National Immunization Survey

A User's Guide for the 2011 Public-Use Data File

Centers for Disease Control and Prevention

National Center for Immunization and Respiratory Diseases

and

National Center for Health Statistics

Presented by:

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Convention for Bolding Text

The Data User's Guide uses **bold** font to highlight substantive changes in the methodology or study design from last year's Guide.

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1. Introduction

In 1992 the Childhood Immunization Initiative (CII) (CDC 1994) was established to 1) improve the delivery of vaccines to children; 2) reduce the cost of vaccines for parents; 3) enhance awareness, partnerships, and community participation; 4) improve vaccinations and their use; and 5) monitor vaccination coverage and occurrences of disease. Subsequently, the Healthy People 2020 objectives established the goal of having at least 90 percent of 2-year-old children fully vaccinated with each recommended vaccine and 80 percent of 2-year-old children vaccinated with the basic immunization series. To fulfill the CII mandate of monitoring vaccination coverage and marking progress toward achieving those goals, the National Immunization Survey (NIS) has been 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 target population for the NIS is children aged 19 to 35 months living in households in the United States at the time of the interview. The official coverage estimates reported from the NIS are rates of being up-to-date with respect to the recommended numbers of doses of all recommended vaccines (CDC 2012). These vaccines and their recommended numbers of doses are:

- diphtheria and tetanus toxoids and acellular pertussis vaccine, diphtheria and tetanus toxoids and pertussis vaccine, or diphtheria and tetanus toxoids vaccine (DTaP/DTP/DT) – 4 doses;
- poliovirus vaccine (polio) – 3 doses;
- measles/mumps/rubella vaccine (MMR) – 1 dose;
- haemophilus influenzae type b vaccine (Hib) – 3 or 4 doses depending on product type;
- hepatitis B vaccine (Hep B) – 3 doses;
- varicella zoster (chicken pox) vaccine (varicella), –1 dose;
- pneumococcal vaccine (PCV) – 4 doses; (Infants and children who have received ≥1 dose of PCV7 should complete the immunization series with PCV13. A single supplemental dose of PCV13 is

recommended for all children aged 14--59 months who have received 4 doses of PCV7 or another age-appropriate, complete PCV7 schedule.)

- hepatitis A vaccine (Hep A), 2 doses;
- influenza vaccine (For the recommended number of doses of influenza vaccine and other vaccines, see http://www.cdc.gov/vaccines/pubs/ACIP-list.htm or (CDC 2008)).
- rotavirus vaccine (RV) – 2 or 3 doses depending on product type

In addition to these vaccines, interest focuses on vaccine series, including the 4:3:1:3:3:1 series (4+ DTaP/DTP/DT, 3+ polio, 1+ MCV, 3 or 4 doses of Hib, depending on type of vaccine received, 3+ Hep B, and 1+ varicella at or after 12 months of age) and the 4:3:1:3:3:1:4 series, which is 4:3:1:3:3:1 series plus 4+ PCV.

The NIS collects data on each of these vaccines. Varicella vaccine was added in Quarter 3, 1996, pneumococcal vaccine in Quarter 4, 2000, influenza vaccine and hepatitis A vaccine in Quarter 1, 2003, and rotavirus vaccine in Quarter 3, 2007. The remainder of the vaccines have been included in the NIS from its start in 1994. In October 2000, the Advisory Committee on Immunization Practices recommended that all children ages 2 to 23 months receive 4 doses of pneumococcal vaccine (CDC 2000). Influenza vaccine was recommended for children aged 6 to 23 months starting with the 2004-05 season (CDC 2003). Estimates of influenza vaccination coverage for the 2010-11 season can be obtained from the 2011 NIS.

The NIS uses random digit dialing (RDD) telephone survey methodology to identify households containing children in the target age range and interviews the adult who is most knowledgeable about the child's vaccinations. With consent of the child's parent or guardian, the NIS also contacts (by mail) the child's health care provider(s) to request information on vaccinations from the child's medical records.

Samples of telephone numbers are drawn independently, for each calendar quarter, within selected geographical areas, or strata. **In 2011, there were 60 geographic strata for which vaccination coverage levels can be estimated, including 9 primarily urban city/county areas (including the District of**

Columbia); the remaining 51 estimation areas are either entire states (including U.S. Virgin Islands) or "rest of state" areas. This design makes it possible to produce annual estimates of vaccination coverage levels for each state (including U.S. Virgin Island) and for each of the 9 sub-state estimation areas with a specified degree of precision (a coefficient of variation of approximately 7.5 percent). Further, by using the same data collection methodology and survey instruments in all estimation areas, the NIS produces comparable vaccination coverage levels among estimation areas and over time.

When the NIS was established in 1994, 78 areas were chosen for sampling strata, including the 50 states, 6 urban areas that receive federal Section 317 immunization grants (Bexar County, TX; Chicago, IL; District of Columbia; Houston, TX; New York City; Philadelphia County, PA), and 22 other urban areas. These areas were called "Immunization Action Plan" (IAP) areas in reference to plans developed to improve immunization coverage following the resurgence of measles during 1989-1991. In 2005 and 2006, selected non-grantee IAP areas were "rotated off" (i.e., not oversampled), and replaced by new areas "rotated on" (i.e., oversampled). Starting in 2007, the base NIS geographic strata included 56 areas (6 grantee urban areas and 50 state or "rest of state" areas). In addition, starting in 2007, state immunization programs could choose city/county areas of interest to be oversampled, using their grant funds. **In 2011, the three additional areas chosen included: Prince George's County, MD; Dallas County, TX; and El Paso County, TX.** As in 2010, NIS data were collected in the U.S. Virgin Islands in 2011; as noted throughout this report, several of the sampling, data collection, and estimation procedures differed for the U.S. Virgin Islands when compared to the rest of the U.S., including the creation of separate survey weight variables for analysis that is to include the U.S. Virgin Islands.

The 60 = 56 + 3 + 1 (U.S. Virgin Islands) areas are called *estimation areas*, or simply *strata*. Table 11 in Section 8 shows cross-walk of estimation areas between years.

To maintain consistency with past NIS public use data files, variable names and descriptions continue to use the term "IAP" to designate areas included as strata, which was the term used prior to 2008. The changing geographic strata over time will not cause a problem with bias in estimation of state and national coverage levels since the geographic strata are nested within state.

In 2011, the NIS utilized a dual-frame sampling design with independent samples drawn from landline and cell-phone sampling frames. The cell-phone component was added to the survey in order to address the rapid rise of cell-phone-only households. Preliminary results from the July-December 2011 National Health Interview Survey (NHIS) indicate that the number of households with only wireless telephones continues to increase. Approximately 38.1 percent of all children under 18 years of age—approximately 28 million children—live in households with access to only wireless telephones (Blumberg and Luke 2012). For the first time, the 2011 NIS public-use data include interviews collected both by landline telephones and cell phones. Several of the sampling, data collection and estimation procedures differ for the cell-phone sample as compared to the landline sample, as noted throughout this report. Cell-phone sample was not fielded in the U.S. Virgin Islands.

For the 2011 NIS landline sample, the household interviews began on January 6, 2011 and ended on February 8, 2012. For the cell-phone sample, household interviews began on January 18, 2011 and ended on February 8, 2012. Provider data collection extended from February 2011 to April 2012 for both sample sources. A total sample of approximately 9.3 million telephone numbers (8.6 million landline and 0.7 million cell-phone) yielded household interviews for 27,305 children (23,970 landline and 3,335 cell-phone), 19,534 of whom (17,309 landline and 2,225 cell-phone) had provider data adequate to determine whether the child was up-to-date with respect to the recommended immunization schedule. The 2011 NIS public-use data file contains data for the 27,305 children with

completed household interviews, and more extensive data for the 19,534 children with adequate provider data (including 190 zero-shot children).

The weights included in this public use file afford the data analyst the capability of conducting several different types of analyses, depending on interests and aims. One can choose to analyze all children with completed household interviews or only the subset of children for whom the provider-reported data are adequate. Also, one can choose to include or exclude children who reside in the U.S. Virgin Islands in the analysis. Previous NIS public-use data files have provided analysts with these capabilities.

New to the 2011 Public Use File is the capability of producing both single-frame and dual-frame estimates of vaccination coverage rates. The CDC has determined that the dual-frame estimates are the best estimates for 2011 in terms of minimizing any bias due to the incompleteness of the landline sampling frame (See published results in *Morbidity and Mortality Weekly Report*: http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6135a1.htm?s_cid=mm6135a1_w). Analysts who wish to prepare such estimates, or to duplicate the CDC's official vaccination coverage estimates for 2011, should use the dual-frame sets of weights. The remaining sets of weights, which are provided for purposes of historical comparisons with previous years' data, implement the single-frame landline-sample estimator, which was the estimator used in all previous NIS public-use data files. Analysts who wish to compare 2011 to previous years or to combine the 2011 sample with previous years' samples to reduce sampling variability in estimation for small domains, may consider use of the single-frame weights. Section 6 of this user's guide provides information about the creation of the weight variables included in the 2011 NIS public-use data file, and Section 8 provides guidance for their use.

Published tables of vaccination coverage estimates for 2011 will be available on the National Center for Immunization and Respiratory Diseases website, http://www.cdc.gov/vaccines/stats-surv/imz-coverage.htm#nis.

An article summarizing key findings from the NIS data, as published in the *Morbidity and Mortality Weekly Report (MMWR),* will be available on the Centers for Disease Control and Prevention website at http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6135a1.htm?s_cid=mm6135a1_e%0d%0aThe accompanying codebook (NCHS 2012) documents the contents of the 2011 NIS public-use data file. For reference, Appendix F (Alphabetical Listing of Variables in the 2004-2011 Public-Use Data Files) provides a full list of variables in the 2011 public-use data file.

Additional information on the NIS is available at:

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

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

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2. Sample Design

The NIS uses two phases of data collection to obtain vaccination information for a large national probability sample of young children: an RDD telephone survey designed to identify households with children 19 to 35 months of age, followed by the Provider Record Check Study, a mailed survey to children's immunization providers. This section summarizes these two phases of data collection. Other descriptions of the sample design are given by Ezzati-Rice et al. (1995), Zell et al. (2000), Smith et al. (2001a, 2005), and NORC (2011).

2.1. The NIS RDD Telephone Survey

The NIS RDD telephone survey phase uses independent, quarterly samples of telephone numbers. **Landline telephone numbers were sampled within estimation areas in each quarter of 2011, while cell-phone numbers were sampled at a national level in Q1/2011 and Q2/2011, and within estimation areas in Q3/2011 and Q4/2011.** Table G.1 (in Appendix G) lists the 60 estimation areas for the 2011 NIS by state and shows the estimated number of children living in each state and estimation area in 2011.

The NIS uses the list-assisted method of RDD (Lepkowski 1988). This method selects a random sample of telephone numbers from "banks" of 100 consecutive telephone numbers (e.g., 773-256-0000 to 773-256-0099) that contain at least one directory-listed residential telephone number. **Because directory listings are not available for cell phones, the NIS cell-phone sample did not use the list-assisted method of RDD, but rather used RDD without list-assistance. That is, the cell-phone sample was selected from all banks of cell-phone numbers, not just those containing at least one directory-listed residential telephone number. Directory listings were also unavailable for the U.S. Virgin Islands landline sample frame, so the sample lines for the U.S. Virgin Islands were likewise selected without list-assistance even though they were landline telephone numbers. No cell-phone sample was fielded in the U.S. Virgin Islands.**

In Q1/2011, cell phones were screened for cell-phone-only/mainly status. A cell-phone respondent was classified as living in a cell-phone-only/mainly household if the household did not contain a landline telephone, or if a landline telephone was present but the respondent reported that it would be somewhat or very unlikely to be answered if it were to ring while someone was at home. Screening for the presence of eligible children was conducted only for cell-phone respondents satisfying the cell-phone-only/mainly condition. Beginning Q2/2011 and continuing through Q4/2011, cell phones were no longer screened in this way; instead, all adult cell-phone respondents were eligible to be screened for the presence of eligible children.

Beginning in Q2/2011, a change was made to the household eligibility criteria. Prior to Q2/2011, households were eligible for the NIS interview if they contained a child who was 19-35 months old as of the day the screening questions were administered; beginning Q2/2011 and continuing through Q4/2011, households were eligible if they contained a child who was or would be 19-35 months old on any day of the calendar quarter. For example, households sampled in Q2/2011 were eligible if they contained a child who was 19-35 months old on any day from April 1, 2011 to June 30, 2011, regardless of the date the screening questions were administered. For children who were less than 19 months old on the date of the household interview, vaccination status was determined based on all vaccines received before the date on which the child eventually turned 19 months old. For children who were at least 19 months old on the household interview date, vaccination status was determined based on all vaccines received before the interview date. For children over 35 months at the time of interview, vaccinations status was determined based on all vaccines received before the date on which the child turned 36 months old. This change results in an increase to the age-eligibility rate of about 17 percent and was made to reduce data collection costs.

The target sample size of completed telephone interviews in each estimation area is designed to achieve an approximately equal coefficient of variation of 7.5 percent for an estimator of immunization coverage derived

from provider-reported immunization histories, given a true coverage parameter of 50 percent. **Landline telephone sample sizes were chosen to meet the target coefficient of variation of 7.5 percent for a single-frame landline-sample statistic. The cell-phone sample component provides supplementary completed interviews to round out coverage of the population of age-eligible children. It was not subject to the 7.5 coefficient of variation criterion; the cell-phone sample was drawn with the goal of achieving approximately 3,237 completed cell-phone interviews in 2011.**

In 2011, 71.5 percent of children (72.2 percent of landline sample children and 66.7 percent of cell-phone sample children) with a completed household interview were determined to have adequate provider data. The phrase "adequate provider data" means that sufficient vaccination history information was obtained from the provider(s) to determine whether the child is up-to-date with respect to the recommended vaccination schedule. (See Section 5.4.2. Disposition and Determination of Adequate Provider Data in NORC (2011).) **The percentage of children with adequate provider data varies among estimation areas (61.1 percent in New York City to 79.9 percent in Utah).** Starting with the 2002 public-use data file, the definition of children with adequate provider data was expanded to include unvaccinated children. These are children for whom the respondent reported, during the household interview, that the child had received no vaccinations and either has no immunization providers or has one or more immunization providers, but those providers all reported administering no vaccinations. An NCHS Series 2 Report on the statistical methodology of the NIS (Smith et al. 2005) includes details of how unvaccinated children are included in the estimates of vaccine coverage. This report can be viewed at http://www.cdc.gov/nchs/data/series/sr_02/sr02_138.pdf. This modification to the NIS produces only small changes in vaccination coverage for estimation areas and states, because the number of unvaccinated children in the sample is very small (only 190 in 2011).

The design and implementation of the NIS **landline** sample involves four procedures. First, statistical models predict the number of sample telephone numbers needed in each estimation area to meet the target precision requirements. Second, the sample for an estimation area is 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 eliminates a portion of the non-working and non-residential telephone numbers from the sample before the interviewers dial them. Fourth, the sample telephone numbers are 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 NIS, an advance letter is sent to these addresses approximately two weeks prior to the household interview. (For U.S. Virgin Islands sample, mailing addresses were not obtained, and advance letters were not sent.)

The design and implementation of the cell-phone sample differs from that of the landline sample in two ways:

- **There is no automated procedure to eliminate a portion of non-working and non-residential cell-phone numbers. All sample lines were sent to the interviewers for dialing.**
- **Cell-phone numbers were not matched to an external database to obtain mailing addresses. Cell-phone sample cases were not sent advance letters.**

2.2. The NIS Provider Record Check

At the end of the household interview, consent to contact the child's vaccination provider(s) is requested from the parent/guardian. When oral consent is obtained, each provider is mailed an immunization history questionnaire. This mail survey portion of the NIS is the Provider Record Check (PRC). **The Provider Record Check is conducted in the same manner for both landline and cell-phone sample cases.**

The instructions ask vaccination providers to mail or fax the immunization history questionnaire back upon completion. Two weeks after the initial mailing, a thank you/reminder letter is sent to each provider. If no response has been received, another questionnaire packet is mailed five weeks after the initial mailing. Finally, seven weeks after the initial mailing, a telephone call is made to providers who have still not responded, to remind and encourage them to complete the form and either mail or fax the information back. In some

instances, provider-reported vaccination histories are completed over the telephone. In certain key periods during the year, the above seven-week schedule is accelerated in order to obtain as many questionnaires as possible prior to the closing date for accepting questionnaires. In the accelerated schedule, telephone calls are made to providers two weeks after the initial mailout, timed to coincide with receipt of the thank you/reminder letter. The data from the questionnaires are edited, entered, cleaned, and merged with the household information from the RDD survey to produce a child level record.

2.3. Summary of Data Collection

Table 1 presents selected operational results of NIS data collection for calendar year 2011 for the entire sample. To facilitate comparisons with prior years, the numbers in Table 1 are presented separately for the landline and cell-phone samples. The statistics in Table 1 exclude the U.S. Virgin Islands sample. Children ages 19 to 35 months during 2011 data collection were born between January 2008 and May 2010.

The landline RDD sample (in replicates that were released for use) consisted of 8,423,688 telephone numbers. Of those, 3,934,335 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 4,489,353 numbers were sent to the telephone centers to be dialed, and 1,258,093 households were identified, as shown in Rows 3 and 6. Among the identified households, 1,141,212 (90.7 percent) were successfully screened. Of these, 1,113,511 did not contain an age-eligible child, and 27,701 (2.43 percent) contained one or more age-eligible children. Among these households, 22,642 (81.7 percent) completed the household interview.

The cell-phone sample (in replicates that were released for use) consisted of 727,860 telephone numbers. All of these were sent to the telephone centers to be dialed, and 173,090 active personal cell-phone numbers (APCNs) were identified, as shown in Row 6. Among the identified APCNs, 132,033 (76.3 percent) were successfully screened. Of these, 4,598 (3.48 percent) were deemed eligible for the NIS survey. In Q1/2011, households were eligible if the cell phone that was dialed belonged

to an adult living in a cell-phone-only/mainly household, and the household contained at least one age-eligible child. In Q2/2011-Q4/2011, households were eligible if the cell phone belonged to an adult living in a household with at least one age-eligible child, but there was no screener for cell-phone-only/mainly status. Among the identified eligible households, 3,237 (70.4 percent) completed the household interview.

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). **In 2011, the CASRO response rate (Row 10, Table 1) for the landline sample was 61.5 percent. The CASRO response rate equals the product of the resolution rate (83.0 percent, Row 5), the screening completion rate (90.7 percent, Row 7), and the interview completion rate among eligible households (81.7 percent, Row 9).** 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 age-eligible children. The interview completion rate is the percentage of households with one or more age-eligible children who complete the household interview.

The CASRO response rate (Row 10) for the cell-phone sample in 2011 was 25.2 percent. As with the landline sample, it equals the product of the resolution rate (47.0 percent, Row 5), the screening completion rate (76.3 percent, Row 7), and the interview completion rate among eligible households (70.4 percent, Row 9). Due to operational differences in the resolution and screening processes, the CASRO response rates for the landline and cell-phone samples are not directly comparable.

Row 11 of Table 1 shows that household interviews were completed on behalf of 23,406 age-eligible children in the landline sample and 3,335 children in the cell-phone sample. Rows 12 through 15 give results for the Provider Record Check phase. Specifically, Row 12 gives the rate of obtaining oral consent from household respondents to contact their children's vaccination providers – 79.5 percent

for landline sample cases and 75.0 percent for cell-phone sample cases in 2011. The number of immunization history questionnaires mailed to vaccination providers exceeds the number of completed interviews for children with consent, because some children have more than one vaccination provider.

Of the questionnaires mailed to providers of children from the landline sample, 23,334 (95.2 percent, Row 14) were returned. Among the children with completed household interviews, 16,919 (72.3 percent, Row 15) had adequate vaccination histories based on provider reporting (16,753) or were determined to be unvaccinated (166). The other 27.7 percent of children lacked adequate provider data for a variety of reasons, such as the parent did not give consent to contact the child's provider(s), or the provider(s) did not have medical records for the child.

Of the questionnaires mailed to providers of children from the cell-phone sample, 3,150 (93.8 percent, Row 14) were returned. Among the cell-phone-sample children with completed household interviews, 2,225 (66.7 percent, Row 15) had adequate vaccination histories based on provider reporting (2,201) or had no vaccinations based on household reporting (24).

In 2011, data from the Health Insurance Module (HIM) were collected. Among the 23,406 age-eligible children in the **landline** sample with completed household interviews, 18,928 (80.9 percent, Row 16) completed the HIM module. **Among the age-eligible children in the cell-phone sample with completed household interviews, 2,496 (74.8 percent, Row 16) completed the HIM.**

For each estimation area and each state, Table G.1 (see Appendix G) shows the number of children with completed household interviews and the number of children with adequate provider data.

Table 1: Selected Operational Results of Data Collection, National Immunization Survey (Excluding U.S. Virgin Islands), 2011

Row	Key Indicator	Landline Sample		Cell-Phone Sample		Formula for Percentages
		Number	Percent	Number	Percent	
	Household Phase					
1	Total Selected Telephone Numbers in Released Replicates	8,423,688	--	727,860	--	–
2	Phone Numbers Resolved before Computer-Assisted Telephone Interviewing	3,934,335	46.7%	0	0.0%	(Row 2/Row 1)
3	Total Phone Numbers Released to Telephone Centers	4,489,353	--	727,860	--	–
4	Advance Letters Mailed	1,925,791	42.9%	0	0.0%	(Row 4/Row 3)
5	Resolved Phone Numbers[1] – *Resolution Rate*	6,992,832	83.0%	341,797	47.0%	(Row 5/Row 1)
6	Households Identified – *WRN/APCN Rate*[2]	1,258,093	18.0%	173,090	50.6%	(Row 6/Row 5)
7	Households Successfully Screened[3] – *Screener Completion Rate*	1,141,212	90.7%	132,033	76.3%	(Row 7/Row 6)
8	Eligible Households – *Eligibility Rate*[4]	27,701	2.43%	4,598	3.48%	(Row 8/Row 7)
9	Households with Completed Household Interviews – *Interview Completion Rate*	22,642	81.7%	3,237	70.4%	(Row 9/Row 8)
10	CASRO Response Rate[5]	--	61.5%	--	25.2%	(Row 5 x Row 7 x Row 9)
11	Age-Eligible Children with Completed Household Interviews[6]	23,406	--	3,335	--	–
	Provider Record Check Phase					
12	Children with Consent to Contact Vaccination Providers	18,611	79.5%	2,502	75.0%	(Row 12/Row 11)
13	Immunization History Questionnaires Mailed to Providers	24,512	--	3,358	--	–
14	Immunization History Questionnaires Returned from Providers	23,334	95.2%	3,150	93.8%	(Row 14/Row 13)
15	Children with Adequate Provider Data	16,919 includes 166	72.3%	2,225 (includes 24	66.7%	(Row 15/Row 11)

Table 1: Selected Operational Results of Data Collection, National Immunization Survey (Excluding U.S. Virgin Islands), 2011

Row	Key Indicator	Landline Sample		Cell-Phone Sample		Formula for Percentages
		Number	Percent	Number	Percent	
		unvaccinated children)		unvaccinated children)		
		Modules				
16	Age-Eligible Children with Completed Household Interview and Completed Health Insurance Module	18,928	80.8%	2,496	74.8%	(Row 16/Row 11)

[1] For landline sample, includes phone numbers resolved before dialing (Row 2).
[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.
[3] For the landline sample, this is the age-eligibility screener; for the cell-phone sample in Q1/2011, it is a combination of the screener for adult cell-phone-only/mainly status and the screener for age-eligibility; for the cell-phone sample in Q2-Q4/2011, it is a combination of the screener for non-minor-only cell-phone status and the age-eligibility screener.
[4] For the landline sample, this is the age-eligibility rate; for the cell-phone sample in Q1/2011, it reflects both the adult cell-phone-only/mainly rate and the age-eligibility rate; for the cell-phone sample in Q2-Q4/2011, it reflects the non-minor-only cell-phone rate and the age-eligibility rate. Prior to Q2/2011, households were age-eligible if they contained a child who was 19-35 months old on the day the screening questions were administered; beginning Q2/2011, households were age-eligible if they contained a child who was or would be 19-35 months old on any day of the calendar quarter.
[5] CASRO, Council of American Survey Research Organizations.
[6] Rows 11-16 reflect the removal of children with an ineligible best date of birth, and the inclusion of multiple children from the same household.

2.4. 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 the survey. Informed consent is obtained from the person in the household most knowledgeable about the eligible child's immunization history (generally the parent or guardian of the child). Informed consent to contact the child's vaccination provider(s) is obtained at the end of the interview.

Information in the NIS 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 NIS sign the NCHS confidentiality agreement and follow instructions to prevent disclosure.

All information in the NIS is collected under strict confidentiality and can be used only for research [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 NIS Questionnaires

This section describes the questionnaires used in the 2011 NIS telephone interview of households and in the NIS Provider Record Check.

3.1. Content of the Household Questionnaire

The computer-assisted telephone interview (CATI) questionnaire used in the RDD phase of NIS data collection consists of two parts: a screener to identify households with children ages 19 to 35 months and an interview portion. The questionnaire is modeled on the Immunization Supplement to the National Health Interview Survey (NHIS) (NCHS 1999). The NIS CATI questionnaire has been translated into Spanish, and Language Line Services (formerly part of AT&T) is used for real-time translation into many other languages (Wall et al. 1995). Table 2 summarizes the content of each section of the NIS household interview. The CATI questionnaire is available at http://www.cdc.gov/nchs/nis/data_files.htm.

In the screener, the purpose of the survey is explained to the respondent, and the household is screened to determine whether it contains any children ages 19 to 35 months. If the household has an eligible child, the respondent is asked whether he/she is the most knowledgeable person for the child's vaccination history. If the respondent indicates that another person in the household is more knowledgeable, the interviewer asks to speak to him/her at that time. If that person is unavailable to be interviewed, the interview proceeds to Section MR, the name of the most knowledgeable person is recorded, and a "callback" is scheduled for a later date. **In the Q1/2011 cell-phone sample, prior to screening for age-eligibility the household was first screened for adult cell-phone status to determine whether or not the cell-phone was used by an adult in a cell-phone-only/mainly household; in the Q2/2011-Q4/2011 cell-phone sample, prior to screening for age-eligibility the household was not screened for cell-phone-only/mainly status but was still screened to ensure that the cell-phone was used by an adult (i.e., to ensure it was not a minor-only cell phone).**

Table 2: Content of the Household Interview, National Immunization Survey, 2011

Questionnaire Section	Content of Section
Section S	Screening questions to determine eligibility, roster of eligible children, availability of shot records
Section MR	Most-knowledgeable-respondent callback questions
Section A	Vaccination history (asked if shot records are available)
Section B	Vaccination history (asked if shot records are not available)
Section C	Demographic and socioeconomic questions
Section D	Provider information and request for consent to contact the eligible child's vaccination provider(s)
Section E	Health Insurance Module

During the screener section, the person being interviewed is also asked whether he/she has a written record (shot card) of the child's vaccination history, and whether it is easily accessible. If a shot card is available, the respondent is asked to provide information directly from it in Section A. If the child does not have a shot card or the shot card is not easily accessible, the interview proceeds with Section B, which asks the respondent to recall from memory information about the child's vaccinations.

Section C obtains information that includes relationship of respondent to the child, race of the child, household income, educational attainment of the mother, and other information on the socioeconomic characteristics of the household and its eligible children. This section is asked of all respondents upon completion of Section A or Section B.

In Section D of the NIS household interview, identifying information (such as name, address, and telephone number) for the child's vaccination provider(s) is requested, as well as the full names of the child(ren) and the respondent, so that NIS personnel can contact the provider(s) and identify the child(ren) whose immunization information the NIS is requesting. After this information is obtained, consent to contact the

child's vaccination provider(s) is requested. When oral consent and sufficient identifying information are obtained, the immunization history questionnaire is mailed to the child's vaccination provider(s).

Beginning in 2006, a Health Insurance Module (HIM) was administered upon completion of Section D to collect data regarding the types of medical insurance coverage the child has had since birth. If a respondent provided consent to contact medical providers and completed Section D, he/she flowed directly into the HIM. If, however, consent or any other critical provider question was refused, the call was terminated; only upon callback on which consent was granted or a second refusal given within Section D was the respondent asked the HIM. See Section 7.10 of this user's guide for information on the HIM variables included on the public-use data file.

Some changes were made to the NIS questionnaire during 2011. These are listed below.

In Q1/2011, the following changes were made:

- **For all cases the informed consent statement at S3_LAW, S3_LAW_INCENT, and S5_LAW was updated to read "The Public Health Service Act is Title 42 of the US Code, Section 242k. The collection of information in this survey is authorized by Section 306 of this Act. Through the National Center for Health Statistics, the confidentiality of your responses is assured by Section 308d of this Act, and the Confidential Information Protection and Statistical Efficiency Act. Would you like me to read the Confidential Information Protection provisions to you?" Previously, the statement read "The Public Health Service Act is Volume 42…" The statement was updated from "Volume" to "Title".**
- **The text for S3_INTRO and S5_BOX was updated to read "Hi. I'm calling for the Centers for Disease Control and Prevention. We're calling about an important national study of immunization. I'd like you to know that this study is voluntary. You may choose not to answer any questions you don't wish to answer, or end the interview at any time with no impact on the benefits you may receive. We are required by Federal laws to develop and**

follow strict procedures to protect your information and use your answers only for statistical research. In order to review my work, this call will be recorded and my supervisor may listen as I ask the questions. I'd like to continue now unless you have any questions." Previously the statement read "In order to review my work, my calls are recorded and my supervisor may listen as I ask the questions." This was updated to read "In order to review my work, this call will be recorded and my supervisor may listen as I ask the questions."

In Q2/2011 a change was made to the screening procedure of the NIS. Previously, cell-phone respondents were screened for cell-phone-only/mainly status. In Q2/2011 the screening approach was updated such that respondents were no longer screened for cell-phone status and all adult cell-phone respondents were selected for the NIS interview if there was an eligible child in the household. As a result of this change in methodology, several changes were made to the questionnaire:

- **C_LANDLINE, which reads "The next few questions are about the telephones in your household. Do you have a landline telephone in your household?", was added to section C of the interview.**
- **C21_06Q3 was updated to read "How many landline telephone numbers are residential numbers?"**
- **C_CELLUSE was added to section C of the questionnaire. The question reads "Thinking just about the landline home phone, not your cell phone, if that telephone rang and someone were home, under normal circumstances how likely is it that it would be answered? Would you say extremely likely, somewhat likely, somewhat unlikely, or not at all likely?"**

Also in Q2/2011, the method for determining the age-eligibility of a child was changed. Previously, a child must have been between the ages of 19 and 35 months at the date of screening. Beginning

Q2/2011, a child was age-eligible if the child was between the ages of 19 and 35 months on any date during the calendar quarter. As a result of this change:

- **S_NUMB, S3_X, S3_3M/D/Y_X, S3_C, and MSG_Y previously mentioned children aged 3 and younger. They were all updated to mention children under 4.**
- **Response option 6 of A5_F_X and B6_F_X that previously listed 31 to 35 months old was updated to read "31 to 38 months old"**

On July 1, 2011, questions regarding the flu vaccination were updated:

- **ANEXTFLU and BNEXTFLU were updated to read "How likely is [CHILD] to get a flu vaccination between now and the end of June, 2012? Would you say:" Previously the date mentioned was July, 2011.**
- **B8_X, which previously read "Since July 2011 has [CHILD] had a flu shot? A flu shot is usually given in the fall and protects against influenza for the flu season." was updated to read "Since July 2011 has [CHILD] had a flu vaccination? There are two types of flu vaccinations. One is a shot and the other is a spray, mist, or drop in the nose."**
- **The text of B8DM_X was updated from "During what month and year did [CHILD] receive the [first/second/…eighth] flu shot?" to "During what month and year did [CHILD] receive [his/her] first dose of the flu vaccine since July 2011?"**
- **B9DM_X, which previously read "During what month and year did [CHILD] receive the [first/second/...eighth] flu nasal spray?" was updated to read "During what month and year did [CHILD] receive [his/her] second dose of the flu vaccine since July 2011?"**
- **The text of BNEXTFLU was updated from "How likely is [CHILD] to get a flu vaccination between now and the end of July, 2011?" to "How likely is [CHILD] to get a flu vaccination between now and the end of June, 2012?"**

In Q3/2011, NIS data collection was conducted in the U.S. Virgin Islands (USVI).

In Q3/2011, the following updates were made to the flu questions for respondents that reported without a shot card.

- **The text of B8DMA_x was updated from "How many times did [CHILD] receive a flu shot or flu vaccine in the past 12 months?" to "How many flu vaccinations has [CHILD] received since July 2011?"**
- **The response options for B8DMA_x were changed from an open-ended numeric response for the number of shots to options of one vaccination or dose, two vaccinations or doses, don't know, or refused. Responses of "one vaccination or dose" or "two vaccinations or doses" went to B8DM_x to collect the dates, whereas responses of don't know and refused skipped to BLOCATION.**
- **Responses to B8DM_x previously skipped to B8D_CONF. In Q3/2011, they were updated to skip to B8D_TYPE. Similarly, responses to B9DM_x previously skipped to B9D_CONF. In Q3/2011, they were updated to skip to B9D_TYPE.**
- **Questions B8DU_x and B8D_CONF were no longer asked.**
- **B8D_TYPE and B9D_TYPE were added to section B of the questionnaire. The questions read "Was this a shot or the spray in the nose?" At B8D_TYPE, any case that had a response of two vaccinations at B8DMA_x skipped to B9DM_x to collect data about the second shot. Cases that did not have a response of two vaccinations at B8DMA_x skipped to BLOCATION. All responses to B9D_TYPE skipped to BLOCATION.**
- **Questions B8H1_x, B9_x, and B9DMA_x were no longer asked in Q3/2011.**
- **Additionally, questions B9DU_x, CP_B9H1_x, B9H1_x, and CP_BLOCATION were no longer asked.**

Also in Q3/2011, logic for state references in the Health Insurance module at INS_2_x and INS_13_x was updated to look to the respondent reported state at C19 or derived state from respondent reported zip code at C19A rather than using the sampling state.

In Q4/2011, data were not collected in the USVI. The following additional change was made:

- **Cell-phone respondents were asked C_AWAY, a new question that asked "Would you mind telling me if I reached you today away from home or at home?"**

3.2. Content of the Immunization History Questionnaire

The immunization history questionnaire administered to the vaccination providers is designed to be simple and brief, to minimize provider burden and encourage survey participation. The structure and content of this form were initially derived from the National Immunization Provider Record Check Study (NHIS/NIPRCS), which collected and reconciled immunization data from the providers of respondents to the Immunization Supplement to the National Health Interview Survey. The immunization history questionnaire consists of two double-sided pages. Page 1 includes space for the label that gives the child's name, date of birth, and gender. The remainder of page 1 contains questions about the facility and vaccination provider. Page 2 gives instructions for filling out the shot grid, which appears on page 3. Page 4 thanks the vaccination provider for providing the information, and lists websites and telephone numbers that can be used to obtain more information about the NIS and the National Center for Immunization and Respiratory Diseases. The Immunization History Questionnaire is available at http://www.cdc.gov/nchs/nis/data_files.htm.

No changes were made to the IHQ during 2011.

4. Data Preparation and Processing Procedures

The household data collection and provider data collection in the NIS 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 for a quarter, post-CATI editing and data cleaning produce a final interview data file. The editing of the provider data begins with a manual review of returned immunization history questionnaires, data entry of the questionnaires, and cleaning of the provider data file. After the provider data are merged with the household interview data and responses from multiple providers for a child are consolidated into a child level data record, the editing continues. A quality assurance check is performed, from all sources of the date-of-birth information, to ensure that the provider completed the questionnaire for the correct child and to confirm age-eligibility. Editing of the provider-reported vaccination dates then attempts to resolve specific types of discrepancies in the provider data. The end product is an analytic file containing household and provider data for use in estimating vaccination coverage.

