National 2009 H1N1 Flu Survey (NHFS)

A User's Guide for the Public-Use Data File

Centers for Disease Control and Prevention

National Center for Immunization and Respiratory Diseases

and

National Center for Health Statistics

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March 2012

Acknowledgments

The development and production of the NHFS public-use data files is a team effort that has included contributions from many individuals (listed in alphabetical order) in the three organizations:

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1. Introduction

The first cases of a new influenza virus, 2009 influenza A (H1N1)pdm09, or pH1N1, began to circulate in the United States in April 2009. This influenza strain is also commonly known as "H1N1 flu" or "swine flu." The virus continued to spread worldwide and in June 2009 the World Health Organization declared it a pandemic (http://www.who.int/mediacentre/news/statements/2009/h1n1_pandemic_phase6_20090611/en/index.html). A pH1N1 influenza vaccine was developed and available to the public beginning October 5, 2009. The pH1N1 vaccine was a separate monovalent vaccine because pH1N1 emerged too late to be included in the trivalent seasonal influenza vaccine for the 2009-10 season. In order to monitor and evaluate influenza vaccination efforts among adults and children, the National 2009 H1N1 Flu Survey (NHFS) was implemented by the National Center for Immunization and Respiratory Diseases (NCIRD) and the National Center for Health Statistics (NCHS) of the Centers for Disease Control and Prevention (CDC). The NHFS collected data on the uptake of both the pH1N1 and the seasonal influenza vaccines. The target population for the NHFS was all persons in the United States aged 6 months and older.

Several groups were recommended by CDC's Advisory Committee on Immunization Practices (ACIP) to receive priority for pH1N1 vaccination (http://www.cdc.gov/h1n1flu/vaccination/acip.htm):

- Pregnant women
- Household contacts or caregivers of children under 6 months of age
- Health care and emergency medical services personnel
- All persons 6 months through 24 years
- Adults 25 to 64 years with high-risk or chronic medical conditions

In addition, a more narrow classification of individuals was recommended for pH1N1 vaccination in the case of vaccination shortages or limitations (the "limited target group"), including the following groups.

- Pregnant women

- Household contacts or caregivers of children under 6 months of age
- Health care and emergency medical services personnel with direct patient contact
- All children 6 months to 4 years
- Children 5 to 18 years with high-risk or chronic medical conditions

Following the target groups above, it was then further recommended that all members of the general population older than 6 months receive a pH1N1 vaccination.

In additional to the monovalent pH1N1 influenza vaccine, the seasonal influenza vaccine for the 2009-10 influenza season was also recommended for the following groups.

- Pregnant women
- Household contacts or caregivers of children under 6 months of age
- Health care and emergency medical services personnel
- All children 6 months through 18 years
- Adults 19 to 49 years with high-risk or chronic medical conditions
- All adults 50 years or older

For the recommended number of doses of influenza vaccine and other vaccines, see http://www.cdc.gov/vaccines/pubs/ACIP-list.htm. The NHFS collected data on both the seasonal influenza vaccine and the monovalent pH1N1 influenza vaccine, by injection or nasal spray or mist.

The NHFS was a large list-assisted random-digit-dialing telephone survey of both landline and cell (aka cellular, wireless) telephones, conducted by NORC at the University of Chicago on behalf of the CDC, operating from October 2009 through June 2010. Interviews were conducted by telephone with households in all 50 states and the District of Columbia. The survey provided weekly monitoring of both H1N1 and seasonal influenza vaccination coverage rates, nationally and at the state level, among all persons age six

months and older. In addition to questions about pH1N1 and seasonal influenza vaccination status of adults and children, the survey also asked about influenza-related behaviors, opinions about influenza vaccine safety and effectiveness, recent respiratory illness, pneumococcal vaccination status, and a number of household and individual demographic characteristics. The NHFS questionnaire can be found on the CDC website at http://www.cdc.gov/nchs/data/nis/h1n1/pandemic_flu_questionnaire_q1.pdf. The NHFS was a one-time survey designed to monitor and evaluate the pH1N1 vaccination campaign during the 2009-10 influenza season. Shorter duration National Flu Surveys (NFS) followed in the 2010-11 and 2011-12 influenza seasons.

For the purposes of monitoring weekly vaccination coverage rates, data from the NHFS were combined with influenza-related data collected as part of the National Immunization Survey (NIS), NIS-Teen, and SLAITS surveys, drawn from the NIS sampling frame. These supplemental NIS data are not included in the NHFS Public-Use Data File. Furthermore, the sampling frames for the NIS and the NHFS were independent and deduplicated, thus there is no overlap in sampled telephone lines between the NIS and the NHFS. For more information on the NIS, see http://www.cdc.gov/nchs/nis.htm.

Samples of telephone numbers were drawn independently for each calendar quarter within selected geographical areas. There are 51 geographic strata for which vaccine coverage levels can be estimated (50 states plus the District of Columbia).

For more information about pH1N1 and to read about the CDC's response to the pandemic, see:

http://www.cdc.gov/h1n1flu/cdcresponse.htm .

http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5947a1.htm?s_cid=mm5947a1_w

http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5912a2.htm

http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5916a1.htm

2. Sample Design

2.1. The NHFS RDD Telephone Survey

The NHFS was conducted using a dual-frame sample design, including interviews obtained by both landline telephones and cellular phones. Within each sample frame, the NHFS RDD telephone survey used independent, quarterly samples of telephone numbers in each of the states. Although most households continue to maintain landline telephone services, the number of cellular telephone users in the U.S. has increased rapidly (Blumberg and Luke, 2010). Results from the July-December 2009 National Health Interview Survey (NHIS) indicated that the number of households with only wireless telephones continues to increase. Approximately 22.9% of all adults – approximately 52 million adults – lived in households with only wireless telephones; 25.9% of all children – approximately 19 million children – lived in households with only wireless telephones (Blumberg and Luke, 2010).

The design and implementation of the NHFS sample involved four procedures. First, statistical models predicted the number of sample telephone numbers needed in each state to meet the target precision requirements. Second, the sample for a state was divided into random sub-samples called replicates. By releasing replicates as needed, it is possible to spread the interviews for each sampling area evenly across the entire calendar quarter. Third, an automated procedure eliminated a portion of the non-working and non-residential landline telephone numbers from the sample before the interviewers dialed them. Landline telephones were dialed using an autodialer while cell phones were manually dialed. Fourth, the sampled landline telephone numbers were matched against a national database of residential telephone numbers in order to obtain usable mailing addresses for as many sample households as possible. To promote participation in the NHFS, an advance letter was sent to these addresses approximately two weeks prior to the household interview. Among landline cases dialed in the telephone center, 45.3 percent were mailed an advance letter. For cell-phone sample cases, mailing addresses were not obtained, and advance letters were not sent.

Beginning 27 September 2009 and ending 20 June 2010, inclusive, a subset of sampled telephone lines were released each Sunday to the telephone center for dialing. Dialing continued for up to five weeks, with contact attempts ceasing after either a completed interview was obtained or five weeks had elapsed. A minimum of eight contact attempts were made.

Using Computer Assisted Telephone Interviewing (CATI), the survey began with a screening section, which differed depending on the type of telephone dialed. For landline telephone calls, the screener was used only to identify whether there was at least one age-eligible adult (≥18 years) in the household. Then, one adult was selected at random from a complete roster of all adults in the household. Cellular telephone numbers were screened to verify that the phone belonged to an adult for personal use, and also that this adult resided in a "cell-phone-only" (household has access to cell phones but not to landline telephones) or "cell-phone-mainly" (household that maintains both one or more landline telephones and one or more cell telephones, but would be very unlikely or somewhat unlikely to answer any one of the landline telephones if it rang when someone was at home) household. If eligible, the answering adult was chosen as the respondent, with no random selection of an adult respondent taking place.

If the adult respondent belonged to a household that also contained one or more children under 18, one child was selected at random. Selection of the child was followed by a set of vaccination status questions analogous to those included in the adult interview, answered by the adult within the household that is identified as the most knowledgeable about the child's health care and vaccination status. While children 0-6 months may have been selected for the NHFS, only completed interviews for children 6 months or older at the time of interview are included on the Public-Use Data File.

2.2. Summary of Data Collection

Table 1 presents selected operational results of NHFS data collection for the entire sample. The sample (in replicates that were released for use) consisted of 980,783 telephone numbers, including 734,367 landline telephones and 246,416 cell phones.

Of the 734,367 landline telephone numbers, 338,271 were eliminated before release to the telephone centers by the automated procedure as non-working, non-residential, cell telephone, or "take me off the list" numbers. The remaining 396,096 numbers were sent to the telephone centers to be dialed, and 106,160 households were identified, as shown in Rows 3 and 6. Among the identified households, 105,724 (99.6 percent) were successfully screened. Of these, 225 did not contain an age-eligible adult, and 105,499 (99.8 percent) contained one or more age-eligible adults. Among these households, 45,599 (43.2 percent) completed the adult household interview. In addition to the adults, 11,240 (24.6 percent) of these households also produced a completed child interview for one child age 6 months to 17 years.

All 246,416 cell-phone numbers were sent to the telephone centers to be dialed, and 44,940 active personal cell phones were identified, as shown in Rows 3 and 6. Among the identified cell phone users, 38,536 (85.8 percent) were successfully screened for both minor status and cell-phone-only/mainly status. Of these, 6,426 were minor-only cell phones, and 12,283 belonged to adults that did not reside in cell-phone-only/mainly households. Of the 19,827 age-eligible adults in cell-phone-only/mainly homes, 11,057 (55.8 percent) completed the adult household interview. From these households, 3,048 (27.6 percent) child interviews were also completed.

Table 1: Selected Operational Results of Data Collection, National 2009 H1N1 Flu Survey

Row	Key Indicator	Number (Landline Telephones)	Percent (Landline Telephones)	Number (Cell Phones)	Percent (Cell Phones)	Formula for Percentages
	Household Phase					
1	Total Selected Telephone Numbers in Released Replicates	734,367	–	246,416	–	–
2	Phone Numbers Resolved before Computer-Assisted Telephone Interviewing	338,271	46.06%	–	–	(Row 2/Row 1)
3	Total Phone Numbers Released for Computer-Assisted Telephone Interviewing	396,096	–	246,416	–	–
4	Number of Advance Letters Mailed – *Advance Letter Mailing Rate*	179,452	45.31%	–	–	(Row 4/Row 3)
5	Resolved Phone Numbers* – *Resolution Rate*	575,533	78.37%	134,511	54.59%	(Row 5/Row 1)
6	Households Identified** – *WRN Rate/APCN Rate*	106,160	18.45%	44,940	33.41%	(Row 6/Row 5)
7	Households Successfully Screened for Presence of an Adult and for Cell-Phone-Only/Mainly Status*** – *Screener Completion Rate*	105,724	99.59%	38,536	85.75%	(Row 7/Row 6)
8	Households with Age-Eligible Adults – *Age Eligibility Rate*	105,499	99.79%	32,110	83.32%	(Row 8/Row 7)
9	Adults with Cell-Phone-Only/Mainly Status – *Cell-Phone-Only/Mainly Rate*	–	–	19,827	61.75%	(Row 9/Row 8)
10	Households with Completed Adult Household Interviews–*Interview Completion Rate*	45,599	43.22%	11,057	55.77%	Landline: (Row 10/Row 8) Cell: (Row 10/Row 9)
11	CASRO Response Rate****	–	33.73%	–	26.11%	(Row 5 x Row 7 x Row 10)
12	Households with Eligible Children–*Child Eligibility Rate*	12,717	27.89%	3,863	34.94%	(Row 12/Row 10)
13	Households with Completed Child Interviews–*Child Interview Completion Rate*	11,240	88.40%	3,048	78.90%	(Row 13/Row 12)

* Includes telephone numbers resolved before release to the telephone centers (Row 2).

** For the landline sample, this is the working residential number (WRN) rate; for the cell-phone sample, it is the active personal cell-phone number (APCN) rate.

*** Screening for cell-phone-only/mainly status was done for the cell-phone sample only.

****CASRO, Council of American Survey Research Organizations.

A standard approach for measuring response rates in telephone surveys has been defined by the Council of American Survey Research Organizations (CASRO 1982). The CASRO response rate is equivalent to "RR3" of AAPOR Standard Definitions (AAPOR, 2011). The CASRO response rate equals the product of the resolution rate (78.4% for landline 54.6% for cell, Row 5), the screening completion rate (99.6% for landline and 85.8% for cell, Row 7), and the interview completion rate among eligible households (43.2% for landline and 55.8% for cell, Row 10). For the NHFS, the CASRO response rate (Row 11) was 33.4 percent for landline telephones (78.4% × 99.6% × 43.2%) and 26.1 percent for cell phones (54.6% × 85.8% × 55.8%). The resolution rate is the percentage of the total telephone numbers selected that are classifiable as non-working, non-residential, or residential. The screening completion rate is the percentage of known households that are successfully screened for the presence of an age-eligible adult, and for cell-phone cases, cell-phone-only/mainly status. The interview completion rate is the percentage of eligible households who complete the household interview.

For each state, Table E.1 (see Appendix E) shows the state-specific total population and the number of completed household interviews for adults and children.

2.3. Informed Consent, Security, and Confidentiality of Information

The advance letter, introduction to the telephone survey, and oral consent assure the respondent of the confidentiality of his/her responses and the voluntary nature of survey participation. Information in the NHFS is collected and processed under high security. To ensure privacy of the respondents and confidentiality of sensitive information, NCHS has established standards for release of data from all NCHS surveys. All CDC staff and contractor staff involved with the NHFS sign the NCHS confidentiality agreement and follow instructions to prevent disclosure.

All information in the NHFS is collected under strict confidentiality and can be used only for research purposes [Section 308(d) of the Public Health Service Act, 42 U.S. Code 242m(d), the Privacy Act of 1974 (5 U.S. Code 552a), and the Confidential Information Protection and Statistical Efficiency Act (5 U.S. Code)].

Prior to public release, the contents of the public-use data file go through extensive review by the NCHS Disclosure Review Board to protect participant privacy as well as data confidentiality.

3. Content of NHFS Questionnaire

The NHFS is a Computer Assisted Telephone Interview (CATI) survey. As shown in Table 2 below, it begins with screening section S. When screening landline cases, the instrument identifies all age-eligible adults (18+ years) in the household and randomly selects one adult for the interview. Cellular telephone numbers are screened to verify that the phone belongs to an adult for personal use, and that this adult belongs to a "cell-phone-only" or "cell-phone-mainly" household. A household is "cell-phone-only" if there is no landline telephone in the home, and "cell-phone-mainly" if there is a landline number available but the respondent reports that it would be very unlikely or somewhat unlikely for the landline telephone to be answered if it were to ring while the respondent was at home.

Following the screener, Section B requests information from the adult respondent about his or her knowledge of and level of concern about the 2009 H1N1 flu virus, and asks whether the respondent has engaged in any of a number of behaviors in response to the potential for an H1N1 flu outbreak. Section F asks the adult about H1N1 and seasonal influenza vaccinations received, including the number of doses and their modes of delivery (injection or nasal spray/mist), as well as the type of place where a vaccine was administered, if one is reported. Reasons for not being vaccinated are asked of those reporting no receipt of an influenza vaccine. In Section R the respondent is asked about selected chronic medical conditions (asthma, diabetes, lung conditions other than asthma, heart conditions, kidney conditions, sickle cell anemia or other anemia, neurological or neuromuscular conditions, liver conditions, weakened immune system caused by chronic illness or by medicines taken for chronic illness), and about his or her history of respiratory illness, including influenza-like illness (ILI).

If the adult respondent belongs to a household that also contains one or more children under 18 years of age, one child is automatically selected at random from a roster of all eligible children in the household. Selection of the child is followed by two sections that are analogous to two of the sections on the adult interview: Section CF requests information regarding the child's history of H1N1 and seasonal flu vaccinations, and Section CR asks about any history of chronic medical conditions and respiratory illness.

In Section D, demographic information is requested regarding the respondent's household and about the adult and child (if any) interviewed. This information includes household income, race and ethnicity of both adult and child, and education level of the adult respondent. Section H completes the interview with questions regarding the number and type of telephone lines in the home and other information needed for the proper processing of data.

Table 2: Content of the Household Interview, National 2009 H1N1 Flu Survey

Questionnaire Section	Content of Section
Section S	Screening questions to identify and select eligible adult
Section B	Adult questions about knowledge, concerns, and behaviors
Section F	Adult H1N1 and seasonal flu vaccination history
Section R	Adult history of chronic conditions and respiratory illness
Section CS	Selection of eligible child, if available
Section CF	Child H1N1 and seasonal flu vaccination history
Section CR	Child history of chronic conditions and respiratory illness
Section D	Demographics and socioeconomic information
Section H	Household characteristics

The NHFS questionnaire can be found on the CDC website at http://www.cdc.gov/nchs/data/nis/h1n1/pandemic_flu_questionnaire_q1.pdf.

4. Data Preparation and Processing Procedures

The household data collection and provider data collection in the NHFS incorporate extensive data preparation and processing procedures. During the household interview, the CATI system supports reconciliation of critical errors as interviewers enter the data. After completion of interviewing, use of post-CATI editing and data cleaning procedures produce a final interview data file. The end product is an analytic file containing household interview data for use in estimating household-reported vaccination coverage rates.

4.1. Data Preparation

The editing and cleaning of NHFS data involve several steps. First, the CATI system enables interviewers to reconcile potential data entry errors while the respondent is on the telephone. Further cleaning and editing take place in a post-CATI clean-up stage, involving a review of data values, cross tabulations, and the recoding of verbatim responses for race, ethnicity, place of vaccination, and reasons for not obtaining a vaccine. The next step involves the creation of numerous composite variables. After these steps have been completed, imputations are performed for item non-response on selected variables, and final analytic weights are calculated. The procedures and rules of the National Health Interview Survey (NHIS) and NIS serve as the standard in all stages of data editing and cleaning (http://www.cdc.gov/nchs/nhis.htm).

4.1.1. Editing in the CATI System

The CATI software checks consistency across data elements and does not allow interviewers to enter invalid values. Catching potential errors early increases the efficiency of post-survey data cleaning and processing.

To prevent an overly complicated CATI system, out-of-range and inconsistent responses produce a warning screen. This allows the interviewer to reconcile errors while respondent is on the telephone.

A CATI system cannot simultaneously incorporate every possible type of error check and maximize system performance. To reconcile this trade-off, post-CATI edits are used to resolve problems that do not require access to the respondent, as well as unanticipated logic problems that appear in the data.

4.1.2. Post-CATI Edits

The post-CATI editing process produces final, cleaned data files. After completion of interviewing each quarter, the raw data are extracted from the CATI data system and used to create two files: the sample file and the interview data file. The sample file contains one record for each sample telephone number and summary information for telephone numbers and households. The interview data file contains one record for each completed interview and all interview data reported. Following creation of these two files, a preliminary analysis of each file identifies out-of-range values and extraneous codes. Once the required corrections are verified, invalid values are replaced with either an appropriate data value or a missing value.

Crosscheck programs ensure that cases exist across files in a consistent manner. Specifically, checks ensure that each case in the interview data file is also present in the sample file and that each case in the sample file was released to the telephone center. Checks also ensure that no duplicate households exist in the sample file.

When all checks have been performed, the final interview data file is created. Programmers and statisticians then create composite variables constructed from basic variables for each child. Sampling weights (described in Section 6 of this Guide) are added to each record.

Although data editing procedures were used for the NHFS, the data user should be aware that some inconsistent data might remain in the public-use data file. The NHFS does not re-contact households to attempt to reconcile potential discrepancies or to resolve reporting errors.

4.2. Separation of Adult and Child Interview Records

In cases where there is both an adult and child interview completed from the same household, the adult and child will each appear as distinct records on the public-use data file. That is, all data pertaining to the adult will appear in one row of the data set while all data pertaining to the child will appear on another row. The variable SEQNUMHH is the household identifier and can be used to link together adults and children from

the same households where desired. However, while the adult and child reside in the same household, the relationship between the adult and child is not known. There is no guarantee that the adult respondent is the parent of, or is even related to, the child selected from the same household, as multiple unrelated families may live in the same household. Adults and children can be identified by the variable SUBGROUP, where adults have SUBGROUP = 'A' and children SUBGROUP = 'C'.

