
# 2020
# SURVEY DESCRIPTION

Division of Health Interview Statistics
National Center for Health Statistics
Hyattsville, Maryland

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

September 2021

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## NCHS Website

Data users can obtain the latest information about the National Health Interview Survey (NHIS) by periodically checking our website:

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

The website features downloadable data and documentation for the 2020 NHIS and previous years, as well as important information about any modifications or updates to the data or documentation. Published reports from previous years' surveys are also available, as are updates about future surveys and datasets. Data files and documentation can be found at:

https://www.cdc.gov/nchs/nhis/data-questionnaires-documentation.htm

## NHIS Electronic Mail List

Data users are encouraged to join the NHIS Listserv, an electronic mailing list. The Listserv is made up of over 3,100 NHIS data users located around the world who receive news about NHIS surveys (e.g., new releases of data or modifications to existing data), publications, workshops, and conferences. To join, go to https://www.cdc.gov/nchs/products/nchs_listservs.htm, and select "National Health Interview Survey (NHIS) Researchers" as one of your options, or click on "Contact Us" on the NHIS website and scroll to "Listserv" or "How to Subscribe to the HISUSERS List."

## Questions about NHIS?

The staff of the Division of Health Interview Statistics at the National Center for Health Statistics respond to data users' questions about NHIS. Users may call us at 301-458-4901 and leave a voice message or e-mail us at nhislist@cdc.gov. A response may take 1-2 business days.

# Guidelines for Citation of Data Source

With the goal of mutual benefit, the National Center for Health Statistics (NCHS) requests that recipients of NHIS data files cooperate in certain actions related to their use.

Any published material derived from the 2020 NHIS data should acknowledge "National Center for Health Statistics, National Health Interview Survey" as the original source. The full spelling of the source without the use of acronyms is preferred. The suggested citation to appear at the bottom of all tables and graphs is as follows:

- Data Source: National Center for Health Statistics, National Health Interview Survey, 2020

In a bibliography, the suggested citation for this document should read:

- National Center for Health Statistics. Survey Description, National Health Interview Survey, 2020. Hyattsville, Maryland. 2021.

The suggested citation for 2020 NHIS survey data and other documentation should read:

- National Center for Health Statistics. National Health Interview Survey, 2020. Public-use data file and documentation. https://www.cdc.gov/nchs/nhis/data-questionnaires-documentation.htm. 2021.

The published material should also include a disclaimer that credits the author's analyses, interpretations, and conclusions 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 ensure that the description is consistent with that published by NCHS.

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Information on how to cite electronic media is available at: https://www.cdc.gov/nchs/products/citations.htm.

# Data User Agreement

## Please Read Carefully Before Using the National Health Interview Survey

The National Health Interview Survey (NHIS) is conducted by the National Center for Health Statistics (NCHS), Centers for Disease Control and Prevention (CDC).

NCHS, CDC conducts statistical and epidemiological activities under the authority granted by the Public Health Service Act (42 U.S.C. § 242k). NCHS survey data such as NHIS are protected by Federal confidentiality laws including Section 308(d) Public Health Service Act [42 U.S.C. 242m(d)] and the Confidential Information Protection and Statistical Efficiency Act or CIPSEA [Pub. L. No. 115-435, 132 Stat. 5529 § 302]. These confidentiality laws state the data collected by NCHS may be used only for statistical reporting and analysis. Any effort to determine the identity of individuals and establishments violates the assurances of confidentiality provided by federal law.

## Terms and Conditions

NCHS does all it can to assure that the identity of individuals and establishments cannot be disclosed. All direct identifiers, as well as any characteristics that might lead to identification, are omitted from the dataset. Any intentional identification or disclosure of an individual or establishment violates the assurances of confidentiality given to the providers of the information. Therefore, users will:

1. Use the data in this dataset for statistical reporting and analysis only.
2. Make no attempt to learn the identity of any person or establishment included in these data.
3. Not link this dataset with individually identifiable data from other NCHS or non-NCHS datasets.
4. Not engage in any efforts to assess disclosure methodologies applied to protect individuals and establishments or any research on methods of re-identification of individuals and establishments.

By using these data, you signify your agreement to comply with the above-stated statutorily based requirements.

## Sanctions for Violating NCHS Data Use Agreement

Willfully disclosing any information that could identify a person or establishment in any manner to a person or agency not entitled to receive it, shall be guilty of a class E felony and imprisoned for not more than 5 years, or fined not more than $250,000, or both.

# What's New in 2020?

- Due to data collection difficulties posed by the COVID-19 pandemic, NHIS shifted from in-person interviewing to all-telephone interviewing starting in late March and continuing through June. From July through December, data collection in select areas were opened for in-person visit interviewing, however, NHIS data collection remained predominantly by telephone during this period.

- Due to concerns about possible loss of coverage and lower response rates typically associated with telephone interviewing, approximately half of the original sample allocated for the last five months of 2020 was replaced with Sample Adults who completed the 2019 NHIS Sample Adult interview. The reinterviewing of Sample Adults from 2019 using the 2020 NHIS questionnaire also provided an opportunity to assess changes over time in health outcomes measured on both survey years and assess measures during the pandemic.

- New survey content in 2020 is listed below:

| | |
|---|---|
| **Rotating Core** | |
| Sample Adult | Industry and occupation, injuries, fatigue, and health-related behaviors (physical activity, walking, sleep, smoking history and cessation, and alcohol use) |
| Sample Child | Injuries, neighborhood characteristics, height and weight, and health-related behaviors (physical activity and sleep) |
| **Sponsored Content** | |
| Sample Adult | *January-December:*<br>Sun protection, perceptions of the walking environment, cigarette smoking history, immunization, exposure to health care settings, food security, Supplemental Nutrition Assistance Program (SNAP) assistance, non-cigarette tobacco use, insulin use, diabetes and diabetes prevention, age of disability onset, opioid use and chronic pain, and asthma<br><br>*July-December:*<br>Cancer-related care during the pandemic, and social distancing at work |
| Sample Child | *January-December:*<br>Food security, SNAP assistance, and asthma |
| **Emerging Content** | |
| Sample Adult | *July-December:*<br>COVID-19 diagnosis, testing, and symptom severity, unmet medical need and telemedicine use due to the pandemic, additional chronic conditions, receipt of at home care, unmet at home care due to the pandemic, and perceived social and emotional support |
| Sample Child | *January-December:*<br>Head injuries or concussions<br><br>*July-December:*<br>COVID-19 diagnosis, testing, and symptom severity, unmet medical need and telemedicine use due to the pandemic |

- Similar to 2019, the 2020 NHIS data release includes files for the annual Sample Adult, annual Sample Child, Imputed Income for the Sample Adult and Sample Child, and Paradata. In 2020, two additional sets of files are available for the Sample Adult: The Partial and Longitudinal data files. The partial file is needed for cross-sectional analyses that produce estimates based on pooled 2019 and 2020 data. The longitudinal file is needed for longitudinal analyses that examine individual-level changes between 2019 and 2020 among those interviewed in 2019 and were reinterviewed in 2020. The Partial data file has the household IDs and sampling weights for Sample Adults who were in the sample designed for and interviewed in 2020, and the Longitudinal data file has the household IDs and sampling weights for Sample Adults who were in the sample designed for and interviewed in 2019 and were reinterviewed in 2020. The appropriate file must be merged with the Sample Adult file to conduct pooled or longitudinal analyses of demographic characteristics and health measures.

- Three Sample Adult sampling weights were created for 2020: 1) a sampling weight to produce 2020 estimates (WTFA_A), available in the 'adult20' data file; 2) a weight created for use only when producing cross sectional estimates based on pooled 2019 and 2020 data (WTSA_P), available in the 'adultpart20' file; and 3) a weight created for longitudinal analyses (WTSA_L) to examine individual-level changes between 2019 and 2020 among those interviewed in 2019 and were reinterviewed in 2020, available in the 'adultlong20' file. There is only one type of Sample Child weight for 2020 (WTFA_C). See analytical guidance provided in "Analyzing 2020 NHIS" in this document.

# About NHIS

NHIS is the principal source of information on the health of the civilian noninstitutionalized population of the United States and is one of the major data collection programs of the NCHS. The National Health Survey Act of 1956 provided for a continuing survey and special studies to secure accurate and current statistical information on the amount, distribution, and effects of illness and disability in the United States and the services rendered for or because of such conditions. The survey referred to in the Act, now called the National Health Interview Survey, was initiated in July 1957. Since 1960, the survey has been conducted by NCHS, which was formed when the National Health Survey and the National Vital Statistics Division were combined.

The main objective of the NHIS is to monitor the health of the United States population through the collection and analysis of data on a broad range of health topics. A major strength of this survey lies in the ability to categorize these health characteristics by many demographic and socioeconomic characteristics.

NHIS data are used widely throughout the Department of Health and Human Services (HHS) to monitor trends in illness and disability and to track progress toward achieving national health objectives. The data are also used by the public health research community for epidemiologic and policy analysis of such timely issues as characterizing those with various health problems, determining barriers to accessing and using appropriate health care, and evaluating Federal health programs.

Since 1957, the content of the survey has been updated about every 10–15 years to incorporate advances in survey methodology and coverage of health topics. In January 2019, NHIS launched a redesigned content and structure that differs from the 1997–2018 NHIS.

# Overview of 2020 Survey Methods

NHIS is a nationally representative household survey of the U.S. civilian noninstitutionalized population. It is conducted continuously throughout the year by the National Center for Health Statistics (NCHS). Interviews are typically conducted in respondents' homes, but follow-ups to complete interviews may be conducted over the telephone. Due to the COVID-19 pandemic, data collection procedures in 2020 were disrupted, and from April to June all interviews were conducted by telephone only, and from July to December interviews were attempted by telephone first with follow-ups to complete interviews by personal visit. Approximately one third of the Sample Adult interviews are comprised of Sample Adults previously interviewed for the 2019 NHIS. Information about the Sample Adult is self-reported, unless physically or mentally unable to do so and a knowledgeable proxy can answer for the Sample Adult. Information about the Sample Child is collected from a parent or adult who is knowledgeable and responsible for the health care of the Sample Child. In 2020, there were 31,568 Sample Adult interviews and 5,790 Sample Child interviews. The Sample Adult response rate for the 2020 sample that excludes reinterviewed Sample Adults was 48.9% and the response rate for Sample Adults from the 2019-2020 longitudinal sample was 29.6%. The Sample Child response rate was 47.8%. The NHIS includes annual content that appears on the survey every year. The survey also includes rotating core content, sponsored content, and emerging content that appears periodically. Visit https://www.cdc.gov/nchs/nhis/2019_quest_redesign.htm for a description of content in any given year. For more information about NHIS, visit: https://www.cdc.gov/nchs/nhis.htm.

# NHIS Methods

## I. Sample Design

NHIS is a cross-sectional household interview survey. The target population for the NHIS is the civilian noninstitutionalized population residing within the 50 states and the District of Columbia at the time of the interview. The NHIS universe includes residents of households and noninstitutional group quarters (e.g., homeless shelters, rooming houses, and group homes). Persons residing temporarily in student dormitories or temporary housing are sampled within the households that they reside in permanently. Persons excluded from the universe are those with no fixed household address (e.g., homeless and/or transient persons not residing in shelters), active duty military personnel and civilians living on military bases, persons in long-term care institutions (e.g., nursing homes for the elderly, hospitals for the chronically ill or physically or intellectually disabled, and wards for abused or neglected children), persons in correctional facilities (e.g., prisons or jails, juvenile detention centers, and halfway houses), and U.S. nationals living in foreign countries. While active-duty Armed Forces personnel cannot be sampled for inclusion in the survey, any civilians residing with Armed Forces personnel in non-military housing are eligible to be sampled.

Because the NHIS is typically conducted in a face-to-face interview format, the costs of interviewing a large simple random sample of households and noninstitutional group quarters would be prohibitive; randomly sampled dwelling units would be too dispersed throughout the nation for cost-effective interviewing. To keep survey operations manageable, cost-effective, and timely, the NHIS uses geographically clustered sampling techniques to select the sample of dwelling units for the NHIS. The sample is designed in such a way that each month's sample is nationally representative. Data collection on the NHIS is continuous, i.e., from January to December each year.

The sampling plan is redesigned after every decennial census. A new sampling plan for the 2016–2025 NHIS was designed with results of the 2010 decennial census. The sampling process starts with partitioning the United States into 1,689 geographic areas. These geographic areas are defined as counties, county equivalents, or groups of counties, are almost always contiguous, and do not cross state boundaries. Next, within some states, the geographic areas are divided into two strata defined by population density (generally, urban counties and rural counties). For the remaining states, all the geographic areas form one stratum. Clusters of addresses were then defined within each stratum. The sizes of the clusters correspond generally to the size of an interviewer's workload over the course of the 10-year sample design period; the approximate size is 2,500 addresses per cluster. Each cluster is located entirely within one of the 1,689 originally defined geographic areas. Within each stratum, a specific number of clusters is systematically selected for the NHIS sample. The number selected is generally proportional to the number of clusters in the strata, e.g.., larger strata have more clusters selected within the strata. The exception is in the 10 least populous states and the District of Columbia, where a slightly higher number of clusters are selected in order to ensure that all states have a minimum number of addresses in the sample.

Commercial address lists were used as the main source of addresses, supplemented by field listing. As of the beginning of 2016, the NHIS sampling frame consists of two non-overlapping parts: the unit frame (a list of addresses purchased from a vendor), and the area frame (generated by traditional field enumeration). Approximately 11% of the counties in the sample were part of the area frame. These area frame counties are typically counties with relatively few city-style addresses, and counties where the unit frame did not have acceptable coverage, i.e., where the vendor-supplied list did not adequately include all eligible households. A report with further information on the 2016–2025 sample design is forthcoming.

## Modifications to the 2020 Sample and Data Collection due to COVID-19

Due to data collection difficulties posed by the COVID-19 pandemic, NHIS shifted from in-person interviewing to all-telephone interviewing starting in late March and continuing through June, covering the entire second quarter of data collection. From July through December (quarters 3 and 4) of data collection, select areas with low incidence of COVID-19 (as determined by the U.S. Census Bureau Regional Offices based on COVID-19 rates in local jurisdictions) were opened for in-person visit interviewing, however, NHIS data collection remained predominantly by telephone during this period.

Due to concerns about possible loss of coverage and lower response rates typically associated with telephone interviewing (Steeh and Piekarski, 2008), approximately half of the original sample allocated for the last five months of 2020 was replaced with 2019 NHIS samples that resulted in a Sample Adult interview in 2019. Sample Adults who participated in the 2019 NHIS were eligible for the 2020 NHIS interview if they had the appropriate contact information to be interviewed by telephone and met additional sampling criteria, described below. The reinterviewing of Sample Adults from the previous year using the 2020 NHIS questionnaire also provided an opportunity to assess changes over time in health outcomes measured on both survey years and assess measures during the pandemic. This subset of Sample Adults with longitudinal data (i.e., 2019 and 2020 NHIS data) is also referred to in this document as the "Followback" sample.

**Table 1. Sampling frame for the 2020 NHIS by month of data collection.**

| Month of data collection | Sample Type and Year | Panel | Target Population |
|---|---|---|---|
| **January** | Original 2020 sample | 1-4 | Sample Adults and Sample Child |
| **February** | Original 2020 sample | 1-4 | Sample Adults and Sample Child |
| **March** | Original 2020 sample | 1-4 | Sample Adults and Sample Child |
| **April** | Original 2020 sample | 1-4 | Sample Adults and Sample Child |
| **May** | Original 2020 sample | 1-4 | Sample Adults and Sample Child |
| **June** | Original 2020 sample | 1-4 | Sample Adults and Sample Child |
| **July** | Original 2020 sample | 1-4 | Sample Adults and Sample Child |
| **August** | Partial original 2020 sample | 1 and 3 | Sample Adults and Sample Child |
| | Followback of 2019 sample | 2 and 4 | Sample Adults only |
| **September** | Partial original 2020 sample | 1 and 3 | Sample Adults and Sample Child |
| | Followback of 2019 sample | 2 and 4 | Sample Adults only |
| **October** | Partial original 2020 sample | 1 and 3 | Sample Adults and Sample Child |
| | Followback of 2019 sample | 2 and 4 | Sample Adults only |
| **November** | Partial original 2020 sample | 1 and 3 | Sample Adults and Sample Child |
| | Followback of 2019 sample | 1 and 3 | Sample Adults only |
| **December** | Partial original 2020 sample | 1 and 3 | Sample Adults and Sample Child |
| | Followback of 2019 sample | 2 and 4 | Sample Adults only |

**NOTE: Mode of data collection was primarily via personal visit during January through March, via telephone only during April through July and for all months of the Followback sample, and primarily telephone during August through December for those in the partial original 2020 sample.**

Both the reduction of the 2020 original sample and the inclusion of the Followback sample was done using the concept of panels. The annual NHIS samples are normally partitioned into four annual panels (subsamples), each having approximately the same number of nationally representative households. The two panels selected for

the Followback sample were the ones not used by the Medical Expenditure Panel Survey (MEPS), which uses two of the NHIS panels as a sampling frame from which the MEPS sample is drawn. The two original 2020 panels that were fielded from August to December 2020 were ones that the MEPS would subsequently use as a sampling from for the 2021 MEPS. Followback samples were released for fielding at least 12 months after initial 2019 interview date. See Table 2 for an overview of the release schedule of the Followback sample in 2020.

**Table 2. Release schedule of Sample Adult Followback sample by month of data collection**

| 2020 NHIS interview | 2019 NHIS interview |
|---|---|
| August | January-March |
| September | April-June |
| October | July-September |
| November | October-December |
| December | October-December |

Sample Children were not included in the Followback component due to methodological concerns, including Sample Child aging into adulthood, and the validity of obtaining information from a different child respondent, when the Sample Child had more than one eligible adult who is knowledgeable and responsible for the child's health.

## II. Interviewing 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 continuously throughout the year by Census interviewers. In 2020, about 664 interviewers, also called "Field Representatives" or "FRs," conducted NHIS interviews nationwide. FRs are trained and directed by health survey supervisors in the U.S. Census Bureau Regional Offices. Interviewers are observed by supervisors periodically and their work is monitored by the Census Bureau's PANDA system, a performance and data analysis program that provides monthly checks on response rates, completion rates, item response times, item nonresponse, telephone usage rates, and other data quality indicators. The supervisors responsible for the NHIS are career Civil Service employees who are selected through an examination and testing process. Interviewers receive thorough refresher training annually and other training during the year in basic interviewing procedures and in the concepts and procedures unique to the NHIS.

Each household address selected for participation in the NHIS is mailed a letter prior to the interviewer's visit. The "Advance letter" is mailed one week prior to the start of the interview period (one week before the 1st of the month) with the goal that it might be fresh on people's mind when the FR makes contact the first few days of the month. This "Advance letter" contains information about the purpose of the NHIS and the amount of time the interview will require, and it assures potential respondents that participation in the NHIS is voluntary. It also informs respondents that the information they provide is protected by law and details how the information will be used. When the interviewer arrives at the household address, he/she provides another copy of the "Advance letter" to each respondent and obtains verbal consent for survey participation. A copy of the current "Advance letter" and other NHIS materials available for distribution by FRs in the field are available at the NHIS participants' page: https://www.cdc.gov/nchs/nhis/participant.htm.

The NHIS is conducted using computer-assisted personal interviewing (CAPI). The CAPI data collection method employs Blaise computer software that presents questions on computer screens to each interviewer. The instrument guides the interviewer through the questionnaire, automatically routing the interviewer to

appropriate questions based on answers to previous questions. Interviewers enter survey responses directly into the computer, and the CAPI program determines if the selected response is within an allowable range, checks it for consistency against some of the other data collected during the interview, and saves the responses into a survey data file. The computer contains help facilities to aid interviewers in administering the CAPI questionnaire. This data collection technology reduces the time required for transferring, processing, and releasing data, and it ensures the accurate flow of the questionnaire.

Typically, face-to-face interviews are conducted in respondents' homes, but follow-ups to complete interviews may be conducted over the telephone. A telephone interview may also be conducted when the respondent requests a telephone interview or when road conditions or travel distances would make it difficult to schedule a personal visit before the required completion date.

The COVID-19 pandemic impacted typical NHIS interviewing procedures beginning in late March of 2020. All contacts with households took place over the telephone across all U.S. Census Bureau Regional Offices from this time through June of 2020 (Quarter 2). Beginning in July of 2020 and continuing through the end of December (Quarters 3 and 4), initial contact with households still took place via telephone, with subsequent personal visits allowed. Personal visits varied by Regional Office based on COVID-19 rates in local jurisdictions.

To reach households by telephone, Field Representatives used the telephone numbers appended with the address-based sample from commercial address lists. For NHIS sample addresses without a telephone match, FRs used online phone number searches to identify household telephone numbers.

In March of 2020, the U.S. Census Bureau issued guidance to FRs for telephone interviewing.

<u>When speaking to a person:</u>

- Identify themselves, affiliation, and purpose of call
  *"Hello, my name is (* say your name), I'm calling from the U.S. Census Bureau, on behalf of the National Center for Health Statistics, which is part of the Centers for Disease Control and Prevention. We are conducting a health survey. This is a nationwide survey about the health of both adults and children."*
- For privacy concerns, only mention the name of the survey after confirming to be speaking to someone at the correct address
- For safety concerns, confirm that the person is not driving. If driving, call another time
- Mention the "Advance letter" and bring to their attention that in-person home visits were replaced with telephone calls due to safety measures related to COVID-19
- Confirm that the person is over 18
- Confirm the correct sample address and that the person usually lives at sample address
- Provide instructions to the household respondent on how to verify their identity and employment status with Census

<u>When leaving a voicemail message:</u>

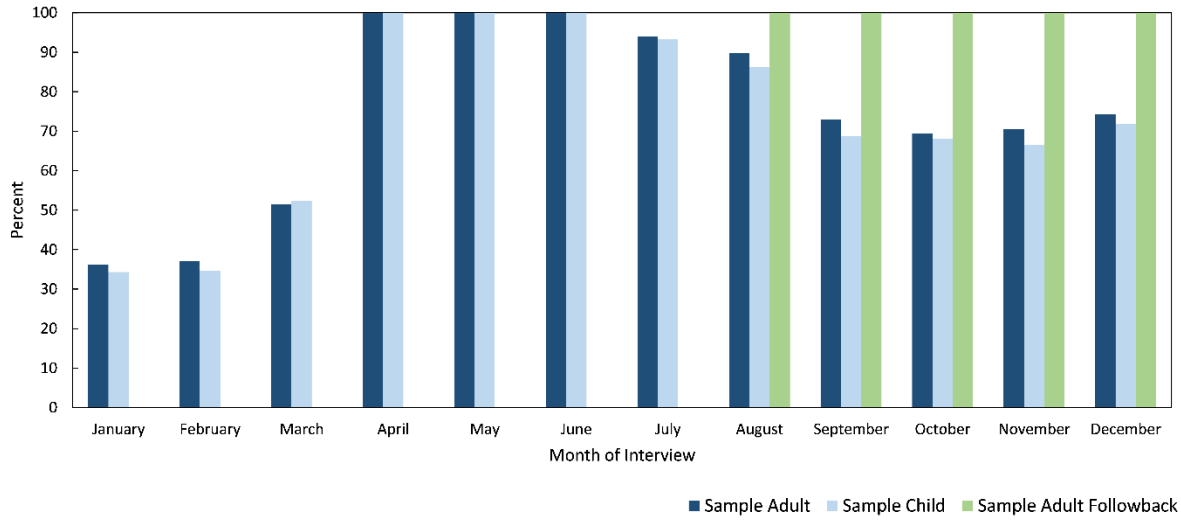
- Identify themselves and affiliation, mention the "Advance letter," purpose of call, and change from in-person visit to telephone call, telephone number for returning call, instructions for verifying their employment with Census, repeat their name and contact telephone number, mention confidentiality of survey information, and a conclude greeting.
- Not mention the name of the survey in the voice message

<u>When non-contact or refusals:</u>

- Limits on number of calls and spacing between calls made

In 2020, 70.7% of the Sample Adult interviews (from the original 2020 sample) and 68.0% of the Sample Child interviews were conducted at least partially by telephone. This is more than double the percentage of telephone interviews that were conducted at least partially by telephone during 2019 for both the Sample Adult (34.3%) and Sample Child (31.7%). The Sample Adult Followback was completely entirely by telephone. Figure 1 shows the percentage of 2020 NHIS interviews completed at least partially by telephone, by month.

Figure 1. 2020 NHIS Interviews Completed Entirely or In Part by Telephone




## Rostering and Respondents

For the Household Roster section of the questionnaire, any responsible household member aged 18 years or over is identified to act as the "household respondent." The household respondent provides names, age, sex, race, and ethnicity for all household members. The highest level of education completed, and active military status is asked for all adult household members age 18 years or over. In addition to collecting this basic demographic information, the household roster interview also identifies whether all persons in the household are members of the same or different family. Note that in a multi-family household, a single "household respondent" provides household information for all families.

NHIS has consistently defined a family as an individual or a group of two or more people residing together who are related by birth, marriage, or adoption. A family additionally includes any unrelated children who are cared for by the family (such as foster children) and any unmarried cohabiting partners and their children. After the household roster is completed, data are collected on one adult and child per household.

A "Sample Adult" is randomly selected by the computer from each household with at least one household member aged 18 years or over and is asked more detailed health related questions. The Sample Adult responds for him/herself to the questions in that section unless he/she is physically or mentally unable to do so, in which case a knowledgeable proxy may answer for the Sample Adult. Students aged 18 and over living away at college, trade, or commercial schools in on-campus housing are eligible to be interviewed in the location they consider to be their usual residence**,** such as their parent's or other family member's household. Students living away at school or college in off-campus housing will not be included as members of the household, since they could be sampled at their off-campus location.

A "Sample Child" is randomly selected by the computer from each household with at least one child 17 years of age or younger. An adult respondent who was previously indicated to be knowledgeable and responsible for the Sample Child's health will be asked questions about that child. In 2020, 92.9% of the Sample Child respondents were the child's parent, either a biological, adoptive or stepparent, while 4.7% were a grandparent, 0.8% were an aunt or uncle, 0.5% were an adult sibling, 1.0% were another relative or other non-relative, and 0.1% were not ascertained. For each sampled household address, interviewers also maintain electronic documentation about the NHIS interview process, including contact attempts, observed characteristics about the exterior of the sample unit or vicinity, and descriptive information about the interview outcome.

## Confidentiality

All information collected by the NHIS that would permit identification of the individual is held strictly confidential, seen only by persons who work on the NHIS (including related studies carried out by the Public Health Service) with a need to know, and such information is not disclosed or released to anyone for any other purpose without the consent of the respondent. NCHS must adhere to Section 308(d) of the Public Health Service Act (42 U.S.C. 242m(d)), which forbids the disclosure of any information that may compromise the confidentiality promised to survey respondents. In addition, confidentiality protections are also mandated by the Confidential Information Protection and Statistical Efficiency Act of 2018 (Title III, Public Law No. 115-435).

Further information about data collection procedures is available in the Field Representative Manual available on the NHIS website, https://www.cdc.gov/nchs/nhis.htm.

## Sample Adult Followback Procedures

The Sample Adult Followback (i.e. Sample Adults from the 2019 NHIS who were reinterviewed for the 2020 NHIS) increased the overall number of households contacted for the 2020 NHIS and allows researchers to compare responses given by the same person prior to the COVID-19 pandemic in 2019 and during the pandemic in 2020. Data collection for the Sample Adult Followback was designed to be conducted entirely by telephone. To be eligible for the Followback, Sample Adults must have sufficiently completed the 2019 Sample Adult module, responses must have been self-reported and not provided by a proxy, must have provided a household or personal telephone number when originally interviewed in 2019, and provided a valid name. Sample Adults who had moved since their 2019 interview or reported to be living away at school or college, either on-campus or off-campus housing, were also eligible for the Sample Adult Followback.

Like the non-Followback NHIS cases, households in the Followback sample were mailed an "Advance letter" a few days before being contacted by telephone for their 2020 NHIS interview. The Followback "Advance letter" was similar to the regular NHIS "Advance letter" but had information about the reasons respondents from 2019 were being recontacted. Upon initial telephone contact with the Followback Sample Adult, if the respondent had not received or read the Followback "Advance letter," the U.S. Census Bureau FR read the letter to them. NHIS field representatives also had access to any notes from the 2019 case that would be helpful for gaining cooperation. The Followback interview may or may not have conducted by the same interviewer that interviewed the Sample Adult in 2019. Field Representatives worked on both Followback and non-Followback NHIS cases simultaneously.

Field Representatives received guidance on how to handle special circumstances that might arise during the Followback Study:

- Deceased Respondents: If the interviewer learned that the Sample Adult was deceased when they attempted to make contact before beginning the interview, they were instructed to say "I'm so sorry for your loss." This information was recorded in the case notes and the interview was terminated.
- Incapable: As mentioned previously, the use of proxies was not allowed for the Followback Study. If the interviewer learned that the Sample Adult was now incapable, as a physical or mental condition prohibited responding, the following was read to the respondent: "Thank you for your time, but not everyone is eligible for the NHIS." Again, this information was recorded in the case notes and the interview was terminated.

Attempts to reach the Sample Adult were also terminated if the interviewer learned that the Sample Adult was incarcerated.

The NHIS questionnaire used for the Followback sample was nearly identical to the questionnaire used for the original 2020 sample. The Followback questionnaire omitted questions that collected social security number (SSN) and consent to link with the SSN since this information was already collected in 2019. In addition, questions that collected proxy information were omitted since the proxy option was not applicable to Followback cases.

## III. NHIS Redesign

In 2020, NHIS continued the structure and content of the 2019 NHIS questionnaire redesign to better meet the needs of data users, the Centers for Disease Control and Prevention, and the Department of Health and Human Services (DHHS). The goals of the redesign were to reduce respondent burden by shortening the length of the questionnaire, harmonize overlapping content with other federal health surveys, establish a long-term structure of ongoing and periodic topics, and incorporate advances in survey methodology and measurement.

The public was involved in the redesign process through public comments received through separate NCHS requests for input in 2015, 2016, and 2017. Additionally, technical expert panels consisting of subject matter experts in the fields of child health, chronic pain, injury, and income were convened to offer information about the directions and needs of each health-related field. For additional information about the 2019 redesign, visit: https://www.cdc.gov/nchs/nhis/2019_quest_redesign.htm

### Structure of Redesigned NHIS

One "Sample Adult" aged 18 years or older and one "Sample Child" aged 17 years or younger (if any children live in the household) are randomly selected from each household following a brief household rostering interview that collects basic demographics of everyone who usually lives or stays in the household and identifies which members of the household are in the Sample Adult's and Sample Child's families. Information about the Sample Adult is collected from the Sample Adult themself unless they are physically or mentally unable to do so, in which case a knowledgeable proxy can answer for the Sample Adult. Information about the Sample Child is collected from a parent or adult who is knowledgeable and responsible for the health care of the Sample Child. This respondent may or may not also be the Sample Adult.

Figure 2 illustrates the interviewing flow of the Household Roster, Sample Adult and Sample Child interviews, or modules, in the NHIS. The Sample Adult and Sample Child may be part of the same family or be part of different families in the household.

Figure 2. NHIS Redesigned Structure

**Households with at least one adult and one child**


**or**

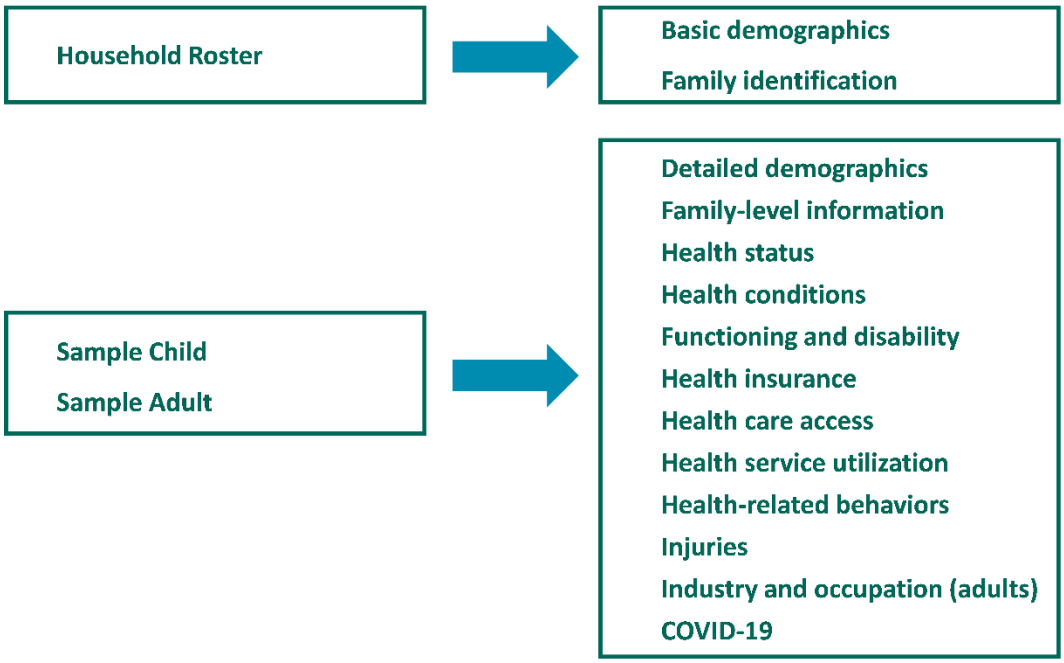

Note. In households where there is an eligible Sample Adult and Sample Child, either the Sample Adult or Sample Child interview is administered first. Once both the Sample Adult and Sample Child interviews have been completed the interview is complete.

**Households with at least one adult and no children**


Note: The NHIS is a survey of the civilian noninstitutionalized population, and active-duty military personnel are not included. In the rare case where a child lives in a household consisting of only active-duty military personnel, the Household Roster would be completed followed by a Sample Child interview.

In the redesigned survey, family-level content is collected in the Sample Adult and/or Sample Child questionnaire module. Figure 3 illustrates how topics or content of the interview is organized by interviewing modules (i.e. Household Roster, Sample Adult and Sample Child). In contrast, the 1997–2018 NHIS administered questions about the family separately for each family in the household. The family interview asked about the family as a whole and about each member of the family. An adult family respondent provided information about him/herself and proxy information about the other family members. For additional information about the 1997–2018 content, refer to year-specific NHIS documentation: https://www.cdc.gov/nchs/nhis/data-questionnaires-documentation.htm

Figure 3. Topic organization in the Household Roster, Sample Adult and Sample Child modules: NHIS 2020.




## Content of the Redesigned Questionnaire

The redesigned NHIS questionnaire consists of three modules: (1) Household Roster; (2) Sample Adult Interview; and (3) Sample Child Interview.

### *Household Roster*

In the Household Roster, an adult (aged 18 years and over) living in the household provides basic information about themselves and other people living in the household. The names, age, sex, race, and ethnicity of everyone in the household are collected. Additionally, the parents of all children are identified. The instrument then randomly selects one adult (Sample Adult) and one child (Sample Child), if any children live in the household, to be given follow-up questions. The Sample Adult is selected randomly among persons aged 18 years and over living in the household, and the Sample Child is selected randomly among those aged 17 years or younger. Questions are asked to determine who is in the family of the Sample Adult and Sample Child. The Sample Adult and Sample Child do not need to be in the same family. No health information is collected in this section. When the Household Roster is complete, the field representative can then proceed with the Sample Adult or Sample Child interview (if a child lives in the household).

### *Sample Adult Interview*

The Sample Adult is asked a series of health questions about themselves. Some questions vary by age or sex of the Sample Adult, but most are the same for all Sample Adults. Additional demographic information is also collected about the Sample Adult and his/her family.