4.1. Data Preparation

The editing and cleaning of NIS data involves several steps. First, the CATI system enables interviewers to reconcile potential errors while the respondent is on the telephone. Further cleaning and editing take place in a post-CATI clean-up stage, involving an extensive review of data values, cross tabulations, and the recoding of verbatim responses for race, ethnicity, and vaccinations. The next step involves the creation of numerous composite variables. Provider data are cleaned in a separate step. After these steps have been completed, imputations are performed for item non-response on selected variables, and weights are calculated. The procedures and rules of the National Health Interview Survey 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 warming screen, allowing the interviewer to correct real time errors. This allows the interviewer to reconcile errors while respondent is on the telephone. CATI warning screens focus on items critical to the survey, such as those that determine a child's eligibility (e.g., date of birth).

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 for each quarter. The steps in this process, implemented after all data collection activities for a quarter are completed, are described below.

Initial Post-CATI Edits and File Creation

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 eligible sample child and all vaccination data reported for the child during the household survey.

Following creation of these two files, a preliminary analysis of each file identifies out-of-range values and extraneous codes. The first check verifies the eligibility status of children, based on date of birth and date of interview. Once the required corrections are verified, invalid values are replaced with either an appropriate data value or a missing value code.

Frequency Review

After the pre-programmed edits are run, frequency distributions of all variables in each file are produced and reviewed. Each variable's range of values is examined for any invalid values or unusual distributions. If blank values exist for a variable, they are checked to see whether they are allowable and whether they occur in excessive numbers. Any problems are investigated and corrected as appropriate.

File Crosschecks

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 and no duplicate children exist in the interview data file.

When all checks have been performed, the final quarterly 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.

4.1.3. Editing of Provider Data

Six to eight weeks after the close of household data collection for a quarter, the majority of the immunization history questionnaires have been collected from providers. The data from the hard-copy questionnaires are entered and independently re-entered to provide 100 percent verification. The provider data file is cleaned, in a similar fashion to the household data file, for out-of-range values and consistency. A computer program back-codes all "other shot" verbatim responses into the proper vaccine category (e.g., Engerix B counts as Hep B, and Tetramune counts as DTP and Hib). These translations come from a file that contains all such verbatim responses ever encountered in the NIS. Also, the provider data file is checked for duplicate records, and exact duplicates are removed. If the provider data contain a date of birth of the child, gender of the child, or child name that differs from the household interview for that child, the questionnaire is re-examined to see whether it may have been filled out for the incorrect child. Provider data that appear to have been filled out

for the wrong child are removed from the provider database. When a child has data from multiple providers, decision rules are applied to produce the most complete picture of the child's immunization history.

Once these data have been cleaned, they are combined with the household data file. Information from up to five providers can be added to a child's record. If more than one provider reported vaccination data for the child, the data from the multiple provider reports are combined into a single history for the child, called the "synthesized provider-reported vaccination history". The determination of whether the child is up-to-date for recommended vaccines and vaccine series is based on the child's synthesized provider-reported vaccination history.

Many variables in the household data file are checked against or verified with the provider data file. For example, a child's date of birth as recorded by the provider is checked against the date of birth as given by the household, to verify that the provider was reporting for that specific child and to form a "best" date of birth for the child. Vaccination dates are also compared, and any discrepancies are examined by hand. In most instances, the provider data are used in preference to the household data.

4.2. Limitations of Data Editing Procedures

Although data editing procedures were used for the NIS, the data user should be aware that some inconsistent data might remain in the public-use data file. The variables that indicate whether a child is up-to-date on each vaccine or series (on which the estimates of vaccination coverage are based) are derived from provider-reported data. Hence, the household-reported vaccination dates (from interviews conducted with a shot card) are not edited for discrepancies beyond the built-in checks in the CATI system.

The NIS does not re-contact households or providers to attempt to reconcile potential discrepancies in provider-reported vaccination dates or to resolve date-of-birth reporting errors. However, beginning with the 1999 NIS, the provider-reported data are manually reviewed and edited to correct specific reporting errors. The *National Immunization Survey: Guide to Quality Control Procedures* (CDC 2002) discusses the change in editing

procedures in more detail. Some children with adequate provider data may have incomplete vaccination histories. These incomplete histories arise from three primary sources: 1) the household does not identify all vaccination providers, 2) some but not all providers respond with vaccination data, and 3) all identified providers respond with vaccination data but fail to list all the vaccinations in the child's medical record. Even with these limitations, the NIS overall is a rich source of data for assessment of up-to-date status and age-appropriate immunization. Also, NIS is the only source to provide comparable vaccination data across states and local areas in the US.

4.3. Variable-Naming Conventions

The names of variables follow a systematic pattern as much as possible. The codebook for the public-use data file groups the variables into ten broad categories according to the source of the data (household or provider) and the content of the variable (NCHS 2012). See Section 7 of this report for detailed information on the contents of the public-use data file.

4.4. Missing Value Codes

Missing value codes for each variable can be found in the codebook (NCHS 2012). For household variables, the missing value codes usually are 77 for DON'T KNOW and 99 for REFUSED. Some household variables may also contain blanks, if the question was not asked. The variables developed from the immunization history questionnaire generally do not have specific missing value codes.

4.5. Imputation for Item Non-Response

The NIS 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 children with a completed household interview – i.e., all children appearing on the public-use data file. (An exception is the indicator of eligibility for the Vaccines for Children program (VFC_I); see Section 7.10 of this user's guide for more information on VFC_I.) 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,

which include estimation area. 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 2012) identifies variables that contain imputed values. These variables include the gender, Hispanic origin, race, and first-born status of the child, and the education level, age group, marital status, and mobility status of the mother.

The count of vaccinations for a specific vaccine is based on the number of unique vaccination *dates* reported by the child's provider(s). In filling out the immunization history questionnaire a provider may not know the date of the first dose of hepatitis B, which is typically given at birth. The provider does, however, have the option of checking the "Given at Birth" box for the first dose of hepatitis B. If it was checked "yes" and the date of the birth dose of hepatitis B was not reported, a program assigns the date of the birth dose for this vaccine. If the household used a vaccination record to report vaccination dates, those dates are examined to see whether the date of the birth dose can be taken from that record. If it is not reported in the vaccination record, a value is imputed from the distribution of provider-reported dates for the birth dose of hepatitis B in the most recent four quarter Child Level Analysis File. The birth dose for this imputation is defined as being given in the first 7 days of life--between the date of birth (i.e., 0 days) and the date of birth plus 6 days. This imputation procedure was first implemented for Quarter 1, 2000 – Quarter 4, 2000. For Quarter 1, 2011 – Quarter 4, 2011 a total of 106 children had the date of the birth dose of hepatitis B assigned using the above procedure (see HEP_FLAG). The date of the birth dose was taken from the household's vaccination record for 24 children. For the remaining 82 children, the value was imputed from the distribution of provider-reported dates for the birth dose.

Table 3 shows the distribution of age in days at the birth dose of hepatitis B for children in Quarter 1, 2011 – Quarter 4, 2011 with a provider-reported birth dose. A similar table is included in the 2000-2010 data user's guides. For 1997, 1998, and 1999, Section 5 of the data user's guide provides information on the distribution of age in days for the birth dose of hepatitis B vaccine and gives guidance on imputing age in days at birth

dose for children with a missing date, but for whom the provider checked the box indicating that a dose was administered at birth (see HEP_BRTH).

Table 3: Distribution of Age (in Days) at the Birth Dose of Hepatitis B Vaccine, National Immunization Survey, 2011

Age in Days at Birth Dose	Unweighted Percentage Of Birth Doses†
0	56.6
1	26.3
2	10.4
3	2.9
4	1.6
5	1.0
6+	1.2

† Excludes U.S. Virgin Islands.

4.6. Vaccine-Specific Recoding of Verbatim Responses

During the household interview, respondents are given the option to report vaccinations in addition to, or instead of, the categories specifically read to them. Similarly, on the IHQ providers can list vaccinations in the "other" section of the IHQ shot grid. These verbatim responses are entered into the CATI system by the interviewer and stored in the interview data file. After data collection, they are reclassified into the listed categories, if possible, using a vaccination recoding table. This table is reviewed by National Center for Immunization and Respiratory Diseases personnel to ensure the shots are recoded into the appropriate category or categories (for combination shots).

4.7. Composite Variables

A number of composite variables (constructed from basic variables) are created and included in the NIS public-use data file. Composite variables assist users and data analysts by eliminating duplication of effort and making NIS data easier to use.

Since the initial years of NIS data collection, the household composite variables have included up-to-date status on individual vaccinations, race of child, household income, and up-to-date status on several vaccination series. Many of these household composite variables are included in the NIS public-use data file. See Section 7 of this report for information on the key variables that are included.

In Quarter 3, 1999 the NIS race questions (see questions C3, C9 and C10 in the household questionnaire) were expanded to include Alaska Native, Native Hawaiian, and 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 variables in the 2002 through present NIS public-use data files, however, contain only three categories: non-Hispanic white alone; non-Hispanic black alone; and non-Hispanic all other races alone and non-Hispanic multi-racial. (The variable RACE_K classifies each child into one of these three categories, while the variable RACEETHK includes a separate "Hispanic" category.) The "all other races alone" 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 child race questions, the child is classified as multi-racial. Because of small sample sizes and risk of disclosure within estimation areas, the 2002 through present public-use data files do not contain any variables with separate multiple-race categories. Rather, the multi-racial children are included in the "all other races" category. Table 4 shows some characteristics of the current race/ethnicity categories.

Table 4: Weighted Distribution of Children by Race/Ethnicity and Corresponding 4:3:1:3, 4:3:1:3:3:1, Pneumococcal, and Varicella Vaccination Coverage Rate Estimates, National Immunization Survey, 2011

Race/ Ethnicity Classification (RACEETHK)	Weighted Distribution of Children ages 19-35 Months in U.S. Estimate (%)	Weighted Percentage 4:3:1 UTD Estimate (%)	Weighted Percentage 4:3:1 UTD Standard Error (%)	Weighted Percentage 4:3:1:3:3:1 with Hib excluded UTD Estimate (%)	Weighted Percentage 4:3:1:3:3:1 with Hib excluded UTD Standard Error (%)	Weighted Percentage 4+ Pneumococcal Estimate (%)	Weighted Percentage 4+ Pneumococcal Standard Error (%)	Weighted Percentage 1+ Varicella at 12+ Months Estimate (%)	Weighted Percentage 1+ Varicella at 12+ Months Standard Error (%)
Hispanic	27.88	82.64	1.16	77.88	1.25	84.62	1.09	91.96	0.76
Non-Hispanic white only	47.91	82.61	0.65	77.30	0.70	85.28	0.61	89.56	0.50
Non-Hispanic black only	13.15	79.62	1.53	75.27	1.68	81.31	1.45	91.16	1.15
Non-Hispanic American Indian or Alaska Native only	0.99	72.68	5.14	72.16	5.14	75.30	5.02	90.15	3.86
Non-Hispanic Asian only	4.15	90.54	1.49	85.36	1.91	84.93	2.39	93.48	1.26
Non-Hispanic Native Hawaiian or Pacific Islander only	0.22	90.03	3.89	81.84	5.91	93.10	3.31	99.04	0.75
Multiracial	5.70	85.41	2.01	79.62	2.32	83.99	2.12	91.94	1.62
Non-Hispanic white/black	2.56	82.90	3.36	77.01	3.68	78.82	3.78	89.89	3.11

Table 4: Weighted Distribution of Children by Race/Ethnicity and Corresponding 4:3:1:3, 4:3:1:3:3:1, Pneumococcal, and Varicella Vaccination Coverage Rate Estimates, National Immunization Survey, 2011

Race/ Ethnicity Classification (RACEETHK)	Weighted Distribution of Children ages 19-35 Months in U.S. Estimate (%)	Weighted Percentage 4:3:1 UTD Estimate (%)	Weighted Percentage 4:3:1 UTD Standard Error (%)	Weighted Percentage 4:3:1:3:3:1 with Hib excluded UTD Estimate (%)	Weighted Percentage 4:3:1:3:3:1 with Hib excluded UTD Standard Error (%)	Weighted Percentage 4+ Pneumococcal Estimate (%)	Weighted Percentage 4+ Pneumococcal Standard Error (%)	Weighted Percentage 1+ Varicella at 12+ Months Estimate (%)	Weighted Percentage 1+ Varicella at 12+ Months Standard Error (%)
Non-Hispanic white/ American Indian or Alaska Native	0.91	88.27	3.79	84.12	4.51	89.55	3.39	95.71	1.56
Non-Hispanic white/Asian	1.23	89.65	3.58	81.27	4.71	92.56	2.02	94.63	1.93
Non-Hispanic other combination	1.00	83.99	4.98	80.16	5.64	81.54	5.45	90.44	3.45

Note: Weighted by PROVWT_D. Children with an unknown Hispanic origin and/or race were imputed by a hot-deck method. This table includes both landline and cell-phone interviews, but excludes U.S. Virgin Islands.

4.8. Sub-Sets of the NIS Data

The NIS public-use data file contains data for all eligible children who have a completed household interview. An interview is considered complete if the respondent completed Section C of the questionnaire. As explained in Section 6 of this guide, each child with a completed household interview is assigned a weight (**RDDWT_LL for U.S. proper landline children; RDDWTVI_LL for U.S. proper plus U.S. Virgin Islands landline children; RDDWT_D for all U.S. proper children including both landline and cell-phone children**) for use in estimation.

The NIS uses the synthesized provider-reported vaccination histories to form the estimates of vaccination coverage because the provider data are considered more accurate than household-reported data. Thus, the most important sub-set of the data consists of children with adequate provider data. For these children, one or more providers returned the immunization history questionnaire, and the vaccination information reported by those providers is sufficient to determine whether the child is up-to-date on the recommended vaccinations. Unvaccinated children are also considered to have adequate provider data. As discussed in Section 7 below, the PDAT variable identifies the children with adequate provider data (PDAT=1). These children have a separate weight (**PROVWT_LL for U.S. proper landline children; PROVWTVI_LL for U.S. proper plus U.S. Virgin Islands landline children; PROVWT_D for U.S. proper children including both landline and cell-phone children**), which should be used to form estimates of vaccination coverage (see Section 6).

4.9. Confidentiality and Disclosure Avoidance

To prevent identification of participants in the NIS 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. Variable labels indicate which variables have been re-coded in these ways.

5. Quality Control and Quality Assurance Procedures

A major contributor to NIS data quality is its sample management system, which in 2011 managed over 400 sample frame by estimation area by quarter samples and used a number of performance measures to track their progress toward completion. Important aspects of the quality assurance program for the RDD component of the NIS included on-line interviewer monitoring; on-line provider look-ups in a database system integrated with the CATI system, including names, addresses, and telephone numbers of vaccination providers; 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 quality assurance procedures.

The Provider Record Check component used quality control measures at four junctions: prior to mailing packets to providers; during the telephone prompting effort; during the editing of returned questionnaires; and during and after their data entry. The final quality assurance activities are implemented during post-processing of the returned questionnaires or vaccination records. All returned questionnaires were examined to identify and correct any obvious errors prior to data entry and then key-entered with 100 percent verification. The keying error rate is estimated, by way of a second verification process, to be less than 1 percent.

6. Sampling Weights

Each of the two phases of data collection results in a separate sampling weight for each child who has data at that phase. The RDD-phase sampling weights permit analyses of data from children with completed household interviews. Each child with adequate provider data (the sub-set on which official estimates of vaccination coverage are based) has a provider-phase sampling weight. **The RDD-phase sampling weights are called RDDWT_LL for landline interviews in the U.S. proper (i.e., set to missing for the U.S. Virgin Islands and for cell-phone sample cases), to be used to produce single-frame landline-sample estimates excluding the U.S. Virgin Islands; RDDWTVI_LL for landline interviews in the U.S. proper plus the U.S. Virgin Islands (i.e., set to missing for cell-phone sample cases), to be used to produce single-frame landline-sample estimates including the U.S. Virgin Islands; and RDDWT_D for both landline and cell-phone interviews in the U.S. proper (i.e. set to missing for the U.S Virgin Islands, where there was no cell-phone sample), to be used to produce dual-frame estimates in the U.S. proper. The provider-phase sampling weights of children with adequate provider data are called PROVWT_LL for landline interviews in the U.S. proper (i.e., set to missing for the U.S. Virgin Islands and for cell-phone sample cases), to be used to produce single-frame landline-sample estimates excluding the U.S. Virgin Islands; PROVWTVI_LL for landline interviews in the U.S. proper plus the U.S. Virgin Islands (i.e., set to missing for cell-phone sample cases), to be used to produce estimates including the U.S. Virgin Islands; and PROVWT_D for both landline and cell-phone interviews in the U.S. proper (i.e., set to missing for the U.S. Virgin Islands), to be used to produce dual-frame estimates in the U.S. proper.** As discussed below, revisions in weighting methodology were made on various occasions and the names of the weight variables were also changed to keep track of the revisions. The RDD sampling weights were called HY_WGT in 1995-2001, RDD_WT in 2002, WGT_RDD in 2003 and 2004, RDDWT in 2005-2008, RDDWT/RDDWTVI from 2009-2010, and RDDWT_LL/RDDWTVI_LL/RDDWT_D in 2011. The provider-phase sampling weights were called W0 in 1995-2001, WT in 2002, WGT in 2003 and 2004, PROVWT in 2005-2008, PROVWT/PROVWTVI from 2009-2010, and PROVWT_LL/PROVWTVI_LL/PROVWT_D in 2011.

Weights produced using only the landline interviews (i.e., RDDWT_LL, PROVWT_LL, RDDWTVI_LL and PROVWTVI_LL) are referred to as the landline sample weights, and moreover, weights produced using both the landline and cell-phone interviews (i.e., RDDWT_D and PROVWT_D) are referred to as the dual-frame weights. A sampling weight may be interpreted as the approximate number of children in the target population that a child in the sample represents. Thus, for example, the sum of the sampling weights of children who are up-to-date (on a particular vaccine or series of vaccines) yields an estimate of the total number of children in the target population who are up-to-date. Dividing this sum by the total of the sampling weights for all children gives an estimate of the corresponding vaccination coverage rate.

This section describes how these weights are developed and adjusted so as to achieve an accurate representation of the target population. The base weights reflect each child's probability of being selected into the sample; the adjustments take into account non-resolution of residential/non-residential/non-working status of a telephone number, non-response to the screener and household interviews, number of telephone lines in the household, **non-coverage of households that do not have landline telephones (for single-frame landline-sample weights only), combination of landline and cell-phone sample sources and non-coverage of households that do not have telephones (for dual-frame weights only)**, poststratification for differential coverage rates, raking, non-response by providers, and a final raking adjustment. Note that when deriving dual-frame weights, initial adjustments are performed separately for the landline and cell-phones samples, and then both samples are combined and further adjustments are performed on the combined samples.

6.1. Base Sampling Weight

In each quarterly NIS sample, each child with a completed household interview receives a base sampling weight. Since cell-phone numbers were sampled at a national level in Q1/2011 and Q2/2011, base sampling weights were calculated slightly differently for these two quarters of the cell-phone sample. For all four quarters of the landline sample and for Q3/2011 and Q4/2011 cell-phone samples, the base sampling weight is equal to the total of telephone numbers in the sampling frame for the estimation area divided by the total

of telephone numbers that were randomly sampled from that sampling frame and released for interview during that quarter. For Q1/2011 and Q2/2011 cell-phone samples, the base sampling weight is equal to the total number of telephone numbers in the sampling frame divided by the total of telephone numbers that were randomly sampled from that sampling frame and released for interview during that quarter.

6.2. Adjustments for Non-Resolution of Telephone Numbers, Screener Non-Response and Interview Non-Response

Non-response occurs in population-based surveys when respondents refuse to participate, are not available at the time of the interview, or could not be reached during the survey period. Thus, the sum of the base sampling weights of children with completed household interviews will underestimate the size of the target population in the estimation area, because not all sampled households respond to all stages of data collection up to the household interview. As a result, the base sampling weights must be adjusted so they accurately reflect the number of children in the target population that each sampled child with a completed household interview represents.

Some sampled households with age-eligible children fail to complete the household interview because of unit non-response: some telephone numbers are never determined to be residential despite multiple call attempts; some households cannot be determined to have age-eligible children; and some households with age-eligible children do not complete the household interview. To compensate for these three types of unit non-response, the sampling weights of children with a completed household interview are adjusted to account for the estimated number of age-eligible children in households whose telephone numbers are never determined to be residential, the estimated number of age-eligible children in households that fail to complete the screening interview, and the number of identified age-eligible children for whom the household interview is not completed. For the landline sample, each of these adjustments is carried out within estimation areas by forming weighting cells based on the residential directory-listed status of the sample telephone number, percent of the population that is white in the telephone exchange, and MSA status of the telephone exchange (e.g., weighting cells were formed from directory-listed versus non-directory-listed telephone number; by

telephone exchanges with 75 percent or higher white population versus telephone exchanges with less than 75 percent white population; and MSA/non-MSA status). For the cell-phone sample, each of these adjustments is carried out within census region (for Q1/2011 and Q2/2011) or estimation area (for Q3/2011 and Q4/2011) by forming weighting cells based on MSA/non-MSA status of the wire center associated with the cell-phone number. Each cell in each stage of adjustment is assured of having sufficient resolved/responding cases (usually 20) at that stage of adjustment. The cells with a deficient number of responding cases are collapsed with neighboring cells. The order of the variables in cell collapsing for the landline sample is MSA status, percent of population that is white, and directory listed status of the telephone number, and for the cell-phone sample, both MSA categories are collapsed if either of the cells have a deficient number of responding cases. Once the adjustment cells are formed, the weights of the unresolved/non-responding records from the previous adjustment step are distributed to the weights of the resolved/responding records within each cell.

6.3. Adjustment for Multiple Telephone Lines and Deriving Annual Weights

Once the non-response-adjusted interview weights for households are computed, these weights are adjusted for additional telephone lines in the household. Because households with multiple telephone lines have a greater chance of being sampled, for the landline sample, each child's household interview weight is adjusted by dividing it by the total number of residential telephone landlines reported in the household (up to a maximum of 3), and for the cell-phone sample, each child's household interview weight is adjusted by dividing it by the total number of cell-phones used by parents or guardians (up to a maximum of 3). Prior to 2005, the adjustment for multiple telephone lines was made by adjusting the base sampling weights before making any other adjustments. Beginning in 2005, the adjustment for multiple telephone lines has been shifted after the interview non-response adjustment, because the information on the number of telephone lines in a household is available only for households with completed household interviews. This shifts the adjustment for multiple telephone lines to the point where the information about the number of telephone lines is actually collected.

Up to the previous step, the sampling weights are adjusted separately for each quarter and sample type (landline, cell-phone), and the weights in each quarter pertain to the target population. However, annual vaccination coverage estimates are obtained from data for four consecutive quarters, so the weights in each quarterly file are adjusted when the data from the four quarters of the landline and cell-phone samples are combined. The adjustment factor is proportional to the number of households with completed household interviews in each quarter within sample type (landline, cell-phone) and estimation area.

6.4. Post-Stratification

Survey weights for the landline and cell-phone samples must be integrated to provide dual-frame weights for the full target population of age eligible children. The landline and cell-phone sampling frames overlap in coverage of children in landline and cell-phone dual use households and exclude children in phoneless households.

The critical issues associated with combining the landline and cell-phone samples are: a) adjustment for overlap of the landline and cell-phone samples; b) adjustment for noncoverage of children in phoneless households; and c) attenuation of cell-phone sample weights to minimize variance associated with survey estimates while controlling for bias. Large cell-phone sample weights are reduced by supplementing with landline cases while bias is controlled by choosing the landline sample cases that are most similar to cell-phone sample cases. More specifically, this adjustment of the annual weights when combining the landline and cell-phone samples is intended to minimize the mean squared error associated with survey estimates. This is accomplished through:

1) Adjustment to population control totals by telephone status;

2) Adjustment for noncoverage of children living in phoneless households;

3) Adjustment for overlap of the landline and cell-phone samples; and

4) Attenuation of cell-phone only weights.

Prior to combining the landline and cell-phone samples, survey weights are adjusted to agree with independent estimates of the population by telephone status relative to the four categories listed above. Adjustments to population estimates of the landline and cell-phone dual user population is made separately for the landline sample and the cell-phone sample (with the overlap adjusted for in the next step, as explained below).

The control total for children by detailed telephone status (cell-phone only, landline and cell-phone dual user, landline-only, phoneless) were derived by ratio-adjusting the percentage of 0-17 year old children in each telephone status category and estimation area for June 2009-July 2010 (Blumberg et al. 2011) to the census region level telephone status estimates obtained from the National Health Interview Survey for 19-35 month old children for July 2010-June 2011. These ratio-adjusted telephone status estimates are applied to the population control total for the estimation area to estimate the control totals by detailed telephone status within the estimation area.

The cell-phone and landline samples must be combined to provide weights for the full target population of 19-35 month old children. Since the cell-phone sample is significantly smaller than the landline sample, the weights for cell-phone sample cases are larger. In order to reduce the variability of the dual-frame weights, a subset of children from the landline sample identified as being "similar" to children in cell-phone only households are combined with children in cell-phone only households (from the cell-phone sample), and are weighted to represent children in cell-phone only households within each estimation area. Moreover, since the cell-phone and landline sampling frames overlap in coverage of children in cell and landline dual use households, dual users from both samples are combined based on the number of children with a completed household interview within each sample type (landline, cell-phone), and are weighted to represent children in dual use households within each estimation area. Similarly, children in landline only households (from the landline sample) within each estimation area are weighted to represent children in landline only households.

Finally, since the dual-frame sample excludes children in phoneless households, children from the landline sample with an interruption in telephone service are weighted to represent children in households without a telephone (either cell-phone or landline telephone). Note that children from the landline sample identified as being "similar" to cell-phone only children and/or having an interruption in telephone service, represent not only the cell-phone only and/or phoneless telephone domains, but also represent the actual telephone domains these children are associated with (either landline and cell dual use or landline only).

For the landline sample weights, adjustment must be made to account for the NIS landline sampling frame including only households that have landline telephones. Because the target population consists of all children ages 19 to 35 months living in households, regardless of whether they have landline telephones, non-response-adjusted sampling weights for the landline sample need to be adjusted to compensate for the non-coverage of children living in households without landline telephones. The non-covered children include children from both wireless-telephone-only and non-telephone households. Data from the NHIS suggest that, of children under the age of 18, approximately 2.2 percent lived in non-telephone households and approximately 38.1 percent lived in wireless-telephone-only households in July - December, 2011, and that this latter percentage is rapidly increasing as the number of households with wireless-telephones only increases (Blumberg and Luke, 2012). Although earlier analysis of NHIS data, which samples both "landline telephone" and "non-landline telephone" households, indicated that children living in households without telephones may have lower vaccination coverage (Bartlett et al., 2001), recent analyses of NIS and NHIS data suggest little or no difference in vaccination coverage rates has been found between children living in households with landline telephones and those living in households with wireless telephones only (Copeland et al. 2011, Copeland et al. 2009, Molinari et al. 2008). Differences in findings may be due to the differences in what constitutes non-landline telephone households – whereas a decade ago non-landline telephone households were primarily households with no telephone, wireless-only households now constitute the vast majority of non-landline telephone households.

The main part of the adjustment builds on findings (from other surveys) that households that have a telephone at the time of the survey but have experienced an interruption (of more than one week) in their telephone service during the previous year are often similar to households that do not have a telephone. In essence, the resulting adjustment projects from the non-interruption part of the sample to the non-interruption part of the population and from the interruption part of the sample to both the interruption and non-landline-telephone parts of the population.

The first step in adjusting for households without landline telephones involves a post-stratification adjustment where two cells within each estimation area are formed based on the interruption status in telephone service. Then the weights are adjusted to the control totals of the respective groups, defined below, within each estimation area. The weights of the children with interruption in telephone service are adjusted to the control total representing themselves and the children in non-landline-telephone households, while the weights of the children without interruption in telephone service are adjusted to the control total representing themselves only, i.e., the children in households without interruption in telephone service.

The control total for children in non-landline-telephone households or in landline-telephone households with interruption are derived from the estimation area-level control total by estimating the percentage of children in non-landline-telephone households and the percentage of children in landline telephone households with interruption within each estimation area. For 2011, data in the 5-percent Public-Use Microdata Sample (PUMS) from the 2000 Census were used to develop initial estimates of the percentage of target children with telephone coverage for each estimation area. The percentages range from 89.1 percent (Mississippi) to 99.0 percent (Prince George's County, Maryland). These initial estimates are then adjusted by the estimates of children in landline-telephone households from the Current Population Survey (CPS). The CPS estimates by census region for 2000 and 2011 are used to make a ratio-adjustment of the PUMS estimates of the percentage of children in telephone households. The estimates of the percentage of children in landline-telephone households with interruption by estimation area are obtained from the NIS sample itself. These

two percentage estimates are applied to the control total for the estimation area to estimate the control totals for the two post-stratification cells within the estimation area.

The next step in the adjustment for both the dual-frame and landline frame survey weights is a simple post-stratification that separates the sample of completed interviews into cells defined by characteristics related to non-coverage. The post-stratification variables are race/ethnicity of the child's mother, level of educational attainment of the child's mother, and age of the child. This adjustment is performed in an identical manner for both the landline sample weights and the dual-frame weights. The control totals used for the NIS are derived from current natality data from the National Center for Health Statistics (NCHS 2008, 2009). Because the Vital Statistics data give the counts of all live births in the U.S., regardless of whether the household has telephone service, the control totals include all eligible children. The control total for each post-stratification cell is derived from the NCHS natality file from 2008 and 2009 (children born between July 1, 2008 and November 30, 2009 would have been 19-35 months on June 30, 2011). Use of the natality data to form the required population control totals for the NIS has three limitations: 1) the natality file provides a universe of live births and therefore does not reflect infant mortality; 2) the natality file does not include children born outside the United States who immigrate to this country before reaching ages 19 to 35 months; and 3) the natality file records residence at time of birth, and some children may move from one estimation area to another by the time they reach 19 to 35 months of age. Adjustments are made to the natality data to account for these three factors. **For 2011, the methodology is similar to that for 2010 except instead of using 2007-2009 American Community Survey PUMS data, 2008-2010 American Community Survey PUMS data were used to make the immigration and migration adjustments.**

To reduce sampling variability and improve the precision of estimation, extreme weights are trimmed and then recalibrated to control totals. Since 2003, RDD sampling weight values exceeding the median weight plus six times the interquartile range of the weights within an estimation area have been truncated to that

threshold. This weight trimming prevents children with unusually large weights from having an unusually large impact on immunization 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 for the landline sample weights and dual-frame weights are identical except for the inclusion of telephone status as an additional raking dimension for the dual-frame weights. The raking procedure used estimation area-level control totals for maternal education categories, maternal race/ethnicity, age group of the child, gender of the child, and telephone status (for dual-frame weights only). Briefly, raking takes each variable in turn and applies a proportional adjustment to the current weights of the children who belong to the same category of the variable. 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. Smith et al. (2005) and NORC (2011) give the details of various aspects of the NIS estimation procedures.

The base sampling weights after all the foregoing adjustments constitute the "RDD sampling weights" (RDDWT_LL for U.S. proper landline sample weights; RDDWTVI_LL for U.S. proper plus U.S. Virgin Islands landline sample weights; RDDWT_D for U.S. proper dual-frame weights).

6.5. Adjustment for Provider Non-Response

Among the 27,305 children with a completed household interview from the landline and cell-phone samples (including U.S. Virgin Islands), 19,534 (71.5 percent) had adequate provider data. Starting with the 2002 public-use data file, the definition of children with adequate provider data includes unvaccinated children. These are children for whom the respondent reported during the household interview that the child had received no vaccination and has no immunization providers, or for whom one or more immunization providers were reported but those providers reported administering no vaccinations. Among the 19,534 children with adequate provider data, 190 were unvaccinated children. Failure to obtain adequate provider data for the remaining 28.5 percent was attributable to:

- parent or guardian not identifying any providers or not giving consent to contact the child's vaccination provider(s) (20.7 percent);
- children with one identified provider but inadequate information to contact the provider, or the provider did not respond, or the provider responded but did not report any immunization information for the child (6.1 percent); and
- children with two or more identified providers but not all the providers responded, and responding providers did not report sufficient information to determine the child's vaccination status (1.7 percent).

The 7,771 children for whom a household interview was completed but adequate provider data were not obtained are classified as "partial non-responders" because they have only a partial response to the NIS as a whole.

Empirical results suggest that children with adequate provider data have characteristics believed to be associated with a greater likelihood of being up-to-date, compared with children who had missing provider data. Specifically, children with adequate provider data are more likely to live in households that have higher total family income, have a white mother, and live outside a central city of a Metropolitan Statistical Area. Also, a child with missing provider data is less likely to live in the state where the mother lived when the child was born and less likely to have a parent/guardian who could locate a shot card. These factors indicate a potential lack of continuity of health care, and are associated with lower vaccination rates (Coronado et al. 2000). If no adjustment is made to the RDD sampling weights to account for these differences, estimated vaccination coverage rates may be biased.

To reduce potential bias in estimators of vaccination coverage attributable to partial non-response, a weighting-class adjustment is used in each estimation area (NORC 2010; Brick and Kalton 1996). This adjustment involves three steps for the landline sample weights and four steps for the dual-frame weights. In the first step, sampled children are classified according to the quintile of their estimated probabilities of

having adequate provider data. In the statistical literature these probabilities are called response propensities (Rosenbaum and Rubin 1983, 1984; Rosenbaum 1987). Children who have similar response propensities will also be similar with respect to variables that are strongly associated with the probability of having adequate provider data. In this important respect, children in each class are comparable. Because of this comparability, any sub-sample of children in a class may represent all children in the class. Therefore, the weighting-class adjustment uses the children with adequate provider data to represent all children in the class. An NCHS Series 2 Report on the statistical methodology of the NIS (Smith et al. 2005) includes details of the methodology for forming weighting classes based on propensity scores. This report can be viewed at http://www.cdc.gov/nchs/data/series/sr_02/sr02_138.pdf.

In the second step of this weighting-class adjustment, within each class an adjustment factor redistributes the RDD sample weights of the children with missing provider data to the weights of the children who have adequate provider data. These adjusted sampling weights of children with adequate provider data are initial non-response-adjusted provider-phase weights. These two steps of the weighting-class adjustment are performed in a similar manner for both the landline sample weights and the dual-frame weights. However, for the dual-frame weights, the model used for creating the adequate provider propensity scores was modified slightly. The model for the landline sample weights includes only significant main effects, while the model for the dual-frame weights includes significant main effects, and also significant two-way interactions between sample type (landline, cell-phone) and all other variables.

For the dual-frame weights, in the third step, the cell-phone and landline samples were once again adjusted based on a similar methodology as described in step 6.4. As in section 6.4, combining the landline and cell-phone samples includes: a) adjustment for overlap of the landline and cell-phone samples; b) adjustment for noncoverage of children in phoneless households; and c) attenuation of cell-phone sample weights to minimize variance associated with survey estimates while controlling for bias (i.e. minimizing the mean squared error of survey estimates).

Within an estimation area, the sums of non-response adjusted weights of children with adequate provider data for the various levels of important socio-demographic variables (such as race/ethnicity) may not be equal to corresponding population totals. To reduce bias attributable to these differences, raking was used in the third step (for landline sample weights) / fourth step (for dual-frame weights) to adjust the non-response adjusted weights to match estimation area control totals. Control totals for these variables were estimated using the weighted totals from the sample of children with completed household interviews. Smith et al. (2001b, 2005) describe the development of this approach in more detail. The raking procedure for the landline sample weights and dual-frame weights are identical except for the inclusion of telephone status as an additional raking dimension for the dual-frame weights. These raked weights of children with adequate provider data are called "final provider-phase weights" (PROVWT_LL for U.S. proper landline sample weights; PROVWTVI_LL for U.S. proper plus U.S. Virgin Islands landline sample weights; PROVWT_D for U.S. proper dual-frame weights). Because of the comparability of children within each weighting class, any estimate that uses data only from the children with adequate provider data, along with their provider-phase sampling weights, will have less bias attributable to differences between children with adequate provider data and children with missing provider data.