Much of the data collected in the questionnaire applies to both adults and children. For example, variables describing H1N1 and seasonal flu vaccination status, history of respiratory illness, and presence of a chronic medical condition apply to all cases and will be populated on both adult and child records. Some questions, however, were asked only of adults and will be missing on child records. Examples include the adults level of concern about the flu, opinions about flu vaccine effectiveness and safety, and membership in specific high-risk groups, such as working in a health-care setting. In addition to listing all of the variables on the data file, Appendix D also indicates for each variable whether it is available for adults only, children only, or both adults and children.

Demographic data have been allocated to adult and child records by the following conventions:

- Any individual-level demographic variable that applies to both adults and children (e.g., age group, race/ethnicity) will be populated on both the adult and the child record under a common variable name.
- Household-level demographic variables (e.g., household income, housing tenure, state of residence) apply to both adults and children and will thus be populated on both adult and child records. These variables will be "double-counted" if frequencies are run on all records in the data set, so the user must take care to limit the data file to adult records only when conducting such frequencies. The NHFS public-use data file is an individual-level data file, not a household-level data file.
- Individual-level demographic variables that apply to adults only (e.g., employment status, marital status, education level) are populated on the adult records and will be entirely missing for all child

records. As mentioned above, the household indicator SEQNUMHH can be used to link adult and child records from the same household, but recall that the relationship between the adult and child is unknown.

4.3. Variable-Naming Conventions

The names of variables follow a systematic pattern where possible. The codebook for the public-use data file groups the variables into seven broad categories according to the content of the variable (NCHS 2011). See Section 7 of this report for detailed information on the contents of the public-use data file.

4.4. Imputation for Item Non-Response

The NHFS uses imputation primarily to replace missing values in the socioeconomic and demographic variables used in weighting. Missing values of these variables are imputed for all completed interviews. A sequential hot-deck method is used to assign imputed values (Ford 1983). Class variables are used to separate respondents into cells. Donors and recipients must agree on the categories of the class variables. Within the categories of the class variables, respondents are sorted by variables related to the variable to be imputed. The last case with an observed value is used as the donor for up to four recipients. The "Notes" line for each variable in the codebook (NCHS 2011) identifies variables that contain imputed values. These variables include the gender, Hispanic origin, race, age group, number of adults in the household, number of children in the household, number of landline telephones in the household, and number of cell phones used by adults in the household.

4.5. Composite Variables

A number of composite variables (constructed from basic variables) are created and included in the NHFS public-use data file. Composite variables assist users and data analysts by eliminating duplication of effort and making NHFS data easier to use. The composite variables include vaccination status for both H1N1 and seasonal flu vaccines, race and ethnicity, and household income. Many of these household composite

variables are included in the NHFS public-use data file. See Section 7 of this report for information on the key variables that are included.

The NHFS race categories include Native American or Alaska Native, and Native Hawaiian or Pacific Islander, implementing the revised Office of Management and Budget (OMB) standards for classification of race and ethnicity (http://www.whitehouse.gov/omb/fedreg_1997standards). The composite race and race/ethnicity variables in the NHFS public-use data files, however, contain only three race categories: white alone, black alone, and all other races alone and multi-racial persons; and two ethnicity categories: Hispanic, and non-Hispanic. The variable RACE_I_R classifies each case into one of the three race categories, while the variable RACEETH4_I includes a separate "Hispanic" category. The "all other races" category includes Asian, American Indian or Alaska Native, Native Hawaiian or Pacific Islander, and other races. If more than one race was selected during administration of the race questions, the respondent is classified as multi-racial. Because of small sample sizes and risk of disclosure within states, the NHFS public-use data file does not contain any variables with separate multiple-race categories. Rather, the multi-racial respondents are included in the "all other races" category.

4.6. Missing Values

As mentioned above, some variables on the NHFS public-use data file are composite variables, derived from other questionnaire items. For such variables, missing values will appear as missing (as a dot for numeric variables, and a null field for character variables). Other variables are taken directly from the questionnaire and contain special missing value codes (77 for Don't Know, 99 for Refused, Missing if question not asked). The NHFS Public-Use Data File Codebook provides additional information about variable levels and their frequencies (NCHS 2011). See Chapter 6 of this guide for detailed information on the contents of the public-use data file.

4.7. Confidentiality and Disclosure Avoidance

To prevent identification of participants in the NHFS and the resulting disclosure of information, certain items from the questionnaires are not included in the public-use data file. In addition, some of the released variables either are top- or bottom-coded, or have their categories collapsed.

5. Quality Control and Quality Assurance Procedures

A major contributor to NHFS data quality is its sample management system, which over the course of the NHFS managed nearly 2,000 state and interview week combinations, and used a number of performance measures to track their progress toward completion. Important aspects of the quality assurance program for the NHFS included on-line interviewer monitoring and automated range-edits and consistency checks. These and other quality assurance procedures contributed to a reduction in total data collection cost by minimizing interviewer labor and overall burden to respondents. Khare et al. (2000), Khare et al. (2001), and the *National Immunization Survey: Guide to Quality Control Procedures* (CDC 2002) describe the quality assurance procedures used in NIS-related surveys.

6. Sampling Weights

The sampling weights permit analyses of data from completed household interviews. Each adult or child with a completed interview has a sampling weight called FLUWT. A sampling weight may be interpreted as the approximate number of people in the target population that a case in the sample represents. Thus, for example, the sum of the sampling weights of adults who were vaccinated for H1N1 flu yields an estimate of the total number of adults in the target population who were vaccinated. Dividing this sum by the total of the sampling weights for all adults gives an estimate of the corresponding vaccination coverage rate. The same method, limited to children instead of adults, would yield estimates of the total number of children vaccinated and the vaccination coverage rate among children.

This section describes how these weights are developed and adjusted so as to achieve an accurate representation of the target population. Because the NHFS was a dual-frame survey including both landline and cell-phone samples, the first two weighting steps (described in sections 6.1-6.2) were done separately by sample frame. After the landline and cell-phone cases were combined in step 6.3, the remainder of the weighting steps described here (in section 6.4) applied to both landline and cell-phone cases together.

6.1. Base Sampling Weight

In each quarterly NHFS sample, each household with at least one completed interview receives a base sampling weight. This weight is equal to the total number of telephone numbers in the sampling frame for the state (i.e., the "universe count") divided by the total number of telephone numbers that were randomly sampled from that sampling frame and state combination and released for interview during that quarter (i.e., the "sample count"). Landline and cell-phone cases have separate sets of state-level base weights, because they are from different sample frames (i.e., the "universe counts" differ) and they were sampled at different rates (i.e., the "sample counts" differ).

Base sampling weights are often further adjusted to correct for nonresolution of telephone numbers, screener noncompletion, and interview noncompletion among eligible households. For the purposes of the NHFS, these steps were not performed, because within each interview week the late responders (i.e., those responding in weeks 2-5 following sample release) were included as a proxy for nonresponding households. Research has suggested that the five-week rolling sample sufficiently mitigated the potential for nonresponse (Singleton et al, 2010) (Singleton et al, 2011). Remaining bias is addressed through weighting adjustments based on observable characteristics as described in sections 6.2-6.4.

6.2. Adjustments for Household Composition and Multiple Telephone Lines

Once the base sampling weights for households are computed, these weights are adjusted for household composition. For landline cases, one adult was selected at random from among all adults in the household. Thus, adults residing in a household with multiple adults are less likely to be sampled than adults living alone, so each adult's base weight is adjusted by multiplying by the number of adults in the household. For adults selected from the cell-phone frame, a similar adjustment is made, with each adult's household weight being multiplied by the number of adults (up to a maximum of 5) who use the sampled cell phone. Regardless of sample frame or telephone type, one child is selected from among all the children residing in the adult respondent's household. Thus for both landline and cell-phone cases, each child's base weight is multiplied by the number of children (up to a maximum of 5) in the household.

After the household composition-adjusted interview weights are computed, these weights are adjusted for additional telephone lines in the household. Because landline households with multiple landline telephones have a greater chance of being sampled, each landline interview weight is adjusted by dividing it by the total number of residential landlines reported in the household (up to a maximum of 3). This adjustment applies to both adults and children sampled from the landline frame. For the adults from the cell-phone frame, the sampled cell phone is considered to be a personal-use device and we assume that each adult can be reached by only one cell phone, thus there is no adjustment for multiple telephone lines for these adults. Children from the cell-phone frame can, however, reside in households containing multiple cell phones used by adults, so each child's weight is adjusted by dividing by the number of cell phones used by adults in the child's household (up to a maximum of 3).

Following the adjustments for household composition and multiple telephone lines, the resulting weight is known as the individual personal-level sampling weight.

6.3. Combining Landline and Cell-Phone Interviews

Given the potential for differential nonresponse and coverage, it is necessary to adjust the weights to allow the landline and cell-phone samples to be appropriately combined to represent the full population. This was accomplished by controlling the landline and cell-phone-only/mainly weighted sample counts to total population estimates for the landline and cell-phone-only/mostly populations, thereby yielding weighted counts that reflect the population distribution by telephone status.

For this step, we take the landline sample and the cell-phone sample to represent mutually exclusive segments of the corresponding population (i.e., the landline and cell-phone-only/mostly populations). That is, all landline sample cases are assumed to be landline only, landline-mostly, or mixed-use households. Cell-phone sample cases, which were screened as described in section 2 for cell-phone-only/mainly status, are assumed to be representative of the cell-phone-only/mostly population (defined as households with no landline telephones, or households that contain landline telephones but that receive all or almost all calls on cell phones). Total population estimates by telephone status were taken from NHIS estimates of telephone status in June-December 2008 (Blumberg and Luke, 2009).

This adjustment was done by age group, with adults divided into five sub-groups (18-24, 25-29, 30-44, 45-64, 65+), and the children divided into five sub-groups (6-18 months, 19-35 months, 3-5 years, 6-12 years, 13-17 years), representing the age groups for which separate estimates of the cell-only/cell-mostly population are available from NHIS. This adjustment was done nationally within each age group, not at the state level, as sample sizes did not warrant this level of stratification.

6.4. Post-Stratification

The next step in the adjustment is a simple post-stratification that separates the sample of completed interviews into cells defined by age group. The control total for each age group cell was derived from 2008 and 2009 Census population estimates of the civilian, non-institutionalized U.S. population. To reduce sampling variability and improve the precision of estimation, extreme weights were trimmed and then

recalibrated to control totals. Sampling weight values with large adjustment factors relative to the base weight were truncated. This weight trimming prevents cases with unusually large weights from having an unusually large impact on vaccination coverage estimates.

The final step in adjusting the RDD sampling weights is a raking adjustment (Deming 1943) of the trimmed, post-stratified weights. The raking procedure used national-level control totals for three raking dimensions: age group by gender, race/ethnicity, and state of residence. Briefly, raking takes each variable in turn and applies a proportional adjustment to the current weights of the cases who belong to the same category of the variable. The adjusted weights are then trimmed once again before the raking procedure continues, and this step is repeated until no weight trimming is needed. After a number of iterations over all the variables, the raked weights have totals that match all the desired control totals. Raking makes it possible to incorporate additional variables into the weighting and to use more detailed categories for those variables.

The sampling weights after all the foregoing adjustments constitute the final sampling weight FLUWT. See Table B.1 of Appendix B for select statistics on the distribution of FLUWT by state among adults. For children, see Table B.2.

7. Contents of the Public-Use Data File

The NHFS public-use data file contains a record for each eligible adult that completed section F of household interview, and one record for each child on whose behalf section CF of the household interview was completed. Thus the pH1N1 and seasonal influenza vaccination coverage status was asked of all cases on the public-use data file, though this information may be unavailable for some cases if they did not know or refused to answer these questions. Additional data concerning demographic information may be unavailable for some cases because this information was collected after section F for adults, and after section CF for children. This means some cases were considered "complete" without having answered the demographic questions.

The public-use data file consists of seven sections, the contents of which are described below in detail. For additional information, users are encouraged to consult the NHFS Public-Use Data File Codebook (NCHS 2011). The codebook is divided into the seven sections described below and contains variable names, labels, and response frequencies (for categorical variables). For select variables, the codebook also gives additional information about the variable in the "Notes" field. A full list of variables appearing on the NHFS public-use data file appears in Appendix D.

7.1. Section 1: Administrative Variables

Section 1 contains ID variables and variables relating to the administration of the survey, as opposed to information collected during the survey itself.

- **SEQNUMHH**, **SEQNUMP**: SEQNUMHH is the unique household identifier and SEQNUMP is the unique person identifier. For households that completed both an adult and a child interview in the stand-alone survey, there are two records on the file with the same SEQNUMHH. The user may use SEQNUMHH to link together child and adults records from the same household.
- **SAMP_DESIG**: SAMP_DESIG indicates the sample type for the person:
    - SAMP_DESIG="FR": landline telephone sample
    - SAMP_DESIG="FC": cell-phone sample
- **SUBGROUP**: indicates the age group of the person for whom the interview was completed:
    - SUB_GROUP ="A": adult 18+ years old
    - SUB_GROUP ="C": child 6 months – 17 years old
- **INT_MONTH**: Indicates the month during which the interview was completed. It is possible though rare for an adult and child from the same household to complete the survey in different months.

- **LANGUAGE**: The language in which the telephone interview was conducted.

7.2. Section 2: Household-Reported Vaccination Variables

Section 2 contains influenza vaccination indicators and counts. These variables are derived from the information reported at section F for adults and section CF for children. These are the variables that are used to produce pH1N1 and seasonal influenza vaccination coverage estimates. If the vaccination status or number of vaccinations could not be determined due to "Don't Know" or Refused" responses, these vaccination status and count variables have been set to missing. As noted earlier, NHFS sample was released on a weekly basis across a data-collection period of 39 weeks, ranging from week ending October 3, 2009 to week ending June 26, 2010. To protect the confidentiality of NHFS respondents, the week of interview is not available on the public use file. The month of interview has been provided as an alternative. Table B.3 presents the number of adult and child interviews achieved by month. Note that NHFS respondents interviewed early (late) in the data-collection period had a relatively low (high) probability of being vaccinated, and generally the probability of vaccination increased monotonically throughout the period. To reflect this reality, special considerations are needed when estimating the proportion of persons vaccinated. See Section 8 for further discussion.

7.2.1. pH1N1 Flu Vaccination Variables

- **VACC_H1N1_F**: Indicates whether or not the person received a monovalent pH1N1 influenza vaccination since September 2009 (1=Yes, 0=No, Missing=undetermined) up to the date of interview. A 1 indicates that at least one vaccination was reported, regardless of whether the month, year, or delivery mode was supplied.

- **VACC_H1N1_COUNT**: Number of monovalent pH1N1 influenza vaccinations the person received since September 2009 (Missing=undetermined) up to the date of interview. Counts all reported vaccinations regardless of whether the month, year, or delivery mode was supplied.

- **VACC[1/2]_H1N1_[M/Y/T]**: Variables giving the month, year, and type (delivery mode: injection or spray/mist) for each of up to two reported monovalent pH1N1 vaccinations. These variables will be missing if the respondent did not receive any monovalent pH1N1 vaccinations, had unknown vaccination status due to Don't Know or Refused answers, or reported a monovalent pH1N1 vaccination but did not provide the month, year, or delivery mode of the vaccination. Note that the monovalent pH1N1 influenza vaccination was only available to the general public beginning October 5, 2009 (though some may have received the vaccination in September as clinical trial participants). However, the questionnaire asks respondents to report H1N1 vaccinations "since September 1st". These variables may indicate report of an H1N1 vaccination in September.

7.2.2. Seasonal Flu Vaccination Variables

- **VACC_SEAS_F**: Indicates whether or not the person received a seasonal influenza vaccination since August 2009 (1=Yes, 0=No, Missing=undetermined) up to the date of interview. A 1 indicates that at least one vaccination was reported, regardless of whether the month, year, or delivery mode was supplied.

- **VACC_SEAS_COUNT**: Number of seasonal influenza vaccinations the person received since August 2009 (Missing=undetermined) up to the date of interview. Counts all reported vaccinations regardless of whether the month, year, or delivery mode was supplied.

- **VACC[1/2]_SEAS_[M/Y/T]**: Variables giving the month, year, and type (delivery mode) for each of up to two reported seasonal flu vaccinations. These variables will be missing if the respondent did not receive any seasonal flu vaccinations, had unknown vaccination status due to Don't Know or Refused answers, or reported a seasonal flu vaccination but did not provide the month, year, or delivery mode of the vaccination.

7.2.3. Pneumonia Vaccination Variables

For adults, information about receipt of the 23-valent pneumococcal polysaccharide vaccine (PPV23), commonly known as the "pneumonia" vaccine, was also collected in the NHFS. Pneumococcal disease is a common bacterial complication of influenza infection, and PPV23 is recommended for persons 2-64 years with medical indications and all persons ≥65 years. The variables included on the data file are:

- **VACC_PNEU_F**: Indicator of whether or not the person has received a pneumonia vaccination as an adult (1=Yes, 0=No, Missing=undetermined). This question is asked only of adults.
- **VACC_PNEU_COUNT**: Number of pneumonia vaccinations the person has received as an adult (Missing=undetermined). This question is asked only of adults.

7.3. Section 3: Knowledge, Attitudes and Practices Variables

Section 3 contains variables with information collected in the "Knowledge, Attitudes, and Practices" section of the survey. These variables are indicator variables, with one variable per response option for each question. (They were set up as indicator variables to facilitate the derivation of estimates and creation of tables.)

- "**B_H1N1**" variables: These variables whose names begin with "B1_H1N1" indicate things the person has done as a result of the H1N1 flu.
- "**CONCERN**" variables: The variables whose names begin with "CONCERN" indicate the person's level of concern about the H1N1 flu.
- "**INT_H1N1**" variables: The variables whose names begin with "INT_H1N1" indicate the person's intent to get the H1N1 flu vaccine for him- or herself or for his or her child.
- "**KNOW_H1N1**" variables: The variables whose names begin with "KNOW_H1N1" indicate the person's level of knowledge about the H1N1 flu.
- "**PLACE_H1N1**" and "**PLACE_SEAS**" variables: The variables whose names begin with "PLACE_H1N1" and "PLACE_SEAS" indicate the place where the person got his or her most

recent H1N1/seasonal flu vaccination. These variables reflect the backcoding of any open-ended verbatim places given.

- "**REAS_NOH1N1**" and "**REAS_NOSEAS**" variables: The variables whose names begin with "REAS_NOH1N1" and "REAS_NOSEAS" indicate the reason why the person will not get an H1N1/seasonal flu vaccination. These variables reflect the backcoding of any open-ended verbatim reasons given.

- "**INT_NEXT**" variables: The variables whose names begin with "INT_NEXT" indicate the person's intent to get the seasonal flu vaccine for him- or herself or for his or her child during the next flu season (Fall 2010). This question was added to the survey in Q2/2010, so this information is available only for interviews completed in April, May and June of 2010.

7.4. Section 4: Respiratory Illness Variables

Section 4 contains variables with information collected in the "Respiratory Illness" sections of the adult and child surveys.

- "**DOCREC**" variables: The variables whose names begin with "DOCREC" indicate whether a doctor has recommended that the person receive a pH1N1 and/or seasonal influenza vaccination.

- **Q9** and **Q9_NUM**: Q9 indicates whether the adult or child visited a doctor since September 2009 up to the date of interview. If so, Q9_NUM indicates the number of such visits. These questions were added to the survey in Q1/2010, so they are available only for interviews completed January 2010 or later.

- "**ILI**" variables: The influenza-like illness (ILI) variables whose names begin with "ILI" indicate whether the person has been sick with a fever and cough or sore throat in the past month, whether the person was treated for this sickness, whether the person was diagnosed with the seasonal or pH1N1 influenza, and for adults, how many days of school or work were missed as a result of influenza-like illness.

- **PSL_1** and **PSL_2**: PSL_1 indicates whether the adult earns or has access to paid sick time off from employment. If so, PSL_2 indicates whether the adult employee may use this time to care of sick children or family members. These questions were added to the survey in Q1/2010, so they are available only for adults reporting that they are employed full time and who completed the survey in January 2010 or later.