### *Sample Child Interview*

An adult knowledgeable and responsible for the health of the child is asked a set of questions about the Sample Child. Some questions asked of the Sample Child vary by age, as younger and older children have different health needs. Additional demographic information is also collected about the child and his/her family.

## Types of Questions

The redesigned NHIS incorporates a long-term structure of fixed and periodic content. The long-term structure for the Sample Adult and Sample Child questionnaires organizes question topics by year and by type of content for the survey years 2019–2027. Additional information about periodicity of question topics for 2019-2027, see, https://www.cdc.gov/nchs/nhis/2019_quest_redesign.htm. There are four types of content: (1) Annual core; (2) Rotating core; (3) Sponsored content; and (4) Emerging topics.

**Annual core** are consistent questions that are asked every year.

**Rotating core** are questions that are asked some, but not all years. These questions are scheduled to appear on a periodic basis of every other year, one out of every three years, or two out of every three years.

**Sponsored content** are questions funded by other federal agencies or other centers within CDC about topics of interest to the sponsor. Sustaining sponsors fund content every year, whereas other sponsors fund content periodically.

**Emerging topics** are questions about areas of interest to NCHS, CDC, or DHHS. These are newer subject areas that have generally not been researched in the general population.

## Questionnaire Sections

The NHIS is divided into many questionnaire sections within each module, each with a different focus. The sections may include any combination of annual core, rotating core, sponsored content, or emerging topics. When the same questions or same types of questions are asked in a Sample Adult and Sample Child interviews, the sections are given the same name for both interviews. The names of the questions asked of the Sample Adult or pertaining to the Sample Adult's family all end in "_A" whereas those asked of the Sample Child or about the Sample Child's family end with "_C." Section names have a 3-letter abbreviation (e.g., INS for Health Insurance), and questions are grouped by module and section.

## Description of the 2020 Questionnaire

A description of the 2020 topics and type of questions are described in this report under Sample Adult's Health, Sample Child's Health, and Health Insurance, while all demographic information has been portioned into four sets of characteristics: 1) those about the Sample Adult and Sample Child; 2) those about the parents or guardian residing in the household with the Sample Child; 3) those about the spouse or partner residing in the household with the Sample Adult (if married or cohabiting); and 4) those about the family of the Sample Adult and Sample Child. In this document, multiple questionnaire sections may be described in each of the health topics included under Sample Adult's Health and Sample Child's Health.

**Sample Adult health topics for 2020 are:**

I. Health Status and Conditions
self-reported health status, height, weight, pregnancy status, and was told by a doctor or other health care professional to have following of health conditions: anxiety, arthritis, asthma, cancer, cardiovascular conditions, cholesterol, chronic obstructive pulmonary disease, cirrhosis or long-term liver condition, dementia, depression, diabetes, hepatitis, hypertension, immunosuppression, and weak or failing kidneys.

II. Functioning and Disability
anxiety, cognition, communication, depression, fatigue, hearing, mobility, self-care and upper body, social functioning (participation), vision, and disability onset age.

III. Pain and Pain Management
chronic pain and non-opioid pain management.

IV. Health Care Access and Health Service Utilization
difficulty paying for health care, utilization of services, immunizations, dental care, mental health care, physical and other therapeutic care, and prescription medication.

V. Preventive Care
diabetes prevention, and lung cancer screening.

VI. Health-Related Behaviors
alcohol use, cigarette smoking and cessation, electronic cigarette use, use of other tobacco products, physical activity, and sleep.

VII. Health Promotion
walking, perceptions of the walking environment, and sun care.

VIII. Injuries
repetitive strain injuries, and sudden onset injuries.

IX. COVID-19
COVID-19 diagnosis, access to care, cancer care and treatment, caregiving received, social distancing at work, and social support.

**Sample Child health topics for 2020 are:**

I. Health Status and Conditions
health status, asthma, diabetes, height, weight, developmental conditions, and learning disabilities

II. Functioning and Disability
anxiety, behavior, cognition, communication, depression, hearing, mobility, self-care and upper body, and vision

III. Health Care Access and Health Service Utilization
difficulty paying for health care, utilization of services, immunizations, dental care, mental health care, physical and other therapeutic care, and prescription medication

IV. Behavioral and Mental health
Baby Pediatric Symptom Checklist (BPSC).

V. Health-Related Behaviors
Physical activity, sleep, and screen time

VI. Health Promotion
Neighborhood characteristics

VII. Injuries
Sudden onset injuries, and concussions

VIII. COVID-19
COVID-19 diagnosis, access to care

## IV. Sponsors

Some 2020 NHIS content is sponsored by other federal agencies or other centers within the Centers for Disease Control and Prevention. Sponsored content may be used to collect data on new topics or to go into more depth about subjects already on the NHIS. Sustaining sponsors add content every year. Other sponsors add content for selected years.

### NHIS Sustaining Sponsors

#### *Cancer Control and Prevention*

The National Cancer Institute at the National Institutes for Health (NIH/NCI) and the National Center for Chronic Disease Prevention and Health Promotion at the Centers for Disease Control and Prevention (CDC/NCCDPHP) sponsored 34 questions asked of Sample Adults about sun protection, perceptions of the walking environment, cigarette smoking history, lung cancer screening (Quarters 1-2), and cancer treatment during the COVID-19 pandemic (Quarters 3-4).

#### *Immunizations and Employment in Health Care Settings*

The National Center for Immunization and Respiratory Diseases at the Centers for Disease Control and Prevention (CDC/NCIRD) sponsored 15 Sample Adult questions about flu vaccination during pregnancy, tetanus, shingles, and two Sample Adult questions about working or volunteering in the health care industry.

#### *Noncigarette Tobacco Product Use*

The Center for Tobacco Products at the Food and Drug Administration (FDA) sponsored seven Sample Adult questions about the use of cigars, pipes, and smokeless tobacco.

#### *Food Security and Food Stamp Benefits*

The United States Department of Agriculture (USDA) sponsored 10 questions that can be used to determine food security or insecurity and degree of insecurity in the Sample Adult or Sample Child's family. Additionally, the USDA sponsored a question about use of SNAP in the past 30 days. (Use of SNAP in the past year is part of the annual core content.)

### *Insulin Use*

The National Institute of Diabetes and Digestive and Kidney Diseases at the National Institutes for Health (NIH/NIDDK) and the National Center for Chronic Disease Prevention and Health Promotion at the Centers for Disease Control and Prevention (CDC/NCCDPHP) sponsored three Sample Adult questions about insulin initiation among adults with diabetes who take insulin.

## Other NHIS Sponsors

### *Asthma*

The National Heart, Lung, and Blood Institute at the National Institutes for Health (NIH/NHLBI), the National Center for Occupational Safety and Health at the Centers for Disease Control and Prevention (CDC/NIOSH), and the National Center for Environmental Health at the Centers for Disease Control and Prevention (CDC/NCEH) sponsored for 2020 five Sample Adult questions on asthma and four Sample Child asthma questions.

### *Diabetes*

The National Center for Chronic Disease Prevention and Health Promotion at the Centers for Disease Control and Prevention (CDC/NCCDPHP) sponsored for 2019–2021 seven questions on diabetes and diabetes prevention for Sample Adults.

### *Prescription Opioid Use and Pain Management*

The National Center for Injury Prevention and Control at the Centers for Disease Control and Prevention (CDC/NCIPC) sponsored for 2020 five Sample Adult questions about opioid use and ten Sample Adult questions about pain management for chronic pain.

### *Age of Disability Onset*

The Administration for Community Living at the Department of Health and Human Services (ACL/HHS) sponsored for 2020–2022 a question about the age of disability onset for adults.

### *Social Distancing at Work*

The National Center for Occupational Safety and Health at the Centers for Disease Control and Prevention (CDC/NIOSH) sponsored for 2020–2021 seven Sample Adult questions on social distancing measures at work.

## V. Sample Sizes and Response Rates

When the NHIS sample was redesigned for 2016–2025, the base of approximately 58,800 addresses was expected to yield about 27,000 Sample Adult and 9,000 Sample Child interviews in roughly 35,000 households each year. Adjusting for response rate changes to the redesigned questionnaire implemented in 2019, the base sample is now expected to yield approximately 28,800 Sample Adult and 8,400 Sample Child interviews in 30,000 households annually. However, NHIS sample size may vary from year to year, with 2020 being no exception given the impacts of the pandemic on data collection and the introduction of the aforementioned Followback or longitudinal sample in which a subset of 2019 Sample Adults were reinterviewed using the 2020 questionnaire. Table 3 provides a breakdown of sample sizes for the various components of the 2020 NHIS public-use data release.

**Table 3. Final sample sizes for the 2020 NHIS public-use data release**

| Interview Unit | 2020 Sample | 2019—2020 Longitudinal Sample | Combined Sample (2020 Sample and 2019—2020 Longitudinal Sample) |
|---|---|---|---|
| Households | 21,930 | --- | 32,345 |
| Sample Adults | 21,153* | 10,415 | 31,568 |
| Sample Children | 5,790 | --- | --- |

*** For 409 of the 21,153 Sample Adults on the 2020 sample, a knowledgeable proxy answered for the Sample Adult because he/she was mentally or physically incapable of answering for himself/herself.**

### Response Rate Method

Response rates presented below conform to the American Association of Public Opinion Research (AAPOR) Response Rate Definition # 2, or AAPOR RR2 (AAPOR, 2016). “Interviewed households,” “interviewed Sample Adults,” and “interviewed Sample Children” include those with completed interviews or acceptable “sufficient partial” interviews.

In the NHIS, a Sample Adult or Sample Child interview is considered fully complete when respondents complete all sections, and therefore questions, for which they are eligible. Conversely, an interview is considered a “partial” when all sections are not completed. The most common reason for a partial is a “break-off,” which occurs when a respondent stops the interview in-progress before completion and the interviewer fails to complete the interview during the allotted assignment period. The partial interview rate is the percent of all sufficiently complete interviews that are not entirely complete. These “sufficient partials” are counted as interviews in the computation of response rates. Partials that are not far enough along in the interview, known as “insufficient partials,” are considered refusals (Stussman et al., 2003) and therefore included as eligible, non-respondents in the computation of response rates.

## 2020 Sample

### *Household Response Rate*

For the 2020 Sample, the household response rate was calculated by dividing the number of interviewed households (n=21,930) by the sum of the number of interviewed households (n=21,930) and the number of nonresponding households (n=21,350). Nonresponding households are eligible households that were not interviewed for a variety of reasons, including language barriers, no one home after repeated contact attempts, refusal, household records rejected for insufficient data, or other reasons for no interview.

**The total Household Response Rate for the 2020 Sample was 50.7%.**

It is important to note that the definition of an interviewed household differs from the past design (1997-2018). Previously, an interviewed household was defined as one where at least one family in the household completed a substantial portion of the family interview. With the family interview removed from the redesigned NHIS, an interviewed household is now defined as one where the household roster and a substantial portion of either the Sample Adult interview or the Sample Child interview (if one or more children reside in the household) is completed. A household response rate obtained during the 1997-2018 NHIS and 2019-2020 NHIS should be presented separately.

### *Household Roster Completion*

The completion of the Household Roster is defined as the enumeration of all persons in an eligible household, with basic demographic information collected about each household member. The Household Roster Completion Rate is calculated by dividing the number of eligible households with a completed household roster (n=23,694) by the number of eligible households (n=43,280). For the 2020 Sample, the Household Roster Completion Rate was 54.7%. Based on demographic information obtained from completed household rosters, there were 6,626 eligible Sample Children and 23,683 eligible Sample Adults in the 2020 Sample.

### *Sample Child Response Rates*

Sample Child response rates can be computed two ways, resulting in either a conditional or final response rate. The Conditional Sample Child Response Rate is calculated by dividing the number of interviewed Sample Children (n=5,790) by the number of eligible Sample Children from households with completed rosters (n=6,626). For the 2020 Sample, the Conditional Sample Child Response Rate was 87.4%.

The Final Sample Child Response Rate accounts for the Household Roster Completion Rate and is calculated by dividing the number of interviewed Sample Children (n=5,790) by the number of eligible Sample Children (n=6,626) from households with completed rosters, and then multiplying this quotient by the Household Roster Completion Rate (54.7%). In 2020, 1.4% of Sample Child interviews were sufficient partials.

**For the 2020 Sample, the Final Sample Child Response Rate was 47.8%.**

### *Sample Adult Response Rates*

As with Sample Children, both a conditional and final response rate can be computed for Sample Adults. The Conditional Sample Adult Response Rate is calculated by dividing the number of interviewed Sample Adults (n=21,153) by the number of eligible Sample Adults from households with completed rosters (n=23,683). For the 2020 Sample, the Conditional Sample Adult Response Rate was 89.3%.

The Final Sample Adult Response Rate is calculated by dividing the number of interviewed Sample Adults (n=21,153) by the number of eligible Sample Adults from households with completed rosters (n=23,694), and then multiplying this quotient by the Household Roster Completion Rate. In the 2020 Sample, 3.6% of Sample Adult interviews were sufficient partials.

**For the 2020 Sample (excluding reinterviewed Sample Adults), the Final Sample Adult Response Rate was 48.9%.**

Note that numbers of households, Sample Children, and Sample Adults eligible and interviewed were used for the calculations of response rates shown and rounding discrepancies may occur when using the percentages.

## 2019—2020 Longitudinal Sample

The 2019—2020 Longitudinal Sample started with 21,161 Sample Adults from non-MEPS panels that completed or partially completed a 2019 Sample Adult interview. This number was reduced to 19,415 Sample Adults based on operational criteria such as the 2019 Sample Adult interview was completed by proxy response or the 2019 Sample Adult lacked sufficient contact information (e.g., no last name, no telephone number, etc.). Note that the 1,746 adults (21,161 – 19,415) that were excluded for operational reasons are included as "eligible" for purposes of computing 2019—2020 Longitudinal Sample response rates. An additional 334 adults were deemed ineligible during data collection for reasons such as death, incarceration, and placement in institutional group quarters for physical or mental health problems.

For the 2019-2020 Longitudinal Sample, both a Sample Adult completion rate and a final sample response rate can be computed. The Sample Adult Completion Rate can be computed by dividing the number of interviewed Sample Adults (n=10,415) by the number of eligible Sample Adults (n=20,827). For the 2019-2020 Longitudinal Sample, the Sample Adult Completion Rate was 50.0%.

The Final Sample Adult Response Rate for the 2019-2020 Longitudinal Sample is calculated by multiplying the Sample Adult Completion Rate (50.0%) by the Final 2019 Sample Adult Response Rate (59.1%). In the 2019-2020 Longitudinal Sample, 3.5% of Sample Adult interviews were sufficient partials.

**For the 2019—2020 Longitudinal Sample, the Final Sample Adult Response Rate was 29.6%.**

## 2020 Combined Sample

When working with the 2020 Combined Sample data file, it is recommended that data users report two final Sample Adult response rates: the Final 2020 Sample Response Rate (48.9%) and the Final 2019-2020 Longitudinal Sample Response Rate (29.6%).

## Reporting Household, Sample Adult, and Sample Child Response Rates

Which response rate to report depends on the focus of one's analysis. When reporting on analyses performed with the Sample Adult data file, the data user should report the Final Sample Adult Response Rate. In addition, it is good practice to also report the Household and Conditional Sample Adult Response Rates. Similarly, if the focus of one's analysis is the Sample Child, the Final Sample Child Response Rate should be reported. Again, the Household and Conditional Sample Child Response Rates could also be reported.

The Household Response Rate would also be reported if one is performing a household-level analysis using the public-use paradata file.

## Calculation of Response Rates for Combined NHIS Data Years: Excluding the 2019-2020 Longitudinal Sample from 2020

Some users may wish to calculate a single response rate across multiple years starting with 2019, the first year of the redesigned NHIS. The response rates for combined NHIS data years are calculated in the same basic way as for a single year. For example, the Household Response Rate for Combined Data Years can be calculated by dividing the number of interviewed households for Years 1 and 2 by the sum of the number of interviewed households and the number of nonresponding households for the survey for Years 1 and 2 (i.e., eligible households). If combining 2019 and 2020 data, the household response rate would be calculated as (33,138 + 21,930) / (54,231 + 43,280) = 56.5% (see Table 4 for counts).

The Conditional Sample Adult Response Rate for Combined Data Years can be calculated by dividing the number of interviewed adults for Years 1 and 2 by the number of Sample Adults that are eligible for the survey in Years 1 and 2, that is, from households with completed rosters for Years 1 and 2. If combining 2019 and 2020 data, the Conditional Sample Adult Response Rate would be calculated as (31,997 + 21,153) / (35,365 + 23,694) = 90.0%. The same approach would be used to calculate a Conditional Sample Child Response Rate for Combined Data Years.

The Final Sample Adult Response Rate for Combined Data Years can be calculated by dividing the number of interviewed sampled adults for Years 1 and 2 by the number of Sample Adults that are eligible for the survey in Years 1 and 2, that is, from households with completed rosters for Years 1 and 2, and then multiplying this quotient by the Household Response Rate for Combined Data Years. If combining 2019 and 2020 data, the Final Sample Adult Response Rate would be calculated as .565 (Household Response Rate for 2019 and 2020) X .900 (Conditional Sample Adult Response Rate for 2019 and 2020) = 50.9%. Again, the same approach would be used to calculate a Final Sample Child Response Rate for Combined Data Years.

Similar methods apply for calculating response rates for more than two years of data.

The 2019 and 2020 counts for eligible and interviewed sample units used in the calculation of response rates for combined data years are shown in Table 4.

**Table 4. Number of eligible and interviewed households, Sample Adults and Sample Children, National Health Interview Survey, 2019-2020**

| | Household | | Sample Adult | | Sample Child | |
|---|---|---|---|---|---|---|
| **Year** | Eligible | Interviewed | Eligible | Interviewed | Eligible | Interviewed |
| **2019** | 54,231 | 33,138 | 35,365 | 31,997 | 10,155 | 9,193 |
| **2020** | 43,280 | 21,930 | 23,694 | 21,153 | 6,626 | 5,790 |

### Calculation of Response Rates for Combined NHIS Data Years: Including the 2019-2020 Longitudinal Sample in 2020

If one wants to combine 2019 and 2020 Sample Adult and use the 2020 Combined Sample data file, resulting in 10,415 adults from the 2019-2020 Longitudinal Sample appearing in both the 2019 and 2020 datafiles, it is recommended that the data user reports three Sample Adult response rates: the Final 2019 Sample Adult Response Rate, the Final 2020 Sample Adult Response Rate, and the Final 2019-2020 Longitudinal Sample Response Rate.

## VI. Weighting

NHIS is a sample survey. That is, only a sample (subset) of the civilian noninstitutionalized population is selected to participate in the survey. Additionally, not everyone selected to participate agrees to participate, which can affect the representativeness of the sample. To account for these two factors, sampling weights are created. These sampling weights are used to produce representative national estimates. The data must be weighted to obtain population estimates for survey outcomes in the population represented by the NHIS. The value of the weight for a given respondent can be interpreted as the number of persons in the NHIS target population represented by that respondent. The sum of the weights over all respondents is used to estimate the size of the total target population. The weights reflect several steps of adjustments starting with a base weight, which is inverse to the probability of selection. Households and persons that are more likely to be selected are given lower weights so that the final estimates are not biased by their increased likelihood of being selected. For example, in a household of two eligible adults, the Sample Adult has a selection probability of one-half, and therefore their base weight will be increased by two. However, in a household of four eligible adults, the Sample Adult has a selection probability of one-fourth, and therefore their base weight will be increased by four, since roughly speaking they represent more people from the household. The base weights are then adjusted for nonresponse patterns, that is, the different response rates among different household and person-level subgroups.

The 2019 questionnaire redesign provided an opportunity to evaluate the adjustment approach that had been in place since 1997. For 1997-2018, the adjustment approach was based on geography; the weights for households and persons in geographic areas with lower response rates were increased more than for those in areas with higher response rates. That way, final estimates were not biased by the latter group's increased likelihood of participation. More sophisticated methods to decrease potential nonresponse bias are now available (Olson, 2013; Valiant et al., 2018), and based on the evaluation, the weighting process for 2019 was updated. The updated approach for nonresponse adjustment uses multilevel regression models that include paradata variables that are predictive of both survey response and selected key health outcomes, the key criteria for effective bias reduction.

Finally, the nonresponse adjusted weights are calibrated to U.S. Census Bureau population projections and American Community Survey (ACS) one-year estimates for age, sex, race and ethnicity, educational attainment, Census division, and Metropolitan Statistical Area (MSA) status. Prior to 2019, calibration was only to age, sex, and race and ethnicity population projections. These changes to the nonresponse adjustment approach and the calibration methods have the potential to impact comparisons of the weighted survey estimates over time.

A report with further information about NHIS sampling weights is available on the 2019 data release page at https://www.cdc.gov/nchs/nhis/2019nhis.htm.

In 2020, modifications to the above methodology were implemented because of the differences in mode of data collection, the reduction in original sample size, and the inclusion of a Followback sample.

### Three Sample Adult weights were created for 2020:

- **Weight for the 2020 annual estimates (WTFA_A)**
  The 2020 annual Sample Adult weight was created to produce estimates for 2020. The 2020 Sample Adult file has respondents who were in the original 2020 sample and those in the 2019 Followback sample (i.e., 2019 Sample Adults reinterviewed in 2020). All 2020 estimates are based on these respondents. The WTFA_A weight takes into account the selection probabilities and nonresponse for the 2020 sample and the Followback sample. An example of an estimate using the 2020 annual weight would be the percentage of U.S. adults in 2020 ever diagnosed with diabetes. The WTFA_A weight is available in the "adult20" data file.

- **Weight for the 2020 longitudinal analyses (WTSA_L)**
  The Followback sample provides a unique opportunity to evaluate change between 2019 and 2020 for 10,415 Sample Adults. These respondents completed both the 2019 and 2020 NHIS questionnaires. A separate weight (WTSA_L) was created to analyze individual-level changes between 2019 and 2020 using these cases. An example of an analysis using this weight would be changes in individual health status between 2019 and 2020. This longitudinal weight, WTSA_L, is available in the "adultlong20" file.

- **Weight for estimates based on the 2020 original sample, without the Followback sample (WTSA_P)**
  This weight is intended to be used for estimates that are based only on the respondents from the 2020 sample. This weight is referred to as the partial weight because it takes into account the selection probabilities and nonresponse for the 2020 samples only (without the Followback sample). The partial sample is recommended for use only when producing estimates based on pooled 2019 and 2020 data. This partial weight, WTSA_P, is available in the "adultpart20" file.

Further information on how to implement sampling weights in found in the section "Analyzing 2020 NHIS."

### There is only one type of Sample Child weight for 2020 (WTFA_C)

The 2020 Sample Child weight was created similarly to the 2019 Sample Child weight, and as described above under "weighting." The only differences between 2020 and 2019 Sample Child weighting procedures are a) the 2020 Sample Child sample size is smaller than usual, since the original sample for 2020 was reduced for five of the 12 months to accommodate interviewer workloads for Followback data collection; and b) adjustments were made to the weighting procedures to account for the loss of coverage for non-telephone households and the different paradata available for telephone versus in-person households. There was no child Followback sample. The WTFA_C weight is available in the "child20" file.

A report with further information about NHIS sampling weights is available on the 2020 data release page at https://www.cdc.gov/nchs/nhis/2020nhis.htm.

Due to the significant changes in data collection and weighting procedures in 2020, the interim annual weight for the Sample Adult (WTIA_A) and the interim annual weight for the Sample Child (WTIA_C) are not included in the public-use files. Interim weights are those sampling weights that do not include the final standard calibration adjustment for age-sex-race/ethnicity-education-MSA status-Census division raking to population control totals.

## VII. Variance Estimation

In a data collection, estimates based on different samples will vary and can differ from the true population values. The estimated difference between the true target population value and the estimate from a random sample is the sampling error. Sampling error cannot be directly calculated because the true target population value is unknown. Rather, sampling error is estimated and expressed as a standard error (SE), the average degree to which estimates based on random samples differ from each other and the true target population value due to sampling. This measure is incorporated in common statistical methods such as significance testing and estimating confidence intervals.

Because of the complex nature of the NHIS sampling design (specifically, the use of stratified cluster sampling), key nesting variables were created to capture explicit stratification and to identify clustering for a more accurate estimation of the sampling error.

> **For both the Sample Adult and the Sample Child files, the stratum and primary sampling unit (PSU) variable names are PSTRAT and PPSU.**

PSTRAT and PPSU are simplified versions of the true NHIS sample design variables created for the public-use files in order to protect the identity of survey respondents. The strata identifier is not directly related to state or density strata. When using the publicly available data files for estimation purposes, strata and PSU identifiers provided by NCHS are required to properly estimate variances. The use of these publicly available variance estimation variables may provide slightly different standard errors than the use of the confidential variance estimation variables used by analysts at NCHS. Data users who want access to the confidential variance estimation variables used by analysts at NCHS may apply to the NCHS Research Data Center (RDC): https://www.cdc.gov/rdc/.

Analysts should be aware that the use of standard statistical procedures that are based on the assumption that data are generated via simple random sampling (SRS), instead of a complex sample design, generally will produce incorrect estimates of variances and standard errors when used to analyze data from the NHIS. Analysts who apply SRS techniques to NHIS data generally will produce standard error estimates that are, on average, too small, and are likely to produce results that are subject to excessive Type I error.

### Degrees of Freedom

The number of degrees of freedom is used to determine the t-statistic, its associated percentage points, p-values, standard error, and confidence intervals. 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 at least two PSUs per stratum and when the variance components by stratum are

roughly the same magnitude. This rule of thumb is not directly applicable to the NHIS design. The applicability of this rule of thumb depends upon the variable of interest and its interaction with the design structure (for additional information, see Chapter 5 of Korn and Graubard, 1999). 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 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 address clusters, 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.

## VIII. Editing the Data During and After the Interview

### Edits to Protect Confidentiality

NCHS (including its contractors and agents) collects personally identifiable NHIS and other survey data under a pledge of confidentiality and a promise that the data will be used only for statistical purposes. Section 308d of the Public Health Service Act and Section 302 of the Confidential Information Protection and Statistical Efficiency Act (CIPSEA) require that confidentiality be maintained without exception. Violations of CIPSEA are a class E felony, punishable by imprisonment for not more than 5 years, a fine of not more than $250,000, or both. Strict procedures in survey operations and data dissemination are used by NCHS, its data collection contractors, and other agents to prevent disclosure of survey subjects' identities.

The risk of inadvertent disclosure of confidential information regarding individual respondents is higher when there exists a publicly released data set having detailed geography variables and a detailed and extensive set of survey observations. For this reason, the NHIS does not publicly release state identifiers and some other geographic variables, and the original design strata and primary sampling units (PSUs) are masked when the data are publicly released. NHIS data sets may also be coarsened by suppressing survey variables, collapsing multiple variables into one, and collapsing response categories. In addition, statistical noise at both the variable level and record level may occasionally be added to protect confidentiality.

Notes fields in the Codebook report may include information about edits and data suppression that were done to protect the confidentiality of NHIS participants. However, one important edit is worth noting here because it applies to multiple variables across the survey. To protect confidentiality among the oldest adults, all age variables were top-coded to "85 years and older" (85+). For example, survey questions related to age at diagnosis for cancer (i.e. LUNGAGE_A) and diabetes (DIBAGE_A) ("How old were you when you were diagnosed [with this condition]?") are top-coded to 85+ years. The recode DIFYRSTC_A ("Years since first diagnosed with diabetes") is also top-coded to 85+ years to ensure confidentiality.

To further protect confidentiality, detailed information for some variables are not available on the NHIS public-use data files. For a list of questions not available on the public-use file, see the annual restricted-use codebook available on the data release webpage, and the Appendix in this document.

Analysts interested in working with data that were suppressed or edited to protect confidentiality may apply to access selected unmodified data files through the NCHS RDC. The RDC is a data enclave established to provide a mechanism whereby researchers can access detailed data files in a secure environment without jeopardizing the confidentiality of survey participants. Information about RDC access options and application procedures is available at: https://www.cdc.gov/rdc/.

### *Edits for Followback Sample*

To mitigate disclosure risks associated with differences in response from repeated measures among the same Sample Adults, the 2020 responses for selected variables in the public-use file were overwritten with the responses obtained in 2019. The 2020 NHIS variables that were overwritten with the 2019 values for followback Sample Adults are listed in Table 5. The actual 2020 responses for these variables are available through the RDC under the same variable name with the suffix "_20." Remaining repeated measures were not edited for consistency between 2019 and 2020. Measurement error may have occurred at either data collection period.

**Table 5. List of variables overwritten with the 2019 responses among Followback Sample Adults, by File and section**

| File | Section | Variables |
|---|---|---|
| Paradata | FLG | ONEFAM_FLG |
| Sample Adult | FLG | HHRESPSA_FLG |
| Sample Adult | GEN | HHSTAT_A |
| Sample Adult | FAM | MLTFAMFLG_A |
| Sample Adult | HHC | AFNOW, HISP_A, HISDETP_A, HISPALLP_A, RACEALLP_A, SEX_A |
| Sample Adult | BMI | HEIGHTTC_A |
| Sample Adult | MAR* | PARSTAT_A, SPOUSESEX_A, PRTNRSEX_A, PRTNREDUC_A, SPOUSEDUC_A, PRTNRAGETC_A, SPOUSAGETC_A, SASPPHISP_A, SASPPRACE_A |
| Sample Adult | NAT | NATUSBORN_A, CITZNSTP_A, YRSINUS_A |
| Sample Adult | ORN | ORIENT_A |

*** Only applicable to when the Sample Adult's spouse was listed in the household roster on both survey years, and when a person was listed in the household roster as a partner to the Sample Adult in 2019 and as a spouse in 2020. For these cases, the age of the partner or spouse was updated to reflect the time lapse between interviews.**

## Family-Level Replicate

In the field, the interviewer can conduct either the Sample Adult or Sample Child interview first in households where both eligible adults and children reside. In instances where the Sample Adult and the Sample Child belong to the same family, the instrument is optimized to only ask family level questions in the first interview. This helps to minimize respondent burden by eliminating repetition for family level questions, such as family income and food security. If, however, the respondent of the first interview refuses or doesn't know the answer to a significant number of questions within a family-level section, that section is repeated in the second interview when the respondent of the second interview is not the same individual.

The family level data collected are then replicated (i.e., copied) to the other interview to a replicate variable of the same name (but a different suffix) in a post-processing step. For example, if the adult interview preceded the child interview and they are in the same family, the question about whether anyone in the family had problems paying medical bills is collected in the adult variable PAYBLL12M_A and replicated to the child variable PAYBLL12M_C. The Questionnaire report identifies a variable as being replicated in the "Replicate to:" field. Searching the document for the string "Replicate" will identify the variables that underwent replication.

When the Sample Adult and the Sample Child are in different families within the household, both the Sample Adult and the Sample Child respondent will be asked family level questions about their respective families. In households where there are no children or there are no eligible adults (e.g., all active Armed Forces), there is no replication involved.

Annual core sections of the questionnaire with instrument optimizations and replicated variables include Family Income (INC), Family Employment (FEM), Difficulty Paying for Health Care (PAY), Food-Related Programs (FOO), Housing (HOU), and Telephone Use (TEL). They can also be found in some sponsored sections of the questionnaire such as Food Security (FDS) and Food-Related Programs (FOO).

Replicate measures are used in analyses the same way as any other measure available in the Sample or Sample Child files. Analyses of replicate measures can be interpreted as an estimate of Sample Adults/Sample Children/persons who are in a family meeting a specific outcome or characteristic (e.g., percentage of persons aged 0–64 years who are in a family that is having problems paying medical bills).

## Hard and Soft Edits

To help prevent both interviewer data entry error and respondent error, range values and consistency checks may be programmed into the CAPI system. During the interview, if an interviewer enters an out-of-range value (such as 180 years instead of 18 for age), an error message instructs the interviewer to enter a new value. Such an interruption of the interview is called a “hard edit” if the interview cannot continue without an acceptable response being entered, and a “soft edit” if the interview may continue with or without a new response being entered. Soft edits may apply to questions for which the response entered is plausible (such as an extreme height value).

Even with such checks built into the CAPI system, data cleaning (data “editing”) is still necessary. The first step in the data cleaning process is verification of the valid number of cases in the data file and the review of frequencies for reasonableness. Each variable is examined to determine if its values are within its range of permissible values. Values not in that range are verified as missing if they are not in the universe due to legitimate skip patterns in the questionnaire or set to the special value of “not ascertained” if there was a break-off in the interview.

## Question-Specific Replication

An optimization edit is an edit that fills-in values for variables that were skipped in the instrument because the information could be inferred from the Sample Adult or Sample Child interview, whichever went first. For example, the marital status of the Sample Adult would be known if the Sample Child interview preceded the Sample Adult interview, if the Sample Adult and Sample Child were in the same family, and if the Sample Adult was also a parent of the Sample Child. Select questions in health insurance relating to detailed characteristics of shared private plans between the Sample Child and Sample Adult in the same family were also filled-in from responses of the interview that came first.

## Recode into Different Variable

Recodes have been created for select questions to make the data more analytically useful. One example of this is a recode that converts a single variable allowing selection of as many answers as are applicable into a series of variables (one for each possible response) with yes/no or mentioned/not mentioned responses. Other recodes have been created to summarize information obtained from multiple questions available to the public (e.g. summary scores of validated scales), or to combine information from which some information may not be publicly available (e.g. multiple race categories).

Data users are recommended to review the description of 'Major Recodes' for the topic of interest in this document, and the codebook documentation for additional recode information.

# Orientation to How to Use NHIS data

## I. Survey Data Files and Documentation

All datasets and associated documentation for 2020 are available on the NHIS website, https://www.cdc.gov/nchs/nhis/2020nhis.htm

Documents in Portable Data Format (PDF) describing NHIS methods, survey implementation materials and other background information are included under the tabs "Using the NHIS" and "Survey Implementation Materials."

The following documents are included in the tab "**Using the NHIS**:"

**Survey Description document (PDF):** A description of NHIS methods, year-specific response rates and content, and other useful resources for NHIS data users.

**Weighting procedures for the 2020 NHIS (PDF):** A description of year-specific procedures for creating weights to account for sampling probabilities and nonresponse.

**Imputed income technical document (PDF):** A description of the methodology for creating the 2020 NHIS imputed income variables.

**Paradata Survey Description document (PDF):** A year-specific description of the interview process information collected from sampled households.

**Notice for data users (PDF):** A year-specific log documenting data releases and other file updates.

**File record length and size summary (PDF):** A year-specific list summarizing the number of records, file size, and record length for each of the ASCII data files released.

**Checksum (PDF):** A list of year-specific reference values for each ASCII and CSV data file released to allow data users to verify the integrity of downloaded files.

**Supplemental Industry and Occupation Tables (PDF):** List of the 4-digit U.S. Census Bureau Industry and Occupation codes corresponding to the 2020–2021 NHIS Employment and Occupation data.

The following documents are included in the tab "**Survey Implementation Materials:"**

**Survey Questionnaire - English (PDF):** Year-specific NHIS questions fielded.

**Survey Questionnaire - Spanish (PDF):** Spanish version of the year-specific NHIS questions fielded.

**Field Representative Manual (PDF):** The manual on Computer-Assisted Personal Interview (CAPI) for NHIS interviewers.

**NHIS Instrument Flowchart (PDF):** A graphical view of the questionnaire content.

**NHIS Sponsored Content (PDF):** A year-specific list of sponsoring agencies and associated sponsored questions in NHIS.

**Advance Letter (PDF):** A letter that explains the NHIS mailed to sampled households prior to interviewer contact and provided to survey respondent at the time of the interviewers' visit. Separate Advance Letters were sent for those in the 2020 sample and in the Followback sample.

