social activities, and relaxing at home), respondents had the opportunity to respond in the interview that they "do not do this activity". For functional activities (related to walking, climbing, standing, sitting, stooping, reaching, grasping, carrying, and pushing), respondents were not permitted in the instrument to use this response category, but could be reassigned to "do not do this activity" in the course of data editing based on information obtained by the FR. As in FHS, if the sample adult reported difficulty with any of these twelve activities, he/she was then asked what condition(s) cause the difficulty, as well as how long he/she has had the condition. The format of this condition data is similar to what is found in the FHS section.

Conditions

Each sample adult indicating any functional limitation (regardless of the degree of the limitation) is asked about the condition(s) or health problem(s) associated with that limitation (up to five conditions may have been indicated), as well as the amount of time he/she has had the condition. Sample adults were given the following fixed response categories: "vision/problem seeing", "hearing problem", "arthritis/rheumatism", "back or neck problem", "fractures, bone/joint injury", "other injury", "heart problem", "stroke problem", "hypertension/high blood pressure", "diabetes", "lung/breathing problem", "cancer", "birth defect", "mental retardation", "other developmental problem (e.g., cerebral palsy)", "senility", "depression/anxiety/emotional problem", "weight problem", and two instances of "other impairment problem". Respondents could supply a verbatim response (entered as up to 20 characters) for the "other impairment problem".

The AHS condition data were edited very much like the condition data in FHS. The verbatim responses recorded by FRs in one or both of the 50-character fields indicating "other impairment problem" were subsequently analyzed during data processing. While most respondents

named conditions that did not fall into the fixed response categories as originally specified in the instrument, some respondents named conditions that could be included in one of the fixed categories. In the latter case, these respondents were assigned codes corresponding to the one of the original 18 response categories. An additional 16 *ad hoc* categories were created during coding to group responses that fell outside the original 18 condition categories included in the instrument: these ad hoc categories were assigned numbers 19-34. Any verbatim conditions that could not be back-coded to one of the original categories or recoded to one of the new categories remained in the "other impairment problem" categories, and were renumbered "90" and "91". The resulting 36 categories were generally informed by the International Classification of Diseases, Ninth Revision, Clinical Modification (see Table 3 on page 26; again, note that the ICD-9-CM codes shown in this table are *not* included on the data file). These specific condition categories were subsequently transformed into variables indicating whether or not the condition was responsible for the respondent's difficulty with any functional activity (a "mention-not mention" format). Because the 16 *ad hoc* categories were not included on the flash cards given to respondents during the course of the interview, it is possible that frequencies obtained for these conditions will be underestimated. Therefore, these variables should be analyzed with care. Moreover, none of the AHS condition variables (AFLHCA1 through AFLHCA34) should be used to estimate prevalence for the conditions they represent, because only those sample adults with a previously reported functional limitation were eligible for the condition question that followed. Analysts who are interested in estimating the prevalence of particular conditions are referred to the Sample Adult Conditions (ACN) section (above).

Recodes

The recode FLA1AR is a summary measure that indicates sample adults who reported *any* difficulty with *any* one or more of the functional activities discussed during the course of the AHS section of the interview. In other words, individuals who indicated *any* degree of difficulty to FLWALK, FLCLIMB, FLSTAND, FLSIT, FLSTOOP, FLREACH, FLGRASP, FLCARRY, FLPUSH, FLSHOP, FLSOCL, *or* FLRELAX are coded "1" for FLA1AR. In response to analysts' requests that the FLA1AR recode distinguish adults who have no functional limitations from adults with unknown disability status, beginning in 1998 and 1999 this variable includes three response levels: "1" for limited, "2" for not limited, and "3" for unknown if limited. ALCHRONR is based on FLA1AR but adds the additional criterion of whether at least one of the reported causal conditions is a chronic condition. The section also includes time recodes (ALANTR1-34, ALANTR90 and ALANTR91) and chronic recodes (ALCNDR1-ALCNDR34, ALCNDR90 and ALCNDR91) for each of the 36 categories. These recodes for conditions that cause functional limitation(s) are similar to those used in the FHS section and described above.

III. Adult Health Behaviors Section (AHB)

The redesigned NHIS Sample Adult questionnaire contains questions on four health-related behaviors: cigarette smoking, leisure time physical activity, alcohol use, and body weight. The health behavior questions have remained essentially the same since 1997. The 1999 data file contains two newly created variables that did not exist in 1997-1998: MET_FLG1 AND MET_FLG2). Details are discussed below under "Body Weight and Height".

Smoking

Smoking questions have been included in the NHIS periodically since 1965, although there has been some variation in question wording. Smokers continue to be defined as persons who have ever smoked 100 cigarettes and currently smoke every day or some days. In 1992, the NHIS basic smoking question changed from "Do you now smoke?" to "Do you now smoke every day, some days, or not at all?" This version of the question continues to be asked. In addition to smoking status, data are collected on age of initiation, amount smoked, and quit attempts.

In 1997, the universes for most of the smoking variables were restricted to respondents with known smoking status. Beginning in 1998 and continuing in 1999, the universes reflect the actual skip patterns in the questionnaire. A decision was made to make the data available in their original form, allowing the analyst to decide how to treat respondents who were asked the question but were not the primary target group for it. For example, CIGDAMO (number of days smoked in the past month) was primarily designed to be asked of "some days" smokers (SMKNOW = 2), but is also appropriate for persons who could not say how frequently they smoked (SMKNOW = 7-9). The universe for CIGDAMO includes SMKNOW = 2, 7-9. The overall number of cases affected by the inclusion of unknowns is quite small, and neither inclusion nor exclusion of unknowns from the universes should affect estimates. Data users need to decide whether they want to redefine these variables, limiting the universes to persons with known data in the lead-in question, or leave the universe as is, presenting data for all persons who were asked the questions.

Leisure time physical activity

The physical activity questions that have been included in the redesigned NHIS beginning in 1997 are substantially different from those in pre-1997 NHIS questionnaires. Because of the large number of topic areas covered in the new NHIS, only a brief set of leisure time physical activity questions could be included in the Sample Adult Module. For this reason, the questions are general and lend themselves to broad classifications of activity levels. In 1998, the core physical activity questions were supplemented with additional physical activity questions in the Sample Adult *Prevention* Module. The Sample Adult *Prevention* Module contained a set of questions on 23 specific leisure time physical activities, and obtained information regarding frequency, duration, and intensity for each activity. In 1999, the physical activity questions were once again limited to those that appeared in the Sample Adult Module. Due to space limitations, questions concerning occupation-related physical activity are not available on the NHIS Sample Adult Module. It is hoped that such questions can be included periodically in future surveys.

Data users who have used the 1997 NHIS data file should note that the variables from quarters 1-2 of 1997 have the same names as the variables included in annual 1998 and 1999 data files. However, the minimum duration for the two sets of questions are different. In 1997 quarters 1-2 variables, respondents were asked how often they did vigorous and light-moderate activities for *at least 20 minutes*. In 1998 and 1999, respondents were asked how often they did vigorous and light-moderate activities *for at least 10 minutes*.

Quarters 3-4 of 1997 were a transition period. The questionnaires contained leisure time physical activity questions with the new minimum duration (i.e., *at least 10 minutes*) but different variable names. Each of the quarters 3-4 physical activity variable names ended with the digit "2", to indicate a second version of the variables for that year. A recode was constructed for each of the physical activity variables that combined quarters 1-4 for activity with a minimum duration of 20 minutes. Data users interested in merging 1997 physical activity variables with later years should be mindful of the changes that were made to the physical activity questions mid-year in 1997 and should consult the 1997 NHIS Survey Description document and Dataset Documentation for additional details.

Alcohol use

The alcohol questions are a variation on questions that have appeared in the NHIS periodically since 1977. Extensive supplements on alcohol use were fielded in 1983 and 1988, with smaller sets of questions asked in other data years including 1985, 1990, 1991, and 1998. However, the order and reference period of the questions differ from many other NHIS data years. The most notable change is in the order of the lifetime drinking questions. The question "Ever have 12 drinks in one year?" now precedes, rather than follows, "Ever have 12 drinks in entire lifetime?" Similarly, the definition of a lifetime abstainer has changed from "less than 12 drinks in one year" to "less than 12 drinks in entire lifetime". The current drinking status questions are now asked of all persons who previously said that they had ever had 12 drinks in their entire life, thus capturing infrequent drinkers who may never have had as many as 12 drinks in any one year, but did drink in the preceding 12 months.