Appendix B summarizes the distribution of the sampling weights (RDDWTVI_LL, PROVWTVI_LL, RDDWT_D and PROVWT_D) in each estimation area.

NIS public-use data files for 1995 to 2001 do not include sampling weights that account for the effect of unvaccinated children. An assessment of the effect of accounting for unvaccinated children for the period 1995 to 2003 was made. Weights were calculated for each year with and without unvaccinated children and the vaccination coverage estimates compared. Details of this assessment and the results are available in the user's guide for the 2004 public-use data file. At the national level, accounting for unvaccinated children had very little effect on the estimates of 4:3:1:3 vaccination coverage. Within estimation areas also, the two

coverage estimates differed little. The largest difference (in either direction) was most often around 2 percentage points. Differences of that magnitude are small relative to the standard errors of the estimates. Although accounting for unvaccinated children has a small effect on estimates of vaccination coverage, data users who use the public-use data files to examine estimation area-level trends over time are advised to interpret the results with appropriate caution.

6.6. Sampling Weights for the U.S. Virgin Islands

The standard NIS weighting process for landline sample weights was followed as closely as possible for U.S. Virgin Islands. Due to differences in the availability of external data sources for U.S. Virgin Islands, slight changes were necessary to accurately estimate vaccination rates for this area. These differences are stated below.

In step 6.2, each of the non-response adjustments for U.S. Virgin Islands was done at the estimation area level. That is, no weighting cells were formed for U.S. Virgin Islands.

In step 6.4, the estimate of the percentage of children living in landline-telephone households was derived differently. The national (U.S. proper) CPS estimates for 2000 and 2011 were used to make a ratio-adjustment of the 2000 Census PUMS U.S. Virgin Islands estimate of the percentage of children living in landline-telephone households.

In step 6.4, the adjustment to the control totals for U.S. Virgin Islands to account for immigration and migration used 5-percent PUMS from the 2000 Census instead of 2008-2010 American Community Survey data.

The model used for creating the adequate provider propensity scores in step 6.5 was modified slightly. The standard model used for U.S. proper includes MSA status, while MSA status is excluded in the model for U.S. Virgin Islands.

After sampling weights were calculated for all children in the 50 states, District of Columbia, and U.S. Virgin Islands, they were stored in the variables RDDWTVI_LL and PROVWTVI_LL. These weight variables permit one to conduct analysis of all estimation areas, including the U.S. Virgin Islands. The weight variables RDDWT_LL and PROVWT_LL are equal to RDDWTVI_LL and PROVWTVI_LL for all children, except for children in U.S. Virgin Islands, for whom the value of these weight variables is blank or missing. RDDWT_LL and PROVWT_LL permit one to conduct analysis of all estimation areas, excluding U.S. Virgin Islands.

7. Contents of the Public-Use Data File

The NIS public-use data file contains a record for each eligible child for whom Section C of the household interview was completed, along with household-reported vaccination information and demographic information about the child and the child's mother. (Because of reporting and recall errors, the household report of vaccinations is not used to produce vaccination coverage rates. Vaccination coverage rates are based on the provider-reported data.) For children with Immunization History Questionnaires (IHQs) containing vaccination data returned by one or more providers, the file also contains provider characteristic variables, as well as variables based on the child's synthesized provider-reported vaccination history: the age of the child at each vaccination, the number of each type of vaccination received, and indicators of whether the child is up-to-date with respect to various recommended vaccines and vaccine series.

The public-use data file consists of ten sections, the contents of which are described below in detail. For additional information, users are encouraged to consult the codebook (NCHS 2012). The codebook is divided into the ten 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.

Table 5 lists key NIS variables commonly used in analyses. A full list of variables appearing on the 2004-2011 public-use data files appears in Appendix F, along with the reason for the addition, subtraction, or modification of the variables in 2005, 2006, 2007, 2008, 2009, 2010 or 2011. Information on changes made between 1995-2004 can be found in the *Alphabetical Listing of Variables that are Not Available in All Public-Use Data Files, National Immunization Survey, 1995-2004*. www.cdc.gov/nchs/data/nis/pufvariables1995to2004.pdf

Table 5: NIS Variables Commonly Used in Analyses or for Published Estimates

ID Variables	
SEQNUMC – unique child ID variable	
SEQNUMHH – unique household ID variable	
Geographic Variables	
ESTIAP11 – estimation area number (introduced in 2008; ITRUEIAP used through 2004; ESTIAP in 2005; ESTIAP06 in 2006; ESTIAP07 in 2007; ESTIAP08 in 2008; ESTIAP09 in 2009; ESTIAP10 in 2010)	
STATE – state FIPS code	
CEN_REG – census region	Northeast Midwest South West
Child Demographic Variables	
AGEGRP – age category of child	19-23 months 24-29 months 30-35 months
RACEETHK – race/ethnicity of child (introduced in 2002; RACEKIDR used in 1995-2001)	Hispanic White alone, non-Hispanic Black alone, non-Hispanic All other races alone and multi-racial, non-Hispanic
SEX – gender of child	Male Female
FRSTBRN – firstborn status of the child	No Yes
Mother Demographic Variables	
EDUC1 – education of the mother	<12 years 12 years >12 years, not a college graduate College graduate
MARITAL2 – marital status of mother	Currently married Never married, widowed, divorced, separated, or deceased
M_AGEGRP – age group of mother	<=19 years 20-29 years 30 years or older
Poverty Variables	
INCPOV1 – poverty status (introduced in 2005; INCPOV1R used through 2004)	At or above poverty level, income > $75,000 At or above poverty level, income <= $75,000 Below poverty level Not determined

Table 5: NIS Variables Commonly Used in Analyses or for Published Estimates (continued)

INCPORAR – income-to-poverty ratio (introduced in 2005; INCPORAT used through 2004)	
WIC Variables	
CWIC_01 – child ever participated in WIC program	Yes No Never heard of WIC Don't know Refused Missing
CWIC_02 – child currently participating in WIC program	Yes No Don't know Refused Missing
Breastfeeding Variables	
CBF_01 – child ever fed breast milk	Yes No Don't know Missing
BF_ENDR06 – length of time in days child was fed breast milk	
BF_EXCLR06 – length of time in days child was exclusively fed breast milk or formula (introduced in 2006)	
BF_FORMR08 – age in days when child was first fed formula (introduced in 2008; BF_FORMR06 used in 2006 and 2007)	
Chicken Pox Variables	
HAD_CPOX – did child ever have chicken pox (introduced in 2005; I_HADCPX used through 2004)	Yes No Don't know Refused Missing
AGECPOXR – age in months when child had chicken pox (introduced in 2005; IAGECPXR used through 2004)	0-6 months 7-12 months 13-18 months 19-24 months 25-30 months 31 months or older Missing
Presence of Provider Data Variables	
PDAT – adequate provider data indicator	Yes No
Number of Provider-Reported Doses of Vaccine Variables	
P_NUMDTP – total number of DTP/DTaP doses	
P_NUMPOL – total number of polio doses	

Table 5: NIS Variables Commonly Used in Analyses or for Published Estimates (continued)

P_NUMMMR – total number of MCV doses	
P_NUMHIB – total number of Hib doses	
P_NUMHEP – total number of hepatitis B doses	
P_NUMVRC – total number of varicella doses	
P_NUMPCV – total number of pneumococcal doses	
P_NUMFLU – total number of seasonal influenza doses	
P_NUMH1N – total number of monovalent 2009 H1N1 influenza doses	
P_NUMHEA – total number of hepatitis A doses	
P_NUMROT – total number of rotavirus doses	
Provider Characteristic Variables	
PROV_FAC – provider facility type	All public facilities All hospital facilities All private facilities All military/other facilities All WIC clinic providers Mixed types Unknown
VFC_ORDER – do child's providers order vaccines for children from state/local health department? (introduced in 2006)	All providers Some but not all providers No providers Unknown
REGISTRY – provider(s) reported child's vaccination(s) to state or community immunization registry	All providers Some but not all providers No providers Unknown

Before describing the sections of the public-use data file below, we first summarize the differences between the 2010 and 2011 public-use data files:

- **Because the 2011 estimation areas differ from those used in 1995-2004 and from those used in 2005, 2006, 2007, 2008, 2009, and 2010, a new 2011 estimation area variable has been added (ESTIAP11) and the 2010 estimation area variable (ESTIAP10) has been dropped.**
- **TEL_SAMPFRAME was added to Section 1 of the PUF. This variable indicates the sample frame from which the household was selected (1=landline telephone, 2=cell phone).**
- **The 2010 PUF included the landline-frame weights RDDWT and PROVWT for estimation in the U.S. proper, and RDDWTVI and PROVWTVI for estimation including U.S. Virgin Islands cases. The 2011 PUF keeps these variables but renames them to identify them clearly as single-frame landline-sample weights. On the 2011 PUF, use RDDWT_LL and**

PROVWT_LL to produce single-frame landline-sample estimates in the U.S. proper (excluding the U.S. Virgin Islands), RDDWTVI_LL and PROVWTVI_LL to produce single-frame landline-sample estimates for the U.S. including the Virgin Islands, and RDDWT_D and PROVWT_D to produce dual-frame estimates in the U.S. proper (there was no cell-phone sample fielded in the U.S. Virgin Islands in 2011). See Section 8 of this user's guide for more information about the appropriate weights to use for various analyses.

- **STRATUM_D has been added to the PUF in 2011. It is the stratum variable for dual-frame variance estimation. For variance estimation using only the single-frame landline-sample cases, the stratum is the estimation area ESTIAP11. For estimating variances using the dual-frame weights, the user should use STRATUM_D, which is a combination of the sample frame and estimation area.**
- **The 2011 public-use data file includes four new up-to-date indicators based on the provider report. These include P_UTDHEPA1 (1+ Hepatitis A-containing), U1D_HEP (Hepatitis B birth dose given between birth and day 1), U2D_HEP (Hepatitis B birth dose given between birth and day 2), U3D_HEP (Hepatitis B birth dose given between birth and day 3).**
- **HH_FLU (household-reported number of seasonal influenza vaccinations in the last 12 months) and HH_H1N (household-reported number of monovalent 2009 H1N1 influenza vaccinations in the last 12 months) have been removed from the PUF because the questionnaire did not ask consistent household-reported influenza vaccination questions throughout 2011.**

7.1. Section 1: ID, Weight, and Flag Variables

SEQNUMHH and **SEQNUMC** are the unique household and child identifiers, respectively. **PDAT** indicates which children are considered to have adequate provider data. **As described in Section 6 of this report, RDDWT_LL/RDDWTVI_LL/RDDWT_D and PROVWT_LL/PROVWTVI_LL/PROVWT_D are the final household- and provider-phase weights,**

respectively. PROVWT_LL/PROVWTVI_LL/PROVWT_D should be used when analyzing the provider-reported data, i.e., the variables in Sections 7, 8, and 9 of the public-use data file.

7.2. Section 2: Household-Reported Vaccination Information

Respondents who have shot cards available for the children are administered Section A of the household questionnaire; for each type of vaccine they are asked for the number of vaccinations listed on the shot card and the dates of those vaccinations.

Respondents who do not have a shot card available are administered Section B of the household questionnaire, where they are asked whether they recall the child getting each type of vaccination.

Section 2 of the public-use data file contains variables derived from the information collected in Section A and Section B of the household questionnaire. Variable **SHOTCARD** indicates whether the respondent had a shot card available for the child (i.e., SHOTCARD indicates whether Section A or Section B of the household questionnaire was administered). For each type of vaccine asked about in Sections A and B, a set of variables store the number of vaccinations reported by the respondent in that vaccine category. (Note that these variables were new starting with the 2006 public-use file.) These variables are named "HH_" followed by the vaccine category abbreviation. For example, **HH_HEPB** has five values, corresponding to zero hepatitis B doses received, at least one hepatitis B dose received, "all" hepatitis B doses received, and responses of "don't know" or "refused" from the respondent.

An additional set of variables indicates whether the child is up-to-date for the vaccine category, based on the household shot card report of vaccinations received by the child. (These variables were new starting with the 2006 public-use file.) These variables are named "SC_" followed by the vaccine category abbreviation. For example, **SC_HEPB** indicates whether the child has three or more hepatitis B vaccinations indicated on the shot card.

Section 2 also contains variables indicating whether respondent reported that the child has had chicken pox disease (**HAD_CPOX**) and the child's age in months at chicken pox disease (**AGECPOXR**).

7.3. Section 3: Demographic, Socio-Economic, and Other Household/Child Information

Section 3 of the public-use data file consists of information collected during the household screening interview and Section C of the household main interview. To protect confidentiality, many of these variables have been collapsed, top-coded, or bottom-coded from the original, fully-detailed versions; the variable labels (see the public-use date file codebook) indicate which variables have had such actions taken.

AGEGRP is the age of the child in years in three categories (19-23 months, 24-29 months, 30-35 months), based on the child's best date of birth and the eligibility date. **SEX** gives the gender of the child, and **FRSTBRN** indicates whether the child is the first born, with missing values of these variables imputed. The language in which the interview was conducted is stored in variable **LANGUAGE**, and **C5R** gives the relationship of the respondent to the child.

The breastfeeding variables include whether the child was ever fed breast milk (**CBF_01**), length of time in days the child was fed breast milk (**BF_ENDR06**), the age in days when the child was first fed formula (**BF_FORMR08**), and the length of time in days the child was exclusively fed breast milk or formula (**BF_EXCLR06**). Two types of inconsistencies arise in the breastfeeding data: 1) duration of any breastfeeding can exceed age of the child, and 2) age when the child was first fed formula can exceed the age of the child. **BFENDFL06** is set equal to 1 when BF_ENDR06 exceeds the age of the child (with a buffer), and **BFFORMFL06** is set equal to 1 when BF_FORMR08 exceeds the age of the child (with a buffer). Appendix C provides details on how the flags were created. Data users are cautioned to review Appendix C before analyzing any of the breastfeeding variables.

The WIC variables include whether the child ever participated in the WIC program (**CWIC_01**) and whether the child is currently participating (**CWIC_02**).

C1R and **CHILDNM** give the number of people and children, respectively, in the household. The child's Hispanic origin indicator, race with three categories, and race/ethnicity with four categories are presented in variables **I_HISP_K**, **RACE_K**, and **RACEETHK**, respectively; for each of these variables, missing values have been imputed. The age, education level, and marital status of the mother of the child are stored in variables **M_AGEGRP**, **EDUC1**, and **MARITAL2 (married vs. not married)**, with missing values imputed.

The categorized total combined income for the child's family is given by **INCQ298A**; **INCPOV1** gives the family's poverty status (at or above poverty, income > $75,000; at or above poverty, income <= $75,000; below poverty; unknown), and **INCPORAR** gives the ratio of the family's income to the poverty level. Household tenure is given by **RENT_OWN**.

The number of landline telephone numbers in the household, the number of working cell phones household members have available for personal use, and the number of these cell phones that are usually used by parents or guardians are given by **NUM_PHONE**, **NUM_CELLS_HH**, and **NUM_CELLS_PARENTS**, respectively.

Variable **CEN_REG** gives the census region of the respondent's current residence, and **MOBIL_I** indicates whether the mother's current state of residence is the same as her state of residence at the time of the child's birth.

7.4. Section 4: Geographic Variables

Variables **ESTIAP11** and **STATE** give the 2011 estimation area and state of residence, respectively, for each child.

7.5. Section 5: Number of Providers Identified and Consent Variables

Variable **D7** indicates whether the respondent gave consent to contact the child's providers. If D7=1, then consent was granted; if D7=2 then consent was explicitly denied; and if D7 is missing, consent was not granted because the respondent broke off the interview before being explicitly asked for consent.

Variable **D6R** gives the number of providers identified by the respondent. Note that sometimes respondents report erroneous provider counts and sometimes report the same provider more than one time, and D6R does not reflect cleaning or de-duplication of the initially-reported provider count.

7.6. Section 6: Number of Responding Providers Variables

Variable **N_PRVR** indicates the number of providers returning IHQs with vaccination information for the child. That is, N_PRVR is the number of IHQs that were returned for the child that contain information on the IHQ shot grid. **DISPCODE** is the provider record check disposition code for the child. Children with DISPCODE = 1 to 6 or 8 to 11 or who are unvaccinated (as defined earlier) are considered to have adequate provider data (PDAT=1); children (excluding unvaccinated children) who do not have provider vaccination data (DISPCODE = MISSING) or have provider vaccination data that are not adequate to determine up-to-date vaccination status of the child (DISPCODE = 7) are not considered to have adequate provider data (PDAT=2). The definition of the values of DISPCODE can be found in Appendix D.

7.7. Section 7: Characteristics of Providers Variables

The variables in this section of the public-use file summarize the information collected in IHQ questions 6, 7, and 8 across the child's providers who returned IHQs containing vaccination (i.e., shot grid) data.

PROV_FAC indicates the facility type of the child's vaccination providers based on responses to IHQ question 6. If all of the child's providers that returned IHQs containing shot grid data (see Section 6 variable N_PRVR) reported their facility type to be:

- a federally-qualified health center or a public health department-operated clinic, then PROV_FAC=1 (all public facilities);
- a hospital, then PROV_FAC=2 (all hospital facilities);
- a private practice, then PROV_FAC=3 (all private facilities);
- a WIC clinic, then PROV_FAC=7 (all WIC clinic providers);
- a military or other type of facility, then PROV_FAC=4 (all military/other facilities)

If the responses of providers that returned IHQs containing shot grid data fell into more than one of the above bulleted categories, PROV_FAC=5 (mixed); otherwise, if at least one of the child's providers returned an IHQ containing shot grid data, PROV_FAC=6 (unknown). If none of the child's providers returned an IHQ containing shot grid data, PROV_FAC is set to missing.

VFC_ORDER, based on responses to IHQ question 7, indicates whether the child's vaccination providers order vaccines from a state or local health department to administer to children. If all of the child's providers that returned IHQs containing shot grid data (see Section 6 variable N_PRVR) reported that they order vaccines from a state or local health department to administer to children, then VFC_ORDER=1 (all providers); if at least one of the child's providers that returned an IHQ containing shot grid data reported that the practice orders vaccines from a state or local health department to administer to children and the child's other providers that returned IHQs containing shot grid data reported either that they did not order such vaccines or that they did not know whether or not they did, then VFC_ORDER=2 (some but possibly or definitely not all providers); if all of the child's providers that returned IHQs containing shot grid data reported that they do not order vaccines from a state or local health department to administer to children, then VFC_ORDER=3 (no providers); if none of the conditions for VFC_ORDER=1, 2, or 3 was met but at least one of the child's providers returned an IHQ containing shot grid data, VFC_ORDER=4 (unknown). If none of the child's providers returned an IHQ containing shot grid data, VFC_ORDER is set to missing.

REGISTRY is based on responses to IHQ question 8 and indicates whether the child's vaccination providers reported the child's vaccinations to a community or state registry. If all of the child's providers that returned IHQs containing shot grid data (see Section 6 variable N_PRVR) indicated that they reported to a registry, then REGISTRY=1 (all providers); if at least one of the child's providers that returned an IHQ containing shot grid data indicated that the practice reported to a registry and the child's other providers that returned IHQs containing shot grid data indicated that they did not report to a registry, that they did not know whether or not they reported to a registry, or that the question is not applicable, then REGISTRY=2 (some but possibly or definitely not all providers); if all of the child's providers that returned IHQs containing shot grid data indicated that they did not report to a registry or that the question is not applicable, then REGISTRY=3 (no providers); if none of the conditions for REGISTRY=1, 2, or 3 was met but at least one of the child's providers returned an IHQ containing shot grid data, REGISTRY=4 (unknown). If none of the child's providers returned an IHQ containing shot grid data, REGISTRY is set to missing.

7.8. Section 8: Provider-Reported Up-To-Date Vaccination Variables

This section contains vaccination count and up-to-date variables based on the child's synthesized provider-reported vaccination history. To facilitate data processing and to accommodate the large and continually growing number of vaccination types covered by the NIS, the provider-reported vaccination data are organized around the concept of vaccine categories and vaccine types within vaccine category. The vaccine categories correspond to the sections of the IHQ shot grid, and the vaccine types correspond to the type boxes on the IHQ shot grid. (For each vaccine category, an "unknown" vaccine type is created for vaccinations that are reported without a type box being checked. Also, a few vaccine types, such as Measles-Mumps, arise through the backcoding of shots initially reported in the "other" section of the IHQ shot grid.) Table 6 shows the vaccine categories and types for the 2011 NIS. Note that a single vaccination can fall into more than one vaccine category; for example, an MMR-Varicella vaccination is part of both the Measles-containing and Varicella-containing vaccine categories. (The full list of vaccine type codes can also be found in Appendix I.)

For each vaccine category, Section 8 of the public-use data file contains a variable typically named **P_NUM*YYY*** – where "YYY" is the vaccine category abbreviation given in Table 6 – that stores the number of vaccinations in that vaccine category in the child's synthesized provider-reported vaccination history. For each vaccine type in Table 6, Section 8 also contains a variable that stores the number of vaccinations of that vaccine type in the child's synthesized provider-reported vaccination history. For example, **P_NUMDHI** is the number of DTaP/HepB/IPV shots in the child's history.

This section of the public-use data file also contains up-to-date indicators for a variety of recommended vaccines and vaccine series. These variables' names typically begin with **"P_UTD"**. Additional variables indicate whether the child is up-to-date for various vaccine series. For example, **P_UTD431** indicates whether the child has received 4 or more DTaP/DTP shots, 3 or more polio shots, and one or more measles-containing shot. The variable labels indicate what is needed to be considered up-to-date for each variable, and the "Notes" field in the codebook shows the vaccine type codes (see Table 6) being included when determining whether the child is up-to-date.

Note that it is possible that the administration of the NIS interview itself prompts some respondents to vaccinate their children following the interview; to ensure that the vaccination rate estimates aren't artificially boosted because of this, the synthesized vaccination history count and up-to-date variables in this section of the public-use data file count only vaccinations received before the date the household interview was completed.

Table 6: Vaccine Categories and Vaccine Types, National Immunization Survey, 2011

Vaccine Category Abbreviation	Vaccination Category Description	Vaccine Type Code	Vaccine Type Description
DTP	DTaP/DTP-containing vaccine	03	DTaP/DTP-containing, unknown type
		04	DTaP
		07	DTaP-Hib
		08	DTaP-HepB-IPV
		D3	DTaP-IPV-Hib
POL or POLIO	Polio-containing vaccine	08	DTaP-HepB-IPV
		20	OPV
		21	IPV
		22	Polio-containing, unknown type
		D3	DTaP-IPV-Hib
MCV or MMR	Measles-containing vaccine	30	MMR
		31	Measles only
		32	Measles-mumps
		33	Measles-rubella
		MM	Measles-containing, unknown type
		VM	MMR-Varicella
HIB	Hib-containing vaccine	07	DTaP-Hib
		43	HepB-Hib
		44	Hib-only, unknown type
		D3	DTaP-IPV-Hib
		HI	Hib-containing, unknown type
		HM	Hib-only (Merck)
		HG	Hib-only (GSK)
		HS	Hib-only (Sanofi)
HEPB or HEP	Hepatitis B-containing vaccine	08	DTaP-HepB-IPV
		43	HepB-Hib
		60	HepB-only
		HB	HepB-containing, unknown type
VRC	Varicella-containing vaccine	VA	Varicella-containing, unknown type
		VM	MMR-Varicella
		VO	Varicella-only

Table 6: Vaccine Categories and Vaccine Types, National Immunization Survey, 2011 (continued)

Vaccine Category Abbreviation	Vaccination Category Description	Vaccine Type Code	Vaccine Type Description
PCV	Pneumococcal-containing vaccine	70	**Conjugate-unknown**
		71	Polysaccharide
		72	Pneumococcal-containing, unknown type
		73	Conjugate-7
		74	Conjugate-13
HEPA or HEA	Hepatitis A-containing vaccine	HA	Hepatitis A
FLU	Seasonal influenza vaccine	FL	Seasonal flu, unknown type
		FM	Seasonal flu spray
		FN	Injected seasonal flu
H1N	Monovalent 2009 H1N1 influenza vaccine	1L	H1N1 flu, unknown type
		1M	H1N1 flu spray
		1N	Injected H1N1 flu
MP	Mumps-only vaccine	MP	Mumps-only
MPRB or MPR	Mumps-Rubella-only vaccine	MB	Mumps-Rubella-only
RB	Rubella-only vaccine	RB	Rubella-only
ROT	Rotavirus-containing vaccine	RG	Rotarix® (GSK)
		RM	RotaTeq® (Merck)
		RO	Rotavirus, unknown type

7.8.1. Seasonal Influenza Up-To-Date Variables

Since 2003, two influenza vaccine up-to-date variables have been created (NCHS 2012). The two variables are:

P_UTDFL1: Vaccinated – For interviews conducted during year x (defined using year variable associated with the quarter), child was of age between 6 and 23 months during the entire span from 9/1 through 12/31 of year x-1, and child received at least one influenza vaccination during this period.

Not Vaccinated – For interviews conducted during year x (defined using year variable associated with the quarter), child was of age between 6 and 23 months during the entire span from 9/1 through 12/31 of year x-1, and child received no influenza vaccine during this period.

Not eligible – For interviews conducted during year x (defined using year variable associated with the quarter), child's age fell outside the span of 6 and 23 months at any point between 9/1/x-1 and 12/31/x-1.

and

P_UTDFL2: Vaccinated – For interviews conducted during year x (defined using year variable associated with the quarter), child was of age between 6 and 23 months during the entire span from 9/1 through 12/31 of year x-1, and either a) received no doses of influenza vaccine prior to 9/1/x-1, but then received two between 9/1/(x-1) and whichever is earlier, date of interview or 1/31/x or b) received at least one dose of influenza vaccine prior to 9/1/x-1 and then received one during the period 9/1/x-1 through 12/31/x-1.

Not vaccinated – For interviews conducted during year x (defined using year variable associated with the quarter), child was of age between 6 and 23 months during the entire span from 9/1 through 12/31 of year x-1, but does not qualify for the above definition.

Not eligible – For interviews conducted during year x (defined using year variable associated with the quarter), child's age fell outside the span of 6 and 23 months at any point between 9/1/x-1 and 12/31/x-1.

Starting 2007, another influenza vaccine up-to-date variable (**P_UTDFL3**) has been created. It is similar to the P_UTDFL2 variable but with slight modification in the definition of "not vaccinated". The difference between P_UTDFL2 and P_UTDFL3 is shown in Table 7.

Table 7: Comparison of Old Flu Up-to-Date Indicator (P_UTDFL2) and New Flu Up-to-Date Indicator (P_UTDFL3)[1]

Number of Doses in Season 1 Before 9/1/[YEAR[2]-2]	Number of Doses in Season 2 9/1/[YEAR-2] to 9/1/[YEAR-1], Left Inclusive	Number of Doses in Season 3 9/1/[YEAR-1] to 12/31/[YEAR-1][3] Inclusive	Fully Vaccinated According to P_UTDFL2	Fully Vaccinated According to P_UTDFL3	Different
0	0	0	No	No	
0	0	1	No	No	
0	0	2	Yes	Yes	
0	1	0	No	No	
0	1	1	Yes	No	X
0	1	2	Yes	Yes	
0	2	0	No	No	
0	2	1	Yes	Yes	
0	2	2	Yes	Yes	
1	0	0	No	No	
1	0	1	Yes	Yes	
1	0	2	Yes	Yes	
1	1	0	No	No	
1	1	1	Yes	Yes	
1	1	2	Yes	Yes	
1	2	0	No	No	
1	2	1	Yes	Yes	
1	2	2	Yes	Yes	
2	0	0	No	No	
2	0	1	Yes	Yes	
2	0	2	Yes	Yes	
2	1	0	No	No	
2	1	1	Yes	Yes	
2	1	2	Yes	Yes	
2	2	0	No	No	
2	2	1	Yes	Yes	
2	2	2	Yes	Yes	

[1] For children who were between the ages of 6 and 23 months (inclusive) for the entire span of 9/1/[YEAR-1] and 12/31/[YEAR-1].

[2] In this table, YEAR refers to the sampling year for the child.

[3] This date does not apply to the first three rows of this table; for the first three rows (i.e., 0 doses received prior to 9/1/[YEAR-1]) the date is INTERVIEWDATE or 1/31/[YEAR], whichever is earlier.

7.8.1. H1N1 Influenza Up-To-Date Variables

The public-use data file contains two up-to-date indicators for provider-reported monovalent 2009 H1N1 influenza vaccinations. P_UTDH1N_1 indicates receipt of 1 or more H1N1 influenza vaccinations by 36 months of age, excluding any vaccinations after the household interview date, and excluding vaccinations given prior to 10/5/2009. P_UTDH1N_2 indicates receipt of 2 or more H1N1 influenza vaccinations by 36 months of age, excluding any vaccinations after the household interview date, and excluding vaccinations given prior to 10/5/2009.

7.8.2. Hib Up-To-Date Variables

A Hib vaccine shortage and interim recommendation to suspend the booster dose for healthy children occurred December 2007 to September 2009 (CDC 2010). Furthermore, the NIS has historically considered children to be up-to-date for Hib if the child had 3 or more doses of any Hib-containing vaccine, but for some Hib vaccine product types, 4 doses are required. Because the NIS has historically not distinguished between product types for Hib vaccine, children who received 3 doses of a vaccine product that required 4 doses were misclassified as up-to-date for Hib (CDC 2010).

Because of the Hib vaccine shortage and because of the dependence of the Hib recommendation on product type, in 2009 the IHQ was modified to capture the manufacturer of the Hib vaccinations the child has received. Beginning with the 2009 NIS public-use data file, new up-to-date variables were added to indicate up-to-date status based on Hib recommendation (i.e., the primary series recommended during the shortage vs. the full series) and on the Hib manufacturer.

Table 8 shows the Hib up-to-date variables appearing on the public-use-date file beginning in 2009: in addition to the existing up-to-date indicator based on 3+ Hib of any type (P_UTDHIB), an indicator based on the "shortage" (i.e., primary series) recommendations accounting for manufacturer (3+ Hib of any type or 2+ Hib of Merck types) and an indicator based on the "routine" (i.e., full series) recommendations accounting for manufacturer (4+ Hib of any type or 2 Hib of Merck types followed by 1 Hib of any type)

were added. Table 9 shows the up-to-date series variables that include Hib appearing on the public-use-date file beginning in 2009: in addition to the existing vaccine series up-to-date variables based on 3+ Hib of any type (PUTD4313, PUT43133, PU431331, PU4313313, PU4313314), variables based on the "routine" (i.e., full series) Hib recommendations accounting for manufacturer (4+ Hib of any type or 2 Hib of Merck types followed by 1 Hib of any type) were added have been added (P_UTD431H_ROUT_S, P_UTD431H3_ROUT_S, P_UTD431H31_ROUT_S, P_UTD431H313_ROUT_S, P_UTD431H314_ROUT_S).

Note that for these Hib up-to-date variables that account for the manufacturer, if the manufacturer is unknown because the provider failed to check a type box on the IHQ, it has been assumed that the manufacturer of the Hib vaccine is not Merck; that is, these variables are based on a "strict" treatment of Hib vaccinations of unknown type, erring on the side of classifying the child as not up-to-date.

Beginning with the 2010 public-use data file, two new vaccination series up-to-date indicators were added that ignore the Hib component altogether. These are PU431_31 (indicates up-to-date status as measured by PU431331, but excluding the Hib component) and PU431_314 (indicates up-to-date status as measured by PU4313314, but excluding the Hib component).

Table 8: Up-To-Date Variables for Hib, National Immunization Survey, 2009-2011

Name	Description	Up-To-Date Criteria
P_UTDHIB	Historical UTD flag for Hib.	3+ of any type (07,43,44,D3,HG,HI,HM,HS)
P_UTDHIB_SHORT_S	UTD flag for Hib-shortage (i.e., primary series) recommendation, accounting for manufacturer. New starting 2009.	3+ of any type (07,43,44,D3,HG,HI,HM,HS) OR 2+ Merck types (HM,43)
P_UTDHIB_ROUT_S	UTD flag for routine (i.e., full series) Hib recommendation, accounting for manufacturer. New starting 2009.	4+ of any type (07,43,44,D3,HG,HI,HM,HS) OR 2 Merck types (HM,43) followed by 1 of any type (07,43,44,D3,HG,HI,HM,HS)

Table 9: Up-To-Date Variables for Vaccine Series Including Hib, National Immunization Survey, 2009-2011

Name	Description
PUTD4313	UTD flag for the 4:3:1:3 series using the 3+ any type UTD definition for HIB
P_UTD431H_ROUT_S	UTD flag for the 4:3:1:3 series using the routine (i.e., full series) UTD definition for HIB
PUT43133	UTD flag for the 4:3:1:3:3 series using the 3+ any type UTD definition for HIB
P_UTD431H3_ROUT_S	UTD flag for the 4:3:1:3:3 series using the routine (i.e., full series) UTD definition for HIB
PU431331	UTD flag for the 4:3:1:3:3:1 series using the 3+ any type UTD definition for HIB
P_UTD431H31_ROUT_S	UTD flag for the 4:3:1:3:3:1 series using the routine (i.e., full series) UTD definition for HIB
PU4313313	UTD flag for the 4:3:1:3:3:1:3 series using the 3+ any type UTD definition for HIB
P_UTD431H313_ROUT_S	UTD flag for the 4:3:1:3:3:1:3 series using the routine (i.e., full series) UTD definition for HIB
PU4313314	UTD flag for the 4:3:1:3:3:1:4 series using the 3+ any type UTD definition for HIB
P_UTD431H314_ROUT_S	UTD flag for the 4:3:1:3:3:1:4 series using the routine (i.e., full series) UTD definition for HIB

7.8.3. Rotavirus Up-To-Date Variables

The up-to-date status for Rotavirus vaccine depends on the manufacturer of the vaccines received; the requirement is two or more doses of Rotarix® (GSK) or three or more doses of Rotavirus vaccine of any type. Beginning with the 2009 NIS public-use data file, an up-to-date variable for Rotavirus vaccine (P_UTDROT_S) was added to indicate up-to-date status, accounting for the manufacturer (3+ Rotavirus doses of any type or 2+ Rotarix® doses).

Note that for this Rotavirus up-to-date variable, if the manufacturer is unknown because the provider failed to check a type box on the IHQ, it has been assumed that the Rotavirus vaccine dose is not Rotarix®; that is, this variable is based on a "strict" treatment of Rotavirus vaccinations of unknown type, erring on the side of classifying the child as not up-to-date.

7.9. Section 9: Provider-Reported Age-At-Vaccination Variables

This section contains variables storing the child's age in days and months at each vaccination in the synthesized provider-reported vaccination history, along with the vaccine types of those vaccinations.

For each vaccine category, variables named **D*YYY*1** - **D*YYY*9** and ***YYY*_AGE1** - ***YYY*_AGE9** store the age in days and months, respectively, of the child when the vaccination was administered for up to nine vaccinations in the child's synthesized provider-reported vaccination history, where "YYY" is the vaccine category abbreviation given in Table 6. For vaccine categories that contain multiple vaccine types, variables **X*YYY*TY1** - **X*YYY*TY9** give the corresponding vaccine type code (see Table 6).

Unlike the vaccination count and up-to-date variables in Section 8 of the public-use data file, the variables in Section 9 include vaccinations given both before and after the household interview was completed. If desired, users can limit the Section 9 variables to only those before the household interview date by examining the corresponding Section 8 "P_NUM" variable and limiting the analysis of the Section 9 variables to only the first *n* variables, where *n* is equal to the number of vaccinations in the vaccine category before the household interview date as indicated by the corresponding "P_NUM" variable.