## Survey Questionnaire

The 2020 survey questionnaire (PDF) lists the questions in the survey and descriptive information about them. The information in the document is organized in two panels: a hierarchical bookmarks panel on the left for navigation, and a main panel on the right for displaying detailed content. The bookmarks themselves are organized as:

a) Link to a contents page that explains the document's overall structure
b) List of questions fielded only during the first two quarters of 2020
c) List of questions fielded only during the third and fourth quarters of 2020
d) Hierarchical section index that lists the sections, their descriptions, the content type (Annual Core, Rotating Core, Sponsored Content or Emerging Content) and the page range in the PDF for each section for ease of printing
e) Hierarchical questionnaire organized by module, section and variable and appearing in the order that the questions are asked.

Selecting a bookmark for a module or a section navigates to the first variable in the module or section, respectively. When selecting a variable of interest, detailed information for that variable is displayed in the main panel. For each variable, the main panel heading has the year and title of the survey along with the section abbreviation and description. The body of the main panel starts with a header (in blue background) with the Question ID (used for ordering questions in the questionnaire), the variable name, the interview module and the content type. This is followed by the question text as it appears in the instrument. The question text may contain one or more context-sensitive fills, indicated by text with a leading caret (^) symbol. A fill is text that is conditionally generated to modify the question text to make it more suitable to the context of the interview. For example, the fill whose name is ^heshe_C will expand to "he" if the Sample Child is male, "she" if female or "they" if sex is not known. All fills in the question text appear in the fills table in order along with their description and rule-based instructions on how the fill text is generated in the instrument. For some variables, as part of the question text, there may be interviewer instructions in bolded blue text with any optional text appearing in italics and gray font. Below the fills table, there is another table with valid response categories and their descriptions, followed by the universe description, and if present, any skip instructions, hard or soft edits.

Both English and Spanish versions of the questionnaire are available on the NHIS website. The Spanish version of the questionnaire has Spanish translations for the question text, the fills and the response choices.

## NHIS Sponsored Content

The NHIS Sponsored Content (PDF) lists the sponsoring organizations and the questions that they have sponsored in the NHIS for the current year. The information in this document is organized in two panels: a bookmarks panel on the left listing the sponsoring organization names alphabetically (short form), and a main

panel on the right listing the variables and some descriptive information about them such as question ID, question text and the universe description. When content is sponsored by multiple organizations, the names of all the sponsors are shown on the bookmarks panel. Selecting an organization's bookmark takes you to the content sponsored by that organization. The document's page header lists the sponsoring organizations' full name(s).

## Data Files

Similar to 2019, the 2020 NHIS data release includes files for the annual Sample Adult, annual Sample Child, Imputed Income for the Sample Adult and Sample Child, and Paradata. In 2020, two additional data files are available for the Sample Adult: The Partial and Longitudinal data files. The partial file is for use in a cross-sectional analysis to produce estimates based on pooled 2019 and 2020 data. The longitudinal file is for use in longitudinal analyses to examine individual-level changes between 2019 and 2020 among those interviewed in 2019 and reinterviewed in 2020. The Partial data file has the household IDs and sampling weights for the 21,153 Sample Adults who were in the sample designed for and interviewed in 2020, and the Longitudinal data file has the household IDs and sampling weights for the 10,415 Sample Adults who were in the sample designed for and interviewed in 2019 and were reinterviewed in 2020. The appropriate file has to be merged with the Sample Adult file to conduct pooled or longitudinal analyses of demographic characteristics and health measures. Additional analytical guidance is provided in the next section "Analyzing 2020 NHIS."

The file names for the 2020 data release are listed in Tables 6A and 6B. Files corresponding to the 2020 NHIS have a two-digit suffix at the end that represents the survey year, e.g., 20 for 2020, or adult20. In years prior to 2019, separate files were available for household, family, and person level information due to the different survey design. Imputed income files for Sample Adult and Sample Child can be merged with their respective Sample Adult and Sample Child files to create a single dataset (see, "Merging Survey Data and Imputed Income Files" in next section). Sample Adult and Sample Child files can also be merged with Paradata. The Partial and Longitudinal Sample Adult files have to be merged with the Sample Adult file, as described in the previous paragraph.

### *Sample Adult and Sample Child files*

The 2020 Sample Adult and Sample Child files include all publicly available questionnaire variables and associated recodes, and household and family-level variables. The Codebook and Summary reports for each file describe their contents in detail.

### *Imputed Income Files*

The 2020 Imputed Income files for Sample Adult and Sample Child contain 10 imputations of family income and poverty ratio as both continuous and categorical top-coded variables. An example with sample code that demonstrates using the imputed income data file in an analysis is described in this report in the section "Merging Files" under the heading "Using Imputed Income Data Files."

Variables based on the first imputation were also added to the Sample Adult and Sample Child files for convenience of users who choose not to use multiply imputed data in their analyses. While each of the 10 imputations has been drawn from a valid distribution based on a regression model, the first imputation included

in the Sample Adult and Sample Child files may be slightly different from the other sets of imputations. Single imputation analyses result in estimated standard errors that are too small because the imputed values are treated as if they were observed. This ignores the inherent uncertainty resulting from lack of knowledge about the true (unobserved) value, but it is superior to analyses that use only cases with observed values.

Information about income measurements in NHIS and income recodes are described in this document in the sections "Family Income" and "Recodes of Family Income and Imputed Family Income." Methodology for creating the imputed income variables is described in the "Imputed Income Technical Document" available with the 2020 file releases on the NHIS website, under "Using the NHIS."

### *Sample Adult Partial and Longitudinal Files*

Both the Partial and Longitudinal files only include the unique identifier variable(s) to link them to annual files and the sampling weight to use when interested in analyzing the Partial or Longitudinal samples. For more information about the Partial and Longitudinal files, see the "Weighting" section earlier in this document, and "Analyzing the 2020 NHIS" later in this document.

### *Paradata File*

The NHIS Paradata file contains information about the interview process. The data from the Paradata file are collected as part of the NHIS interview, using computer-assisted personal interviewing (CAPI). The NHIS paradata come from a number of sources:

- The Contact History Instrument (CHI), a supplemental piece to the NHIS that collects data from the interviewer about each contact attempt. Data include strategies used for gaining participation and reasons for respondent reluctance.

- The Back section of the NHIS, where a series of questions are asked of the interviewer, including mode of interview (in-person visit vs. phone interview), and reasons for partial interviews/breakoffs.

- Date and time variables from each module of the instrument (Household, Sample Child, Sample Adult). The date and time information are collected each time a module is started and completed.

The Paradata file is on a case (household) level, where one record represents one case. Unlike the NHIS public-use Sample Adult and Sample Child data files, which contain information on fully complete and sufficiently complete interviewed cases only, the Paradata file also contains data on other types of cases, including cases that were ultimately refusals, insufficient partials, and other types of nonresponse.

The Paradata file is intended as both a stand-alone data file and one whose fully complete and sufficiently complete cases can be linked with the Sample Adult and/or Sample Child data files. For more information about the Paradata file, including linking Paradata files with other data files, see the Paradata Survey description document available with the 2020 file releases on the NHIS website, under "Using the NHIS."

## File Names

The data files are released as both a column-delimited text (ASCII) file and a comma-separated values (CSV) file. Programs that contain input statements in SAS, Stata and SPSS environments are provided to help load the ASCII files into datasets with proper data formats and labels in the respective computing environments. Tables 6A and 6B list the names of data files, programs and documentation in the 2020 NHIS data release.

## Data Documentation

Summary and Codebook PDFs provide accompanying documentation for the 2020 data files.

### *Summary (PDF)*

The summary report is a PDF document with a bookmarks panel on the left organized by module and section in questionnaire order, and a main panel that displays the variable list by section. When the section is selected in the bookmarks panel, the following information for all variables in that section is displayed in the main panel in tabular form. The lead-in header has the module name, the 3-letter section abbreviation and the section description. The table has rows with the following information:

**Question ID:** if the variable is in the questionnaire, the unique ID for that variable is displayed. For recodes, the word "Recode" is displayed, and for any that are neither (e.g., identifiers), this column is blank. Question ID may change by survey year and should not be used for data management purposes across years.

**Variable name**: the name of the variable in the data. Generally, the variable name in the questionnaire has the same variable name in the dataset.

**Source variables**: for recodes, this column lists the names of variables used to create the recode

**Description:** the variable label

**Type:** the data type for this variable, i.e., character or numeric

**Location:** the column range in the ASCII file (column numbers) where this variable is stored

**Length:** the length of the variable as a character data type

**Table 6A. Data release files names for the Sample Adult: NHIS 2020.**

| Type of file | Sample Adult Annual files | Sample Adult Imputed Income files | Sample Adult Partial files* | Sample Adult Longitudinal files |
|---|---|---|---|---|
| **Data in column-delimited ASCII format** | adult20.dat | Adultinc20.dat | Adultpart20.dat | adultlong20.dat |
| **Data in comma separated Values (CSV) format** | adult20.csv | Adultinc20.csv | Adultpart20.csv | adultlong20.csv |
| **SAS program with input statements** | adult.sas | adultinc.sas | adultpart.sas | adultlong.sas |
| **STATA program with input statements** | adult.do | adultinc.do | adultpart.do | adultlong.do |
| **SPSS program with input statements** | adult.sps | adultinc.sps | adultpart.sps | adultlong.sps |
| **Summary** | Adult-summary.pdf | Adultinc-summary.pdf | Adultpart-summary.pdf | Adultlong-summary.pdf |
| **Codebook** | Adult-codebook.pdf | Variables included in the Adult-Codebooks | Adultpart-codebook.pdf | Adultlong-codebook.pdf |

**Table 6B. Data release files names for the Sample Child Annual, Sample Child Imputed Income, and Paradata files: NHIS 2020.**

| Type of file | Sample Child Annual files | Sample Child Imputed income files | Paradata files |
|---|---|---|---|
| **Data in column-delimited ASCII format** | child20.dat | Childinc20.dat | paradata20.dat |
| **Data in comma separated Values (CSV) format** | child20.csv | Childinc20.csv | paradata20.csv |
| **SAS program with input statements** | child.sas | childinc.sas | paradata.sas |
| **STATA program with input statements** | child.do | childinc.do | paradata.do |
| **SPSS program with input statements** | child.sps | childinc.sps | paradata.sps |
| **Summary** | Child-summary.pdf | Childinc-summary.pdf | Paradata-summary.pdf |
| **Codebook** | Child-codebook.pdf | Variables included in the Child Codebooks | Paradata-codebook.pdf |

### *Codebook (PDF)*

The Codebook report combines all the detailed information for a variable with the unweighted frequencies (counts and percentages) found in the data. The Codebook report is a combination of the former variable layout

and variable frequency reports from years prior to 2019. The report has a navigational bookmarks panel on the left with expandable module and section bookmarks in questionnaire order. The main panel on the right contains the variable detail. When a variable bookmark is selected, the detailed display includes its module, section, file, data type, question text (if present), question fill information, universe and universe description, the variable description or label, question ID, keywords, and notes.

This is followed by a table that provides the unweighted frequencies and percentages for the variable. All response categories are shown in the table, including those with a zero count in the data files. For continuous variables, a range of values is provided. This allows users to see a complete list of response categories with frequencies for each variable without referring to additional documentation. In addition, the "frequency missing" label will be shown if a variable has cases that are not in the universe.

In the NHIS, the same codes are used across all files to designate "refused" (RF) and "don't know" (DK) responses: refusals are coded as 7 (with leading 9's added to the length of the field, as in 7, 97, 997, etc.), while "don't know" responses are coded as 9 (with leading 9's added to the length of the field, as in 9, 99, 999, etc.). For partially completed interviews (e.g., Sample Adult interviews where the respondent discontinued the interview before reaching the question), the responses will appear as 8's for "not ascertained," again with leading 9's added to the length of the field, as in 8, 98, 998, etc., for the remaining variables in the file. A code of 8 is also used to indicate "not ascertained" responses when the field was blank or contained an impossible code. Lastly, in some limited situations (primarily recodes), the "Refused," "Don't know," and "Not ascertained" categories may be 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). Data users are advised to read the notes in the data release documentation for further information about the variables of interest.

### *Codebook for restricted-use variables (PDF)*

This document lists the restricted-use (or inhouse) variables that are available to analysts in the RDC. It does not include any variables that are in the public data files. The format is similar to the codebook, except that no frequencies are shown.

## Variable Conventions

Variable labels are restricted to 80 characters due to limits in some programming languages. All variables have a length of 12 characters or less. Variables names in the Sample Adult file have the suffix _A, e.g., DIBEV_A, to indicate that they refer to the Sample Adult or were asked of the Sample Adult's family. Variables associated with the Sample Child will analogously have the suffix _C, e.g., DIBEV_C. Variables that do not have these suffixes are household or family level variables or identifiers, e.g., HHX.

## Definitions

The following defines some terms used in the different reports:

***Fills*:** Text that modifies the question, based on previously collected information and using conditional logic. Fills are indicated by a caret (^) symbol followed by the name of the fill, e.g., ^SCNAME.

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

***Notes:*** Additional information that analysts need to know about a variable, such as assumptions, limitations, caveats, and differences between instrument versions. Analysts are encouraged to read the notes pertaining to variables of interest. Notes may contain cross-references to other pertinent variables.

***Recode:*** A variable derived from the reordering, collapsing, or verbatim coding of another variable. Alternatively, a recode may be constructed from two or more variables. All variables used to construct a recode are listed as a cross reference in Sources. Users will note that several standardized variables appear in the NHIS dataset. A standardized variable is a type of recode based on time unit information obtained during the interview. When respondents are asked 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 number of time units and the type of time unit. During data editing, this information is standardized into a single appropriate time unit. Some of the standardized time unit recodes may also be top-coded (i.e., the maximum reported value may be capped) for confidentiality reasons.

***Sources:*** If the variable is a recode, then all variables that were used to make that recode are listed as sources.

***Universe:*** The group of adults or children to whom a specific question applies. For example, the universes for most Sample Adult variables are adults who were age 18 or over. This universe is specified on the Codebook report as HHSTAT_A=1. Sample adults who are not eligible to answer a given question are considered to be not-in-universe. For example, Sample Adults who reported that they never had high cholesterol, e.g., CHLEV_A having a value of 2, or RF or DK the response would not be eligible for a follow-up question CHL12M_A about whether they had high cholesterol in the past 12 months. Universes for many questions are often age specific. In the redesigned NHIS, missingness in the Sample Adult or Sample Child's age is possible, and in those few cases the individuals would be ineligible for the question. Note that during rostering, when a person's age is not known, there are age-related follow-up questions to get at whether they are adults or children so the Sample Adult or Sample Child selections can be made. If the age is still not known, the interview terminates. Similarly, the sex variable (SEX_A or SEX_C) also allows for missing values, but the interview can proceed. Sex-specific questions for the Sample Adult and the Sample Child are not in universe when sex is unknown.

## II. Analyzing 2020 NHIS

**To appropriately analyze NHIS data, it is necessary to utilize weights and variance estimation variables.** This is because the NHIS uses a complex sample design involving stratification and clustering designed to represent the civilian noninstitutionalized population of the United States and not all sampled respondents respond. If data are not weighted, severely biased estimates may result, such as producing estimates that are not representative of the NHIS target population. If the correct variance estimation variables are not used, then estimates of precision, such as standard errors, will likely be smaller than they should be. This will make the data appear to be more precise and will result in more statistically significant differences between estimates and in other analyses that are subject to excessive Type I error (rejection of a true null hypothesis).

In contrast to 2019, the 2020 public-use files include three different sampling weights for the Sample Adult, and similarly to 2019, one sampling weight for the Sample Child. Tables 7A and 7B provides examples of types of research questions and the corresponding sampling weight and variance estimation variables for the analysis, and additional adjustments needed to the sampling weights.

**Table 7A. Examples of Analysis and Weighting Procedures for Sample Adults—2020 NHIS**

| Analytic Goal | Example | Weight Variable and Modifications Needed | Variance Estimation |
|---|---|---|---|
| **Produce official estimates for 2020[1]** | Percentage of adults ever told by doctor or other health professional that they had diabetes | WTFA_A | Use standard variance estimation variables PSTRAT and PPSU for 2020 |
| **Compare estimates between 2019 and 2020[2]** | Percentage of adults ever told by doctor or other health professional that they had diabetes, 2019 compared with 2020 | Use WTFA_A for both 2019 and 2020; no changes need to be made to 2020 annual data file or weights. | Use standard variance estimation variables PSTRAT and PPSU for 2019 and 2020 |
| **Produce estimates of COVID-19 content fielded in July-December 2020[1]** | Percentage of adults who delayed getting medical care because of pandemic | Create a new weight variable where the observations in quarters 1 and 2 are assigned a value of zero, and observations for quarters 3 and 4 are equal to the 2020 WTFA_A multiplied by 2. | Use standard variance estimation variables PSTRAT and PPSU for 2020 |
| **Evaluate *individual-level* changes before and during the COVID-19 pandemic among the Followback sample (comparing changes from 2019 to August–December of 2020 among the same adults)[3]** | Changes in general health status among adults before and during the pandemic: a longitudinal analysis | Use the 2020 Sample Adult Longitudinal weight, WTSA_L | Use standard variance estimation variables PSTRAT and PPSU for 2019 |

**Table 7A Continued. Examples of Analysis and Weighting Procedures for Sample Adults—2020 NHIS**

| Analytic Goal | Example | Weight Variable and Modifications Needed | Variance Estimation |
|---|---|---|---|
| **Evaluate changes between 2020 quarter 1 (January-March) and 2020 quarters 2–4 (April-December)[1]** | Changes in the percentage of adults engaging in moderate-intensity leisure time physical activities, pre-pandemic 2020 versus during 2020 pandemic. | Create a new weight variable where WTFA_A is multiplied by 4 for observations in quarter 1, and WTFA_A is multiplied by 1.33 for observations in quarters 2–4. The sum of weights for Q1 and for Q2-4 would each sum to the populations of inference. | Use standard variance estimation variables PSTRAT and PPSU for 2020 |
| **Pooling 2019 and 2020 data to increase sample size[4]** | Percentage of adults ever told by doctor or other health professional that they had diabetes, by a disability indicator | Create a new weight variable that divides by 2 the 2019 WTFA_A for 2019 observations and the 2020 Sample Adult partial weight WTSA_P for 2020 observations. | Use standard variance estimation variables PSTRAT and PPSU for 2019 and 2020 |

**Note. For estimates of the population of both children and adults, follow the instructions per Sample Child and Sample Adult files before appending files.**

**[1] Use the adult20 data file.**

**[2] Use the adult20 and the adult19 data files. See suggested code for creating the dataset using SAS or STATA under scenario 2 in "Appending and Merging 2019 and 2020 Sample Adult files. "**

**[3] Use the adult20, adultlong20 and the adult19 data files. See suggested code for creating the dataset using SAS or STATA under scenario 3 in "Appending and Merging 2019 and 2020 Sample Adult files. "**

**[4] Use the adult20, adultpart20 and the adult19 data files. See suggested code for creating the dataset using SAS or STATA under scenario 1 in "Appending and Merging 2019 and 2020 Sample Adult files. "**

**Table 7B. Examples of Analysis and Weighting Procedures for Sample Children—2020 NHIS**

| Analytic Goal | Example | Weight Variable and Modifications Needed | Variance Estimation |
|---|---|---|---|
| **Produce official estimates for 2020[1]** | Percentage of children ever told by doctor or other health professional that they had diabetes | WTFA_C | Use standard variance estimation variables PSTRAT and PPSU for 2020 |
| **Compare estimates between 2019 and 2020[2]** | Percentage of children ever told by doctor or other health professional that they had diabetes, 2019 compared with 2020 | Use WTFA_C for both 2019 and 2020 | Use standard variance estimation variables PSTRAT and PPSU for 2019 and 2020 |
| **Produce estimates of COVID-19 content fielded in July-December 2020[1]** | Percentage of children who delayed getting medical care because of pandemic | Create a new weight variable where the observations in quarters 1 and 2 are assigned a value of zero, and observations for quarters 3 and 4 are equal to the 2020 WTFA_C multiplied by 2. | Use standard variance estimation variables PSTRAT and PPSU for 2020 |
| **Evaluate changes between 2020 quarter 1 (January-March) and 2020 quarters 2–4 (April-December)[1]** | Percentage of children spending more than 2 hours a day in front of a TV, computer, cellphone or other electronic device, pre-pandemic 2020 versus during 2020 pandemic. | Create a new weight variable where WTFA_C is multiplied by 4 for observations in quarter 1, and WTFA_C is multiplied by 1.33 for observations in quarters 2–4. The sum of weights for Q1 and for Q2-4 would each sum to the populations of inference. | Use standard variance estimation variables PSTRAT and PPSU for 2020 |
| **Pooling 2019 and 2020 data to increase sample size[2]** | Percentage of children ever told by doctor or other health professional that they had diabetes, by a disability indicator | Create a new weight variable that divides by 2 the 2019 and 2020 WTFA_C | Use standard variance estimation variables PSTRAT and PPSU for 2019 and 2020 |

**Note. For estimates of the population of both children and adults, follow the instructions per Sample Child and Sample Adult files before appending files.**

**[1] Use the child20 data file.**

**[2] Use the child20 and child19 data files. Modify the suggested code for creating the dataset using SAS or STATA under scenario 2, in "Appending and Merging 2019 and 2020 Sample Adult** files **"to correspond to the Sample Child file names and variables.**

## Applying Sample Weight and Variance Estimation Variables in Analysis

Several software packages are available for analyzing complex samples. Below are examples of computer code for specifying sample weight and variance estimation variables for standard error calculation code of means, percentages and totals with the NHIS data using SUDAAN, Stata, SPSS, SAS, and R software packages for illustrative purposes.

The limited public release design information requires a mathematical simplification that the PSUs be treated as if they were sampled with replacement (WR). The simplified design structure can be specified for the file with the following statements in selected software packages.

### *Example using SUDAAN*

PROC <DESCRIPT, CROSSTAB, ...> ... DESIGN = WR;
NEST PSTRAT PPSU;
WEIGHT WTFA_A;
Note that SUDAAN requires that the input file be sorted by the variables listed on the NEST statement (i.e., PSTRAT and PPSU). Design statements for other data files should use the appropriate weight variables found on these files.

### *Example using STATA*

Stata svy
svyset [pweight=wtfa_a], strata(pstrat) psu(ppsu)
svy: mean <name of variable to be analyzed for average>
or
svy: proportion <name of variable to be analyzed for percentage/proportion>

### *Example using SPSS*

SPSS csdescriptives (for averages) or cstabulate (for percentages/proportions):
One needs first to define a “plan file” with information about the weight and variance estimation, e.g.:
CSPLAN ANALYSIS
/PLAN FILE=“< file name >“
/PLANVARS ANALYSISWEIGHT=WTFA_A
/DESIGN STRATA=PSTRAT CLUSTER=PPSU
/ESTIMATOR TYPE=WR.

and then refer to the plan file when using csdescriptives or cstabulate, e.g.:
CSDESCRIPTIVES
/PLAN FILE=“< file name >“
/SUMMARY VARIABLES =<name of variable to be analyzed>
/MEAN.
CSTABULATE
/PLAN FILE=“< file name >“

/TABLES VARIABLES =<name of variable to be analyzed>
/CELLS TABLEPCT.

### *Example using SAS*

SAS proc surveymeans (for averages) or surveyfreq (for percentages/proportions)

```
PROC SURVEYMEANS;
STRATA PSTRAT;
CLUSTER PPSU;
WEIGHT WTFA_A;
VAR <name of variable to be analyzed>;
RUN;

PROC SURVEYFREQ;
STRATA PSTRAT;
CLUSTER PPSU;
WEIGHT WTFA_A;
TABLES <name of variable to be analyzed>;
RUN;
```

### *Example using R*

R (including the "survey" add-on package)
Note that R syntax is case-sensitive.

```
# load survey package
require(survey)
# create data frame with NHIS design information, using existing data frame of NHIS data
nhissvy <- svydesign(id=~PPSU, strata=~PSTRAT,
    nest = TRUE,
    weights=~wtfa_a,
    data=< existing data frame name>)
svymean(~<name of variable to be analyzed>,design=nhissvy)
```

Note that svymean will produce proportions for "factor variables." For details, consult the R documentation.

## Appending and Merging 2019 and 2020 Sample Adult files

Examples were provided above in Table 7A that illustrated the sampling weights and variance estimates variables for various research questions, using the 2020 Sample Adult files. This section provides sample code in SAS and STATA for appending and merging Sample Adult data files for conducting data analysis. Table 8 lists the variables used in 3 scenarios and the source file.

- Scenario 1: Concatenating (pooling) 2019 and 2020 Sample Adult data, excluding the longitudinal sample (i.e., Sample Adults interviewed in 2019 and in 2020), to increase sample size

- Scenario 2: Concatenating (pooling) 2019 and 2020 Sample Adult data, including the longitudinal sample, to compare estimates between 2019 and 2020

- Scenario 3: Merging the 2019 and 2020 Sample Adult data from the **same adults** to create a longitudinal person-level record file.

**Table 8. Variables used in the examples to append and merge 2019 and 2020 Sample Adults files.**

| Variables in examples | | Sample Adult Source File | | | |
|---|---|---|---|---|---|
| **Variable name** | **Variable Description** | **adult20** | **adult19** | **adultlong20** | **adultpart20** |
| **HHX** | Randomly assigned household number unique to household | ✓ | ✓ | | |
| **HHX_2020** | Randomly assigned household number unique to household for 2020 Sample Adult file | | | ✓ | ✓ |
| **HHX_2019** | Randomly assigned household number unique to household for 2019 Sample Adult file | | | ✓ | |
| **PSTRAT** | Pseudo-stratum for public-use file variance estimation | ✓ | ✓ | | |
| **PPSU** | Pseudo-PSU for public-use file variance estimation | ✓ | ✓ | | |
| **PHSTAT_A** | Survey question: would you say your health in general is excellent, very good, good, fair or poor? | ✓ | ✓ | | |
| **WTSA_A** | Sample Adult annual weight | ✓ | ✓ | | |
| **WTSA_L** | Sample Adult longitudinal weight | | | ✓ | |
| **WTSA_P** | Sample Adult partial weight | | | | ✓ |

**Note. Data files adult20 and adult19 are the annual public-use files for the 2020 and 2019 NHIS, respectively, that contain all annual health and demographics measures. Data files adultlong20 and adultpart20 only contain the household IDs to merge to the Sample Adult annual file and the sampling weight to conduct specific analysis.**

For these examples, import the 2020 data files using input statements in SAS or STATA provided on the 2020 NHIS Data Release page. For 2019 data, import data file using input statements in SAS or STATA provided on the 2019 NHIS Data Release page.

### *Scenario #1: Concatenating (pooling) 2019 and 2020 Sample Adult data, excluding the longitudinal sample*

This example illustrates how to create a dataset that pools data from 2019 and 2020 to increase sample size and produce a cross-sectional estimate (e.g., fair or poor health status). An analyst can pool 2019 and 2020 data when interested in increasing precision of an estimate among a population that might have a small sample size with a single year of data (e.g., adults aged 85 and older, or adults with a history of cardiovascular disease). This analysis excludes the responses from the second interview of the Followback sample.

For this example, a new file called NEWADULT19_20 will include all Sample Adults in 2019 and the sample adults in the 2020 sample excluding the longitudinal sample. It will be derived from the data files adult19, adult20 and adultpart20. The adultpart20 file will be merged with the adult20 files to create a temporary 2020 dataset that will only contain the variables of interest: health status and the variance structure variables from the adult20 file, and the sampling weight from the adultpart20 file. Another temporary dataset will be created from the adult19 file that will only contain the 2019 variables for health status, variance structure and the sampling weight. The 2019 and 2020 files will be combined into a new dataset, NEWADULT19_20. It will have a new weight (NEWWT_ADJ) where the annual weight (WTFA_A) will apply to 2019 cases, and the partial weight (WTSA_P) will apply to 2020 cases. This weight will also be adjusted to account for 2 years of data (i.e., that is dividing each sample weight by the number of years that are being pooled).

#### Example using SAS

```
*Create temporary subsets of 2020 data by selecting household ID (HHX), weight, analytic variables and
variance structures (PSTRAT and PPSU);
DATA TEMPADULT20;
SET ADULT20;  *2020 Sample Adult file;
KEEP HHX WTFA_A PSTRAT PPSU PHSTAT_A NHHX;
NHHX=HHX; *Rename HHX to NHHX to match with household ID in 2020 Sample Adult partial file;
RUN;

DATA TEMPPART20;
SET ADULTPART20; *2020 Sample Adult partial file;
KEEP HHX_2020 WTSA_P NHHX;
NHHX=HHX_2020; *Rename HHX_2020 to NHHX to match with household ID in 2020 Sample Adult file;
RUN;

*Sort each temporary dataset by the merge variable;
PROC SORT DATA=TEMPADULT20;
BY NHHX;
PROC SORT DATA=TEMPPART20;
BY NHHX;
RUN;
```

```
*Merge the two temporary 2020 Sample Adult files;
DATA NEWADULT20;
MERGE TEMPADULT20 TEMPPART20;
BY NHHX;
IF WTSA_P > 0; *Keep records with a value in the partial weight;
NEWWT= WTSA_P; *Rename WTSA_P to NEWWT to match the variable name for sampling weight when combining files;
RUN;


*Create a temporary subset of 2019 data by selecting household ID (HHX), weight, analytic variables, and variance structures (PSTRAT and PPSU);

DATA NEWADULT19;
SET ADULT19;
KEEP HHX WTFA_A PSTRAT PPSU PHSTAT_A NHHX NEWWT;
*Rename HHX to NHHX to match the new variable name for household ID in the temporary2020 Sample Adult file, and rename WTFA_A to NEWWT to match the variable name for sampling weight when combining files;
NHHX=HHX;
NEWWT=WTFA_A;
RUN;

*Append temporary 2019 and 2020 datasets;
DATA NEWADULT19_20;
SET NEWADULT19 NEWADULT20;
KEEP PSTRAT PPSU PHSTAT_A NHHX NEWWT_ADJ;
NEWWT_ADJ=NEWWT/2; *Divide the new weight by 2 for the two years of data being combined. Otherwise, weighted estimates of totals will be higher than the estimated total U.S. civilian noninstitutionalized population;
RUN;
```

## Example using Stata

```
*Create temporary subsets of 2020 data by selecting household ID (HHX), weight, analytic variables and variance structures (pstrat and ppsu);
*Adult20 - 2020 Sample Adult file;
use adult20
keep hhx wtfa_a pstrat ppsu phstat_a
*Rename hhx to nhhx to match with household ID in 2020 Sample Adult partial file;
gen nhhx=""
replace nhhx=hhx
save tempadult20

*Adultpart20 - 2020 Sample Adult partial file;
use adultpart20
*Rename hhx_2020 to nhhx to match with household ID in 2020 Sample Adult file;
gen nhhx=""
replace nhhx=hhx_2020
keep hhx _2020 wtsa_p nhhx
```

```
save temppart20

*Sort each temporary dataset by the merge variable;
use tempadult20
sort nhhx
save tempadult20, replace

use temppart20
sort nhhx
save temppart20, replace

*Merge the two temporary 2020 Sample Adult files;
use tempadult20
merge 1:1 nhhx using temppart20
*Keep records with a value in the partial weight;
keep if wtsa_p != .
*Rename wtsa_p to newwt to match the variable name for sampling weight when combining files;
gen newwt=.
replace newwt=wtsa_p
save newadult20

*Create a temporary subset of 2019 data by selecting household ID (HHX), weight, analytic variables, and
variance structures (pstrat and ppsu);
use adult19
keep hhx wtfa_a pstrat ppsu phstat_A
*Rename hhx to nhhx to match the new variable name for household ID in the temporary 2020 Sample Adult
*file;
gen nhhx=""
replace nhhx=hhx

*Rename wtfa_a to newwt to match the variable name for sampling weight when combining files;
gen newwt=.
replace newwt=wtfa_a
drop wtfa_a hhx
save newadult19

*Append temporary 2019 and 2020 datasets;
append using newadult20
keep pstrat ppsu phstat_a nhhx newwt
*Divide the new weight by 2 for the two years of data being combined. Otherwise, weighted estimates of
totals
*will be higher than the estimated total U.S. civilian noninstitutionalized population;
gen newwt_adj=.
replace newwt_adj=newwt/2
save newadult19_20
```

*Scenario #2: Concatenating (pooling) 2019 and 2020 Sample Adult data, including the Followback sample*

For this example, one is interested in comparing estimates from 2019 and 2020 for a measure (e.g., fair or poor health status) by combining the 2019 and 2020 Sample Adult files. An analyst can combine 2019 and 2020 data when interested in comparing NHIS annual estimates. The 2019 Sample Adult annual estimate is based on all Sample Adults interviewed in 2019. The 2020 Sample Adult annual estimate is based on all Sample Adults interviewed in 2020 – those in the original 2020 sample and those in the Followback sample (i.e., 2019 Sample Adults reinterviewed in 2020).

For this example, a new file called ADULT19_20 will include all Sample Adults in 2019 and 2020. It will be derived from the data files adult19 and adult20. It will first create two temporary files that keep only the variables of interest (i.e., variables corresponding to health status, sampling weight, and variance structure) from the 2019 data and the 2020 data, respectively. These two temporary files will be combined to create the dataset, ADULT19_20. A new weight (WTFA_ADJ ) will be created from the annual sampling weight, WTFA_A, from 2020 and 2019, and it will be adjusted to account for 2 years of data (i.e., that is dividing each sample weight by the number of years that are being pooled): If not adjusted for the number of pooled data years, the weighted estimates of totals will be too high for the estimated total U.S. civilian noninstitutionalized population.

## Example using SAS

```
*Create temporary subsets of 2019 and 2020 data by selecting household ID (HHX), weight, analytic variables and variance structures (PSTRAT and PPSU);
data tempadult20 ;
set adult20 ;
KEEP HHX WTFA_A PSTRAT PPSU PHSTAT_A;
run;


data tempadult19 ;
set adult19;
KEEP HHX WTFA_A PSTRAT PPSU PHSTAT_A;
run;


*Create temporary subsets of 2019 and 2020 data by selecting household ID (HHX), weight, analytic variables and variance structures (PSTRAT and PPSU);

DATA ADULT19_20;
SET tempadult19 tempadult20 ;  *2019 and 2020 Sample Adult files;
WTFA_ADJ=WTFA_A/2; *Divide the weight by 2;
RUN;
```

## Example using Stata

```
*Create temporary subsets of 2019 and 2020 data by selecting household ID (HHX), weight, analytic variables and variance structures (pstrat and ppsu);
```

```
*Adult19 - 2019 Sample Adult file;
use adult19
keep hhx wtfa_a pstrat ppsu phstat_a
save tempadult19

*Adult20 - 2020 Sample Adult file;
use adult20
keep hhx wtfa_a pstrat ppsu phstat_a
save tempadult20

append using tempadult19
*Divide the weight by 2;
gen wtfa_adj=.
replace wtfa_adj=wtfa_a/2
save adult19_20
```

*Scenario #3: Merging 2019 Sample Adults reinterviewed in 2020 to create a longitudinal person-level record file.*

For this example, one is interested in the change of a measure (e.g., fair or poor health status) among Sample Adults between their initial interview in 2019 and their follow-up interview in 2020. For this example, the longitudinal weight (WTSA_L) is used for the analysis. The sample code below will create a new file with all 2019 Sample Adults as a base, and their corresponding 2020 interview data matched by the identifier variable. Records for those who were reinterviewed in 2020 will have multiple variables that contain data from 2019 and 2020.