As with other sections of the questionnaire, the reference period was chosen to capture as much information as possible for as many people as possible. Although a twelve-month reference period is less than ideal, it allows for measurement of alcohol use among all adults, rather than just those who drink frequently. Given this twelve-month reference period pertaining to the alcohol consumption questions, the respondent has the opportunity to answer in days per week, per month, or per year. It is assumed that persons who drink frequently will answer in days per week, while less frequent drinkers will answer in days per month or per year. Standardized variables, which convert the various time response options to a single standardized unit (i.e., days per week, days per month, days per year) are provided in the data file. Standardized variables assume a constant rate of occurrence across time periods. The question asking how often the respondent had five or more drinks in one day during the past year was asked of all adults who had anything to drink in the past year. The responses were not edited for consistency with usual quantity or frequency. Notice that the quantity questions are phrased in terms of drinks *per day*, not drinks at a sitting.

Body weight and height

Height and weight have been asked for adults in the NHIS Core questionnaire for many years prior to the 1997 redesign, with proxy reporting allowed for family members not home at the time of the household interview. In addition, height and weight were asked in selected special topic NHIS questionnaires prior to 1997. These questions were always self-reported in special topic questionnaires. It should be kept in mind that estimates based on proxy reports may differ from those based on self-reports, and users of historical NHIS data files should be cognizant of the method that was used to collect the data for data years prior to 1997. No physical measurements

are taken in the NHIS. Estimates based on physical measurements, such as those available from NCHS's National Health and Nutrition Examination Survey, are likely to differ from estimates available from the NHIS.

Beginning in 1998, the CAPI instrument allowed respondents to report height and weight in either metric or non-metric units. Metric responses for height were recoded from meters and centimeters to feet and inches, and metric responses for weight were recoded from kilograms to pounds. Flags (MET_FLG1 and MET_FLG2) were added in 1999 that allow the data user to identify which responses were volunteered in metric units. The metric variables themselves are not included in the public use data file but can be created using the formulas found in the Dataset Documentation for the BMI recode.

Beginning in 1997 and continuing thereafter, when a very large or very small value was reported for either height or weight, the data for both variables were changed to "96" or "996" ("Not available") on public use data files. This was done in order to protect the confidentiality of NHIS respondents who might be identifiable by their unusual physical characteristics.

Lastly, two recodes were created to make the height and weight data easier to use: Desirable Body Weight (DESIREWT) and Body Mass Index (BMI). Desirable Body Weight is based on the Metropolitan Life Insurance Company standards of desirable body weight (1983), which have been used in the NHIS since 1985. The Desirable Body Weight recode is restricted to persons whose height and weight are within the range provided by the Metropolitan Life chart of desirable weight for height. Because of this, the number of unknowns is substantially larger in the DESIREWT recode (n=1,816) than in the BMI recode (n=1,086).

The BMI is calculated from the formula: weight /(height)^2, where weight and height are in kilograms and meters, respectively. Unlike the Desirable Body Weight recode, the BMI recode includes all persons who provided height and weight information, including those for whom individual height and weight values were changed to "96" on the public use file. The values for the BMI recode are continuous; users should insert a decimal point in the appropriate place. Using the BMI, overweight is defined as values greater than or equal to 25 for both men and women, while BMI values greater than or equal to 30 indicate obesity. The BMI cut points are discussed in the Report of the Dietary Guidelines Advisory Committee on the Dietary Guidelines for Americans, 1995, to the Secretary of Health and Human Services and the Secretary of Agriculture (U.S. Department of Agriculture, Agricultural Research Service, Dietary Guidelines Advisory Committee, p. 23-24).

IV. Adult Health Care Access and Utilization Section (AAU)

The core Adult Health Care Access and Utilization (AAU) section of the 1999 NHIS is similar to 1998 and 1997 and consists of four parts: Access to Care, Dental Care, Health Care Provider Contacts, and Immunizations. Because four of the core questions in the 1999 AAU section featured new or expanded answer categories, the output variable names have been modified. Also, a new permanent core question/variable, which inquires about the respondent's ability to afford eyeglasses, was added. These changes are noted on the Dataset Documentation.

The "Access to Care" section includes questions that ask respondents whether they have a usual place for sick care and have a usual place for routine/preventive care, and whether they have

experienced any changes in their place of care, any delays in getting medical care, and instances when they were unable to afford medical care. While all of these topics were covered in the previous, pre-1997 design of the NHIS, the redesigned NHIS introduced changes in question wording as well as the order in which questions were asked. For example, in 1996 the question regarding the reason for delaying care asked "because of worry about the cost?" In 1997, and continuing through 1999, the question about the reason for delaying care focused on such access issues as transportation difficulties, getting an appointment, and waiting time prior to actually seeing the doctor.

The "Dental Care" core section includes only one question: length of time since last dental visit. This item has been asked in previous years, but beginning in 1997 the question was re-phrased.

As with the Person-level FAU section described previously, NHIS surveys prior to 1997 focused on physician contacts, visits, and home care that included only contacts with a medical doctor or a health care professional working with or for a medical doctor. In contrast, the redesigned NHIS allows for visits not only from medical doctors but from a variety of other health care professionals, including chiropractors. Moreover, there has been a change in the reference period. Surveys in 1996 and earlier asked about health care contacts in the two weeks prior to the interview; in contrast, beginning in 1997 the survey asked about contacts during the past twelve months. Additionally, the questions about home care in the redesigned NHIS were asked independently of visits to the doctor's office, the hospital, etc. Also new for 1997, and continuing through 1999, is a question asking about the number of visits to a hospital emergency room in the past 12 months.

The "Immunizations" core section includes two questions related to adult immunizations: flu shots and pneumonia vaccinations. In 1999, a minor modification was made to the question wording in the item text asking about pneumonia vaccinations. Please see 1998 for comparison.

Technical notes

Due to the inclusion of new or expanded response categories in a few of the variables in 1999, modifications may have been made to the universe of the item during the data editing process. It is suggested that analysts compare the 1998 and 1999 Dataset Documentation pertaining to the relevant variables. Also, with the addition of new or expanded response categories, the output variable names may have changed; these changes are indicated in the 1999 Dataset Documentation.

1999 Periodic Questions

In addition to the core questions, 56 periodic questions were added to the 1999 AAU section. These periodic questions expand on particular questions contained in each of the four sub-sections of AAU. In the "Access to Care" section of AAU, additional information is obtained regarding the respondent's place for usual and routine health care, the length of time the respondent has been going to this usual health care place, the types of health professionals seen, whether these health professionals specialize in a particular disease or problem, whether they treat children and

adults, the respondent's access to health professionals at night or by phone, the waiting time for an appointment, the respondent's rating of his/her usual health care provider and the health provider's staff, and the respondent's main reason for not having a usual source of care. In the course of data editing, a recode (ONESRCEA) was created to designate the correct universe for some of these variables. Please refer to the notes on the Dataset Documentation for identification of the variables affected.

Thirteen periodic cancer screening questions were also added after the Access to Care section. Female sample adults aged 18 years and older were asked whether they had ever had a Pap smear or a breast physical exam, and when their most recent smear or exam had taken place. Female sample adults aged 30 years and older were asked whether they had ever had a mammogram and when their most recent mammogram had taken place. Male sample adults aged 40 years and older were asked whether they had ever heard of a PSA test, had ever had a PSA test, and when their most recent test had taken place.

Users should be aware that mammogram utilization data from the 1998 NHIS and 1999 NHIS are not completely comparable due to the changes in the way the time interval questions were phrased. Technically, the same problem exists for the "time interval" questions for Pap smear, breast exam, and PSA test, but the effect is most pronounced for mammograms. Approximately 900 women in the 1999 NHIS reported having their most recent mammogram exactly two years ago. Because the response "TWO YEARS AGO" may mean a little bit less than two years ago or a little bit more than two years ago in most cases, excluding these women may significantly underestimate the utilization rate, while including these women may overestimate the utilization rate. It is unknown, unfortunately, what proportion of these 900 women would actually mean a little bit more than two years ago. However, based on analysis on the trend in mammogram utilization over time from 1987 through 1998, it is quite likely that not many women who reported exactly two years ago meant more than two years ago. Therefore, to estimate the mammogram utilization rate during the past two years, women in 1999 NHIS who reported having their most recent mammogram TWO YEARS AGO should be included in order to be comparable (as close as possible) with data from the 1998 NHIS, for the purpose of assessing the trend. Nevertheless, this rate may be slightly overestimated for the reason mentioned above.