7.5. Section 5: Risk Variables

Section 4 contains variables storing information collected in the "Risk Factors" section of the adult and child surveys. Note that the user will not be able to use these variables to exactly construct the initial, limited, or seasonal vaccination target groups as outlined in Chapter 1 of this guide, because 1) a pregnancy indicator is not included on the public-use data file, and 2) the age groups provided on the PUF are too broad to construct these risk groups exactly (see Section 7.6). These omissions were made to minimize the risk of participant disclosure.

- **CHRONIC_MED_F**: This variable indicates whether the person has any of the following chronic medical conditions: asthma or an other lung condition, diabetes, a heart condition, a kidney condition, sickle cell anemia or other anemia, a neurological or neuromuscular condition, a liver condition, or a weakened immune system caused by a chronic illness or by medicines taken for a chronic illness.

- **CLOSE_UNDER6MO_F**: This variable indicates whether the person has close regular contact with a person under the age of six months, either as a parent or a caregiver. It is available only for adults.

- **HEALTH_WORKER_F**: This variable indicates whether the person is a health care worker. It is available only for adults.

- **PATIENT_CONTACT_F**: This variable indicates whether the person is a health care worker with regular direct patient contact. It is available only for adults.

7.6. Section 6: Socio-Demographic Variables

Section 6 contains socio-demographic information. These variables are derived from information collected in the demographics sections of the adult and child surveys.

- **AGEGRP**: The age group of the adult or child. Missing values have been imputed.
- **EDUCATION_COMP**: Adult's self-reported level of education. Available for adults only.
- **HISP_I**: Indicates whether the adult or child is of Hispanic origin. Reflects the backcoding of open-ended verbatim ethnicities given. Missing values have been imputed.
- **RACE_I_R**: Three-level race variable has been collapsed into the following categories: white only, black or African American only, and all other races or multiple races. Reflects the backcoding of any open-ended verbatim races given. Missing values have been imputed.
- **RACEETH4_I**: Four-level composite race and ethnicity indicator, derived from HISP_I and RACE_I_R identifies the following groups: Hispanic (any race), non-Hispanic white only, non-Hispanic black only, non-Hispanic all other races or multiple races.
- **SEX_I**: SEX_I indicates the gender of the person. Missing values have been imputed.
- **INC_CAT1** and **INC_POV**: INC_CAT1 is the seven-level categorized household income and is available for both adults and children. INC_POV gives the poverty status of the person's household (above the poverty threshold, >=$75,000 income; above the poverty threshold, <$75,000 income; below the poverty threshold; poverty status unknown). Its derivation is based on the number of people and children reported in the household, the reported household income, and the 2008 Census poverty thresholds. The poverty status could be determined if the number of people and children in the household was reported and (1) if an exact household income was reported or (2) the entire cascade of income questions was completed, in which case the poverty status was set based on the midpoint of the established income bounds. INC_POV is also valid if the respondent did not complete the entire cascade of income questions but established income bounds sufficient to

determine poverty status. If the respondent did not report the number of people or the number of children in the household, or if the cascade of income questions was not completed sufficiently to determine poverty status, then INC_POV is set to "unknown".

- **N_PEOPLE_R, N_ADULT_R,** and **HH_CHILD_R**: These household composition variables give the total number of people (topcoded to 7), the total number of adults (topcoded to 4) and the total number of children (topcoded to 3) in the household and are available for both adults and children.

- **Q95**, **Q95_INDSTR**, and **Q95_OCCPN**: Q95 indicates whether an adult respondent is employed for wages or self-employed, unemployed, or not in the labor force (student, retired, etc.). For employed adults, Q95_INDSTR and Q95_OCCPN give the categorized industry and occupation for the adult's type of work. These distinctions are based on two-digit industry (NAICS) and occupation (SOC) codes, but are not actually equal to these existing codes; they are simply numeric values (1,2,3…) assigned for purposes of the NHFS.

- **MARITAL**: The marital status (married, not married, unknown) of the adult respondent. Not populated for children.

- **RENT_OWN**: This housing tenure variable indicates whether the respondent resides in a home that is owned or being bought, or if a home that is rented or occupied by some other arrangement. This variable is available for both adults and children.

7.7. Section 7: Geographic and Survey Weight Variables

Section 7 contains variables relating to the location of the person's residence and the survey weights.

- **FLUWT:** FLUWT is the final, person-level weight to be used when analyzing all data on the NHFS public-use data file.

- **STATE**, **CEN_REG** and **HHS_REGION**: STATE is the true state of residence, which is based on respondent-reported geographic information where available, and on the sampling state derived from the telephone exchange when geographic information was not provided. CEN_REG is the Census region of residence based on STATE. HHS_REGION is the ten-level Health and Human Services defined health surveillance regions, also based on STATE.

- **MSA3_I** and **MSA_DEF**: MSA3_I is a three-level metropolitan statistical area indicator variable (in a principal city of an MSA; in an MSA but not in a principal city; not in an MSA). It is derived based on the respondent reported ZIP code (not provided). Missing values have been imputed. MSA_DEF indicates the month and the year of the MSA definitions used when constructing MSA3_I.

8. Analytic and Reporting Guidelines

Data from the NHFS public-use data file can be used to produce national and state-level estimates of the proportion of persons vaccinated or having selected opinions about influenza and influenza vaccination, using the weight variable FLUWT. Information in the data file can also be used to calculate standard errors of the estimates that reflect the complex sample design of the NHFS. The file includes state identifier STATE. The sample is stratified by the 51 states (including DC), and the state identifier (STATE) and the coded household identifier (SEQNUMHH) are key variables for obtaining standard errors for state and national estimates of vaccination coverage levels.

Official CDC estimates of influenza vaccination coverage levels using the NHFS are available online at http://www.cdc.gov/flu/professionals/vaccination/coverage_0910estimates.htm. The data contained in the NHFS public-use data file cannot be used to exactly replicate these estimates, because the official estimates included were based on NHFS data combined with other data sources. A key value of the NHFS public-use data file may be to evaluate factors associated with vaccination. Demographic and socioeconomic variables in the file can be used to obtain national vaccination coverage levels for sub-groups, or domains, of the

population. Estimates for such sub-groups at the state level can also be obtained, but will generally have larger standard errors because of smaller sample sizes.

8.1. Estimation and Analysis

8.1.1. Estimating a Proportion

Many estimates of vaccination levels or incidence of influenza-related opinions are ratio estimators, as described in the statistical literature on methods for complex sample surveys. To summarize the statistical methodology by which ratio estimators and their standard errors are obtained from these data, let Y_{hij} be an indicator, for the *j*th subject (adult or child) in the *i*th sampled household in the *h*th stratum (state) of the NHFS sampling design, equal to 1 if the subject presents the quality of interest (e.g., vaccination), and 0 otherwise. Also, let W_{hij} denote the value of FLUWT for this subject. Then, letting $\hat{Y}_h = \sum_{i=1}^{n_h} \sum_{j=1}^{m_{hi}} W_{hij} Y_{hij}$ and $\hat{T}_h = \sum_{i=1}^{n_h} \sum_{j=1}^{m_{hi}} W_{hij}$, the national ratio estimator may be expressed as

$$\hat{\theta} = \frac{\sum_{h=1}^{L} \hat{Y}_h}{\sum_{h=1}^{L} \hat{T}_h}$$

where *L* denotes the number of strata (the 51 states), n_h denotes the number of sampled households with at least one completed interview in the *h*th state, and m_{hi} denotes the number of number of subjects with completed NHFS interviews (up to two) in the *i*th household in the *h*th state.

8.1.2. Estimating Standard Errors of Ratio Estimators

The Taylor-series method can be used to estimate the sampling variance of ratio estimators for the U.S. and the states. Letting $Z_{hij} = \frac{W_{hij}(Y_{hij} - \hat{\theta})}{\sum_{h=1}^{L} \hat{T}_h}$, $Z_{hi} = \sum_{j=1}^{m_{hi}} Z_{hij}$, and $\overline{Z}_h = \frac{\sum_{i=1}^{n_h} Z_{hi}}{n_h}$ yields an estimator of the variance of the ratio estimator, $\hat{\theta}$, equal to

$$v(\hat{\theta}) = \sum_{h=1}^{L} \frac{n_h}{n_h - 1} \sum_{i=1}^{n_h} (Z_{hi} - \overline{Z}_h)^2 .$$

The standard error is the square root of the variance. The estimation of standard errors for ratio estimators in the NHFS can be implemented in specialized statistical software such as SUDAAN (Research Triangle Institute 2008), SAS (SAS Institute Inc. 2003), R (Lumley, 2010), and Stata (Stata Corporation 2005). Appendix E gives several examples of the use of SAS, R, and SUDAAN to estimate proportions and their standard errors for states. For all procedures, the option of with-replacement sampling of primary sampling units within stratum is used, because the sampling fractions for households within a state area are all quite small. In these applications the state (STATE) is used as the stratum variable and the household identifier (SEQNUMHH) as the primary sampling unit identifier. The data file should be sorted first on STATE and then on SEQNUMHH before running the programs for SUDAAN and SAS. As indicated above, FLUWT is used as the weight variable for analysis.

8.1.3. Methods of Estimation

The NHFS was conducted from October 2009 through June 2010, during the vaccination period for the 2009-10 pH1N1 and seasonal influenza vaccines. As a result, many respondent attributes will have changed over the duration of survey administration. Attitudinal and opinion variables may have changed over time in the population as the pandemic progressed and waned. The incidence of influenza-like illness (ILI) was also likely not constant. In particular, true vaccination coverage levels increased monotonically in the population over this period. To appropriately estimate influenza vaccination coverage levels in the 2009-10 season, one of the following methods should be used:

1. Use May or June, or combined May-June data to estimate influenza vaccination coverage levels for the 2009-10 season. This implies that no new vaccinations occur during these months, though in reality, a very small number of additional vaccines are administered in May and June. The programming examples in Appendix C follow this approach.
2. Identify a vaccination period of interest, then follow a "post-vaccination period" approach. For example, the user may define the seasonal influenza vaccination period to be August 2009 through March 2010, then use April – June 2010 data to produce estimated vaccination levels, while using the reported month and year of vaccinations to count only vaccines received during the defined vaccination period.
3. Use a time-to-event approach, such as a Kaplan-Meier survival analysis approach (Kaplan and Meier, 1958), to estimate vaccination coverage levels throughout the vaccination period while using interview data collected during the vaccination period. This approach was used to produce the CDC official estimates of 2009-10 pH1N1 and seasonal influenza vaccination coverage. For a description of this method, see http://www.cdc.gov/flu/professionals/vaccination/coverage_0910_estimates.htm.

Note that approaches 2 and 3 above rely on the reported month and year of vaccination. Excluding interviews with a missing month and year of vaccination may bias the resulting estimates downward, as doing so implicitly assumes that persons who reported vaccination but were not able report the month and year of vaccination were in truth not vaccinated. CDC official estimates used a hot-deck imputation procedure to impute the month and year of vaccinations where this information is missing.

Finally, analysis of the factors associated with influenza vaccination may not require the definition of a vaccination period. Users interested in evaluating the association of vaccination with opinion and socio-demographic factors may choose to restrict analysis to interviews conducted after the true incidence of vaccination was low. For example, using January – June or February – June 2010 interviews.

9. Summary Tables

Appendix E contains five tables. Appendix Table E.1 lists the 51 states for the NHFS by state. For the U.S. and for each state, it provides the estimated population total for adults and children in 2009, and (from NHFS data collection) the number of adults and children with completed household interviews.

Appendix Tables E.2 through E.5 summarize pairs of variables: age group by family poverty status (Appendix Table E.2), race/ethnicity by family poverty status (Appendix Table E.3), age group by race/ethnicity (Appendix Table E.4), and age group by gender (Appendix Table E.5). Each of these tables gives the unweighted and weighted counts of adults who have completed household interviews and the unweighted and weighted counts of children with completed interviews.

10. Limitations

The findings in this report are subject to several limitations. First, because NHFS is a telephone survey, results are weighted to be representative of all persons age 6 months and older. Although statistical adjustments were made to account for nonresponse and undercoverage, some bias might remain. Second, estimates of vaccination coverage are computed solely from respondent-reported information, and household reports of such data are subject to recall error and may not always be accurate. The data may reflect recall error from the sampled adult about themselves and the household, and from the adult about the status of the selected child. The NHFS did not collect the nature of the relationship between the selected child and the most knowledgeable adult. Finally, although national estimates of vaccination coverage are more precise, estimates for states should be interpreted with caution because the sample sizes are smaller and confidence intervals generally are wider than those for national estimates.

11. Citations for NHFS Data

In publications please acknowledge the original data source. The citation for the NHFS public-use data file is:

U.S. Department of Health and Human Services (DHHS). National Center for Health Statistics. The National 2009 H1N1 Flu Survey, Hyattsville, MD: Centers for Disease Control and Prevention, 2012.

Information about the NHFS is located at http://www.cdc.gov/nchs/nis/about_nis.htm#h1n1.

Please place the acronym "NHFS" in the titles, keywords, or abstracts of journal articles and other publications in order to facilitate retrieval of such materials in bibliographic searches.

For additional information on the NHFS public-use data file, please contact the NCHS Information Dissemination Staff:

Information Dissemination Staff, NCHS
3311 Toledo Road
Hyattsville, MD 20782

Phone: 1 (800) 232-4636

E-mail: nchsed@cdc.gov

Internet: http://www.cdc.gov/nchs/

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Appendix A

Glossary of Abbreviations and Terms

ACIP	Advisory Committee for Immunization Practices
CATI	Computer-assisted telephone interviewing
CDC	Centers for Disease Control and Prevention
DOB	Date of birth
DHHS	Department of Health and Human Services
FLU	Seasonal influenza vaccine
H1N	Monovalent 2009 H1N1 influenza vaccine
ILI	Influenza-like Illness
IAP	Immunization Action Plan areas
NAICS	North American Industry Classification System
NCHS	National Center for Health Statistics
NCIRD	National Center for Immunization and Respiratory Diseases
NIS	National Immunization Survey
NHIS	National Health Interview Survey
OMB	Office of Management and Budget
PUF	Public-use file
RDD	Random digit dialing
SOC	Standard Occupational Classification

Appendix B

Summary Statistics for Sampling Weights by State

Table B.1: Distribution of Sampling Weights for Adults from Households with Completed Interviews (FLUWT), National 2009 H1N1 Flu Survey

State	n	Sum	Minimum	Maximum	Mean	Coefficient of Variation (%)
Total U.S.	56,656	227,179,323.50	5.09	192,422.45	4009.80	167.81
Alabama	1,156	3,486,669.43	58.25	39,777.55	3016.15	100.33
Alaska	1,090	489,263.77	18.54	14,463.39	448.87	180.27
Arizona	1,241	4,752,614.27	152.59	62,611.96	3829.67	119.32
Arkansas	1,135	2,103,273.91	119.88	22,652.47	1853.10	103.80
California	1,306	27,932,790.45	353.33	192,422.45	21388.05	82.41
Colorado	1,130	3,627,893.20	194.71	47,657.23	3210.52	109.97
Connecticut	1,064	2,638,996.65	144.62	34,354.85	2480.26	105.84
Delaware	1,093	668,496.99	35.76	17,172.18	611.62	124.79
District of Columbia	1,342	465,095.56	5.09	11,615.05	346.57	194.72
Florida	1,224	14,223,915.02	141.21	143,428.87	11620.85	93.02
Georgia	1,243	6,804,694.68	195.68	48,921.23	5474.41	102.74
Hawaii	993	960,515.50	31.07	11,851.60	967.29	118.03
Idaho	1,042	1,081,598.70	44.26	9,660.85	1038.00	93.76
Illinois	1,230	9,542,179.16	155.71	86,597.53	7757.87	90.55
Indiana	1,088	4,604,110.56	75.17	35,558.01	4231.72	78.63
Iowa	1,072	2,235,645.54	57.38	36,575.11	2085.49	101.60
Kansas	1,055	1,928,467.78	54.06	17,959.14	1827.93	92.55
Kentucky	986	3,194,479.91	142.53	37,599.02	3239.84	97.79
Louisiana	1,160	3,250,088.49	126.15	30,392.69	2801.80	93.87
Maine	980	969,241.59	25.35	8,451.75	989.02	82.53
Maryland	1,262	4,095,136.42	38.91	41,979.77	3244.96	95.02
Massachusetts	1,046	4,782,799.26	157.23	47,424.23	4572.47	90.47
Michigan	1,060	7,331,158.81	232.41	124,937.98	6916.19	95.49
Mississippi	1,205	2,122,837.87	34.15	26,044.06	1761.69	127.74
Missouri	1,046	4,469,944.22	250.85	43,855.27	4273.37	89.84
Minnesota	1,050	3,886,995.15	60.51	44,652.95	3701.90	93.77
Montana	975	722,688.18	36.36	5,542.73	741.22	86.91

Table B.1: Distribution of Sampling Weights for Adults from Households with Completed Interviews (FLUWT), National 2009 H1N1 Flu Survey

State	n	Sum	Minimum	Maximum	Mean	Coefficient of Variation (%)
Nebraska	1,099	1,271,272.37	53.57	16,703.96	1156.75	106.02
Nevada	1,141	1,999,459.48	21.26	61,279.28	1752.37	163.56
New Hampshire	902	976,482.14	29.49	10,474.33	1082.57	85.17
New Jersey	1,189	6,487,646.83	145.75	56,231.41	5456.39	86.34
New Mexico	1,352	1,393,577.84	41.31	25,319.56	1030.75	146.68
New York	1,214	15,038,312.56	78.88	98,725.86	12387.41	87.10
North Carolina	1,173	6,888,281.12	183.52	46,597.58	5872.36	85.93
North Dakota	955	458,799.43	15.45	5,223.51	480.42	99.59
Ohio	1,041	8,557,187.56	306.56	69,034.35	8220.16	78.18
Oklahoma	1,064	2,638,732.25	110.75	49,927.35	2480.01	109.28
Oregon	1,099	2,889,209.04	145.72	36,707.68	2628.94	107.04
Pennsylvania	1,052	9,475,023.65	278.41	112,813.03	9006.68	91.35
Rhode Island	1,030	754,584.36	21.18	9,678.16	732.61	95.75
South Carolina	1,148	3,443,062.36	95.29	60,117.48	2999.18	116.26
South Dakota	938	576,874.43	15.90	11,216.99	615.00	129.19
Tennessee	1,071	4,706,749.06	207.80	35,732.48	4394.72	90.37
Texas	1,354	18,318,849.76	23.75	150,912.35	13529.43	107.80
Utah	1,094	1,761,440.03	41.46	16,080.97	1610.09	94.82
Vermont	1,030	471,054.93	25.99	5,008.81	457.33	97.85
Virginia	1,232	5,721,994.18	110.84	48,243.24	4644.48	102.56
Washington	1,113	4,958,859.02	144.58	37,192.65	4455.40	86.72
West Virginia	950	1,325,004.50	87.17	23,224.08	1394.74	93.97
Wisconsin	1,069	4,303,928.57	252.47	23,331.82	4026.13	79.34
Wyoming	1,072	391,346.93	13.49	5,758.04	365.06	125.54

Table B.2: Distribution of Sampling Weights for Children from Households with Completed Interviews (FLUWT), National 2009 H1N1 Flu Survey