Users of the NIS Public Use File should be aware that the age-at-vaccination variables included in Section 9 may contain a small number of vaccination ages that are implausible according to the recommended immunization schedules (http://www.cdc.gov/vaccines/schedules/hcp/child-adolescent.html). Such ages may arise if a medical provider inadvertently records an erroneous vaccination date or if a vaccination date is incorrectly transcribed onto an IHQ. The quality control

procedures of the NIS address implausible ages to every extent possible. Suspicious dates are manually reviewed and corrected if there is evidence either from the household interview or from another provider that the date is incorrect. In rare cases, however, when there is no further information with which to correct the reported vaccination date, the vaccination is treated as having actually occurred and the implausible age at vaccination persists on the data file. The data user should consider these issues in deciding how to analyze the NIS data.

7.10. Section 10: Health Insurance Module Variables

The Health Insurance Module (HIM) was introduced in 2006 to gather information on the health insurance coverage of the child. HIM data were included in the NIS public-use data file for the first time in 2007. The NIS public-use file contains seven variables as follows:

- **INS_1** – "Is child covered by health insurance provided through employer or union?";
- **INS_2** – "Is child covered by any MEDICAID plan?";
- **INS_3** – "Is child covered by S-CHIP?";
- **INS_3A** – "Is child covered by any MEDICAID plan or S-CHIP?";
- **INS_4_5 –** "Is the child covered by Indian Health Service, Military Health Care, TRICARE, CHAMPUS, or CHAMP-VA?";
- **INS_6** – "Is child covered by any other health insurance or health care plan?"; and
- **INS_11** - "Anytime when child was not covered by health insurance?"

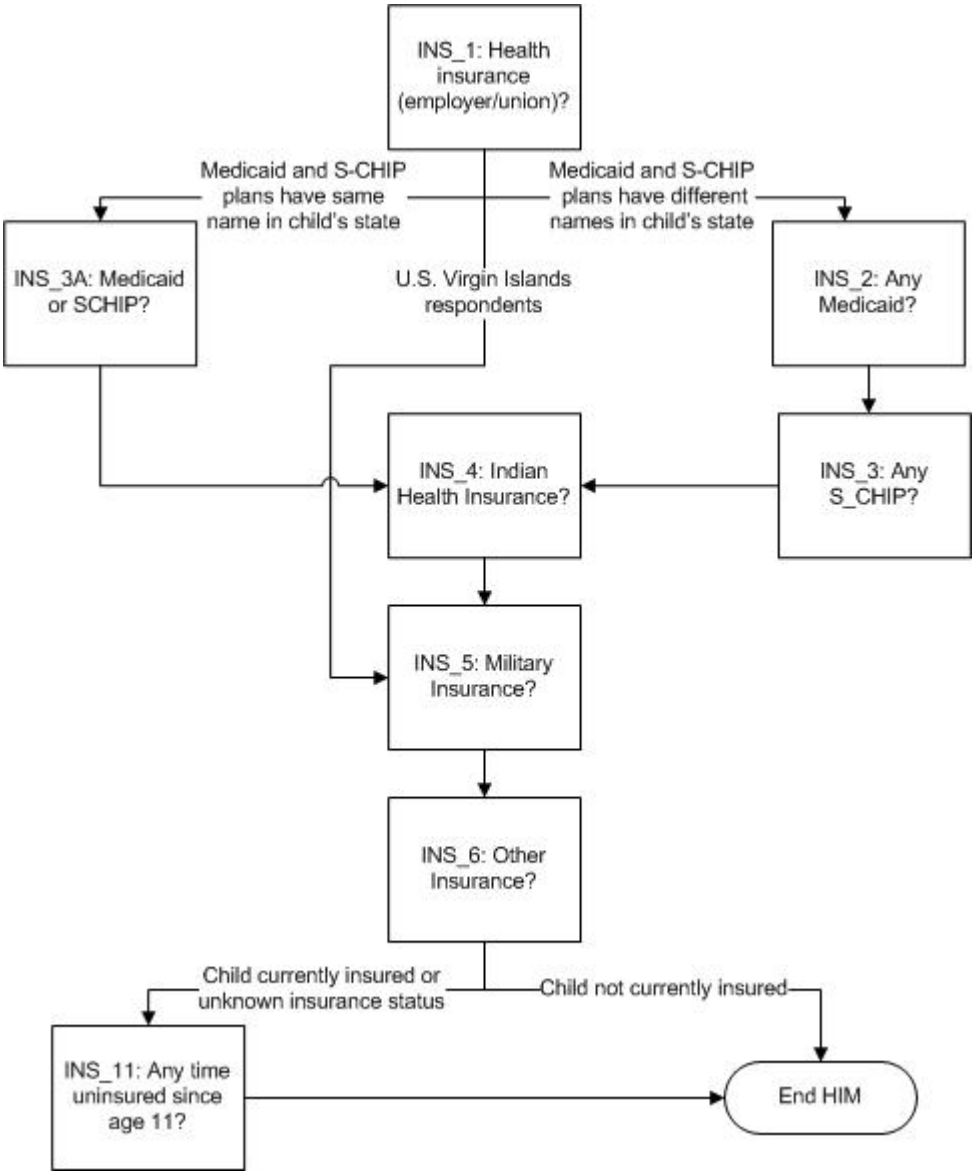
Note that INS_4_5 combines the responses at questions INS_4 and INS_5. Each variable has "Yes", "No", "Don't Know", and "Refused" as response options. Also, users will encounter blanks or missing values in each variable. There are several reasons for the missingness. First, in order to reach the HIM section, the respondent must first finish Section D. Since the NIS public-use data file contains records for all respondents completing Section C, and because some of these Section C respondents did not complete Section D, some records are for respondents who did not reach the HIM. Second, there is a possibility that the respondent began the HIM but broke off the interview before finishing. Finally, there are skip patterns in the module.

That is, depending on the respondent's answers to previous questions, certain questions may be skipped. Figure 1 illustrates the flow of questions for the eight variables included in the NIS public-use data file.

The first question (INS_1) was asked of all respondents who reached the HIM. If the name of the Medicaid and S-CHIP programs were the same in the child's state, the respondent skipped to INS_3A; if the names of the Medicaid and S-CHIP programs were different in the child's state, the respondent was instead asked questions INS_2 and INS_3. (Note that U.S. Virgin Islands respondents were not asked about Medicaid and S-CHIP; such cases skipped INS_2, INS_3, and INS_3A.) Questions INS_4, INS_5, and INS_6 were asked of all U.S. proper HIM respondents. (U.S. Virgin Islands respondents were not asked about Indian Health Insurance at INS_4.) Based on the respondent's answers to previous HIM questions (some of which are not included in the public-use file), if it was determined that the child currently had health insurance or if the child's insurance status was unknown, the respondent was asked if the child was ever uninsured at question INS_11.

VFC_I indicates whether the child is eligible for the Vaccines for Children (VFC) program. The VFC program is a federally-funded program that provides vaccines at no cost to children who might not otherwise be vaccinated because of inability to pay. A child is considered to be VFC-eligible if he or she is on Medicaid, uninsured, American Indian or Alaska Native, or both underinsured and attending a Federally-Qualified Health Center. (A child is underinsured if he or she is covered by private insurance but that coverage does not include vaccines.) VFC_I is derived based on imputed versions of the NIS Health Insurance Module variables, imputed race of the child, imputed provider facility type, and imputed income-to-poverty ratio. (These imputed source variables are not included on the public-use data file.) VFC_I is valid only for children with adequate provider data who live in the U.S. proper (i.e., VFC_I has been set to missing for children without adequate provider data and for U.S. Virgin Islands children).

Figure 1: Question Flow for the Eight Health Insurance Variables included in the Public Use File



8. Analytic and Reporting Guidelines

Data from the NIS public-use data file can be used to produce national, state, and estimation area estimates of vaccination coverage rates using the PROVWT_LL weight (PROVWTVI_LL if U.S. Virgin Islands is to be included) for single-frame landline-sample estimates and the PROVWT_D weight for dual-frame estimates.

Information in the data file can also be used to calculate standard errors of the estimated vaccination coverage rates that reflect the complex sample design of the NIS. The sample is stratified by the two sample frames and the 60 estimation areas. **Use ESTIAP11 as the stratum variable for variance estimation when producing single-frame landline-sample estimates, and STRATUM_D as the stratum variable for variance estimation when producing dual-frame estimates.** These stratum identifiers and the coded household identifier (SEQNUMHH) are key variables for obtaining standard errors for estimation area, state, and national estimates of vaccination coverage rates.

Demographic and socioeconomic variables in the file can be used to obtain national vaccination coverage rates for sub-groups of the population. Data users should, however, be aware that estimates for such sub-groups at the state or estimation area level will generally have large standard errors because of small sample sizes. The NCHS standard for precision of sub-group estimates is that the ratio of the standard error to the estimate should be less than or equal to 0.3, and each analytic cell should contain at least 30 respondents.

8.1. Use of NIS Sampling Weights

The NIS public-use data file contains two sets of child level weights. **The RDD-phase weights and strata are RDDWT_LL/RDDWTVI_LL with stratum variable ESTIAP11 and RDDWT_D with stratum variables STRATUM_D.**

The weight variables that apply to children with adequate provider data are PROVWT_LL/PROVWTVI_LL with stratum variable ESTIAP11 and PROVWT_D with stratum variable STRATUM_D. These weights should be used to form estimates of vaccination coverage. Each child with adequate provider data (PDAT = 1) has a positive value for PROVWT_LL/PROVWTVI_LL/PROVWT_D. Starting with the 2002 file, the definition of children with adequate provider data was expanded to include unvaccinated children (as discussed in Section 2). Table 10 presents a summary of the appropriate weights and stratum variables to use for various types of analyses.

Table 10: Summary of Weights and Stratum Variables, National Immunization Survey PUF, 2011

Weight Variable	Population	Sample Frame	Strata	Stratum Variable
RDDWT_LL	U.S. proper	Landline Only	Estimation Area	ESTIAP11
RDDWTVI_LL	U.S. including USVI	Landline Only	Estimation Area	ESTIAP11
RDDWT_D	U.S. proper	Dual Frame (Landline/Cell)	Sample Type by Estimation Area	STRATUM_D
PROVWT_LL	U.S. proper, with adequate provider data	Landline Only	Estimation Area	ESTIAP11
PROVWTVI_LL	U.S. including USVI, with adequate provider data	Landline Only	Estimation Area	ESTIAP11
PROVWT_D	U.S. proper, with adequate provider data	Dual Frame (Landline/Cell)	Sample Type by Estimation Area	STRATUM_D

The NIS public-use data file does not contain any provider-level weights. The NIS does not sample providers directly; rather, they are included in the survey through the children they vaccinate. A user of the file should not attempt provider-level analyses (e.g., estimate the percentage of providers in the U.S. that are private providers), because the NIS sample was not designed for that purpose.

8.2. Estimation and Analysis

8.2.1. Estimating Vaccination Coverage Rates

Vaccination coverage rates are ratio estimators, as described in the statistical literature on methods for complex sample surveys. Because of the adjustment to the sampling weights for provider-phase non-response, statistical analyses require only data from children with adequate provider data (PDAT = 1), along

with their final provider sampling weights (PROVWT_LL/PROVWTVI_LL/PROVWT_D). To summarize the statistical methodology by which vaccination coverage rates and their standard errors are obtained from these data, let Y_{hij} be an indicator, for the *j*th child with adequate provider data in the *i*th sampled household in the *h*th stratum of the NIS sampling design, equal to 1 if the child is up-to-date according to the provider data and 0 otherwise. Also, let W_{hij} denote the value of PROVWT_LL/PROVWTVI_LL/PROVWT_D for this child. 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 estimator of the vaccination coverage rate 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 60 estimation areas), n_h denotes the number of sampled households containing children with adequate provider data in the *h*th estimation area, and m_{hi} denotes the number of age-eligible children with adequate provider data in the *i*th household in the *h*th stratum.

Letting L instead denote the number of estimation areas in a state, the above formula can also be used to calculate vaccination coverage rates for states (regardless of whether the state contains only one or more than one estimation area).

8.2.2. Estimating Standard Errors of Vaccination Coverage Rates

The Taylor-series method can be used to estimate the sampling variance of vaccination coverage rates for the U.S., the states, and estimation areas. 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 estimated vaccination coverage rate, $\hat{\theta}$, equal to

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

The standard error is the square root of the variance. The estimation of standard errors for estimates of vaccination coverage rates in the NIS 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 2009). Appendix E gives several examples of the use of SAS, R, and SUDAAN to estimate vaccination coverage rates and their standard errors for estimation areas and 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 an estimation area are all quite small. **In these applications the estimation area (ESTIAP11) is used as the stratum variable for single-frame landline-sample estimation, and the variable STRATUM_D is used for dual-frame estimation.** In both cases, the household identifier (SEQNUMHH) is the primary sampling unit identifier. The data file should be sorted first on ESTIAP11/STRATUM_D and then on SEQNUMHH before running the programs for SUDAAN and SAS.

8.3. Combining Multiple Years of NIS Data

8.3.1. Estimation of Multi-Year Means

With release of the 2011 NIS public-use data file, seventeen years of NIS data are now available. The precision of estimates of vaccination coverage for sub-domains (e.g., by race/ethnicity of child) within estimation areas or states can be improved by combining two or more years of NIS data. Data users should, however, be aware that estimates from combined years of NIS data represent an average over two or more years. Although combining several years of NIS data will yield a larger sample size for estimation areas and states, the composition of the population in a geographic area may change over time, making interpretation of the results difficult. Furthermore, if vaccination administration schedules or vaccination coverage changes over time, the estimate of vaccination coverage for the combined time period applies to a hypothetical population that existed at the middle of the time period, making interpretation of the results even more difficult. Given the use of independent RDD samples in the NIS, it is also possible that a child could appear

in more than one public-use data file. **The tables of vaccination coverage estimates for 2011 released on the National Center for Immunization and Respiratory Diseases website (http://www.cdc.gov/vaccines/stats-surv/nis/default.htm#nis) contain the dual-frame estimates, but in the interest of methodological consistency the user may alternatively choose to use single-frame, landline-sample weights and limit analyses to landline sample cases only (TEL_SAMPFRAME = 1).**

To estimate a multi-year mean for a given NIS variable, the weights in each participating file (RDD-phase weights HY_WGT in 1995-2001, RDD_WT in 2002, WGT_RDD in 2003-2004, RDDWT in 2005-2010, **RDDWT_D/RDDWT_LL in 2011**; and provider-phase weights W0 in 1995-2001, WT in 2002, WGT in 2003-2004, PROVWT in 2005-2010, **PROVWT_D/PROVWT_LL in 2011**) should be divided by the number of years being combined. For example, if data for 2010 and 2011 for children with adequate provider data are to be combined, then the weights in the two files – **PROVWT in 2010 and PROVWT_D/PROVWT_LL in 2011** – should be divided by 2 to obtain revised weights, which should be saved as a new variable, say NEWWT. It is necessary to use NEWWT in the analysis to obtain correct weighted estimates for children ages 19 to 35 months. Furthermore, the child and household ID numbers (SEQNUMC and SEQNUMHH) in the files are unique only within a year, not across years. It is important for the user to create revised, unique ID numbers when combining data from multiple years.

The following SAS code can be used:

YRSEQC = 1 * (YEAR || SEQNUMC);

YRSEQHH = 1 * (YEAR || SEQNUMHH);

YEAR is the 4-digit year variable for the NIS data year (e.g., 2010).

To produce valid estimates of sampling variability and valid confidence intervals for multi-year coverage rates and other multi-year means, it is necessary to use specialized software such as SAS or SUDAAN.

The years 2005 to 2011 bring an important new complication for variance estimation not encountered in previous NIS years, because some traditional estimation areas were removed and other new areas were defined and introduced to the survey (see Section 2 above for more information about rotating estimation areas). The variance strata for 2004 and all prior years are defined by the variable ITRUEIAP, while the variance strata for 2005-2011 are defined by the variables ESTIAP, ESTIAP06, ESTIAP07, ESTIAP08, ESTIAP09, ESTIAP10, and ESTIAP11 respectively. The variables ITRUEIAP, ESTIAP, ESTIAP06, ESTIAP07, ESTIAP08, ESTIAP09, ESTIAP10, and ESTIAP11 define mutually exclusive and exhaustive geographic areas. However, they are not exactly the same areas. For example, Boston and Rest of Massachusetts are both strata in 2006, 2004 and all prior years, while statewide Massachusetts is a stratum in 2005 and 2007-2011. Other areas, such as New York City and Rest of New York, are strata in all years, including 2005-2011.

To make inferences concerning multi-year means, the user must take two actions. First, he/she must define and save a new stratum variable with a common name for all years included in the analysis. Second, he/she must define a common set of estimation domains that can be supported by each of the files included in the multi-year analysis. To take these actions, the user should follow the following seven-step procedure (or its equivalent):

i. Compute and save the new, common variance-stratum variable for each year participating in the analysis. The variable should be defined by the equation

STRATUMV = ITRUEIAP, for children in the 2004 or prior years' public-use data files
= ESTIAP, for children in the 2005 public-use data file
= ESTIAP06, for children in the 2006 public-use data file
= ESTIAP07, for children in the 2007 public-use data file
= ESTIAP08, for children in the 2008 public-use data file
= ESTIAP09, for children in the 2009 public-use data file
= ESTIAP10, for children in the 2010 public-use data file

= ESTIAP11, for children in the 2011 public-use data file

ii. Compute and save the new, common weight variable, NEWWT, as instructed above for each year participating in the analysis.

iii. Compute and save the new, unique child and household identification numbers, YRSEQC and YRSEQHH, as instructed above for each year participating in the analysis.

iv. Compute and save a variable defining the common estimation domains to be studied for each year participating in the analysis. For example, one could use the LCDIAP (Least Common Denominator Estimation Area) variable set forth in Table 11 or states as geographic domains.

v. Merge the multiple files into one consolidated file in a format compatible with the specialized software to be used.

vi. Sort the consolidated file by YEAR, STRATUMV, and YRSEQHH.

vii. Run the specialized software on the consolidated file, computing estimates, variance estimates, and confidence intervals. For SUDAAN users, sampling levels or stages may be specified by the statement

NEST YEAR STRATUMV YRSEQHH / PSULEV = 3;

the specification of weights by

WEIGHT NEWWT;

and the specification of estimation domains, for example, by the two statements

CLASS YEAR LCDIAP STATE;
TABLES LCDIAP;

or

CLASS YEAR LCDIAP STATE;
TABLES STATE;

8.3.2. Estimation of Multi-Year Contrasts

Considerations similar to those for multi-year means arise in the estimation of contrasts between NIS years. For example, a typical contrast of interest would be the difference between the immunization coverage parameters in 2010 and in 2011.

To make inferences concerning a multi-year contrast, the user will need to work with the original weights reported on the files and store them in a common variable. One must not divide the original weights by the number of years included in the contrast. For the example, one may define the new, common weight variable as

NEWWT2	=	PROVWT	, if the child is in the 2010 PUF
	=	**PROVWT_D/PROVWT_LL**	, if the child is in the 2011 PUF.

The user should follow the seven-step procedure set forth in the section on multi-year means, using NEWWT2 in lieu of NEWWT. In SUDAAN, the user should also specify the contrast of interest through use of a CONTRAST statement or an appropriate regression model. For example, to compare the 4:3:1:3:3:1 up-to-date estimate from 2010 to the 2011 estimate, SUDAAN users can use the following WEIGHT, VAR, and CONTRAST statements:

```
WEIGHT NEWWT2;
VAR PU431331;
CONTRAST YEAR = (-1 1);
```

Table 11: Cross-Walk Between ITRUEIAP, ESTIAP, ESTIAP06-ESTIAP11, and Least Common Denominator Estimation Area (LCDIAP), National Immunization Survey, 2011

LCDIAP	Area Name	ITRUEIAP (1995-2004)	ESTIAP (2005)	ESTIAP06 (2006)	ESTIAP07 (2007)	ESTIAP08 (2008)	ESTIAP09 (2009)	ESTIAP10 (2010)	ESTIAP11 (2011)
	Alabama								
20	AL-Jefferson County	21	21	20	20	20	20	20	20
20	AL-Rest of State	20	20	20	20	20	20	20	20
74	Alaska	74	74	74	74	74	74	74	74
	Arizona								
66	AZ-Maricopa County	67	67	67	66	66	66	66	66
66	AZ-Rest of State	66	66	66	66	66	66	66	66
46	Arkansas	46	46	46	46	46	46	46	46
	California								
68	CA-Fresno County	68	68	84	68	68	68	68	68
68	CA-Los Angeles County	69	69	69	69	69	69	69	**68**
68	CA-Northern CA	68	68	85	68	85	68	68	68
68	CA-San Diego County	71	68	71	68	68	68	68	68
68	CA-Santa Clara County	70	68	70	68	70	68	68	68
68	CA-San Bernardino County	68	80	68	80	68	68	68	68
68	CA-Alameda County	68	79	68	79	68	68	68	68
68	CA-Rest of State	68	68	68	68	68	68	68	68
	Colorado								
60	CO-Denver	60	81	60	60	60	60	60	60
60	CO-Rest of State	60	60	60	60	60	60	60	60
1	Connecticut	1	1	1	1	1	1	1	1
13	Delaware	13	13	13	13	13	13	13	13
12	District of Columbia	12	12	12	12	12	12	12	12
	Florida								

Table 11: Cross-Walk Between ITRUEIAP, ESTIAP, ESTIAP06-ESTIAP11, and Least Common Denominator Estimation Area (LCDIAP), National Immunization Survey, 2011

LCDIAP	Area Name	ITRUEIAP (1995-2004)	ESTIAP (2005)	ESTIAP06 (2006)	ESTIAP07 (2007)	ESTIAP08 (2008)	ESTIAP09 (2009)	ESTIAP10 (2010)	ESTIAP11 (2011)
22	FL-Miami-Dade County	24	22	24	24	24	22	22	22
22	FL-Duval County	23	23	23	22	22	22	22	22
22	FL-Orange County	22	22	22	22	91	22	22	22
22	FL-Rest of State	22	22	22	22	22	22	22	22
	Georgia								
25	GA-Fulton/DeKalb Counties	26	26	26	25	25	25	25	25
25	GA-Rest of State	25	25	25	25	25	25	25	25
72	Hawaii	72	72	72	72	72	72	72	72
75	Idaho	75	75	75	75	75	75	75	75
	Illinois								
35	IL-City of Chicago	35	35	35	35	35	35	35	35
34	IL-Madison and St. Clair Counties	34	34	34	34	92	34	34	34
34	IL-Rest of State	34	34	34	34	34	34	34	34
	Indiana								
36	IN-Lake County	36	36	36	36	36	96	36	36
36	IN-Marion County	37	36	37	37	36	37	36	36
36	IN-Rest of State	36	36	36	36	36	36	36	36
56	Iowa	56	56	56	56	56	56	56	56
	Kansas								
57	KS-Eastern KS	57	57	86	57	57	57	57	57
57	KS-Rest of State	57	57	57	57	57	57	57	57
27	Kentucky	27	27	27	27	27	27	27	27
	Louisiana								

Table 11: Cross-Walk Between ITRUEIAP, ESTIAP, ESTIAP06-ESTIAP11, and Least Common Denominator Estimation Area (LCDIAP), National Immunization Survey, 2011

LCDIAP	Area Name	ITRUEIAP (1995-2004)	ESTIAP (2005)	ESTIAP06 (2006)	ESTIAP07 (2007)	ESTIAP08 (2008)	ESTIAP09 (2009)	ESTIAP10 (2010)	ESTIAP11 (2011)
47	LA-Orleans Parish	48	47	47	47	47	47	47	47
47	LA-Rest of State	47	47	47	47	47	47	47	47
4	Maine	4	4	4	4	4	4	4	4
	Maryland								
14	MD-City of Baltimore	15	15	15	14	15	15	14	14
14	**MD-Prince George's County**	**14**	**14**	**14**	**14**	**14**	**14**	**14**	**103**
14	MD-Rest of State	14	14	14	14	14	14	14	14
	Massachusetts								
2	MA-City of Boston	3	2	3	2	2	2	2	2
2	MA-Rest of State	2	2	2	2	2	2	2	2
	Michigan								
38	MI-City of Detroit	39	39	39	38	38	38	38	38
38	MI-Rest of State	38	38	38	38	38	38	38	38
	Minnesota								
40	MN-Twin Cities	40	40	40	40	93	40	40	40
40	MN-Rest of State	40	40	40	40	40	40	40	40
28	Mississippi	28	28	28	28	28	28	28	28
	Missouri								
58	MO-St. Louis County/City	58	82	58	58	58	58	58	58
58	MO-Rest of State	58	58	58	58	58	58	58	58
61	Montana	61	61	61	61	61	61	61	61
59	Nebraska	59	59	59	59	59	59	59	59
	Nevada								

Table 11: Cross-Walk Between ITRUEIAP, ESTIAP, ESTIAP06-ESTIAP11, and Least Common Denominator Estimation Area (LCDIAP), National Immunization Survey, 2011

LCDIAP	Area Name	ITRUEIAP (1995-2004)	ESTIAP (2005)	ESTIAP06 (2006)	ESTIAP07 (2007)	ESTIAP08 (2008)	ESTIAP09 (2009)	ESTIAP10 (2010)	ESTIAP11 (2011)
73	NV-Clark County	73	83	73	73	73	73	73	73
73	NV-Rest of State	73	73	73	73	73	73	73	73
5	New Hampshire	5	5	5	5	5	5	5	5
	New Jersey								
8	NJ-City of Newark	9	9	9	8	8	8	8	8
8	NJ-Rest of State	8	8	8	8	8	8	8	8
	New Mexico								
49	NM-Southern NM	49	49	88	49	49	49	49	49
49	NM-Rest of State	49	49	49	49	49	49	49	49
	New York								
11	NY-City of New York	11	11	11	11	11	11	11	11
10	NY-Rest of State	10	10	10	10	10	10	10	10
29	North Carolina	29	29	29	29	29	29	29	29
62	North Dakota	62	62	62	62	62	62	62	62
	Ohio								
41	OH-Cuyahoga County	42	42	42	41	41	41	41	41
41	OH-Franklin County	43	43	41	41	41	41	41	41
41	OH-Rest of State	41	41	41	41	41	41	41	41
50	Oklahoma	50	50	50	50	50	50	50	50
76	Oregon	76	76	76	76	76	76	76	76
	Pennsylvania								
16	PA-Allegheny County	16	16	87	16	16	16	16	16
17	PA-Philadelphia County	17	17	17	17	17	17	17	17
16	PA-Rest of State	16	16	16	16	16	16	16	16

Table 11: Cross-Walk Between ITRUEIAP, ESTIAP, ESTIAP06-ESTIAP11, and Least Common Denominator Estimation Area (LCDIAP), National Immunization Survey, 2011

LCDIAP	Area Name	ITRUEIAP (1995-2004)	ESTIAP (2005)	ESTIAP06 (2006)	ESTIAP07 (2007)	ESTIAP08 (2008)	ESTIAP09 (2009)	ESTIAP10 (2010)	ESTIAP11 (2011)
6	Rhode Island	6	6	6	6	6	6	6	6
30	South Carolina	30	30	30	30	30	30	30	30
63	South Dakota	63	63	63	63	63	63	63	63
	Tennessee								
31	TN-Davidson County	33	33	31	31	31	31	31	31
31	TN-Shelby County	32	32	32	31	31	31	31	31
31	TN-Rest of State	31	31	31	31	31	31	31	31
	Texas								
55	TX-Bexar County	55	55	55	55	55	55	55	55
54	TX-City of Houston	54	54	54	54	54	54	54	54
52	TX-Dallas County	52	52	52	52	52	52	52	52
53	TX-El Paso County	53	53	53	53	53	53	53	53
51	TX-Rest of State	51	51	51	51	51	51	51	51
64	Utah	64	64	64	64	64	64	64	64
7	Vermont	7	7	7	7	7	7	7	7
18	Virginia	18	18	18	18	18	18	18	18
	Washington[1]								
77	WA-Eastern WA	77	77	771	77	774	774	97	**77**
77	WA-Western WA	77	77	77	773	774	774	102	**77**
77	WA-King County	78	78	78	77	77	77	102	**77**
77	WA-Rest of State	77	77	772	77	77	77	-	**77**
19	West Virginia	19	19	19	19	19	19	19	19
	Wisconsin								
44	WI-Milwaukee County	45	45	45	44	44	44	44	44

Table 11: Cross-Walk Between ITRUEIAP, ESTIAP, ESTIAP06-ESTIAP11, and Least Common Denominator Estimation Area (LCDIAP), National Immunization Survey, 2011

LCDIAP	Area Name	ITRUEIAP (1995-2004)	ESTIAP (2005)	ESTIAP06 (2006)	ESTIAP07 (2007)	ESTIAP08 (2008)	ESTIAP09 (2009)	ESTIAP10 (2010)	ESTIAP11 (2011)
44	WI-Rest of State	44	44	44	44	44	44	44	44
65	Wyoming	65	65	65	65	65	65	65	65
-	U.S. Virgin Islands	-	-	-	-	-	95	95	95

[1] The estimation area WA-Eastern WA was introduced in 2006, and while this estimation area also existed in 2010, the county definition of the area changed, making cross-year comparisons inadvisable. The estimation area WA-Western WA, introduced in 2007, presents the same issue. The county definition of the changed (e.g., in 2010 it included King County). Analysis of Washington state data across years should use the "Least Common Denominator" of the entire state.

9. Summary Tables

Appendix G contains seven tables. Appendix Table G.1 lists the 60 estimation areas for the 2011 NIS by state. For the U.S. and for each state and estimation area, it provides the estimated population total of children ages 19 to 35 months of age in 2011, and (from 2011 NIS data collection) number of children with completed household interviews and number of children with adequate provider data.

Appendix Tables G.2 through G.5 summarize pairs of variables: age group of child by maternal education (Appendix Table G.2), age group by family poverty status (Appendix Table G.3), race/ethnicity by family poverty status (Appendix Table G.4), age group by race/ethnicity (Appendix Table G.5), and age group by gender (Appendix Table G.6). Each of these tables gives the unweighted and weighted counts of children who have completed household interviews and the unweighted and weighted counts of children with adequate provider data.

Appendix Table G.7 gives unweighted counts of children for shot card use by presence of adequate provider data.

Appendix Table G.8 presents estimates of vaccination coverage and asymmetric 95-percent confidence intervals obtained from SUDAAN. The data user should obtain the same estimates from the 2011 public-use data file.

Appendix H contains two tables and two time-series charts. Table H.1 and Figure H.1 show key components of the NIS response rates and the overall CASRO response rates for the landline sample by year of the survey. Table H.2 and Figure H.2 show landline-sample vaccination coverage estimates since 1995.

10. Limitations

The findings in this report are subject to at least three limitations. First, because NIS is a telephone survey, results are weighted to be representative of all children aged 19-35 months. Although statistical adjustments were made to account for nonresponse and households without (landline) telephones, some bias might remain. Second, underestimates of vaccination coverage might have resulted from the exclusive use of provider-reported vaccination histories because completeness of these records is unknown. Finally, although national estimates of vaccination coverage are precise, estimates for state and local areas should be interpreted with caution because their sample sizes are smaller and their confidence intervals generally are wider than those for national estimates.

11. Citations for NIS Data

In publications please acknowledge the original data source. The citation for the 2011 NIS public-use data file is:

U.S. Department of Health and Human Services (DHHS). National Center for Health Statistics. The 2011 National Immunization Survey, Hyattsville, MD: Centers for Disease Control and Prevention, 2012.

Information about the NIS is located at http://www.cdc.gov/nchs/nis.htm

The NIS public-use data file is located at http://www.cdc.gov/nchs/nis/data_files.htm.