Eight periodic questions were added to the "Dental Care" section of AAU. Respondents were asked their main reason for their last dental visit, the number of dental visits in the past 12 months, the number of dental visits in the past two weeks, and whether the respondent had a private health insurance plan that covered dental care. No verbatim response field was created when respondents chose "other" as their response to the question regarding their reason for their last dental visit. Those respondents not seeing a dentist in the past 12 months were asked their reasons for not having any dental visits, and whether they had a private health insurance plan covering dental care. Verbatim responses were obtained for those respondents who chose "other" when giving a reason for not seeing a dentist in the past 12 months. These responses were reviewed during the course of data editing, and any verbatim replies that matched one of the existing response categories *and* were obtained in sufficient numbers were backcoded to that category. Additionally, the recode PRIVATE, created in the Family Health Insurance section, was used to designate the universe for the periodic questions pertaining to health insurance plans covering dental care. PRIVATE is considered the most accurate measure of health insurance coverage in the NHIS.

Regarding "Health Care Provider Contacts", 1999 periodic questions asked respondents their main reason for their last visit to an emergency room (for health care), whether they had taken any prescription medications during the last three months, and their rating of all health care received from all doctors and other health professionals in past 12 months.

Lastly, regarding "Immunizations", a periodic question was included in the 1999 NHIS that asked respondents whether they had a tetanus shot in the past ten years. Also included in this section was a final periodic question that inquired about the respondent's use of alternative therapies and treatments (e.g., acupuncture, massage therapy, hypnosis). Respondents could mention up to five additional alternative therapies or treatments. An output field was created for these verbatim responses, which were modified slightly to delete identifying names, places, or areas, as well as any unnecessary verbiage that did not alter the intent of the response. The responses were not edited for correct spelling.

V. Adult Demographics Section (ASD)

The Sample Adult Demographics (ASD) section provides information regarding the occupation, industry, workplace, and employment conditions of *employed* sample adults during the last week before the interview. Note that in previous years, NHIS asked about employment during the *two* weeks preceding the date of interview.

Industry and Occupation Coding

Sample adults aged 18 years and older who were "working at a job or business" or "with a job or business but not at work" during the week prior to their interview (DOINGLW = 1, 2) were then asked a series of questions about their employment and work status. First, verbatim responses were obtained from each respondent regarding his/her industry and occupation. These were subsequently recoded into two two-digit industry recodes that are consistent with the 1995 revisions to the Standard Industrial Classification (SIC) system. A detailed recode (INDSTRY1) indicates 42 possible industries, while a more simple recode (INDSTRY2) distinguishes 14 industries. A similar pair of recodes was created from the occupation information; again, this coding is consistent with the 1995 revisions to the Standard Occupational Classification (SOC) system. OCCUP1 distinguishes 41 separate occupations, while OCCUP2 indicates 13 occupations. These coding categories are provided in the Industry and Occupation Appendices (following the Dataset Documentation for the Sample Adult file).

Other Employment Questions

Sample adults were also asked to describe their employment situation (whether they were an employee of a private company or business, the federal government, a state or local government, self-employed in their own business or professional practice, or working without pay in a family business or farm), the number of full- and part-time employees at their workplace, how long they had worked at their current job or business, whether they were paid by the hour and received paid sick leave, and whether they were working more than one job. Sample adults who indicated that they had a second job were asked two additional questions: whether they were working for an employer or were self-employed, and if the latter, whether their business was incorporated.

VI. Adult AIDS Section (ADS)

This section contains a series of questions related to testing for the AIDS virus. Respondents were asked whether they had ever had a blood test for AIDS, their reasons for getting or not getting tested, and the location of any testing. The section also contains questions on respondents' plans for being tested in the future and their reasons for those plans, as well as their perceived personal risk for getting AIDS. These questions are similar to those asked in the AIDS Knowledge and Attitudes Supplements that were included in the NHIS from 1987 to 1995.

1999 National Health Interview Survey
Sample Child File

The Sample Child section of the 1999 NHIS covers additional subject areas not included in the Family Core. Moreover, the questions in the Sample Child section are more specific and are intended to gather more detailed information than those in the Family Core. Sample children do not speak for themselves; instead a knowledgeable adult (typically a parent or guardian) answers questions on the sample child's behalf. The sections comprising the Sample Child file are discussed below.

I. Child Conditions, Limitation of Activity, and Health Status Section (CHS)

The Child Health Status (CHS) section of the 1999 NHIS consists of two parts: "Conditions, Limitations of Activity, and Health Status" and "Child Behavior". The section on Conditions, Limitations of Activity, and Health Status includes questions on the following health conditions: mental retardation, developmental delays, attention deficit disorder, Down's syndrome, cerebral palsy, muscular dystrophy, cystic fibrosis, sickle cell anemia, autism, diabetes, arthritis, congenital and other heart disease, asthma, various allergies, colitis, anemia, ear infections, seizures, headaches, stuttering, and stammering. This section also contains a question used to determine the number of school-loss days reported during the 12 months prior to the interview. In addition, respondents were asked about hearing and vision loss; if a health problem requires the sample child to use special equipment such as a brace, wheelchair, or hearing aid; whether the sample child's health is better, worse, or the same compared with 12 months ago; and whether the sample child currently has a problem that has required prescription medication for at least three months. Lastly, there are questions about the sample child's height and weight.

The questions pertaining to child behavior were designed to serve as a global mental health indicator. The items were taken from the Child Behavior Checklist for Ages 2-3, and the Child Behavior Checklist for Ages 4-18 (Achenbach and Edelbrock 1983); these are standardized instruments for obtaining parents' reports of their children's problems. The items were chosen for their ability to discriminate between children who have not received mental health services in the preceding 12 months and those who have, by using demographically-matched normative and clinical samples for each sex and age group.

Regarding the CHS data on colds and intestinal illnesses, analysts should keep in mind that the questions are measuring fairly broad symptoms and illnesses. Furthermore, these may be a result of either acute or chronic conditions (e.g., irritable bowel syndrome or respiratory allergies). These data are best used to measure trends over time.

Technical Notes

Several questions pertaining to child behavior are used to create several mental health indicator recodes; only the recodes are included in the Public Use file. The background and usage of the mental health indicators can be found in the Mental Health Index, an appendix following the Dataset Documentation for the Sample Child file.

1999 Periodic Questions

In 1999 a series of periodic questions about asthma were administered to all sample children who were ever diagnosed with asthma, including the following topics: asthma management class, occurrences of wheezing or whistling, sleep disturbance, exercise-related wheezing, limitation of usual activities, and days lost from school or work. A few additional questions on hospitalization, over-the-counter medications, and prescription inhalers were administered only to sample children who had an asthma attack during the past year.

II. Child Health Care Access and Utilization Section (CAU)

The Child Health Care Access and Utilization (CAU) section of the 1999 NHIS consists of three parts: "Access to Care", "Dental Care", and "Health Care Provider Contacts". The questions pertaining to "Access to Care" include: having a usual place for sick care, having a usual place for routine/preventive care, change in place of care, reasons for a delay in getting medical care, and the inability to afford medical care. These topics were covered in previous years; however, there has been some change in every question, including minor word changes, changes in the order in which questions were asked, and rewriting of an entire question. For example, 1996 NHIS participants were asked if they delayed getting medical care for the sample child "because of worry about the cost...." In contrast, with the redesign in 1997, questions focused on wider access issues, such as not having transportation, difficulty in getting appointments, and waiting time to see the doctor.

The section on "Dental Care" includes only one question: length of time since last dental visit. This topic has been covered in previous years, but the question was re-phrased in 1997.

Lastly, questions regarding "Health Care Provider Contacts" are similar to the doctor visit questions from previous years, and include visits to or from medical doctors and other health care professionals (such as chiropractors) in the past twelve months. As with the FAU section discussed previously, the category of "health care professional" has been expanded to include additional occupational capacities (i.e., chiropractors, various types of therapists, psychiatrists, psychologists, and social workers); moreover, contacts or visits are no longer restricted to medical doctors or professionals working with/for a medical doctor. In addition, previous questionnaires included home care visits in the same question as visits to or contacts with a doctor's office, hospital, etc. From 1997 on, questions about home care were asked independently of these other visits. Most significantly, there has been a change in the reference period. Surveys in 1996 and earlier asked about health care contacts in the two weeks prior to the interview; in contrast, the redesigned survey asked about contacts during the past twelve months. Lastly, beginning in 1997 a question was asked about the number of visits to a hospital emergency room in the past 12 months.