State	n	Sum	Minimum	Maximum	Mean	Coefficient of Variation (%)
Total U.S.	14,288	72,074,160.50	0.03	126,836.76	5044.38	155.28
Alabama	263	1,079,790.62	390.18	28,624.16	4105.67	93.63
Alaska	353	187,784.37	26.40	10,985.70	531.97	133.59
Arizona	325	1,737,265.98	396.77	50,529.21	5345.43	105.90
Arkansas	258	702,027.00	213.59	35,061.28	2721.03	133.27
California	341	8,351,496.64	1007.38	126,836.76	24491.19	76.29
Colorado	304	1,295,232.18	158.26	30,618.84	4260.63	111.34
Connecticut	285	791,120.62	162.23	20,233.72	2775.86	91.35
Delaware	253	192,256.10	64.18	6,492.20	759.91	119.28
District of Columbia	253	111,594.50	6.84	6,802.99	441.08	168.75
Florida	254	3,745,952.43	0.03	122,875.06	14747.84	89.02
Georgia	367	2,766,121.01	199.23	69,551.66	7537.11	113.09
Hawaii	244	313,405.01	45.67	12,111.14	1284.45	127.06
Idaho	289	435,355.32	23.34	22,401.18	1506.42	121.24
Illinois	342	3,103,555.05	498.72	52,874.00	9074.72	88.95
Indiana	286	1,657,679.33	197.84	48,652.51	5796.08	100.81
Iowa	246	714,306.17	120.87	16,018.61	2903.68	85.20
Kansas	286	829,190.31	221.57	17,573.18	2899.27	96.22
Kentucky	237	1,006,287.04	172.35	35,856.95	4245.94	100.35
Louisiana	307	1,073,253.20	278.36	16,351.09	3495.94	81.91
Maine	223	320,327.82	103.47	8,560.01	1436.45	94.36
Maryland	334	1,397,100.28	91.70	32,750.36	4182.93	102.31
Massachusetts	271	1,594,695.85	351.25	68,864.78	5884.49	97.89
Michigan	256	2,379,759.62	740.82	51,300.17	9295.94	83.92
Mississippi	287	743,381.64	164.28	34,938.19	2590.18	140.70
Missouri	245	1,326,191.26	392.75	33,033.07	5413.03	86.89
Minnesota	273	1,249,945.25	107.67	28,547.69	4578.55	91.17
Montana	244	234,417.86	46.08	7,161.50	960.73	94.01
Nebraska	281	482,115.96	192.23	27,503.31	1715.72	133.40
Nevada	287	586,214.90	130.85	19,607.22	2042.56	103.95
New Hampshire	211	315,936.87	66.70	13,361.04	1497.33	101.52
New Jersey	318	2,010,431.29	139.30	52,222.01	6322.11	94.25
New Mexico	334	567,196.61	43.03	20,086.03	1698.19	133.68

Table B.2: Distribution of Sampling Weights for Children from Households with Completed Interviews (FLUWT), National 2009 H1N1 Flu Survey

State	n	Sum	Minimum	Maximum	Mean	Coefficient of Variation (%)
New York	291	4,024,215.55	469.81	64,962.98	13828.92	75.69
North Carolina	277	2,267,201.69	137.23	69,572.95	8184.84	99.20
North Dakota	214	170,839.64	59.88	8,369.87	798.32	136.33
Ohio	248	2,650,848.67	834.56	101,525.66	10688.91	92.65
Oklahoma	266	948,444.89	111.02	43,154.24	3565.58	110.73
Oregon	256	871,604.81	218.70	22,691.56	3404.71	89.36
Pennsylvania	243	2,691,919.54	561.95	107,294.60	11077.86	90.88
Rhode Island	256	269,386.00	61.86	11,865.87	1052.29	131.31
South Carolina	257	986,088.31	356.70	23,765.29	3836.92	98.59
South Dakota	242	216,820.39	29.58	8,973.67	895.95	113.79
Tennessee	254	1,413,944.89	319.84	36,747.02	5566.71	95.09
Texas	380	5,877,370.31	268.23	123,335.82	15466.76	95.02
Utah	398	976,186.49	116.57	22,715.12	2452.73	93.85
Vermont	262	138,123.57	43.38	2,928.88	527.19	79.83
Virginia	343	1,912,293.25	121.97	45,428.78	5575.20	99.81
Washington	292	1,545,111.60	382.04	24,332.56	5291.48	84.76
West Virginia	236	452,529.73	194.39	37,275.17	1917.50	149.28
Wisconsin	243	1,220,870.40	469.24	29,044.15	5024.16	87.92
Wyoming	273	138,972.69	22.72	3,572.94	509.06	108.39

.

Table B.3: Number of Completed Adult and Child Interviews by Interview Week[1] and Interview Month (INT_MONTH), National 2009 H1N1 Flu Survey

Week Ending	Completed Adult Interviews	Completed Child Interviews
10/3/2009	474	115
10/10/2009	498	131
10/17/2009	874	242
10/24/2009	2,113	547
10/31/2009	2,402	604
October 2009	**6,361**	**1,639**
11/7/2009	1,894	495
11/14/2009	1,658	451
11/21/2009	1,513	420
11/28/2009	1,364	379
November 2009	**6,429**	**1,745**
12/5/2009	1,510	404
12/12/2009	1,486	390
12/19/2009	1,599	404
12/26/2009	1,124	299
December 2009	**5,719**	**1,497**
1/2/2010	1,406	373
1/9/2010	1,686	447
1/16/2010	1,404	355
1/23/2010	1,499	368
1/30/2010	1,391	351
January 2010	**7,386**	**1,894**
2/6/2010	1,397	371
2/13/2010	1,360	345
2/20/2010	1,406	381
2/27/2010	1,400	349
February 2010	**5,563**	**1,446**
3/6/2010	1,478	417
3/13/2010	1,495	347
3/20/2010	1,497	335
3/27/2010	1,461	355
March 2010	**5,931**	**1,454**
4/3/2010	1,520	366
4/10/2010	1,507	321
4/17/2010	1,499	337
4/24/2010	1,531	371
April 2010	**6,057**	**1,395**

Table B.3: Number of Completed Adult and Child Interviews by Interview Week[1] and Interview Month (INT_MONTH), National 2009 H1N1 Flu Survey

5/1/2010	1,419	342
5/8/2010	1,496	363
5/15/2010	1,408	334
5/22/2010	1,430	341
5/29/2010	1,532	388
May 2010	**7,285**	**1,768**
6/5/2010	1,475	356
6/12/2010	1,510	363
6/19/2010	1,472	368
6/26/2010	1,468	363
June 2010	**5,925**	**1,450**

[1] To protect the confidentiality of NHFS respondents, the week of interview is not available on the public use file.

Appendix C

Programs for Estimation: Examples of the Use of SUDAAN, SAS and R to Estimate Vaccination Coverage Levels and Their Standard Errors, and an Example of the Production of a Cross-Tabulation and Chart

A. SUDAAN

```
**********************;
title1 'SUD_H1N1.SAS';
*************************************************************************
SAS Version 9.2

THIS PROGRAM WILL PRODUCE ESTIMATION AREA ESTIMATES AND STANDARD
ERRORS FOR H1N1 VACCINATION USING SAS CALLABLE SUDAAN, BASED ON
INTERVIEWS COMPLETED IN MAY 2010.

SUDAAN NOTES:
1. ALL VARIABLES USED MUST BE NUMERIC.
2. VARIABLES IN THE SUBGROUP STATEMENT MUST HAVE VALUES 1,2,..K
WHERE K IS THE NUMBER OF LEVELS FOR EACH VARIABLE.
3. DATA MUST BE SORTED ACCORDING TO THE SAMPLE DESIGN VARIABLES
(STRATUM AND PRIMARY SAMPLING UNIT), SPECIFIED IN THE
NEST STATEMENT.
*************************************************************************;
options ps=78 ls=90 obs= max;

libname dd 'C:\NHFSPUF'; *--- SPECIFY PATH TO SAS DATASET ---*;
libname library 'C:\NHFSPUF'; *--- IF DATASET WAS CREATED WITH FORMATS
STORED ---*;

%let in_file=dd.nhfspuf; *--- NAME OF SAS DATASET ---*;
%let estiap=state; * --- ESTIMATION AREA VARIABLE TO USE ---*;
%let intmonth=MAY10; * --- MONTH OF INTERVIEW TO USE --- *;
%let wt=fluwt; * --- WEIGHT TO USE ---*;
```

```
Proc format;
/*
THE FOLLOWING FORMAT WILL BE USED FOR VACC_H1N1_F.
ORIGINAL VALUES OF VACC_H1N1_F ARE 1,0.
MUST BE CONVERTED TO 1,2 IN SUDAAN.
*/
value h1n1f
1='H1N1 Vaccinated'
2='Not H1N1 Vaccinated';

value statef
0 ='U.S. Total'
1 ='Alabama '
2 ='Alaska '
4 ='Arizona '
5 ='Arkansas '
6 ='California '
8 ='Colorado '
9 ='Connecticut '
10 ='Delaware '
11 ='District of Columbia'
12 ='Florida '
13 ='Georgia '
15 ='Hawaii '
16 ='Idaho '
17 ='Illinois '
18 ='Indiana '
19 ='Iowa '
20 ='Kansas '
21 ='Kentucky '
22 ='Louisiana '
23 ='Maine '
24 ='Maryland '
25 ='Massachusetts '
26 ='Michigan '
27 ='Minnesota '
28 ='Mississippi '
29 ='Missouri '
30 ='Montana '
31 ='Nebraska '
32 ='Nevada '
33 ='New Hampshire '
34 ='New Jersey '
35 ='New Mexico '
36 ='New York '
37 ='North Carolina '
38 ='North Dakota '
39 ='Ohio '
40 ='Oklahoma '
41 ='Oregon '
42 ='Pennsylvania '
44 ='Rhode Island '
45 ='South Carolina '
46 ='South Dakota '
47 ='Tennessee '
```

```
48 ='Texas '
49 ='Utah '
50 ='Vermont '
51 ='Virginia '
53 ='Washington '
54 ='West Virginia '
55 ='Wisconsin '
56 ='Wyoming '
78 ='U.S. Virgin Islands '
;
run;
data sud_file;
set &in_file(keep= seqnumhh seqnump int_month vacc_h1n1_f &estiap &wt);
where INT_MONTH = "&intmonth";
if vacc_h1n1_f=0 then vacc_h1n1_f=2; *--- CONVERT VACC_H1N1_F=0 TO
VACC_H1N1_F=2 ---*;
nseqnumh=1*seqnumhh; *---CONVERT HOUSEHOLD ID SEQNUMHH FROM CHARACTER TO
NUMERIC ---*;
run;
*=== SORT BY NEST VARIABLES: STATE (STRATUM) NSEQNUMH (PRIMARY SAMPLING
UNIT) ===*;
proc sort;
by &estiap nseqnumh;
run;
proc crosstab data=sud_file filetype=sas design=wr;
weight &wt;
nest &estiap nseqnumh;
subgroup &estiap vacc_h1n1_f ;
levels 56 2 ;
tables &estiap * vacc_h1n1_f ;
print nsum wsum rowper serow/style=nchs ;
rtitle "H1N1 VACCINATION ESTIMATES BY STATE, MAY 2010 INTERVIEWS";
rformat &estiap statef.;
rformat vacc_h1n1_f h1n1f.;
output rowper serow/filename=sud_est filetype=sas replace;
run;
proc print data=sud_est(where=(vacc_h1n1_f=1 and rowper ne .)) noobs
label;
format &estiap statef.;
var &estiap rowper serow ;
label
rowper='Percent H1N1 Vaccinated'
serow='Standard Error'
;
title "H1N1 VACCINATION ESTIMATES BY STATE, MAY 2010 INTERVIEWS";
run;


**********;
title1 'SUD_SEAS.SAS';
*********************************************************************
SAS Version 9.2

THIS PROGRAM WILL PRODUCE ESTIMATION AREA ESTIMATES AND STANDARD
ERRORS FOR SEASONAL INFLUENZA VACCINATION USING SAS CALLABLE SUDAAN,
```

```
BASED ON INTERVIEWS COMPLETED IN MAY 2010

SUDAAN NOTES:
1. ALL VARIABLES USED MUST BE NUMERIC.
2. VARIABLES IN THE SUBGROUP STATEMENT MUST HAVE VALUES 1,2,..K
WHERE K IS THE NUMBER OF LEVELS FOR EACH VARIABLE.
3. DATA MUST BE SORTED ACCORDING TO THE SAMPLE DESIGN VARIABLES
(STRATUM AND PRIMARY SAMPLING UNIT), SPECIFIED IN THE
NEST STATEMENT.
*****************************************************************;
options ps=78 ls=90 obs= max;

libname dd 'C:\NHFSPUF'; *--- SPECIFY PATH TO SAS DATASET ---*;
libname library 'C:\NHFSPUF'; *--- IF DATASET WAS CREATED WITH FORMATS
STORED ---*;

%let in_file=dd.nhfspuf; *--- NAME OF SAS DATASET ---*;
%let estiap=state; * --- ESTIMATION AREA VARIABLE TO USE ---*;
%let intmonth=MAY10; * --- MONTH OF INTERVIEW TO USE --- *;
%let wt=fluwt; * --- WEIGHT TO USE ---*;

Proc format;
/*
THE FOLLOWING FORMAT WILL BE USED FOR VACC_SEAS_F.
ORIGINAL VALUES OF VACC_SEAS_F ARE 1,0.
MUST BE CONVERTED TO 1,2 IN SUDAAN.
*/
value seasf
1='Seasonal Vaccinated'
2='Not Seasonal Vaccinated';

value statef
0 ='U.S. Total'
1 ='Alabama '
2 ='Alaska '
4 ='Arizona '
5 ='Arkansas '
6 ='California '
8 ='Colorado '
9 ='Connecticut '
10 ='Delaware '
11 ='District of Columbia'
12 ='Florida '
13 ='Georgia '
15 ='Hawaii '
16 ='Idaho '
17 ='Illinois '
18 ='Indiana '
19 ='Iowa '
20 ='Kansas '
21 ='Kentucky '
22 ='Louisiana '
23 ='Maine '
24 ='Maryland '
25 ='Massachusetts '
```

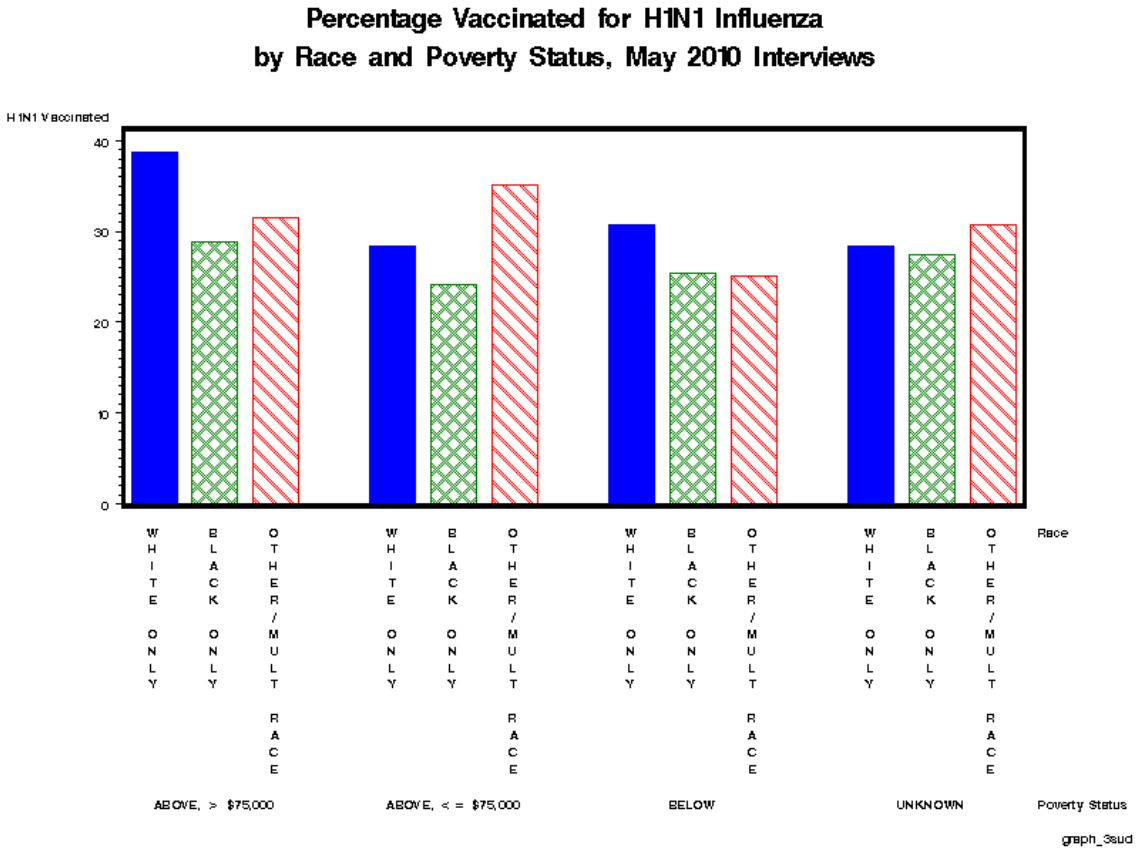
```
26 ='Michigan '
27 ='Minnesota '
28 ='Mississippi '
29 ='Missouri '
30 ='Montana '
31 ='Nebraska '
32 ='Nevada '
33 ='New Hampshire '
34 ='New Jersey '
35 ='New Mexico '
36 ='New York '
37 ='North Carolina '
38 ='North Dakota '
39 ='Ohio '
40 ='Oklahoma '
41 ='Oregon '
42 ='Pennsylvania '
44 ='Rhode Island '
45 ='South Carolina '
46 ='South Dakota '
47 ='Tennessee '
48 ='Texas '
49 ='Utah '
50 ='Vermont '
51 ='Virginia '
53 ='Washington '
54 ='West Virginia '
55 ='Wisconsin '
56 ='Wyoming '
;
run;
data sud_file;
set &in_file(keep= seqnumhh seqnump int_month vacc_seas_f &estiap &wt);
where INT_MONTH = "&intmonth";
if vacc_seas_f=0 then vacc_seas_f=2; *--- CONVERT VACC_SEAS_F=0 TO
VACC_SEAS_F=2 ---*;
nseqnumh=1*seqnumhh; *---CONVERT HOUSEHOLD ID SEQNUMHH FROM CHARACTER TO
NUMERIC ---*;
run;
*=== SORT BY NEST VARIABLES: STATE (STRATUM) NSEQNUMH (PRIMARY SAMPLING
UNIT) ===*;
proc sort;
by &estiap nseqnumh;
run;
proc crosstab data=sud_file filetype=sas design=wr;
weight &wt;
nest &estiap nseqnumh;
subgroup &estiap vacc_seas_f ;
levels 56 2 ;
tables &estiap * vacc_seas_f ;
print nsum wsum rowper serow/style=nchs ;
rtitle "H1N1 VACCINATION ESTIMATES BY STATE, MAY 2010 INTERVIEWS";
rformat &estiap statef.;
rformat vacc_seas_f seasf.;
output rowper serow/filename=sud_est2 filetype=sas replace;
```

```
run;
proc print data=sud_est2(where=(vacc_seas_f=1 and rowper ne .)) noobs
label;
format &estiap statef.;
var &estiap rowper serow ;
label
rowper='Percent Seasonal Vaccinated'
serow='Standard Error'
;
title "SEASONAL VACCINATION ESTIMATES BY STATE, MAY 2010 INTERVIEWS";
run;


**********************;
title1 'PROG_3.SAS';
*************************************************************************
SAS Version 9.2

TABLE OF VACC_H1N1_F BY INC_POV BY RACE_I_R, BASED ON INTERVIEWS
COLLECTED IN MAY 2010. SAVE % ESTIMATES (NOT S.E.'S) FOR USE IN THE
PROGRAM GRAPH_3. THIS PROGRAM WILL PRODUCE ESTIMATES USING SAS CALLABLE
SUDAAN.

SUDAAN NOTES:
1. ALL VARIABLES USED MUST BE NUMERIC.
2. VARIABLES IN THE SUBGROUP STATEMENT MUST HAVE VALUES 1,2,..K
WHERE K IS THE NUMBER OF LEVELS FOR EACH VARIABLE.
3. DATA MUST BE SORTED ACCORDING TO THE SAMPLE DESIGN VARIABLES
(STRATUM AND PRIMARY SAMPLING UNIT), SPECIFIED IN THE
NEST STATEMENT.
*************************************************************************;
options ps=78 ls=90 obs= max;

libname dd 'C:\NHFSPUF'; *--- SPECIFY PATH TO SAS DATASET ---*;
libname library 'C:\NHFSPUF'; *--- IF DATASET WAS CREATED WITH FORMATS
STORED ---*;

libname out 'C:\NHFSPUF'; *--- SPECIFY THE PATH FOR WHERE YOU WANT THE
CHART OUTPUT TO GO ---*;

%let in_file=dd.nhfspuf; *--- NAME OF SAS DATASET ---*;
%let estiap=STATE; * --- ESTIMATION VARIABLE TO USE ---*;
%let intmonth=MAY10; * --- MONTH OF INTERVIEW TO USE --- *;
%let wt=fluwt; *--- WEIGHT TO USE ---*;
%let period=May 2010; *--- ANALYSIS PERIOD FOR TITLES ---*;

PROC FORMAT;
/*
THE FOLLOWING FORMAT WILL BE USED FOR VACC_H1N1_F.
ORIGINAL VALUES OF VACC_H1N1_F ARE 1,0.
MUST BE CONVERTED TO 1,2 IN SUDAAN.
*/
value h1n1f
1='H1N1 Vaccinated'
2='Not H1N1 Vaccinated'
```

```
;
VALUE RACE_KF
1 = "WHITE ONLY"
2 = "BLACK ONLY"
3 = "OTHER AND MULTIPLE RACES"
;
VALUE INCPVR2F
1 = "ABOVE, > $75,000"
2 = "ABOVE, <= $75,000"
3 = "BELOW"
4 = "UNKNOWN"
;
run;
data sud_file;
set &in_file(keep= seqnumhh seqnump int_month vacc_h1n1_f &estiap race_i_r
inc_pov &wt);
where INT_MONTH = "&intmonth";
nseqnumh=1*seqnumhh; *** CONVERT HOUSEHOLD ID SEQNUMH FROM CHARACTER TO
NUMERIC ***;
if vacc_h1n1_f=0 then vacc_h1n1_f=2; *** CONVERT VACC_H1N1_F=0 TO
VACC_H1N1_F=2 ***;
run;
*=== SORT BY NEST VARIABLES: ESTIAP (STRATUM) NSEQNUMH (PRIMARY SAMPLING
UNIT) ===*;
proc sort;
by &estiap nseqnumh;
run;
proc crosstab data=sud_file filetype=sas design=wr;
weight &wt;
nest &estiap nseqnumh;
subgroup inc_pov race_i_r vacc_h1n1_f;
levels 4 3 2 ;
tables (inc_pov * race_i_r * vacc_h1n1_f) ;
print nsum wsum rowper="H1N1 Vaccinated (ROWPER)" serow="Standard Error
(SEROW)" /style=nchs ;
rtitle "Table 3A. Percent H1N1 Vaccinated and Estimated Standard Errors,
&period Interviews";
rtitle "WEIGHT = &WT";
rformat vacc_h1n1_f h1n1f.;
rformat inc_pov incpvr2f.;
rformat race_i_r race_kf.;
output rowper serow / filename=sud_est3 filetype=sas replace;
run;
data out.sud_est3;
set sud_est3(where=(vacc_h1n1_f=1 & inc_pov > 0 & race_i_r > 0));
keep inc_pov race_i_r rowper serow;
label rowper='H1N1 Vaccinated';
format rowper 5.2;
format serow 5.2;
run;
proc print data=out.sud_est3 label;
format race_i_r race_kf.;
format inc_pov incpvr2f.;
title "H1N1 VACCINATION ESTIMATES AND STANDARD ERRORS BY INC_POV BY
RACE_I_R, &period INTERVIEWS";
```

```
run;


**********************;
title1 'GRAPH_3.SAS';
*************************************************************************
SAS Version 9.2

THIS PROGRAM BUILDS OFF OF THE PROGRAM SAS_PROG_3. IT PRODUCES A CHART OF
VACC_H1N1_F BY INC_POV BY RACE_I_R, BASED ON INTERVIEWS COLLECTED IN MAY
2010. IT CREATES A BAR CHART IN SAS GRAPH FOR THE 4X3 = 12 CELLS. THE
OUTPUT OF THE FOLLOWING EXAMPLE IS ATTACHED AT THE END.
*************************************************************************;
options ps=78 ls=90 obs= max;

libname dd 'C:\NHFSPUF'; *--- SPECIFY PATH TO SAS DATASET ---*;

%let out='C:\NHFSPUF'; *--- SPECIFY THE PATH FOR WHERE YOU WANT THE CHART
OUTPUT TO GO ---*;

%let in_file=dd.sud_est3; *--- NAME OF SAS DATASET OUTPUT FROM PROG_3 ---
*;
%let period=May 2010; *--- ANALYSIS PERIOD FOR TITLES ---*;

PROC FORMAT;
VALUE INCPVR2F
1 = "ABOVE, > $75,000"
2 = "ABOVE, <= $75,000"
3 = "BELOW"
4 = "UNKNOWN"
;
VALUE RACE_KF
1 = "WHITE ONLY"
2 = "BLACK ONLY"
3 = "OTHER/MULT RACE"
;
run;
data sud_est4;
set &in_file;
format rowper 3.
race_i_r race_kf.
inc_pov incpvr2f.
;
label
race_i_r = 'Race'
inc_pov = 'Poverty Status'
;
filename odsout &out;
ods listing close;
/* SET THE GRAPHICS ENVIRONMENT */
goptions reset=global gunit=pct border
ftext=swissb htitle=4 htext=1.5
device=gif
;
ods html body='graph_3_sud.html' path=odsout;
```

```
TITLE1 HEIGHT=3 "Percentage Vaccinated for H1N1 Influenza";
TITLE2 HEIGHT=3 "by Race and Poverty Status, &period Interviews";
footnote j=r 'graph_3sud';
pattern1 value = solid color = blue;
pattern2 value = x3 color = green;
pattern3 value = l3 color = red;
pattern4 value = empty color = lib;
axis width = 3;
run;
proc gchart data=sud_est4;
vbar race_i_r
/frame
discrete
sumvar=rowper
group=inc_pov
gspace = 5
gaxis = axis
raxis = axis
name = 'graph_3_sud'
patternid = midpoint
;
run;
quit;
ods html close;
ods listing;
ods html close;
ods listing;
```