This example uses the adult20, adultlong20 and adult19 data files. The adult20 and adult19 have all the survey measures for the given year, while adultlong20 has the household IDs to link the adult20 and adult19 data files to each other, and the sampling weight needed to conduct longitudinal analyses. The example creates a temporary file from the adult20 file that keeps and renames variables of interest to identify them as 2020 measures. This temporary file is merged with the adultlong20 file by the 2020 household ID to create a new file (NEWADULT20L) that adds the variables for the longitudinal sampling weight and the 2019 household ID. The file NEWADULT20L will only keep cases for Sample Adults reinterviewed in 2020 only (i.e., those with a non-zero longitudinal sampling weight). A temporary file from the adult19 file is created that keeps variance structure variables and renames variables of interest to identify them as 2019 measures. The 2020 data file created (NEWADULT20L) is merged with the temporary 2019 data file by the 2019 household ID to create a new file called NEWADULT19_20.

## Example using SAS

```
*Create temporary subsets of 2020 data by selecting household ID (HHX) and analytic variable(s);
DATA TEMPADULT20;
SET ADULT20; *2020 Sample Adult file;
KEEP PHSTAT_A20 HHX_2020;
HHX_2020=HHX; *Rename HHX to HHX_2020 to match with 2020 household ID in TEMPLONG20 dataset;
PHSTAT_A20=PHSTAT_A; *Rename the 2020 analytic variables of interest to indicate they are the 2020 versions;
RUN;
```

```
DATA TEMPLONG20;
SET ADULTLONG20; *Weights provided for only longitudinal records;
KEEP HHX_2020 HHX_2019 WTSA_L;
RUN;

*Sort each temporary dataset by the merge variable (HHX_2020);
PROC SORT DATA=TEMPADULT20;
BY HHX_2020;

PROC SORT DATA=TEMPLONG20;
BY HHX_2020;
RUN;

*Merge the two temporary 2020 Sample Adult files;
DATA NEWADULT20L;
MERGE TEMPADULT20 TEMPLONG20;
BY HHX_2020;
IF WTSA_L NE .; *Keep records with a value in the longitudinal weight;
RUN;

*Create temporary 2019 data set by selecting household ID (HHX), analytic variables and variance structures
(PSTRAT and PPSU);
DATA NEWADULT19;
SET ADULT19;
KEEP PSTRAT PPSU PHSTAT_A19 HHX_2019;
HHX_2019=HHX; *Rename HHX to HHX_2019 to match with 2019 household ID in NEWADULT20L dataset;
PHSTAT_A19=PHSTAT_A; *Rename analytic variables to indicate they are the 2019 versions;
RUN;

*Sort each temporary dataset by the merge variable (HHX_2019);
PROC SORT DATA=NEWADULT20L;
BY HHX_2019;
PROC SORT DATA=NEWADULT19;
BY HHX_2019;
RUN;

*Merge data from all the 2019 Sample Adults with data from Sample Adult reinterviewed in 2020, using
household ID (HHX_2019);
DATA NEWADULT19_20;
MERGE NEWADULT19 NEWADULT20L;
BY HHX_2019;
IF WTSA_L NE .; *Keep records with a value in the longitudinal weight;
RUN;
```

## Example using Stata

```
*Create temporary subsets of 2020 data by selecting household ID (hhx) and analytic variable(s);
*Adult20 - 2020 Sample Adult file;
```

```
use adult20
*Rename HHX to HHX_2020 to match with 2020 household ID in TEMPLONG20 dataset;
gen hhx_2020=""
replace hhx_2020=hhx
*Rename the 2020 analytic variables of interest to indicate they are the 2020 versions
gen phstat_a20=.
replace phstat_a20= phstat_a
keep hhx_2020 phstat_a20
save tempadult20

use adultlong20
*Weights provided for only longitudinal records;
keep hhx_2020 hhx_2019 wtsa_l
save templong20

*Sort each temporary dataset by the merge variable (hhx_2020);
use tempadult20
sort hhx_2020
save tempadult20, replace

use templong20
sort hhx_2020
save templong20, replace

*Merge the two temporary 2020 Sample Adult files;
use tempadult20, clear
merge 1:1 hhx_2020 using templong20
*Keep records with a value in the longitudinal weight;
keep if wtsa_l != .
drop _merge
save newadult20l

*Create temporary 2019 data set by selecting household ID (hhx), analytic variables and variance structures
*(pstrat and ppsu);
use adult19
keep pstrat ppsu phstat_a hhx
*Rename hhx to hhx_2019 to match with 2019 household ID in NEWADULT20 dataset;
gen hhx_2019=""
replace hhx_2019=hhx
*Rename analytic variables to indicate they are the 2019 versions;
gen phstat_a19=.
replace phstat_a19=phstat_a
drop hhx phstat_a
save newadult19

*Sort each temporary dataset by the merge variable (hhx_2019);
use newadult20l, clear
sort hhx_2019
save newadult20l, replace
use newadult19, clear
```

```
sort hhx_2019
save newadult19, replace
*Merge data from all 2019 sample adults with data from Sample Adult reinterviewed in 2020 by 2019 household
*ID (hhx_2019);
use newadult20l, clear
merge 1:1 hhx_2019 using newadult19
*Keep records with a value in the longitudinal weight;
keep if wtsa_l != .
drop _merge
save newadult19_20
```

## Merging Survey Data and Paradata Files

Data users can merge the Paradata file with the Sample Adult file (or the Sample Child file) to explore associations between a wide range of methodological measures and survey data. To merge 2020 files, use variable HHX as the unique identifier between the two files. Sample code in SAS and STATA is provided below to illustrate merging the Sample adult file with the Paradata file.

Note that data files should be merged within the same year before combining (pooling) data files for multiple years.

### Example using SAS

```
PROC SORT DATA=ADULT20;
BY HHX;
RUN;
PROC SORT DATA=PARADATA20;
BY HHX;
RUN;

/* creates a new file with Sample Adult and Paradata variables for each household */
DATA ADULT20_PLUS_PARA;
MERGE ADULT20 PARADATA20;
BY HHX;
RUN;
```

### Example using STATA

```
cd c:\nhis2020\

use adult20
sort hhx
save adult20, replace
use paradata20
sort hhx
```

```
save paradata20, replace

merge 1:1 hhx using adult20
save adultpara20 /* creates a new file with Sample Adult and Paradata variables for each household */
```

## Merging Survey Data and Imputed Income Files

Data users can merge the Sample Adult file (or the Sample Child file) with their respective Imputed Income file to include both observed and imputed family income information and apply the imputation variable to the analyses for the appropriate calculation of standard error of the imputed variable. Variable HHX is the unique identifier between the two files.

**Table 9. Variables in the imputed income example.**

| Survey question | Original variable name | Original values | Recoded variable name | Recoded values |
|---|---|---|---|---|
| **Randomly assigned household number unique to household** | HHX | Range of unique of values | (not recoded) | (not recoded) |
| **Would you say your health in general is excellent, very good, good, fair, or poor?** | PHSTAT_A | 1. Excellent<br>2. Very good<br>3. Good<br>4. Fair<br>5. Poor<br>7. Refused<br>8. Not ascertained<br>9. Don't know | HEALTH | 1. Excellent, very good or good<br>0. Fair or poor<br>. (missing) |
| **Was the last doctor's visit a wellness visit, physical, or general purpose check-up?** | WELLNESS_A | 1. Yes<br>2. No<br>7. Refused<br>8. Not ascertained<br>9. Don't know | WELLCHK | 1. Yes<br>2. No<br>. (missing) |
| **Ratio of income to poverty threshold** | RATCAT_A | 1. 0.00 - < 0.50<br>2. 0.50 - < 0.75<br>3. 0.75 - < 1.00<br>4. 1.00 - < 1.25<br>5. 1.25 - < 1.50<br>6. 1.50 - < 1.75<br>7. 1.75 - < 2.00<br>8. 2.00 - < 2.50<br>9. 2.50 - < 3.00<br>10. 3.00 - < 3.50<br>11. 3.50 - < 4.00<br>12. 4.00 - < 4.50<br>13. 4.50 - < 5.00<br>14. >= 5.00 | (not recoded) | (not recoded) |

The following code (in SAS, SUDAAN, and STATA) is for merging the Sample Adult data file and the Sample Adult imputed income file and conducting an analytic procedure (i.e., logistic regression using survey data). The variables used in this example were recoded as illustrated in Table 9. The analytic example, using the 2020 Sample Adult data file and the Sample Adult imputed income file, will examine the effect of the variables RATCAT_A (the ratio of family income to the poverty threshold [*imputed*]), and WELLCHK (last doctor's visit was a wellness visit, recoded from WELLNESS_A) on HEALTH (having good-to-excellent health, recoded from PHSTAT_A).

### *Example using SAS*

In SAS, analysis of multiple imputed data is conducted in two stages:

1. Analysis: each of the M imputed datasets is analyzed separately using any method that would have been selected had there been a single complete dataset. This includes analytical procedure in SAS, such as PROC GLM, PROC MIXED, PROC LOGITIC, PROC FREQ, etc.
- In SAS, analysis of multiply imputed data is invoked with a "BY _IMPUTATION_" statement, to indicate that the same analysis is performed within each of the imputed datasets.
- Users need to rename the NHIS imputation number identifier IMPNUM to _IMPUTATION.

2. Pooling: analysis results from M imputed datasets obtained from step 1 are combined into one overall result. This step can be carried out using SAS PROC MIANALYZE.

Import data files into SAS. See SAS input statements provided on the 2020 NHIS Data Release page. This example uses the libname 'NHIS.'

```
/*The sample code below illustrates renaming the IMPNUM variable to _IMPUTATION_ for analyses in a new SAS dataset. */

DATA IMPINC;
SET NHIS.ADULTINC20;
RENAME IMPNUM= _IMPUTATION_; *SAS identifies imputed datasets by imputation_;
RUN;

/* Next, merge the Sample Adult file and Sample adult imputed Income file. Data files must be sorted by the common ID before they can be merged*/

PROC SORT DATA= IMPINC;
BY HHX;
RUN;

PROC SORT DATA=NHIS.ADULT20 OUT=ADULT20;
BY HHX;
RUN;

DATA NHIS20;
MERGE ADULT20 (IN=A) IMPINC; *Merging the imputed income and the main dataset;
BY HHX;
```

```
IF A;
RUN;
/* Sort the new dataset by imputation prior to analysis. Otherwise, your analyses will only show the first
category of each variable for imputed analyses */

PROC SORT DATA= NHIS20;
BY _IMPUTATION_;
RUN;

/*The survey analytic procedure (PROC SURVEYLOGISTIC) is used to account for the complex sampling design of
NHIS. */
PROC SURVEYLOGISTIC DATA=NHIS20;
  STRATUM PSTRAT;
  CLUSTER PPSU;
  WEIGHT WTFA_A;
  CLASS RATCAT_A WELLCHK (DESC);
  MODEL HEALTH(EVENT='1') = RATCAT_A WELLCHK;
  ODS OUTPUT PARAMETERESTIMATES=lgsparms ODDSRATIOS=lgsodds;
  BY _IMPUTATION_;
RUN;

/*The ODS datasets from the code above will contain a set of estimates for each imputed dataset identified by
the variable _imputation_ included in each of them.
The MIANALYZE procedure combines the results of the analyses of imputed data and generates valid statistical
inferences.*/

PROC MIANALYZE PARMS(CLASSVAR=CLASSVAL)=lgsparms;
  CLASS RATCAT_A WELLCHK;
  MODELEFFECTS RATCAT_A WELLCHK;
  ODS OUTPUT PARAMETERESTIMATES=mian_lgsparms; *Combines the results of previous analyses;
RUN;

/*The mian_lgsparms output shows parameters from the pooled imputed datasets.*/
```

### *Example using SAS-callable SUDAAN*

SUDAAN reads in separate imputed datasets. To conduct analyses in SAS-callable SUDAAN, the following steps are taken:

1. Separate the multiply imputed NHIS.ADULTINC20 SAS data set into 10 individual imputed income datasets impinc1-impinc10.
2. Merge each imputed dataset with the main NHIS data file.

Import data files into SAS. See SAS input statements provided on the 2020 NHIS Data Release page. This example uses the libname ‘NHIS.’

```
PROC SORT DATA=nhis.ADULT20; *Sorting by HHX;
```

```
BY HHX;
RUN;


/* The following macro creates 10 separate imputation datasets from the NHIS.ADULTINC20 multiply imputed
file. It then sorts them by the merge variable HHX and merges each with the NHIS.ADULT20 dataset. Ultimately
10 separate datasets are created for imputed analyses in SUDAAN */

%MACRO SEPARATE;
%DO I= 1 %TO 10; *Instructs SAS to do the procedure for 10 iterations;

DATA IMPINC&I;   *CREATING 10 SEPARATE IMPUTED DATASETS;
SET NHIS.ADULTINC20;
WHERE IMPNUM= &I;
RUN;

PROC SORT DATA= IMPINC&I; *Sorting the 10 imputed datasets by HHX;
BY HHX;
RUN;
DATA NHIS20_&I; *Creating 10 separate analytic datasets;
MERGE NHIS.ADULT20 IMPINC&I;
BY HHX;

/* SUDAAN requires analytic datasets be sorted by the design/nest variables.
These variables are PSTRAT and PPSU on the NHIS. */

PROC SORT DATA= NHIS20_&I; *SORTING THE IMPUTED DATASETS BY DESIGN VARIABLES;

BY PSTRAT PPSU;
RUN;

%END;
%MEND;
%SEPARATE;

/*In SUDAAN, the option MI_COUNT indicates use of multiple imputed datasets.
The associated numeral indicates the number of imputed datasets to be used in the analysis. Note that the data
name used after the DATA= is the name of the first imputed dataset. This dataset name ends with the number 1.
*/

PROC RLOGIST  DATA = NHIS20_1 FILETYPE=SAS DESIGN=WR MI_COUNT=10 ;
NEST PSTRAT PPSU / MISSUNIT;
WEIGHT WTFA_A;

SUBGROUP WELLCHK  ;
LEVELS      2       ;

REFLEVEL  WELLCHK=1 ;

MODEL  HEALTH= RATCAT_A WELLCHK ;
```

```
EFFECTS  WELLCHK= (2 -1)/EXP NAME="WELLCHK Yes vs No" ;

PRINT / betas=default risk=default tests=default   expcntrst=default
t_betafmt=f7.2 waldffmt=f8.2 dffmt=f10.0 orfmt=f5.2 loworfmt=f5.2
uporfmt=f5.2 exp_cntrstfmt=f13.2 low_cntrstfmt=f5.2 up_cntrstfmt=f5.2;

SETENV COLWIDTH=15 DECWIDTH=4 LABWIDTH=25 COLSPCE=1 TOPMGN=0;

RLABEL HEALTH="In good-excellent health";
RTITLE "Using LOGISTIC to Model good-excellent health";
RUN;
```

*Example using STATA*

Import data files into Stata. See the sample Stata *.do* statements provided on the 2020 NHIS Data Release page.

```
cd c:\nhis2020\
use adult20
sort hhx
save nhis20

use adultinc20
sort hhx
save impinc

use nhis20
merge 1:m hhx using "impinc"
append using "nhis20"

// Rename the NHIS imputation number identifier impnum to _mi_m

replace impnum=0 if impnum==.
save nhis20_mi, replace

//set data to mi svyset

mi import flong, m(impnum) id(hhx)

mi svyset [pweight=WTFA_A], strat(pstrat) psu(ppsu) singleunit(centered)
save nhis20_mi_dat
```

*//mi describe* will list the registration status of the variables. *mi varying* will report the varying and super-varying variables. Verify that all varying variables are registered as imputed or passive.

```
mi describe
mi varying

//logistic regression
```

```
mi estimate: svy: logistic health RATCAT_A wellchk
//odds ratios
mi estimate, or: svy: logistic health RATCAT_A wellchk
```

## Appending Sample Adult and Sample Child Files

The 2020 Sample Adult and Sample Child can be appended to one another (i.e., add observations from different persons) to facilitate the analysis of measures that are common to both adults and children. An example of the need to combine observations or concatenate the Sample Adult and Sample Child files would be if the user is interested in generating an estimate of the U.S. civilian noninstitutional population of both children and adults or any subset of age ranges that includes both children and adults (e.g., ages 0 to 64 years).

To do so, data from the Sample Adult file and the Sample Child file should have comparable measures available. Since the names of the sample adult variables end in "_A" and the names of the Sample Child variables end in "_C", comparable measures should be renamed to a common variable name. The Sample Adult and Sample Child weights should also be renamed to have the same variable name. The variance estimation variables have the same name for both the Sample Adult and Sample Child files, and no additional recoding and renaming is needed.

The following code illustrates the concatenation of the 2020 Sample Adult and Sample Child files for the purpose of generating an estimate of the U.S. civilian noninstitutional population who are uninsured, by age. The example code illustrates keeping variables of interest for the analysis and recoding them in order to generate the estimate of interest. The code does not include analytic procedures for generating the estimate. The variables used in this example are illustrated in Table 10.

**Table 10. Variables in example concatenating the Sample Adult file and the Sample Child**

| Variable description | Variable name in the Sample Adult file | Variable name in the Sample Child file | Variable name in new file |
|---|---|---|---|
| Indicates person is the sample adult; Indicates person is the Sample Child | HHSTAT_A | HHSTAT_C | HHSTAT_A and HHSTAT_C |
| Pseudo-stratum for public-use file variance estimation | PSTRAT | PSTRAT | PSTRAT |
| Pseudo-PSU for public-use file variance estimation | PPSU | PPSU | PPSU |
| Weight - Final Annual | WTFA_A | WTFA_C | WTFA_NEW |
| Coverage status as used in Health United States | NOTCOV_A | NOTCOV_C | NOTCOV |
| Age of sample adult (top coded); Age of sample child | AGEP_A | AGEP_C | AGE |

## Example using SAS

Create a new file with all Sample Adult and all Sample Child records. Keep variance and sample weights, common variables in both files and new recodes combining key variables.

```
DATA PERSON20;
SET ADULT20 CHILD20;
KEEP
PSTRAT PPSU WTFA_A WTFA_C HHSTAT_A HHSTAT_C
NOTCOV_A AGEP_A
NOTCOV_C AGEP_C
WTFA_NEW
NOTCOV
AGE;

/* recodes*/
IF HHSTAT_A='1' THEN DO;
WTFA_NEW=WTFA_A;
NOTCOV=NOTCOV_A;
AGE = AGEP_A;
END;
IF HHSTAT_C='1' THEN DO;
WTFA_NEW=WTFA_C;
NOTCOV=NOTCOV_C;
AGE = AGEP_C;
END;
RUN;
```

*Example using STATA*

Create new separate files for the sample adult and Sample Child with the variables for variance, sample weight, and common variables of interest. Combine files and recode combining key variables.

```
use child20
keep NOTCOV_C HHSTAT_C ppsu pstrat WTFA_C AGEP_C
save childvars

use adult20
keep  NOTCOV_A HHSTAT_A ppsu pstrat WTFA_A AGEP_A
save adultvars

append using childvars

//Recodes
gen notcov=.
replace notcov=1 if NOTCOV_C==1 | NOTCOV_A==1
replace notcov=2 if NOTCOV_C==2 | NOTCOV_A==2

gen age=.
replace age=AGEP_C if HHSTAT_C==1
replace age=AGEP_A if HHSTAT_A==1

gen WTFA_new=.
```

```
replace WTFA_new= WTFA_C if HHSTAT_C==1
replace WTFA_new= WTFA_A if HHSTAT_A==1
save vars_child_adult
```

## Variance Estimation for Subsetted Data Analysis

Frequently, analyses using NHIS data are restricted to specific population subgroups (e.g., persons aged 65 and older). NCHS recommends that subpopulation analyses be carried out using the full data file and the SUBPOPN statement in SUDAAN, or an equivalent procedure with another complex design variance estimation software package.

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 selected records (and list-wise deleting other records) is called subsetting the data. With a subsetted dataset that is appropriately weighted, correct point estimates (e.g., estimates of population subgroup means) can be produced. However, in general, software packages that correctly analyze complex survey data cannot compute accurate standard errors for subsetted data. When complex survey data are subsetted, often the sample design structure available to the software is incomplete; subsetting data deletes important design information needed for variance estimation.

Analyses of large NHIS subgroups usually produce reliable estimates, but analyses of small subgroups may yield unreliable estimates, as indicated by their larger variances. The analyst should pay attention to the coefficient of variation (relative standard error) 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 estimates lacking precision.

Below are examples for subsetting NHIS data using SUDAAN, Stata, SPSS, SAS, and R software packages for illustrative purposes. The following code is to subset the second category for each variable RACEALLP_A and SEX_A, which happens to be the value “2” in both cases in this example. These are Sample Adult variables for race and sex where RACEALLP_A=2 is Black/African American only and SEX_A=2 is female.

### *Example using SUDAAN*

SUDAAN has a SUBPOPN statement that allows the targeting of a subpopulation while using the full (unsubsetted) data file containing the design information for the entire sample.

#### Strategy 1 (recommended)

Use the SUBPOPN statement with the SUDAAN method described above for the full Sample Adult dataset:

```
PROC ...DESIGN = WR;
NEST PSTRAT PPSU;
WEIGHT WTFA _SA;
SUBGROUP (variable names);
LEVELS ... ;
SUBPOPN RACEALLP_A=2 & SEX_A=2 / NAME=“Analysis of African American women;”
```

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

### Strategy 2 (not recommended, except when Strategy 1 is infeasible)

Use the MISSUNIT option on the NEST statement with the method described above for subsetted data:
NEST PSTRAT PPSU / MISSUNIT;

In a WR design, when some PSUs are removed from the database through the listwise deletion of records outside the population of interest, leaving only one PSU in one or more strata, the MISSUNIT option in SUDAAN "fixes" the estimation to avoid errors due to the presence of strata with only one PSU. In the special case of a WR design with exactly two PSUs per stratum, using the MISSUNIT option with subsetted data gives the same variance estimate as using Strategy 1. However, except for this special case, there is no guarantee that the variance estimates obtained by this method are equivalent to those obtained using Strategy 1. Other calculations, such as those for design effects, degrees of freedom, standardization, etc., may need to be carried out differently.

### *Example using STATA*

Stata svy
Add SUBPOP to the SVY statement, e.g.:
svy, subpop( raceallp_a==2 & sex_a==2 ): mean <name of variable to be analyzed>

### *Example using SPSS*

SPSS csdescriptives or cstabulate
One must first define an indicator variable, e.g.:

```
DO IF (RACEALLP_A EQ 2 AND SEX_A EQ 2).
 COMPUTE SUBGRP=1.
ELSE.
 COMPUTE SUBGRP=0.
END IF.
```

And then refer to the indicator variable in csdescriptives or cstabulate, e.g.:

```
CSDESCRIPTIVES (or CSTABULATE)
/SUBPOP TABLE=SUBGRP
```

It is very important that the indicator variable be defined for all data records. Otherwise, an invalid result can occur.

### *Example using SAS*

SAS proc surveymeans or surveyfreq

One must first define an indicator variable, e.g.:
IF RACEALLP_A=2 & SEX_A=2 THEN SUBGRP=1;
ELSE SUBGRP=0;

And then refer to the indicator variable in proc surveymeans using the DOMAIN statement, e.g.:
PROC SURVEYMEANS;
DOMAIN SUBGRP;

Proc surveyfreq does not have a DOMAIN statement. Instead, include the indicator variable in the TABLES specification:
PROC SURVEYFREQ;
TABLES SUBGRP*<name of variable to be analyzed>;

This will produce tables for all values of the SUBGRP variable. As with SPSS, it is very important that the indicator variable is defined for all data records. Otherwise an invalid result can occur.

### *Example using R*

R (including the "survey" add-on package)

After applying the svydesign function to a data frame that contains the entire NHIS sample file being analyzed, specify the criteria that define the subgroup of interest in the subset function and apply the function to the R "object" created by the svydesign function to create a new R object. Note that the syntax that follows specifies the subgroup of interest without using an equality test.
# subset for raceallp_a=2 & sex_a=2 without using equal signs
subgrp <- subset(nhissvy,raceallp_a>1 & raceallp_a<3 & sex_a>1)
svymean(~<name of variable to be analyzed>,design=subgrp)

Note that users may want to recode variables such that missing values (which have numeric codes greater than 1) are not treated as real values. For example, sex>1 would include missing codes 7, 8 and 9 (don't know, refused, not ascertained respectively).

## III. Questionnaire and Codebook Section Acronyms

**Table 11. Acronym definition of sections in the questionnaire and codebook: 2020 NHIS**

| Section | Section Description |
|---|---|
| **ACC** | Access to Care |
| **ADO** | Age of Disability Onset |
| **ALC** | Alcohol Use |
| **ANX** | Anxiety |
| **AST** | Asthma |
| **BCK** | Back (Paradata) |
| **BEH** | Behavior |
| **BMI** | Current Pregnant, Height, Weight (Sample Adult) |
| **BMI** | Height and Weight (Sample Child) |
| **BSC** | Baby Pediatric Symptom Checklist |
| **CAN** | Cancer |
| **CGR** | Caregiving Received |
| **CHI** | Contact History Instrument |
| **CHL** | Cholesterol |
| **CIG** | Cigarettes and E-cigarettes |
| **CNV** | Cancer COVID |
| **COG** | Cognition |
| **COM** | Communication |
| **CON** | Other Chronic Conditions |
| **CVC** | Cardiovascular Conditions |
| **CVD** | Positive COVID Diagnosis |
| **DEP** | Depression |
| **DIB** | Diabetes |
| **DLD** | Developmental and Learning Disabilities |
| **DNC** | Dental Care |
| **DPV** | Diabetes Prevention |
| **EMP** | Employment |
| **ENV** | Perceptions of The Walking Environment |
| **FAM** | Family Composition |
| **FDS** | Food Security |
| **FEM** | Employment of Family Members |
| **FLG** | Flags |
| **FGE** | Fatigue |
| **FOO** | Food Related Programs |
| **FRT** | Front |
| **GEN** | General |
| **HEA** | Hearing |
| **HHC** | Household Composition |
| **HIS** | Health Status |

**Table 11 Continued. Acronym definition of sections in the questionnaire and codebook: 2020 NHIS**

| Section | Section Description |
|---|---|
| **HOU** | Housing |
| **HYP** | Hypertension |
| **IDN** | Identifier |
| **IMM** | Immunization (Sample Child) |
| **IMS** | Immunization (Sample Adult) |
| **INC** | Family Income |
| **INJ** | Injury |
| **INS** | Health Insurance |
| **ISN** | Immunosuppression |
| **LNK** | Linkage |
| **MAR** | Marital Status |
| **MHC** | Mental Health Care |
| **MOB** | Mobility |
| **NAT** | Nativity |
| **NHC** | Neighborhood Characteristics |
| **OPD** | Opioid Use |
| **ORN** | Sexual Orientation |
| **OTB** | Other Tobacco |
| **PAI** | Chronic Pain |
| **PAR** | Parent Demographics |
| **PAY** | Difficulty Paying for Health Care |
| **PHY** | Physical Activity |
| **PMD** | Prescription Medication |
| **PTC** | Physical and Other Therapeutic Care |
| **RCN** | Rotating Conditions |
| **REL** | Relationship of Children to Parents |
| **REP** | Repetitive Strain Injury |
| **SCH** | Schooling |
| **SCR** | Screen Time |
| **SDW** | Social Distancing at Work |
| **SLP** | Sleep |
| **SOC** | Social Functioning |
| **SOS** | Social Support |
| **SUN** | Sun Care and Protection |
| **TBI** | Concussions Lifetime |
| **TEL** | Telephone Use |
| **UCF** | Unit Control File |
| **UPP** | Selfcare And Upper Body |
| **UTZ** | Utilization |
| **VET** | Veterans Status |
| **VIS** | Vision |
| **WLK** | Walking |

# Sample Adult's Health

## I. Health Status and Conditions

### Annual Core

Several sections throughout the Sample Adult module measure the health of U.S. adults. Sample Adults were asked to self-report their height and weight, self-perceived health status, current pregnancy status for females aged 18–49 years, and whether a doctor or other health care professional had told them that they had series of selected conditions. Estimates derived from questions that ask about specific health conditions diagnosed by a doctor or health care professional may underestimate the true burden of these conditions in the population due to the undiagnosed status of the condition during its detectable pre-clinical and clinical phase and from reporting bias. For a list of health conditions measured in the annual core, by questionnaire section and reference periods of its respective questions, see Table 5. Sample Adults were also asked about the intake of medication to treat diabetes, hypertension and high cholesterol, type of diabetes, and visits to an emergency room due to asthma, if ever diagnosed with these respective conditions. Age of diagnosis was collected from sample adults ever diagnosed with diabetes and cancers.

**Table 12. Annual core content measures of health conditions about the sample adult, by questionnaire section and reference periods.**

| Topic | Section | Reference period in available questions |
|---|---|---|
| **Angina pectoris** | CVC | Ever |
| **Anxiety disorder** | CON | Ever |
| **Arthritis, rheumatoid arthritis, gout, lupus, or fibromyalgia** | CON | Ever |
| **Asthma** | AST | Ever; Past 12 months; Current |
| **Cancer and cancer kind** | CAN | Ever |
| **Chronic Obstructive Pulmonary Disease** | CON | Ever |
| **Coronary heart disease** | CVC | Ever |
| **Dementia, including Alzheimer's disease** | CON | Ever |
| **Depression** | CON | Ever |
| **Diabetes** | DIB | Ever |
| **Gestational diabetes** | DIB | Ever |
| **Health status** | HIS | Current |
| **Height and weight** | BMI | Current; If pregnant, before pregnancy |
| **Hyperlipidemia** | CHL | Ever; Past 12 months |
| **Hypertension** | HYP | Ever; Past 12 months |
| **Myocardial infarction** | CVC | Ever |
| **Pre-diabetes** | DIB | Ever |
| **Pregnancy status** | BMI | Current |
| **Stroke** | CVC | Ever |

## Emerging Content

Starting in July of 2020, information about the diagnosis of additional chronic conditions, not part of the annual core, were included as emerging content in the RCN section of the Sample Adult module in response to the coronavirus disease 2019 (COVID-19) pandemic. These questions, scheduled to field in 2021 and rotate every three years thereafter, asked whether a doctor or other health care professional had ever told the Sample Adult that they had:

- weak or failing kidneys
- hepatitis
- cirrhosis or any other kind of long-term liver condition

Adults with kidney and liver disease are associated with experiencing severe COVID-19 (CDC, 2021).

Also, in response to the COVID-19 pandemic, two questions that asked Sample Adults about their immunosuppression status began fielding in July of 2020 in the ISN section of the Sample Adult module as emerging content. Adults with an immunocompromised state are more likely to get severely ill from COVID-19 (CDC, 2021). Sample Adults were asked whether a doctor or other health professional had told them that:

- their prescription medication or any medical treatments in the past 12 months would weaken the immune system
- they currently have a condition that weakens the immune system

## Sponsored Content

NCCDPHP and NIDDK sponsored three questions in the Sample Adult DIB section on insulin use. Sample Adults who reported having been told by a doctor or health professional that they had diabetes and are now taking insulin were asked how long after diagnosis they began taking insulin, whether it was discontinued for more than 6 months after initiating it and whether this occurred during the first year of diabetes diagnosis.

NCCDPHP also sponsored two additional questions in the Sample Adult DIB section that asked Sample Adults about history of diabetes among blood relatives and the last time they had been tested for diabetes by a doctor or health professional.

NHLBI, NIOSH and NCEH sponsored five questions in the Sample Adult AST section to collect additional information from adults with current asthma (i.e. those who reported still having asthma or having had an asthma attack in the past 12 months). Sample Adults with current asthma were asked whether a doctor or other health professional had ever told them that their asthma was caused or that symptoms were made worse by any job held. Sample Adults with current asthma were also asked whether in the past 12 months they had been hospitalized due to asthma, the number of days that they were unable to work or get work done around house because of asthma, whether in the past three months they had used a prescription for quick relief from asthma symptoms or attack, and the frequency in which they now take a preventive asthma medication.

## Major Recodes

**Age of diabetes diagnosis.** The age when first told by a doctor or health professional that the sample adult had diabetes is top-coded at age 85.

**Age of cancer diagnosis.** The age when first told by a doctor or health professional that the sample adult had a specific kind of cancer is available for 27 of the 29 different kinds of cancers and 'other' kind of cancer collected in NHIS. To protect confidentiality, sample adults mentioning kidney or testicular cancer were suppressed along with the age of diagnosis for these specific cancers. The age of cancer diagnosis for those mentioning kidney and testicular cancer are included in the recode for age of diagnosis for 'other' kind of cancer. The age of cancer diagnosis was also calculated for combined cancer types colorectal (which combines colon and rectal cancer) and for head and neck cancers (which combines larynx-tracheal, mouth/tongue/lip, and throat (pharyngeal) cancers). The youngest age provided for the respective cancer type was assigned for sample adults with combined cancers, those who identified the same kind of cancer as the second or third kind of cancer, or mentioned 'other kind of cancer' more than once. Sample Adults who reported 'don't know' or 'refused' when asked about the type of cancer but provided an age of diagnoses for the unidentified cancer are included in the variable for age of cancer diagnosis for 'other kind of cancer.' Variables for age of cancer diagnosis are top-coded at age 85 for all cancers, and bottom-coded at age 18 for cancers of the breast, cervix, prostrate, and skin (nonmelanoma, melanoma and unknown type).

**Body Mass Index (BMI).** A categorical measure of BMI was created using unrestricted height and weight values which contain the greater range of height and weight values than are available on the public-use file. BMI was calculated using the formula: BMI = kilograms /meters$^2$ where 1 kilogram = 2.20462 pounds and 1 meter = 39.37008 inches. The categorical measure of BMI was classified as follows: underweight is BMI< 18.5; healthy weight is BMI 18.5 to <25; overweight is BMI > = 25 to <30; and obese is BMI > = 30. Sample Adults who answered don't know or refused for height or weight, reported values for either height or weight that were outside the limits for public data release, or for whom height or weight values for public release were set to 96 and 996 due to missing sex information were coded as 99 in the categorical BMI measure.

**Cancer types.** Sample Adults could name up to three kinds of cancer. Twenty-nine kinds of cancer could be identified in NHIS, with the option for 'other' not listed. Responses from the up to three kinds of cancers were recoded during editing into "mentioned"/ "not mentioned" variables for each cancer type. Due to confidentiality concerns, recodes that identified whether kidney cancer or testicular cancer were mentioned were suppressed, and sample adults reporting these cancers were included in the recode 'other cancer type' mentioned. Recodes were also created that combine specific kinds of cancers available in the public-use file. Sample Adults reporting colon or rectal cancer were combined into a separate variable indicating whether colorectal cancer was "mentioned"/ "not mentioned." Similarly, Sample Adults reporting larynx-tracheal, mouth/tongue/lip, or throat (pharyngeal) cancer were recoded into a separate variable indicating whether a head and neck cancer was mentioned/not mentioned. Sample Adults who reported having had cancer but reported 'don't know' or 'refused' when asked about the type of cancer are recoded as "don't know" or "refused" in these recodes, respectively. Respondents who reported a combination of "don't know" and "refused" to type of cancers are recoded as "don't know" in these recodes.

**Height and Weight.** Sample Adults had the option to report height and weight using the U.S. customary system (pounds: feet and inches) or the metric system (kilograms: meters and centimeters). Metric responses on height and weight were converted into the U.S. Customary system using the following conversion scale: 1 meter=39.37008 inches and 1 kilogram=2.20462 pounds (lbs.). The public-use height variable reflects total height in inches (e.g., 65" is 5' 5"), with height ranges 63–76 inches for men and 59-70 inches for women. The

public-use weight variable reflects total pounds rounded to whole integers with weight ranges 126–299 lbs. for men and 100-274 lbs. for women. Pregnant women aged 18–49 were asked to report weight before pregnancy. Sample Adults who reported values outside the public-use limits for either height or weight had data for both variables recoded to "96" or "996" ("Not available") on the public-use data file to protect the confidentiality of those who might be identifiable by their unusual physical characteristics. In addition, due to the sex-specific height and weight limits for public data release, all sample adults for whom sex was answered as don't know or refused were also coded as 96 for height and 996 for weight. Don't know and refused responses to either height or weight were retained in the height and weight public-use recodes.