Technical notes

Due to the inclusion of new or expanded response categories in a few of the variables in 1999, modifications may have been made to the universe of the item during the data editing process. It is suggested that analysts compare the 1998 and 1999 Dataset Documentation pertaining to the

relevant variables. Also, with the addition of new or expanded response categories, the output variable names may have changed; these changes are indicated in the 1999 Dataset Documentation.

1999 Periodic Questions

In 1999 a series of 15 periodic questions about access to health care were inserted in this section, including the following: if sample child saw particular health care professional, kind of particular health care professional seen, general doctor or specialist, doctor visit in the past 12 months, rating doctor (worst to best), main reason for no usual source of health care (for sample children with no usual source of care), provider evening/weekend office hours, timely phone advice available, wait to get an appointment if sick/routine care, length of time waiting to see provider, rating doctor's office staff (worst to best), and provider asks about medications and treatments prescribed by other doctors. In the course of data editing, a recode (ONESRCEC) was created to designate the correct universe for some of these variables. Please refer to the Dataset Documentation for identification of the variables affected.

Eight periodic questions were included in the "Dental Care" section, including main reason for last dental visit, reasons for no recent dental visit, number of dental visits in the past year, number of dental visits in the past 2 weeks, and dental health insurance.

Finally, for any child who visited a hospital emergency room about his/her health during the past 12 months, the "Health Care Provider Contacts" section included an additional periodic question regarding the main reason for the child's last ER visit.

III. Child Immunization File (CIM)

The Child Immunization file of the 1999 Sample Child Core involves questions on the vaccination status of children under 18 years of age and within two age groupings (under 7 years, and 7-17 years), for a randomly selected sample child per family in a household, along with any non-sample children aged 12-35 months within families of the household. The inclusion of additional children in the younger age ranges increases the precision of estimates of vaccination coverage for young children. The age split at 7 years reflects a differential focus on vaccinations by age. Among younger children, the focus is on the standard shots for which NHIS has previously obtained information. Among older children, vaccines such as hepatitis, measles, and diphtheria-tetanus booster are emphasized.

Using the child's shot record, if available, the FR transcribes information on type of shot, number of shots, and shot dates for specific shot types according to the child's current age, or alternatively, a knowledgeable adult in the family uses the shot record to report the same information to the interviewer. In the absence of a shot record, information on shot type and number (but not date) is obtained from the adult respondent in the family. In addition, information is also obtained about shots not listed on the shot record, other immunizations, and booster shots. During data processing this information is appended to the Child Immunization file in the form of shot type and date matrices, which were obtained originally from the child's shot record.

The variable ICRELTIV is included on the 1999 CIM file in order to define the (proxy) respondent's relationship to the child whose immunization status is assessed.

Guidelines for Citation of Data

With the goal of mutual benefit, the National Center for Health Statistics (NCHS) requests that recipients of data files cooperate in certain actions related to their use. Any published material derived from the data should acknowledge NCHS as the original source. The suggested citation to appear at the bottom of all tables and graphs is as follows:

Data Source: National Center for Health Statistics (2002)

In a bibliography, the suggested citation should read:

National Center for Health Statistics (2002). Dataset Documentation, National Health Interview Survey, 1999 (machine readable data file and documentation). National Center for Health Statistics, Hyattsville, Maryland.

The citation for the Survey Description document should read:

National Center for Health Statistics (2002). NHIS Survey Description, National Health Interview Survey, 1999 (machine readable documentation). National Center for Health Statistics, Hyattsville, Maryland.

The published material should also include a disclaimer that credits any analyses, interpretations, or conclusions reached to the author (recipient of the data file) and not to NCHS, which is responsible only for the initial data. Users who wish to publish a technical description of the data should make a reasonable effort to insure that the description is consistent with that published by NCHS.

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Appendix I

Calculation of Response Rates for the 1999 NHIS

The redesigned NHIS incorporated a change from the previous paper and pencil questionnaire to a new computer assisted personal interviewing (CAPI) system. In 1999, a Basic Module including a variety of periodic questions was fielded. The response rates calculated here pertain to the Basic and periodic questions.

The Basic Module collects basic information on the household and all family members. In addition, for each family, more detailed information is collected on one sample adult, one sample child, if any, and any child within the age guidelines for the immunization section. The 1999 periodic questions that were inserted into the Basic Module collected more detailed information on a variety of health care topics for adults and children.

Household Response Rate

$$\frac{\text{(Interviewed Households)}}{\text{(Interviewed Households + Type A Non - Response Households)}}$$

The Household (HH) response rate is calculated by dividing the number of responding households by the number of households that are in-scope or eligible for the survey. Note that Type A non-response households are eligible households that were not interviewed for a variety of reasons: language problems; no one was at home after repeated contact attempts; family temporarily absent; refusal; household records rejected for insufficient data; household records rejected for other CAPI related problems; or other reasons for no interview.

Conditional Family Core Response Rate

$$\frac{\text{(Interviewed Families)}}{\text{(Interviewed Families + Rejected Families (from Interviewed HH))}}$$

This file was created from Family Core data collected from the respondent about all persons in the family. Because all eligible persons in the family are included, the response rates for the Person file are identical to the response rates for the Family file. The response rates for the Family Core can be calculated in two ways. The conditional Family response rate is the rate only for those families identified as eligible and does not take into account household non-response. The conditional Family response rate is calculated by dividing the number of responding families by the number of families that are eligible for the survey, that is, from interviewed households. Note that a household can have multiple families, and rejected families are families that were deleted from interviewed households because of insufficient data.

Final Family Core Response Rate

$$\frac{\text{(Interviewed Families)}}{\text{(Interviewed Families + Rejected Families (from interviewed HH))}}\left[\text{ Household Response Rate }\right]$$

The final Family response rate is the rate for those families identified as eligible that takes into account household non-response. The final Family response rate is calculated by dividing the number of responding families by the number of families that are eligible for the survey, that is, from interviewed households, and then multiplying this quotient by the Household response rate.

Conditional Sample Adult Response Rate

$$\frac{\text{(Interviewed Sample Adults)}}{\text{(Eligible Sample Adults)}}$$

The response rates for the Sample Adult section can be calculated in two ways. The conditional Sample Adult response rate is the rate only for those sample adults identified as eligible and does not take into account household or family non-response. The conditional Sample Adult response rate is calculated by dividing the number of responding sample adults by the number of eligible sample adults from interviewed families.

Final Sample Adult Response Rate

$$\frac{\text{(Interviewed Sample Adults)}}{\text{Eligible Sample Adults from interviewed families}}\left[\begin{array}{l}\text{Final Family}\\ \text{Response Rate}\end{array}\right]$$

The final Sample Adult response rate is the rate for those sample adults identified as eligible that takes into account household and family non-response. The final Sample Adult response rate is calculated by dividing the number of responding sample adults by the number of sample adults who are eligible for the survey, that is, from interviewed families, and then multiplying this quotient by the final Family response rate.

Conditional Sample Child Response Rate

$$\frac{\text{(Interviewed Sample Children)}}{\text{(Eligible Sample Children)}}$$

The response rates for the Sample Child section can be calculated in two ways. The conditional Sample Child response rate is the rate only for sample children and does not take into account household or family non-response. The conditional Sample Child response rate is calculated by dividing the number of responding sample children by the number of eligible sample children from interviewed families.

Final Sample Child Response Rate

$$\frac{\text{(Interviewed Sample Children)}}{\text{(Eligible Sample Children from interviewed families)}} \left[\begin{array}{l}\text{Final Family} \\ \text{Response Rate}\end{array}\right]$$

The final Sample Child response rate is the rate for sample children that takes into account household and family non-response. The final Sample Child response rate is calculated by dividing the number of responding sample children by the number of sample children who are eligible for the survey, that is, from interviewed families, and then multiplying this quotient by the final Family response rate.