B. SAS

```
*********************;
title1 'SAS_H1N1.SAS';
*************************************************************************
SAS Version 9.2

THIS PROGRAM WILL PRODUCE STATE LEVEL ESTIMATES AND STANDARD ERRORS
FOR H1N1 VACCINATION USING SAS, BASED ON INTERVIEWS COMPLETED IN MAY
2010.
*************************************************************************;
options ps=78 ls=90 obs= max;

libname dd 'C:\NHFSPUF'; *--- SPECIFY PATH TO SAS DATASET ---*;
libname library 'C:\NHFSPUF'; *--- IF DATASET WAS CREATED WITH FORMATS
STORED ---*;

%let in_file=dd.nhfspuf; *--- NAME OF SAS DATASET ---*;
%let estiap=STATE; * --- ESTIMATION AREA VARIABLE TO USE ---*;
%let intmonth=MAY10; * --- INTERVIEW MONTH TO ANALYZE ---*;
%let wt=fluwt; * --- WEIGHT TO USE ---*;

proc format;
value h1n1f
0='Not H1N1 Vaccinated'
1='H1N1 Vaccinated';

value statef
0 ='U.S. Total'
1 ='Alabama '
2 ='Alaska '
4 ='Arizona '
5 ='Arkansas '
6 ='California '
8 ='Colorado '
9 ='Connecticut '
10 ='Delaware '
11 ='District of Columbia'
12 ='Florida '
13 ='Georgia '
15 ='Hawaii '
16 ='Idaho '
17 ='Illinois '
18 ='Indiana '
19 ='Iowa '
20 ='Kansas '
21 ='Kentucky '
22 ='Louisiana '
23 ='Maine '
24 ='Maryland '
25 ='Massachusetts '
26 ='Michigan '
27 ='Minnesota '
28 ='Mississippi '
```

```
29 ='Missouri '
30 ='Montana '
31 ='Nebraska '
32 ='Nevada '
33 ='New Hampshire '
34 ='New Jersey '
35 ='New Mexico '
36 ='New York '
37 ='North Carolina '
38 ='North Dakota '
39 ='Ohio '
40 ='Oklahoma '
41 ='Oregon '
42 ='Pennsylvania '
44 ='Rhode Island '
45 ='South Carolina '
46 ='South Dakota '
47 ='Tennessee '
48 ='Texas '
49 ='Utah '
50 ='Vermont '
51 ='Virginia '
53 ='Washington '
54 ='West Virginia '
55 ='Wisconsin '
56 ='Wyoming '
;
run;
data sas_file;
set &in_file(keep= seqnumhh seqnump int_month vacc_h1n1_f &estiap &wt);
where INT_MONTH = "&intmonth";
run;
proc sort data = sas_file;
by &estiap;
run;
title1 'H1N1 ESTIMATES BY STATE, MAY 2010 INTERVIEWS';
ods output Statistics=sas_est;
proc surveymeans data = sas_file nobs sum mean stderr;
stratum &estiap;
cluster seqnumhh;
weight &wt;
class vacc_h1n1_f;
var vacc_h1n1_f;
by &estiap;
format vacc_h1n1_f h1n1f.;
format &estiap statef.;
run;
data sas_est;
set sas_est;
mean = mean*100; *CONVERT TO PERCENT ESTIMATES;
stderr = stderr*100;
run;
proc print data=sas_est(where=(varlevel='H1N1 Vaccinated')) noobs
label;
format &estiap statef.;
```

```
format mean stderr 5.2;
var &estiap mean stderr;
label
mean='Percent H1N1 Vaccinated'
stderr='Standard Error';
title "H1N1 VACCINATION ESTIMATES BY STATE, MAY 2010 INTERVIEWS";
run;


**********;
title1 'SAS_SEAS.SAS';
*********************************************************************
SAS Version 9.2

THIS PROGRAM WILL PRODUCE STATE LEVEL ESTIMATES AND STANDARD ERRORS
FOR SEASONAL INFLUENZA VACCINATION USING SAS, BASED ON INTERVIEWS
COMPLETED IN MAY 2010.
*********************************************************************;
options ps=78 ls=90 obs= max;

libname dd 'C:\NHFSPUF'; *--- SPECIFY PATH TO SAS DATASET ---*;
libname library 'C:\NHFSPUF'; *--- IF DATASET WAS CREATED WITH FORMATS
STORED ---*;

%let in_file=dd.nhfspuf; *--- NAME OF SAS DATASET ---*;
%let estiap=STATE; * --- ESTIMATION AREA VARIABLE TO USE ---*;
%let intmonth=MAY10; * --- INTERVIEW MONTH TO ANALYZE ---*;
%let wt=fluwt; * --- WEIGHT TO USE ---*;

proc format;
value seasf
0='Not Seasonal Vaccinated'
1='Seasonal Vaccinated';

value statef
0 ='U.S. Total'
1 ='Alabama '
2 ='Alaska '
4 ='Arizona '
5 ='Arkansas '
6 ='California '
8 ='Colorado '
9 ='Connecticut '
10 ='Delaware '
11 ='District of Columbia'
12 ='Florida '
13 ='Georgia '
15 ='Hawaii '
16 ='Idaho '
17 ='Illinois '
18 ='Indiana '
19 ='Iowa '
20 ='Kansas '
21 ='Kentucky '
22 ='Louisiana '
```

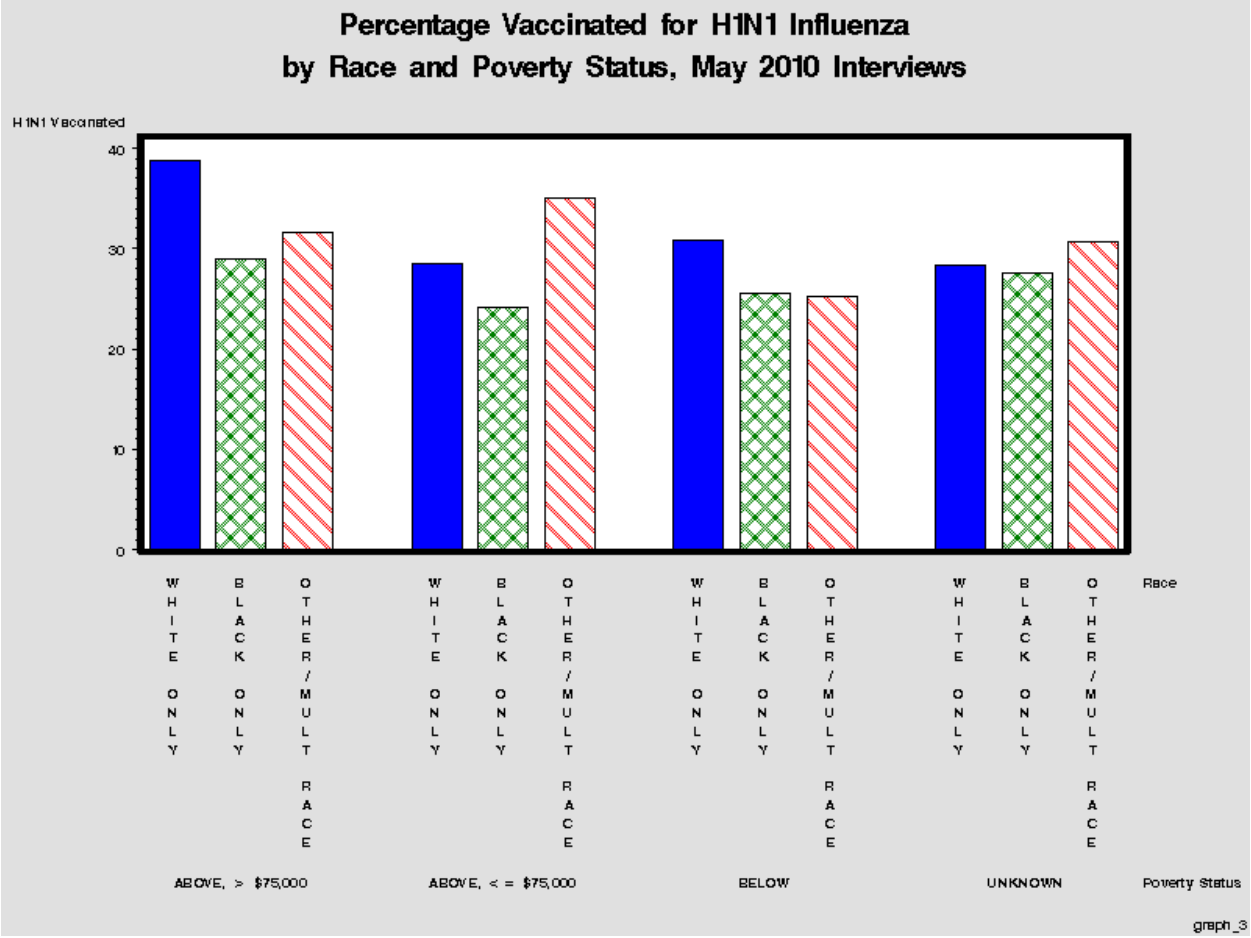
```
23 ='Maine '
24 ='Maryland '
25 ='Massachusetts '
26 ='Michigan '
27 ='Minnesota '
28 ='Mississippi '
29 ='Missouri '
30 ='Montana '
31 ='Nebraska '
32 ='Nevada '
33 ='New Hampshire '
34 ='New Jersey '
35 ='New Mexico '
36 ='New York '
37 ='North Carolina '
38 ='North Dakota '
39 ='Ohio '
40 ='Oklahoma '
41 ='Oregon '
42 ='Pennsylvania '
44 ='Rhode Island '
45 ='South Carolina '
46 ='South Dakota '
47 ='Tennessee '
48 ='Texas '
49 ='Utah '
50 ='Vermont '
51 ='Virginia '
53 ='Washington '
54 ='West Virginia '
55 ='Wisconsin '
56 ='Wyoming '
;
run;
data sas_file;
set &in_file(keep= seqnumhh seqnump int_month vacc_seas_f &estiap &wt);
where INT_MONTH = "&intmonth";
run;
proc sort data = sas_file;
by &estiap;
run;
title1 'SEASONAL ESTIMATES BY STATE, MAY 2010 INTERVIEWS';
ods output Statistics=sas_est2;
proc surveymeans data = sas_file nobs sum mean stderr;
stratum &estiap;
cluster seqnumhh;
weight &wt;
class vacc_seas_f;
var vacc_seas_f;
by &estiap;
format vacc_seas_f seasf.;
format &estiap statef.;
run;
data sas_est2;
set sas_est2;
```

```
mean = mean*100; *CONVERT TO PERCENT ESTIMATES;
stderr = stderr*100;
run;
proc print data=sas_est2(where=(varlevel='Seasonal Vaccinated')) noobs
label;
format &estiap statef.;
format mean stderr 5.2;
var &estiap mean stderr;
label
mean='Percent Seasonal Vaccinated'
stderr='Standard Error';
title "SEASONAL VACCINATION ESTIMATES BY STATE, MAY 2010 INTERVIEWS";
run;


**********;
title1 'SAS_PROG_3.SAS';
*************************************************************************
SAS Version 9.2

TABLE OF VACC_H1N1_F BY INC_POV BY RACE_I_R, BASED ON INTERVIEWS
COMPLETED IN MAY 2010. SAVE % ESTIMATES (NOT S.E.'S) FOR USE IN THE
PROGRAM SAS_GRAPH_4. THIS PROGRAM WILL PRODUCE ESTIMATES USING SAS.
*************************************************************************;
options ps=78 ls=90 obs= max;

libname dd 'C:\NHFSPUF'; *--- SPECIFY PATH TO SAS DATASET ---*;
libname library 'C:\NHFSPUF'; *--- IF DATASET WAS CREATED WITH FORMATS
STORED ---*;

libname out 'C:\NHFSPUF'; *--- SPECIFY THE PATH FOR
WHERE YOU WANT THE CHART OUTPUT TO GO ---*;

%let in_file=dd.nhfspuf; *--- NAME OF SAS DATASET ---*;
%let estiap=STATE; * --- ESTIMATION AREA VARIABLE TO USE ---*;
%let intmonth=MAY10; * --- INTERVIEW MONTH TO ANALYZE ---*;
%let wt=fluwt; * --- WEIGHT TO USE ---*;
%let period=May 2010;  *--- PERIOD FOR ANALYSIS ---*;

PROC FORMAT;
value h1n1f
0='Not H1N1 Vaccinated'
1='H1N1 Vaccinated'
;
VALUE RACE_KF
1 = "WHITE ONLY"
2 = "BLACK ONLY"
3 = "OTHER AND MULTIPLE RACE"
;
VALUE INCPVR2F
1 = "ABOVE, > $75,000"
2 = "ABOVE, <= $75,000"
3 = "BELOW"
4 = "UNKNOWN"
;
```

```
run;
data sas_file;
set &in_file(keep= seqnumhh seqnump int_month vacc_h1n1_f &estiap RACE_I_R
INC_POV &wt);
where INT_MONTH = "&intmonth";
run;
proc sort data = sas_file;
by INC_POV RACE_I_R;
run;
data sas_file;
set sas_file;
if vacc_h1n1_f < 0 | INC_POV < 0 | RACE_I_R < 0 | &wt. < 0 then delete;
run;
proc surveymeans data = sas_file nobs sum mean stderr;
ods output Domain=sas_est3;
stratum &estiap;
cluster seqnumhh;
weight &wt;
class vacc_h1n1_f;
var vacc_h1n1_f;
domain INC_POV*RACE_I_R;
format vacc_h1n1_f h1n1f.;
format INC_POV incpvr2f.;
format RACE_I_R race_kf.;
run;
data sas_est3;
set sas_est3;
mean = mean*100; *CONVERT TO PERCENT ESTIMATES;
stderr = stderr*100;
run;
proc print data=sas_est3(where=(varlevel='H1N1 Vaccinated')) noobs
label;
format INC_POV incpvr2f.;
format RACE_I_R race_kf.;
format mean stderr 5.2;
var INC_POV RACE_I_R mean stderr;
label
mean='H1N1 Vaccinated'
stderr='Standard Error';
title1 "Table 3. Percent H1N1 Vaccinated and Estimated
Standard Errors, &period Interviews";
run;
data out.sas_est3;
set sas_est3(where=(varlevel='H1N1 Vaccinated'));
keep INC_POV RACE_I_R mean;
label mean='H1N1 Vaccinated';
format mean 5.2;
run;


**********************;
title1 'SAS_GRAPH_3.SAS';
*******************************************************************************
SAS Version 9.2
```

```
THIS PROGRAM BUILDS OFF OF THE PROGRAM SAS_PROG_3. IT PRODUCES A CHART OF
VACC_H1N1_F BY INC_POV BY RACE_I_R. IT CREATES A BAR CHART IN SAS GRAPH
FOR THE 4X3 = 12 CELLS. THE OUTPUT OF THE FOLLOWING EXAMPLE IS ATTACHED
AT THE END.
*********************************************************************;
options ps=78 ls=90 obs= max;

libname dd 'C:\NHFSPUF'; *--- SPECIFY PATH TO SAS DATASET ---*;

%let out='C:\NHFSPUF'; *--- SPECIFY THE PATH FOR WHERE YOU WANT THE CHART
OUTPUT TO GO ---*;

%let in_file=dd.sas_est3; *--- NAME OF SAS DATASET OUTPUT FROM PROG_4 ---
*;
%let period=May 2010; *--- PERIOD FOR ANALYSIS ---*;

PROC FORMAT;
VALUE INCPVR2F
1 = "ABOVE, > $75,000"
2 = "ABOVE, <= $75,000"
3 = "BELOW"
4 = "UNKNOWN"
;
VALUE RACE_KF
1 = "WHITE ONLY"
2 = "BLACK ONLY"
3 = "OTHER/MULT RACE"
;
run;
data sas_est4;
set &in_file;
format mean 3.
RACE_I_R race_kf.
INC_POV incpvr2f.
;
label
RACE_I_R = 'Race '
INC_POV = 'Poverty Status'
;
filename odsout &out;
ods listing close;
/* SET THE GRAPHICS ENVIRONMENT */
goptions reset=global gunit=pct border
ftext=swissb htitle=4 htext=1.5
device=gif
;
ods html body='graph_3.html' path=odsout;
TITLE1 HEIGHT=3 "Percentage Vaccinated for H1N1 Influenza";
TITLE2 HEIGHT=3 "by Race and Poverty Status, &period Interviews";
footnote j=r 'graph_3';
pattern1 value = solid color = blue;
pattern2 value = x3 color = green;
pattern3 value = l3 color = red;
pattern4 value = empty color = lib;
axis width = 3;
```

```
run;
proc gchart data=sas_est4;
vbar RACE_I_R
/frame
discrete
sumvar=mean
group=INC_POV
gspace = 5
gaxis = axis
raxis = axis
name = 'graph_3'
patternid = midpoint
;
run;
quit;
ods html close;
ods listing;
```