**Missed workdays due to asthma**. The number of days that sample adults with current asthma was unable to work or get work done around the house in the past 12 months because of their asthma was top-coded at 30 or more days.

**Number of cancers.** A summary recode was created that indicates the number of kinds of cancer mentioned by the Sample Adult. Sample Adults who were never told that they had cancer were assigned the value 0. The number of kinds of cancers were derived from responses to the type of cancer told to have and whether they had a second, third and other (additional) types of cancer (assigned values 1–4, respectively, where 4 indicates four or more). This recode reflects the number of cancers mentioned even when the same kind of cancer was mentioned more than once.

**Years since diabetes diagnosis.** This recode is the calculation of the sample adult's current age (in years) minus the age (in years) when first told to have diabetes. The highest number of years since diabetes diagnosis available in the public data release is 85 years, and years since diagnosis for sample adults aged 85 or older is collapsed into one or more years and coded 96.

## II. Functioning and Disability

### Annual Core

#### *Functioning and Disability*

The questions on functioning and disability found in sections VIS, HEA, MOB, COM, COG, UPP, ADO, ANX, DEP, PAI, and FGE of the sample adult module are part of sets of international standard measures developed, tested and endorsed by the Washington Group on Disability Statistics (WG). The WG is a city group established in 2001 under the United Nations Statistical Commission to address the need for population-based measures of disability by promoting and coordinating international cooperation in the area of health statistics focusing on disability data collection tools suitable for censuses and national surveys. The major objective is to provide necessary information on disability that is comparable throughout the world by identifying individuals with functional limitations in basic actions, regardless of nationality or culture. The questions reflect advances in the conceptualization of disability and use the World Health Organization's International Classification of Functioning, Disability, and Health (ICF) as a conceptual framework. The intended use of these questions is to describe the functional status of adults and, when used with other questions on the survey, to evaluate whether adults with functional limitations have achieved similar levels of participation and inclusion as adults without functional limitations. These questions do not capture all aspects of difficulty in functioning, but rather focus on domains of functioning that are likely to identify the majority of adults at risk of participation restrictions in an unaccommodating environment.

The questions included for sample adults are from the WG Extended Set on Functioning (WG-ES). Two additional question sets developed by the WG are subsets of the WG-ES set – the WG Short Set on Functioning (WG-SS) and the WG Short Set on Functioning – Enhanced (WG-SS Enhanced), comprised of 6 and 12 questions, respectively. For a list of questions included in each set and their respective questionnaire sections, see Table 6.

**Table 13. Functional limitations measured in the Sample Adult module, by topic, section and Washington Group Set on Functioning**

| Topic | Section | WG-SS | WG-SS Enhanced | WG-ES |
|---|---|---|---|---|
| **Wear glasses or contacts** | VIS | | | x |
| **Have difficulty seeing** | VIS | x | x | x |
| **Use a hearing aid** | HEA | | | x |
| **How often use hearing aid** | HEA | | | x |
| **Have difficulty hearing** | HEA | x | x | x |
| **Difficulty walking or climbing steps** | MOB | x | x | x |
| **Use equipment or receive help for getting around** | MOB | | | x |
| **Type of equipment** | MOB | | | x |
| **Difficulty walking 100 yards** | MOB | | | x |
| **Difficulty walking a third of mile** | MOB | | | x |
| **Difficulty walking up or down 12 steps** | MOB | | | x |
| **Difficulty communicating** | COM | x | x | x |
| **Difficulty remembering or concentrating** | COG | x | x | x |
| **Difficulty remembering, concentrating, or both** | COG | | | x |
| **How often have difficulty remembering** | COG | | | x |
| **Difficulty remembering few things, a lot, everything** | COG | | | x |
| **Difficulty with self-care** | UPP | x | x | x |
| **Difficulty raising a 2-liter bottle from waist to eye level** | UPP | | x | x |
| **Difficulty using hands and fingers** | UPP | | x | x |
| **How often feel worried, nervous, or anxious** | ANX | | x | x |
| **Take prescription medication for these feelings** | ANX | | | x |
| **Level of feelings of worried, nervous, anxious** | ANX | | x | x |
| **How often feel depressed** | DEP | | x | x |
| **Take prescription medication for these feelings** | DEP | | | x |
| **Level of feelings of depressed** | DEP | | x | x |
| **How often have pain** | PAI | | | x |
| **How much pain** | PAI | | | x |
| **How often felt very tired or exhausted*** | FGE | | | x |
| **How long tired or exhausted feelings last*** | FGE | | | x |
| **Level of tiredness or exhaustion*** | FGE | | | x |

***Questions about fatigue are part of the rotating core content, rotating every two years starting in 2020.**

**NOTE: WG-SS is WG Short Set on Functioning, WG-SS Enhanced is WG Short Set on Functioning – Enhanced, and WG-ES is WG Extended Set on Functioning.**

Questions ask about the sample adults' level of difficulty (no difficulty, some difficulty, a lot of difficulty, or cannot do at all) in basic domains of functioning including seeing, hearing, mobility, communication, cognition, self-care, and upper body functioning and about the frequency and intensity of experiencing anxiety and depression, pain, and fatigue. In addition to questions about level of difficulty, several of the domains have questions to provide information on the use of accommodations. More information on the Washington Group and the question sets may be obtained by request to the WG Secretariat at WG_Secretariat@cdc.gov or found on the WG website at: http://www.washingtongroup-disability.com/.

The WG questions can be analyzed separately, by domain, or combined across domains. A disability status indicator is available to data users (See Major Recodes below) that identifies sample adults who are at greater risk than the general population for experiencing restrictions in participation because of difficulties doing certain universal, basic actions. This recode classifies sample adults with disability as those reporting "have a lot of difficulty" or "cannot do at all" for at least one of the six domains included in the WG Short Set on Functioning. Use of the functioning and disability data should be tailored to the needs of the analysis. Other disability indicators can be created from the WG Extended Set on Functioning and the WG Short Set Enhanced. Consult the WG website for guidance on the creation of these indicators. Changing the threshold for either the number of domains the respondent identifies having difficulty with or the degree of difficulty can create different identifiers that will capture different populations. For example, a recode that includes respondents who have "some difficulty" with any of the domains will capture a greater proportion of the population than a recode limited to include only those who report they "cannot do at all" to any of the domains. In this example, the functional abilities of the larger group will be much more heterogeneous than that of the smaller group. Analytic guidelines, including recommended disability identifiers, written for each of the WG questions sets may be obtained from the WG website: https://www.washingtongroup-disability.com/analysis/analysis-overview/.

A cognitive testing report is available for selected WG questions at https://wwwn.cdc.gov/QBank/Report.aspx?1216. For a report that examines differences in survey responses of disability between the set of disability questions from Short Set on Functioning (WG–SS) and set of disability questions developed for the American Community Survey, see, https://www.cdc.gov/nchs/data/nhsr/nhsr161-508.pdf.

### *Participation*

The SOC section in the Sample Adult module contains three questions about difficulty with participation in everyday life activities that are not part of the WG questions on functioning. These questions directly ask about participation by determining whether because of a physical, mental, or emotional condition the sample adult is limited in the kind or amount of work the respondent can perform, and the degree of difficulty the sample adult has doing errands alone, or participating in social activities. Analysts can analyze each question separately or can combine the questions into an indicator to meet the needs of their analysis.

### Rotating Content

Starting in 2020, questions on fatigue are included in the FGE section every two years. These questions ask Sample Adults how often they feel very tired or exhausted in the past three months, how long it lasted, and the level of tiredness they felt. These questions can also be used as part of the fatigue domain in the WG extended set of disability identifiers and can be analyzed as part of the WG Extended Set on Functioning (see Table 13).

### Sponsored Content

The Administration for Community Living (ACL) sponsored a sample adult question in the ADO section. Sample Adults reporting having "a lot of difficulty" or "cannot do at all" to the functioning questions asking about difficulty walking or climbing stairs, communicating, remembering or concentrating, self-care, or doing errands alone were then asked whether the difficulty began before age 22. The purpose of the question was to assist analysts who wish to identify adults with intellectual or developmental disability.

### Major Recodes

**Disability status composite indicator, age 18 and older.** An indicator of disability status based on the WG Short Set on Functioning that identifies sample adults who are at greater risk than the general population for experiencing restrictions in participation because of difficulties doing certain universal, basic actions. This recode classifies sample adults with disability as those reporting “a lot of difficulty” or “cannot do at all” for at least one of six domains of functioning: seeing (even if wearing glasses), hearing (even if wearing hearing aids), mobility (walking or climbing stairs), communication (understanding or being understood by others), cognition (remembering or concentrating), and self-care (such as washing all over or dressing). The remaining sample adults, that is those who responded "some difficulty" or “no difficulty" to at least one domain (and did not report “a lot of difficulty” or “cannot do at all” for any of the six domains of functioning) are classified as without disability. Those responding "don't know" or "refused" to all six questions are excluded.

## III. Pain and Pain Management

### Rotating Core

Beginning in July 2020, (quarter 3) the PAI section added two questions on pain interference (how much pain impacts daily life and family members) to examine the impact of chronic pain on work and family during the COVID-19 pandemic among adults who reported experiencing pain some, most or every day. These questions were previously fielded in 2019 and are on schedule to rotate every other year.

### Sponsored Content

NCIPC sponsored two questions in the PAI section that are an extension of the work from the National Pain Strategy, an Interagency Pain Research Coordinating Committee at the National Institutes of Health (https://www.iprcc.nih.gov/national-pain-strategy-overview). These questions are part of the set of questions previously fielded in 2019 designed to develop consistent population-based estimates of chronic pain and high impact chronic pain (defined as chronic pain that frequently limits life or work activities). The questions ask about frequency of pain in the past 3 months and the amount of pain the last time they experienced pain. These questions can also be used as part of the pain domain in the WG extended set of disability identifiers and can be analyzed as part of the WG Extended Set on Functioning (see Table 13).

NCIPC also sponsored questions on pain management techniques, another extension of the National Pain Strategy, which were fielded in 2019 as emerging content. The questions ask sample adults who reported experiencing pain some days, most days, or every day in the past 3 months about their use of various techniques

to manage their pain within the past 3 months. Two new pain management techniques were added to the set in 2020 that asked about ways respondents managed their pain: the use of over-the-counter medication; and pain relievers other than opioids. One question was also modified to include Qi Gong, in addition to yoga and Tai Chi. Continuing pain management techniques questions asked about: physical therapy, rehabilitative therapy, or occupational therapy; spinal manipulation or other forms of chiropractic care; talk therapies such as cognitive-behavioral therapy (CBT); a chronic pain self-management group; massage; meditation, guided imagery, or other relaxation techniques; or other method to manage pain.

The opioid use (OPD) section, also sponsored by NCIPC, asked questions about the use of prescription opioid pain relievers. The purpose of these questions is to examine the relationship between prescription opioid use, pain, and health outcomes measured on the NHIS. Prescription opioid pain relievers refer to pain relievers prescribed by a doctor, dentist, or other health professionals containing opioids. Examples of opioid pain relievers include hydrocodone, Vicodin, Norco, Lortab, oxycodone, OxyContin, Percocet, and Percodan. The OPD questions ask sample adults who have taken prescribed medication in the past 12 months about use of any opioid pain reliever prescribed by a medical professional in the past 12 and 3 months. Additionally, they ask about prescription opioid use for short term or acute pain, use for long term or chronic pain, and frequency of use.

## IV. Health Care Access and Health Service Utilization

### Annual Core

Several sections throughout the sample adult module measure access to and use of health services, as well as affordability of care. For a list of measures on these topics asked in the annual core, by questionnaire section and reference period of its respective questions, see Table 14. Similar content is also available for the Sample Child.

**Table 14: Annual core content measures of health care access, service use, and affordability of care asked of the Sample Adult, by questionnaire section and reference periods.**

| Measure | Section | Reference period |
|---|---|---|
| **Immunizations** | | |
| **Flu vaccine** | IMS | Last 12 months, Month and Year |
| **Pneumonia vaccine** | IMS | Ever |
| **Number of pneumonia vaccines received** | IMS | Ever |
| **Medical Care** | | |
| **Saw a doctor for medical care** | UTZ | Last time interval |
| **Medical and wellness visit combined** | UTZ | --- |
| **Wellness visit** | UTZ | Last time interval |
| **Usual place to go for medical care** | UTZ | Current |
| **Kind of place for medical care** | UTZ | Current |
| **Number of urgent care visits** | UTZ | Last 12 months |
| **Number of emergency department visits** | UTZ | Last 12 months |
| **Any overnight hospitalization** | UTZ | Last 12 months |
| **Delayed medical care due to cost** | UTZ | Last 12 months |
| **Needed but did not get medical care due to cost** | UTZ | Last 12 months |

| Table 14 continued: Annual core content measures of health care access, service use, and affordability of care asked of the Sample Adult, by questionnaire section and reference periods. | | |
|---|---|---|
| **Measure** | **Section** | **Reference period** |
| **Mental Health Care** | | |
| **Took medication for emotions/mental health** | MHC | Last 12 months |
| **Received therapy or counseling** | MHC | Last 12 months; current |
| **Delayed getting therapy/counseling due to cost** | MHC | Last 12 months |
| **Needed but did not get therapy/counseling due to cost** | MHC | Last 12 months |
| **Prescription Medication** | | |
| **Took prescription medication** | PMD | Last 12 months |
| **Skipped doses to save money** | PMD | Last 12 months |
| **Took less medication to save money** | PMD | Last 12 months |
| **Delayed filling prescription to save money** | PMD | Last 12 months |
| **Needed but did not get prescription due to cost** | PMD | Last 12 months |
| **Problems Paying Medical Bills** | | |
| **Anyone in family having problems paying medical bills*** | PAY | Last 12 months |
| **Have bills unable to pay at all*** | PAY | Current |
| **Level of worry about paying medical bills if sick/accident** | PAY | Current |
| ***These are family-level replicate questions asked once per family.** | | |

## Rotating Core

For two consecutive years every three years starting in 2019, there is additional content about the use of selected health services. These questions ask sample adults about receiving dental, eye, home, and physical or other therapeutic care, and about affordability of dental care. Table 15 lists rotating core measures of health care use, and affordability, by questionnaire section and reference period of its respective questions.

| Table 15. Measures of health care access, service use, and affordability of care asked of the sample adult in the rotating core, by questionnaire section and reference periods: 2019–2020 NHIS | | |
|---|---|---|
| **Measure** | **Section** | **Reference period** |
| **Dental Care** | | |
| **Received a dental cleaning/exam** | DNC | Last time interval |
| **Delayed dental care due to cost** | DNC | Last 12 months |
| **Needed but did not get dental care due to cost** | DNC | Last 12 months |
| **Physical and Other Therapeutic/Specialist Care** | | |
| **Received eye exam from eye specialist** | PTC | Last 12 months |
| **Received physical/speech/rehabilitative/occupational therapy** | PTC | Last 12 months |
| **Received home care** | PTC | Last 12 months |

## Sponsored Content

The IMS section includes several questions sponsored by NCIRD regarding CDC recommended vaccinations and employment (paid or volunteer) in health care settings. Questions about vaccinations included additional content about flu and content about shingles and tetanus vaccines. Specifically, sample adults were asked about:

Flu vaccine (Female sample adults aged 18–49 or age unknown)
- Pregnancy status during most recent flu season
- Flu shot was received before/during/after a current or recent pregnancy

Shingles vaccine (Sample Adults aged 50 and over)
- Receipt of any shingles vaccine
- Type of shingles vaccine received (Shingrix or Zostavax)
- When each vaccine was received
- Number of Shingrix vaccines received

Tetanus vaccine (Female sample adults aged 18–49 or age unknown who had a live birth in the past 12 months)
- Receipt of a TDAP shot during pregnancy

Flu vaccination timing in relation to pregnancy status was determined as follows:
Female sample adults between 18 and 49 years old (or whose age was not known) who reported that they were currently pregnant (asked previously in the BMI section), and who had received a flu vaccine in the past 12 months, and were interviewed from January through March or from August through December were asked: "Did you get a flu vaccination before or during your current pregnancy?" Female sample adults 18–49 years (or whose age is not known) and reported that they were not currently pregnant (or pregnancy status is not known), or those who were currently pregnant and were interviewed between April through July, were asked about pregnancy status during August through March as follows: since August 1st of last year if interviewed between January through March; from August of last year through March of current year if interviewed April through July; and since August 1 of current year if interviewed August through December. Those who reported to be currently pregnant or had a recent pregnancy during August through March, and who had received a flu vaccine in the past 12 months were asked: "Earlier you said you were pregnant sometime [since August 1st, {prior year}/from August {prior year} through March {current year}/since August 1st, {current year}] Did you get a flu vaccination before, during, or after your pregnancy?"

NCIRD sponsored a question for female sample adults between 18 and 49 years old (or whose age was not known) that asked if they had a live birth in the past 12 months. NCIRD also sponsored two questions for sample adults aged 18 and over about employment in health care settings that ask whether, in their work or volunteer activities, the sample adult provides direct medical care to patients, or whether they do any work or volunteer activities in a health care facility. The purpose of these questions is to permit analysis of vaccine uptake by pregnant women and health care workers.

## Major Recodes

**Year of receipt of shingles vaccine.** Recodes were created with a lower limit of 2006 for the year of the most recent Zostavax® vaccine, and 2017 for the year of the most recent Shingrix® vaccine. Sample Adults reporting years earlier than these lower limits were assigned the value 9996.

# V. Preventive Care and Services

## Rotating Core

Rotating every other year starting in 2020 is a question on whether a doctor or other health professional has advised the Sample Adult in the past year to increase the amount of physical activity or exercise they get. In 2020, this question was moved from the PHY section to the diabetes prevention (DPV) section to go with sponsored content on whether that advice is being followed.

## Sponsored Content

The DPV section included sponsored content from NCCDPHP aimed at collecting information about diabetes prevention prevalence in the adult population. Sample Adults were asked if a doctor or other health professional advised them to reduce the amount of fat or calories in their diet, participate in a weight loss program, and whether they were now doing these recommendations, including increasing their physical activity.

NCI and NCCDPHP sponsored four questions about lung cancer screening in the LNG section. Sample Adults aged 40 and over were asked about having a computed tomography (CT) scan of their chest area and if it was done mainly to check or screen for lung cancer. The United States Preventive Services Task Force (USPSTF) recommends annual lung cancer screening with low-dose computed tomography (LDCT) in adults aged 50 to 80 years who have a 20 pack-year smoking history and currently smoke or have quit within the past 15 years https://uspreventiveservicestaskforce.org/uspstf/recommendation/lung-cancer-screening). Questions in the LNG section were fielded during quarters one and two of 2020 but were discontinued thereafter due to disruptions in access to and utilization of screening services during the COVID-19 pandemic. This is consistent with CDC guidelines to defer non-urgent care during the COVID-19 pandemic, and the American College of Chest Physician released a statement recommending both the initiation of CT scans and annual CT scans to check for lung cancer be deferred (Mazzone, et al. 2020). Answers to these questions are not included in the public-use data file. Data users interested in viewing or analyzing these data may apply for access through the RDC.

# VI. Health-Related Behaviors

## Annual Core

Sample Adults were asked about cigarette smoking and the use of electronic cigarettes in the CIG section. All adults were asked if they had smoked at least 100 cigarettes in their entire life. Those who had done so were asked whether they now smoke cigarettes every day, some days, or not at all. Every day smokers were asked about the number of cigarettes smoked every day, while someday smokers were asked the number of days that they smoked in the past 30 days and the average number of cigarettes smoked on those days. All sample adults were also asked about the use of electronic cigarettes or other electronic vaping products, even one time in their entire life, and if so, whether they now use this product every day, some days, or not at all.

## Rotating Core

Rotating every other year starting in 2020 are questions about alcohol use in the ALC section, physical activity in the PHY section, sleep in the SLP section, and smoking history in the CIG section. Table 16 lists rotating core health-related measures.

Alcohol use questions in the ALC section serve to determine the frequency and quantity of drinking and whether a doctor or health professional had advised the sample adult to stop or cut down on their drinking. Sample Adults were asked if they ever had at least 1 drink of alcohol, excluding sips and small tastes, in their entire life, with examples of types of alcoholic beverages provided. Those who had not consumed alcohol in the past year were asked whether they have had at least 12 alcoholic drinks in any one year. Those who had consumed alcohol in the past year were asked about their alcohol drinking frequency and average quantity per drinking day in the past 12 months. Heavy drinking was defined as consuming 4 or more alcoholic drinks a day for women, and 5 or more drinks for men (and for sample adults who refused to identify as male or female or answered don't know to the question on sex). Binge drinking was defined as consuming 4 or more drinks for women and 5 or more drinks for men, on one occasion—or roughly two hours. Sample Adults who on average met the criteria for heavy drinking in the past 12 months were asked about any drinking in the past 30 days and binge drinking in the past 30 days. Sample Adults who on average were not heavy drinkers were asked about any heavy drinking in the past year, and binge drinking in the past 30 days. All sample adults who drank in the past 12 months and had also seen a health professional were asked about being advised by a health professional to stop or reduce drinking.

**Table 16. Health-related behaviors asked of the Sample Adult in the rotating core, by questionnaire section and reference periods: 2020 NHIS**

| Measure (Section) | Reference period |
|---|---|
| **Alcohol Use (ALC)** | |
| **One or more drinks** | Ever, Past 12 months, in any one year, 30 days |
| **Drinking frequency** | Past 12 months |
| **Average number of drinks** | Past 12 months |
| **Heavy and binge drinking** | Past 12 months, 30 days |
| **Advised to stop** | Past 12 months |
| **Smoking History (CIG)** | |
| **Initiation age** | Since age 6 |
| **Cessation** | Past 12 months, up to 70 years |
| **Advised to stop** | Past 12 months |
| **Physical Activity (PHY)** | |
| **Moderate intensity** | Current |
| **Vigorous intensity** | Current |
| **Muscle strengthening** | Current |
| **Sleep (SLP)** | |
| **Duration** | Current |
| **Quality** | 30 days |
| **Medication** | 30 days |

Questions about smoking history in the CIG section were asked of Sample Adults who ever smoked 100 cigarettes, and include age when they first started smoking regularly, whether current smokers had stopped smoking for more than one day in the past 12 months because they were trying to quit, and time since they quit

among former smokers. Current cigarette smokers and former smokers who quit smoking in the past 12 months and had also seen a health professional in the past 12 months were asked if they had been advised by a health professional to quit smoking or prescribed medications to help them quit.

The PHY section asked sample adults about physical activity they engaged in during their leisure time, including exercise, sports, or physically active hobbies. These questions are designed to assess compliance with the 2018 Health and Human Services Physical Activity Guidelines, which recommend that adults complete at least 150 minutes to 300 minutes of moderate-intensity activity, or 75 minutes to 150 minutes of vigorous-intensity aerobic activity per week, as well as moderate or greater intensity muscle strengthening activities on two or more days a week (U.S. Department of Health and Human Services, 2018). Moderate-intensity activities cause moderate increases in breathing or heart rate while vigorous-intensity activities cause large increases in breathing or heart rate. Muscle strengthening activities include exercises such as sit-ups, push-ups, or lifting weights. Sample Adults were asked in separate questions about the frequency and duration of doing moderate and vigorous physical activities, as well as the frequency of doing strengthening activities.

Sample Adults were asked in the SLP section about their average number of hours of sleep in a 24-hour period as well as how often during the past 30 days they woke up feeling rested, had trouble falling asleep, had trouble staying asleep, and took medications to help them sleep.

## Sponsored Content

NCI and NCCDPHP sponsored two questions in the CIG section. Sample Adults, who were former smokers, were asked how many cigarettes they usually smoked per day when they smoked fairly regularly. Former cigarette smokers whose daily cigarette use varied, never smoked fairly regularly, or did not know the number of cigarettes they smoked a day were asked the average number of cigarettes they smoked daily during the longest period they smoked.

The FDA sponsored seven questions about the use of cigars, pipes and smokeless tobacco products in the OTB section. In separate questions, all sample adults were asked about whether they had ever smoked a cigar, smoked a pipe filled with tobacco, or used smokeless tobacco products. Questions included examples and descriptions of these products. Those who said “yes” to each respective tobacco product were asked whether they now use it every day, some days or not at all. Sample Adults who had ever smoked any type of cigar were also asked about the number of days they smoked cigars in the past 30 days.

For additional information about the historical context of tobacco use questions in NHIS, see https://www.cdc.gov/nchs/nhis/tobacco.htm

## Major Recodes

**Cigarette smoking status.** Sample Adults were classified in terms of their lifetime and current cigarette smoking status. The recode includes the following categories: current everyday smoker; current someday smoker; former smoker; never smoker; smoker, current status unknown; and unknown if ever smoked. Former smoker is defined as a person who has smoked at least 100 cigarettes in their entire life and currently does not smoke at all. Never smoker is a person who has never smoked any cigarettes or has smoked less than 100 cigarettes in their entire life. “Smoker, current status unknown” is defined as a person who has smoked 100 cigarettes in their entire life and the question about current smoking practices was answered as don’t know or refused, or it

was not ascertained. "Unknown if ever smoked" includes those whose response to ever having smoked at least 100 cigarettes in their entire life was answered as don't know or refused, or it was not ascertained.

**Drinking status.** Sample Adults were classified in terms of their lifetime and current alcohol drinking status. This recode follows similar categories used in prior years of the NHIS; however, some of the alcohol questions in the redesigned NHIS have been revised and are administered in a different order, and sample adults who did not indicate their sex and reported more than 7 and up to 14 drinks per week were classified as 'current unknown' because they could not be differentiated between the 'moderate' or the 'heavier' drinking categories. The drinking status categories are as follows:

- Lifetime abstainer: a person who has not had at least one alcoholic drink in his or her entire life
- Former infrequent: a person who ever had at least one alcoholic drink but never as many as 12 in any one year and none in the past year
- Former regular: a person who has had at least 12 alcoholic drinks in any one year but did not drink in the past year
- Former, unknown: a person who had at least one alcoholic drink in their lifetime, did not drink in the past year, and their response to having at least 12 alcoholic drinks in any one year was refused or don't know, or it was not ascertained
- Current infrequent: a person who has had up to 11 alcoholic drinks in the past year.
- Current light: a person who has had an average of up to 3 drinks per week in the past year.
- Current moderate: men who had more than 3 drinks per week up to 14 drinks per week in the past year, or women who had more than 3 drinks per week up to 7 drinks per week in the past year; or sex is unknown or refused and person had more than 3 drinks per week up to 7 drinks per week
- Current heavier: men who had more than 14 drinks per week on average in past year, or women who had more than 7 drinks per week in the past year; or sex is unknown or refused and person had more than 14 drinks per week on average in past year.
- Current, unknown: a person who drank more than 7 and up to 14 drinks per week and sex is unknown or refused, therefore cannot be classified as either moderate or heavier current drinker; those who drank in the past year but whose average amount was unknown, refused, not ascertained, or inconsistent due to a response of zero drinks for average amount; and those whose average alcohol consumption last year was known but the frequency was unknown, refused, or inconsistent with the time period, i.e. responses of greater than 7 days a week or greater than 31 days a month.
- Drinking status unknown includes those who had an unknown or implausible drinking frequency (> 7 days/week or >31 days/month) in the past year and whose average amount was also unknown, refused, inconsistent (zero average drinks on days drank), or not ascertained; those who refused to answer their drinking frequency in the past year or it was not ascertained and as a result, they were not asked the remaining alcohol questions; and those whose response to ever having at least 1 drink in their lifetime was refused or don't know, or it was not ascertained.

**Duration of physical activity.** Sample Adults could report their length of moderate and vigorous physical activity in either minutes or hours. A recode was created to standardize duration by converting all values reported in hours to minutes.

**Electronic cigarette use status**. Sample Adults were classified in terms of their ever and current electronic cigarette use. The recode includes the following categories: current e-cigarette user; used e-cigarette, not current user; never e-cigarette user; e-cigarette user, current status unknown; and unknown if ever used e-cigarettes. Current e-cigarette user is defined as a person who uses electronic cigarettes everyday or somedays. Not current user is defined as a person who has ever used an electronic cigarette even one time in their entire life and who currently does not use them at all. Never user is defined as a person who has never used electronic cigarette. User, current status unknown is defined as person who has used an electronic cigarette even one time in their entire life and the question about current use was answered as don't know or refused, or it was not

ascertained. Unknown if ever used electronic cigarettes includes those whose response to ever having used an electronic cigarette in their entire life was answered as don't know or refused, or it was not ascertained.

**Frequency of drinking alcohol.** Sample Adults could answer the question about frequency of drinking alcohol in days per week, per month, or per year. Two recodes were created to standardize these frequencies. In the first recode, all drinking frequencies were converted to days per week by dividing monthly values by 4.33 and dividing yearly values by 52. A value of 0 on this recode indicates less than one day a week. The second recode converted frequencies to days per year by multiplying weekly frequencies by 52 and monthly frequencies by 12.

**Frequency of physical activity.** Sample Adults could answer questions about frequency of moderate, vigorous, and strengthening physical activity in times per day, per week, per month, or per year. Those who reported physical activity frequency in times per day, per month, or per year were converted to times per week to standardize values.

**Heavy drinking.** This recode classified sample adults who drank in the past 12 months into whether they engaged in heavy drinking in the past 12 months, defined as 4 or more drinks per day among women, and 5 or more drinks among men, and among those whose sex is refused or don't know. The recode is based on responses from the questions on the average number of drinks on the days drank in the past 12 months, any heavy drinking in the past 12 months, and any binge drinking in the past 30 days. Individuals who responded yes to binge drinking in the past 30 days are classified as yes in this recode even if they did not answer yes to heavy drinking in the past 12 months.

**Meets aerobic activity guidelines.** Sample Adults were classified based on whether their physical activity met the 2018 Physical Activity Guidelines for aerobic activity (U.S. Department of Health and Human Services, 2018) and categorized as either inactive, insufficiently active, or sufficiently active. Inactive is defined as zero minutes of moderate and vigorous activity per week. Insufficiently active is defined as less than 150 minutes of total activity per week, including moderate- and vigorous-intensity activity, with each minute of vigorous activity counting as two minutes. Sufficiently active is defined as 150 minutes or more of moderate and vigorous physical activity a week.

**Meets aerobic activity or strengthening guidelines.** Sample Adults were classified based on whether their physical activity met the 2018 Physical Activity Guidelines for aerobic activity or the guideline for strengthening activity, defined as engaging in muscle strengthening physical activity at least two times a week. Individuals were categorized as meeting neither guideline (aerobic activity nor strengthening activity); meeting only the aerobic activity guideline; meeting only the strengthening activity guideline; or meeting both guidelines. Sample Adults whose activity was known on only one guideline but unknown on the other were not classified in this recode.

**Years since quitting cigarettes.** Former smokers could answer the question about time since quitting smoking in days, weeks, months, or years. Those who reported time since quitting as number of days, weeks, or months were converted to number of years, where zero years indicates less than 365 days ago, less than 52 weeks ago, or less than 12 months ago. Time intervals exceeding these values were classified into the respective number of years. Due to confidentiality concerns regarding the sample adult's age, number of years since quitting is top-coded at 70 years. The variables used for this recode are available in the public-use file, and top-coded at 70 years.

**Corrections to alcohol questions.** Recodes were created to correct an instrument error in 2020 that allowed two types of data inconsistencies in the ALC section. The original source variables and the corrected recodes are available in the public-use file. See the Sample Adult Codebook, ALC section for the variable names.

1) In quarter 1, the instrument did not include an error message to notify the field representative that the number for the time interval entered in the question about days drank per week, per month, or per year in the past 12 months was incorrect (e.g., 8 or more days per week, 32 or more days per month). Two recodes were created that assign these inconsistent answers to 6 and 996 for the time interval and number interval question, respectively.
2) In quarters 1–4, the instrument allowed the response of zero drinks to the question about number of drinks consumed on average on the days drank in the past 12 months, among sample adults who previously indicated drinking one or more days in the past 12 months. Those with the response of zero drinks were assigned the value 96 in a recode for average number of drinks. In addition, sample adults with the response zero drinks on the days drank in the past year were asked the follow-up question about whether in any one year they had consumed 12 or more drinks, used to determine former drinking status. A recode was created that assigns the inconsistent drinking pattern in the past year the value 6.

**Corrections to physical activity questions.** Recodes were created to correct reports of extreme frequency and duration for physical activity in the PHY section.

1) Frequencies of moderate, vigorous, and strengthening activity greater than four times a day, 28 times a week, and 120 times a month were considered extreme. Recodes of the original source variables were created that assign these extreme values to 5 and 9995 for the time interval and number question, respectively.
2) Reports of moderate and vigorous activity duration greater than 720 minutes or greater than 12 hours at a time were considered extreme. In addition, an instrument error in 2020 allowed for entries of more than 24 hours in duration. Recodes of the original source variables were created that assign these extreme values to 6 and 996 for the time interval and number question, respectively.

## VII. Health Promotion

### Rotating Core

Rotating every two years beginning in 2020, the walking section (WLK) collected information from Sample Adults about walking for transportation and leisure. This section provides data to generate population estimates and track progress towards national health objectives like Healthy People 2030. Estimates on walking can inform new policies or interventions to promote walking activity, especially among vulnerable populations.

Sample Adults were asked about walks for at least 10 minutes in the past 7 days for transportation, defined as walking they might have done to travel to and from work, to do errands, or to go from place to place, and for leisure, defined as walk for fun, relaxation, exercise, or to walk the dog. Sample Adults were also asked about the frequency (the number of days and times in a day walked) and duration of those walks.

### Sponsored Content

NCI and NCCDPHP sponsored the perceptions of the walking environment (ENV) section with the purpose to determine how the Sample Adult perceives their walking environment and whether factors enable or prevent them from walking. An individual's perception of their walking environment may affect their decision to walk (Ariffin et al., 2013), and a lack of places to walk to and threats to safety may discourage walking, resulting in

decreased physical activity and worse health outcomes (CDC, 2021). Questions ask about being able to walk to places for transportation, entertainment, or relaxation near where you live; whether there are sidewalks; if traffic, crime, or animals make it unsafe to walk; and how often there are people walking within sight of your home.

NCI and NCCDPHP also sponsored the sun care and protection (SUN) section with questions that measure the effect of sun exposure on skin, and sun-safety health behaviors. Skin cancer is the most common cancer in the U.S. (CDC, 2021). Too much sun or exposure to UV rays can cause skin cancer. The CDC recommends limiting exposure to ultraviolet (UV) radiation, including tanning beds, and wearing protective clothing and/or sunscreen when outdoors (CDC, 2021). The World Health Organization's (WHO) International Agency for Research on Cancer (IARC) includes tanning devices, along with ultraviolet radiation from the sun, in its list of group 1 carcinogens. (Ghissassi et al., 2009.)

Sample Adults were asked about staying in the shade, wearing clothes that cover arms and legs, wearing a hat and sunglasses, and regularly applying sunscreen for cancer prevention. Sample Adults were also asked about their use of indoor tanning devices sometimes referred to as tanning beds, and the number of sunburns in the past 12 months.

**UPDATE (2022):** The use of indoor tanning devices (variable SUNBEDTC_A derived from SUNBED_A in the questionnaire), was removed from the public use file. There was an unexpectedly high number of responses for "2 times" and there is a concern that due to keying errors, the response of '2' or 'no' may include responses for "no use."