Conditional Immunization Response Rate

$$\frac{\text{(Interviewed Certainty Children + Interviewed Non-certainty Sample Children)}}{\text{(Eligible Certainty Children + Eligible Non-certainty Sample Children)}}$$

The response rates for the Immunization section can be calculated in two ways. The conditional immunization response rate is the rate only for the Immunization section and does not take into account household or family non-response. The conditional immunization response rate is calculated by dividing the respondents to the immunization section by the number of eligible children from interviewed families. Note that certainty children are children who were selected to participate in the Immunization section with certainty based on their age, regardless of whether they were selected as the sample child. Non-certainty sample children were selected, because all sample children (under 18 years) who responded to the Sample Child section were eligible for the Immunization section.

Final Immunization Response Rate

$$\frac{\begin{array}{l}\text{[(Interviewed Certainty Children)(Final Family Response Rate) +} \\ \text{(Interviewed Non-certainty Sample Children)(Final Sample Child Response Rate)]}\end{array}}{\text{(Eligible Certainty Children + Eligible Non-certainty Sample Children)}}$$

The final immunization response rate is the rate for the Immunization section that takes into account household and family non-response. The final immunization response rate is calculated by adding the product of the number of responding certainty children and the final Family response rate to the product of the number of responding non-certainty sample children and the final Sample Child response rate, and then dividing this sum by the sum of the number of certainty children and non-certainty sample children who are from interviewed families and eligible for the survey. Note that certainty children are children who were selected to participate in the Immunization section with certainty based on their age, regardless of whether they were selected as the sample child. Non-certainty sample children were selected, because all sample children (under 18 years) who responded to the Sample Child section were eligible for the Immunization section.

Appendix I, Table 1. Response Rates for the 1999 NHIS

Household	87.6%
Family/Person (Core) - Conditional Family/Person (Core) - Final	98.3% 86.1%
Sample Adult - Conditional Sample Adult - Final	80.8% 69.6%
Sample Child - Conditional Sample Child - Final	90.8% 78.2%
Immunization - Conditional Immunization - Final	97.9% 78.0%

Calculation of Response Rates for Combined NHIS Data Years

The response rates for combined NHIS data years are calculated in the same basic way as for a single year, but the sum of the numerators for all combined data years is used for the combined numerator and the sum of the denominators for all combined data years is used for the combined denominator. The following examples are shown for two years of data. The same methods apply for multiple years of data with the same sample design used in 1997-2004.

Household Response Rate for Combined Data Years

$$\frac{\text{(Interviewed Households for Years 1 and 2)}}{\text{(Interviewed Households for Years 1 and 2 + Type A Non-Response Households for Years 1 and 2)}}$$

The Household (HH) response rate for combined data years is calculated by dividing the number of responding households for Years 1 and 2 by the number of households that are in-scope or eligible for the survey for Years 1 and 2. Note that Type A non-response households are eligible households that were not interviewed for a variety of reasons: language problems; no one was at home after repeated contact attempts; family temporarily absent; refusal; household records rejected for insufficient data; household records rejected for other CAPI related problems; or other reasons for no interview.

Conditional Family Core Response Rate for Combined Data Years

$$\frac{\text{(Interviewed Families for Years 1 and 2)}}{\text{(Interviewed Families for Years 1 and 2 + Rejected Families for Years 1 and 2)}}$$

This file was created from Family Core data collected from the respondent about all persons in the family. Because all eligible persons in the family are included, the response rates for the Person file are identical to the response rates for the Family file. The response rates for the Family Core can be calculated in two ways. The conditional Family response rate is the rate only for those families identified as eligible and does not take into account household non-response. The conditional Family response rate for combined data years is calculated by dividing the number of responding families in Years 1 and 2 by the number of families that are eligible for the survey in Years 1 and 2, that is, from interviewed households in Year 1 and Year 2. Note that a household can have multiple families, and rejected families are families that were deleted from interviewed households because of insufficient data.

Final Family Core Response Rate for Combined Data Years

$$\frac{\text{(Interviewed Families for Years 1 and 2)}}{\text{(Interviewed Families for Years 1 and 2 + Rejected Families from interviewd HH for Years 1 and 2)}} \left[\begin{array}{l}\text{Household Response} \\ \text{Rate for Years 1 and 2}\end{array}\right]$$

The final Family response rate is the rate for those families identified as eligible that takes into account household non-response. The final Family response rate for combined data years is calculated by dividing the number of responding families for Years 1 and 2 by the number of families that are eligible for the survey for Years 1 and 2 , that is, from interviewed households for Year 1 and Year 2 , and then multiplying this quotient by the Household response rate for the combined data years.

Conditional Sample Adult Response Rate for Combined Data Years

$$\frac{\text{(Interviewed Sample Adults for Years 1 and 2)}}{\text{(Eligible Sample Adults for Years 1 and 2)}}$$

The response rates for the Sample Adult section can be calculated in two ways. The conditional Sample Adult response rate is the rate only for those sample adults identified as eligible and does not take into account household or family non-response. The conditional Sample Adult response rate for combined data years is calculated by dividing the number of responding sample adults for Years 1 and 2 by the number of eligible sample adults from interviewed families for Years 1 and 2.

Final Sample Adult Response Rate for Combined Data Years

$$\frac{\text{(Interviewed Sample Adults for Years 1 and 2)}}{\text{(Eligible Sample Adults from interviewed families for Years 1 and 2)}}\left[\begin{array}{l}\text{Final Family Response}\\ \text{Rate for Years 1 and 2}\end{array}\right]$$

The final Sample Adult response rate is the rate for those sample adults identified as eligible that takes into account household and family non-response. The final Sample Adult response rate for combined data years is calculated by dividing the number of responding sample adults for Years 1 and 2 by the number of sample adults who are eligible for the survey, that is, from interviewed families for Year 1 and Year 2, and then multiplying this quotient by the final Family response rate for the combined data years.

Conditional Sample Child Response Rate for Combined Data Years

$$\frac{\text{(Interviewed Sample Children for Years 1 and 2)}}{\text{(Eligible Sample Children for Years 1 and 2)}}$$

The response rates for the Sample Child section can be calculated in two ways. The conditional Sample Child response rate is the rate only for sample children and does not take into account household or family non-response. The conditional Sample Child response rate for combined data years is calculated by dividing the number of responding sample children for Years 1 and 2 by the number of eligible sample children from interviewed families for Years 1 and 2.

Final Sample Child Response Rate for Combined Data Years

$$\frac{\text{(Interviewed Sample Children for Years 1 and 2)}}{\text{(Eligible Sample Children from interviewed families for Years 1 and 2)}}\left[\begin{array}{l}\text{Final Family Response}\\ \text{Rate for Years 1 and 2}\end{array}\right]$$

The final Sample Child response rate is the rate for sample children that takes into account household and family non-response. The final Sample Child response rate for combined data years is calculated by dividing the number of responding sample children for Year 1 and Year 2 by the number of sample children who are eligible for the survey, that is, from interviewed families for Year 1 and Year 2, and then multiplying this quotient by the final Family response rate for the combined data years.

Conditional Immunization Response Rate for Combined Data Years

$$\frac{\text{(Interviewed Certainty Children for Years 1 and 2 + Interviewed Non-Certainty Sample Children for Years 1 and 2)}}{\text{(Eligible Certainty Children for Years 1 and 2 + Eligible Non-Certainty Sample Children for Years 1 and 2)}}$$

The response rates for the Immunization section can be calculated in two ways. The conditional immunization response rate is the rate only for the Immunization section and does not take into account

household or family non-response. The conditional immunization response rate for combined data years is calculated by dividing the respondents to the immunization section for Year 1 and Year 2 by the number of eligible children from interviewed families for Year 1 and Year 2. Note that certainty children are children who were selected to participate in the Immunization section with certainty based on their age, regardless of whether they were selected as the sample child. Non-certainty sample children were selected, because all sample children (under 18 years) who responded to the Sample Child section were eligible for the Immunization section.

Final Immunization Response Rate for Combined Data Years

$$\frac{[(\text{Interviewed Certainty Children for Years 1 and 2})(\text{Final Family Response Rate for Years 1 and 2}) + (\text{Interviewed Non-certainty Sample Children for Years 1 and 2})(\text{Final Sample Child Response Rate for Years 1 and 2})]}{(\text{Eligible Certainty Children for Years 1 and 2} + \text{Eligible Non-certainty Sample Children for Years 1 and 2})}$$

The final immunization response rate is the rate for the Immunization section that takes into account household and family non-response. The final immunization response rate for combined data years is calculated by adding the product of the number of responding certainty children for Years 1 and 2 and the final Family response rate for Years 1 and 2 to the product of the number of responding non-certainty sample children for Years 1 and 2 and the final Sample Child response rate for Years 1 and 2, and then dividing this sum by the sum of the number of certainty children and non-certainty sample children who are from interviewed families and eligible for the survey for Years 1 and 2. Note that certainty children are children who were selected to participate in the Immunization section with certainty based on their age, regardless of whether they were selected as the sample child. Non-certainty sample children were selected because all sample children (under 18 years) who responded to the Sample Child section were eligible for the Immunization section.