C. ‘R’

```
######################
title <- "H1N1_STATE.R"
#########################################################################
#R Version 2.8.1
#THIS PROGRAM WILL PRODUCE STATE LEVEL ESTIMATES AND STANDARD ERRORS
#FOR VACC_H1N1_F USING R, BASED ON INTERVIEWS COMPLETED IN MAY 2010.
#
#R NOTES:
#1. R IS CASE SENSITIVE.
#2. A FILE PATH IS SEPERATED BY SLASH(/)
#########################################################################
library(survey) #TO USE svydesign(), svymean(), and svyby()
library(Hmisc) #TO USE prn()


dd <- "C:/NHFSPUF" #"path-to-dataset"


#--- NAME OF R DATASET ---#
in.file <- paste(dd,"/NHFSPUF.RData",sep="")
#---READ R DATASET---#
load(in.file)
#---FORMAT---#
H1N1levels=c(0,1)
H1N1labels=c("Not H1N1 Vaccinated", "H1N1 Vaccinated")
STATElevels=c(1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17,
18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35,
36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53,
54, 55, 56)
STATElabels=c(
"ALABAMA",
"ALASKA",
" ",
"ARIZONA",
"ARKANSAS",
"CALIFORNIA",
" ",
"COLORADO",
"CONNECTICUT",
"DELAWARE",
"DISTRICT OF COLUMBIA",
"FLORIDA",
"GEORGIA",
" ",
"HAWAII",
"IDAHO",
"ILLINOIS",
"INDIANA",
"IOWA",
"KANSAS",
"KENTUCKY",
"LOUISIANA",
"MAINE",
"MARYLAND",
"MASSACHUSETTS",
"MICHIGAN",
"MINNESOTA",
"MISSISSIPPI",
"MISSOURI",
```

```
"MONTANA",
"NEBRASKA",
"NEVADA",
"NEW HAMPSHIRE",
"NEW JERSEY",
"NEW MEXICO",
"NEW YORK",
"NORTH CAROLINA",
"NORTH DAKOTA",
"OHIO",
"OKLAHOMA",
"OREGON",
"PENNSYLVANIA",
" ",
"RHODE ISLAND",
"SOUTH CAROLINA",
"SOUTH DAKOTA",
"TENNESSEE",
"TEXAS",
"UTAH",
"VERMONT",
"VIRGINIA",
" ",
"WASHINGTON",
"WEST VIRGINIA",
"WISCONSIN",
"WYOMING")

R_FILE <- subset(NHFSPUF, INT_MONTH == "MAY10", select=c(SEQNUMHH, SEQNUMP,
INT_MONTH, VACC_H1N1_F, STATE,
FLUWT))
names(R_FILE) <- c("SEQNUMHH", "SEQNUMP", "INT_MONTH", "VACC_H1N1_F", "STATE",
"WT")
R_FILE <- na.omit(R_FILE)
#---ASSIGN LABELS---#
R_FILE$VACC_H1N1_F <- factor(R_FILE$VACC_H1N1_F, levels=H1N1levels,
labels=H1N1labels)
R_FILE$STATE <- factor(R_FILE$STATE, levels=STATElevels,
labels=STATElabels)

#---SPECIFY A SAMPLING DESIGN---#
svydsg <- svydesign(id=~SEQNUMHH, strata=~STATE, weights=~WT,
data=R_FILE)

#---U.S. TOTAL ESTIMATES AND STANDARD ERRORS---#
r_nation <- svymean(~VACC_H1N1_F, svydsg)
PERCENT_UTD <- round(r_nation*100,2) #CONVERT INTO PERCENT ESTIMATES(MEAN)
SE_UTD <- round(SE(r_nation)*100,2) #CONVERT INTO PERCENT ESTIMATES(SE)
r_nation_est <- cbind(PERCENT_UTD, SE_UTD)
title <- "H1N1 VACCINATION ESTIMATES AT NATIONAL LEVEL, MAY 2010 INTERVIEWS"
prn(r_nation_est, title)

#---STATE LEVEL ESTIMATES AND STANDARD ERRORS---#
r_est <- svyby(~VACC_H1N1_F, ~STATE, svydsg, svymean)
r_est[,-c(1)] <- round(r_est[,-c(1)]*100,2) #CONVERT INTO PERCENT ESTIMATES
r_est <- subset(r_est, select=c(3,5))


#SELECT ESTIMATES FOR CASES
names(r_est) <- c("PERCENT H1N1 VACCINATED", "STANDARD ERROR ESTIMATE")
title <- "H1N1 VACCINATION ESTIMATES BY STATE, MAY 2010 INTERVIEWS"
prn(r_est, title)
```

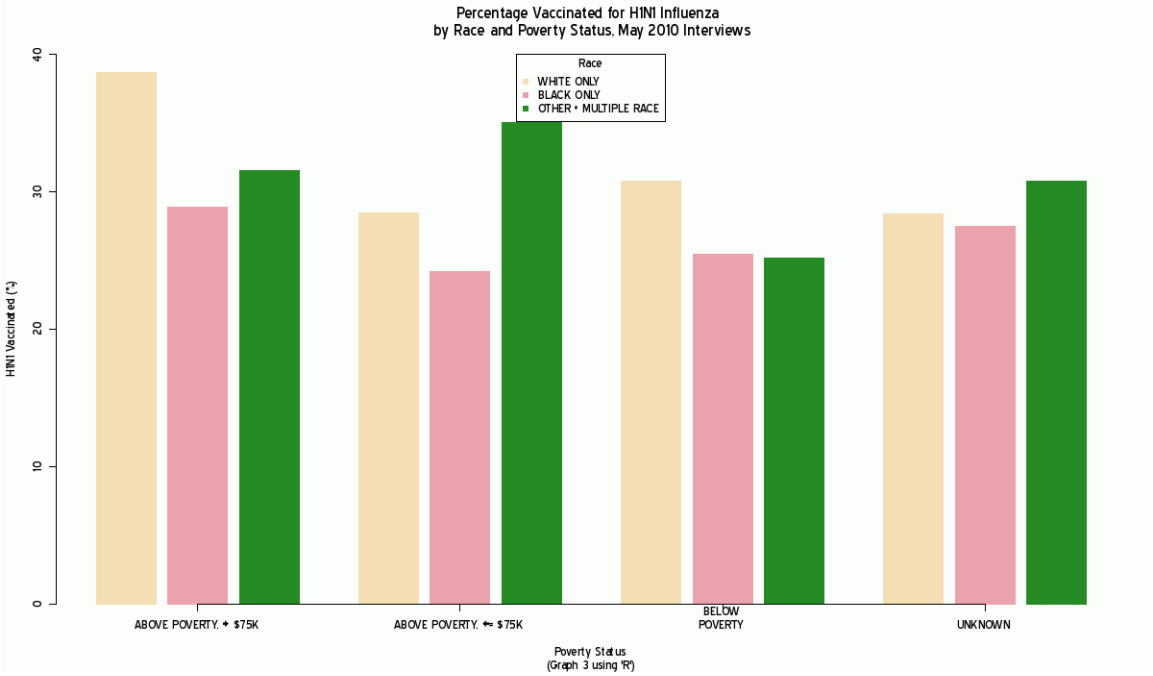
```
######################
title <- "SEAS_STATE.R"
#############################################################################
#R Version 2.8.1
#THIS PROGRAM WILL PRODUCE STATE LEVEL ESTIMATES AND STANDARD ERRORS
#FOR VACC_SEAS_F USING R, BASED ON INTERVIEWS COMPLETED IN MAY 2010.
#
#R NOTES:
#1. R IS CASE SENSITIVE.
#2. A FILE PATH IS SEPERATED BY SLASH(/)
#############################################################################
library(survey) #TO USE svydesign(), svymean(), and svyby()
library(Hmisc) #TO USE prn()


dd <- " C:/NHFSPUF" #"path-to-dataset"


#--- NAME OF R DATASET ---#
in.file <- paste(dd,"/NHFSPUF.RData",sep="")
#---READ R DATASET---#
load(in.file)
#---FORMAT---#
SEASlevels=c(0,1)
SEASlabels=c("Not Seasonal Vaccinated", "Seasonal Vaccinated")
STATElevels=c(1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17,
18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35,
36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53,
54, 55, 56)
STATElabels=c(
"ALABAMA",
"ALASKA",
" ",
"ARIZONA",
"ARKANSAS",
"CALIFORNIA",
" ",
"COLORADO",
"CONNECTICUT",
"DELAWARE",
"DISTRICT OF COLUMBIA",
"FLORIDA",
"GEORGIA",
" ",
"HAWAII",
"IDAHO",
"ILLINOIS",
"INDIANA",
"IOWA",
"KANSAS",
"KENTUCKY",
"LOUISIANA",
"MAINE",
"MARYLAND",
"MASSACHUSETTS",
"MICHIGAN",
"MINNESOTA",
"MISSISSIPPI",
"MISSOURI",
"MONTANA",
```

```
"NEBRASKA",
"NEVADA",
"NEW HAMPSHIRE",
"NEW JERSEY",
"NEW MEXICO",
"NEW YORK",
"NORTH CAROLINA",
"NORTH DAKOTA",
"OHIO",
"OKLAHOMA",
"OREGON",
"PENNSYLVANIA",
" ",
"RHODE ISLAND",
"SOUTH CAROLINA",
"SOUTH DAKOTA",
"TENNESSEE",
"TEXAS",
"UTAH",
"VERMONT",
"VIRGINIA",
" ",
"WASHINGTON",
"WEST VIRGINIA",
"WISCONSIN",
"WYOMING")

R_FILE <- subset(NHFSPUF, INT_MONTH == "MAY10", select=c(SEQNUMHH, SEQNUMP,
INT_MONTH, VACC_SEAS_F, STATE,
FLUWT))
names(R_FILE) <- c("SEQNUMHH", "SEQNUMP", "INT_MONTH", "VACC_SEAS_F", "STATE",
"WT")
R_FILE <- na.omit(R_FILE)
#---ASSIGN LABELS---#
R_FILE$VACC_SEAS_F <- factor(R_FILE$VACC_SEAS_F, levels=SEASlevels,
labels=SEASlabels)
R_FILE$STATE <- factor(R_FILE$STATE, levels=STATElevels,
labels=STATElabels)

#---SPECIFY A SAMPLING DESIGN---#
svydsg <- svydesign(id=~SEQNUMHH, strata=~STATE, weights=~WT,
data=R_FILE)

#---U.S. TOTAL ESTIMATES AND STANDARD ERRORS---#
r_nation <- svymean(~VACC_SEAS_F, svydsg)
PERCENT_UTD <- round(r_nation*100,2) #CONVERT INTO PERCENT ESTIMATES(MEAN)
SE_UTD <- round(SE(r_nation)*100,2) #CONVERT INTO PERCENT ESTIMATES(SE)
r_nation_est <- cbind(PERCENT_UTD, SE_UTD)
title <- "SEASONAL VACCINATION ESTIMATES AT NATIONAL LEVEL, MAY 2010 INTERVIEWS"
prn(r_nation_est, title)

#---ESTIMATION AREA ESTIMATES AND STANDARD ERRORS---#
r_est <- svyby(~VACC_SEAS_F, ~STATE, svydsg, svymean)
r_est[,-c(1)] <- round(r_est[,-c(1)]*100,2) #CONVERT INTO PERCENT ESTIMATES
r_est <- subset(r_est, select=c(3,5))


#SELECT ESTIMATES FOR CASES
names(r_est) <- c("PERCENT SEASONAL VACCINATED", "STANDARD ERROR ESTIMATE")
title <- "SEASONAL VACCINATION ESTIMATES BY STATE, MAY 2010 INTERVIEWS"
prn(r_est, title)
######################
```

```
title <- "PROG_3.R"
#############################################################################
#R Version 2.8.1
#TABLE OF VACC_H1N1_F BY INC_POV BY RACE_I_R, BASED ON INTERIVIEWS
#COMPLETED IN MAY 2010. SAVE % ESTIMATES (NOT S.E.'S) FOR USE IN THE
#PROGRAM GRAPH_3.R
#
#THIS PROGRAM WILL PRODUCE ESTIMATES USING R.
#
#R NOTES:
#1. R IS CASE SENSITIVE.
#2. A FILE PATH IS SEPERATED BY SLASH(/)
#############################################################################
library(survey) #TO USE svydesign(), svymean(), and svyby()
library(Hmisc) #TO USE prn()

dd <- " C:/NHFSPUF" #"path-to-dataset"

out <-" C:/NHFSPUF" #"path-to-output"

#--- NAME OF R DATASET ---#
in.file <- paste(dd,"/NHFSPUF.RData",sep="")
#---READ R DATASET---#
load(in.file)
#---FORMAT---#
H1N1levels=c(0,1)
H1N1labels=c("NOT H1N1 VACCINATED", "H1N1 VACCINATED")
RACE_PUFlevels=c(1,2,3)
RACE_PUFlabels=c("WHITE ONLY", "BLACK ONLY", "OTHER + MULTIPLE RACE")
INCPOVlevels=c(1,2,3,4)
INCPOVlabels=c("ABOVE POVERTY, > $75K", "ABOVE POVERTY, <= $75K", "BELOW
POVERTY", "UNKNOWN")

R_FILE <- subset(NHFSPUF, INT_MONTH == "MAY10", select=c(SEQNUMHH, SEQNUMP,
INT_MONTH, VACC_H1N1_F, STATE, RACE_I_R, INC_POV, FLUWT))
names(R_FILE) <- c("SEQNUMHH", "SEQNUMP", "INT_MONTH", "VACC_H1N1_F", "STATE",
"RACE_I_R", "INC_POV", "WT")
#---ASSIGN LABELS---#
R_FILE$VACC_H1N1_F <- factor(R_FILE$VACC_H1N1_F, levels=H1N1levels,
labels=H1N1labels, exclude=NULL)
R_FILE$RACE_I_R <- factor(R_FILE$RACE_I_R, levels=RACE_PUFlevels,
labels=RACE_PUFlabels, exclude=NULL)
R_FILE$INC_POV <- factor(R_FILE$INC_POV, levels=INCPOVlevels,labels=INCPOVlabels,
exclude=NULL)
#---UNWEIGHTED FREQUENCIES---#
unwt_freq <- function(UNWT.VAR){#FUNCTION TO PRINT UNWEIGHTED FREQUENCIES
unwt.tab <- wtd.table(UNWT.VAR, weights= NULL, type='table')
unwtd.freq <- data.frame(cbind(
unwt.tab, round(unwt.tab/sum(unwt.tab)*100,2),
cumsum(unwt.tab), cumsum(round(unwt.tab/sum(unwt.tab)*100,2))))
names(unwtd.freq) <- c("Frequency", "Percent", "Cumulative Frequency", "Cumulative
Percent")
unwtd.title <- paste('Table 3A. MAY 2010', 'UNWEIGHTED FREQUENCIES',
label(UNWT.VAR), sep="\n")
label(unwtd.freq) <- unwtd.title
print(unwtd.freq)
}
unwt_freq(R_FILE$VACC_H1N1_F)
unwt_freq(R_FILE$INC_POV)
unwt_freq(R_FILE$RACE_I_R)
R_FILE <- na.omit(R_FILE)
#---SPECIFY A SAMPLING DESIGN---#
```

```
svydsg <- svydesign(id=~SEQNUMHH, strata=~STATE, weights=~WT,
data=R_FILE)
#---ESTIMATES ESTIMATED STANDARD ERRORS---#
r_est3 <- svyby(~VACC_H1N1_F, ~RACE_I_R+INC_POV, svydsg, svymean)
r_est3[,-c(1,2)] <- round(r_est3[,-c(1,2)]*100,2) #CONVERT INTO PERCENT ESTIMATES
r_est3 <- subset(r_est3, select=c(1,2,4,6)) #SELECT ESTIMATES FOR CASES
names(r_est3) <- c("RACE", "INCOME", "PERCENT_VACC", "STANDARD_ERROR_VACC")
title <- "Table 3B. MAY 2010, Percent Vaccinated for H1N1 and Estimated Standard
Errors"
r_est3p <- subset(r_est3, select=c(3,4))
names(r_est3p) <- c("PERCENT_VACC", "STANDARD_ERROR_VACC")
prn(r_est3p, title)
#---SAVE ESTIMATES FOR USE IN THE PROGRAM GRAPH_3---#
r_est3 <- subset(r_est3, select=c(1,2,3))
save(r_est3, file=paste(out, "/r_est3", sep=""))



######################
title <- "GRAPH_3.R"
#############################################################################
#R Version 2.8.1
#THIS PROGRAM BUILDS OFF OF THE PROGRAM PROG_3. IT PRODUCES A CHART OF
#VACC_H1N1_F BY INC_POV BY RACE_I_R, BASED ON INTERVIEWS COMPLETED IN
#MAY 2010. IT CREATES A BAR CHART IN R GRAPH FOR
#THE 4X3 = 12 CELLS.
#R NOTES:
#1. R IS CASE SENSITIVE.
#2. A FILE PATH IS SEPERATED BY SLASH(/)
#############################################################################
library(survey) #TO USE svydesign(), svymean(), and svyby()
library(Hmisc) #TO USE prn()
library(GDD) # TO USE GDD()

#dd <- "path-to-dataset" #---SPECIFY PATH TO R DATASET THAT WAS THE OUTPUT OF
R_PROG_4---#

dd <- " C:/NHFSPUF"

#out <- "path-to-dataset" #---SPECIFY THE PATH FOR WHERE YOU WANT THE CHART OUTPUT
TO GO---#

out <- " C:/NHFSPUF"

#---NAME OF R DATASET OUTPUT FROM R_PROG_3---#
in.file <- paste(dd,"/r_est3",sep="")
#---READ R DATASET---#
load(in.file)
#---BARCHART---#
#NOTE:R DOES NOT SUPPORT CREATING A HTML FILE CONTAINING A BARCHART#
#CREATE A DATA MATRIX FOR DRAWING A BARCHART#
r_est4 <- matrix(r_est3$PERCENT_VACC, nrow=3, ncol=4, byrow=F,
dimnames=list(levels(r_est3$RACE), levels(r_est3$INCOME)))
#CREATE GRAPH_3.GIF#
GDD(paste(out,"/graph_3R.gif",sep=""), type="gif", width=1200, height=700)
barplot(r_est4, beside=TRUE, space=c(0.2,1),
col = c("wheat", "lightpink2", "forestgreen"),
axis.lty = 1,
sub="(Graph 3 using 'R')", cex.sub=1, ylim=c(0,40),
xlab="Poverty Status",
ylab="H1N1 Vaccinated (%)", cex=1, cex.names=1, border=NA)
legend("top", rownames(r_est4), col=c("wheat", "lightpink2",
```

```
"forestgreen"), title="Race", pch=15, cex=1)
title1 <- "Percentage Vaccinated for H1N1 Influenza \n"
title2 <- "by Race and Poverty Status, May 2010 Interviews\n"
mtext(paste(title1,title2), cex=1.3)
dev.off()
```