## Major Recodes

**Walking for transportation.** Sample Adults who walked for transportation at least one time in the past 7 days were asked on average, how many times per day they walked for transportation and on average, how long those walks took. Respondents could choose a count of up to 995 minutes or hours. For ease of calculation and to limit the publication of extreme values, a recode was created for the average length of walks for transportation. This recode has a continuous count of 1–180 minutes, and a top-coded at 181 minutes for all walks with a duration over 3 hours. Users can convert these times to hours by dividing by 60.

**Walking for leisure**. Sample Adults who walked for leisure at least one time in the past 7 days were asked on average, how many times per day they walked for leisure and on average, how long those walks took. Respondents could choose a count of up to 995 minutes or hours. For ease of calculation and to limit the publication of extreme values, a recode was created for the average length of walks for leisure. This recode had a continuous count of 1–180 minutes, and a top-coded at 181 minutes for all walks with a duration over 3 hours. Users can convert these times to hours by dividing by 60.

**Sunburns.** Sample Adults were asked how many times they had a sunburn in the past 12 months. Respondents could choose a count of up to 365 times, however, to limit the publication of extreme values, a recode was created to reflect a continuous count of 1–12 times during the past 12 months, with reports at a higher frequency indicated by 13 (more than once per month, on average).

# VIII. Injuries

## Rotating Core

For two consecutive years every three years starting in 2020, the Sample Adult module included questions about repetitive strain injuries (RSI) in the REP section, followed by questions about sudden injuries in the INJ section. RSIs are defined as injuries caused by repeating the same movement over an extended period. Examples of RSI include carpal tunnel syndrome, tennis elbow, or tendonitis. Sudden injury may occur accidently or on purpose, and it may be self-inflicted or caused by others. All questions in the REP and INJ sections were asked with the reference period of past 3 months.

The REP section asked whether the Sample Adult had an RSI, and if the RSI had limited usual activities for at least 24 hours. Those limited in their usual activities were asked about visiting a doctor or other health professional for the RSI and being told by a doctor or other health professional that any of their RSIs were work-related. Sample Adults limited in their usual activities due to the RSI were also asked about the impact on their work: number of workdays missed due to the RSI, expecting to miss additional workdays due to the RSI, stopping or changing job due to the RSI, and changing work activities due to the RSI. Since the employment questions are asked later in the interview and those questions are in reference to the past the week, field representatives were instructed to ask the Sample Adult reporting zero missed workdays if they had worked at all in the past 3 months. Those who did not work in the past 3 months were included in a separate category ('91') for number of missed workdays, but they were included in the 'no' response category for questions about changing job or job duties.

The INJ section asked whether the Sample Adult had a sudden injury, and if the sudden injury had limited usual activities for at least 24 hours after the injury occurred, also defined as significant injuries. Those with a sudden significant injury that limited their usual activities were asked about the number of significant injuries, place where they were injured (e.g., at home or at work), activity they were doing when they were injured (e.g., playing sports, driving, or doing household chores), medical care they received (e.g., saw a doctor, visited ER, or hospitalized overnight), and impact on work (e.g., number of workdays missed, expected workdays missed, or stopped or changed job). Also refer to Table 16 for measures of sudden injury.

**Table 16. Rotating core content on adult sudden injuries: 2020–2021 NHIS**

| Measure |
|---|
| Any injury |
| Number of significant injuries |
| Place where injured |
| Home |
| Work |
| Activity when injured |
| Sports |
| Household chores |
| Motor vehicle accident: driver, passenger, bicyclist, pedestrian, or something else |
| Type of Injury |
| Fall |
| Motor vehicle accident |

| Table 16 Continued. Rotating core content on adult sudden injuries: 2020–2021 NHIS |
|---|
| **Measure** |
| Medical care received |
| Saw a doctor or healthcare professional |
| Visited Emergency Room |
| Hospitalized overnight |
| Impact on work |
| Number of workdays missed |
| Expected workdays missed |
| Stopped or changed job |
| Broken bones due to injury |
| Stitches or staples due to injury |

### Major Recodes

**Missed workdays due to RSI**. Number of workdays missed due to repetitive strain injury was top-coded at 10 or more days, and values 91 (did not work), 97 (refused), 98 (not ascertained), and 99 (don't know) were retained.

**Missed workdays due to sudden injury**. Number of workdays missed due to sudden injury were top-coded at 10 or more days, and values 91 (did not work), 97 (refused), 98 (not ascertained), and 99 (don't know) were retained.

**Significant injuries**. Number of significant injuries was top-coded at 10 or more days, and values 97 (refused), 98 (not ascertained), and 99 (don't know) were retained.

## IX. COVID-19

In March of 2020, the World Health Organization declared a global pandemic of coronavirus disease 2019 (COVID-19), caused by a severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Also at this time, a national emergency was declared in the United States, and states began issuing stay-at-home orders, mask mandates, and capacity limits at businesses to slow the rate of new infections. Social distancing measures were also recommended for shared spaces including those in the workplace. The virus was first detected in December 2019 in Wuhan, China, and in January of 2020, CDC had confirmed the first case of COVID-19 in the United States. Testing for COVID-19 in the United States became available in February of 2020.

### Emerging Content

Beginning in July of 2020 (quarter 3), several questions were added to the NHIS survey in response to the COVID-19 pandemic, see Table 17. Sample Adults were asked about positive COVID-19 diagnosis, testing and perceived symptom severity. Sample Adults were also asked about unmet medical needs due to the pandemic, receipt of telemedicine in the past year and due to the pandemic, receipt of at-home care from a friend or family member, unmet need for at-home care from a friend or family member and nurse or health professional due to the pandemic, and whether a friend or family member provided some or all of at-home care not provided by a nurse or health professional due to the pandemic. Two questions were also added about the Sample Adult's

perception of how often they receive the social and emotional support they need and the receipt of this support in comparison to 2019 (pre-pandemic).

**Table 17. COVID-19 measures fielded in July–December 2020**

| Topic (Section) | Reference period |
|---|---|
| Positive COVID-19 Diagnosis (CVD)* | |
| Diagnosed | Ever |
| Tested | Ever |
| Positive test | Ever |
| Symptom severity | Symptoms at their worst |
| Access to Care (ACC)* | |
| Delayed medical care | During pandemic |
| Did not get needed medical care | During pandemic |
| Telemedicine | Past 12 months; During pandemic |
| Cancer Care (CNV)[1] | |
| In treatment or medically indicated | During pandemic |
| Needed other cancer medical care | During pandemic |
| Treatment change, delay, or cancelled | During pandemic |
| Other cancer medical care change, delayed, or cancelled | During pandemic |
| Caregiving Received (CGR) | |
| Did not get needed at home care from a nurse or other health professional | During pandemic |
| Received at home care from a friend or family member | During pandemic |
| Did not get needed at home from a friend or family member | During pandemic |
| Friend or family member provided at home care not provided by nurse or other health professional | During pandemic |
| Social Support (SOS) | |
| Social and emotional support | Current; Compared with 12 months ago |
| Social distancing at work (SDW)[2] | |
| Social distancing measures in effect | Current; Since the start of the pandemic (working at main job or business)<br>Ever (not working but held a job in the past 12 months); |
| Work closer than 6 feet to other people | Current (working at main job or business); At last job (not working but held a job in the past 12 months);<br>When social distances measures in effect/not in effect (working main job or business, and not working but held a job in the past 12 months) |

***These measures are also available for Sample Children.**
**[1] Sponsored content from NCI.**
**[2] Sponsored content from NIOSH.**
**NOTE. Additional measures fielded among Sample Adults in response to the COVID-19 pandemic are found in the ISN, RCN and PAI sections. See descriptions for ISN and RCN under "Health Status and Conditions" and for PAI under "Pain and Pain Management."**

## Sponsored Content

Beginning in July of 2020, sponsored content on cancer care and social distancing in the workplace were also added in response to the COVID-19 pandemic. NCI sponsored content about the receipt of medically indicated treatment and medical care for cancer and whether these were unmet due to the pandemic. NIOSH sponsored content about social distancing measures in effect to help keep people apart and the need to work closer than six feet apart from other people at their workplace, among Sample Adults who were working in the past week and those who did not work in the past week but worked in the past year.

## Major Recodes

**Social distancing at any time.** This recode summarizes a set of questions into whether the sample adult ever had any social distancing measures at their workplace, among those who were currently working (including those on temporary leave last week, those with seasonal/contract work, and those who work but not for pay) and those who worked in the past 12 months. The recode is based on responses to the following questions: whether there are currently social distancing measures at the sample adult's main job; whether the sample adult's main job implemented social distancing measures at any time since the COVID-19 pandemic began; and whether those who are not currently working but worked in the last 12 months ever had social distancing measures in place at their main job when they were still working there. For sample adults who are working but do not have social distancing measures currently in place or who don't know or refused to answer, final responses to this recode are based on the question on whether social distancing measures were ever instituted, regardless of their response about current social distancing measures.

**Frequency of working close to others when social distancing measures were in effect**. Among sample adults who had social distancing measures in effect at their main job at any time, this recode summarizes the frequency that sample adults work(ed) closer than 6 feet to others when social distancing measures were in effect. It is based on the response to one of three questions about frequency of working closer than 6 feet to others: WRKCLSSD_A for those who currently have social distancing measures at work; SDMSRSOFT_A for those who do not currently have social distancing measures at work but whose jobs did at some point since the coronavirus pandemic began; and RJWRKCLSSD_A for those who are no longer working but had social distancing measures in place when they were working in the past 12 months. Response options are "all of the time," "some of the time," "most of the time," and "none of the time." An additional response option was added to categorize those who only worked at their main job when the social distancing measures were not in effect.

**Frequency of working close to others when social distancing measures were not in effect**. This recode summarizes how often sample adults work(ed) closer than 6 feet to others when social distancing measures were not in effect at their workplace during or before the pandemic. It is based on the response to one of four questions about frequency of working closer than 6 feet to others: WRKCLSNOSD_A for those who currently have social distancing measures at work; WRKCLSOFT_A for those who do not currently have social distancing measures in place at work; RJWCLSNOSD_A for those who are no longer working but had social distancing measures in place when they were working in the past 12 months; and RJWKCLSOFT_A for those who are no longer working and never had social distancing measures in place at their recent job in the past 12 months. Response options are "all of the time," "some of the time," "most of the time," and "none of the time." An additional response option was added to categorize those who only worked at their main job when the social distancing measures were in effect.

# Sample Child's Health

## I. Health status and conditions

### Annual Core

The Sample Child module includes questions about the health status of the child and whether a doctor or other health care professional had diagnosed the child with asthma, diabetes, selected developmental conditions, and whether a representative from a school or a health professional had stated that the child had a learning disability.

The health status of Sample Children aged 0–17 years was asked in the Sample Child HIS section and assessed whether the child's health is generally excellent, very good, good, fair, or poor.

Questions regarding asthma were asked of children aged 0-17 years in the Sample Child AST section and measure the following: whether a doctor or other health care professional ever told that the Sample Child had asthma; still has asthma; had an episode of asthma or an asthma attack during the past 12 months; and had to visit an emergency room or urgent care center because of asthma during the past 12 months.

Questions regarding diabetes were asked of children aged 0–17 years in the Sample Child DIB section and measure whether a doctor or other health care professional ever told that Sample Child had prediabetes or borderline diabetes, and diabetes.

Questions regarding development conditions were asked of children aged 0–17 or aged 2–17 years in the Sample Child DLD section. Sample children aged 2–17 years were asked in separate questions whether a doctor or other health professional had ever told that the child had Attention Deficit/Hyperactivity Disorder (ADHD) or Attention-Deficit Disorder (ADD), and autism, Asperger's disorder, pervasive developmental disorder, or autism spectrum disorder. Sample children aged 0–17 years were asked in separate questions whether a doctor or other health professional had ever told that the child had an intellectual disability, also known as mental retardation, and any other developmental delay. For each condition, a follow up question asked whether the Sample Child currently had this developmental condition.

The DLD section also included two questions for Sample Children aged 0–17 years that asked whether a representative from a school or a health professional ever told that the child had a learning disability and currently had a learning disability.

### Rotating Core

The Body Mass Index (BMI) section is a set of questions rotating every other year in the Sample Child module for Sample Children aged 10–17 that asked how tall is the child without shoes in feet and inches or meters and centimeters~~,~~ and how much does the child weigh now in pounds or kilograms.

## Sponsored Content

NHLBI, NIOSH and NCEH sponsored additional asthma questions in the Sample Child AST section. These questions were asked of children aged 0–17 years with current asthma (i.e. still have asthma or had an asthma attack in the past 12 months), and measure the following: had the child stayed overnight in a hospital because of asthma during the past 12 months; how many days of daycare or school did the child miss because of asthma during the past 12 months; had the child used the kind of prescription asthma inhaler that gives quick relief from asthma symptoms during an attack during the past 3 months; was the child now taking a preventive asthma medication every day, some days, most days, or never.

## Major Recodes

**Body Mass Index (BMI)**. A categorical measure of BMI was created using unrestricted height and weight values which contain the greater range of height and weight values than are available on the public-use file. BMI was calculated using the formula: BMI = kilograms /meters² where 1 kilogram = 2.20462 pounds and 1 meter = 39.37008 inches. For children and teens, the classification of underweight, healthy weight, overweight and obese is age and sex specific. Values for BMI for age were categorized according to the National Center for Health Statistics' Data Table of BMI-for-age Charts. Table 18 shows the cutoff values for BMI for age for children aged 10 to 17 years by sex. Up to 5 decimal points were used for classifying Sample Children into the respective BMI categories. Sample children with the responses "don't know" or "refused" for height or weight, or those who had values for either height or weight that were outside the limits for public data release, or for whom height or weight values for public release were set to 96 and 996 due to missing sex information were coded as 9 in the categorical BMI measure. For additional information about children and teens BMI, see https://www.cdc.gov/healthyweight/assessing/bmi/childrens_bmi/about_childrens_bmi.html.

**Height and Weight.** The Sample Child respondent had the option to report height and weight using the U.S. customary system (pounds: feet and inches) or the metric system (kilograms: meters and centimeters). Metric responses on height and weight were converted into the U.S. Customary system using the following conversion scale: 1 meter=39.37008 inches and 1 kilogram=2.20462 pounds (lbs.). The public-use height variable for ages 10–17 years reflects total height in inches (e.g., 53"is 4' 5"), with height ranges 48–76 inches for boys and 41–70 inches for girls. The public-use weight variable for ages 10 – 17 years reflects total pounds rounded to whole integers, with weight ranges 50–280 lbs. for boys and 46–230 lbs. for girls. Values reported for boys and girls outside the public-use limits for either height or weight had data for both variables recoded to "96" or "996" ("Not available") on the public-use data file to protect the confidentiality of those who might be identifiable by their unusual physical characteristics. In addition, due to the sex-specific height and weight limits by age for public data release, all Sample Children for whom sex was answered as don't know or refused were also coded as 96 for height and 996 for weight. Don't know and refused responses to either height or weight were retained in the height and weight public-use recodes.

**Missed days due to asthma**. A recode was created of the number of missed days to daycare or school due to asthma during the past 12 months, top-coded at 10 or more days.

**Table 18. Body Mass Index (BMI) for age values for children aged 10 to 17 years old, by sex.**

| Age and Sex | Underweight | Healthy weight | Overweight | Obese |
|---|---|---|---|---|
| **Age 10** | | | | |
| **Boys** | <14.21866 | 14.21866 to <19.39041 | 19.39041 to <22.15409 | >=22.15409 |
| **Girls** | <14.03535 | 14.03535 to <19.984 | 19.984 to <22.98258 | >=22.98258 |
| **Age 11** | | | | |
| **Boys** | <14.56001 | 14.56001 to <20.19667 | 20.19667 to <23.21358 | >=23.21358 |
| **Girls** | <14.4029 | 14.4029 to <20.86984 | 20.86984 to <24.14141 | >=24.14141 |
| **Age 12** | | | | |
| **Boys** | < 14.97745 | 14.97745 to < 21.02386 | 21.02386 to < 24.22985 | >= 24.22985 |
| **Girls** | <14.83262 | 14.83262 to <21.74263 | 21.74263 to <25.25564 | >=25.25564 |
| **Age 13** | | | | |
| **Boys** | < 15.45918 | 15.45918 to < 21.85104 | 21.85104 to < 25.17811 | >= 25.17811 |
| **Girls** | <15.30749 | 15.30749 to <22.57506 | 22.57506 to <26.2988 | >=26.2988 |
| **Age 14** | | | | |
| **Boys** | < 15.99065 | 15.99065 to < 22.66325 | 22.66325 to < 26.04662 | >= 26.04662 |
| **Girls** | <15.80753 | 15.80753 to <23.34689 | 23.34689 to <27.25597 | >=27.25597 |
| **Age 15** | | | | |
| **Boys** | < 16.55481 | 16.55481 to < 23.45117 | 23.45117 to < 26.83688 | >= 26.83688 |
| **Girls** | <16.30974 | 16.30974 to <24.04503 | 24.04503 to <28.12369 | >=28.12369 |
| **Age 16** | | | | |
| **Boys** | < 17.1325 | 17.1325 to < 24.21087 | 24.21087 to < 27.56393 | >= 27.56393 |
| **Girls** | <16.78787 | 16.78787 to <24.66372 | 24.66372 to <28.90981 | >=28.90981 |
| **Age 17** | | | | |
| **Boys** | < 17.70284 | 17.70284 to < 24.94362 | 24.94362 to < 28.25676 | >= 28.25676 |
| **Girls** | <17.21234 | 17.21234 to <25.20482 | 25.20482 to <29.6335 | >=29.6335 |

**Source. National Center for Health Statistics. Data Table of BMI-for-age Charts, available at https://www.cdc.gov/growthcharts/html_charts/bmiagerev.htm.**

# II. Functioning and Disability

## Annual Core

The questions on functioning and disability found in sections VIS, HEA, MOB, UPP, COM, COG, ANX, DEP, and BEH of the Sample Child module compose the Child Functioning Module (CFM) that is part of a set of international standard measures developed, tested and endorsed by the Washington Group on Disability Statistics (WG). The WG is a city group established in 2001 under the United Nations Statistical Commission to address the need for population-based measures of disability by promoting and coordinating international cooperation in the area of health statistics focusing on disability data collection tools suitable for censuses and national surveys. The major objective is to provide necessary information on disability that is comparable throughout the world by identifying individuals with functional limitations in basic actions, regardless of nationality or culture. The questions reflect advances in the conceptualization of disability and use the World Health Organization's International Classification of Functioning, Disability, and Health (ICF) as a conceptual framework. The CFM was developed jointly with the United Nations Children's Fund (UNICEF). There are questions about children 2–4 years of age (CFM 2–4) and questions about children 5–17 years of age (CFM 5–17). The intended use of these questions is to describe the functional status of children and, when used with other questions on the survey, to evaluate whether children with functional limitations have achieved similar levels of participation and inclusion as children without functional limitations. These questions do not capture all aspects of difficulty in functioning, but rather focus on domains of functioning that are likely to identify the majority of children at risk of participation restrictions in an unaccommodating environment.

Questions ask about the Sample Child's level of difficulty (no difficulty, some difficulty, a lot of difficulty, or cannot do at all) in basic domains of functioning including seeing, hearing, mobility, dexterity, self-care, communication, cognition, playing, learning, relationships, and behavior and about the frequency of experiencing anxiety and depression as well as kicking/biting/hitting others. The CFM 2–4 and CFM 5–17 are designed to include domains of functioning relevant for each age group. For a list of questions asked in each set, and the associated functioning domain, questionnaire section, and respective age range, see Table 19. In addition, several of the domains have questions to provide information on the use of accommodations. Questions about the use of equipment or assistance with walking were asked about children who had difficulty walking both with and without equipment or assistance. More information may be obtained by request to the WG Secretariat at WG_Secretariat@cdc.gov or found on the WG website at: http://www.washingtongroup-disability.com/.

The WG questions can be analyzed separately, by domain, or combined across domains. CFM disability status indicators are available to data users (see Major Recodes below). The disability composite indicators for Sample Children aged 2–4 and 5–17 identify children who are at greater risk than the general population for experiencing restrictions in participation because of difficulties doing certain universal, basic actions. Consult the WG website for guidance on the creation of these indicators. Changing the threshold for either the number of domains the respondent identifies the child having difficulty with or the child's degree of difficulty can create different identifiers that will capture different populations. For example, a recode that includes Sample Children with the response "some difficulty" to any of the domains will capture a greater proportion of the population than a recode that includes only Sample Children with the response "cannot do at all" to any of the domains. In this example, the functional abilities of the larger group will be much more heterogeneous than that of the smaller group. Analytic guidelines written for each of the CFM questions sets, including recommended disability identifiers, may be obtained from the WG website.

**Table 19. Annual core content measures of functional limitations measured in the Sample Child module, by domain, question topic, questionnaire section and age range of question**

| Domain | Question topic | Section | Age range for question |
|---|---|---|---|
| **Seeing** | Wear glasses or contacts | VIS | 2–17 |
| **Seeing** | Have difficulty seeing (with glasses, if worn) | VIS | 2–17 |
| **Hearing** | Use a hearing aid | HEA | 2–17 |
| **Hearing** | Have difficulty hearing sounds (with hearing aid, if used) | HEA | 2–17 |
| **Mobility** | Use equipment or assistance for walking | MOB | 2–17 |
| **Mobility** | Difficulty walking | MOB | 2–4 |
| **Mobility** | Difficulty walking 100 yards | MOB | 5–17 |
| **Mobility** | Difficulty walking a third of a mile | MOB | 5–17 |
| **Dexterity** | Difficulty picking up small objects | UPP | 2–4 |
| **Self-care** | Difficulty with self-care | UPP | 5–17 |
| **Communication** | Difficulty understanding you | COM | 2–4 |
| **Communication** | Difficulty understanding Sample Child | COM | 2–4 |
| **Communication** | Difficulty being understood by people inside of household | COM | 5–17 |
| **Communication** | Difficulty being understood by people outside of household | COM | 5–17 |
| **Learning** | Difficulty learning things | COG | 2–17 |
| **Cognition** | Difficulty remembering things | COG | 5–17 |
| **Affect** | How often seem very anxious, nervous, or worried | ANX | 5–17 |
| **Affect** | How often seem very sad or depressed | DEP | 5–17 |
| **Playing** | Difficulty playing | BEH | 2–4 |
| **Behavior** | Kick, bite, or hit other children or adults | BEH | 2–4 |
| **Behavior** | Difficulty controlling behavior | BEH | 5–17 |
| **Cognition** | Difficulty concentrating | BEH | 5–17 |
| **Behavior** | Difficulty accepting changes in routine | BEH | 5–17 |
| **Relationships** | Difficulty making friends | BEH | 5–17 |

## Major Recodes

**Disability status composite indicator, age 2–4.** An indicator of disability that captures Sample Children aged 2–4 who are at greater risk than the general population for experiencing restrictions in participation because of difficulties doing certain universal, basic actions. This recode classifies children with disability as those with the responses “a lot of difficulty” or “cannot do at all” for at least one of the questions asking about the Sample Child’s difficulty seeing, hearing, walking, dexterity, communication, learning, and playing, or with the response “cannot do at all” to the question about controlling behavior. The remaining Sample Children, with the responses "some difficulty" or “no difficulty" to at least one question (and who do not have the responses “a lot of difficulty” or “cannot do at all” for any of the questions) are classified as without disability. Sample Children with a response of don't know" or "refused" to all questions are excluded.

**Disability status composite indicator, age 5–17.** An indicator of disability that captures Sample Children aged 5–17 who are at greater risk than the general population for experiencing restrictions in participation because of difficulties doing certain universal, basic actions. This recode classifies children with disability as those with the responses “a lot of difficulty” or “cannot do at all” for at least one of the questions asking about the Sample Child’s difficulty seeing, hearing, walking, self-care, communication, learning, remembering, concentrating, accepting change, controlling behavior, making friends or the response “daily” to questions asking how often the Sample Child feels anxious, nervous, or worried or feels depressed. The remaining Sample Children, with the responses "some difficulty" or “no difficulty" to at least one question (and who do not have the responses “a lot of difficulty” or “cannot do at all” or “daily” for any of the questions) are classified as without disability. Sample children with a response of "don't know" or "refused" to all questions are excluded.

## III. Health Care Access and Health Service Utilization

### Annual Core

Several sections throughout the Sample Child module measure access to and use of health services, as well as affordability of care. Similar content is also available for sample adults. For a list of measures on these topics asked in the annual core, by questionnaire section and reference period of its respective questions, see Table 20.

**Table 20. Annual core content measures of health care access, service use, and affordability of care asked of the Sample Child, by questionnaire section and reference periods**

| Measure | Section | Reference period |
|---|---|---|
| Immunizations | | |
| Flu vaccine (any, number of vaccines up to 2) | IMM | Last 12 months, Month and Year |
| Medical Care | | |
| Saw a doctor for medical care | UTZ | Last time interval |
| Medical and wellness visit combined | UTZ | --- |
| Wellness visit | UTZ | Last time interval |
| Usual place to go for medical care | UTZ | Current |
| Kind of place for medical care | UTZ | Current |
| Number of urgent care visits | UTZ | Last 12 months |
| Number of emergency department visits | UTZ | Last 12 months |
| Any overnight hospitalization | UTZ | Last 12 months |
| Delayed medical care due to cost | UTZ | Last 12 months |
| Needed but did not get medical care due to cost | UTZ | Last 12 months |
| Prescription Medication | | |
| Took prescription medication | PMD | Last 12 months |
| Delayed filling prescription to save money | PMD | Last 12 months |
| Needed but did not get prescription due to cost | PMD | Last 12 months |
| Problems Paying Medical Bills | | |
| Anyone in family having problems paying medical bills* | PAY | Last 12 months |
| Have bills unable to pay at all* | PAY | Current |
| Level of worry about paying medical bills if sick/accident | PAY | Current |
| ***These are family-level replicate questions asked once per family.** | | |

### Rotating Core

Rotating for two consecutive years every three years starting in 2019 is additional content about Sample Children's use of selected health services. These questions ask about receiving dental, mental, eye, home, and physical or other therapeutic care, and affordability of dental and mental care. Similar content is also available for Sample Adults. Table 11 lists rotating core measures of health care use, and affordability, by questionnaire section and reference period of its respective questions.

**Table 21. Measures of health care access, service use, and affordability of care asked of the Sample Child in the rotating core, by questionnaire section and reference periods: 2019–2020 NHIS**

| Measure | Section | Reference period |
|---|---|---|
| Dental Care | | |
| Received a dental cleaning/exam | DNC | Last time interval |
| Delayed dental care due to cost | DNC | Last 12 months |
| Needed but did not get dental care due to cost | DNC | Last 12 months |
| Mental Health Care | | |
| Took medication for emotions/mental health | MHC | Last 12 months |
| Received therapy or counseling from mental health professional | MHC | Last 12 months |
| Delayed getting therapy/counseling due to cost | MHC | Last 12 months |
| Needed but did not get therapy/counseling due to cost | MHC | Last 12 months |
| Physical and Other Therapeutic/Specialist Care | | |
| Received eye exam from eye specialist | PTC | Last 12 months |
| Received physical/speech/rehabilitative/occupational therapy | PTC | Last 12 months |
| Received home care | PTC | Last 12 months |

## IV. Behavioral and Mental Health

### Annual Core

The Baby Pediatric Symptom Checklist (BPSC) is a 12-item validated screening tool used for assessing social and emotional difficulties among children aged 0–17 months (Sheldrick, 2013). The BPSC is one component of the larger Survey of Well-being of Young Children (SWYC), a screening instrument designed for use in a clinical setting, such as a pediatric primary care. Information about SWYC is available at https://www.floatinghospital.org/The-Survey-of-Wellbeing-of-Young-Children/Overview.aspx

Parents or adults knowledgeable and responsible for the child's health rated a series of behaviors related to irritability, inflexibility, and difficulty with routines that may be used to identify risk for social and emotional difficulties. Each item in this section can be rated as "not at all"; "somewhat"; or "very much" and responses are assigned point values of 0, 1 and 2 respectively. Items with missing responses will count as 0 points. The BPSC is constructed of three subscales (irritability, inflexibility and difficulty with routines) and each subscale is composed of 4 items. Any summed scale of three or more on any of the three subscales indicates that a child is at risk and in practice will prompt further evaluation with a health care professional. For analysis, users may sum responses to operationalize risk as a continuous variable. As thresholds have not yet been developed to operationalize a categorical variable for the general population, no cut-off scores have been provided. Although

the BPSC instrument was developed for children under age 18 months, questions were fielded among Sample Children aged 0–23 months.

## V. Health-Related Behaviors

### Rotating Core

Rotating once every two years beginning in 2020, is content about screen time on electronic devices, sleep. and physical activity.

Screen time in the SCR section includes a single question asked of Sample Children aged 0–17 years assessing whether they spend more than 2 hours a day on electronic devices.

Sleep content in the SLP section includes typical routines and sleep behaviors among Sample Children aged 2–17 years such as frequency of waking up well-rested, difficulty getting out of bed in the morning, being tired during the day, falling asleep or taking naps during the day, and having routine bed and wake times.

Physical activity content in the PHY section asked of Sample Children aged 6–17 years collected information about participation in sports teams, and gym class, and the frequency (i.e., how often) Sample Children participate in the following activities: exercise or sports, strength training activities, walking at least 10 minutes, bicycling at least 10 minutes.

## VI. Health Promotion

### Rotating Core

Rotating once every two years beginning in 2020 is content about neighborhood characteristics of Sample Children aged 6–17 years. The questions are intended to provide information about the environment of the child which may create barriers for physical activity (Franzini, et al., 2010). Questions in the NHC section ask about the presence of neighborhood amenities favorable to outdoor activities and perception of neighborhood safety to engage in outdoor activities:

- Roads, sidewalks, paths, or trails for walking or biking on
- Parks or playgrounds in proximity of walking or biking to
- Traffic causing safety concerns for walking or biking
- Crime causing safety concerns for walking or biking

# VII. Injuries

## Rotating Core

For two consecutive years every three years starting in 2020, the Sample Child INJ section included questions about sudden injuries in reference to the past 3 months. An introduction statement preceded these questions that told the Sample Child respondent that the questions were about all types of injuries, and that injuries may occur accidently or on purpose, and it may be self-inflicted or caused by others. Questions ask whether the Sample Child had an injury, and if the injury was significant enough that it limited Sample Child's usual activities for at least 24 hours. Additional information about significant injuries included the number of significant injuries, place where the injury occurred (e.g., at home, day care if 2 years old or younger, day care or school if 3 to 5 years old, or school if 6–17 years old), activity they were doing when they were injured (e.g., playing sports or exercising, or an activity related to motor vehicle accident ), medical care received (e.g., saw a doctor, visited emergency room, or hospitalized overnight), and impact on daily life (e.g., number of daycare or school days missed and additional days expected to miss). Refer to Table 22 for a list of types of injury measures collected.

**Table 22. Rotating core content on child injuries: NHIS 2020–2021**

| **Measure** |
|---|
| Any injury |
| Number of significant injuries |
| Place where injured |
| Home |
| School or daycare |
| Activity when injured |
| Sports |
| Motor vehicle accident: driver*, passenger, bicyclist, or something else |
| Type of Injury |
| Fall |
| Motor vehicle accident |
| Medical care received |
| Saw a doctor or healthcare professional |
| Visited Emergency room |
| Hospitalized overnight |
| Impact on school |
| Number of school or daycare days missed |
| Expect to miss additional school or daycare |
| Broken bones due to injury |
| Stitches or staples due to injury |
| **Note: The option of driver is unavailable for children under 6 years old.** |

### Emerging Content

In 2020, content about head injuries or concussions experienced by Sample Children was added in the TBI section as emerging content. The Sample Child respondent was asked to think about all head injuries, for example, from playing sports, car accidents, falls, or being hit by something or someone. The questions ask about head injuries that may have occurred anytime in Sample Child's life, ever experiencing concussion symptoms as a result of that head injury (e.g., gap in memory, headaches, vomiting, blurred vision, or changes in mood or behavior), receiving assessment for a concussion from a health care professional, and a diagnosis of a concussion from a health care professional.

### Major Recodes

**Missed school or daycare days.** Number of school days missed due to injury was top-coded at 10 or more days, and values 97 (refused), 98 (not ascertained), and 99 (don't know) were retained.

## VIII. COVID-19

In March of 2020, the World Health Organization declared a global pandemic of coronavirus disease 2019 (COVID-19), caused by a severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Also at this time, a national emergency was declared in the United States, and states began issuing stay-at-home orders, mask mandates, and capacity limits at businesses to slow the rate of new infections. Social distancing measures were also recommended for shared spaces including those in the workplace. The virus was first detected in December 2019 in Wuhan, China, and in January of 2020, CDC had confirmed the first case of COVID-19 in the United States. Testing for COVID-19 in the United States became available in February of 2020.

### Emerging Content

Beginning in July of 2020 (quarter 3), several questions were added to the NHIS survey in response to the COVID-19 pandemic. The Sample Child module included questions in the CVD section about positive COVID-19 diagnosis, testing and perceived symptom severity. The Sample Child module also included questions in the ACC section about the Sample Child's unmet medical needs due to the pandemic, receipt of telemedicine in the past year, and receipt of telemedicine due to the pandemic.

Questions in the CVD and ACC sections were asked about Sample Children aged 0 to 17 years, and similar content is also available for Sample Adults.

# Health Insurance

## Annual Core

The health insurance sections (INS) of the Sample Adult and Sample Child modules have a full range of items addressing health insurance such as coverage status, sources of coverage, characteristics of coverage, and reasons for no coverage. The flow and content of the questions pertaining to health insurance programs covered in the INS sections are similar to questions covered in the 1997–2018 NHIS Family Core. The main difference starting in 2019 and continuing in 2020 is that instead of asking health insurance for all family or household members, one adult and one child (if present) are selected from each household to receive these questions. The Sample Adult and Sample Child receive a similar set of questions with a few exceptions that will be outlined below.

### *Health Insurance Coverage Status*

An individual is considered currently insured if they currently have coverage through private health insurance, Medicare, Medicaid, Children's Health Insurance Program (CHIP), military (TRICARE, Veterans Administration (VA), and CHAMP-VA), other state-sponsored health plans, or other government program. Individuals without any of the aforementioned coverages, with only Indian Health Service coverage, or a non-comprehensive plan that covers only dental, vision, or prescription drugs are considered uninsured.

For ease of analysis two recodes are available, NOTCOV_A (on the Sample Adult file) and NOTCOV_C (on the Sample Child file) that reflect this definition of noncoverage as used in *Health, United States* (in which persons with *only* Indian Health Service coverage or a single service plan that covers only dental, vision, or prescription drugs are considered uninsured).