Appendix I, Table 2. Number Eligible/Interviewed 1999 NHIS

File	Eligible	Interviewed
Household	42,882	37,573
Family/Person	38,845	38,171
Sample Adult	38,117	30,801
Sample Child	14,217	12,910
Immunization	14,178	13,881

Appendix I, Table 3. Number Eligible/Interviewed 1998 NHIS

File	Eligible	Interviewed
Household	42,440	38,209
Family/Person	39,559	38,773
Sample Adult	38,729	32,440
Prevention Sample Adult	32,440	31,882
Sample Child	14,619	13,645
Prevention Sample Child	13,645	13,610
Immunization	15,041	14,775

Appendix I, Table 4. Number Eligible/Interviewed 1997 NHIS

File	Eligible	Interviewed
Household	43,370	39,832
Family/Person	41,291	40,623
Sample Adult	40,552	36,116
Sample Child	15,244	14,290
Immunization	15,558	15,402

Appendix II

Race and Hispanic Origin in the 1999 NHIS

Background

For over 20 years, the National Health Interview Survey (NHIS) has collected information on the race and ethnicity of its respondents, following guidelines set forth by the Office of Management and Budget in a policy known as OMB Directive 15 (Office of Management and Budget 1977). The NHIS has relied on respondents to provide self-identified race and ethnicity information (proxy information is reported for children and non-present household members), although interviewer-observed race was also recorded through 1996, the last year of the paper questionnaire. NHIS data are routinely tabulated by race and ethnicity in NCHS publications such as Current Estimates; Health, United States; Healthy People 2010 objectives and updates; and Advance Data reports.

In response to the changing demographics of the U.S. population, the OMB issued new standards for race and ethnicity data collection in 1997 after an extensive period of research and public commentary. The new standards allow respondents to the Census and federal surveys to indicate more than one group in answering questions on race. A complete description of the new OMB guidelines on the collection of racial and ethnic data, including descriptions of the new race categories, the ordering of race and ethnicity questions, and guidelines for the tabulation and publication of data under the new standards, can be found on the OMB web site: **http://www.whitehouse.gov/OMB/inforeg**. Although this policy is not expected to be fully implemented across the federal statistical system until January, 2003, surveys like the NHIS that are reviewed by OMB for renewal on a yearly basis are expected to implement changes to their survey instruments when they apply for their first OMB clearance after the policy's effective date. In accordance with this requirement, the NHIS became fully compliant with the new race and ethnicity standards with the fielding of the 1999 questionnaire, although the NHIS had been following some aspects of the new guidelines for many years.

Race and Hispanic Origin Questions in the National Health Interview Survey

The 1999 NHIS included two questions (HHC.170 and HHC.180) about Hispanic Origin:

"Do/Does {you/name} consider {yourself / himself / herself} Hispanic / Latino?",

and

"Please give me the number of the group that represents your Hispanic Origin or ancestry".

Although the placement and order of these Hispanic Origin questions did not change in the 1999 NHIS (they have been asked prior to the race questions since 1994), the response categories on the hand card offered to respondents were changed to reflect the changing composition of the Hispanic population of the

U.S., and to make the NHIS questions more consistent with the 2000 Census Hispanic Origin questions. Data users are urged to pay careful attention to the 1999 response categories, and to compare these with the response categories for the NHIS Hispanic Origin question in 1997 and 1998. To alert users to the change in response categories, the variable name for 1999 has been changed from HISPAN_P to HISPANCR.

In addition to the questions on Hispanic origin, the 1999 NHIS included two race questions (HHC.200 and HHC.220) to obtain information on a respondent's race:

"What race {does/do} {name/you} consider {himself/herself/yourself} to be?"

and

"Which one of these groups, that is (FR: READ GROUPS) would you say BEST represents {your/name's} race?"

The first question is asked of all respondents, while the second question is asked only of those respondents who give more than one race in response to the first question. Although the wording and placement of these two questions are basically the same as they had been in the NHIS for the past several years, there are changes in the response categories. In compliance with the new race and ethnicity standards, the category "Asian and Pacific Islander" is now split into two distinct categories, "Asian" versus "Native Hawaiian and Other Pacific Islander" (NHOPI), for data collection. Because confidentiality regulations on minimum sample size do not permit the NHIS to release data for Native Hawaiians and Other Pacific Islanders or some of the Asian subgroups separately, data are provided for the three largest Asian subpopulation groups, while the "Other Asian" category combines groups that cannot be shown separately.

In the 1997 and 1998 NHIS, the variable that summarized the responses to the two race questions was called MRACE_P. Since the implementation of the new standards in 1999 led to the addition of new categories, this variable name has been changed to MRACER_P. Again, data users are strongly urged to read the 1999 Dataset Documentation carefully, in which further details on the specific response categories for the race questions can be found. Table 1 summarizes the variables available on the public use files for 1997-1998. The NHIS Dataset Documentation can be found on the NHIS web site at **http://www.cdc.gov/nchs/nhis.htm**.

Appendix II, Table 1. Description of 1997-1998 NHIS Race variables

1997/1998 NHIS Variable	Variable Categories	Previous NHIS variable (prior to 1997)	Previous file location	Relationship to OMB race standards (Old/New)	Example of Analytic Use
RACEREC	White, Black, Other race	Race recode #1	PU: 43	Old	Used to define race in *Current Estimates* through 1996
HISPCODE (combined race/ethnicity variable)	Hispanic White, Non-Hispanic Black, Non-Hispanic Other, Non-Hispanic	NA	NA	Old	Used to define combined race/ethnicity in *Summary Health Statistics* tables beginning in 1997
MRACE_P	White, Black, and detailed groups for AIAN* and API**	Main racial background	PU: 41-42	Old	At the discretion of the analyst
RACE	4 OMB race groups with single multiple race category (note that in beginning in data year 1999, this will contain 4 of the 5 OMB groups (White, Black, Asian, and AIAN), Other race, and a single multiple race category - see text)	NA	NA	New	At the discretion of the analyst

* AIAN represents American Indian and Alaska Native (Aleut and Eskimo)

** API represents Asian and Pacific Islander.

1999 Race and Hispanic Origin Variables

Since 1999 represents the first year that the new guidelines have been fully implemented in the NHIS, data elements on this file will differ from the race and ethnicity variables that have appeared on previous files. In addition to the variable name changes noted above, several variables were added to the data file that correspond to both the old and new race standards. Finally, the order of the variables in the data file was rearranged: the ethnicity variables are first, followed by the race variables corresponding to the revised OMB race standards, and then the variables corresponding to the old OMB race standards. Table 2 summarizes the 1999 Hispanic origin and race variables, including the creation of a bridge race variable (see further description in the next section of this appendix). Additional details on these variables can be found in the Dataset Documentation, and users are urged to read the variable descriptions carefully to determine how and when the variables should be used in analysis. Data users are also strongly urged to calculate frequencies of the unweighted data for these variables before computing weighted estimates, to insure that they match the unweighted frequencies reported in the Dataset Documentation.