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

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Appendix A

Glossary of Abbreviations and Terms

3:3:1	The series of 3 or more DTaP vaccinations, 3 or more polio vaccinations, and 1 or more MCV vaccinations
4:3:1	The series of 4 or more DTaP vaccinations, 3 or more polio vaccinations, and 1 or more MCV vaccinations
4:3:1:3	The series of 4 or more DTaP vaccinations, 3 or more polio vaccinations, 1 or more MCV vaccinations, and 3 or more Hib vaccinations of any type
4:3:1:H (routine Hib)	The series of 4 or more DTaP vaccinations, 3 or more polio vaccinations, 1 or more MCV vaccinations, and 3 or 4 Hib vaccinations depending on manufacturer (routine recommendation)
4:3:1:3:3	The series of 4 or more DTaP vaccinations, 3 or more polio vaccinations, 1 or more MCV vaccinations, 3 or more Hib vaccinations of any type, and 3 or more hepatitis B vaccinations
4:3:1:H:3 (routine Hib)	The series of 4 or more DTaP vaccinations, 3 or more polio vaccinations, 1 or more MCV vaccinations, 3 or 4 Hib vaccinations depending on manufacturer (routine recommendation), and 3 or more hepatitis B vaccinations
4:3:1:3:3:1	The series of 4 or more DTaP vaccinations, 3 or more polio vaccinations, 1 or more MCV vaccinations, 3 or more Hib vaccinations of any type, 3 or more hepatitis B vaccinations, and 1 or more varicella vaccinations given at age 12 months or older
4:3:1:H:3:1 (routine Hib)	The series of 4 or more DTaP vaccinations, 3 or more polio vaccinations, 1 or more MCV vaccinations, 3 or 4 Hib vaccinations depending on manufacturer (routine recommendation), 3 or more hepatitis B vaccinations, and 1 or more varicella vaccinations given at age 12 months or older
4:3:1:3:3:1:3	The series of 4 or more DTaP vaccinations, 3 or more polio vaccinations, 1 or more MCV vaccinations, 3 or more Hib vaccinations of any type, 3 or more hepatitis B vaccinations, 1 or more varicella vaccinations given at age 12 months or older, and 3 or more pneumococcal vaccinations
4:3:1:H:3:1:3 (routine Hib)	The series of 4 or more DTaP vaccinations, 3 or more polio vaccinations, 1 or more MCV vaccinations, 3 or 4 Hib vaccinations depending on manufacturer (routine recommendation), 3 or more hepatitis B vaccinations, 1 or more varicella vaccinations given at age 12 months or older, and 3 or more pneumococcal vaccinations
4:3:1:3:3:1:4	The series of 4 or more DTaP vaccinations, 3 or more polio vaccinations, 1 or more MCV vaccinations, 3 or more Hib vaccinations of any type, 3 or more hepatitis B

	vaccinations, 1 or more varicella vaccinations given at age 12 months or older, and 4 or more pneumococcal vaccinations
4:3:1:H:3:1:4 (routine Hib)	The series of 4 or more DTaP vaccinations, 3 or more polio vaccinations, 1 or more MCV vaccinations, 3 or 4 Hib vaccinations depending on manufacturer (routine recommendation), 3 or more hepatitis B vaccinations, 1 or more varicella vaccinations given at age 12 months or older, and 4 or more pneumococcal vaccinations
CATI	Computer-assisted telephone interviewing
CDC	Centers for Disease Control and Prevention
CII	Childhood Immunization Initiative
DOB	Date of birth
DTaP	Diphtheria and tetanus toxoids and acellular pertussis vaccine
DTP	Diphtheria and tetanus toxoids and pertussis vaccine
DT	Diphtheria and tetanus toxoids vaccine
FLU	Seasonal influenza vaccine
H1N	Monovalent 2009 H1N1 influenza vaccine
Hep A	Hepatitis A vaccine
Hep B	Hepatitis B vaccine
Hib	Haemophilus influenzae type b vaccine
Hib routine recommendation	Four or more doses of Hib vaccine of any type, or two or more doses of Hib vaccine of Merck types followed by one dose of Hib vaccine of any type
Hib shortage recommendation	Three or more doses of Hib vaccine of any type or two or more doses of Hib vaccine of Merck types
IAP	Immunization Action Plan areas
IHQ	Immunization history questionnaire
IPV	Inactivated poliovirus vaccine
MCV	Measles-containing vaccine
MMR	Measles, mumps, and rubella vaccine
NCHS	National Center for Health Statistics

NCIRD	National Center for Immunization and Respiratory Diseases
NIS	National Immunization Survey
NHIS	National Health Interview Survey
NIP	National Immunization Program
OPV	Oral poliovirus vaccine
PCV	Pneumococcal vaccine
PRC	Provider Record Check Study
PUF	Public-use file
RDD	Random digit dialing
ROT	Rotavirus vaccine
SC	Shot card
UTD	Up-to-date
VFC	Vaccines for Children program
VRC	Varicella vaccine

Appendix B

Summary Statistics for Sampling Weights by Sample Frame and Estimation Area

Table B.1: Distribution of Landline-Frame[1] Sampling Weights for Children with Completed Household Interviews (RDDWT_LL/RDDWTVI_LL), National Immunization Survey, 2011

State/Estimation Area	n	Sum	Minimum	Maximum	Mean	Coefficient of Variation (%)
Total U.S.[2]	23,406	5,993,200.85	4.95	7,658.10	256.05	149.92
Alabama	488	93,100.48	66.70	925.22	200.65	57.55
Alaska	349	12,463.08	6.97	91.38	35.71	45.60
Arizona	376	147,432.76	79.80	1,102.84	338.93	95.25
Arkansas	415	56,898.65	45.27	714.03	137.11	69.95
California	408	766,807.88	20.59	7,658.10	1879.43	61.06
Colorado	516	100,618.03	17.86	1,279.19	195.00	118.46
Connecticut	512	60,166.47	34.28	763.50	174.90	54.45
Delaware	411	16,983.52	7.71	210.59	41.32	64.33
District of Columbia	484	10,554.79	3.54	113.97	23.56	79.74
Florida	405	321,763.61	75.58	3,108.87	794.48	71.52
Georgia	416	218,575.45	23.71	1,921.13	520.42	75.94
Hawaii	385	27,044.40	9.78	344.02	70.25	77.95
Idaho	317	36,539.92	32.13	317.54	105.30	56.96
Illinois						
IL-City of Chicago	548	64,914.83	32.66	642.05	130.09	101.64
IL-Rest of State	444	180,911.03	35.51	1,882.40	407.46	75.36
Indiana	468	128,834.27	75.53	987.76	316.55	62.40
Iowa	366	58,405.30	44.68	438.07	159.58	44.27
Kansas	438	58,954.94	37.28	621.94	157.21	67.48
Kentucky	339	80,570.02	65.86	913.24	237.67	50.94
Louisiana	427	92,949.94	39.94	943.41	270.99	55.68
Maine	327	19,054.58	16.33	195.98	58.27	46.26
Maryland						
MD-Prince George's County	429	17,951.49	6.32	161.32	41.84	89.15
MD-Rest of State	408	92,951.60	6.98	992.12	227.82	63.79

Table B.1: Distribution of Landline-Frame[1] Sampling Weights for Children with Completed Household Interviews (RDDWT_LL/RDDWTVI_LL), National Immunization Survey, 2011

State/Estimation Area	n	Sum	Minimum	Maximum	Mean	Coefficient of Variation (%)
Massachusetts	377	109,138.49	19.98	1,019.59	289.49	69.93
Michigan	479	166,312.57	51.41	2,025.18	449.47	74.12
Mississippi	372	63,204.72	44.20	713.15	169.91	65.76
Missouri	488	116,274.11	88.25	978.45	266.68	61.46
Minnesota	310	102,649.95	32.37	923.06	331.13	46.14
Montana	383	17,573.30	12.49	180.51	47.37	45.14
Nebraska	313	38,925.74	38.09	459.54	124.36	57.15
Nevada	364	61,948.85	45.12	500.63	183.28	67.71
New Hampshire	290	19,813.69	15.24	233.46	68.32	61.89
New Jersey	494	166,362.92	21.72	1,618.86	343.02	66.38
New Mexico	394	42,426.57	27.27	381.63	107.68	60.83
New York						
NY-City of New York	451	172,766.17	11.64	1,353.48	383.07	58.31
NY-Rest of State	356	178,132.40	65.36	1,803.81	525.46	57.41
North Carolina	358	188,399.34	18.04	1,818.30	526.26	68.64
North Dakota	264	12,751.87	15.30	84.88	39.85	28.62
Ohio	333	208,269.30	85.67	2,797.37	625.43	63.65
Oklahoma	394	80,259.46	43.73	688.10	178.35	50.28
Oregon	356	68,338.93	44.03	749.02	191.96	62.70
Pennsylvania						
PA-Philadelphia County	362	34,113.07	15.43	295.76	94.23	49.74
PA-Rest of State	416	182,373.01	7.92	1,597.73	441.58	48.36
Rhode Island	446	17,342.78	5.67	136.16	38.89	80.32
South Carolina	317	92,647.69	77.20	922.09	216.97	50.46
South Dakota	300	16,740.62	17.77	221.62	55.80	59.12
Tennessee	357	127,008.14	60.39	1,116.20	342.34	59.51
Texas						
TX-Bexar County	499	40,158.46	14.39	384.71	87.49	76.56
TX-City of Houston	394	73,407.69	22.53	1,074.44	186.31	83.09
TX-Dallas County	446	64,295.39	34.59	432.63	169.20	70.73
TX-El Paso County	318	20,951.07	20.59	235.12	65.88	55.34
TX-Rest of State	384	399,009.87	51.46	2,587.86	876.94	73.16
Utah	397	77,311.13	36.21	868.33	194.74	65.88
Vermont	346	8,851.90	9.15	63.32	28.83	48.70

Table B.1: Distribution of Landline-Frame[1] Sampling Weights for Children with Completed Household Interviews (RDDWT_LL/RDDWTVI_LL), National Immunization Survey, 2011

State/Estimation Area	n	Sum	Minimum	Maximum	Mean	Coefficient of Variation (%)
Virginia	495	152,773.29	9.11	1,750.14	308.63	88.17
Washington	332	132,648.66	102.22	1,473.11	399.54	57.12
West Virginia	455	29,061.33	19.53	219.46	63.87	52.62
Wisconsin	348	103,624.28	72.35	675.56	255.86	65.33
Wyoming	342	11,595.31	13.49	153.64	33.90	59.05
U.S. Virgin Islands[3]	564	2,446.28	1.01	13.95	4.34	53.12

[1] All figures in this table exclude the cell-phone sample.
[2] 'Total U.S.' excludes the U.S. Virgin Islands. The sampling weight variable for these records is RDDWT_LL.
[3] For U.S. Virgin Islands records, the sampling weight variable is RDDWTVI_LL.

Table B.2: Distribution of Landline-Frame[1] Sampling Weights for Children with Adequate Provider Data (PROVWT_LL/PROVWTVI_LL), National Immunization Survey, 2011

State/Estimation Area	n	Sum	Minimum	Maximum	Mean	Coefficient of Variation (%)
Total U.S.[2]	16,919	5,993,200.85	6.83	12,903.65	354.23	157.63
Alabama	362	90,063.16	27.54	988.62	248.79	60.83
Alaska	248	12,463.08	9.04	123.26	50.25	48.57
Arizona	248	135,911.83	82.55	3,215.32	548.03	103.37
Arkansas	288	56,898.65	56.78	1,402.84	197.56	86.57
California	280	766,807.88	26.02	12,903.65	2738.60	69.52
Colorado	369	100,618.03	35.01	2,073.04	272.68	119.40
Connecticut	352	58,563.24	13.97	617.50	166.37	52.11
Delaware	292	16,983.52	14.46	338.28	58.16	73.21
District of Columbia	332	10,112.54	6.83	141.31	30.46	81.48
Florida	276	321,763.61	89.22	4,410.60	1165.81	70.00
Georgia	306	206,821.32	46.72	3,111.63	675.89	74.53
Hawaii	270	27,044.40	12.64	561.02	100.16	74.59
Idaho	248	35,169.61	41.15	581.37	141.81	63.29
Illinois						
IL-City of Chicago	388	63,315.71	18.22	1,079.82	163.18	106.94
IL-Rest of State	313	180,911.03	55.47	3,168.45	577.99	76.12
Indiana	347	126,343.49	49.47	1,689.46	364.10	65.67
Iowa	282	58,405.30	68.75	677.90	207.11	48.49
Kansas	328	59,802.80	56.68	765.24	182.33	77.26
Kentucky	248	80,570.02	90.20	1,145.84	324.88	56.32
Louisiana	276	92,684.23	66.61	1,050.78	335.81	50.76
Maine	258	19,054.58	21.55	239.71	73.85	45.84
Maryland						
MD-Prince George's County	293	17,951.49	8.05	243.44	61.27	83.15
MD-Rest of State	289	92,951.60	16.15	1,530.18	321.63	62.84
Massachusetts	264	109,138.49	46.43	2,027.52	413.40	84.38
Michigan	353	166,312.57	34.01	3,309.64	471.14	87.63
Mississippi	262	63,204.72	60.80	1,074.59	241.24	60.51
Missouri	360	113,278.64	115.43	1,563.28	314.66	67.03
Minnesota	234	102,649.95	33.48	1,364.16	438.68	54.67
Montana	295	17,598.66	21.57	190.93	59.66	44.07
Nebraska	246	38,925.74	59.27	618.82	158.23	56.06
Nevada	279	57,494.69	38.91	908.59	206.07	68.72
New Hampshire	217	19,813.69	19.57	324.63	91.31	57.51

Table B.2: Distribution of Landline-Frame[1] Sampling Weights for Children with Adequate Provider Data (PROVWT_LL/PROVWTVI_LL), National Immunization Survey, 2011

State/Estimation Area	n	Sum	Minimum	Maximum	Mean	Coefficient of Variation (%)
New Jersey	340	162,451.14	29.51	1,686.29	477.80	63.62
New Mexico	303	42,426.57	39.39	477.49	140.02	55.68
New York						
NY-City of New York	277	172,766.17	94.17	2,582.04	623.70	71.08
NY-Rest of State	244	175,121.91	31.85	2,282.15	717.71	57.40
North Carolina	250	188,399.34	232.46	3,423.29	753.60	74.39
North Dakota	213	12,874.12	30.56	181.63	60.44	34.50
Ohio	250	208,269.30	106.09	4,150.49	833.08	68.18
Oklahoma	279	79,357.99	84.46	1,154.91	284.44	55.58
Oregon	268	68,338.93	45.57	1,160.97	255.00	72.66
Pennsylvania						
PA-Philadelphia County	263	34,113.07	29.99	474.17	129.71	62.43
PA-Rest of State	318	178,857.19	25.48	2,529.26	562.44	54.57
Rhode Island	340	17,342.78	11.10	215.92	51.01	82.95
South Carolina	230	89,395.78	63.13	1,759.12	388.68	56.33
South Dakota	218	16,740.62	26.25	244.89	76.79	54.71
Tennessee	262	121,578.19	80.47	1,670.32	464.04	60.28
Texas						
TX-Bexar County	323	39,700.68	28.00	500.30	122.91	78.46
TX-City of Houston	289	73,407.69	25.52	1,823.09	254.01	85.24
TX-Dallas County	295	62,308.88	38.41	845.02	211.22	71.75
TX-El Paso County	239	20,951.07	29.36	404.04	87.66	62.33
TX-Rest of State	285	394,828.09	26.54	5,237.91	1385.36	70.48
Utah	320	77,311.13	41.68	891.12	241.60	66.91
Vermont	249	8,491.98	8.51	103.74	34.10	52.97
Virginia	336	152,773.29	12.17	2,951.10	454.68	96.18
Washington	258	132,648.66	117.92	1,828.83	514.14	59.82
West Virginia	338	29,061.33	27.22	290.97	85.98	48.08
Wisconsin	271	102,461.36	78.44	1,405.64	378.09	70.85
Wyoming	258	11,595.31	16.45	197.58	44.94	60.57
U.S. Virgin Islands[3]	390	2,446.28	1.25	21.10	6.27	54.67

[1] All figures in this table exclude the cell-phone sample.

[2] 'Total U.S.' excludes the U.S. Virgin Islands. The provider-stage weight for these records is PROVWT_LL.

[3] For U.S. Virgin Islands records, the provider-stage weight is PROVWTVI_LL.

Table B.3: Distribution of Dual-Frame[1] Sampling Weights for Children with Completed Household Interviews (RDDWT_D), National Immunization Survey, 2011

State/Estimation Area	n	Sum	Minimum	Maximum	Mean	Coefficient of Variation (%)
Total U.S.[2]	26,741	5,993,200.85	0.45	7,700.81	224.12	149.85
Alabama	539	90,063.16	17.91	908.14	167.09	80.15
Alaska	397	12,463.08	3.10	220.67	31.39	79.54
Arizona	424	135,911.83	3.71	1,854.65	320.55	102.66
Arkansas	460	56,898.65	13.09	747.38	123.69	91.31
California	599	766,807.88	6.88	7,700.81	1280.15	64.70
Colorado	564	100,618.03	14.23	1,658.54	178.40	140.73
Connecticut	557	58,563.24	4.87	569.54	105.14	71.69
Delaware	457	16,983.52	2.13	255.71	37.16	77.11
District of Columbia	535	10,112.54	0.92	133.64	18.90	98.96
Florida	503	321,763.61	5.53	3,033.47	639.69	78.05
Georgia	482	206,821.32	8.66	2,226.75	429.09	89.54
Hawaii	430	27,044.40	2.12	508.08	62.89	108.18
Idaho	363	35,169.61	2.91	660.91	96.89	103.96
Illinois						
IL-City of Chicago	579	63,315.71	4.25	990.75	109.35	117.47
IL-Rest of State	507	180,911.03	3.92	1,713.01	356.83	91.01
Indiana	519	126,343.49	7.03	2,069.15	243.44	100.01
Iowa	411	58,405.30	9.80	591.15	142.11	74.85
Kansas	483	59,802.80	9.52	1,520.92	123.82	126.77
Kentucky	386	80,570.02	13.78	1,140.86	208.73	82.38
Louisiana	480	92,684.23	3.82	948.11	193.09	76.49
Maine	380	19,054.58	0.45	225.59	50.14	60.91
Maryland						
MD-Prince George's County	455	17,951.49	1.98	297.21	39.45	99.83
MD-Rest of State	506	92,951.60	2.64	1,492.92	183.70	85.53
Massachusetts	427	109,138.49	0.96	1,331.53	255.59	79.52
Michigan	525	166,312.57	12.80	1,964.20	316.79	107.20
Mississippi	416	63,204.72	15.63	1,279.44	151.93	103.24
Missouri	536	113,278.64	16.15	927.80	211.34	82.04
Minnesota	370	102,649.95	11.09	1,863.66	277.43	74.38
Montana	431	17,598.66	4.54	257.77	40.83	123.58
Nebraska	356	38,925.74	23.97	774.66	109.34	91.98
Nevada	405	57,494.69	14.43	1,073.52	141.96	118.08

Table B.3: Distribution of Dual-Frame[1] Sampling Weights for Children with Completed Household Interviews (RDDWT_D), National Immunization Survey, 2011

State/Estimation Area	n	Sum	Minimum	Maximum	Mean	Coefficient of Variation (%)
New Hampshire	331	19,813.69	6.22	395.16	59.86	74.81
New Jersey	551	162,451.14	2.23	2,159.66	294.83	72.65
New Mexico	439	42,426.57	4.85	368.61	96.64	79.41
New York						
NY-City of New York	511	172,766.17	12.46	1,362.31	338.09	69.84
NY-Rest of State	408	175,121.91	10.40	2,059.75	429.22	66.30
North Carolina	412	188,399.34	0.63	3,619.59	457.28	93.67
North Dakota	316	12,874.12	4.86	175.52	40.74	96.17
Ohio	394	208,269.30	5.87	2,823.35	528.60	83.03
Oklahoma	440	79,357.99	14.64	891.64	180.36	74.15
Oregon	401	68,338.93	3.17	1,332.24	170.42	103.91
Pennsylvania						
PA-Philadelphia County	408	34,113.07	1.55	382.62	83.61	66.02
PA-Rest of State	520	178,857.19	0.48	1,640.30	343.96	74.29
Rhode Island	485	17,342.78	5.91	210.68	35.76	82.65
South Carolina	368	89,395.78	28.97	945.39	242.92	73.02
South Dakota	346	16,740.62	1.73	352.03	48.38	135.97
Tennessee	411	121,578.19	27.38	1,528.24	295.81	84.47
Texas						
TX-Bexar County	537	39,700.68	2.33	304.93	73.93	87.92
TX-City of Houston	426	73,407.69	16.75	1,511.58	172.32	111.36
TX-Dallas County	489	62,308.88	2.30	565.56	127.42	88.91
TX-El Paso County	357	20,951.07	10.73	352.95	58.69	92.54
TX-Rest of State	602	394,828.09	14.40	4,481.38	655.86	98.78
Utah	442	77,311.13	16.17	911.94	174.91	91.37
Vermont	393	8,491.98	3.97	118.17	21.61	59.90
Virginia	596	152,773.29	6.95	1,925.80	256.33	102.44
Washington	384	132,648.66	8.44	2,838.22	345.44	83.92
West Virginia	501	29,061.33	13.25	352.57	58.01	74.13
Wisconsin	403	102,461.36	40.18	2,029.67	254.25	93.12
Wyoming	388	11,595.31	7.73	194.72	29.88	94.65

[1] All figures in this table include both the landline sample and the cell-phone sample. The weight for these records is RDDWT_D

[2] 'Total U.S.' excludes the U.S. Virgin Islands. There was no cell-phone sample in the U.S. Virgin Islands in 2011.

Table B.4: Distribution of Dual-Frame[1] Sampling Weights for Children with Adequate Provider Data (PROVWT_D), National Immunization Survey, 2011

State/Estimation Area	n	Sum	Minimum	Maximum	Mean	Coefficient of Variation (%)
Total U.S.[2]	19,144	5,993,200.85	0.47	11,933.14	313.06	160.61
Alabama	399	90,063.16	19.71	1,381.98	225.72	84.07
Alaska	278	12,463.08	5.89	255.12	44.83	81.90
Arizona	279	135,911.83	2.11	3,618.33	487.14	116.14
Arkansas	322	56,898.65	17.16	1,291.98	176.70	106.35
California	407	766,807.88	6.86	11,933.14	1884.05	82.05
Colorado	403	100,618.03	13.88	2,783.20	249.67	139.37
Connecticut	386	58,563.24	7.52	879.29	151.72	78.59
Delaware	326	16,983.52	5.36	297.33	52.10	78.69
District of Columbia	369	10,112.54	1.99	220.24	27.41	99.53
Florida	346	321,763.61	9.30	6,592.03	929.95	81.48
Georgia	359	206,821.32	10.65	3,531.20	576.10	88.91
Hawaii	296	27,044.40	2.02	739.54	91.37	102.72
Idaho	282	35,169.61	4.08	772.76	124.71	105.65
Illinois						
IL-City of Chicago	411	63,315.71	4.89	1,740.77	154.05	123.10
IL-Rest of State	351	180,911.03	7.86	2,593.96	515.42	93.44
Indiana	382	126,343.49	33.92	1,633.10	330.74	87.54
Iowa	313	58,405.30	10.39	859.89	186.60	84.25
Kansas	359	59,802.80	15.91	1,550.29	166.58	127.43
Kentucky	281	80,570.02	23.36	2,091.48	286.73	95.72
Louisiana	307	92,684.23	50.85	1,570.38	301.90	75.12
Maine	294	19,054.58	0.47	229.56	64.81	60.03
Maryland						
MD-Prince George's County	312	17,951.49	3.63	261.88	57.54	86.43
MD-Rest of State	345	92,951.60	3.11	1,755.70	269.42	85.39
Massachusetts	295	109,138.49	1.78	2,623.30	369.96	92.86
Michigan	386	166,312.57	21.17	4,574.56	430.86	121.21
Mississippi	292	63,204.72	22.43	1,078.27	216.45	94.20
Missouri	397	113,278.64	32.61	1,422.25	285.34	80.73
Minnesota	278	102,649.95	13.44	1,602.18	369.24	76.71
Montana	328	17,598.66	4.71	534.24	53.65	128.43
Nebraska	276	38,925.74	26.65	680.79	141.04	88.56
Nevada	306	57,494.69	15.70	1,528.44	187.89	119.89
New Hampshire	244	19,813.69	7.19	434.62	81.20	73.16

Table B.4: Distribution of Dual-Frame[1] Sampling Weights for Children with Adequate Provider Data (PROVWT_D), National Immunization Survey, 2011

State/Estimation Area	n	Sum	Minimum	Maximum	Mean	Coefficient of Variation (%)
New Jersey	372	162,451.14	3.54	2,162.62	436.70	66.60
New Mexico	332	42,426.57	5.63	934.04	127.79	89.34
New York						
NY-City of New York	312	172,766.17	53.56	3,826.92	553.74	85.60
NY-Rest of State	274	175,121.91	27.41	4,710.26	639.13	69.63
North Carolina	287	188,399.34	1.03	4,637.16	656.44	94.54
North Dakota	247	12,874.12	6.17	338.54	52.12	114.31
Ohio	284	208,269.30	15.94	4,183.46	733.34	92.67
Oklahoma	303	79,357.99	24.57	1,513.47	261.91	84.92
Oregon	296	68,338.93	8.84	1,660.70	230.87	103.32
Pennsylvania						
PA-Philadelphia County	290	34,113.07	4.13	520.33	117.63	72.20
PA-Rest of State	381	178,857.19	8.80	2,248.55	469.44	72.15
Rhode Island	367	17,342.78	6.52	249.69	47.26	88.78
South Carolina	269	89,395.78	22.93	1,507.95	332.33	76.57
South Dakota	254	16,740.62	2.44	472.95	65.91	129.67
Tennessee	297	121,578.19	35.53	1,857.07	409.35	80.73
Texas						
TX-Bexar County	350	39,700.68	6.26	575.52	113.43	90.20
TX-City of Houston	314	73,407.69	15.41	2,367.67	233.78	100.40
TX-Dallas County	320	62,308.88	6.30	809.82	194.72	87.50
TX-El Paso County	270	20,951.07	13.55	427.81	77.60	78.73
TX-Rest of State	429	394,828.09	13.15	6,795.81	920.35	96.53
Utah	353	77,311.13	21.62	1,255.81	219.01	94.92
Vermont	276	8,491.98	4.01	114.19	30.77	64.54
Virginia	394	152,773.29	3.83	3,198.79	387.75	109.92
Washington	295	132,648.66	23.12	2,021.53	449.66	76.62
West Virginia	373	29,061.33	14.61	406.86	77.91	68.86
Wisconsin	307	102,461.36	52.28	2,091.77	333.75	90.88
Wyoming	289	11,595.31	9.87	291.58	40.12	105.61

[1] All figures in this table include both the landline sample and the cell-phone sample. The weight for these records is PROVWT_D

[2] 'Total U.S.' excludes the U.S. Virgin Islands. There was no cell-phone sample in the U.S. Virgin Islands in 2011.

Appendix C

Flags for Inconsistent Values in the Breastfeeding Data

Two different types of inconsistency can arise in breastfeeding data. The first is that the duration of any breastfeeding can exceed the age of the child, and the second is that the age of the child when first fed formula can exceed the age of child. BF_ENDR06 stores the duration of any breastfeeding, and BF_ENDFL06 flags the inconsistency; BF_FORMR08 stores the age of the child when first fed formula, and BF_FORMFL06 flags the inconsistency.

1. **Both BF_ENDR06 and BF_FORMR08 are formulated using the following conversion factors:**

   if unit=1(days) then BF_ENDR06 = number x 1
   if unit=2(weeks) then BF_ENDR06 = number x 7
   if unit=3(months) then BF_ENDR06 = number x 30.4375
   if unit=4(years) then BF_ENDR06 = number x 365.25

   if unit=1(days) then BF_FORMR08 = number x 1
   if unit=2(weeks) then BF_FORMR08 = number x 7
   if unit=3(months) then BF_FORMR08 = number x 30.4375
   if unit=4(years) then BF_FORMR08 = number x 365.25

2. **Flagging BF_ENDR06 when the duration of any breastfeeding exceeds the age in days with a buffer for different units:**

   if unit=1(days) flag when BF_ENDR06 > age + 1
   if unit=2(weeks) flag when BF_ENDR06 > age + 3
   if unit=3(months) flag when BF_ENDR06 > age + 15
   if unit=4(years) flag when BF_ENDR06 > age + 182

The different buffers allow for the impact of rounding durations upward in the specified units (for example, 50 days might be reported as 2 months).

3. **Flagging BF_FORMR08 when the age when first fed formula exceeds the age in days with a buffer for different units:**

   if unit=1(days) flag when BF_FORMR08 > age + 1
   if unit=2(weeks) flag when BF_FORMR08 > age + 3
   if unit=3(months) flag when BF_FORMR08 > age + 15
   if unit=4(years) flag when BF_FORMR08 > age + 182

The different buffers allow for the impact of rounding durations upward in the specified units (for example, 50 days might be reported as 2 months).

Appendix D

Disposition of Children with Respect to Provider Record Check

Table D.1: Disposition of Children with Respect to Provider Record Check, National Immunization Survey, 2011[1]

Number of Children	Disposition Code Number and Definition
5,062	1 = All identified providers responded, no problems indicated in cross-check between household and provider shot dates.
12,554	2 = All identified providers responded, no NIS shot card to cross check.
419	3 = All identified providers responded, poor immunization history matching results.
45	4 = All identified providers responded, poor immunization history matching results, additional mismatch indicators present.
661	5 = Some but not all identified providers responded, but provider information indicates 4:3:1:3:3 up-to-date.
7	6 = Some but not all identified providers responded, but provider information matches NIS shot card immunization history.
92	7 = Some but not all identified providers responded, completeness of provider immunization history is unknown.
12	8 = Some but not all identified providers responded, but provider information indicates 4:3:1:3:3 up-to-date when post-RDD-interview immunizations are included.
20	9 = Some but not all identified providers responded, but provider information indicates at least as many doses for each vaccine as the RDD respondent (or at least 1 dose for MCV).
177	10 = Some but not all identified providers responded, but the household reported an inexact number of vaccinations ("All","Don't Know," "Refused," or missing) for one or more vaccines and any exact responses meet previous criteria (for DISPCODE 9).
0	11 = Some but not all identified providers responded, but a definite number of shots was reported by household not from a shot card for one or more vaccines and any other vaccines meet previous criteria (for DISPCODE 9 or 10).
19,049	TOTAL

[1] Excludes U.S. Virgin Islands.

Notes: The criteria for all dispositions (except 7) are applied in order. A case where some but not all providers responded is assigned disposition 7 if it does not qualify for dispositions 5, 6, 8, 9, 10 or 11.

When checking the criteria for dispositions 10 and 11, the provider history must contain at least three distinct vaccination dates (visits) for the provider immunization count to be accepted for vaccines for which an inexact response was reported, from recall, in the household survey.

Appendix E

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

A. SUDAAN

```
**********************;
title1 'SUD_IAP.SAS';
*********************************************************************
THIS PROGRAM WILL PRODUCE ESTIMATION AREA ESTIMATES AND STANDARD ERRORS
FOR PUTD4313 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:\nispuf11'; *--- SPECIFY PATH TO SAS DATASET ---*;
libname library 'c:\nispuf11'; *--- IF DATASET WAS CREATED WITH FORMATS
STORED ---*;

*--- PERMANENTLY SPECIFY PATH TO LIBRARY ---*;
*--- OTHERWISE COMMENT THIS STATEMENT OUT ---*;
%let in_file=dd.nispuf11; *--- NAME OF SAS DATASET ---*;
%let estiap=estiap11; * --- ESTIMATION AREA VARIABLE TO USE ---*;
%let wt=provwt_d; * --- WEIGHT TO USE (PROVWT_D is the dual-frame weight.
To limit to landline cases, use PROVWT_LL to exclude U.S. Virgin Islands,
PROVWTVI_LL to include U.S. Virgin Islands) ---*;
%let strat=stratum_d; * --- STRATUM VARIABLE TO USE FOR VARIANCE
ESTIMATION (Use STRATUM_D for dual-frame estimation. When limiting to
landline cases with PROVWT_LL or PROVWTVI_LL, use ESTIAP) ---*;
```

```
Proc format;
/*
THE FOLLOWING FORMAT WILL BE USED FOR PUTD4313.
ORIGINAL VALUES OF PUTD4313 ARE 1,0.
MUST BE CONVERTED TO 1,2 IN SUDAAN.
*/
value put4313f
1='4:3:1:3 Up-to-Date'
2='Not 4:3:1:3 Up-to-Date';

value estiapf
. = "Missing"
 0 = "US Total"
 1 = "CT"
 2 = "MA"
 4 = "ME"
 5 = "NH"
 6 = "RI"
 7 = "VT"
 8 = "NJ"
10 = "NY-Rest of State"
11 = "NY-City of New York"
12 = "DC"
13 = "DE"
14 = "MD-Rest of State"
16 = "PA-Rest of State"
17 = "PA-Philadelphia County"
18 = "VA"
19 = "WV"
20 = "AL"
22 = "FL"
25 = "GA"
27 = "KY"
28 = "MS"
29 = "NC"
30 = "SC"
31 = "TN"
34 = "IL-Rest of State"
35 = "IL-City of Chicago"
36 = "IN "
38 = "MI"
40 = "MN"
41 = "OH"
44 = "WI"
46 = "AR"
47 = "LA"
49 = "NM"
50 = "OK"
51 = "TX-Rest of State"
52 = "TX-Dallas County"
53 = "TX-El Paso County"
54 = "TX-City of Houston"
55 = "TX-Bexar County"
56 = "IA"
57 = "KS"
```

```
58 = "MO"
59 = "NE"
60 = "CO"
61 = "MT"
62 = "ND"
63 = "SD"
64 = "UT"
65 = "WY"
66 = "AZ"
68 = "CA"
72 = "HI"
73 = "NV"
74 = "AK"
75 = "ID"
76 = "OR"
77 = "WA"
95 = "U.S. Virgin Islands"
100 = "MD-Prince George's County"
;
run;
data sud_file;
set &in_file(keep= seqnumhh seqnumc putd4313 &estiap &wt &strat);
if putd4313=0 then putd4313=2; *--- CONVERT PUTD4313=0 TO PUTD4313=2 ---*;
if &estiap=103 then &estiap=100; *--- CONVERT ESTIAP 103 TO ESTIAP 100 ---
*;
nseqnumh=1*seqnumhh; *---CONVERT HOUSEHOLD ID SEQNUMHH FROM CHARACTER TO
NUMERIC ---*;
run;
*=== SORT BY NEST VARIABLES: STRATUM_D (STRATUM) NSEQNUMH (PRIMARY
SAMPLING UNIT) ===*;
proc sort;
by &strat nseqnumh;
run;
proc crosstab data=sud_file filetype=sas design=wr;
weight &wt;
nest &strat nseqnumh;
subgroup &estiap putd4313 ;
levels 100 2 ;
tables &estiap * putd4313 ;
print nsum wsum rowper serow/style=nchs ;
rtitle "4:3:1:3 ESTIMATES BY Estimation Area";
rformat &estiap estiapf.;
rformat putd4313 put4313f.;
output rowper serow/filename=sud_est filetype=sas;
run;
proc print data=sud_est(where=(putd4313=1 and rowper ne .)) noobs label;
format &estiap estiapf.;
var &estiap rowper serow ;
label
rowper='Percent 4:3:1:3 Up-to-Date'
serow='Standard Error'
;
title "4:3:1:3 ESTIMATES BY Estimation Area";
run;
```

```
**********************;
title1 'SUDSTATE.SAS';
*************************************************************************
THIS PROGRAM WILL PRODUCE STATE ESTIMATES AND STANDARD ERRORS
FOR PUTD4313 USING SAS CALLABLE SUDAAN.
NOTE : THE STATE VARIABLE IS BASED ON FIPSTATE CODES ,THERE ARE
NO STATES WITH FIPS CODES 3,7,14,43,52,57-77.
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:\nispuf11'; *--- SPECIFY PATH TO SAS DATASET ---*;
libname library 'c:\nispuf11'; *--- IF DATASET WAS CREATED WITH FORMATS
STORED ---*;

*--- PERMANENTLY SPECIFY PATH TO LIBRARY ---*;
*--- OTHERWISE COMMENT THIS STATEMENT OUT ---*;
%let in_file=dd.nispuf11; *--- NAME OF SAS DATASET ---*;
%let wt=provwt_d; * --- WEIGHT TO USE (PROVWT_D is the dual-frame weight.
To limit to landline cases, use PROVWT_LL to exclude U.S. Virgin Islands,
PROVWTVI_LL to include U.S. Virgin Islands) ---*;
%let strat=stratum_d; * --- STRATUM VARIABLE TO USE FOR VARIANCE
ESTIMATION (Use STRATUM_D for dual-frame estimation. When limiting to
landline cases with PROVWT_LL or PROVWTVI_LL, use ESTIAP) ---*;

PROC FORMAT;
/*
THE FOLLOWING FORMAT WILL BE USED FOR PUTD4313.
ORIGINAL VALUES OF PUTD4313 ARE 1,0.
MUST BE CONVERTED TO 1,2 IN SUDAAN.
*/
value put4313f
1='4:3:1:3 Up-to-Date'
2='Not 4:3:1:3 Up-to-Date'
;
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 seqnumc putd4313 state &wt &strat);
if putd4313=0 then putd4313=2; *** CONVERT PUTD4313=0 TO PUTD4313=2 ***;
nseqnumh=1*seqnumhh; *** CONVERT HOUSEHOLD ID SEQNUMH FROM CHARACTER TO
NUMERIC ***;
run;
*=== SORT BY NEST VARIABLES: STRATUM_D (STRATUM) NSEQNUMH (PRIMARY
SAMPLING UNIT) ===*;
proc sort;
by &strat nseqnumh;
run;
proc crosstab data=sud_file filetype=sas design=wr;
weight &wt;
```

```
nest &strat nseqnumh;
subgroup state putd4313 ;
levels 56 2 ;
tables state * putd4313 ;
print nsum wsum rowper serow/style=nchs ;
rtitle "4:3:1:3 ESTIMATES BY STATE";
rformat state statef.;
rformat putd4313 put4313f.;
output rowper serow / filename=sud_est2 filetype=sas;
run;
*** EXCLUDE 3,7,14,43,52,57-77 THERE ARE NO STATES WITH THESE FIPS CODES
*** ;
proc print data=sud_est2(where=(putd4313=1
& state notin (3,7,14,43,52) & not(57<=state<=77))) label noobs;
format state statef.;
var state rowper serow ;
label
rowper='Percent 4:3:1:3 Up-to-Date'
serow='Standard Error'
;
title "4:3:1:3 ESTIMATES BY STATE";
run;

**********************;
title1 'PROG_3.SAS';
*************************************************************************
THIS PROGRAM WILL PRODUCE A TABLE OF HAD_CPOX BY STATE FOR ALL RDD
COMPLETES USING RDDWT_D. THE PROGRAM USES 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;
options ps=78 ls=90 obs= max;

libname dd 'c:\nispuf11'; *--- SPECIFY PATH TO SAS DATASET ---*;
libname library 'c:\nispuf11'; *--- IF DATASET WAS CREATED WITH FORMATS
STORED ---*;

*--- PERMANENTLY SPECIFY PATH TO LIBRARY ---*;
*--- OTHERWISE COMMENT THIS STATEMENT OUT ---*;
%let in_file=dd.nispuf11; *--- NAME OF SAS DATASET ---*;
%let wt=rddwt_d; * --- WEIGHT TO USE (RDDWT_D is the dual-frame weight. To
limit to landline cases, use RDDWT_LL to exclude U.S. Virgin Islands,
RDDWTVI_LL to include U.S. Virgin Islands) ---*;
%let strat=stratum_d; * --- STRATUM VARIABLE TO USE FOR VARIANCE
ESTIMATION (Use STRATUM_D for dual-frame estimation. when limiting to
landline cases with RDDWT_LL or RDDWTVI_LL, use ESTIAP) ---*;

PROC FORMAT;
/*
```

```
THE FOLLOWING FORMAT WILL BE USED FOR PUTD4313.
ORIGINAL VALUES OF PUTD4313 ARE 1,0.
MUST BE CONVERTED TO 1,2 IN SUDAAN.
*/
value hadcpoxf
1='Yes'
2='No'
;
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 seqnumc state had_cpox &wt &strat);
nseqnumh=1*seqnumhh; *** CONVERT HOUSEHOLD ID SEQNUMH FROM CHARACTER TO
NUMERIC ***;
run;
*=== SORT BY NEST VARIABLES: STRATUM_D (STRATUM) NSEQNUMH (PRIMARY
SAMPLING UNIT) ===*;
proc sort;
by &strat nseqnumh;
run;
proc crosstab data=sud_file filetype=sas design=wr;
weight &wt;
nest &strat nseqnumh;
subgroup state had_cpox ;
levels 56 2 ;
tables state * had_cpox ;
print nsum wsum rowper serow/style=nchs ;
rtitle "HAD_CPOX ESTIMATES BY STATE";
rtitle "WEIGHT = &WT";
rformat state statef.;
rformat had_cpox hadcpoxf.;
output rowper serow / filename=sud_est3 filetype=sas;
run;
*** EXCLUDE 3,7,14,43,52,57-77 THERE ARE NO STATES WITH THESE FIPS CODES
*** ;
proc print data=sud_est3(where=(had_cpox=1
& state notin (3,7,14,43,52) & not(57<=state<=77))) label noobs;
format state statef.;
var state rowper serow ;
label
rowper='Percent HAD_CPOX = Yes'
serow='Standard Error'
;
title "CHILD HAD CHICKEN POX BY STATE";
run;


**********;
title1 'PROG_4.SAS';
*********************************************************************
TABLE OF PUTD4313 BY INCPOV1 BY RACE_K. SAVE % UTD
ESTIMATES (NOT S.E.'S) FOR USE IN THE PROGRAM CHART_4.
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
```