### *Sources of Coverage*

Sample Adult and Sample Child respondents could identify one or more sources of medical care coverage, and single service plans were asked as separate questions. The following sources of healthcare coverage were collected in the interview:

- Private health insurance: Coverage obtained through employment or directly purchased (including Medigap plans)
- Medicare: The federal health insurance program for adults who are 65 and older, certain younger people with disabilities, and people with End-Stage Renal Disease (permanent kidney failure requiring dialysis or a transplant, sometimes called ESRD)
- Medicaid: A joint federal and state program that provide free or low-cost healthcare coverage to Americans, including some low-income people, families and children, pregnant women, the elderly, and people with disabilities

- CHIP (Children's Health Insurance Program): A joint federal and state program that provides low-cost health coverage to children in families that earn above the income threshold to qualify for Medicaid
- Military: TRICARE, VA or CHAMP-VA
- Other state-sponsored health plans
- Other government program
- Indian Health Service: A part of the federal government that delivers direct medical and public health services to federally recognized Native American Tribes and Alaska Native people
- Single service dental plan
- Single service vison plan
- Single service prescription drug plan

### *Characteristics of Coverage*

For all coverage types, except for the Indian Health Service, additional follow-up questions specific to the type of coverage are asked. Some of these characteristics of coverage are broad and are relevant to more than one coverage type, whereas other characteristics are very specific to a particular type of coverage. In summary, the INS section includes detailed follow-up questions in the following areas:

- Health Insurance Marketplace, state exchanges or Healthcare.gov as to how coverage (private, Medicaid, CHIP, state-sponsored plans, other government programs) was obtained
- Enrollment in a high deductible health plan (private, Medicaid, CHIP, state-sponsored plans, or other government programs)
- Premium (private, Medicaid, CHIP, state-sponsored plans, or other government programs)
- Characteristics of private insurance (up to two plans per person)
    - exchange-based
    - policyholder
    - coverage of individuals other than the policyholder
    - relationship to the policyholder (only Sample Adult)
    - how plan was obtained (e.g., work, directly purchased)
    - who pays for the plan (e.g., self or family, work)
    - annual amount of premium paid by individual or family
    - prescription drug benefit
    - dental benefit
    - vision benefit
    - health savings account
- Characteristics of Medicare
    - Medicare Parts (A, B, C, D)

  - Medicare Advantage plan or Medicare managed care

- Types of military healthcare
  - VA (only Sample Adult)
  - TRICARE
  - CHAMP-VA

### *Continuity of Coverage*

For persons with coverage, they were asked if there was any time in the past 12 months when they did not have coverage. If they answered "yes," they were asked for how many months they did not have coverage. For persons who were currently uninsured, they were asked when the last time was that they had coverage. If it was less than a year, they were asked for how many months they did not have coverage.

### *Reasons for No Coverage*

There are two sets of questions concerning the reasons for not having healthcare coverage. The first set focuses on reasons for no longer being enrolled in health coverage among those individuals who currently lacked coverage for less than three years. Reasons measured included the following: policyholder retired; lost a job or changed employers; a deadline was missed for signing up or paying for coverage; became ineligible due to age or leaving school; the cost of the coverage increased; and had Medicaid or other public coverage but were no longer eligible. The second set of questions focuses on reasons for not obtaining health coverage among all individual who currently did not have healthcare coverage. Reasons measured included the following: currently uninsured because coverage is not affordable; do not need or want coverage; not eligible for coverage; process of signing up is too difficult or confusing; cannot find a plan that meets needs; has applied for coverage but it has not started yet; and other reason. Based on coding open-ended responses, two additional categories are available as recoded variables. These additional reasons captured were retired, lost a job or changed employers and missing a deadline for signing up for coverage.

### *Replicate*

To reduce respondent burden, under certain circumstances a family who shared the same private plans were only asked about detailed characteristics of shared plans once, either in the Sample Adult interview or Sample Child interview, whichever occurred first. To be eligible for this replicate, the Sample Adult and Sample Child must be from the same family, the private plan must cover more than one person, the private plan must have a "valid" plan name, (i.e. it cannot have a refused or not known as the name of the plan), and the plan has to have information as to either where the plan was obtained or who pays for it, (i.e. it cannot have refused or not known to either of these fields). In addition, if either the Sample Adult or Sample Child indicated that they have Medigap coverage through HIKIND03_A or HIKIND03_C, they were not eligible for the replicate. Families may share up to two private plans.

### *Processing Health Insurance Responses*

The INS sections use responses to follow-up questions to evaluate the reliability of the reported health insurance coverage and to adjudicate conflicting information. For many survey respondents, health insurance is a complex topic and some inconsistencies in survey responses are expected. If the responses to follow-up questions are inconsistent with the original health insurance coverage indicated, the original responses are edited. As a result, a portion of the Sample Adults and Sample Children are reassigned to a different type of coverage or reclassified from insured to uninsured (or vice versa). Conversely, follow-up responses in agreement with the original health insurance response are not edited and are included in the recodes. Therefore, it is best to use the recodes created, and listed in Table 23 below, for specific types of healthcare coverage and noncoverage because of the complicated editing process that takes place in the INS sections.

**Table 23. Annual core content of health insurance recode variables for the Sample Adult and Sample Child**

| Type of health insurance coverage | Sample Adult file | Sample Child file |
|---|---|---|
| **Private health plans** | PRIVATE_A | PRIVATE_C |
| **Medicare** | MEDICARE_A | OTHGOVR_C* |
| **Medicaid** | MEDICAID_A | MEDICAID_C |
| **Children's Health Insurance Program (CHIP)** | CHIP_A | CHIP_C |
| **Military health plans** | MILITARY_A | MILITARY_C |
| **Indian Health Service** | IHS_A | IHS_C |
| **Other government programs** | OTHGOV_A | OTHGOVR_C* |
| **State-sponsored health plans** | OTHPUB_A | OTHPUB_C |
| **Uninsured** | NOTCOV_A | NOTCOV_C |

***This recode combines Sample Children covered by Medicare, other government programs or both.**

# Characteristics about the Sample Adult and Sample Child

## Annual Core

### *Sex, Age, Hispanic origin and Race*

The NHIS collects information across different modules and sections that describe the Sample Adult and Sample Child's sex, age, Hispanic origin, and race. Table 24 lists the variables that summarized the final public-use variables on sex, age, Hispanic origin, and race available for them. These variables are described in the HHC section of the Codebooks.

**Table 24. Annual core content on public-use variables for sex, age, Hispanic origin and race variables**

| Description | Sample Adult variable | Sample child variable |
|---|---|---|
| **Sex** | SEX_A | SEX_C |
| **Age*** | AGEP_A | AGEP_C |
| **Hispanic origin** | HISP_A | HISP_C |
| **Hispanic group detail** | HISDETP_A | HISPDETP_C |
| **Single and multiple race groups** | RACEALLP_A | RACEALLP_C |
| **Single and multiple race groups combined with Hispanic origin** | HISPALLP_A | HISPALLP_C |

***During rostering, household respondents who refused or don't know the age of a household member are then asked a set of age range questions about the household member. The public-use data file includes information from the household respondent on whether the person selected to be the Sample Adult is under 65 years or age or 65 or older (AGE65). In the Sample Adult and Sample Child modules, the respondent can then provide the missing age, correct it, or also decline to provide this information. AGEP_A and AGEP_C are based on the final age information.**

Starting in 2019, responses of "refused" or "don't know" to the sex and age questions are allowed. To preserve confidentiality, the ages of adults aged over 85 years are top-coded at 85 on the Sample Adult public-use data file.

In accordance with the Office of Management and Budget's Revisions to the Standards for the Classification of Federal Data on Race and Ethnicity (OMB, 1997) for the collection of ethnicity and race in federal data systems, separate questions are asked about Hispanic origin and race. Persons of Hispanic origin may be of any race or combination of races. Hispanic origin includes persons of Mexican/Mexican American/Chicano, Central American, South American, Puerto Rican, Cuban, Dominican, or other Hispanic origin. Race is based on the Sample Adult's description of his or her own racial and ethnic identity, and an adult knowledgeable and responsible for the child's health provides this information for the Sample Child. More than one race can be reported for a Sample Adult and Sample Child.

The confidentiality of respondents and their families could be compromised if there were extensive details available about the Sample Adult, Sample Adult's spouse or partner, Sample Children and their parents, and other family members. Starting in 2019, detailed information about race and ethnicity that was previously available in public-use files is suppressed as more detailed geographic information (e.g. region and urbanization level) is included in the public use file. The following four single-race categories are available for Sample Adult and Sample Children in the public-use files: 1) white; 2) black or African American; 3) Asian; and 4) American Indian or Alaska Native (AIAN). The only multiple race category available in the public-use files is AIAN and another race. Sample Adult and Sample Child respondents indicating a single race other than the four mentioned or reporting more than one race, other than including AIAN, were combined into the "other single and multiple races" category. Detailed Hispanic origin information available in the public-use files includes Mexican and Mexican American only.

For additional information about the historical context of race and ethnicity data collection in the NHIS, including editing, references for NHIS race and Hispanic origin, and background documents related to race and ethnicity data collection in federal data systems, see Appendix II of the 2012 NHIS *Survey Description*.

### *Nativity*

Information on place of birth (U.S. state or territory, or outside of the U.S.) and citizenship status is collected in the NAT section of the Sample Adults and Sample Child modules. To protect confidentiality, information on U.S. state or territory of birth and detailed citizenship status is not available in the public-use data files. Information about whether the Sample Adult or Sample Child was born in the U.S., and for those born outside the U.S., whether the Sample Adult or Sample Child is a U.S. citizen and years in the U.S. (categorical variable) is available in the public-use files.

### *Schooling*

The schooling sections (SCH) of the Sample Adult and Sample Child modules contain questions to determine the number of school days missed during the past 12 months. All Sample Children under aged 5–17 years, and Sample Adults aged 18 and over who were enrolled in or attending school at the time of interview were asked about the number of school days missed because of illness, injury, or disability during the 12 months prior to the interview. Persons responding for the Sample Children aged 0–17 years were asked if the child ever had a special education or early intervention plan, such as an Individualized Education Plan (IEP), or an Individualized Family Service Plan (IFSP). Those who responded "yes" were then asked if the child currently (sometime in the past school year) a special education or early intervention plan, and if he/she received these services to help with his/her emotions, concentration, behavior, or mental health.

### *Education*

Information on educational attainment, measured as the highest level of school or highest degree completed is asked about all adults in the household during the household roster module. The variable EDUC_A describes the highest educational attainment of the Sample Adult. Additionally, recodes have been created that describe the level of educational attainment for the spouse or partner of the Sample Adult (described under "Characteristics about the Spouse or Partner of the Sample Adult"), and the parents of the Sample Child (described under "Characteristics about the Sample Child's Parents"). Persons responding for the Sample Children are not asked about highest school grade or education the Sample Child has completed.

## *Employment*

The Sample Adult EMP section contains information regarding the Sample Adult's work status in the week before the interview, main reason for not working, hours worked, work benefits for those working, and days of sick leave taken among Sample Adults who worked in the past year.

Sample Adults were first asked whether they worked for pay at a job or business last week; if not, they were asked if they had a job or business last week, but were temporarily absent due to illness, vacation, family or maternity leave. Those who were working or temporarily absent from work were then asked how many hours in total they worked at all jobs or business in the last week (if they said they were working last week) or in a usual week (if they were temporarily absent last week). Sample Adults who said they were working last week and said they worked 34 or fewer hours are asked if they usually work 35 or more hours per week in total at all their jobs or businesses.

Sample Adults who were not working last week or were not temporarily absent from a job or business last week are asked the main reason they were not working for pay at a job or business last week. Sample Adults who couldn't find work, were laid off, looking for work, retired, unable to work for health reasons/disabled, taking care of house or family, going to school, or some other reason, as well as refused or don't know responses are then asked when was the last time they worked for pay at a job or business, even if only for a few days.

Employed Sample Adults – those who were working last week, temporarily absent last week, performed seasonal or contract work, or were working, but not for pay – are asked whether paid sick leave is available and whether health insurance is offered through their workplace. Lastly, all Sample Adults working within the past 12 months are asked how many days of work they missed because of illness, injury or disability in the past year. To protect confidentiality, information on the number of workdays missed due to health reasons is top-coded at 130 days in the recode EMPDYSMSS2.

## *Employment Recodes*

Sample Adults who performed seasonal or contract work or worked, but not for pay, in a job or business were considered employed and were asked about paid sick leave, health insurance available through the workplace, and workdays missed in the last 12 months even though they indicated that they were not working in the past week and were not temporarily absent from work. In addition, they were not asked about the number of hours they worked in the last week or in a usual week and were not asked the last time they worked for pay. To ensure that the variables in this section are internally consistent with one another, a summary recode, EMPWRKLSWK_A, identifies all employed Sample Adults, including those who were working during the last week; those with a job or business but temporarily absent the last week; and those performing seasonal, contract, or unpaid work. A second recode, EMPWKHRS2_A, provides the hours worked last week (top-coded at 95 for confidentiality), and codes Sample Adults who performed seasonal, contract, or unpaid work as "998" or "not ascertained" on this recode. A third recode, EMPWRKFT_A, identifies all employed Sample Adults who usually worked 35 or more hours per week; those performing seasonal, contract, or unpaid work are coded as "8" or "not ascertained" on this recode. Lastly, a fourth recode, EMPLSTWORK_A, indicates the last time that Sample Adults who were not working in the last week or temporarily absent from their usual job or business had worked for pay, and Sample Adults performing seasonal, contract, or unpaid work are coded as "8" or "not ascertained" on this recode.

### *Marital Status*

The MAR section contains information on the marital status of the Sample Adult. Sample Adults are first asked if they are "now married, living with a partner together as an unmarried couple, or neither." Sample Adults who responded they are married are asked if their spouse lives in the same residence. If not living in the same residence, they are asked if this is because the Sample Adult and their spouse is legally separated. Sample Adults who are married or living with a partner are asked to verify the sex of their spouse or partner that was obtained during rostering. Sample Adults whose answer to the initial marriage and cohabitation question was other than "married," are asked if they have ever been married. Sample Adults who are currently living with a partner and have been married are asked their current legal marital status – that is, whether they are currently married, widowed, divorced, or separated. Sample Adults who are neither married nor living with a partner but have been married are asked if they are now widowed, divorced, or separated.

Additional information about the spouse or partner of the Sample Adult is described under "Characteristics about the Spouse or Partner of the Sample Adult."

### *Parental Status*

The MAR section also includes recodes which describe whether the Sample Adult is a parent of a child residing in the family (PARSTAT_A) and the Sample Adult's relationship to Sample Child (SAPARENTSC_A).

### *Sexual Orientation*

Sample Adults were asked about their sexual orientation. This question was asked before determining marital status of the Sample Adult and sex of the spouse or partner living in the household. Sexual orientation was not asked about the Sample Child.

### *Proxy Status*

Generally, Sample Adults provide information for themselves during the Sample Adult interview. However, in a small number of cases, proxy responses are allowed if the Sample Adult had a physical or mental condition that prevented them from responding. The variable PROXY_A indicates those cases for which a proxy respondent provided the information.

### *Veteran Status*

The VET section contains information about the Sample Adult's military veteran status and use of Veteran Affairs (VA) services. Specifically, it includes information on whether the Sample Adult ever served in the U.S. Armed Forces, military Reserves, or National Guard, if served in active duty for training or in a combat setting or humanitarian peace-keeping mission, and whether has received a service-connected disability rating. Information about use of VA services focused on whether the Sample Adult sought care from at VA Hospital or other VA-affiliated facility in the past 12 months, and whether they have ever enrolled in or used VA healthcare.

## Rotating Core

### *Industry and Occupation*

Employed Sample Adults – those who were working last week, temporarily absent last week, performed seasonal or contract work, or were working, but not for pay – and those working within the past 12 months were asked about their occupation, industry, and work activities through a series of questions in the EMP section allowing for verbatim text responses. Sample Adults were first asked for whom they work(ed) at their main job, followed by questions about the kind of business or industry of this job, the kind of work they perform(ed), and their job duties or most important activities. Employed Sample Adults were also asked whether they supervise(d) other employees as part of their job as well as to classify their main job into one of the following categories: employee of a private company, federal government employee, state government employee, local government employee, self-employed, or working without pay at a family-owned business or farm. These detailed employment questions rotate for two consecutive years every three years in the NHIS, starting in 2020.

### *Industry and Occupation Recodes*

The verbatim responses obtained from employed Sample Adult regarding their industry and occupation were coded by statistical clerks and assistants from the Coding & Research Section of the Geography Branch in the National Processing Center at the U.S. Census Bureau. The industry and occupation codes developed by U.S. Census Bureau for use in non-economic Federal surveys are 4-digit Census codes for industry and occupation consistent with the 2017 North American Industry Classification System (NAICS) and 2018 Standard Occupational Classification (SOC). However, these are not the actual NAICS and SOC codes. Verbatim responses from the Sample Adult are not available to the public.

Available in the Sample Adult public-use files are the detailed occupation recode (EMDOCCUPR1_A) with 94 distinct occupation subgroups, and the associated simple recode (EMDOCCUPR2_A) with 23 major occupation groups. These categories are derived from the 2018 SOC Occupation Subgroups and Major Occupation Groups, respectively, as determined by the U.S. Census Bureau and the Bureau of Labor Statistics. Also available are the detailed industry recode (EMDINDSTR1_A) informed by the 2017 NAICS with 79 distinct industry subsectors, and the associated simple recode (EMDINDSTR2_A) with 21 industry sectors. These are derived from the NAICS Industry Subsectors and Sectors, respectively, as identified by the U.S. Census Bureau.

The Occupation and Industry Appendices in the Sample Adult Codebook includes the response categories and labels to EMDOCCUPR1_A, EMDOCCUPR2_A, EMDINDSTR1_A, and EMDINDSTR2_A. Links to information on the NAICS Industry Subsectors and Sectors and the SOC Occupation Subgroups and Major Groups are embedded within these appendices and provide the classification framework for the recodes on the public-use data file. These lists should not be used in place of the Occupation and Industry Appendices. For more information about the 2017 NAICS, please refer to https://www.bls.gov/ces/naics/home.htm. For more information about the 2018 SOC, please refer to https://www.bls.gov/soc/2018/home.htm.

# Characteristics about the Parents of the Sample Child

## Annual Core

Starting in 2019, the PAR section includes variables and recodes describing the demographic characteristics of parents residing with the Sample Child, type of relationship (biological, adoptive, step, foster) between the child and his or her parent(s), each parent's current and legal marital status, and information on nativity (whether the parent was born in the U.S. or a U.S. territory).

Detailed information on the type of relationship between Sample Child and parent is suppressed in the public-use data due to disclosure risks. Specifically, adoptive and biological children are combined in a single category, and foster children cannot be identified. In addition, while the redesigned NHIS allows for the collection of information on up to four parents as long as they all reside in the same household as the child, only information on the first two are released in the public-use file. In 2020, there were no instances where a Sample Child had three or four residential parents. Detailed information for the parents residing with the Sample Child is available through the NCHS RDC. For a list of restricted variables, see the PAR section of the Sample Child Codebook for restricted variables.

Several recodes are available in the PAR section of the public-use data that describe the demographic characteristics of up to two parents residing with the Sample Child. The information for these recodes was obtained from questions asked in various sections of the Sample Child module (i.e., PAR, GEN, HHC). Table 25 lists the available recodes, which include parental sex, age (bottom-coded at 20 and top-coded at 65), education of the parent with the highest educational attainment, employment status (including full- versus part-time work), current marital status, legal marital status, and whether the Sample Child's parents are of the same sex or of opposite sex.

To protect confidentiality, detailed information about race and ethnicity of the Sample Child's resident parents is suppressed. To assist data users interested in studying interracial families, the PAR section also includes four recodes to indicate (1) whether the Sample Child's race is the same as all parents in the household, (2) whether the Sample Child and all the parents in the household are of same Hispanic or Latino origin category (i.e. Hispanic, non-Hispanic), (3) whether the Sample Child's parents are of the same race to each other, and (4) whether the Sample Child's parents are of the same Hispanic or Latino origin category to each other. These recodes are "yes" and "no" answers. The "yes" response means that the Sample Child and all resident parents are in the same racial category, or the Sample Child and all resident parents are in the same Hispanic or Latino origin category. A "no" response means that either the Sample Child and at least one of the parents is of a different racial category, or that either the Sample Child and at least one of the parents are not of the same Hispanic or Latino origin category, respectively. Similarly, same race and same Hispanic or Latino origin category between parents is based on a common racial and Hispanic or Latino origin category. Same race is in reference to the racial categories available in the public-use file, that is white, black or African American, Asian, AIAN, AIAN and another race, and all other single and multiple races. Same Hispanic or Latino origin category is based on whether the child and all parents, and whether all the parents, are of any Hispanic or Latino ethnicity (regardless of country or area of origin). Sample children residing with one parent in the household are categorized as missing (not in universe) in the variables categorizing whether the Sample Child's parents are of the same race to each other, and whether the Sample Child's parents are in the same Hispanic or Latino origin category.

Additional information about the family of the Sample Child is described under "Characteristics about the Family and Household of the Sample Adult and Sample Child."

**Table 25. Annual core content of public-use recodes describing demographic characteristics of the parents residing with the Sample Child**

| Description | Codebook section | Residential parent 1 variable | Residential parent 2 variable | Variable for both residential parents |
|---|---|---|---|---|
| Relationship type to Sample Child | PAR | RELCHPARP1_C | RELCHPARP2_C | |
| Sex | PAR | PARSEX1_C | PARSEX2_C | |
| Age | PAR | PARAGETC1_C | PARAGETC2_C | |
| Education of the Sample Child's parent with the highest education | PAR | | | MAXPAREDUC_C |
| Working last week | PAR | PARWORK1_C | PARWORK2_C | |
| Working full-time last week (35+ hours) | PAR | PARWKFT1_C | PARWKFT2_C | |
| Current marital status | PAR | MARSTAT1_C | MARSTAT2_C | |
| Legal marital status | PAR | LEGMSTAT1_C | LEGMSTAT2_C | |
| Two parents of same or of opposite sex | PAR | | | PARSAMEOPP_C |
| Sample child's Hispanic ethnicity is the same as both parents | PAR | | | SCPARHISP_C |
| Sample child's race is the same as both parents | PAR | | | SCPARRAC_C |
| Sample child's parents are of the same Hispanic ethnicity | PAR | | | HISPPARSC_C |
| Sample child's parents are of the same race | PAR | | | RACPARSC_C |

**Note: The Sample Child's parents are labeled as parent 1 and parent 2 based in the order that this information was provided by the respondent and entered by the interviewer during the interview for questions WHOPAR and WHOFOST. All information in the recodes about parent 1 (e.g., sex, age) are about the same person, and similarly for parent 2.**

# Characteristics about the Spouse or Partner of the Sample Adult

## Annual Core

Starting in 2019, the MAR section includes several recodes describing the demographic characteristics of the spouse or partner living with the Sample Adult, if married or cohabiting. The information for these recodes was obtained from questions asked in various sections of the Sample Adult module (i.e., MAR, GEN, HHC). These recodes are shown in Table 26 and include the spouse or partner's sex, age (bottom-coded at 20 and top-coded at 85 years), education, current work status, and whether the spouse or partner worked full-time (35 or more hours per week).

For data users interested in studying interracial families, recodes of the race and ethnicity of the spouse or partner in the household are available in reference to the Sample Adult's race and ethnicity. These recodes are "yes" and "no" answers, where a "yes" response means that Sample Adult and the spouse or partner are in the same racial category, or the same Hispanic or Latino origin category (i.e. Hispanic, non-Hispanic), and a "no" response means that the Sample Adult and the spouse or partner are of a different racial category, or Hispanic or Latino origin category, respectively. Same race is in reference to the racial categories available in the public-use file, that is white, black or African American, Asian, AIAN, AIAN and another race, and all other single and multiple races. Same Hispanic ethnicity is based on any Hispanic or Latino ethnicity (regardless of country or area of origin).

Additional information about the family of the Sample Adult is described under "Characteristics about the Family of the Sample Adult and Sample Child."

**Table 26. Annual core content of public-use recode variables describing demographic characteristics of the spouse or partner residing with the Sample Adult**

| Description | Codebook section | Variable for spouse | Variable for cohabiting partner |
|---|---|---|---|
| Sex | MAR | SPOUSESEX_A | PRTNRSEX_A |
| Age | MAR | SPOUSAGETC_A | PRTNRAGETC_A |
| Hispanic ethnicity of Sample Adult and spouse/partner are the same | MAR | SASPPHISP_A | SASPPHISP_A |
| Race of Sample Adult and spouse/partner are the same | MAR | SASPPRACE_A | SASPPRACE_A |
| Education | MAR | SPOUSEDUC_A | PRTNREDUC_A |
| Working last week | MAR | SPOUSWRK_A | PRTNRWRK_A |
| Working full-time last week (35+ hours) | MAR | SPOUSWKFT_A | PRTNRWKFT_A |

# Characteristics about the Family and Household of the Sample Adult and Sample Child

## Annual Core

### *Family and Household Composition variable*

Table 27 provides a list of various recodes included on the public-use Sample Adult and Sample Child data files that describe the families and households in which the Sample Adult and Sample Child live. Flag variables indicate source respondent for each module and whether the sample unit was a single or multiple family household. Also listed are recodes that indicate the level of education attained by the adult with the highest education in the Sample Adult's and Sample Child's family. In addition, several top-coded counters provide the number of household members in the Sample Adult's and Sample Child's family, and family members in various age groups.

**Table 27. Annual core content of public-use recodes of family and household composition and counter variables available for Sample Adult and Sample Child**

| Description | Codebook section | Variable name for Sample Adult's family | Variable name for Sample Child's family |
|---|---|---|---|
| Sample Adult is the household respondent or the proxy who lives in the household | FLG | HHRESPSA_FLG | |
| Sample child respondent is the household respondent | FLG | | HHRESPSC_FLG |
| Number of persons in the Sample Adult's /Sample Child's family (top-coded) | FAM | PCNTFAM_A | PCNTFAM_C |
| Number of adults in the Sample Adult's / Sample Child's family (top-coded) | FAM | PCNTADLT_A | PCNTADLT_C |
| Number of children in the Sample Adult's / Sample Child's family (top-coded) | FAM | PCNTKIDS_A | PCNTKIDS_C |
| Indicator for at least one person is 65 and over in the Sample Adult's / Sample Child's family | FAM | OVER65FLG_A | OVER65FLG_A |
| Education of the adult with the highest education in the Sample Adult's family / Sample Child's family | FAM | MAXEDUC_A | MAXEDUC_C |
| Flag indicating Sample Adults / Sample Child living in households containing more than one family | FAM | MLTFAMFLG_A | MLTFAMFLG_C |
| Counters of all members in the Sample Adult's and Sample Child's households (top-coded) | HHC | PCNTTC | PCNTTC |
| Counters of persons aged 0–17 years in the Sample Adult's and Sample Child's households (top-coded) | HHC | PCNTLT18TC | PCNTLT18TC |
| Counters of persons aged 18 years and older in the Sample Adult's and Sample Child's households (top-coded) | HHC | PCNT18UPTC | PCNT18UPTC |

For 81 households that were part of the Followback sample in 2020, there were inconsistencies in the data that suggested the household roster collected in 2020 was incomplete. The number of household members for these Sample Adults is unknown. Counter variables (that is, the person count variables for the household and Sample Adult's families) have been set to 8 (not ascertained).

### *Family Employment*

The family employment section (FEM) contains employment information for all related adults in the Sample Adult's and Sample Child's families. To reduce respondent burden, these questions were asked once per family. Responses to these questions were used to create several counters on the public-use Sample Adult and Sample Child file and are top-coded for confidentiality, see Table 28.

**Table 28. Annual core content of employment counter variables available in the Sample Adult or Sample Child files**

| Description | Module, section | Variable Name | Notes |
|---|---|---|---|
| **Number of adults in the Sample Adult's family who are working** | Sample Adult, FEM | PCNTADTWKP_A | Top-coded at 3. |
| **Number of adults in the Sample Adult's family who are working full-time (35 or more hours per week)** | Sample Adult, FEM | PCNTADTWFP_A | Top-coded at 3. |
| **Number of adults in the Sample Child's family who are working** | Sample Child, FEM | PCNTADTWKP_C | Top-coded at 3. |
| **Number of adults in the Sample Child's family who are working full-time (35 or more hours per week)** | Sample Child, FEM | PCNTADTWFP_C | Top-coded at 3. |

### *Family Income*

The family income section (INC) contains information regarding a variety of income sources, as well as estimates of total combined family income. All questions are asked once per family, using the family-level-replicate interviewing approach. Respondents are told at the start of the family income section that all questions are seeking information about possible income sources in the previous calendar year, and the names of all family members (collected earlier) to consider when responding.

Respondents were asked whether anyone in the family received income from a variety of sources (e.g. wages, salary from self-employment, social security, railroad retirement, government assistance). Respondents are also asked to report their "best estimate" of their family's total income (in dollars) from all sources for all family members living in the household before taxes in the last calendar year. Because nonresponse to this question tends to be relatively high, the NHIS includes a series of follow-up questions utilizing an unfolding bracket methodology that obtains additional income information. The unfolding bracket method asked a series of closed-ended income range questions (e.g., "is it less than $75,000, or $75,000 or more?") if the respondent did not provide an estimated total family income. These closed-ended income range questions were constructed so that each successive question established a smaller range for the amount of the family's income. In addition to

asking respondents about the family's income relative to specific dollar values (i.e., $75,000, $100,000, and $150,000), these respondents were also asked about the family's income relative to the federal poverty threshold (100%, 138%, 200%, 250% and 400%) and take into account each family's size (collected earlier in the interview).

The poverty thresholds used in the questionnaire, and shown in Table 29, are intended to approximate the U.S. Census Bureau's weighted average poverty thresholds for 2019. Because these values were not available when the 2020 NHIS instrument was created, the poverty thresholds used in the 2020 instrument were derived by NCHS from the 2018 poverty thresholds by size of family and number of related children under 18 years, the average Consumer Price Index for all urban consumers (CPI-U) from 2018, the forecasted annual growth rate of the CPI-U for 2019, actual monthly CPI values (all consumers) for January-July 2019, and projected CPI values (all consumers) for August-December 2019.

**Table 29. Poverty thresholds used in the 2020 NHIS Instrument, by family size.**

| Family Size | 100% of the federal poverty level | 138% of the federal poverty level | 200% of the federal poverty level | 250% of the federal poverty level | 400% of the federal poverty level |
|---|---|---|---|---|---|
| **1 person < 66 years** | $13,000 | $18,000 | $27,000 | $33,000 | $53,000 |
| **1 person ≥ 66 years** | $12,000 | $17,000 | $25,000 | $31,000 | $49,000 |
| **2 persons, both < 66** | $17,000 | $24,000 | $34,000 | $43,000 | $69,000 |
| **2 persons, 1 is ≥ 66** | $15,000 | $21,000 | $31,000 | $39,000 | $62,000 |
| **3 persons** | $20,000 | $28,000 | $41,000 | $51,000 | $81,000 |
| **4 persons** | $26,000 | $36,000 | $52,000 | $65,000 | $105,000 |
| **5 persons** | $31,000 | $43,000 | $62,000 | $78,000 | $124,000 |
| **6 persons** | $35,000 | $49,000 | $70,000 | $88,000 | $141,000 |
| **7 persons** | $40,000 | $55,000 | $80,000 | $100,000 | $160,000 |
| **8 persons** | $44,000 | $61,000 | $89,000 | $111,000 | $178,000 |
| **9 or more persons** | $52,000 | $72,000 | $105,000 | $131,000 | $209,000 |

When the questions about income relative to poverty threshold are asked during the course of the interview, the appropriate poverty threshold relative to the family's size (in a dollar amount) is displayed on the interviewer's screen, so that the respondent is asked if the family's income in the previous year was less than the applicable poverty threshold, or if the family's income was greater than or equal to that same poverty threshold.

In 2020, 76.8% of Sample Adults and 82.5% of Sample Child respondents provided their family income. Missing family income for Sample Adults (23.2%) and Sample children (17.5%) were imputed using family income bracket responses or other survey information. Missingness on family income is not completely at random and excluding observations with missing income information can result in biased analyses. Family income, reported

or imputed, has been top-coded for confidentiality and is available for all respondents, see "Recodes of Family Income and Imputed Family Income," below.

To protect confidentiality, family income reported in dollar amounts as well as the variables obtained from the income bracketing questions are not available on the NHIS public-use data files. See Appendix for availability of restricted income questions.

### *Recodes of Family Income and Imputed Family Income*

Missing data on family income and earnings in the NHIS are imputed using a multiple imputation methodology. Imputation is the process of replacing missing data with substituted values based on information collected from other observations in the dataset. Multiple imputation accounts for the extra variability due to imputation in statistical analyses.

Two separate files are available as part of the data release: adultinc20 and childinc20 which contain 10 multiply imputed income data values for the Sample Adult and the Sample Child's families, respectively. All 10 imputations are stacked in a single file with a variable (IMPNUM) indicating the imputation number. In previous years, NHIS core data files were accompanied by five imputations of selected income data in five separate datasets. However, recent literature on multiple imputation analysis suggests that increasing the number of imputations (e.g., to 10 or higher) produces more precise estimates for a wide variety of analyses (van Buuren, 2012). Stacking the 10 multiple imputation datasets into one allows for fewer steps in data preparation for analyses in SAS and Stata. See the examples provided further in this section.

Ten sets of top-coded variables for family income, poverty ratio, grouped income and grouped poverty ratios are available for the Sample Adult and Sample Child families in the two income files respectively (Table 30). These recodes incorporate information from reported and imputed total family income and are available as a continuous total family income value and in categories of family income, and as the continuous ratio of total family income and family size relative to the poverty threshold and as a finite number of categories.

**Table 30. Top-coded variables for family income and poverty ratio, and related flags available in the Sample Adult and Sample Child files**

| Description | Sample Adult file | Sample Child file |
|---|---|---|
| **Top-coded family income** | FAMINCTC_A | FAMINCTC_C |
| **Grouped family income** | INCGRP1_A | INCGRP_C |
| **Top-coded poverty ratio** | POVRATTC_A | POVRATTC_C |
| **Grouped poverty ratio** | RATCAT_A | RATCAT_C |
| **Income top-code flag** | INCTCFLG_A | INCTCFLG_C |
| **Imputed income flag** | IMPINCFLG_A | IMPINCFLG_C |

In cases where the Sample Adult and Sample Child are in the same family, these corresponding values are identical. The family income is top-coded at the 95$^{th}$ percentile and imputed within the lower and upper bound when the income bracketing questions are answered. Similarly, the poverty ratio variable is top-coded at the 95$^{th}$ percentile.

For the convenience of analyses that don't need or use multiple imputed data, the same variables, i.e., FAMINCTC_A, INCGRP_A, POVRATTC_A, RATCAT_A, and INCTCFLG_A (for the Sample Adult's family) and analogously for the Sample Child family from a single imputation are also available in the Sample Adult and Sample Child files, respectively. Descriptive statistics for the continuous variables for each imputation are available in the appendix of the codebook.

No personal earnings information is collected as part of the redesigned questionnaire.

**Analysts are reminded that imputed income files for each year should be merged with the relevant data files for that year before concatenating data files for multiple years.**

For technical information about the imputation model, please refer to the "Imputed Income Technical Document" available with the annual file releases on the NHIS website, under "Using the NHIS.". For examples of code on how to use multiply imputation in analysis, see the "Merging files" section in this document.

### *Food Related Programs*

The food related programs (FOO) section includes three questions to ascertain past 12-month participation in the food assistance program Supplemental Nutrition Assistance Program (SNAP), free or reduced-cost breakfasts or lunches at school, and the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC). These are family-level replicate questions asked once per family. The universes for the questions in this section coincide with program eligibility. Sample Adult and Sample Child respondents were asked about SNAP assistance program participation. Sample Adult and Sample Child respondents living in families with females 12–55 years of age or children 0–5 years of age were asked about WIC program participation. Sample Adult and Sample Child respondents living in families with children between the ages of 5–17 were asked about free or reduced-cost breakfasts or lunches at school.

### *Housing*

The housing section (HOU) collects information on housing tenure, length of residence, and participation in Federal, State, or local government housing assistance programs among renters. To reduce respondent burden, these questions were asked once per family.

### *Region and urbanization level*

Geographical classification of the U.S. population is provided on the NHIS in two ways: region and urban-rural classification. In the geographical classification, states are grouped into four regions used by the U.S. Census Bureau: Northeast (Maine, Vermont, New Hampshire, Massachusetts, Connecticut, Rhode Island, New York, New Jersey, and Pennsylvania), Midwest (Ohio, Illinois, Indiana, Michigan, Wisconsin, Minnesota, Iowa, Missouri, North Dakota, South Dakota, Kansas, and Nebraska), South (Delaware, Maryland, District of Columbia, West Virginia, Virginia, Kentucky, Tennessee, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, Oklahoma, Arkansas, and Texas), and West (Washington, Oregon, California, Nevada, New Mexico, Arizona, Idaho, Utah, Colorado, Montana, Wyoming, Alaska, and Hawaii).