Appendix II, Table 2. Description of the 1999 NHIS Race and Ethnicity Variables

Variable name	Status for 1999	Description
ORIGIN	Same as 1997 and 1998 (no changes)	Hispanic Origin/ancestry
HISPANCR	Variable name changed; response categories changed	Type of Hispanic Origin/ancestry
RACDET_P	New variable based on new OMB race standards	Detailed race variable; multiple race persons in separate category
RC_SUM_P	New variable based on new OMB standards	Summary race variable (i.e., no detailed groups); contains 4 of 5 OMB race groups and "Other race"; multiple race persons in separate category
RACER_P	New variable based on new OMB standards	Contains 4 of 5 OMB race groups and "Other race"; multiple race persons coded differently than in RACDET_P and RC_SUM_P (see documentation).
MRACER_P	Variable name changed; based on old OMB standards	Detailed race variable; only multiple race persons not selecting a primary race group in separate category
MRACBR_P	New bridge variable	See section below on bridging.
RACERECR	Variable name changed; categories the same as in 1997 and 1998; based on old OMB standards	All persons not coded in a specific race category are imputed to a race category on this variable.
RCIMPFGR	Race imputation flag	Imputation flag for use in determining which cases were imputed for the variable RACERECR
HISPCODR	Variable name changed; categories the same as in 1997 and 1998; based on old OMB standards	Same categories as RACERECR, crossed with ORIGIN (Hispanic/non-Hispanic)

Bridging to the Old OMB Standards

The OMB tabulation guidelines for the new race and ethnicity standards recognize that the complete transition from the old standards to the new standards will take some time, and that many federal statistical systems have a primary mission to track data trends over time. During this transitional period, known as the "bridge," it has been recommended that data systems tabulate data for publication under the new standards, while also providing a means for data users to bridge the new data back to the old standards. This will allow data users to examine differences, if any, in tabulating the data under the old and new standards, assist in the maintenance of data trends, and allow users to become accustomed to data tabulated under the new standard before the transition is complete. In the NHIS,

the second race question (commonly known as the "follow-up question") is used to create the bridge between data collected under the old standards and data collected under the new ones. The 1999 NHIS public use data release contains one bridge race variable that was created in order to allow comparisons of 1999 data with data from previous years, and for merging the 1999 data with 1997 and/or 1998 data.

To allow a complete bridge to data released prior to 1999, it would be necessary to include a category for "Asians and Other Pacific Islanders" for the bridging variable. This category would be created by merging the Asian and NHOPI groups under the new guidelines. However, NCHS confidentiality standards do not permit NCHS to release data that might lead to the inadvertent identification of individual respondents to the survey (e.g., a combination of demographic, geographic and other characteristics of persons in relatively small population groups could lead to identification of an individual respondent). The NCHS Disclosure Review Board (DRB), consulting with DHIS analysts, determined that the NHOPI category did not meet confidentiality standards for release. As a result, the NHIS cannot release the combined bridged category "API", as the cross classification of this group and the Asian group would identify the NHOPI. Thus, it is not possible to bridge between 1998 (and previous years) and 1999 for this group. Data users who need this information for their analyses should refer to the NCHS Research Data Center to obtain controlled access to non-released data (**http://www.cdc.gov/nchs/rdc.htm**).

Creation and Editing of 1999 Race Variables

The variables RACERECR and MRACER_P were created in the same fashion as their previous NHIS counterparts (National Center for Health Statistics 1996), with two exceptions. First, since observed race is no longer collected in the NHIS (beginning in 1997), it was not used to help classify persons with "Unknown" race on the RACERECR recode. Second, the recodes "White/Non-White" and "Black/Non-Black" were not created because they are no longer used in the weighting and tabulation of NHIS data. As in the past, smaller subgroups have been collapsed for confidentiality reasons.

The variable RACER_P was created using an algorithm that first coded the five race mentions from the survey into the single and multiple race group combinations (shown in bold/italicized and regular font, respectively) can be found on the NHIS website at **http://www.cdc.gov/nchs/nhis.htm**. All of the multiple race categories in the table were then collapsed into a single "Multiple race" category, and along with the 4 of the 5 OMB single race categories and the category "Other race", the variable RACER was created. Since these variables conform to the new OMB race standards, they are created independently of the follow-up question (see the section of this appendix on Race and Hispanic Origin Questions in the 1999 National Health Interview Survey).

Further Information

Although the race variables included in the 1999 file have been edited and tested, analytic and methodological work with these variables continues. NCHS is also evaluating other recodes for possible public release at a later date. If these analyses should result in changes to the 1999 NHIS race data, information about this can be found on the NCHS web site (see page 3).

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Appendix III

Variance Estimation Using the NHIS Public Use Data, 1997-1999

Introduction

The data collected in the NHIS are obtained through a complex, multistage sample design that involves stratification, clustering, and oversampling of specific population subgroups. The final weights provided for analytic purposes are adjusted in several ways to yield estimates for the civilian, noninstitutionalized population of the United States. As with any variance estimation methodology, those presented here involve several simplifying assumptions about the design and weighting scheme applied to the data. This appendix provides guidelines for data users based on simplified concepts of the NHIS sample design structure so that users may compute reasonably accurate standard errors.

There are several available software packages for analyzing complex samples. The web site, *Summary of Survey Analysis Software,* currently located at

http://www.fas.harvard.edu/~stats/survey-soft/survey-soft.html

provides references for and a comparison of different software alternatives for the analysis of complex data. Analysts at NCHS use the software package SUDAAN® (Shah et al. 1997) to produce accurate standard errors. In this appendix, examples of SUDAAN computer code are provided for illustrative purposes. However, the appropriate application of these procedures is the ultimate responsibility of data users and the example command code is *not* "guaranteed". Both the computer command code and methods are subject to change without notification to the user. NCHS strongly recommends that NHIS data are analyzed under the direction of or in consultation with a statistician who is cognizant of sampling methodologies and techniques for the analysis of survey data.

☹ **CAUTION.** Users are reminded that the use of standard statistical procedures, which are based on the assumption that data are generated via simple random sampling (SRS), will produce incorrect estimates of variances and standard errors when used to analyze data from the NHIS. The clustering protocols that are used in the multistage selection of the NHIS sample require other analytic procedures described below. Analysts who apply SRS techniques to NHIS data will produce standard errors that are, on average, too small, and are likely to produce results that are subject to Type I error.

Conceptual NHIS design for 1995-2004

Thorough discussions of the NHIS design, the methods used for weighting data, and the methods used for variance estimation are beyond the scope of this appendix, but are provided elsewhere (NCHS 1999; NCHS 2000). This appendix outlines the basic technical ideas published in these technical reports (NCHS 1999; NCHS 2000).

To achieve sampling efficiency and to keep survey operations manageable and cost-effective, the NHIS survey planners used multistage sampling techniques to select the sample of persons and households for the NHIS. These multistage methods partition the target universe into several nested levels of strata and clusters. The NHIS target universe is defined as all dwelling units in the U.S. that contain members of the civilian noninstitutionalized population. As the NHIS is conducted in a face-to-face interview format, a simple random sample of dwelling units would be too dispersed throughout the nation; as a result, the costs of obtaining a simple random sample of 50,000 households would be prohibitive. Also, specific population subgroups, such as black and/or Hispanic households, would not be sampled sufficiently under a simple random sample design. To achieve survey objectives subject to resource constraints, the NHIS uses methods of clustering, stratification, and oversampling of specific population subgroups.

First, the target universe was partitioned into approximately 1900 Primary Sampling Units (PSUs), single counties or groups of adjacent counties (or equivalent jurisdictions) and/or metropolitan areas. These PSUs vary in population size and number of jurisdictions. The PSUs with the largest populations (e.g., the New York metropolitan area) support cost-effective sampling and are sampled with certainty; consequently, they are designated as self-representing (SR) PSUs. Resource constraints required that the remaining smaller PSUs be sampled for data collection. These smaller PSUs are called non-self-representing (NSR) or non-certainty PSUs. The universe of NSR PSUs is stratified using multiple criteria consistent with NHIS objectives. The NSR PSUs were stratified first at the state level according to metropolitan status (metro or non-metro). If a particular NSR stratum in a given state contained a large population, then it was further stratified by aggregate-level poverty rates. Thus, the number of NSR strata varies from state to state, and the number of PSUs varies from stratum to stratum. Once these strata were defined, a sample of PSUs was selected; within each NSR stratum, two PSUs were selected without replacement with probability proportional to population size, and the SR PSUs were selected with certainty. For some stratum with smaller population size, only one NSR PSU was drawn from a stratum.

The U.S. Census Bureau partitioned each selected NSR or SR PSU into substrata of Census blocks or combined blocks based on the concentrations of black and Hispanic populations. These race and ethnicity density substrata were defined according to the population concentrations from the 1990 decennial Census. New housing within a PSU was included as its own substratum in order to produce the most current sample of households. Each PSU could be partitioned into up to 21 substrata of dwelling units. Large metropolitan SR PSUs tend to have many substrata, while the NSR PSUs tend to have only a few.

Sampling within the PSU substrata is complex and involves clustering dwelling units within each substratum. These clusters form a universe of Secondary Sampling Units (SSUs). A systematic sample of SSUs is selected to represent each substratum. Each race and ethnicity density substratum has its own sampling rate for SSU selection.