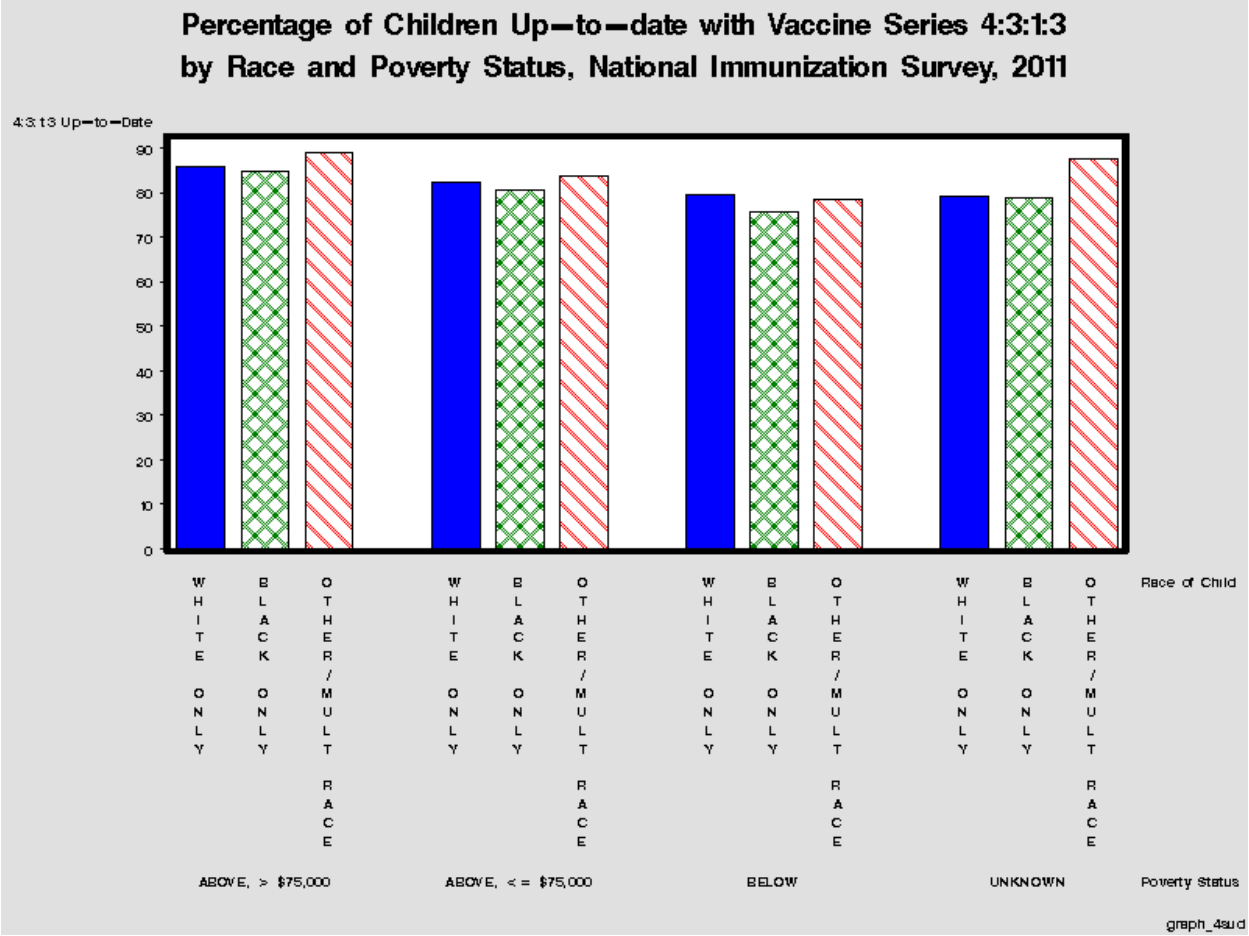
```
WHERE K IS THE NUMBER OF LEVELS FOR EACH VARIABLE.
3. DATA MUST BE SORTED ACCORDING TO THE SAMPLE DESIGN VARIABLES
(STRATUM AND PRIMARY SAMPLING UNIT), SPECIFIED IN THE
NEST STATEMENT.
*********************************************************************;
options ps=78 ls=90 obs= max;

libname dd 'c:\nispuf11'; *--- SPECIFY PATH TO SAS DATASET ---*;
libname library 'c:\nispuf11'; *--- IF DATASET WAS CREATED WITH FORMATS
STORED ---*;

*--- PERMANENTLY SPECIFY PATH TO LIBRARY ---*;
*--- OTHERWISE COMMENT THIS STATEMENT OUT ---*;

libname out 'c:\nispuf11'; *--- SPECIFY THE PATH FOR WHERE YOU WANT THE
CHART OUTPUT TO GO ---*;

%let in_file=dd.nispuf11; *--- NAME OF SAS DATASET ---*;
%let wt=provwt_d; * --- WEIGHT TO USE (PROVWT_D is the dual-frame weight.
To limit to landline cases, use PROVWT_LL to exclude U.S. Virgin Islands,
PROVWTVI_LL to include U.S. Virgin Islands) ---*;
%let strat=stratum_d; * --- STRATUM VARIABLE TO USE FOR VARIANCE
ESTIMATION (Use STRATUM_D for dual-frame estimation. When limiting to
landline cases with PROVWT_LL or PROVWTVI_LL, use ESTIAP) ---*;
%let qtr_lab=Q1/2011 - Q4/2011; *NIS 4 QUARTER PERIOD*;

PROC FORMAT;
/*
THE FOLLOWING FORMAT WILL BE USED FOR PUTD4313.
ORIGINAL VALUES OF PUTD4313 ARE 1,0.
MUST BE CONVERTED TO 1,2 IN SUDAAN.
*/
value put4313f
1='4:3:1:3 Up-to-date'
2='Not 4:3:1:3 Up-to-date'
;
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"
;
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 seqnumc putd4313 race_k incpov1 &wt &strat);
nseqnumh=1*seqnumhh; *** CONVERT HOUSEHOLD ID SEQNUMH FROM CHARACTER TO
NUMERIC ***;
if putd4313=0 then putd4313=2; *** CONVERT PUTD4313=0 TO PUTD4313=2 ***;
run;
```

```
*=== SORT BY NEST VARIABLES: STRATUM_D (STRATUM) NSEQNUMH (PRIMARY
SAMPLING UNIT) ===*;
proc sort;
by &strat nseqnumh;
run;
proc freq;
tables putd4313 incpov1 race_k;
run;
title3 "Table 4A. &qtr_lab: Unweighted Frequencies";
proc crosstab data=sud_file filetype=sas design=wr;
weight &wt;
nest &strat nseqnumh;
subgroup incpov1 race_k putd4313 ;
levels 4 3 2 ;
tables (incpov1 * race_k * putd4313) ;
print nsum wsum rowper="4:3:1:3 Up-to-Date (ROWPER)"
serow="Standard Error (SEROW)" /style=nchs ;
rtitle "Table 4B. &qtr_lab, Percent 4:3:1:3 Up-to-Date and Estimated
Standard Errors";
rtitle "WEIGHT = &WT";
rformat putd4313 put4313f.;
rformat incpov1 incpvr2f.;
rformat race_k race_kf.;
output rowper serow / filename=sud_est4 filetype=sas;
run;
data out.sud_est4;
set sud_est4(where=(putd4313=1 & incpov1 > 0 & race_k > 0));
keep incpov1 race_k rowper serow;
label rowper='4:3:1:3 Up-to-Date';
format rowper 5.2;
format serow 5.2;
run;
proc print data=out.sud_est4 label;
format race_k race_kf.;
format incpov1 incpvr2f.;
title "&qtr_lab: 4:3:1:3 ESTIMATES AND STANDARD ERRORS BY INCPOV1 BY
RACE_K";
run;

**********************;
title1 'SAS_GRAPH_4.SAS';
*************************************************************************
THIS PROGRAM BUILDS OFF OF THE PROGRAM SAS_PROG_4. IT PRODUCES A CHART OF
PUTD4313 BY INCPOV1 BY RACE_K. 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:\nispuf11'; *--- SPECIFY PATH TO SAS DATASET ---*;

%let out='c:\nispuf11'; *--- SPECIFY THE PATH FOR WHERE YOU WANT THE CHART
OUTPUT TO GO ---*;
```

```
%let in_file=dd.sud_est4; *--- NAME OF SAS DATASET OUTPUT FROM PROG_4 ---
*;
%let qtr_lab=Q1/2011 - Q4/2011; *NIS 4 QUARTER PERIOD*;
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_k race_kf.
incpov1 incpvr2f.
;
label
race_k = 'Race of Child'
incpov1 = '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_4_sud.html' path=odsout;
TITLE1 HEIGHT=3 "Percentage of Children Up-to-date with Vaccine Series
4:3:1:3";
TITLE2 HEIGHT=3 "by Race and Poverty Status, National Immunization Survey,
2011";
footnote j=r 'graph_4sud';
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_k
/frame
discrete
sumvar=rowper
group=incpov1
gspace = 5
gaxis = axis
raxis = axis
name = 'graph_4_sud'
```

```
patternid = midpoint
;
run;
quit;
ods html close;
ods listing;
ods html close;
ods listing;
```



B. SAS

```
*********************;
title1 'SAS_IAP.SAS';
*************************************************************************
THIS PROGRAM WILL PRODUCE ESTIMATION AREA ESTIMATES AND STANDARD ERRORS
FOR PUTD4313 USING SAS.
*************************************************************************;
options ps=78 ls=90 obs= max;

libname dd 'c:\nispuf11'; *--- SPECIFY PATH TO SAS DATASET ---*;
libname library 'c:\nispuf11'; *--- IF DATASET WAS CREATED WITH FORMATS
STORED ---*;

*--- PERMANENTLY SPECIFY PATH TO LIBRARY ---*;
*--- OTHERWISE COMMENT THIS STATEMENT OUT ---*;
%let in_file=dd.nispuf11; *--- NAME OF SAS DATASET ---*;
%let estiap=estiap11; * --- ESTIMATION AREA VARIABLE TO USE ---*;
%let wt=provwt_d; * --- WEIGHT TO USE (PROVWT_D is the dual-frame weight.
To limit to landline cases, use PROVWT_LL to exclude U.S. Virgin Islands,
PROVWTVI_LL to include U.S. Virgin Islands) ---*;
%let strat=stratum_d; * --- STRATUM VARIABLE TO USE FOR VARIANCE
ESTIMATION (Use STRATUM_D for dual-frame estimation. When limiting to
landline cases with PROVWT_LL or PROVWTVI_LL, use ESTIAP) ---*;
proc format;
value put4313f
0='Not 4:3:1:3 Up-To-Date'
1='4:3:1:3 Up-To-Date';

value estiapf
. = "Missing"
 0 = "US Total"
 1 = "CT"
 2 = "MA"
 4 = "ME"
 5 = "NH"
 6 = "RI"
 7 = "VT"
 8 = "NJ"
10 = "NY-Rest of State"
11 = "NY-City of New York"
12 = "DC"
13 = "DE"
14 = "MD-Rest of State"
16 = "PA-Rest of State"
17 = "PA-Philadelphia County"
18 = "VA"
19 = "WV"
20 = "AL"
22 = "FL"
25 = "GA"
27 = "KY"
28 = "MS"
29 = "NC"
```

```
30 = "SC"
31 = "TN"
34 = "IL-Rest of State"
35 = "IL-City of Chicago"
36 = "IN "
38 = "MI"
40 = "MN"
41 = "OH"
44 = "WI"
46 = "AR"
47 = "LA"
49 = "NM"
50 = "OK"
51 = "TX-Rest of State"
52 = "TX-Dallas County"
53 = "TX-El Paso County"
54 = "TX-City of Houston"
55 = "TX-Bexar County"
56 = "IA"
57 = "KS"
58 = "MO"
59 = "NE"
60 = "CO"
61 = "MT"
62 = "ND"
63 = "SD"
64 = "UT"
65 = "WY"
66 = "AZ"
68 = "CA"
72 = "HI"
73 = "NV"
74 = "AK"
75 = "ID"
76 = "OR"
77 = "WA"
95 = "U.S. Virgin Islands"
103 = "MD-Prince George's County"
;
run;
data sas_file;
set &in_file(keep= seqnumhh seqnumc putd4313 &estiap &wt &strat);
run;
proc sort data = sas_file;
by &estiap;
run;
title1 '4:3:1:3 ESTIMATES BY Estimation Area';
ods output Statistics=sas_est;
proc surveymeans data = sas_file nobs sum mean stderr;
stratum &strat;
cluster seqnumhh;
weight &wt;
class putd4313;
var putd4313;
by &estiap;
```

```
format putd4313 put4313f.;
format &estiap estiapf.;
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='4:3:1:3 Up-To-Date')) noobs
label;
format &estiap estiapf.;
format mean stderr 5.2;
var &estiap mean stderr;
label
mean='Percent 4:3:1:3 Up-to-Date'
stderr='Standard Error';
title "4:3:1:3 ESTIMATES BY Estimation Area";
run;

**********************;
title1 'SASSTATE.SAS';
*********************************************************************
THIS PROGRAM WILL PRODUCE STATE ESTIMATES AND STANDARD ERRORS
FOR PUTD4313 USING SAS.
NOTE : THE STATE VARIABLE IS BASED ON FIPSTATE CODES ,THERE ARE
NO STATES WITH FIPS CODES 3,7,14,43,52,57-77.
*********************************************************************;
options ps=78 ls=90 obs= max;

libname dd 'c:\nispuf11'; *--- SPECIFY PATH TO SAS DATASET ---*;
libname library 'c:\nispuf11'; *--- IF DATASET WAS CREATED WITH FORMATS
STORED ---*;
*--- PERMANENTLY SPECIFY PATH TO LIBRARY ---*;
*--- OTHERWISE COMMENT THIS STATEMENT OUT ---*;

%let in_file=dd.nispuf11; *--- NAME OF SAS DATASET ---*;
%let wt=provwt_d; * --- WEIGHT TO USE (PROVWT_D is the dual-frame weight.
To limit to landline cases, use PROVWT_LL to exclude U.S. Virgin Islands,
PROVWTVI_LL to include U.S. Virgin Islands) ---*;
%let strat=stratum_d; * --- STRATUM VARIABLE TO USE FOR VARIANCE
ESTIMATION (Use STRATUM_D for dual-frame estimation. When limiting to
landline cases with PROVWT_LL or PROVWTVI_LL, use ESTIAP) ---*;
proc format;
value put4313f
0='Not 4:3:1:3 Up-To-Date'
1='4:3:1:3 Up-To-Date';
value statef
. ="Missing"
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 sas_file;
set &in_file(keep= seqnumhh seqnumc putd4313 state &wt &strat);
run;
proc sort data = sas_file;
by state;
title1 '4:3:1:3 ESTIMATES BY STATE';
ods output Statistics=sas_est2;
```

```
run;
proc surveymeans data = sas_file nobs sum mean stderr;
stratum &strat;
cluster seqnumhh;
weight &wt;
class putd4313;
var putd4313;
by state;
format putd4313 put4313f.;
format state 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='4:3:1:3 Up-To-Date')) noobs
label;
format state statef.;
format mean stderr 5.2;
var state mean stderr;
label
mean='Percent 4:3:1:3 Up-to-Date'
stderr='Standard Error';
title "4:3:1:3 ESTIMATES BY STATE";
run;

**********************;
title1 'SAS_PROG_3.SAS';
*************************************************************************
THIS PROGRAM WILL PRODUCE A TABLE OF HAD_CPOX BY STATE FOR ALL RDD
COMPLETES USING RDDWT. THE PROGRAM USES SAS.
*************************************************************************;
options ps=78 ls=90 obs= max;

libname dd 'c:\nispuf11'; *--- SPECIFY PATH TO SAS DATASET ---*;
libname library 'c:\nispuf11'; *--- IF DATASET WAS CREATED WITH FORMATS
STORED ---*;
*--- PERMANENTLY SPECIFY PATH TO LIBRARY ---*;
*--- OTHERWISE COMMENT THIS STATEMENT OUT ---*;

%let in_file=dd.nispuf11; *--- NAME OF SAS DATASET ---*;
%let wt=rddwt_d; * --- WEIGHT TO USE (RDDWT_D is the dual-frame weight. To
limit to landline cases, use RDDWT_LL to exclude U.S. Virgin Islands,
RDDWTVI_LL to include U.S. Virgin Islands) ---*;
%let strat=stratum_d; * --- STRATUM VARIABLE TO USE FOR VARIANCE
ESTIMATION (Use STRATUM_D for dual-frame estimation. When limiting to
landline cases with RDDWT_LL or RDDWTVI_LL, use ESTIAP) ---*;
PROC FORMAT;
value hadcpoxf
1='Yes'
2='No'
;
value statef
0 ='U.S. Total '
```

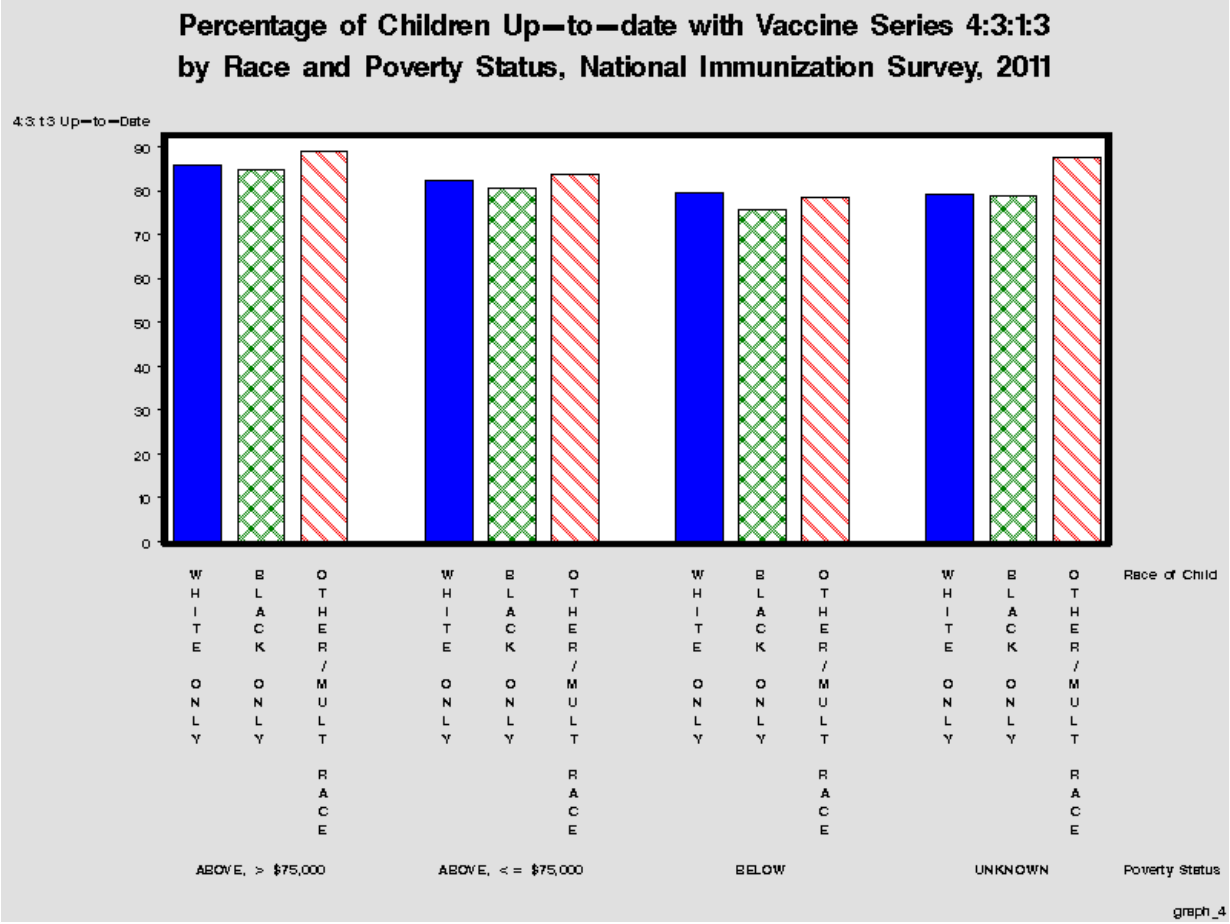
```
1 ='Alabama '
2 ='Alaska '
4 ='Arizona '
5 ='Arkansas '
6 ='California '
8 ='Colorado '
9 ='Connecticut '
10 ='Delaware '
11 ='District of Columbia'
12 ='Florida '
13 ='Georgia '
15 ='Hawaii '
16 ='Idaho '
17 ='Illinois '
18 ='Indiana '
19 ='Iowa '
20 ='Kansas '
21 ='Kentucky '
22 ='Louisiana '
23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

```
set &in_file(keep= seqnumhh seqnumc state had_cpox &wt &strat);
run;
proc sort data = sas_file;
by state;
title1 'HAD_CPOX ESTIMATES BY STATE';
ods output Statistics=sas_est3;
run;
proc surveymeans data = sas_file nobs sum mean stderr;
stratum &strat;
cluster seqnumhh;
weight &wt;
class had_cpox;
var had_cpox;
by state;
format had_cpox hadcpoxf.;
format state statef.;
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='Yes')) noobs label;
format state statef.;
format mean stderr 5.2;
var state mean stderr;
label
mean='Percent HAD_CPOX = Yes'
stderr='Standard Error';
title "CHILD HAD CHICKEN POX BY ESTIMATION AREA";
run;


**********;
title1 'SAS_PROG_4.SAS';
*************************************************************************
TABLE OF PUTD4313 BY INCPOV1 BY RACE_K. SAVE % UTD
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:\nispuf11'; *--- SPECIFY PATH TO SAS DATASET ---*;
libname library 'c:\nispuf11'; *--- IF DATASET WAS CREATED WITH FORMATS
STORED ---*;
*--- PERMANENTLY SPECIFY PATH TO LIBRARY ---*;
*--- OTHERWISE COMMENT THIS STATEMENT OUT ---*;

libname out 'c:\nispuf11'; *--- SPECIFY THE PATH FOR
WHERE YOU WANT THE CHART OUTPUT TO GO ---*;

%let in_file=dd.nispuf11; *--- NAME OF SAS DATASET ---*;
%let wt=provwt_d; * --- WEIGHT TO USE (PROVWT_D is the dual-frame weight.
To limit to landline cases, use PROVWT_LL to exclude U.S. Virgin Islands,
PROVWTVI_LL to include U.S. Virgin Islands) ---*;
```

```
%let strat=stratum_d; * --- STRATUM VARIABLE TO USE FOR VARIANCE
ESTIMATION (Use STRATUM_D for dual-frame estimation. When limiting to
landline cases with PROVWT_LL or PROVWTVI_LL, use ESTIAP) ---*;
%let qtr_lab=Q1/2011 - Q4/2011; *NIS 4 QUARTER PERIOD*;
PROC FORMAT;
value put4313f
0='Not 4:3:1:3 Up-To-Date'
1='4:3:1:3 Up-To-Date'
;
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 seqnumc putd4313 race_k incpov1 &wt &strat);
run;
proc sort data = sas_file;
by incpov1 race_k;
run;
proc freq;
tables putd4313 incpov1 race_k;
title1 "Table 4A. &qtr_lab: Unweighted Frequencies";
run;
data sas_file;
set sas_file;
if putd4313 < 0 | incpov1 < 0 | race_k < 0 | &wt. < 0 then delete;
run;
proc surveymeans data = sas_file nobs sum mean stderr;
ods output Domain=sas_est4;
stratum &strat;
cluster seqnumhh;
weight &wt;
class putd4313;
var putd4313;
domain incpov1*race_k;
format putd4313 put4313f.;
format incpov1 incpvr2f.;
format race_k race_kf.;
run;
data sas_est4;
set sas_est4;
mean = mean*100; *CONVERT TO PERCENT ESTIMATES;
stderr = stderr*100;
run;
proc print data=sas_est4(where=(varlevel='4:3:1:3 Up-To-Date')) noobs
label;
format incpov1 incpvr2f.;
```

```
format race_k race_kf.;
format mean stderr 5.2;
var incpov1 race_k mean stderr;
label
mean='4:3:1:3 Up-To-Date'
stderr='Standard Error';
title1 "Table 4B. &qtr_lab, Percent 4:3:1:3 Up-to-Date and Estimated
Standard Errors";
run;
data out.sas_est4;
set sas_est4(where=(varlevel='4:3:1:3 Up-To-Date'));
keep incpov1 race_k mean;
label mean='4:3:1:3 Up-to-Date';
format mean 5.2;
run;

**********************;
title1 'SAS_GRAPH_4.SAS';
*************************************************************************
THIS PROGRAM BUILDS OFF OF THE PROGRAM SAS_PROG_4. IT PRODUCES A CHART OF
PUTD4313 BY INCPOV1 BY RACE_K. 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:\nispuf11'; *--- SPECIFY PATH TO SAS DATASET ---*;

%let out='c:\nispuf11'; *--- SPECIFY THE PATH FOR WHERE YOU WANT THE CHART
OUTPUT TO GO ---*;


%let in_file=dd.sas_est4; *--- NAME OF SAS DATASET OUTPUT FROM PROG_4 ---
*;
%let qtr_lab=Q1/2011 - Q4/2011; *NIS 4 QUARTER PERIOD*;
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_k race_kf.
incpov1 incpvr2f.
;
label
```

```
race_k = 'Race of Child'
incpov1 = '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_4.html' path=odsout;
TITLE1 HEIGHT=3 "Percentage of Children Up-to-date with Vaccine Series
4:3:1:3";
TITLE2 HEIGHT=3 "by Race and Poverty Status, National Immunization Survey,
2011";
footnote j=r 'graph_4';
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_k
/frame
discrete
sumvar=mean
group=incpov1
gspace = 5
gaxis = axis
raxis = axis
name = 'graph_4'
patternid = midpoint
;
run;
quit;
ods html close;
ods listing;
```


Percentage of Children Up—to—date with Vaccine Series 4:3:1:3
by Race and Poverty Status, National Immunization Survey, 2011
4:3:1:3 Up—to—Date
90
80
70
60
50
40
30
20
10
0
WHITE ONLY
BLACK ONLY
OTHER/MULTIRACE
Race of Child
ABOVE, > $75,000
ABOVE, <= $75,000
BELOW
UNKNOWN
Poverty Status
graph_4

C. ‘R’

```
######################
title <- "R_IAP.R"
#########################################################################
#THIS PROGRAM WILL PRODUCE ESTIMATION AREA ESTIMATES AND STANDARD ERRORS
#FOR PUTD4313 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:/nispuf11" #"path-to-dataset"


#--- NAME OF R DATASET ---#
in.file <- paste(dd,"/NISPUF11.RData",sep="")
#---READ R DATASET---#
load(in.file)
#---FORMAT---#
UTD4313levels=c(0,1)
UTD4313labels=c("NOT 4:3:1:3 UTD", "4:3:1:3 UTD")
ESTIAPlevels=c(0, 1, 2, 4, 5, 6, 7, 8, 10, 11, 12, 13, 14, 16, 17, 18, 19, 20, 22,
25, 27, 28, 29, 30, 31, 34, 35, 36, 38, 40, 41, 44, 46, 47, 49, 50, 51, 52, 53, 54,
55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 68, 72, 73, 74, 75, 76, 77, 95,
103)
ESTIAPlabels=c("US Total", "CT", "MA", "ME", "NH", "RI", "VT", "NJ", "NY-Rest of
State", "NY-City of New York", "DC", "DE", "MD-Rest of State", "PA-Rest of State",
"PA-Philadelphia County", "VA", "WV", "AL", "FL", "GA", "KY", "MS", "NC", "SC",
"TN", "IL-Rest of State", "IL-City of Chicago", "IN ", "MI", "MN", "OH", "WI",
"AR", "LA", "NM", "OK", "TX-Rest of State", "TX-Dallas County", "TX-El Paso
County", "TX-City of Houston", "TX-Bexar County", "IA", "KS", "MO", "NE", "CO",
"MT", "ND", "SD", "UT", "WY", "AZ", "CA", "HI", "NV", "AK", "ID", "OR", "WA", "U.S.
Virgin Islands", "MD-Prince George’s County")

#---PROVWT_D WILL BE USED AS A WEIGHT (PROVWT_D IS THE DUAL-FRAME WEIGHT. TO LIMIT
TO LANDLINE CASES, USE PROVWT_LL TO EXCLUDE U.S. VIRGIN ISLANDS. USE PROVWTVI_LL TO
INCLUDE U.S. VIRGIN ISLANDS)---#
#---STRATUM_D WILL BE USED AS A STRATUM VARIABLE FOR VARIANCE ESTIMATION (USE
STRATUM_D FOR DUAL-FRAME ESTIMATION. WHEN LIMITING TO LANDLINE CASES WITH PROVWT_LL
OR PROVWTVI_LL, USE ESTIAP)---#
R_FILE <- subset(NISPUF11, select=c(SEQNUMHH, SEQNUMC, PUTD4313, ESTIAP11,
PROVWT_D, STRATUM_D))
names(R_FILE) <- c("SEQNUMHH", "SEQNUMC", "PUTD4313", "ESTIAP", "WT", "STRATUM")
R_FILE <- na.omit(R_FILE)
#---ASSIGN LABELS---#
R_FILE$PUTD4313 <- factor(R_FILE$PUTD4313, levels=UTD4313levels,
labels=UTD4313labels)
R_FILE$ESTIAP <- factor(R_FILE$ESTIAP, levels=ESTIAPlevels,
labels=ESTIAPlabels)

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

#---U.S. TOTAL ESTIMATES AND STANDARD ERRORS---#
r_nation <- svymean(~PUTD4313, 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 <- "PERCENT 4:3:1:3 ESTIMATES AT A NATIONWIDE LEVEL"
prn(r_nation_est, title)

#---ESTIMATION AREA ESTIMATES AND STANDARD ERRORS---#
r_est <- svyby(~PUTD4313, ~ESTIAP, svydsg, svymean)
r_est[,-c(1)] <- round(r_est[,-c(1)]*100,2) #CONVERT INTO PERCENT ESTIMATES
r_est <- subset(r_est, select=c(1,3,5))


#SELECT ESTIMATES FOR UP-TO-DATE CASES
names(r_est) <- c("ESTIMATION AREA", "PERCENT 4:3:1:3 UTD", "STANDARD ERROR UTD")
title <- "PERCENT 4:3:1:3 ESTIMATES BY ESTIMATION AREA"
prn(r_est, title)

######################
title <- "R_STATE.R"
#########################################################################
#THIS PROGRAM WILL PRODUCE STATE ESTIMATES AND STANDARD ERRORS
#FOR PUTD4313 USING R.
#
#NOTE : THE STATE VARIABLE IS BASED ON FIPSTATE CODES ,THERE ARE
#NO STATES WITH FIPS CODES 3,7,14,43,52,57-77.
#
#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:/nispuf11" #"path-to-data"