Appendix D

Alphabetical Listing of Variables that are in the NHFS Public-Use Data File

Table D.1 Alphabetical Listing of Variables that are in the NHFS Public-Use Data File

Variable Name	Variable Label[2]	Available on:		Notes
		Adult Records	Child Records	
AGEGRP	AGE GROUP	Y	Y	Missing values have been imputed.
B_H1N1_ANTIV	BEHAVIORAL INDICATOR: TAKING ANTIVIRAL MEDICATIONS	Y		
B_H1N1_AVOID	BEHAVIORAL INDICATOR: AVOID CLOSE CONTACT WITH OTHERS WITH FLULIKE SYMPTOMS	Y		
B_H1N1_FMASK	BEHAVIORAL INDICATOR: BOUGHT A FACE MASK	Y		
B_H1N1_HANDS	BEHAVIORAL INDICATOR: WASHING HANDS	Y		
B_H1N1_LARGE	BEHAVIORAL INDICATOR: REDUCED TIME AT LARGE GATHERINGS	Y		
B_H1N1_RCONT	BEHAVIORAL INDICATOR: REDUCED CONTACT OUTSIDE THE HOME	Y		
B_H1N1_TOUCH	BEHAVIORAL INDICATOR: AVOID TOUCHING EYES, NOSE, OR MOUTH	Y		
C_INSURE2	HEALTH INSURANCE COVERAGE IS MEDICAID OR SCHIP PROGRAM		Y	Added to survey Q1 2010.
CHRONIC_MED_F	CHRONIC MEDICAL CONDITION FLAG	Y		
CLOSE_UNDER6MO_F	CLOSE CONTACT WITH CHILD UNDER 6 MONTHS FLAG	Y		
CONCERN_DKNW_F	H1N1 CONCERN LEVEL UNKNOWN	Y		
CONCERN_NONE_F	NOT AT ALL CONCERNED ABOUT H1N1 FLU	Y		
CONCERN_NOTV_F	NOT VERY CONCERNED ABOUT H1N1 FLU	Y		
CONCERN_REFD_F	H1N1 CONCERN LEVEL REFUSED	Y		
CONCERN_SOME_F	SOMEWHAT CONCERNED ABOUT H1N1 FLU	Y		
CONCERN_VERY_F	VERY CONCERNED ABOUT H1N1 FLU	Y		
DOCREC_BOTH_F	DOCTORS RECOMMENDATION FOR BOTH FLU VACCINES	Y	Y	
DOCREC_DKNW_F	DOCTORS RECOMMENDATION UNKNOWN	Y	Y	
DOCREC_H1N1_F	DOCTORS RECOMMENDATION FOR H1N1 VACCINE	Y	Y	
DOCREC_NTHR_F	DOCTORS RECOMMENDATION FOR NEITHER H1N1 NOR SEASONAL VACCINE	Y	Y	

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Variable Name	Variable Label[2]	Available on:		Notes
		Adult Records	Child Records	
DOCREC_REFD_F	DOCTORS RECOMMENDATION REFUSED	Y	Y	
DOCREC_SEAS_F	DOCTORS RECOMMENDATION FOR SEASONAL VACCINE	Y	Y	
EDUCATION_COMP	ADULT SELF-REPORTED EDUCATION LEVEL	Y		Education level of adult respondent.
FLUWT	FINAL CUMULATIVE WEIGHT	Y	Y	Sampling weight to use in all analyses.
HEALTH_WORKER_F	WORKS IN HEALTH CARE FIELD FLAG	Y		
HH_CHILD_R	NUMBER OF CHILDREN IN THE HOUSEHOLD: RECODE	Y	Y	Topcoded
HHS_REGION	HHS SURVEILLANCE REGION NUMBER	Y	Y	Derived from STATE
HISP_I	HISPANIC OR LATINO?: IMPUTED	Y	Y	Reflects backcoding.
HQ23	OPINION: EFFECTIVENESS OF H1N1 VACCINE	Y		
HQ24	OPINION: RISK OF GETTING SICK WITH H1N1 FLU WITHOUT VACCINE	Y		
HQ24_B	OPINION: WORRY ABOUT GETTING SICK FROM THE H1N1 VACCINE	Y		
ILI_DIAG_H1N1_F	DIAGNOSED WITH H1N1 WHEN TREATED FOR FEVER WITH COUGH OR SORE THROAT	Y	Y	Available where ILI_F = 1 and ILI_TREAT = 1.
ILI_DIAG_SEAS_F	DIAGNOSED WITH SEAS WHEN TREATED FOR FEVER WITH COUGH OR SORE THROAT	Y	Y	Available where ILI_F = 1 and ILI_TREAT = 1.
ILI_F	SICK WITH FEVER AND COUGH OR SORE THROAT IN PAST MONTH FLAG	Y	Y	
ILI_OTHER_F	OTHER PEOPLE IN HOUSE WITH FEVER AND COUGH OR SORE THROAT FLAG	Y	Y	
ILI_TIME_OFF	NUMBER OF DAYS OF SCHOOL OR WORK MISSED BECAUSE OF INFLUENZA-LIKE ILLNESS	Y		Available where ILI_F = 1.
ILI_TREAT_F	SICK WITH FEVER AND COUGH OR SORE THROAT IN PAST MONTH AND TREATED FLAG	Y	Y	Available where ILI_F = 1
INC_CAT1	HOUSEHOLD INCOME CATEGORY	Y	Y	Total income of all residents of household.
INC_POV	POVERTY STATUS OF HOUSEHOLD	Y	Y	
INC_REF	REFERENCE YEAR FOR HOUSEHOLD INCOME	Y	Y	The year that is referred to when asking respondent's household income. 2008 for Q42009 cases and cases released from 12/27/2009 to 1/10/2010. Equals 2009 for all other cases.
INSURE	HAS HEALTH INSURANCE COVERAGE	Y	Y	Added to survey Q1 2010.
INT_H1N1_DKNW_F	INTENT TO GET H1N1 VACCINE (FOR SELF OR CHILD) UNKNOWN	Y	Y	Available for adults and children not yet vaccinated at the time of interview.
INT_H1N1_DNOT_F	DEFINITELY NO INTENT TO GET H1N1 VACCINE (FOR SELF OR CHILD)	Y	Y	Available for adults and children not yet vaccinated at the time of interview.
INT_H1N1_DYES_F	DEFINITE INTENT TO GET H1N1 VACCINE (FOR SELF OR CHILD)	Y	Y	Available for adults and children not yet vaccinated at the time of interview.

Table D.1 Alphabetical Listing of Variables that are in the NHFS Public-Use Data File

Variable Name	Variable Label[2]	Available on:		Notes
		Adult Records	Child Records	
INT_H1N1_PNOT_F	IMPROBABLE INTENT TO GET H1N1 VACCINE (FOR SELF OR CHILD)	Y	Y	Available for adults and children not yet vaccinated at the time of interview.
INT_H1N1_PYES_F	PROBABLE INTENT TO GET H1N1 VACCINE (FOR SELF OR CHILD)	Y	Y	Available for adults and children not yet vaccinated at the time of interview.
INT_H1N1_REFD_F	INTENT TO GET H1N1 VACCINE (FOR SELF OR CHILD) REFUSED	Y	Y	Available for adults and children not yet vaccinated at the time of interview.
INT_MONTH	MONTH OF INTERVIEW COMPLETION	Y	Y	
INT_NEXT_DKNW_F	INTENT TO GET SEAS VACCINE NEXT SEASON (2010) UNKNOWN	Y	Y	Added to the survey in quarter 2 of 2010.
INT_NEXT_DNOT_F	DEFINITELY NO INTENT TO GET SEAS VACCINE NEXT SEASON (2010)	Y	Y	Added to the survey in quarter 2 of 2010.
INT_NEXT_DYES_F	DEFINITE INTENT TO GET SEAS VACCINE NEXT SEASON (2010)	Y	Y	Added to the survey in quarter 2 of 2010.
INT_NEXT_PNOT_F	IMPROBABLE INTENT TO GET SEAS VACCINE NEXT SEASON (2010)	Y	Y	Added to the survey in quarter 2 of 2010.
INT_NEXT_PYES_F	PROBABLE INTENT TO GET SEAS VACCINE NEXT SEASON (2010)	Y	Y	Added to the survey in quarter 2 of 2010.
INT_NEXT_REFD_F	INTENT TO GET SEAS VACCINE NEXT SEASON (2010) REFUSED	Y	Y	Added to the survey in quarter 2 of 2010.
INT_SEAS_DKNW_F	INTENT TO GET SEAS VACCINE (FOR SELF OR CHILD) UNKNOWN	Y	Y	Available for adults and children not yet vaccinated at the time of interview.
INT_SEAS_DNOT_F	DEFINITELY NO INTENT TO GET SEAS VACCINE (FOR SELF OR CHILD)	Y	Y	Available for adults and children not yet vaccinated at the time of interview.
INT_SEAS_DYES_F	DEFINITE INTENT TO GET SEAS VACCINE (FOR SELF OR CHILD)	Y	Y	Available for adults and children not yet vaccinated at the time of interview.
INT_SEAS_PNOT_F	IMPROBABLE INTENT TO GET SEAS VACCINE (FOR SELF OR CHILD)	Y	Y	Available for adults and children not yet vaccinated at the time of interview.
INT_SEAS_PYES_F	PROBABLE INTENT TO GET SEAS VACCINE (FOR SELF OR CHILD)	Y	Y	Available for adults and children not yet vaccinated at the time of interview.
INT_SEAS_REFD_F	INTENT TO GET SEAS VACCINE (FOR SELF OR CHILD) REFUSED	Y	Y	Available for adults and children not yet vaccinated at the time of interview.
KNOW_H1N1_ALOT_F	A LOT OF KNOWLEDGE ABOUT H1N1 FLU	Y		
KNOW_H1N1_DKNW_F	KNOWLEDGE LEVEL ABOUT H1N1 FLU UNKNOWN	Y		
KNOW_H1N1_LITL_F	A LITTLE KNOWLEDGE ABOUT H1N1 FLU	Y		
KNOW_H1N1_NONE_F	NO KNOWLEDGE ABOUT H1N1 FLU	Y		
KNOW_H1N1_REFD_F	KNOWLEDGE LEVEL ABOUT H1N1 FLU REFUSED	Y		
LANGUAGE	LANGUAGE IN WHICH IN THE INTERVIEW WAS COMPLETED	Y	Y	
MARITAL	MARITAL STATUS	Y		
MSA3_I	3-CATEGORY MSA STATUS: IMPUTED	Y	Y	

Table D.1 Alphabetical Listing of Variables that are in the NHFS Public-Use Data File

Variable Name	Variable Label[2]	Available on:		Notes
		Adult Records	Child Records	
MSA_DEF	DATE OF CENSUS MSA DEFINITIONS USED TO CREATE MSA3_I	Y	Y	
N_ADULT_R	NUMBER ADULTS IN THE HOUSEHOLD: RECODE	Y	Y	Topcoded
N_PEOPLE_R	NUMBER ADULTS IN THE HOUSEHOLD: RECODE	Y	Y	Topcoded
PATIENT_CONTACT_F	DIRECT PATIENT CONTACT FLAG	Y	Y	
PLACE_H1N1_CLIN_F	MOST RECENT H1N1 VACCINE RECEIVED AT A CLINIC OR HEALTH CENTER	Y	Y	Available for vaccinated adults and children. Reflects backcoding.
PLACE_H1N1_DEPT_F	MOST RECENT H1N1 VACCINE RECEIVED AT THE HEALTH DEPARTMENT	Y	Y	Available for vaccinated adults and children. Reflects backcoding.
PLACE_H1N1_DKNW_F	PLACE OF MOST RECENT H1N1 VACCINE RECEIVED UNKNOWN	Y	Y	Available for vaccinated adults and children. Reflects backcoding.
PLACE_H1N1_DOCT_F	MOST RECENT H1N1 VACCINE RECEIVED AT A DOCTORS OFFICE	Y	Y	Available for vaccinated adults and children. Reflects backcoding.
PLACE_H1N1_HOSP_F	MOST RECENT H1N1 VACCINE RECEIVED AT A HOSPITAL	Y	Y	Available for vaccinated adults and children. Reflects backcoding.
PLACE_H1N1_MTRY_F	MOST RECENT H1N1 VACCINE RECEIVED AT A MILITARY FACILITY	Y	Y	Available for vaccinated adults and children. Reflects backcoding.
PLACE_H1N1_OTHM_F	MOST RECENT H1N1 VACCINE RECEIVED AT AN OTHER MEDICAL PLACE	Y	Y	Available for vaccinated adults and children. Reflects backcoding.
PLACE_H1N1_OTHN_F	MOST RECENT H1N1 VACCINE RECEIVED AT AN OTHER NON-MEDICAL PLACE	Y	Y	Available for vaccinated adults and children. Reflects backcoding.
PLACE_H1N1_PHRM_F	MOST RECENT H1N1 VACCINE RECEIVED AT A PHARMACY	Y	Y	Available for vaccinated adults and children. Reflects backcoding.
PLACE_H1N1_REFD_F	PLACE OF MOST RECENT H1N1 VACCINE RECEIVED REFUSED	Y	Y	Available for vaccinated adults and children. Reflects backcoding.
PLACE_H1N1_SCHL_F	MOST RECENT H1N1 VACCINE RECEIVED AT A SCHOOL	Y	Y	Available for vaccinated adults and children. Reflects backcoding.
PLACE_H1N1_SCTR_F	MOST RECENT H1N1 VACCINE RECEIVED AT A SENIOR CENTER	Y	Y	Available for vaccinated adults and children. Reflects backcoding.
PLACE_H1N1_SMKT_F	MOST RECENT H1N1 VACCINE RECEIVED AT A SUPERMARKAT	Y	Y	Available for vaccinated adults and children. Reflects backcoding.
PLACE_H1N1_WORK_F	MOST RECENT H1N1 VACCINE RECEIVED AT THE WORKPLACE	Y	Y	Available for vaccinated adults and children. Reflects backcoding.
PLACE_SEAS_CLIN_F	MOST RECENT SEAS VACCINE RECEIVED AT A CLINIC OR HEALTH CENTER	Y	Y	Available for vaccinated adults and children. Reflects backcoding.
PLACE_SEAS_DEPT_F	MOST RECENT SEAS VACCINE RECEIVED AT THE HEALTH DEPARTMENT	Y	Y	Available for vaccinated adults and children. Reflects backcoding.
PLACE_SEAS_DKNW_F	PLACE OF MOST RECENT SEAS VACCINE RECEIVED UNKNOWN	Y	Y	Available for vaccinated adults and children. Reflects backcoding.
PLACE_SEAS_DOCT_F	MOST RECENT SEAS VACCINE RECEIVED AT A DOCTORS OFFICE	Y	Y	Available for vaccinated adults and children. Reflects backcoding.
PLACE_SEAS_HOSP_F	MOST RECENT SEAS VACCINE RECEIVED AT A HOSPITAL	Y	Y	Available for vaccinated adults and children. Reflects backcoding.

Table D.1 Alphabetical Listing of Variables that are in the NHFS Public-Use Data File

Variable Name	Variable Label[2]	Available on:		Notes
		Adult Records	Child Records	
PLACE_SEAS_MTRY_F	MOST RECENT SEASONAL VACCINE RECEIVED AT A MILITARY FACILITY	Y	Y	Available for vaccinated adults and children. Reflects backcoding.
PLACE_SEAS_OTHM_F	MOST RECENT SEAS VACCINE RECEIVED AT AN OTHER MEDICAL PLACE	Y	Y	Available for vaccinated adults and children. Reflects backcoding.
PLACE_SEAS_OTHN_F	MOST RECENT SEAS VACCINE RECEIVED AT AN OTHER NON-MEDICAL PLACE	Y	Y	Available for vaccinated adults and children. Reflects backcoding.
PLACE_SEAS_PHRM_F	MOST RECENT SEAS VACCINE RECEIVED AT A PHARMACY	Y	Y	Available for vaccinated adults and children. Reflects backcoding.
PLACE_SEAS_REFD_F	PLACE OF MOST RECENT SEAS VACCINE RECEIVED REFUSED	Y	Y	Available for vaccinated adults and children. Reflects backcoding.
PLACE_SEAS_SCHL_F	MOST RECENT SEAS VACCINE RECEIVED AT A SCHOOL	Y	Y	Available for vaccinated adults and children. Reflects backcoding.
PLACE_SEAS_SCTR_F	MOST RECENT SEASONAL VACCINE RECEIVED AT A SENIOR CENTER	Y	Y	Available for vaccinated adults and children. Reflects backcoding.
PLACE_SEAS_SMKT_F	MOST RECENT SEASONAL VACCINE RECEIVED AT A SUPERMARKAT	Y	Y	Available for vaccinated adults and children. Reflects backcoding.
PLACE_SEAS_WORK_F	MOST RECENT SEAS VACCINE RECEIVED AT THE WORKPLACE	Y	Y	Available for vaccinated adults and children. Reflects backcoding.
PSL_1	ADULT WORKER IS ELIGIBLE FOR PAID SICK TIME OFF	Y		Available for adults who are employed.
PSL_2	ADULT WORKER CAN USE PAID SICK TIME OFF FOR SICK FAMILY MEMBER	Y		Available for adults with paid sick leave.
Q23	OPINION: EFFECTIVENESS OF SEASONAL VACCINE	Y		
Q24	OPINION: RISK OF GETTING SICK WITH SEASONAL FLU WITHOUT VACCINE	Y		
Q24_B	OPINION: WORRY ABOUT GETTING SICK FROM THE SEASONAL VACCINE	Y		
Q9	HAS BEEN TO A DOCTOR/HOSPITAL/CLINIC SINCE AUGUST 2009	Y	Y	Added to survey Q1 2010.
Q9_NUM	NUMBER OF TIMES SEEN DOCTOR SINCE AUGUST 2009	Y	Y	Added to survey Q1 2010.
Q95	WORK STATUS	Y		
Q95_INDSTR	WORK INDUSTRY TYPE	Y		Available for adults who are employed.
Q95_OCCPN	WORK OCCUPATION TYPE	Y		Available for adults who are employed.
RACE_I_R	RACE WITH MULTIRACE CATEGORY: IMPUTED	Y	Y	Reflects backcoding. Recoded.
RACEETH4_I	FOUR-LEVEL RACE/ETHNICITY: IMPUTED	Y	Y	Reflects backcoding.
REAS_NOH1N1_AHAD_F	H1N1 VACCINE NOT RECEIVED BECAUSE ALREADY HAD H1N1	Y	Y	Available for non-vaccinated adults and children with improbably or definitely no intent for vaccination. Reflects backcoding.
REAS_NOH1N1_ALLG_F	H1N1 VACCINE NOT RECEIVED BECAUSE OF ALLERGIES	Y	Y	Available for non-vaccinated adults and children with improbably or definitely no intent for vaccination. Reflects backcoding.
REAS_NOH1N1_CANT_F	H1N1 VACCINE NOT RECEIVED BECAUSE TRIED BUT COULDN'T GET THE VACCINE	Y	Y	Available for non-vaccinated adults and children with improbably or definitely no intent for vaccination. Reflects backcoding.