Within each selected SSU all households containing black or Hispanic persons are selected for interview, while only a sample of other households are selected. These non-black, non-Hispanic

households are sampled at different rates within the 21 substrata. For selected households, the NHIS collects some information on all household members, and additional information is obtained for randomly selected persons in each household. For example, one adult per family is randomly selected for interview with the sample adult questionnaire.

This hierarchy of sampling allows the creation of household- and person-level base weights. Each base weight is the product of the inverse probabilities of selection at each sampling stage. Roughly speaking, the base weight is the number of population units a sampled unit represents. Under ideal sampling conditions, a base-weighted sample total will be an unbiased estimator for the true total in the target population. In practice, however, the base weights are adjusted for non-response, and ratio-adjusted to create final sampling weights. The final weights are adjusted according to a quarterly poststratification by 88 age/sex/race and/or ethnicity classes based on Census control totals.

Internally, NCHS uses the design and weighting information to formulate appropriate variance estimators for NHIS statistics. While recognizing the need to provide accurate information, NCHS also must adhere to the Public Health Service Act (Section 308(d)) that forbids the disclosure of any information that may compromise the confidentiality promised to its survey respondents. Consequently, much of the NHIS design information cannot be publicly released, and other data are either suppressed or recoded to insure confidentiality. In order to satisfy this disclosure constraint, many of the original design strata, substrata, PSUs and SSUs are masked for public release by applying techniques to cluster, collapse, mix, and partition the original design variables. Through this process the original NHIS design variables are transformed into public use design variables. The public use design structures perform reasonably well when compared to internal NCHS design structures (NCHS 2000). The sampling weights have not been changed in any way for the public data. Data users who want access to the internal NCHS data have the option of accessing internal data through the NCHS Research Data Center (for further information, refer to **http://www.cdc.gov/nchs/r&d/rdc.htm**).

Design Information Available on the NHIS Public Use Data

The Person file public use design variables utilized for variance estimation are provided in Table 1. Users should check the Dataset Documentation for exact names and locations of these variables for each of the files.

Appendix III, Table 1. Variables Used for Variance Estimation, 1999 NHIS Person File

Variable Name	Variable Label
Stratum	Stratum for variance estimation
PSU	PSU for variance estimation
WTFA	Weight - Final, annual Person weight

As discussed above, in order to mask true geographical locations the STRATUM and PSU levels are pseudo-levels or simplified versions of the true NHIS sample design variables. Analysts are cautioned that these simplified design structures do not support geographical analyses below the regional level.

☹ **CAUTION.** Significant changes were made to the Stratum and PSU values beginning with the 1997 survey year. More strata have been provided (compared to the 1995 public release) to improve statistical efficiency in various statistical estimation procedures. The sample design variables provided on the 1997-1999 NHIS public use data files are *not* comparable to those of previous data years. Users are cautioned that variance estimation structures discussed here are for individual survey years only, not for pooled analyses of multiple years of the NHIS.

Variance Estimation Method for Public Use Data

The method described below is applicable to all 1999 NHIS public use data, except the Injury Episode, Injury Verbatim, and Poison Episode files.

For this method of variance estimation, the NHIS sample is treated as having 339 strata, each containing two sampled PSUs. While in reality the PSUs were not duplicated, the limited public release design information requires a mathematical simplification that the PSUs be treated as if they were sampled with replacement (WR). This public use method provides slightly more conservative standard errors than the true variance estimation method that is applied internally by analysts at NCHS (NCHS 2000). Additionally, this public use method is applicable in many of the statistical packages for complex survey data that require exactly two sample PSUs per stratum. Moreover, this method is robust when analyzing subsetted or subgroup data (see the section "Subsetted Data Analysis" below).

When implementing this public use method, users should observe 678 PSUs when analyzing the full database. The simplified design structure can be specified with the following statements in SUDAAN:

```
PROC ...    DESIGN = WR ;
NEST        STRATUM  PSU ;
WEIGHT      WTFA ;
```

Note that SUDAAN requires that the input file be sorted by the variables listed on the nest statement (i.e., STRATUM and PSU). Design statements for other data files should use the appropriate weight variables.

☹ **CAUTION.** A rule of thumb to calculate the number of degrees of freedom to associate with a standard error is the quantity *number of PSUs - number of strata.* Typically, this rule is applied to a design with two-PSU per stratum and when the variance components by stratum are roughly the same

magnitude. The applicability of this rule depends upon the variable of interest and its interaction with the design structure (for additional information, see Chapter 5 of Korn and Graubard 1999). Given this rule of thumb, the number of degrees of freedom for the public use method described above is 339. The number of degrees of freedom is used to determine the *t*-statistic, its associated percentage points, p-values, standard error, and confidence intervals. As the number of degrees of freedom becomes large, the distribution of the *t*-statistic approaches the standard normal distribution. For example, with 120 degrees of freedom, the 97.5 percentage point of the t_{120} distribution is 1.980, while the 97.5 percentage point of the standard normal distribution is 1.960. If a variable of interest is distributed across most of the NHIS PSUs, a normal distribution assumption may be adequate for analysis since the number of degrees of freedom would be large. The user should consult a mathematical statistician for further discussion.

Subsetted Data Analysis

Frequently, studies using NHIS data are restricted to specific population subgroups, e.g., persons aged 65 and older. Some users delete all records outside of the domain of interest (e.g., persons aged less than 65 years) in order to work with smaller data files and run computer jobs more quickly. This procedure of keeping only select records (and list-wise deleting other records) is called subsetting the data. With a subsetted data set, which is appropriately weighted, correct point estimates (e.g., estimates of population subgroup means) can be produced. However, most software packages that analyze complex survey data incorrectly compute standard errors for subsetted data. When complex survey data are subsetted, oftentimes the sample design structure is compromised because the complete design information is not available; subsetting data deletes important design information needed for variance estimation. Note that SUDAAN has a SUBPOPN option that allows the targeting of a subpopulation while using the full (unsubsetted) data file which has all sample design information. (See a SUDAAN manual for more information).

Strategy 1 Use the MISSUNIT option on the NEST statement with the method described above for subsetted data:

NEST **STRATUM PSU / MISSUNIT ;**

In a WR design with exactly two PSUs per stratum, when some PSUs are removed from the database through the listwise deletion of records outside the population of interest, the MISSUNIT option in SUDAAN "fixes" the estimation to produce standard errors identical to that achieved when using a full data set with a SUBPOPN statement (see Strategy 2, below). Note that other calculations for design effects, degrees of freedom, and standardization may need to be carried out differently. Users are responsible for verifying the correctness of their results based on subsetted data.

Strategy 2 Use the SUBPOPN statement with the method described above for the full data set:

```
PROC ...     DESIGN = WR ;
NEST         STRATUM  PSU ;
WEIGHT       WTFA ;
SUBGROUP     (variable names);
LEVELS ...   ;
SUBPOPN      RACE=2 & SEX=2 / NAME="Analysis of African American women";
```

Using the full data set with the SUBPOPN statement in this example would constrain analysis to African American women only (RACE = 2 for black and SEX = 2 for female). Use of the SUBPOPN statement is equivalent to subsetting the data set, except that any resulting variance estimates are based on the full design structure for the complete data set.

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Appendix IV

Adult Mental Health Documentation

Some of the NHIS 1999 periodic questions pertaining to adult mental health (ACN.530.030through ACN.530.650) were based on parts of the Composite International Diagnostic Interview - Short Form (CIDI-SF). The CIDI-SF was initially developed from the longer and more complex Composite International Diagnostic Interview (World Health Organization, 1992) for use in the 1994 NHIS (Kessler et al., 1994; Kessler et al., 1998) to provide brief screening measures for eight disorders defined in the Diagnostic and Statistical Manual (DSM) of Mental Disorders, 3rd edition (American Psychiatric Association, 1987). The CIDI-SF was subsequently revised to screen for diagnoses in the 4th edition of the DSM (American Psychiatric Association, 1994). The 1999 NHIS contained questions used in three of the CIDI-SF screening scales—for major depression, generalized anxiety disorder, and panic attack. A complete copy of the questions and scoring instructions for the CIDI-SF are available at **www.who.int/msa/cidi/index.htm.**

☹ **CAUTION.** NCHS suggests that the individual CIDI-SF items not be used for purposes beyond those recommended by the World Health Organization. Instructions for extracting the probability of psychiatric diagnoses/outcomes from individual CIDI-SF items are available from the above-mentioned web site.

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