#--- NAME OF R DATASET ---#
in.file <- paste(dd,"/NISPUF11.RData",sep="")
#---READ R DATASET---#
load(in.file)
#---FORMAT---#
UTD4313levels=c(0,1)
UTD4313labels=c("NOT 4:3:1:3 UTD", "4:3:1:3 UTD")
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, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71,
72, 73, 74, 75, 76, 77, 78)
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",
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```

```
" ",
" ",
" ",
" ",
"U.S. Virgin Islands")
#---PROVWT_D WILL BE USED AS A WEIGHT (PROVWT_D IS THE DUAL-FRAME WEIGHT. TO LIMIT
TO LANDLINE CASES, USE PROVWT_LL TO EXCLUDE U.S. VIRGIN ISLANDS. USE PROVWTVI_LL TO
INCLUDE U.S. VIRGIN ISLANDS)---#
#---STRATUM_D WILL BE USED AS A STRATUM VARIABLE FOR VARIANCE ESTIMATION (USE
STRATUM_D FOR DUAL-FRAME ESTIMATION. WHEN LIMITING TO LANDLINE CASES WITH PROVWT_LL
OR PROVWTVI_LL, USE ESTIAP)---#
R_FILE <- subset(NISPUF11, select=c(SEQNUMHH, SEQNUMC, PUTD4313,
STATE, PROVWT_D, STRATUM_D))
names(R_FILE) <- c("SEQNUMHH", "SEQNUMC", "PUTD4313", "STATE",
"WT","STRATUM")
R_FILE <- na.omit(R_FILE)
#---ASSIGN LABELS---#
R_FILE$PUTD4313 <- factor(R_FILE$PUTD4313, levels=UTD4313levels,
labels=UTD4313labels)
R_FILE$STATE <- factor(R_FILE$STATE, levels=STATElevels,
labels=STATElabels)
#---SPECIFY A SAMPLING DESIGN---#
svydsg <- svydesign(id=~SEQNUMHH, strata=~STRATUM, weights=~WT,
data=R_FILE)
#---STATE ESTIMATES AND STANDARD ERRORS---#
r_est2 <- svyby(~PUTD4313, ~STATE, svydsg, svymean)
r_est2[,-c(1)] <- round(r_est2[,-c(1)]*100,2) #CONVERT INTO PERCENT
ESTIMATES
r_est2 <- subset(r_est2, select=c(1,3,5)) #SELECT ESTIMATES FOR UP-TO-DATE
CASES
names(r_est2) <- c("STATE", "PERCENT 4:3:1;3 UTD", "STANDARD ERROR UTD")
prn(r_est2, '4:3:1:3 ESTIMATES BY STATE')

######################
title <- "R_PROG_3.R"
#########################################################################
#THIS PROGRAM WILL PRODUCE A TABLE OF HAD_CPOX BY STATE FOR ALL RDD
#COMPLETES USING RDDWT_D. THE PROGRAM USES 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()
library(prettyR) #TO USE freq()

#dd <- “c:/nispuf11” #"path-to-dataset"


#--- NAME OF R DATASET ---#
in.file <- paste(dd,"/NISPUF11.RData",sep="")
#---READ R DATASET---#
load(in.file)
#---FORMAT---#
HAD_CPOXlevels=c(1,2,77,99)
HAD_CPOXlabels=c("YES", "NO", "DON'T KNOW", "REFUSED")
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, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71,
72, 73, 74, 75, 76, 77, 78)
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",
" ",
" ",
" ",
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" ",
" ",
"U.S. Virgin Islands")

#---RDDWT_D WILL BE USED AS A WEIGHT (RDDWT_D IS THE DUAL-FRAME WEIGHT. TO LIMIT TO
LANDLINE CASES, USE RDDWT_LL TO EXCLUDE U.S. VIRGIN ISLANDS. USE RDDWTVI_LL TO
INCLUDE U.S. VIRGIN ISLANDS)---#
#---STRATUM_D WILL BE USED AS A STRATUM VARIABLE FOR VARIANCE ESTIMATION (USE
STRATUM_D FOR DUAL-FRAME ESTIMATION. WHEN LIMITING TO LANDLINE CASES WITH RDDWT_LL
OR RDDWTVI_LL, USE ESTIAP)---#
R_FILE <- subset(NISPUF11, select=c(SEQNUMHH, SEQNUMC, STATE,
HAD_CPOX, RDDWT_D, STRATUM_D))
names(R_FILE) <- c("SEQNUMHH", "SEQNUMC", "STATE", "HAD_CPOX",
"WT", "STRATUM")

#---ASSIGN LABELS---#
R_FILE$HAD_CPOX <- factor(R_FILE$HAD_CPOX, levels=HAD_CPOXlevels,
labels=HAD_CPOXlabels)
R_FILE$STATE <- factor(R_FILE$STATE, levels=STATElevels,
labels=STATElabels)
R_FILE <- na.omit(R_FILE)
summary(R_FILE$HAD_CPOX)

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

#---U.S. TOTAL ESTIMATES AND STANDARD ERRORS---#
r_nation <- svymean(~HAD_CPOX, 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_est3 <- cbind(PERCENT_UTD, SE_UTD)
prn(r_nation_est3, "PERCENT HAD_CPOX = YES ESTIMATES AT A NATIONWIDE
LEVEL\n")

#---HAD_CPOX = YES ESTIMATES BY STATE---#
r_est3 <- svyby(~HAD_CPOX, ~STATE, svydsg, svymean)
r_est3[,-c(1)] <- round(r_est3[,-c(1)]*100,2) #CONVERT INTO PERCENT ESTIMATES
r_est3 <- subset(r_est3, select=c(1,2,6)) #SELECT ESTIMATES FOR HAD_CPOX=YES
names(r_est3) <- c("STATE", "PERCENT HAD_CPOX=YES", "STANDARD ERROR
HAD_CPOX=Y")
prn(r_est3, 'PERCENT HAD_CPOX ESTIMATES BY STATE')


#######################
title <- "PROG_4.R"
#############################################################################
#TABLE OF PUTD4313 BY INCPOV1 BY RACE_K. SAVE % UTD
#ESTIMATES (NOT S.E.'S) FOR USE IN THE PROGRAM GRAPH_4.
```
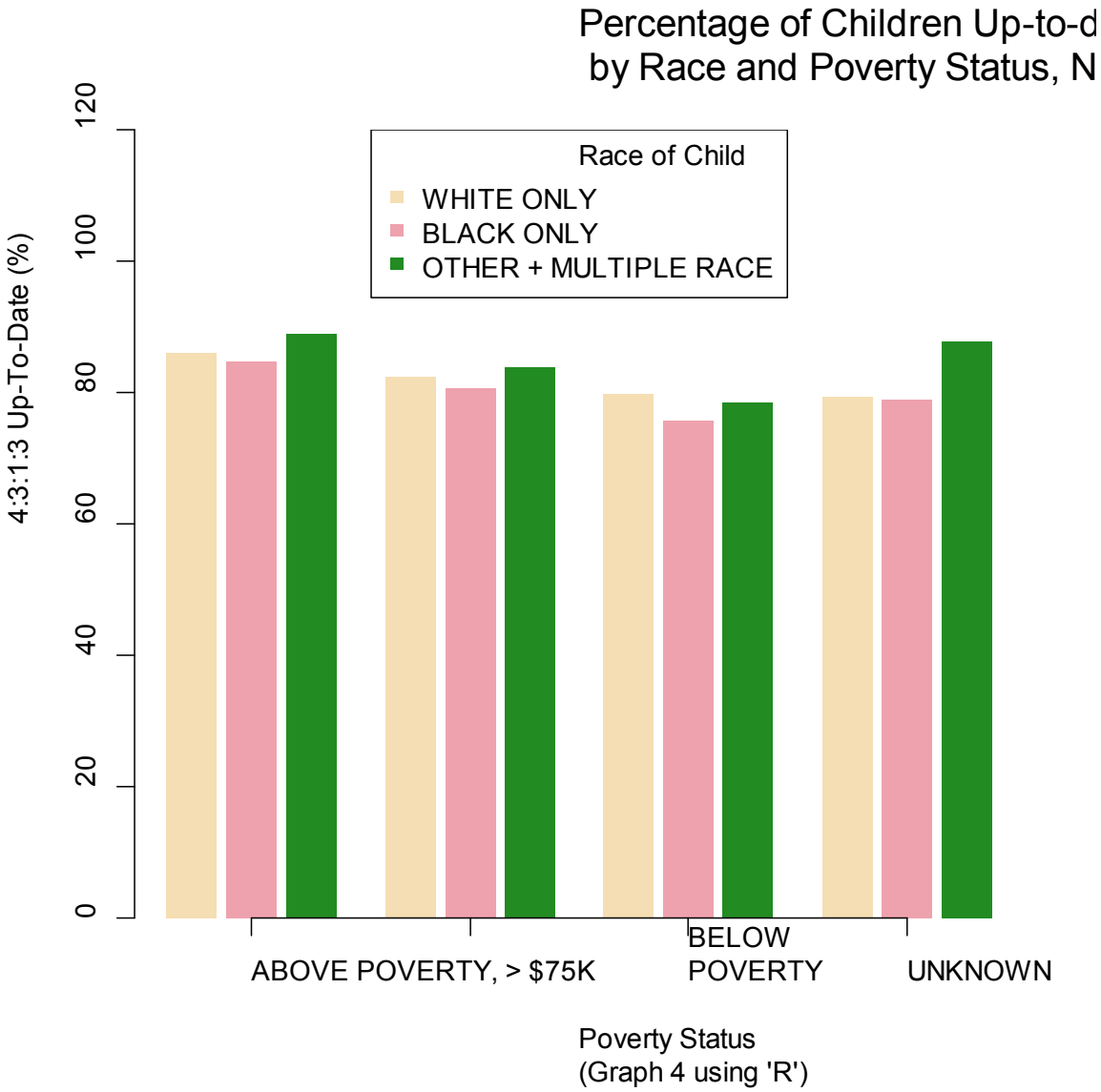

```
#
#THIS PROGRAM WILL PRODUCE ESTIMATES USING R.
#
#R NOTES:
#1. R IS CASE SENSITIVE.
#2. A FILE PATH IS SEPERATED BY SLASH(/)
##############################################################################
library(survey) #TO USE svydesign(), svymean(), and svyby()
library(Hmisc) #TO USE prn()


dd <- "c:/nispuf11" #"path-to-dataset"

out <-"c:/nispuf11" #"path-to-output"



#--- NAME OF R DATASET ---#
in.file <- paste(dd,"/NISPUF11.RData",sep="")
#---READ R DATASET---#
load(in.file)
#---FORMAT---#
UTD4313levels=c(0,1)
UTD4313labels=c("NOT 4:3:1:3 UTD", "4:3:1:3 UTD")
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, <= $75K", "BELOW
POVERTY", "UNKNOWN")
#---PROVWT_D WILL BE USED AS A WEIGHT (PROVWT_D IS THE DUAL-FRAME WEIGHT. TO LIMIT
TO LANDLINE CASES, USE PROVWT_LL TO EXCLUDE U.S. VIRGIN ISLANDS. USE PROVWTVI_LL TO
INCLUDE U.S. VIRGIN ISLANDS)---#
#---STRATUM_D WILL BE USED AS A STRATUM VARIABLE FOR VARIANCE ESTIMATION (USE
STRATUM_D FOR DUAL-FRAME ESTIMATION. WHEN LIMITING TO LANDLINE CASES WITH PROVWT_LL
OR PROVWTVI_LL, USE ESTIAP)---#
R_FILE <- subset(NISPUF11, select=c(SEQNUMHH, SEQNUMC, PUTD4313, RACE_K, INCPOV1,
PROVWT_D, STRATUM_D))
names(R_FILE) <- c("SEQNUMHH", "SEQNUMC", "PUTD4313", "RACE_K", "INCPOV1", "WT",
"STRATUM")
#---ASSIGN LABELS---#
R_FILE$PUTD4313 <- factor(R_FILE$PUTD4313, levels=UTD4313levels,
labels=UTD4313labels, exclude=NULL)
R_FILE$RACE_K <- factor(R_FILE$RACE_K, levels=RACE_PUFlevels,
labels=RACE_PUFlabels, exclude=NULL)
R_FILE$INCPOV1 <- factor(R_FILE$INCPOV1, levels=INCPOVlevels,labels=INCPOVlabels,
exclude=NULL)
#---UNWEIGHTED FREQUENCIES---#
unwt_freq <- function(UNWT.VAR){#FUNCTION TO PRINT UNWEIGHTED FREQUENCIES
unwt.tab <- wtd.table(UNWT.VAR, weights= NULL, type='table')
unwtd.freq <- data.frame(cbind(
unwt.tab, round(unwt.tab/sum(unwt.tab)*100,2),
cumsum(unwt.tab), cumsum(round(unwt.tab/sum(unwt.tab)*100,2))))
names(unwtd.freq) <- c("Frequency", "Percent", "Cumulative Frequency", "Cumulative
Percent")
unwtd.title <- paste('Table 4A. Q1/2011 - Q4/2011', 'UNWEIGHTED FREQUENCIES',
label(UNWT.VAR), sep="\n")
label(unwtd.freq) <- unwtd.title
print(unwtd.freq)
}
unwt_freq(R_FILE$PUTD4313)
unwt_freq(R_FILE$INCPOV1)
unwt_freq(R_FILE$RACE_K)
```

```
R_FILE <- na.omit(R_FILE)
#---SPECIFY A SAMPLING DESIGN---#
svydsg <- svydesign(id=~SEQNUMHH, strata=~STRATUM, weights=~WT,
data=R_FILE)
#---PERCENT 4:3:1:3 UP-TO-DATE AND ESTIMATED STANDARD ERRORS---#
r_est4 <- svyby(~PUTD4313, ~RACE_K+INCPOV1, svydsg, svymean)
r_est4[,-c(1,2)] <- round(r_est4[,-c(1,2)]*100,2) #CONVERT INTO PERCENT
ESTIMATES
r_est4 <- subset(r_est4, select=c(1,2,4,6)) #SELECT ESTIMATES FOR UP-TODATE CASES
names(r_est4) <- c("RACE", "INCOME", "PERCENT_UTD", "STANDARD_ERROR_UTD")
title <- "Table 4B. Q1/2011 - Q4/2011, Percent 4:3:1:3 UTD and Estimated Standard
Errors"
prn(r_est4, title)
#---SAVE PERCENT UP-TO-DATE ESTIMATES FOR USE IN THE PROGRAM GRAPH_4---#
r_est4 <- subset(r_est4, select=c(RACE, INCOME, PERCENT_UTD))
save(r_est4, file=paste(out, "/r_est4_11", sep=""))



######################
title <- "GRAPH_4.R"
#############################################################################
#THIS PROGRAM BUILDS OFF OF THE PROGRAM PROG_4. IT PRODUCES A CHART OF
#PUTD4313 BY INCPOV1 BY RACE_K. 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()

dd <- "c:/nispuf11" #---SPECIFY PATH TO R DATASET THAT WAS THE OUTPUT OF R_PROG_4--
-#

out <- "c:/nispuf11" #---SPECIFY THE PATH FOR WHERE YOU WANT THE CHART OUTPUT TO
GO---#


#---NAME OF R DATASET OUTPUT FROM R_PROG_4---#
in.file <- paste(dd,"/r_est4_11",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#
utd4313 <- matrix(r_est4$PERCENT_UTD, nrow=3, ncol=4, byrow=F,
dimnames=list(levels(r_est4$RACE), levels(r_est4$INCOME)))
#CREATE GRAPH_4.GIF#
barplot(utd4313, beside=TRUE, space=c(0.2,1),
col = c("wheat", "lightpink2", "forestgreen"),
axis.lty = 1,
sub="(Graph 4 using 'R')", cex.sub=1, ylim=c(0,120),
xlab="Poverty Status",
ylab="4:3:1:3 Up-To-Date (%)", cex=1, cex.names=1, border=NA)
legend("top", rownames(utd4313), col=c("wheat", "lightpink2",
"forestgreen"), title="Race of Child", pch=15, cex=1)
title1 <- "Percentage of Children Up-to-date with Vaccine Series 4:3:1:3 \n"
title2 <- "by Race and Poverty Status, National Immunization Survey, 2011\n"
mtext(paste(title1,title2), cex=1.3)
```


Percentage of Children Up-to-d
by Race and Poverty Status, N
Race of Child
WHITE ONLY
BLACK ONLY
OTHER + MULTIPLE RACE
4:3:1:3 Up-To-Date (%)
0
20
40
60
80
100
120
ABOVE POVERTY, > $75K
BELOW POVERTY
UNKNOWN
Poverty Status
(Graph 4 using 'R')

Appendix F

Alphabetical Listing of Variables that are in the 2004-2011 Public-Use Data Files

Table F.1 Alphabetical Listing of Variables that are in the 2004-2011 Public-Use Data Files[1]

Variable Name	Variable Label[2]	Year of Data Collection								Notes[3]
		2004	2005	2006	2007	2008	2009	2010	2011	
AGECPOXR	AGE IN MONTHS AT CHICKEN POX DISEASE (RECODE)		Y	Y	Y	Y	Y	Y	Y	Replaces IAGECPXR starting 2005. This version is not imputed.
AGEGRP	AGE CATEGORY OF CHILD (19-23, 24-29, 30-35 MO) (RECODE)	Y	Y	Y	Y	Y	Y	Y	Y	
ALL4SHOT	HH REPORT OF 4:3:1:3 UP-TO-DATE	Y	Y							Dropped starting in 2006 because no longer possible to derive due to shortened Section B.
BF_ENDR	DURATION OF BREAST FEEDING IN DAYS (TOPCODE)	Y	Y							Dropped starting in 2006 because of question wording change. Replaced by BF_ENDR06.
BF_ENDR06	DURATION OF BREAST FEEDING IN DAYS (RECODE)			Y	Y	Y	Y	Y	Y	Replaces BF_ENDR starting 2006.
BF_EXCLR	DURATION OF EXCLUSIVE BREAST FEEDING IN DAYS (TOPCODE)	Y	Y							Dropped starting in 2006 because of question wording change. Replaced by BF_EXCLR06.
BF_EXCLR06	DURATION OF EXCLUSIVE BREAST/FORMULA FEEDING IN DAYS (RECODE)			Y	Y	Y	Y	Y	Y	Replaces BF_EXCLR starting 2006.
BF_FORMR06	AGE IN DAYS WHEN CHILD FIRST FED FORMULA (TOPCODE)			Y	Y					Question CBF_03_X added starting 2006. Replaced by BF_FORMR06 starting 2008.
BF_FORMR08	AGE IN DAYS WHEN CHILD FIRST FED FORMULA (RECODE)					Y	Y	Y	Y	Replaces BF_FORMR06 to add a "never fed formula" code.
BFENDFL	DURATION OF BREAST FEEDING EXCEEDS CHILD AGE IN DAYS, WITH BUFFER	Y	Y							Dropped starting in 2006 because of question wording change. Replaced by BFENDFL06.
BFENDFL06	DURATION OF BREAST FEEDING EXCEEDS CHILD AGE IN DAYS, WITH BUFFER			Y	Y	Y	Y	Y	Y	Replaces BFENDFL starting 2006.
BFEXCLFL	DURATION OF EXCLUSIVE BREAST FEEDING EXCEEDS TOTAL BREASTFEEDING, WITH BUFFER	Y	Y							Dropped starting in 2006 because question wording change do not allow it to be derived.
BFFORMFL06	AGE IN DAYS WHEN CHILD FIRST FED FORMULA EXCEEDS CHILD AGE IN DAYS, WITH BUFFER			Y	Y	Y	Y	Y	Y	Question CBF_03_X added starting 2006.
C_431	HH REPORT OF 4:3:1 UP-TO-DATE BY SHOT CARD USE	Y	Y							Dropped starting in 2006 because no longer possible to derive due to shortened Section B.
C_4313	HH REPORT OF 4:3:1:3 UP-TO-DATE BY SHOT CARD USE	Y	Y							Dropped starting in 2006 because no longer possible to derive due to shortened Section B.
C_DTP	HH REPORT OF 4+ DT-CONTAINING UP-TO-DATE BY SHOT CARD USE	Y	Y							Dropped starting in 2006 because no longer possible to derive due to shortened Section B.
C_HEP	HH REPORT OF 3+ HEPATITIS B-CONTAINING UP-TO-DATE BY SHOT CARD USE	Y	Y							Dropped starting in 2006 because no longer possible to derive due to shortened Section B.
C_HIB	HH REPORT OF 3+ HIB-CONTAINING UP-TO-DATE BY SHOT CARD USE	Y	Y							Dropped starting in 2006 because no longer possible to derive due to shortened Section B.
C_MMR	HH REPORT OF 1+ MEASLES-CONTAINING UP-TO-DATE BY SHOT CARD USE	Y	Y							Dropped starting in 2006 because no longer possible to derive due to shortened Section B.
C_POL	HH REPORT OF 3+ POLIO-CONTAINING UP-TO-DATE BY SHOT CARD USE	Y	Y							Dropped starting in 2006 because no longer possible to derive due to shortened Section B.
C_VRC	HH REPORT OF 1+ VARICELLA-CONTAINING UP-TO-DATE BY SHOT CARD USE	Y	Y							Dropped starting in 2006 because no longer possible to derive due to shortened Section B.
C1R	NUMBER OF PEOPLE IN HOUSEHOLD (RECODE)	Y	Y	Y	Y	Y	Y	Y	Y	
C5R	RELATIONSHIP OF RESPONDENT TO CHILD (RECODE)	Y	Y	Y	Y	Y	Y	Y	Y	
CBF_01	WAS CHILD EVER BREAST FED OR FED BREAST MILK?	Y	Y	Y	Y	Y	Y	Y	Y	
CEN_REG	CENSUS REGION BASED ON TRUE STATE OF RESIDENCE	Y	Y	Y	Y	Y	Y	Y	Y	
CHILDNM	NUMBER OF CHILDREN LESS THAN 18 YEARS IN HH (RECODE)	Y	Y	Y	Y	Y	Y	Y	Y	
CWIC_01	CHILD EVER RECEIVED WIC BENEFITS?	Y	Y	Y	Y	Y	Y	Y	Y	
CWIC_02	CHILD CURRENTLY RECEIVING WIC BENEFITS?	Y	Y	Y	Y	Y	Y	Y	Y	

Table F.1 Alphabetical Listing of Variables that are in the 2004-2011 Public-Use Data Files[1]

Variable Name	Variable Label[2]	Year of Data Collection								Notes[3]
		2004	2005	2006	2007	2008	2009	2010	2011	
D6R	NUMBER OF VACCINATION PROVIDERS IDENTIFIED BY RESPONDENT (RECODE)	Y	Y	Y	Y	Y	Y	Y	Y	
D7	CONSENT TO OBTAIN CHILD'S IMMUNIZATION RECORDS FROM PROVIDERS	Y	Y	Y	Y	Y	Y	Y	Y	
DDTP1	AGE IN DAYS OF PROV-REPTD DT-CONTAINING SHOT #1	Y	Y	Y	Y	Y	Y	Y	Y	
DDTP2	AGE IN DAYS OF PROV-REPTD DT-CONTAINING SHOT #2	Y	Y	Y	Y	Y	Y	Y	Y	
DDTP3	AGE IN DAYS OF PROV-REPTD DT-CONTAINING SHOT #3	Y	Y	Y	Y	Y	Y	Y	Y	
DDTP4	AGE IN DAYS OF PROV-REPTD DT-CONTAINING SHOT #4	Y	Y	Y	Y	Y	Y	Y	Y	
DDTP5	AGE IN DAYS OF PROV-REPTD DT-CONTAINING SHOT #5	Y	Y	Y	Y	Y	Y	Y	Y	
DDTP6	AGE IN DAYS OF PROV-REPTD DT-CONTAINING SHOT #6	Y	Y	Y	Y	Y	Y	Y	Y	
DDTP7	AGE IN DAYS OF PROV-REPTD DT-CONTAINING SHOT #7	Y	Y	Y	Y	Y	Y	Y	Y	
DDTP8	AGE IN DAYS OF PROV-REPTD DT-CONTAINING SHOT #8	Y	Y	Y	Y	Y	Y	Y	Y	
DDTP9	AGE IN DAYS OF PROV-REPTD DT-CONTAINING SHOT #9		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
DFLU1	AGE IN DAYS OF PROV-REPTD SEASONAL FLU-CONTAINING VACCINATION #1	Y	Y	Y	Y	Y	Y	Y	Y	
DFLU2	AGE IN DAYS OF PROV-REPTD SEASONAL FLU-CONTAINING VACCINATION #2	Y	Y	Y	Y	Y	Y	Y	Y	
DFLU3	AGE IN DAYS OF PROV-REPTD SEASONAL FLU-CONTAINING VACCINATION #3	Y	Y	Y	Y	Y	Y	Y	Y	
DFLU4	AGE IN DAYS OF PROV-REPTD SEASONAL FLU-CONTAINING VACCINATION #4	Y	Y	Y	Y	Y	Y	Y	Y	
DFLU5	AGE IN DAYS OF PROV-REPTD SEASONAL FLU-CONTAINING VACCINATION #5	Y	Y	Y	Y	Y	Y	Y	Y	
DFLU6	AGE IN DAYS OF PROV-REPTD SEASONAL FLU-CONTAINING VACCINATION #6	Y	Y	Y	Y	Y	Y	Y	Y	
DFLU7	AGE IN DAYS OF PROV-REPTD SEASONAL FLU-CONTAINING VACCINATION #7	Y	Y	Y	Y	Y	Y	Y	Y	
DFLU8	AGE IN DAYS OF PROV-REPTD SEASONAL FLU-CONTAINING VACCINATION #8	Y	Y	Y	Y	Y	Y	Y	Y	
DFLU9	AGE IN DAYS OF PROV-REPTD SEASONAL FLU-CONTAINING VACCINATION #9		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
DH1N1	AGE IN DAYS OF PROV-REPTD MONOVALENT 2009 H1N1 FLU VACCINATION #1							Y	Y	Introduced in 2010.
DH1N2	AGE IN DAYS OF PROV-REPTD MONOVALENT 2009 H1N1 FLU VACCINATION #2							Y	Y	Introduced in 2010.
DH1N3	AGE IN DAYS OF PROV-REPTD MONOVALENT 2009 H1N1 FLU VACCINATION #3							Y	Y	Introduced in 2010.
DH1N4	AGE IN DAYS OF PROV-REPTD MONOVALENT 2009 H1N1 FLU VACCINATION #4							Y	Y	Introduced in 2010.
DH1N5	AGE IN DAYS OF PROV-REPTD MONOVALENT 2009 H1N1 FLU VACCINATION #5							Y	Y	Introduced in 2010.
DH1N6	AGE IN DAYS OF PROV-REPTD MONOVALENT 2009 H1N1 FLU VACCINATION #6							Y	Y	Introduced in 2010.
DH1N7	AGE IN DAYS OF PROV-REPTD MONOVALENT 2009 H1N1 FLU VACCINATION #7							Y	Y	Introduced in 2010.
DH1N8	AGE IN DAYS OF PROV-REPTD MONOVALENT 2009 H1N1 FLU VACCINATION #8							Y	Y	Introduced in 2010.
DH1N9	AGE IN DAYS OF PROV-REPTD MONOVALENT 2009 H1N1 FLU VACCINATION #9							Y	Y	Introduced in 2010.

Table F.1 Alphabetical Listing of Variables that are in the 2004-2011 Public-Use Data Files[1]

Variable Name	Variable Label[2]	Year of Data Collection								Notes[3]
		2004	2005	2006	2007	2008	2009	2010	2011	
DHEPA1	AGE IN DAYS OF PROV-REPTD HEPATITIS A-CONTAINING SHOT #1	Y	Y	Y	Y	Y	Y	Y	Y	
DHEPA2	AGE IN DAYS OF PROV-REPTD HEPATITIS A-CONTAINING SHOT #2	Y	Y	Y	Y	Y	Y	Y	Y	
DHEPA3	AGE IN DAYS OF PROV-REPTD HEPATITIS A-CONTAINING SHOT #3	Y	Y	Y	Y	Y	Y	Y	Y	
DHEPA4	AGE IN DAYS OF PROV-REPTD HEPATITIS A-CONTAINING SHOT #4	Y	Y	Y	Y	Y	Y	Y	Y	
DHEPA5	AGE IN DAYS OF PROV-REPTD HEPATITIS A-CONTAINING SHOT #5	Y	Y	Y	Y	Y	Y	Y	Y	
DHEPA6	AGE IN DAYS OF PROV-REPTD HEPATITIS A-CONTAINING SHOT #6	Y	Y	Y	Y	Y	Y	Y	Y	
DHEPA7	AGE IN DAYS OF PROV-REPTD HEPATITIS A-CONTAINING SHOT #7	Y	Y	Y	Y	Y	Y	Y	Y	
DHEPA8	AGE IN DAYS OF PROV-REPTD HEPATITIS A-CONTAINING SHOT #8	Y	Y	Y	Y	Y	Y	Y	Y	
DHEPA9	AGE IN DAYS OF PROV-REPTD HEPATITIS A-CONTAINING SHOT #9		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
DHEPB1	AGE IN DAYS OF PROV-REPTD HEPATITIS B-CONTAINING SHOT #1	Y	Y	Y	Y	Y	Y	Y	Y	
DHEPB2	AGE IN DAYS OF PROV-REPTD HEPATITIS B-CONTAINING SHOT #2	Y	Y	Y	Y	Y	Y	Y	Y	
DHEPB3	AGE IN DAYS OF PROV-REPTD HEPATITIS B-CONTAINING SHOT #3	Y	Y	Y	Y	Y	Y	Y	Y	
DHEPB4	AGE IN DAYS OF PROV-REPTD HEPATITIS B-CONTAINING SHOT #4	Y	Y	Y	Y	Y	Y	Y	Y	
DHEPB5	AGE IN DAYS OF PROV-REPTD HEPATITIS B-CONTAINING SHOT #5	Y	Y	Y	Y	Y	Y	Y	Y	
DHEPB6	AGE IN DAYS OF PROV-REPTD HEPATITIS B-CONTAINING SHOT #6	Y	Y	Y	Y	Y	Y	Y	Y	
DHEPB7	AGE IN DAYS OF PROV-REPTD HEPATITIS B-CONTAINING SHOT #7	Y	Y	Y	Y	Y	Y	Y	Y	
DHEPB8	AGE IN DAYS OF PROV-REPTD HEPATITIS B-CONTAINING SHOT #8	Y	Y	Y	Y	Y	Y	Y	Y	
DHEPB9	AGE IN DAYS OF PROV-REPTD HEPATITIS B-CONTAINING SHOT #9		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
DHIB1	AGE IN DAYS OF PROV-REPTD HIB-CONTAINING SHOT #1	Y	Y	Y	Y	Y	Y	Y	Y	
DHIB2	AGE IN DAYS OF PROV-REPTD HIB-CONTAINING SHOT #2	Y	Y	Y	Y	Y	Y	Y	Y	
DHIB3	AGE IN DAYS OF PROV-REPTD HIB-CONTAINING SHOT #3	Y	Y	Y	Y	Y	Y	Y	Y	
DHIB4	AGE IN DAYS OF PROV-REPTD HIB-CONTAINING SHOT #4	Y	Y	Y	Y	Y	Y	Y	Y	
DHIB5	AGE IN DAYS OF PROV-REPTD HIB-CONTAINING SHOT #5	Y	Y	Y	Y	Y	Y	Y	Y	
DHIB6	AGE IN DAYS OF PROV-REPTD HIB-CONTAINING SHOT #6	Y	Y	Y	Y	Y	Y	Y	Y	
DHIB7	AGE IN DAYS OF PROV-REPTD HIB-CONTAINING SHOT #7	Y	Y	Y	Y	Y	Y	Y	Y	
DHIB8	AGE IN DAYS OF PROV-REPTD HIB-CONTAINING SHOT #8	Y	Y	Y	Y	Y	Y	Y	Y	
DHIB9	AGE IN DAYS OF PROV-REPTD HIB-CONTAINING SHOT #9		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
DISPCODE	NIS PROVIDER RECORD-CHECK DISPOSITION CODE	Y	Y	Y	Y	Y	Y	Y	Y	
DMMR1	AGE IN DAYS OF PROV-REPTD MEASLES-CONTAINING SHOT #1	Y	Y	Y	Y	Y	Y	Y	Y	

Table F.1 Alphabetical Listing of Variables that are in the 2004-2011 Public-Use Data Files[1]

Variable Name	Variable Label[2]	Year of Data Collection								Notes[3]
		2004	2005	2006	2007	2008	2009	2010	2011	
DMMR2	AGE IN DAYS OF PROV-REPTD MEASLES-CONTAINING SHOT #2	Y	Y	Y	Y	Y	Y	Y	Y	
DMMR3	AGE IN DAYS OF PROV-REPTD MEASLES-CONTAINING SHOT #3	Y	Y	Y	Y	Y	Y	Y	Y	
DMMR4	AGE IN DAYS OF PROV-REPTD MEASLES-CONTAINING SHOT #4	Y	Y	Y	Y	Y	Y	Y	Y	
DMMR5	AGE IN DAYS OF PROV-REPTD MEASLES-CONTAINING SHOT #5		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
DMMR6	AGE IN DAYS OF PROV-REPTD MEASLES-CONTAINING SHOT #6		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
DMMR7	AGE IN DAYS OF PROV-REPTD MEASLES-CONTAINING SHOT #7		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
DMMR8	AGE IN DAYS OF PROV-REPTD MEASLES-CONTAINING SHOT #8		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
DMMR9	AGE IN DAYS OF PROV-REPTD MEASLES-CONTAINING SHOT #9		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
DMP1	AGE IN DAYS OF PROV-REPTD MUMPS-ONLY SHOT #1	Y	Y	Y	Y	Y	Y	Y	Y	
DMP2	AGE IN DAYS OF PROV-REPTD MUMPS-ONLY SHOT #2	Y	Y	Y	Y	Y	Y	Y	Y	
DMP3	AGE IN DAYS OF PROV-REPTD MUMPS-ONLY SHOT #3	Y	Y	Y	Y	Y	Y	Y	Y	
DMP4	AGE IN DAYS OF PROV-REPTD MUMPS-ONLY SHOT #4	Y	Y	Y	Y	Y	Y	Y	Y	
DMP5	AGE IN DAYS OF PROV-REPTD MUMPS-ONLY SHOT #5		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
DMP6	AGE IN DAYS OF PROV-REPTD MUMPS-ONLY SHOT #6		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
DMP7	AGE IN DAYS OF PROV-REPTD MUMPS-ONLY SHOT #7		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
DMP8	AGE IN DAYS OF PROV-REPTD MUMPS-ONLY SHOT #8		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
DMP9	AGE IN DAYS OF PROV-REPTD MUMPS-ONLY SHOT #9		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
DMPRB1	AGE IN DAYS OF PROV-REPTD (MUMPS/RUBELLA)-ONLY SHOT #1	Y	Y	Y	Y	Y	Y	Y	Y	
DMPRB2	AGE IN DAYS OF PROV-REPTD (MUMPS/RUBELLA)-ONLY SHOT #2	Y	Y	Y	Y	Y	Y	Y	Y	
DMPRB3	AGE IN DAYS OF PROV-REPTD (MUMPS/RUBELLA)-ONLY SHOT #3	Y	Y	Y	Y	Y	Y	Y	Y	
DMPRB4	AGE IN DAYS OF PROV-REPTD (MUMPS/RUBELLA)-ONLY SHOT #4	Y	Y	Y	Y	Y	Y	Y	Y	
DMPRB5	AGE IN DAYS OF PROV-REPTD (MUMPS/RUBELLA)-ONLY SHOT #5		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
DMPRB6	AGE IN DAYS OF PROV-REPTD (MUMPS/RUBELLA)-ONLY SHOT #6		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
DMPRB7	AGE IN DAYS OF PROV-REPTD (MUMPS/RUBELLA)-ONLY SHOT #7		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
DMPRB8	AGE IN DAYS OF PROV-REPTD (MUMPS/RUBELLA)-ONLY SHOT #8		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
DMPRB9	AGE IN DAYS OF PROV-REPTD (MUMPS/RUBELLA)-ONLY SHOT #9		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
DPCV1	AGE IN DAYS OF PROV-REPTD PNEUMOCOCCAL-CONTAINING SHOT #1	Y	Y	Y	Y	Y	Y	Y	Y	
DPCV2	AGE IN DAYS OF PROV-REPTD PNEUMOCOCCAL-CONTAINING SHOT #2	Y	Y	Y	Y	Y	Y	Y	Y	
DPCV3	AGE IN DAYS OF PROV-REPTD PNEUMOCOCCAL-CONTAINING SHOT #3	Y	Y	Y	Y	Y	Y	Y	Y	
DPCV4	AGE IN DAYS OF PROV-REPTD PNEUMOCOCCAL-CONTAINING SHOT #4	Y	Y	Y	Y	Y	Y	Y	Y	
DPCV5	AGE IN DAYS OF PROV-REPTD PNEUMOCOCCAL-CONTAINING SHOT #5	Y	Y	Y	Y	Y	Y	Y	Y	
DPCV6	AGE IN DAYS OF PROV-REPTD PNEUMOCOCCAL-CONTAINING SHOT #6	Y	Y	Y	Y	Y	Y	Y	Y	
DPCV7	AGE IN DAYS OF PROV-REPTD PNEUMOCOCCAL-CONTAINING SHOT #7	Y	Y	Y	Y	Y	Y	Y	Y	

Table F.1 Alphabetical Listing of Variables that are in the 2004-2011 Public-Use Data Files[1]

Variable Name	Variable Label[2]	Year of Data Collection								Notes[3]
		2004	2005	2006	2007	2008	2009	2010	2011	
DPCV8	AGE IN DAYS OF PROV-REPTD PNEUMOCOCCAL-CONTAINING SHOT #8	Y	Y	Y	Y	Y	Y	Y	Y	
DPCV9	AGE IN DAYS OF PROV-REPTD PNEUMOCOCCAL-CONTAINING SHOT #9		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
DPOLIO1	AGE IN DAYS OF PROV-REPTD POLIO-CONTAINING SHOT #1	Y	Y	Y	Y	Y	Y	Y	Y	
DPOLIO2	AGE IN DAYS OF PROV-REPTD POLIO-CONTAINING SHOT #2	Y	Y	Y	Y	Y	Y	Y	Y	
DPOLIO3	AGE IN DAYS OF PROV-REPTD POLIO-CONTAINING SHOT #3	Y	Y	Y	Y	Y	Y	Y	Y	
DPOLIO4	AGE IN DAYS OF PROV-REPTD POLIO-CONTAINING SHOT #4	Y	Y	Y	Y	Y	Y	Y	Y	
DPOLIO5	AGE IN DAYS OF PROV-REPTD POLIO-CONTAINING SHOT #5	Y	Y	Y	Y	Y	Y	Y	Y	
DPOLIO6	AGE IN DAYS OF PROV-REPTD POLIO-CONTAINING SHOT #6	Y	Y	Y	Y	Y	Y	Y	Y	
DPOLIO7	AGE IN DAYS OF PROV-REPTD POLIO-CONTAINING SHOT #7	Y	Y	Y	Y	Y	Y	Y	Y	
DPOLIO8	AGE IN DAYS OF PROV-REPTD POLIO-CONTAINING SHOT #8	Y	Y	Y	Y	Y	Y	Y	Y	
DPOLIO9	AGE IN DAYS OF PROV-REPTD POLIO-CONTAINING SHOT #9		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
DRB1	AGE IN DAYS OF PROV-REPTD RUBELLA-ONLY SHOT #1	Y	Y	Y	Y	Y	Y	Y	Y	
DRB2	AGE IN DAYS OF PROV-REPTD RUBELLA-ONLY SHOT #2	Y	Y	Y	Y	Y	Y	Y	Y	
DRB3	AGE IN DAYS OF PROV-REPTD RUBELLA-ONLY SHOT #3	Y	Y	Y	Y	Y	Y	Y	Y	
DRB4	AGE IN DAYS OF PROV-REPTD RUBELLA-ONLY SHOT #4	Y	Y	Y	Y	Y	Y	Y	Y	
DRB5	AGE IN DAYS OF PROV-REPTD RUBELLA-ONLY SHOT #5	Y	Y	Y	Y	Y	Y	Y	Y	
DRB6	AGE IN DAYS OF PROV-REPTD RUBELLA-ONLY SHOT #6	Y	Y	Y	Y	Y	Y	Y	Y	
DRB7	AGE IN DAYS OF PROV-REPTD RUBELLA-ONLY SHOT #7	Y	Y	Y	Y	Y	Y	Y	Y	
DRB8	AGE IN DAYS OF PROV-REPTD RUBELLA-ONLY SHOT #8	Y	Y	Y	Y	Y	Y	Y	Y	
DRB9	AGE IN DAYS OF PROV-REPTD RUBELLA-ONLY SHOT #9		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
DROT1	AGE IN DAYS OF PROV-REPTD ROTAVIRUS-CONTAINING SHOT #1	Y	Y	Y	Y	Y	Y	Y	Y	
DROT2	AGE IN DAYS OF PROV-REPTD ROTAVIRUS-CONTAINING SHOT #2	Y	Y	Y	Y	Y	Y	Y	Y	
DROT3	AGE IN DAYS OF PROV-REPTD ROTAVIRUS-CONTAINING SHOT #3	Y	Y	Y	Y	Y	Y	Y	Y	
DROT4	AGE IN DAYS OF PROV-REPTD ROTAVIRUS-CONTAINING SHOT #4	Y	Y	Y	Y	Y	Y	Y	Y	
DROT5	AGE IN DAYS OF PROV-REPTD ROTAVIRUS-CONTAINING SHOT #5	Y	Y	Y	Y	Y	Y	Y	Y	
DROT6	AGE IN DAYS OF PROV-REPTD ROTAVIRUS-CONTAINING SHOT #6	Y	Y	Y	Y	Y	Y	Y	Y	
DROT7	AGE IN DAYS OF PROV-REPTD ROTAVIRUS-CONTAINING SHOT #7	Y	Y	Y	Y	Y	Y	Y	Y	
DROT8	AGE IN DAYS OF PROV-REPTD ROTAVIRUS-CONTAINING SHOT #8	Y	Y	Y	Y	Y	Y	Y	Y	
DROT9	AGE IN DAYS OF PROV-REPTD ROTAVIRUS-CONTAINING SHOT #9		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.