Table D.1 Alphabetical Listing of Variables that are in the NHFS Public-Use Data File

Variable Name	Variable Label[2]	Available on:		Notes
		Adult Records	Child Records	
REAS_NOH1N1_COST_F	H1N1 VACCINE NOT RECEIVED BECAUSE IT COSTS TOO MUCH	Y	Y	Available for non-vaccinated adults and children with improbably or definitely no intent for vaccination. Reflects backcoding.
REAS_NOH1N1_DKNW_F	REASON H1N1 VACCINE NOT RECEIVED UNKNOWN	Y	Y	Available for non-vaccinated adults and children with improbably or definitely no intent for vaccination. Reflects backcoding.
REAS_NOH1N1_DWRK_F	H1N1 VACCINE NOT RECEIVED BECAUSE VACCINE DOESN'T WORK	Y	Y	Available for non-vaccinated adults and children with improbably or definitely no intent for vaccination. Reflects backcoding.
REAS_NOH1N1_GOTO_F	H1N1 VACCINE NOT RECEIVED BECAUSE UNSURE WHERE TO GO / WHO TO CALL	Y	Y	Available for non-vaccinated adults and children with improbably or definitely no intent for vaccination. Reflects backcoding.
REAS_NOH1N1_NDOC_F	H1N1 VACCINE NOT RECEIVED BECAUSE DOCTOR HASN'T RECOMMENDED IT	Y	Y	Available for non-vaccinated adults and children with improbably or definitely no intent for vaccination. Reflects backcoding.
REAS_NOH1N1_NEVR_F	H1N1 VACCINE NOT RECEIVED BECAUSE NEVER GETS FLU VACCINES / DOESN'T BELIEVE IN THEM	Y	Y	Available for non-vaccinated adults and children with improbably or definitely no intent for vaccination. Reflects backcoding.
REAS_NOH1N1_NNDD_F	H1N1 VACCINE NOT RECEIVED BECAUSE IT IS NOT NEEDED	Y	Y	Available for non-vaccinated adults and children with improbably or definitely no intent for vaccination. Reflects backcoding.
REAS_NOH1N1_NOTA_F	H1N1 VACCINE NOT RECEIVED BECAUSE VACCINE IS NOT AVAILABLE	Y	Y	Available for non-vaccinated adults and children with improbably or definitely no intent for vaccination. Reflects backcoding.
REAS_NOH1N1_OTHR_F	H1N1 VACCINE NOT RECEIVED BECAUSE OF ANOTHER REASON	Y	Y	Available for non-vaccinated adults and children with improbably or definitely no intent for vaccination. Reflects backcoding.
REAS_NOH1N1_REFD_F	REASON H1N1 VACCINE NOT RECEIVED REFUSED	Y	Y	Available for non-vaccinated adults and children with improbably or definitely no intent for vaccination. Reflects backcoding.
REAS_NOH1N1_SAVE_F	H1N1 VACCINE NOT RECEIVED BECAUSE WOULD RATHER SAVE DOSE FOR SOMEONE WHO NEEDS IT MORE	Y	Y	Available for non-vaccinated adults and children with improbably or definitely no intent for vaccination. Reflects backcoding.
REAS_NOH1N1_SEFF_F	H1N1 VACCINE NOT RECEIVED BECAUSE OF SIDE EFFECTS WORRIES	Y	Y	Available for non-vaccinated adults and children with improbably or definitely no intent for vaccination. Reflects backcoding.
REAS_NOH1N1_TIME_F	H1N1 VACCINE NOT RECEIVED BECAUSE HASN'T GOTTEN TO IT YET / HASN'T HAD TIME	Y	Y	Available for non-vaccinated adults and children with improbably or definitely no intent for vaccination. Reflects backcoding.
REAS_NOSEAS_AHAD_F	SEASONAL VACCINE NOT RECEIVED BECAUSE HAS ALREADY GOTTEN THE FLU	Y	Y	Available for non-vaccinated adults and children with improbably or definitely no intent for vaccination. Reflects backcoding.
REAS_NOSEAS_ALLG_F	SEAS VACCINE NOT RECEIVED BECAUSE OF ALLERGIES	Y	Y	Available for non-vaccinated adults and children with improbably or definitely no intent for vaccination. Reflects backcoding.
REAS_NOSEAS_CANT_F	SEASONAL VACCINE NOT RECEIVED BECAUSE TRIED BUT COULDN'T GET THE VACCINE	Y	Y	Available for non-vaccinated adults and children with improbably or definitely no intent for vaccination. Reflects backcoding.
REAS_NOSEAS_COST_F	SEAS VACCINE NOT RECEIVED BECAUSE IT COSTS TOO MUCH	Y	Y	Available for non-vaccinated adults and children with improbably or definitely no intent for vaccination. Reflects backcoding.
REAS_NOSEAS_DKNW_F	REASON SEAS VACCINE NOT RECEIVED UNKNOWN	Y	Y	Available for non-vaccinated adults and children with improbably or definitely no intent for vaccination. Reflects backcoding.

Table D.1 **Alphabetical Listing of Variables that are in the NHFS Public-Use Data File**

Variable Name	Variable Label[2]	Available on:		Notes
		Adult Records	Child Records	
REAS_NOSEAS_DWRK_F	SEAS VACCINE NOT RECEIVED BECAUSE VACCINE DOESN'T WORK	Y	Y	Available for non-vaccinated adults and children with improbably or definitely no intent for vaccination. Reflects backcoding.
REAS_NOSEAS_GOTO_F	SEASONAL VACCINE NOT RECEIVED BECAUSE UNSURE WHERE TO GO / WHO TO CALL	Y	Y	Available for non-vaccinated adults and children with improbably or definitely no intent for vaccination. Reflects backcoding.
REAS_NOSEAS_NDOC_F	SEASONAL VACCINE NOT RECEIVED BECAUSE DOCTOR HASN'T RECOMMENDED IT	Y	Y	Available for non-vaccinated adults and children with improbably or definitely no intent for vaccination. Reflects backcoding.
REAS_NOSEAS_NEVR_F	SEASONAL VACCINE NOT RECEIVED BECAUSE NEVER GETS FLU VACCINES / DOESN'T BELIEVE IN THEM	Y	Y	Available for non-vaccinated adults and children with improbably or definitely no intent for vaccination. Reflects backcoding.
REAS_NOSEAS_NNDD_F	SEAS VACCINE NOT RECEIVED BECAUSE IT IS NOT NEEDED	Y	Y	Available for non-vaccinated adults and children with improbably or definitely no intent for vaccination. Reflects backcoding.
REAS_NOSEAS_NOTA_F	SEAS VACCINE NOT RECEIVED BECAUSE VACCINE IS NOT AVAILABLE	Y	Y	Available for non-vaccinated adults and children with improbably or definitely no intent for vaccination. Reflects backcoding.
REAS_NOSEAS_OTHR_F	SEAS VACCINE NOT RECEIVED BECAUSE OF ANOTHER REASON	Y	Y	Available for non-vaccinated adults and children with improbably or definitely no intent for vaccination. Reflects backcoding.
REAS_NOSEAS_REFD_F	REASON SEAS VACCINE NOT RECEIVED REFUSED	Y	Y	Available for non-vaccinated adults and children with improbably or definitely no intent for vaccination. Reflects backcoding.
REAS_NOSEAS_SAVE_F	SEASONAL VACCINE NOT RECEIVED BECAUSE WOULD RATHER SAVE DOSE FOR SOMEONE WHO NEEDS IT MORE	Y	Y	Available for non-vaccinated adults and children with improbably or definitely no intent for vaccination. Reflects backcoding.
REAS_NOSEAS_SEFF_F	SEAS VACCINE NOT RECEIVED BECAUSE OF SIDE EFFECTS WORRIES	Y	Y	Available for non-vaccinated adults and children with improbably or definitely no intent for vaccination. Reflects backcoding.
REAS_NOSEAS_TIME_F	SEASONAL VACCINE NOT RECEIVED BECAUSE HASN'T GOTTEN TO IT YET / HASN'T HAD TIME	Y	Y	Available for non-vaccinated adults and children with improbably or definitely no intent for vaccination. Reflects backcoding.
RENT_OWN_R	IS HOME RENTED OR OWNED	Y	Y	Recoded
SAMP_DESIG	SAMPLE DESIGNATION (LANDLINE VS CELL)	Y	Y	'FR' = landline telephone, 'FC' = cellular telephone
SEQNUMHH	HOUSEHOLD IDENTIFIER	Y	Y	Randomly assigned sequential number
SEQNUMP	PERSON IDENTIFIER	Y	Y	Equal to SEQNUMHH concatenated with 1 for adults, 2 for children
SEX_I	GENDER OF PERSON: IMPUTED	Y	Y	
SUBGROUP	SUBGROUP DESIGNATION (ADULT OR CHILD)	Y	Y	'A' - Adult (18+yrs) 'C' - Child (6mos - 17yrs)
CEN_REG	TRUE CENSUS REGION OF RESIDENCE (1=NORTHEAST 2=MIDWEST 3=SOUTH 4=WEST)	Y	Y	Derived from STATE.
STATE	TRUE STATE OF RESIDENCE	Y	Y	Reported state if available. If missing or refused, then equal to the sampling state based on telephone exchange.
VACC_H1N1_COUNT	NUMBER OF H1N1 FLU VACCINATIONS	Y	Y	
VACC_H1N1_F	H1N1 FLU VACCINATION INDICATOR	Y	Y	
VACC_PNEU_COUNT	NUMBER OF PPV23 VACCINE DOSES RECEIVED AS AN ADULT	Y		

Table D.1 Alphabetical Listing of Variables that are in the NHFS Public-Use Data File

Variable Name	Variable Label[2]	Available on:		Notes
		Adult Records	Child Records	
VACC_PNEU_F	RECEIVED PPV23 VACCINE AS AN ADULT INDICATOR	Y		
VACC_SEAS_COUNT	NUMBER OF SEASONAL FLU VACCINATIONS	Y	Y	Allowed to be greater than 1 only for children under 9 years of age.
VACC_SEAS_F	SEASONAL FLU VACCINATION INDICATOR	Y	Y	
VACC1_H1N1_M	MONTH OF FIRST H1N1 VACCINATION	Y	Y	Missing if not vaccinated, if vaccination status is unknown, or if vaccinated but the month of vaccination is unknown.
VACC1_H1N1_T	TYPE OF FIRST H1N1 VACCINATION (DELIVERY MODE)	Y	Y	Missing if not vaccinated, if vaccination status is unknown, or if vaccinated but the type of vaccination is unknown.
VACC1_H1N1_Y	YEAR OF FIRST H1N1 VACCINATION	Y	Y	Missing if not vaccinated, if vaccination status is unknown, or if vaccinated but the year of vaccination is unknown.
VACC1_SEAS_M	MONTH OF FIRST SEASONAL VACCINATION	Y	Y	Missing if not vaccinated, if vaccination status is unknown, or if vaccinated but the month of vaccination is unknown.
VACC1_SEAS_T	TYPE OF FIRST SEASONAL VACCINATION (DELIVERY MODE)	Y	Y	Missing if not vaccinated, if vaccination status is unknown, or if vaccinated but the type of vaccination is unknown.
VACC1_SEAS_Y	YEAR OF FIRST SEASONAL VACCINATION	Y	Y	Missing if not vaccinated, if vaccination status is unknown, or if vaccinated but the year of vaccination is unknown.
VACC2_H1N1_M	MONTH OF SECOND H1N1 VACCINATION	Y	Y	Missing if not vaccinated twice, if vaccination status is unknown, or if vaccinated twice but the month of second vaccination is unknown.
VACC2_H1N1_T	TYPE OF SECOND H1N1 VACCINATION (DELIVERY MODE)	Y	Y	Missing if not vaccinated twice, if vaccination status is unknown, or if vaccinated twice but the type of second vaccination is unknown.
VACC2_H1N1_Y	YEAR OF SECOND H1N1 VACCINATION	Y	Y	Missing if not vaccinated twice, if vaccination status is unknown, or if vaccinated twice but the year of second vaccination is unknown.
VACC2_SEAS_M	MONTH OF SECOND SEASONAL VACCINATION	Y	Y	Missing if not vaccinated twice, if vaccination status is unknown, or if vaccinated twice but the month of second vaccination is unknown.
VACC2_SEAS_T	TYPE OF SECOND SEASONAL VACCINATION (DELIVERY MODE)	Y	Y	Missing if not vaccinated twice, if vaccination status is unknown, or if vaccinated twice but the type of second vaccination is unknown.
VACC2_SEAS_Y	YEAR OF SECOND SEASONAL VACCINATION	Y	Y	Missing if not vaccinated twice, if vaccination status is unknown, or if vaccinated twice but the year of second vaccination is unknown.

Appendix E

Summary Tables

Table E.1: Estimated Population Totals and Sample Sizes by State and Estimation Area, National 2009 H1N1 Flu Survey

	Adults		Children	
State/Estimation Area	Estimated Population Total	Number of Complete Interviews	Estimated Population Total	Number of Complete Interviews
Total U.S.	227,179,323	56,656	72,074,161	14,288
Alabama	3,486,669	1,156	1,079,791	263
Alaska	489,264	1,090	187,784	353
Arizona	4,752,614	1,241	1,737,266	325
Arkansas	2,103,274	1,135	702,027	258
California	27,932,790	1,306	8,351,497	341
Colorado	3,627,893	1,130	1,295,232	304
Connecticut	2,638,997	1,064	791,121	285
Delaware	668,497	1,093	192,256	253
District of Columbia	465,096	1,342	111,594	253
Florida	14,223,915	1,224	3,745,952	254
Georgia	6,804,695	1,243	2,766,121	367
Hawaii	960,516	993	313,405	244
Idaho	1,081,599	1,042	435,355	289
Illinois	9,542,179	1,230	3,103,555	342
Indiana	4,604,111	1,088	1,657,679	286
Iowa	2,235,646	1,072	714,306	246
Kansas	1,928,468	1,055	829,190	286
Kentucky	3,194,480	986	1,006,287	237
Louisiana	3,250,088	1,160	1,073,253	307
Maine	969,242	980	320,328	223
Maryland	4,095,136	1,262	1,397,100	334
Massachusetts	4,782,799	1,046	1,594,696	271
Michigan	7,331,159	1,060	2,379,760	256
Mississippi	2,122,838	1,205	743,382	287
Missouri	4,469,944	1,046	1,326,191	245
Minnesota	3,886,995	1,050	1,249,945	273
Montana	722,688	975	234,418	244
Nebraska	1,271,272	1,099	482,116	281
Nevada	1,999,459	1,141	586,215	287
New Hampshire	976,482	902	315,937	211
New Jersey	6,487,647	1,189	2,010,431	318
New Mexico	1,393,578	1,352	567,197	334
New York	15,038,313	1,214	4,024,216	291
North Carolina	6,888,281	1,173	2,267,202	277
North Dakota	458,799	955	170,840	214
Ohio	8,557,188	1,041	2,650,849	248
Oklahoma	2,638,732	1,064	948,445	266
Oregon	2,889,209	1,099	871,605	256
Pennsylvania	9,475,024	1,052	2,691,920	243
Rhode Island	754,584	1,030	269,386	256
South Carolina	3,443,062	1,148	986,088	257

Table E.1: Estimated Population Totals and Sample Sizes by State and Estimation Area, National 2009 H1N1 Flu Survey

	Adults		Children	
State/Estimation Area	Estimated Population Total	Number of Complete Interviews	Estimated Population Total	Number of Complete Interviews
South Dakota	576,874	938	216,820	242
Tennessee	4,706,749	1,071	1,413,945	254
Texas	18,318,850	1,354	5,877,370	380
Utah	1,761,440	1,094	976,186	398
Vermont	471,055	1,030	138,124	262
Virginia	5,721,994	1,232	1,912,293	343
Washington	4,958,859	1,113	1,545,112	292
West Virginia	1,325,005	950	452,530	236
Wisconsin	4,303,929	1,069	1,220,870	243
Wyoming	391,347	1,072	138,973	273

Table E.2: Estimated Population Totals and Sample Sizes for Age Group by Poverty Status, National 2009 H1N1 Flu Survey

Age Group	Poverty Status	Unweighted Completes	Weighted Completes
Child 6 Months – 17 Years	Above poverty, > $75K	5,401	24,360,070
Child 6 Months – 17 Years	Above poverty, <= $75K	5,619	27,053,815
Child 6 Months – 17 Years	Below poverty	1,880	13,972,971
Child 6 Months – 17 Years	Unknown	1,388	6,687,304
Adult 18+ Years	Above poverty, > $75K	14,416	59,735,953
Adult 18+ Years	Above poverty, <= $75K	27,061	98,981,461
Adult 18+ Years	Below poverty	5,623	28,721,902
Adult 18+ Years	Unknown	9,556	39,740,008
Total		70,944	299,253,484

Table E.3: Estimated Population Totals and Sample Sizes for Race/Ethnicity by Poverty Status, National 2009 H1N1 Flu Survey

Race/Ethnicity*	Poverty Status	Unweighted Completes	Weighted Completes
Hispanic	Above poverty, > $75K	924	7,191,411
Hispanic	Above poverty, <= $75K	2,161	18,030,429
Hispanic	Below poverty	1,547	15,194,322
Hispanic	Unknown	898	6,901,761
Non-Hispanic White Only	Above poverty, > $75K	16,719	65,799,810
Non-Hispanic White Only	Above poverty, <= $75K	26,059	84,759,392
Non-Hispanic White Only	Below poverty	3,947	14,799,293
Non-Hispanic White Only	Unknown	8,172	30,130,404
Non-Hispanic Black Only	Above poverty, > $75K	944	5,376,956
Non-Hispanic Black Only	Above poverty, <= $75K	2,502	14,830,375
Non-Hispanic Black Only	Below poverty	1,295	9,534,949
Non-Hispanic Black Only	Unknown	1,100	6,100,424
Non-Hispanic Other & Multi-Racial	Above poverty, > $75K	1,230	5,727,846
Non-Hispanic Other & Multi-Racial	Above poverty, <= $75K	1,958	8,415,080
Non-Hispanic Other & Multi-Racial	Below poverty	714	3,166,309
Non-Hispanic Other & Multi-Racial	Unknown	774	3,294,724
Total		70,944	299,253,484

*Race/Ethnicity is self-reported and mutually exclusive.

Table E.4: Estimated Population Totals and Sample Sizes for Age Group by Race/Ethnicity, National 2009 H1N1 Flu Survey

Age Group	Race/Ethnicity*	Unweighted Completes	Weighted Completes
Child 6 Months – 17 Years	Hispanic	1,841	15,604,860
Child 6 Months – 17 Years	Non-Hispanic White Only	9,848	40,882,442
Child 6 Months – 17 Years	Non-Hispanic Black Only	1,261	9,533,702
Child 6 Months – 17 Years	Non-Hispanic Other & Multi-Racial	1,338	6,053,156
Adult 18+ Years	Hispanic	3,689	31,713,062
Adult 18+ Years	Non-Hispanic White Only	45,049	154,606,457
Adult 18+ Years	Non-Hispanic Black Only	4,580	26,309,002
Adult 18+ Years	Non-Hispanic Other & Multi-Racial	3,338	14,550,803
Total		70,944	299,253,484

*Race/Ethnicity is self-reported and mutually exclusive.

Table E.5: Estimated Population Totals and Sample Sizes for Age Group by Gender, National 2009 H1N1 Flu Survey

Age Group		Unweighted Completes	Weighted Completes
Child 6 Months – 17 Years	Male	7,345	37,015,397
Child 6 Months – 17 Years	Female	6,943	35,058,764
Adult 18+ Years	Male	23,084	109,567,230
Adult 18+ Years	Female	33,572	117,612,093
Total		70,944	299,253,484