The urban-rural classification is based the 2013 NCHS Urban-Rural Classification Scheme for Counties, which groups U.S. counties and county-equivalent entities into six urban-rural categories: large central metro, large fringe metro, medium metro, small metro, micropolitan, and non-core (Ingram and Franco, 2014). The

categorization included on the NHIS public-use files combine medium and small metropolitan areas into a single group and micropolitan and non-core areas into a single group to yield the following four categories: large central metro, large fringe metro, medium and small metro, and nonmetropolitan. Additional information on the development of this classification scheme can be found in "2013 NCHS Urban-Rural Classification Scheme for Counties" available at: https://www.cdc.gov/nchs/data/series/sr_02/sr02_166.pdf.

### *Telephone Use*

The telephone use section (TEL) contains information regarding the availability of a working non-cellular telephone (land line) and of a cellular (wireless, mobile) telephone in the home, and for adults with both types of working telephones, whether the calls received are answered "all or almost all," "some," or "very few or none" on the cell phone. The purpose of the telephone questions is to track the percentages of wireless-only adults and of children living in homes with only wireless telephones. The telephone use data are in the Paradata file. Variable information is found in the TEL sections (adult and child) of the Paradata codebook.

## Sponsored Content

### *Food Related Programs*

The FOO section included a question sponsored by the USDA about participation in the Supplemental Nutrition Assistance Program (SNAP) in the last month. This question was asked of Sample Adult and Sample Child respondents who reported receiving SNAP benefits in the last 12 months. To reduce respondent burden, this question was asked once per family.

### *Family Food Security*

Family food security refers to access at all times to enough food for active, healthy lives. The food security questions in the FDS sections of the Sample Adult and Sample Child modules are sponsored by the USDA and consist of the same 10 questions measuring food security status of families in the past 30 days. The first three questions asked about being worried that food would not last until there is money to buy more, food bought did not last and didn't have money to buy more, and not being able to afford to eat balanced meals. The next set of statements asked about cutting or skipping meals, eating less than should, being hungry but not eating, losing weight, and not eating for a whole day because there wasn't enough money to buy food. Respondents were also asked for the number of days that a meal was skipped, and the number of days that they did not eat for a whole day. During 2011–2018, the food security questions were administered as part of the Family Component at the beginning of the interview. Starting in 2019, the food security questions are administered once per family in the later portion of the Sample Adult and Sample Child modules using the family-level replicate interviewing approach. Responses to food security questions can be combined to create a raw food security score and categories for degree of food insecurity (see family food security recodes). The purpose of the questions is to examine the relationship between health and food insecurity. For more information about the USDA's food security research and standard procedures for measuring food insecurity and hunger in the United States, see https://www.fns.usda.gov/sites/default/files/FSGuide.pdf.

### *Family Food Security Recodes*

The ten questions in the Food Security (FDS) section were used to determine a 3 and 4 level scale of food security status of adults and children as recommended by the USDA Economic Research Service. The food security status classification variables were derived from a raw food security score created to represent the number of affirmative responses to the food security questions. Answers of "often true," "sometimes true," and "yes" are considered affirmative. Responses to questions that ask about the frequency of occurrence in the past 30 days are considered affirmative if the respondent's answer was greater than or equal to 3 days. Each affirmative response has a score of 1 for a total score ranging from 0 to 10. Not all ten questions were asked of all respondents. Respondents who answer "never true" to the first three questions (with a score of zero for each question) are determined to be food secure and are not asked additional questions. Subsequently, only those with an affirmative answer to questions that specify because there wasn't enough money for food, they cut the size or skipped meals, ate less than they should, were hungry but didn't eat, or lost weight, were asked about not eating for a whole day, and the number of days that occurred. Respondents who answered "don't know" or "refused" or whose answers were not ascertained to the first three questions in the food security set are classified as not ascertained food security status and coded as 8. Information from any affirmative response was summed to the raw score, including when respondents answered "don't know" or "refused" or whose answers were not ascertained for questions that came after the initial three food security questions within the set.
Two options for food security status classification variables were created: one with food security represented in a single "food secure" category, and one which distinguishes between families with high food security and families with marginal food security. The recommended classifications are given below:

Option 1

- Food secure (high or marginal food security, raw score 0–2)
- Low food security (raw score 3–5)
- Very low food security (raw score 6–10)

Option 2

- High food security (raw score 0)
- Marginal food security (raw score 1–2)
- Low food security (raw score 3–5)
- Very low food security (raw score 6–10)

# NCHS Data Linkage Program

The Data Linkage Program at NCHS is a cross-cutting program housed in the Division of Analysis and Epidemiology (DAE) which aims to maximize the scientific value of the Center's population-based surveys, by linking NCHS survey data with data collected from vital and other administrative records. Linked data files enable researchers to augment information for major diseases, risk factors, and health service utilization, by linking exposures to outcomes and in some cases introducing a longitudinal component to survey data.

## Data Sources Linked

The Data Linkage Program currently links NHIS data with:

- National Death Index (NDI) death certificate data, including cause of death (https://www.cdc.gov/nchs/data-linkage/mortality.htm)
- Centers for Medicare and Medicaid Services (CMS) enrollment and claims data for:
    - Medicare (https://www.cdc.gov/nchs/data-linkage/medicare.htm)
    - Medicaid/CHIP (https://www.cdc.gov/nchs/data-linkage/medicaid.htm)
- Department of Housing and Urban Development's (HUD) administrative data from the largest rental housing assistance programs (https://www.cdc.gov/nchs/data-linkage/hud.htm)
- United States Renal Data System (USRDS) data on End Stage Renal Disease (ESRD) (https://www.cdc.gov/nchs/data-linkage/esrd.htm).
- Social Security Administration data, such as insurance claim data and utilization data, from Old Age, Survivors and Disability Insurance (OASDI) and Supplemental Security Income (SSI) benefit records (https://www.cdc.gov/nchs/data-linkage/ssa.htm).

For more information on available linked datasets, see https://www.cdc.gov/nchs/data/datalinkage/LinkageTable.pdf.

## Linkage Methodology

Only NHIS participants who have provided consent as well as the necessary personally identifiable information (PII) are considered *linkage-eligible. Linkage-eligibility* is distinct from program eligibility, which refers to whether a person meets eligibility criteria for a benefits program. *Linkage eligibility* refers to the potential ability to link data obtained from an NHIS participant to administrative data. Survey participants are informed of NCHS' intent to conduct data linkage activities through a variety of procedures such as "advance letters," participant brochures, and during the interview when verbal consent is requested. Starting in 2007, NHIS participants selected to be the Sample Adult or Sample Child (by proxy respondent) are asked for the last four digits of their Social Security Number (SSN) and Medicare Health Insurance Claim number (HICN) for participants age 65 and older. Additionally, those who refused to provide the last four digits of their SSN or HICN, are asked if they would consent to linkage based on their other identifying information. Only Sample Adult and Sample Child participants who provided the last four digits of SSN or HICN or provided consent for linkage without SSN or HICN are included in linkage activities for 2007 NHIS forward. Since 2010, approximately 90% of NHIS Sample Adult participants are linkage eligible. Questions to determine linkage eligibility are collected in the LNK sections of the Sample Adult and Sample Child interview.

The individual-level linkages are conducted using both probabilistic and deterministic techniques. The algorithms rely on PII such as SSN, name, and date of birth. Please refer to the appropriate linkage documentation for further information on methodology and analytic considerations (for example for the linked NDI data, https://www.cdc.gov/nchs/data-linkage/mortality-methods.htm).

Sample addresses from NHIS are also geocoded to standard Census geocoded areas. This enables researchers to merge contextual data (e.g., county level data, air quality data) with NHIS data.

## Availability of Public-Use Linked Data

There are two types of public-use files released by the NCHS Data Linkage Program:

a) Public-use linked mortality data files (https://www.cdc.gov/nchs/data-linkage/mortality-public.htm)
b) Public-use feasibility data files released for the following data linkages:
    - NCHS-CMS Medicare (https://www.cdc.gov/nchs/data-linkage/medicare-feasibility.htm)
    - NCHS-CMS Medicaid (https://www.cdc.gov/nchs/data-linkage/medicaid-feasibility.htm)
    - NCHS-SSA (https://www.cdc.gov/nchs/data-linkage/ssa-feasibility.htm)

    Note: The feasibility files were developed to help interested researchers determine the maximum available sample sizes to assess the feasibility of conducting analyses utilizing the restricted-use linked files available through the NCHS Research Data Center.

## Restricted-Use Linked Data

All other linked data files are restricted-use and available only through the NCHS Research Data Center. For more information about the restricted-use linked data, including the file contents, methods used for linkage and analytic consideration, follow the links provided for each of the following data linkages:

- National Death Index (NDI), Restricted-Use Linked Mortality Data (https://www.cdc.gov/nchs/data-linkage/mortality-restricted.htm)
- NCHS-CMS Medicare (https://www.cdc.gov/nchs/data-linkage/medicare-restricted.htm)
- NCHS-CMS Medicaid (https://www.cdc.gov/nchs/data-linkage/medicaid-restricted.htm)
- NCHS-HUD (https://www.cdc.gov/nchs/data-linkage/hud-restricted.htm)
- NCHS- USRDS ESRD (https://www.cdc.gov/nchs/data-linkage/esrd-restricted.htm)
- NCHS-SSA (https://www.cdc.gov/nchs/data-linkage/ssa-restricted.htm)
- Geocoded data (https://www.cdc.gov/rdc/geocodes/geowt_nhis.htm)

For more information about accessing the restricted-use linked data, please visit the NCHS Research Data Center website: https://www.cdc.gov/rdc/index.htm

# Medical Expenditure Panel Survey (MEPS)

NHIS interviewed households also serve as a sampling frame for the Medical Expenditure Panel Survey (MEPS). MEPS, conducted by the Agency for Healthcare Research and Quality (AHRQ), collects data on the specific health services that Americans use, how frequently they use them, the cost of these services, and how they are paid for, as well as data on the cost, scope, and breadth of health insurance held by and available to U.S. workers.

The MEPS Household Component collects data from a nationally representative subsample of households that participated in the prior year's NHIS. Crosswalks that will allow data users to merge the MEPS full-year population characteristics public-use data files with the NHIS person-level public-use data files are available from AHRQ: https://meps.ahrq.gov/mepsweb/data_stats/more_info_download_data_files.jsp#hc-nhis.

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# Appendix: Availability of Health, Health Insurance and Selected Demographic Questions Not Included in the Sample Adult and Sample Child Public-use Files

**Table. List of questions not available in the public-use files and availability through the Research Data Center (D), as a recode (R), or not available (NA): 2020 NHIS**

| Module | Section Acronym | Questionnaire Variable | Description | Availability | Public-use Recode |
|---|---|---|---|---|---|
| **Roster** | HHC | EDUC | Highest level of education completed | D R | EDUC_A, MAXEDUC_A, PRTNREDUC_A, SPOUSEDUC_A, MAXEDUC_C, MAXPAREDUC_C |
| **Roster, Sample Adult, Sample Child** | HHC, VFY | RACE, RACE_SP, RACE_VRBAT, NEWRACE_A, NATORG, NEWNATORG_A, HISPTYPE_A, HISPOTHER_A, HISPVRBAT_A, PITYPE_A, PIOTHER_A, PIVRBAT_A, ASIANTYPE_A, ASIANOTHER_A, ASIANVRBAT_A, RACEOTHER_A, RACEVRBAT_A, MLTRACE_A, NEWNATORG_C, HISPTYPE_C, HISPOTHER_C, HISPVRBAT_C, PITYPE_C, PIOTHER_C, PIVRBAT_C, ASIANTYPE_C, ASIANOTHER_C, ASIANVRBAT_C, RACEOTHER_C, RACEVRBAT_C, MLTRACE_C | Race and Ethnicity | D R | RACEALLP_A, HISPALLP_A, HISP_A, HISDETP_A, RACEALLP_C, HISPALLP_C, HISP_C, HISDETP_C, SASPPRACE_A, SASPPHISP_A , SCPARRAC_C, RACPARSC_C, SCPARHISP_C, HISPPARSC_C |
| **Sample Child** | AST | ASDAYS12M_C | Number of missed days due to asthma | D R | ASDYS12MTC_C |
| **Sample Adult** | AST | ASDAYS12M_A | Number of missed days due to asthma | D R | ASDYS12MTC_A |
| **Sample Adult** | BMI | HEIGHTFT_A, HEIGHTIN_A, HEIGHTM_A, HEIGHTCM_A | Height | D R | HEIGHTTC_A, BMICAT_A |
| **Sample Adult** | BMI | WEIGHTLB_A, WEIGHTKG_A | Weight | D R | WEIGHTLBTC_A, BMICAT_A |
| **Sample Child** | BMI | HEIGHTFT_C, HEIGHTIN_C, HEIGHTM_C, HEIGHTCM_C | Height | D R | HEIGHTTC_C, BMICAT_C |
| **Sample Child** | BMI | WEIGHTLB_C, WEIGHTKG_C | Weight | D R | WEIGHTLBTC_C, BMICAT_C |
| **Sample Adult** | CAN | CANKIND1_A-CANKIND3_A | Kind of cancer | D R | BLADDCAN_A BLOODCAN_A BONECAN_A BRAINCAN_A BREASCAN_A CERVICAN_A COLONCAN_A ESOPHCAN_A GALLBCAN_A LARYNCAN_A LEUKECAN_ALIVERCAN_A LUNGCAN_A LYMPHCAN_A MELANCAN_A MOUTHCAN_A OVARYCAN_A PANCRCAN_A PROSTCAN_A RECTUCAN_A SKNMCAN_A SKNNMCAN_A SKNDKCAN_A STOMACAN_A THROACAN_A THYROCAN_A |

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| | | | | | UTERUCAN_A HDNCKCAN_A COLRCCAN_A OTHERCAN_A |
| **Sample Adult** | CAN | CANKIND1_A-CANKIND3_A | Kind of cancer (kidney, testicular) | D | |
| **Sample Adult** | CAN | CANAGE1_A-CANAGE3_A | Age of cancer diagnosis | D R | BLADDAGETC_A, BLOODAGETC_A, BONEAGETC_A, BRAINAGETC_A, BREASAGETC_A, CERVIAGETC_A, COLONAGETC_A, ESOPHAGETC_A, GALLBAGETC_A, LARYNAGETC_A, LEUKEAGETC_A, LIVERAGETC_A, LUNGAGETC_A, LYMPHAGETC_A, MELANAGETC_A, MOUTHAGETC_A, OVARYAGETC_A, PANCRAGETC_A, PROSTAGETC_A, RECTUAGETC_A, SKNMAGETC_A, SKNNMAGETC_A, SKNDKAGETC_A, STOMAAGETC_A, THROAAGETC_A, THYROAGETC_A, UTERUAGETC_A, HDNCKAGETC_A, COLRCAGETC_A, OTHERAGETC_A |
| **Sample Adult** | CAN | CANAGE1_A-CANAGE3_A | Age of cancer diagnosis (kidney, testicular) | D | |
| **Sample Adult** | CAN | CANMORE_A | More than three kinds of cancer | D R | NUMCAN_A |
| **Sample Adult** | CIG | SMKQTN_A | Time since quitting smoking-number | D R | SMKQTNP_A, SMKQTY_A |
| **Sample Adult** | DIB | DIBAGE_A | Age of diabetes diagnosis | D R | DIBAGETC_A, DIFYRSTC_A |
| **Sample Adult** | EMP | EMPLASTWK_A | Working last week | D R | EMPWRKLSWK_A |
| **Sample Adult** | EMP | EMPNOWRK_A | Temporarily absent from work last week | D R | EMPWRKLSWK_A |
| **Sample Adult** | EMP | EMPWRKHRS_A | Number of hours worked last week | D R | EMPWKHRS2_A |
| **Sample Adult** | EMP | EMPWKFT_A | Usually working 35+ hours per week | D R | EMPWRKFT_A |
| **Sample Adult** | EMP | EMPLSTWRK_A | Last time worked for pay | D R | EMPLSTWORK_A |
| **Sample Adult** | EMP | EMPDYSMSS_A | Days missed work in past 12 months due to illness/injury/disability | D R | EMPDYSMSS2_A |
| **Sample Adult** | EMP | EMDKINDIND_A | Kind of business or industry | R | EMDINDSTRY_A, EMDINDSTR1_A, EMDINDSTR2_A |
| **Sample Adult** | EMP | EMDKINDWRK_A | Kind of work doing | R | EMDOCCUP_A, EMDOCCUPR1_A, EMDOCCUPR2_A |
| **Sample Adult** | FEM | FEMWORK_A | Employment status of other adults | D R | PCNTADTWRP_A |
| **Sample Adult** | FEM | FEMWKFT_A | Other adult family member works 35+ hours per week | D R | PCNTADTWFP_A |
| **Sample Child** | FEM | FEMWORK_C | Employment status of adults | D R | PCNTADTWRP_C, PCNTPARWKP_C |
| **Sample Child** | FEM | FEMWKFT_C | Adult family member works 35+ hours per week | D R | PCNTADTWFP_C, PCNTPARWFP_C |
| **Sample Adult** | IMS | ZOSTAVAXYR_A | Year of most recent Zostavax vaccine | D R | ZOSTAVAXYRP_A |
| **Sample Adult** | IMS | SHINGRIXYR_A | Year of most recent Shingrix vaccine | D R | SHINGRIXYRP_A |
| **Sample Adult** | INC | INCTOTAL_A | Total family income | D R | FAMINCTC_A, INCGRP1_A, POVRATTC_A, RATCAT_A |
| **Sample Adult** | INC | INC400PCT_A, INC250PCT_A, INC200PCT_A, INC138PCT_A, INC100PCT_A | Family income poverty levels | D | |
| **Sample Adult** | INC | INC150K_A, INC100K_A, INC75K_A | Family income ranges | D | |
| **Sample Child** | INC | INCTOTAL_C | Total family income | D R | FAMINCTC_C, INCGRP1_C POVRATTC_C, RATCAT_C |

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| **Sample Child** | INC | INC400PCT_C, INC250PCT_C, INC200PCT_C, INC138PCT_C, INC100PCT_C | Family income poverty levels | D | |
| **Sample Child** | INC | INC150K_C, INC100K_C, INC75K_C | Family income ranges | D | |
| **Sample Adult** | INJ | NUMINJ_A | Number of non-repetitive strain injuries in the past 3 months | D R | NUMINJTC_A |
| **Sample Adult** | INJ | INJWRKDAYS_A | Number of workdays missed due to injury in the past 3 months | D R | INJWRKDYTC_A |
| **Sample Child** | INJ | NDAYS10TC | Number of school days missed due to injury in the past 3 months | D R | INJSCHDYTC_C |
| **Sample Adult** | INS | HIKIND_A | Kinds of health insurance | R | MEDICARE_A, MEDICAID_A, PRIVATE_A, CHIP_A, OTHPUB_A, OTHGOV_A, MILITARY_A, IHS_A, NOTCOV_A, COVER_A, COVER65_A, HIKIND01_A, HIKIND02_A, HIKIND03_A, HIKIND04_A, HIKIND05_A, HIKIND06_A, HIKIND07_A, HIKIND08_A, HIKIND09_A, HIKIND10_A |
| **Sample Adult** | INS | HICHANGE_A | Verification of insurance coverage | NA | |
| **Sample Adult** | INS | MCANAME_A | Verbatim response to name of Medicare Advantage or Medicare HMO plan | R | MCADVR_A |
| **Sample Adult** | INS | MACHMN_A | Verbatim response to name of Medicaid managed care plan | NA | |
| **Sample Adult** | INS | PLANNAME1_A | Adult shares child's plan 1 | R | PRIVATE_A |
| **Sample Adult** | INS | POLHLDA1_A | Policyholder for adult who shares child's plan 1 | R | POLHLD1_A, POLHLD2_A, PRPLCOV1_A, PRPLCOV2_A, PRPOLH1_A, PRPOLH2_A |
| **Sample Adult** | INS | PRPOLHP1_A | Relationship to policyholder for adult who shares child's plan 1 | R | POLHLD1_A, POLHLD2_A, PRPLCOV1_A, PRPLCOV2_A, PRPOLH1_A, PRPOLH2_A |
| **Sample Adult** | INS | PLANNAME2_A | Adult shares child's plan 2 | R | PRIVATE_A |
| **Sample Adult** | INS | POLHLDA2_A | Policyholder for adult who shares child's plan 2 | R | POLHLD1_A, POLHLD2_A, PRPLCOV1_A, PRPLCOV2_A, PRPOLH1_A, PRPOLH2_A |
| **Sample Adult** | INS | PRPOLHP2_A | Relationship to policyholder for adult who shares child's plan 2 | R | POLHLD1_A, POLHLD2_A, PRPLCOV1_A, PRPLCOV2_A, PRPOLH1_A, PRPOLH2_A |
| **Sample Adult** | INS | HIPNAM1_A | Verbatim response to name of Sample Adult's first private plan | R | EXCHPR1_A |
| **Sample Adult** | INS | MORPLAN_A | Any other plans | NA | |
| **Sample Adult** | INS | HIPNAM2_A | Verbatim response to name of Sample Adult's second private plan | R | EXCHPR2_A |
| **Sample Adult** | INS | POLHLD_A | Policyholder for private plan | R | POLHLD1_A, POLHLD2_A |
| **Sample Adult** | INS | PRPLCOV_A | Plan cover others | R | PRPLCOV1_A, PRPLCOV2_A |
| **Sample Adult** | INS | PRPOLH_A | Relationship to policyholder | R | PRPOLH1_A, PRPOLH2_A |
| **Sample Adult** | INS | PLNWRK_A | How adult's plan was obtained | R | PLNWRKR1_A, PLNWRKR2_A |
| **Sample Adult** | INS | PLNWKSP_A | Verbatim response to how plan was obtained | R | PLNWRKR1_A, PLNWRKR2_A |
| **Sample Adult** | INS | PLNEXCHG_A | Plan obtained through the Marketplace | R | PLNEXCHG2_A, PLNEXCHG1_A |
| **Sample Adult** | INS | PLNPAY_A | Who pays for this plan | R | PLN1PAY1_A, PLN1PAY2_A, PLN1PAY3_A, PLN1PAY4_A, PLN1PAY5_A, PLN1PAY6_A, PLN2PAY1_A, PLN2PAY2_A, |

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| | | | | | PLN2PAY3_A, PLN2PAY4_A, PLN2PAY5_A, PLN2PAY6_A |
| **Sample Adult** | INS | HICOSTN_A, HICOSTT_A | Premium amount that family or adult pays for plan | R | HICOSTR1_A, HICOSTR2_A |
| **Sample Adult** | INS | PRDEDUC_A | Plan has a deductible | R | PRDEDUC1_A, PRDEDUC2_A |
| **Sample Adult** | INS | PRHDHP_A | Annual deductible | R | PRHDHP1_A, PRHDHP2_A |
| **Sample Adult** | INS | HSAHRA_A | Health savings account | R | HSAHRA1_A, HSAHRA2_A |
| **Sample Adult** | INS | PRRXCOV_A | Plan has prescription drug coverage | R | PRRXCOV1_A, PRPXCOV2_A |
| **Sample Adult** | INS | PRDNCOV_A | Plan has dental coverage | R | PRDNCOV1_A, PRDNCOV2_A |
| **Sample Adult** | INS | PRVSCOV_A | Plan has vision coverage | R | PRVSCOV1_A, PRVSCOV2_A |
| **Sample Adult** | INS | CHNAME_A | Verbatim response to name of Sample Adults' Children's Health Insurance Program (CHIP) plan | NA | |
| **Sample Adult** | INS | OPNAME_A | Verbatim response to name of Sample Adults' state-sponsored plan | R | PLEXCHOP_A |
| **Sample Adult** | INS | OGNAME_A | Verbatim response to name of Sample Adults' other government plan | R | PLEXCHOGR_A |
| **Sample Adult** | INS | MILSPC_A | Type of military related health care | R | MILSPC1_A, MILSPC1R_A, MILSPC2_A, MILSPC3_A |
| **Sample Adult** | INS | RSNHIOTHSP_A | Verbatim response to reasons for not getting coverage | R | RSNHICOST_A, RSNHIWANT_A, RSNHIELIG_A, RSNHICONF_A, RSNHIMEET_A, RSNHIWAIT_A, RSNHIOTH_A, RSNHIJOB_A, RSNHIMISS_A |
| **Sample Child** | INS | HIKIND_C | Kinds of health insurance | R | MEDICAID_C, PRIVATE_C, CHIP_C, OTHPUB_C, OTHGOVR_C, MILITARY_C, IHS_C, NOTCOV_C, COVER_C, HIKIND01_C, HIKIND03_C, HIKIND04_C, HIKIND05_C, HIKIND06_C, HIKIND07_C, HIKIND08_C, HIKIND09R_C, HIKIND10_C |
| **Sample Child** | INS | HICHANGE_C | Verification of insurance coverage | NA | |
| **Sample Child** | INS | MCANAME_C | Verbatim response to name of Medicare Advantage or Medicare HMO plan | D, R | |
| **Sample Child** | INS | MCPART_C | Type of Medicare coverage | D | |
| **Sample Child** | INS | MCCHOICE_C | Enrolled in Medicare Advantage Plan | D | |
| **Sample Child** | INS | MCHMO_C | Medicare HMO | D | |
| **Sample Child** | INS | MCPARTD_C | Medicare Part D | D | |
| **Sample Child** | INS | MACHMN_C | Verbatim response to name of Medicaid managed care plan | NA | |
| **Sample Child** | INS | PLANNAME1_C | Child shares adults' plan 1 | R | PRIVATE_C |
| **Sample Child** | INS | POLHLDA1_C | Policyholder for child who shares adult's plan 1 | R | POLHLD1_C, POLHLD2_C, PRPLCOV1_C, PRPLCOV2_C, PRPOLH1_C, PRPOLH2_C |
| **Sample Child** | INS | PLANNAME2_C | Child shares adults' plan 2 | R | PRIVATE_C |
| **Sample Child** | INS | POLHLDA2_C | Policyholder for child who shares adult's plan 2 | R | POLHLD1_C, POLHLD2_C, PRPLCOV1_C, PRPLCOV2_C, PRPOLH1_C, PRPOLH2_C |
| **Sample Child** | INS | HIPNAM1_C | Verbatim response to name of Sample Child's first private plan | R | EXCHPR1_C |
| **Sample Child** | INS | MORPLAN_C | Any other plans | NA | |

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| **Sample Child** | INS | HIPNAM2_C | Verbatim response to name of Sample Child's second private plan | R | EXCHPR2_C |
| **Sample Child** | INS | POLHLD_C | Policyholder for private plan | R | POLHLD1_C, POLHLD2_C |
| **Sample Child** | INS | PRPLCOV_C | Plan cover others | R | PRPLCOV1_C, PRPLCOV2_C |
| **Sample Child** | INS | PLNWRK_C | How plan was obtained | R | PLNWRKR1_C, PLNWRKR2_C |
| **Sample Child** | INS | PLNWKSP_C | Verbatim response to how plan was obtained | R | PLNWRKR1_C, PLNWRKR2_C |
| **Sample Child** | INS | PLNEXCHG_C | Plan obtained through the Marketplace | R | PLNEXCHG2_C, PLNEXCHG1_C |
| **Sample Child** | INS | PLNPAY_C | Who pays for this plan | D, R | PLN1PAY1_C, PLN1PAY2_C, PLN1PAY3_C, PLN1PAY5_C, PLN1PAY6R_C, PLN2PAY1_C, PLN2PAY2_C, PLN2PAY3_C, PLN2PAY5_C, PLN2PAY6R_C |
| **Sample Child** | INS | HICOSTN_C, HICOSTT_C | Premium amount that family pays for plan | R | HICOSTR1_C, HICOSTR2_C |
| **Sample Child** | INS | PRDEDUC_C | Plan has a deductible | R | PRDEDUC1_C, PRDEDUC2_C |
| **Sample Child** | INS | PRHDHP_C | Annual deductible | R | PRHDHP1_C, PRHDHP2_C |
| **Sample Child** | INS | HSAHRA_C | Health savings account | R | HSAHRA1_C, HSAHRA2_C |
| **Sample Child** | INS | PRRXCOV_C | Plan has prescription drug coverage | R | PRRXCOV1_C, PRPXCOV2_C |
| **Sample Child** | INS | PRDNCOV_C | Plan has dental coverage | R | PRDNCOV1_C, PRDNCOV2_C |
| **Sample Child** | INS | PRVSCOV_C | Plan has vision coverage | R | PRVSCOV1_C, PRVSCOV2_C |
| **Sample Child** | INS | CHNAME_C | Verbatim response to name of Sample Child's Children's Health Insurance Program (CHIP) plan | NA | |
| **Sample Adult** | LNG | CTSCANEV_A | Ever had a CT scan | D | |
| **Sample Adult** | LNG | CTSCANCHST_A | CT scans to check or screen for lung cancer | D | |
| **Sample Adult** | LNG | CTLNGCAN_A | Lung cancer screening | D | |
| **Sample Adult** | LNG | CTLNGWHEN_A | Time of most recent CT scan | D | |
| **Sample Adult** | MAR | SPOUSWHO_A | Person number for spouse | D | |
| **Sample Adult** | MAR | SPOUSSEX_A, SPOUNEWSEX_A | Confirm spouse's sex; Correct spouse's sex | D R | SPOUSESEX_A |
| **Sample Adult** | MAR | PARTNERWHO_A | Person number for partner | D | |
| **Sample Adult** | MAR | PARTNERSEX_A, PARTNEWSEX_A | Confirm partner's sex; Correct partner's sex | D R | PRTNRSEX_A |
| **Sample Adult** | MAR | LEGALSTAT_A | Legal marital status | D | LEGMARSTAT_A |
| **Sample Adult** | MAR | WIDIVSEP_A | Widowed/Divorced/Separated | D R | MARSTAT_A |
| **Sample Adult** | NAT | CITIZEN_A | Citizen status | D R | CITZNSTP_A |
| **Sample Adult** | NAT | NATSTBORN_A | Place of birth | D | |
| **Sample Adult** | NAT | NATCTZN_A | How Sample Adult became U.S. citizen | D | |
| **Sample Child** | NAT | CITIZEN_C | Citizen status | D R | CITZNSTP_C |
| **Sample Child** | NAT | NATSTBORN_C | Place of birth | D | |
| **Sample Child** | NAT | NATCTZN_C | How Sample Child became U.S. citizen | D | |

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| **Sample Child** | PAR | RELCHPAR_C | Biological/Adoptive/Step/Other to type of parent-child relationship | D R | RELCHPARP1_C-RELCHPARP2_C |
| **Sample Child** | PAR | MARITAL _C | Married/Living with partner as unmarried couple/neither to questions about marital status of Sample Child's parents | D R | MARITAL1_C-MARITAL2_C |
| **Sample Child** | PAR | SPOUSLIV_C | Spouse of first-fourth parent lives there | D | |
| **Sample Child** | PAR | SPOUSEP_C | First-fourth parents are legally separated | D | |
| **Sample Child** | PAR | SPOUSWHO_C | Person number of first-fourth residential parent's spouse | D | |
| **Sample Child** | PAR | SPOUSSEX_C; FIXSPOUSSEX_C_ | Confirming sex of first-fourth parent's spouse; Correcting sex of first-fourth parent's spouse | D | |
| **Sample Child** | PAR | PARTNERWHO_C | Person number of first-fourth residential parent's unmarried partner | D | |
| **Sample Child** | PAR | PARTNERSEX_C; FIXPARTSEX_C | Confirming sex of first-fourth parent's unmarried partner; Correcting sex of first-fourth parent's unmarried partner | D | |
| **Sample Child** | PAR | EVRMARRIED_C, WIDIVSEP_C | Ever been married | D R | MARSTAT1_C-MARSTAT2_C |
| **Sample Child** | PAR | LEGALSTAT_C | Married/Widowed/Divorced/Separated to questions about legal marital status | D R | LEGMSTAT1_C-LEGMSTAT2_C |
| **Sample Child** | PAR | PARBORN_C | Sample child's first-second parent born in the US/US territory | D | |
| **Sample Child** | PAR | FOSTPAR | Sample Child currently in foster care | D | |
| **Sample Adult** | PHY | MODN_A | Moderate physical activity-number | D R | MODNR_A, MODFREQW_A |
| **Sample Adult** | PHY | MODTP_A | Moderate physical activity-time period | D R | MODTPR_A, MODFREQW_A |
| **Sample Adult** | PHY | MODLN_A | Length of moderate physical activity-number | D R | MODLNR_A, MODMIN_A |
| **Sample Adult** | PHY | MODLTP_A | Length of moderate physical activity-time period | D R | MODLTPR_A, MODMIN_A |
| **Sample Adult** | PHY | VIGN_A | Vigorous physical activity-number | D R | VIGNR_A, VIGFREQW_A |
| **Sample Adult** | PHY | VIGTP_A | Vigorous physical activity-time period | D R | VIGTPR_A, VIGFREQW_A |
| **Sample Adult** | PHY | VIGLN_A | Length of vigorous physical activity-number | D R | VIGLNR_A, VIGMIN_A |
| **Sample Adult** | PHY | VIGLTP_A | Length of vigorous physical activity-time period | D R | VIGLTPR_A, VIGMIN_A |
| **Sample Adult** | PHY | STRN_A | Strengthening physical activity-number | D R | STRNR_A, STRFREQW_A |
| **Sample Adult** | PHY | STRTP_A | Strengthening physical activity-time period | D R | STRTPR_A, STRFREQW_A |
| **Sample Adult** | PRV | PSA5YR_A | Number of PSA tests in last 5 years | D R | PSA5YRTC_A |
| **Sample Adult** | PRV | COLKIND_A | Tests to check for colon cancer | R | COLKIND1_A- COLKIND6_A |
| **Sample Adult** | PRV | CGUARDWHEN_A | Most recent Cologuard test | NA | |
| **Sample Adult** | REP | REPWRKDAYS_A | Number of days missed due to repetitive strain injury | D R | REPWRKDYTC_A |
| **Sample Adult** | SCH | SCHDYSMSS_A | Number of school days missed, past 12m | D R | SCHDYMSSTC_A |
| **Sample Child** | SCH | SCHDYSMSS_C | Number of school days missed, past 12m | D R | SCHDYMSSTC_C |
| **Sample Adult** | SUN | NUMSBURNS_A | Number of sunburns in past year | | NUMBRNTC_A |
| **Sample Adult** | SUN | SUNBED_A | Frequency of use of tanning beds | | NO LONGER AVAILABLE |
| **Sample Adult** | UTZ | EMERGE12M_A | Number of times visited hospital emergency room, past 12m | D R | EMERG12MTC_A |

| | | | | | |
|---|---|---|---|---|---|
| **Sample Adult** | UTZ | URGENT12M_A | Number of times visited urgent care, past 12m | D R | URGNT12MTC_A |
| **Sample Child** | UTZ | EMERGE12M_C | Number of times visited hospital emergency room, past 12m | D R | EMERG12MTC_C |
| **Sample Child** | UTZ | URGENT12M_C | Number of times visited urgent care, past 12m | D R | URGNT12MTC_C |
| **Sample Adult** | WLK | WLKTRANLGT_A WLKTRANTP_A | Walk transportation | D R | WLKTRANTC_A |
| **Sample Adult** | WLK | WLKLEISLGT_A WLKLEISTP_ | Walk leisure | D R | WLKLEISTC_A |
| **NOTE: The Research Data Center (RDC) is a data enclave established to provide a mechanism whereby researchers can access detailed data files in a secure environment without jeopardizing the confidentiality of survey participants. Information about RDC access options and application procedures is available at: https://www.cdc.gov/rdc/.** | | | | | |