Table F.1 Alphabetical Listing of Variables that are in the 2004-2011 Public-Use Data Files[1]

Variable Name	Variable Label[2]	Year of Data Collection								Notes[3]
		2004	2005	2006	2007	2008	2009	2010	2011	
DTP_SOUR	SHOT CARD USED FOR DTP REPORTING	Y								Dropped starting in 2005 because this variable is redundant with variable SHOTCARD.
DTP1_AGE	AGE IN MONTHS OF PROV-REPTD DT-CONTAINING SHOT #1	Y	Y	Y	Y	Y	Y	Y	Y	
DTP2_AGE	AGE IN MONTHS OF PROV-REPTD DT-CONTAINING SHOT #2	Y	Y	Y	Y	Y	Y	Y	Y	
DTP3_AGE	AGE IN MONTHS OF PROV-REPTD DT-CONTAINING SHOT #3	Y	Y	Y	Y	Y	Y	Y	Y	
DTP4_AGE	AGE IN MONTHS OF PROV-REPTD DT-CONTAINING SHOT #4	Y	Y	Y	Y	Y	Y	Y	Y	
DTP5_AGE	AGE IN MONTHS OF PROV-REPTD DT-CONTAINING SHOT #5	Y	Y	Y	Y	Y	Y	Y	Y	
DTP6_AGE	AGE IN MONTHS OF PROV-REPTD DT-CONTAINING SHOT #6	Y	Y	Y	Y	Y	Y	Y	Y	
DTP7_AGE	AGE IN MONTHS OF PROV-REPTD DT-CONTAINING SHOT #7	Y	Y	Y	Y	Y	Y	Y	Y	
DTP8_AGE	AGE IN MONTHS OF PROV-REPTD DT-CONTAINING SHOT #8	Y	Y	Y	Y	Y	Y	Y	Y	
DTP9_AGE	AGE IN MONTHS OF PROV-REPTD DT-CONTAINING SHOT #9		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
DVRC1	AGE IN DAYS OF PROV-REPTD VARICELLA-CONTAINING SHOT #1	Y	Y	Y	Y	Y	Y	Y	Y	
DVRC2	AGE IN DAYS OF PROV-REPTD VARICELLA-CONTAINING SHOT #2	Y	Y	Y	Y	Y	Y	Y	Y	
DVRC3	AGE IN DAYS OF PROV-REPTD VARICELLA-CONTAINING SHOT #3	Y	Y	Y	Y	Y	Y	Y	Y	
DVRC4	AGE IN DAYS OF PROV-REPTD VARICELLA-CONTAINING SHOT #4	Y	Y	Y	Y	Y	Y	Y	Y	
DVRC5	AGE IN DAYS OF PROV-REPTD VARICELLA-CONTAINING SHOT #5		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
DVRC6	AGE IN DAYS OF PROV-REPTD VARICELLA-CONTAINING SHOT #6		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
DVRC7	AGE IN DAYS OF PROV-REPTD VARICELLA-CONTAINING SHOT #7		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
DVRC8	AGE IN DAYS OF PROV-REPTD VARICELLA-CONTAINING SHOT #8		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
DVRC9	AGE IN DAYS OF PROV-REPTD VARICELLA-CONTAINING SHOT #9		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
EDUC1	EDUCATION OF MOTHER CATEGORIES (RECODE)	Y	Y	Y	Y	Y	Y	Y	Y	
ENTRY2	CHILD LIVES IN STATE WITH HEPATITIS B STATE ENTRY LAW FOR DAY CARE/HEAD START (2001-2002 SCHOOL YEAR)	Y								Dropped starting in 2005.
ESTIAP	ESTIMATION IAP AREA OF RESIDENCE		Y							New estimation area variable starting in 2005. Replaced ITRUEIAP.
ESTIAP06	ESTIMATION IAP AREA OF RESIDENCE			Y						New starting 2006 because estimation areas were modified.
ESTIAP07	ESTIMATION AREA OF RESIDENCE				Y					New starting 2007 because estimation areas were modified.
ESTIAP08	ESTIMATION AREA OF RESIDENCE					Y				New starting 2008 because estimation areas were modified.
ESTIAP09	ESTIMATION AREA OF RESIDENCE						Y			New starting 2009 because estimation areas were modified.
ESTIAP10	ESTIMATION AREA OF RESIDENCE							Y	Y	New starting 2010 because estimation areas were modified.
FLU1_AGE	AGE IN MONTHS OF PROV-REPTD SEASONAL FLU-CONTAINING VACCINATION #1	Y	Y	Y	Y	Y	Y	Y	Y	
FLU2_AGE	AGE IN MONTHS OF PROV-REPTD SEASONAL FLU-CONTAINING VACCINATION #2	Y	Y	Y	Y	Y	Y	Y	Y	
FLU3_AGE	AGE IN MONTHS OF PROV-REPTD SEASONAL FLU-CONTAINING VACCINATION #3	Y	Y	Y	Y	Y	Y	Y	Y	
FLU4_AGE	AGE IN MONTHS OF PROV-REPTD SEASONAL FLU-CONTAINING VACCINATION #4	Y	Y	Y	Y	Y	Y	Y	Y	
FLU5_AGE	AGE IN MONTHS OF PROV-REPTD SEASONAL FLU-CONTAINING VACCINATION #5	Y	Y	Y	Y	Y	Y	Y	Y	

Table F.1 Alphabetical Listing of Variables that are in the 2004-2011 Public-Use Data Files[1]

Variable Name	Variable Label[2]	Year of Data Collection								Notes[3]
		2004	2005	2006	2007	2008	2009	2010	2011	
FLU6_AGE	AGE IN MONTHS OF PROV-REPTD SEASONAL FLU-CONTAINING VACCINATION #6	Y	Y	Y	Y	Y	Y	Y	Y	
FLU7_AGE	AGE IN MONTHS OF PROV-REPTD SEASONAL FLU-CONTAINING VACCINATION #7	Y	Y	Y	Y	Y	Y	Y	Y	
FLU8_AGE	AGE IN MONTHS OF PROV-REPTD SEASONAL FLU-CONTAINING VACCINATION #8	Y	Y	Y	Y	Y	Y	Y	Y	
FLU9_AGE	AGE IN MONTHS OF PROV-REPTD SEASONAL FLU-CONTAINING VACCINATION #9		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
FRSTBRN	FIRST BORN STATUS OF CHILD	Y	Y	Y	Y	Y	Y	Y	Y	
FUL2_MMR	HOUSEHOLD REPORT OF 1+ MMR AT ANY AGE	Y								Replaced by FULL_MMR starting in 2005.
FULL_CPO	HH REPORT OF 1+ VARICELLA-CONTAINING SHOT AT ANY AGE	Y	Y							Starting 2005, a code of 88 added for children with unknown UTD status. Dropped starting in 2006 because no longer possible to derive due to shortened Section B.
FULL_DTP	HH REPORT OF 4+ DT-CONTAINING SHOT	Y	Y							Starting 2005, a code of 88 added for children with unknown UTD status. Dropped starting in 2006 because no longer possible to derive due to shortened Section B.
FULL_HEP	HH REPORT OF 3+ HEPATITIS B-CONTAINING SHOTS	Y	Y							Starting 2005, a code of 88 added for children with unknown UTD status. Dropped starting in 2006 because no longer possible to derive due to shortened Section B.
FULL_HIB	HH REPORT OF 3+ HIB-CONTAINING SHOTS	Y	Y							Starting 2005, a code of 88 added for children with unknown UTD status. Dropped starting in 2006 because no longer possible to derive due to shortened Section B.
FULL_MMR	HH REPORT OF 1+ MEASLES-CONTAINING SHOT AT ANY AGE		Y							Replaced FUL2_MMR starting in 2005. A code of 88 added for children with unknown UTD status. Dropped starting in 2006 because no longer possible to derive due to shortened Section B.
FULL_POL	HH REPORT OF 3+ POLIO-CONTAINING SHOTS	Y	Y							Starting 2005, a code of 88 added for children with unknown UTD status. Dropped starting in 2006 because no longer possible to derive due to shortened Section B.
H1N1_AGE	AGE IN MONTHS OF PROV-REPTD MONOVALENT 2009 H1N1 FLU VACCINATION #1							Y	Y	Introduced in 2010.
H1N2_AGE	AGE IN MONTHS OF PROV-REPTD MONOVALENT 2009 H1N1 FLU VACCINATION #2							Y	Y	Introduced in 2010.
H1N3_AGE	AGE IN MONTHS OF PROV-REPTD MONOVALENT 2009 H1N1 FLU VACCINATION #3							Y	Y	Introduced in 2010.
H1N4_AGE	AGE IN MONTHS OF PROV-REPTD MONOVALENT 2009 H1N1 FLU VACCINATION #4							Y	Y	Introduced in 2010.
H1N5_AGE	AGE IN MONTHS OF PROV-REPTD MONOVALENT 2009 H1N1 FLU VACCINATION #5							Y	Y	Introduced in 2010.
H1N6_AGE	AGE IN MONTHS OF PROV-REPTD MONOVALENT 2009 H1N1 FLU VACCINATION #6							Y	Y	Introduced in 2010.
H1N7_AGE	AGE IN MONTHS OF PROV-REPTD MONOVALENT 2009 H1N1 FLU VACCINATION #7							Y	Y	Introduced in 2010.
H1N8_AGE	AGE IN MONTHS OF PROV-REPTD MONOVALENT 2009 H1N1 FLU VACCINATION #8							Y	Y	Introduced in 2010.
H1N9_AGE	AGE IN MONTHS OF PROV-REPTD MONOVALENT 2009 H1N1 FLU VACCINATION #9							Y	Y	Introduced in 2010.
HAD_CPOX	CHILD EVER HAD CHICKEN POX DISEASE?		Y	Y	Y	Y	Y	Y	Y	Replaces I_HADCPX starting in 2005. This version is not imputed.
HEA1_AGE	AGE IN MONTHS OF PROV-REPTD HEPATITIS A-CONTAINING SHOT #1	Y	Y	Y	Y	Y	Y	Y	Y	
HEA2_AGE	AGE IN MONTHS OF PROV-REPTD HEPATITIS A-CONTAINING SHOT #2	Y	Y	Y	Y	Y	Y	Y	Y	
HEA3_AGE	AGE IN MONTHS OF PROV-REPTD HEPATITIS A-CONTAINING SHOT #3	Y	Y	Y	Y	Y	Y	Y	Y	
HEA4_AGE	AGE IN MONTHS OF PROV-REPTD HEPATITIS A-CONTAINING SHOT #4	Y	Y	Y	Y	Y	Y	Y	Y	
HEA5_AGE	AGE IN MONTHS OF PROV-REPTD HEPATITIS A-CONTAINING SHOT #5	Y	Y	Y	Y	Y	Y	Y	Y	

Table F.1 Alphabetical Listing of Variables that are in the 2004-2011 Public-Use Data Files[1]

Variable Name	Variable Label[2]	Year of Data Collection								Notes[3]
		2004	2005	2006	2007	2008	2009	2010	2011	
HEA6_AGE	AGE IN MONTHS OF PROV-REPTD HEPATITIS A-CONTAINING SHOT #6	Y	Y	Y	Y	Y	Y	Y	Y	
HEA7_AGE	AGE IN MONTHS OF PROV-REPTD HEPATITIS A-CONTAINING SHOT #7	Y	Y	Y	Y	Y	Y	Y	Y	
HEA8_AGE	AGE IN MONTHS OF PROV-REPTD HEPATITIS A-CONTAINING SHOT #8	Y	Y	Y	Y	Y	Y	Y	Y	
HEA9_AGE	AGE IN MONTHS OF PROV-REPTD HEPATITIS A-CONTAINING SHOT #9		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
HEP_BRTH	HEPATITIS B-CONTAINING SHOT GIVEN AT BIRTH FLAG	Y	Y	Y	Y	Y	Y	Y	Y	
HEP_FLAG	HEPATITIS B BIRTH SHOT DATE IMPUTATION FLAG	Y	Y	Y	Y	Y	Y	Y	Y	
HEP1_AGE	AGE IN MONTHS OF PROV-REPTD HEPATITIS B-CONTAINING SHOT #1	Y	Y	Y	Y	Y	Y	Y	Y	
HEP2_AGE	AGE IN MONTHS OF PROV-REPTD HEPATITIS B-CONTAINING SHOT #2	Y	Y	Y	Y	Y	Y	Y	Y	
HEP3_AGE	AGE IN MONTHS OF PROV-REPTD HEPATITIS B-CONTAINING SHOT #3	Y	Y	Y	Y	Y	Y	Y	Y	
HEP4_AGE	AGE IN MONTHS OF PROV-REPTD HEPATITIS B-CONTAINING SHOT #4	Y	Y	Y	Y	Y	Y	Y	Y	
HEP5_AGE	AGE IN MONTHS OF PROV-REPTD HEPATITIS B-CONTAINING SHOT #5	Y	Y	Y	Y	Y	Y	Y	Y	
HEP6_AGE	AGE IN MONTHS OF PROV-REPTD HEPATITIS B-CONTAINING SHOT #6	Y	Y	Y	Y	Y	Y	Y	Y	
HEP7_AGE	AGE IN MONTHS OF PROV-REPTD HEPATITIS B-CONTAINING SHOT #7	Y	Y	Y	Y	Y	Y	Y	Y	
HEP8_AGE	AGE IN MONTHS OF PROV-REPTD HEPATITIS B-CONTAINING SHOT #8	Y	Y	Y	Y	Y	Y	Y	Y	
HEP9_AGE	AGE IN MONTHS OF PROV-REPTD HEPATITIS B-CONTAINING SHOT #9		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
HH_DTP	HH REPORT OF NUMBER OF DT-CONTAINING SHOTS RECEIVED			Y	Y	Y	Y	Y	Y	Added in 2006 as a partial replacement for the "FULL" and "C_" variables.
HH_FLU	**HH REPORT OF NUMBER OF SEASONAL FLU VACCINATIONS RECEIVED IN THE 12 MONTHS PRIOR TO INTERVIEW**				**Y**	**Y**		**Y**		**FLU questions added to the HH questionnaire starting in 2007. Dropped in 2009 due to mid-year questionnaire changes. Reinstated in 2010. Dropped again in 2011 due to mid-year questionnaire changes.**
HH_H1N	**HH REPORT OF NUMBER OF MONOVALENT 2009 H1N1 FLU VACCINATIONS RECEIVED IN THE 12 MONTHS PRIOR TO INTERVIEW**							**Y**		**H1N1 flu questions added to the HH questionnaire starting in 2009. Introduced in the PUF in 2010. Dropped in 2011 due to mid-year questionnaire changes.**
HH_HEPB	HH REPORT OF NUMBER OF HEPATITIS B-CONTAINING SHOTS RECEIVED			Y	Y	Y	Y	Y	Y	Added in 2006 as a partial replacement for the "FULL" and "C_" variables.
HH_HIB	HH REPORT OF NUMBER OF HIB-CONTAINING SHOTS RECEIVED			Y	Y	Y	Y	Y	Y	Added in 2006 as a partial replacement for the "FULL" and "C_" variables.
HH_MCV	HH REPORT OF NUMBER OF MEASLES-CONTAINING SHOTS RECEIVED			Y	Y	Y	Y	Y	Y	Added in 2006 as a partial replacement for the "FULL" and "C_" variables.
HH_POL	HH REPORT OF NUMBER OF POLIO-CONTAINING SHOTS RECEIVED			Y	Y	Y	Y	Y	Y	Added in 2006 as a partial replacement for the "FULL" and "C_" variables.
HH_VRC	HH REPORT OF NUMBER OF VARICELLA-CONTAINING SHOTS RECEIVED			Y	Y	Y	Y	Y	Y	Added in 2006 as a partial replacement for the "FULL" and "C_" variables.
HIB1_AGE	AGE IN MONTHS OF PROV-REPTD HIB-CONTAINING SHOT #1	Y	Y	Y	Y	Y	Y	Y	Y	
HIB2_AGE	AGE IN MONTHS OF PROV-REPTD HIB-CONTAINING SHOT #2	Y	Y	Y	Y	Y	Y	Y	Y	
HIB3_AGE	AGE IN MONTHS OF PROV-REPTD HIB-CONTAINING SHOT #3	Y	Y	Y	Y	Y	Y	Y	Y	
HIB4_AGE	AGE IN MONTHS OF PROV-REPTD HIB-CONTAINING SHOT #4	Y	Y	Y	Y	Y	Y	Y	Y	
HIB5_AGE	AGE IN MONTHS OF PROV-REPTD HIB-CONTAINING SHOT #5	Y	Y	Y	Y	Y	Y	Y	Y	

Table F.1 Alphabetical Listing of Variables that are in the 2004-2011 Public-Use Data Files[1]

Variable Name	Variable Label[2]	Year of Data Collection								Notes[3]
		2004	2005	2006	2007	2008	2009	2010	2011	
HIB6_AGE	AGE IN MONTHS OF PROV-REPTD HIB-CONTAINING SHOT #6	Y	Y	Y	Y	Y	Y	Y	Y	
HIB7_AGE	AGE IN MONTHS OF PROV-REPTD HIB-CONTAINING SHOT #7	Y	Y	Y	Y	Y	Y	Y	Y	
HIB8_AGE	AGE IN MONTHS OF PROV-REPTD HIB-CONTAINING SHOT #8	Y	Y	Y	Y	Y	Y	Y	Y	
HIB9_AGE	AGE IN MONTHS OF PROV-REPTD HIB-CONTAINING SHOT #9		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
HUTD4313	HOUSEHOLD REPORT OF 4:3:1:3 UTD (UP-TO-DATE)	Y								Dropped starting in 2005 because this variable is redundant with variable ALL4SHOT.
I_HADCPX	DID CHILD EVER HAVE CHICKEN POX?	Y								Replaced by HAD_CPOX starting in 2005.
I_HISP_K	HISPANIC ORIGIN OF CHILD	Y	Y	Y	Y	Y	Y	Y	Y	
IAGECPXR	AGE IN MONTHS WHEN CHILD HAD CHICKEN POX (RECODE)	Y								Replaced by AGECPOXR starting in 2005.
INCPORAR	INCOME TO POVERTY RATIO (RECODE)		Y	Y	Y	Y	Y	Y	Y	Replaces INCPORAT starting 2005. INCPORAT used categories whereas INCPORAR is continuous. INCPORAR has been top- and bottom-coded.
INCPORAT	INCOME TO POVERTY RATIO	Y								Replaced by INCPORAR starting in 2005.
INCPOV1	POVERTY STATUS		Y	Y	Y	Y	Y	Y	Y	Replaces INCPOV1R starting in 2005. INCPOV1R used two categores whereas INCPOV1 uses three.
INCPOV1R	POVERTY STATUS (RECODE)	Y								Replaced by INCPOV1 starting in 2005.
INCQ298A	FAMILY INCOME CATEGORIES (RECODE)		Y	Y	Y	Y	Y	Y	Y	Replaces INCQ298R starting in 2005. INCQ298A uses different categories than were used by INCQ298R.
INCQ298R	FAMILY INCOME CATEGORIES (RECODE)	Y								Replaced by INCQ298A starting in 2005.
INOPHONR	LENGTH OF INTERRUPTION IN TELEPHONE SERVICE IN DAYS (RECODE)	Y	Y	Y	Y	Y	Y			Removed in 2010 due to questionnaire change.
INS_1	IS CHILD COVERED BY HEALTH INSURANCE PROVIDED THROUGH EMPLOYER OR UNION?				Y	Y	Y	Y	Y	
INS_11	ANY TIME WHEN CHILD WAS NOT COVERED BY ANY HEALTH INSURANCE?				Y	Y	Y	Y	Y	
INS_2	IS CHILD COVERED BY ANY MEDICAID PLAN?				Y	Y	Y	Y	Y	
INS_3	IS CHILD COVERED BY S-CHIP?				Y	Y	Y	Y	Y	
INS_3A	IS CHILD COVERED BY ANY MEDICAID PLAN OR S-CHIP?				Y	Y	Y	Y	Y	
INS_4	IS CHILD COVERED BY INDIAN HEALTH SERVICE?				Y	Y				Replaced by INS_4_5 starting 2009.
INS_4_5	IS CHILD COVERED BY INDIAN HEALTH SERVICE, MILITARY HEALTH CARE, TRICARE, CHAMPUS, OR CHAMP-VA?						Y	Y	Y	Replaces INS_4 and INS_5 starting 2009.
INS_5	IS CHILD COVERED BY MILITARY HEALTH CARE, TRICARE, CHAMPUS, OR CHAMP-VA?				Y	Y				Replaced by INS_4_5 starting 2009.
INS_6	IS CHILD COVERED BY ANY OTHER HEALTH INSURANCE OR HEALTH CARE PLAN?				Y	Y	Y	Y	Y	
INTRP	PHONE INTERRUPTION OF 7 DAYS OR MORE IN PAST YEAR?	Y	Y	Y	Y	Y	Y	Y	Y	
ITRUEIAP	IAP AREA OF CURRENT RESIDENCE	Y								The new estimation area variable starting in 2005 is ESTIAP.
LANGUAGE	LANGUAGE IN WHICH INTERVIEW WAS CONDUCTED	Y	Y	Y	Y	Y	Y	Y	Y	
M_AGEGRP	AGE OF MOTHER CATEGORIES (RECODE)	Y	Y	Y	Y	Y	Y	Y	Y	
MARITAL	MARITAL STATUS OF MOTHER CATEGORIES (RECODE)	Y	Y	Y	Y	Y				Replaced by MARITAL2 starting 2009.
MARITAL2	MARITAL STATUS OF MOTHER (RECODE)						Y	Y	Y	Replaces MARITAL starting 2009.
MMR1_AGE	AGE IN MONTHS OF PROV-REPTD MEASLES-CONTAINING SHOT #1	Y	Y	Y	Y	Y	Y	Y	Y	
MMR2_AGE	AGE IN MONTHS OF PROV-REPTD MEASLES-CONTAINING SHOT #2	Y	Y	Y	Y	Y	Y	Y	Y	
MMR3_AGE	AGE IN MONTHS OF PROV-REPTD MEASLES-CONTAINING SHOT #3	Y	Y	Y	Y	Y	Y	Y	Y	
MMR4_AGE	AGE IN MONTHS OF PROV-REPTD MEASLES-CONTAINING SHOT #4	Y	Y	Y	Y	Y	Y	Y	Y	

Table F.1 Alphabetical Listing of Variables that are in the 2004-2011 Public-Use Data Files[1]

Variable Name	Variable Label[2]	Year of Data Collection								Notes[3]
		2004	2005	2006	2007	2008	2009	2010	2011	
MMR5_AGE	AGE IN MONTHS OF PROV-REPTD MEASLES-CONTAINING SHOT #5		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
MMR6_AGE	AGE IN MONTHS OF PROV-REPTD MEASLES-CONTAINING SHOT #6		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
MMR7_AGE	AGE IN MONTHS OF PROV-REPTD MEASLES-CONTAINING SHOT #7		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
MMR8_AGE	AGE IN MONTHS OF PROV-REPTD MEASLES-CONTAINING SHOT #8		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
MMR9_AGE	AGE IN MONTHS OF PROV-REPTD MEASLES-CONTAINING SHOT #9		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
MOBIL	GEOGRAPHIC MOBILITY STATUS: STATE OF RESIDENCE OF CHILD AT BIRTH VERSUS CURRENT STATE	Y								Replaced by MOBIL_I starting in 2005.
MOBIL_I	GEOGRAPHIC MOBILITY STATUS: STATE OF RESIDENCE OF CHILD AT BIRTH VERSUS CURRENT STATE		Y	Y	Y	Y	Y	Y	Y	Replaces MOBIL starting in 2005. This version is imputed.
MP1_AGE	AGE IN MONTHS OF PROV-REPTD MUMPS-ONLY SHOT #1	Y	Y	Y	Y	Y	Y	Y	Y	
MP2_AGE	AGE IN MONTHS OF PROV-REPTD MUMPS-ONLY SHOT #2	Y	Y	Y	Y	Y	Y	Y	Y	
MP3_AGE	AGE IN MONTHS OF PROV-REPTD MUMPS-ONLY SHOT #3	Y	Y	Y	Y	Y	Y	Y	Y	
MP4_AGE	AGE IN MONTHS OF PROV-REPTD MUMPS-ONLY SHOT #4	Y	Y	Y	Y	Y	Y	Y	Y	
MP5_AGE	AGE IN MONTHS OF PROV-REPTD MUMPS-ONLY SHOT #5		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
MP6_AGE	AGE IN MONTHS OF PROV-REPTD MUMPS-ONLY SHOT #6		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
MP7_AGE	AGE IN MONTHS OF PROV-REPTD MUMPS-ONLY SHOT #7		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
MP8_AGE	AGE IN MONTHS OF PROV-REPTD MUMPS-ONLY SHOT #8		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
MP9_AGE	AGE IN MONTHS OF PROV-REPTD MUMPS-ONLY SHOT #9		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
MPR1_AGE	AGE IN MONTHS OF PROV-REPTD (MUMPS/RUBELLA)-ONLY SHOT #1	Y	Y	Y	Y	Y	Y	Y	Y	
MPR2_AGE	AGE IN MONTHS OF PROV-REPTD (MUMPS/RUBELLA)-ONLY SHOT #2	Y	Y	Y	Y	Y	Y	Y	Y	
MPR3_AGE	AGE IN MONTHS OF PROV-REPTD (MUMPS/RUBELLA)-ONLY SHOT #3	Y	Y	Y	Y	Y	Y	Y	Y	
MPR4_AGE	AGE IN MONTHS OF PROV-REPTD (MUMPS/RUBELLA)-ONLY SHOT #4	Y	Y	Y	Y	Y	Y	Y	Y	
MPR5_AGE	AGE IN MONTHS OF PROV-REPTD (MUMPS/RUBELLA)-ONLY SHOT #5		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
MPR6_AGE	AGE IN MONTHS OF PROV-REPTD (MUMPS/RUBELLA)-ONLY SHOT #6		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
MPR7_AGE	AGE IN MONTHS OF PROV-REPTD (MUMPS/RUBELLA)-ONLY SHOT #7		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
MPR8_AGE	AGE IN MONTHS OF PROV-REPTD (MUMPS/RUBELLA)-ONLY SHOT #8		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
MPR9_AGE	AGE IN MONTHS OF PROV-REPTD (MUMPS/RUBELLA)-ONLY SHOT #9		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
N_PRVR	NUMBER OF PROVIDERS RESPONDING WITH VACCINATION DATA FOR CHILD (RECODE)	Y	Y	Y	Y	Y	Y	Y	Y	
NUM_CELLS _PARENTS	NUMBER OF WORKING CELL PHONES USUALLY USED BY PARENTS OR GUARDIANS						Y	Y	Y	
NUM_CELLS_HH	NUMBER OF WORKING CELL PHONES HOUSEHOLD MEMBERS HAVE AVAILABLE FOR PERSONAL USE						Y	Y	Y	

Table F.1 Alphabetical Listing of Variables that are in the 2004-2011 Public-Use Data Files[1]

Variable Name	Variable Label[2]	Year of Data Collection								Notes[3]
		2004	2005	2006	2007	2008	2009	2010	2011	
NUM_PHONE	NUMBER OF RESIDENTIAL TELEPHONE NUMBERS IN HOUSEHOLD (EXCLUDING CELL PHONES)						Y	Y	Y	
P_NUHEPX	NUMBER OF HEPATITIS B-ONLY SHOTS BY 36 MONTHS OF AGE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HH INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUHIBX	NUMBER OF HIB-ONLY SHOTS BY 36 MONTHS OF AGE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HH INTERVIEW DATE.			Y	Y	Y	Y	Y	Y	
P_NUHPHB	NUMBER OF HEPATITIS B/HIB COMBO SHOTS BY 36 MONTHS OF AGE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HH INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUM1L	NUMBER OF MONOVALENT 2009 H1N1 FLU VACCINATIONS OF UNKNOWN TYPE BY 36 MONTHS OF AGE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HH INTERVIEW DATE.							Y	Y	Introduced in 2010.
P_NUM1M	NUMBER OF MONOVALENT 2009 H1N1 FLU SPRAY VACCINATIONS BY 36 MONTHS OF AGE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HH INTERVIEW DATE.							Y	Y	Introduced in 2010.
P_NUM1N	NUMBER OF INJECTED MONOVALENT 2009 H1N1 FLU VACCINATIONS BY 36 MONTHS OF AGE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HH INTERVIEW DATE.							Y	Y	Introduced in 2010.
P_NUMDAH	NUMBER OF DTAP/HIB COMBO SHOTS BY 36 MONTHS OF AGE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HH INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMDHB	NUMBER OF DTP/HIB CONTAINING SHOTS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HH INTERVIEW DATE.	Y	Y	Y	Y	Y				Dropped in 2009 due to change to IHQ shotgrid.
P_NUMDHI	NUMBER OF DTAP/HEPB/IPV COMBO SHOTS BY 36 MONTHS OF AGE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HH INTERVIEW DATE.			Y	Y	Y	Y	Y	Y	
P_NUMDHM	NUMBER OF DTP/HIB COMBO SHOTS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HH INTERVIEW DATE.	Y	Y	Y	Y	Y				Dropped in 2009 due to change to IHQ shotgrid.
P_NUMDIH	NUMBER OF DTAP/IPV/HIB COMBO SHOTS BY 36 MONTHS OF AGE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE.						Y	Y	Y	Added in 2009 due to change to IHQ shotgrid.
P_NUMDTA	NUMBER OF DTAP-ONLY SHOTS BY 36 MONTHS OF AGE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HH INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMDTM	NUMBER OF DT-ONLY SHOTS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HH INTERVIEW DATE.	Y	Y	Y	Y	Y				Dropped in 2009 due to change to IHQ shotgrid.
P_NUMDTP	NUMBER OF DT-CONTAINING SHOTS BY 36 MONTHS OF AGE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HH INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	

Table F.1 Alphabetical Listing of Variables that are in the 2004-2011 Public-Use Data Files[1]

Variable Name	Variable Label[2]	Year of Data Collection								Notes[3]
		2004	2005	2006	2007	2008	2009	2010	2011	
P_NUMFLU	NUMBER OF SEASONAL FLU-CONTAINING VACCINATIONS BY 36 MONTHS OF AGE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HH INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMFLUL	NUMBER OF SEASONAL FLU-CONTAINING VACCINATIONS OF UNKNOWN TYPE BY 36 MONTHS OF AGE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HH INTERVIEW DATE.					Y	Y	Y	Y	Starting in 2008, influenza type boxes were added to the IHQ shot grid.
P_NUMFLUM	NUMBER OF SEASONAL FLU SPRAY VACCINATIONS BY 36 MONTHS OF AGE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HH INTERVIEW DATE.					Y	Y	Y	Y	Starting in 2008, influenza type boxes were added to the IHQ shot grid.
P_NUMFLUN	NUMBER OF INJECTED SEASONAL FLU VACCINATIONS BY 36 MONTHS OF AGE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HH INTERVIEW DATE.					Y	Y	Y	Y	Starting in 2008, influenza type boxes were added to the IHQ shot grid.
P_NUMH1N	NUMBER OF MONOVALENT 2009 H1N1 FLU VACCINATIONS BY 36 MONTHS OF AGE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HH INTERVIEW DATE.							Y	Y	Introduced in 2010.
P_NUMH2	NUMBER OF HIB-SANOFI or HIB-GLAXOSMITHKLINE SHOTS BY 36 MONTHS OF AGE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE.						Y			Added in 2009 due to change to IHQ shotgrid. Replaced in 2010 by P_NUMHG and P_NUMHS.
P_NUMHEA	NUMBER OF HEPATITIS A-CONTAINING SHOTS BY 36 MONTHS OF AGE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HH INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMHEN	NUMBER OF HEPATITIS B-CONTAINING SHOTS OF UNKNOWN TYPE BY 36 MONTHS OF AGE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HH INTERVIEW DATE.			Y	Y	Y	Y	Y	Y	
P_NUMHEP	NUMBER OF HEPATITIS B-CONTAINING SHOTS BY 36 MONTHS OF AGE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HH INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMHG	NUMBER OF HIB-GLAXOSMITHKLINE SHOTS BY 36 MONTHS OF AGE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE.							Y	Y	Introduced in 2010.
P_NUMHIB	NUMBER OF HIB-CONTAINING SHOTS BY 36 MONTHS OF AGE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HH INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMHIN	NUMBER OF HIB-CONTAINING SHOTS OF UNKNOWN TYPE BY 36 MONTHS OF AGE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HH INTERVIEW DATE.			Y	Y	Y	Y	Y	Y	
P_NUMHION	NUMBER OF HIB-ONLY SHOTS OF UNKNOWN TYPE BY 36 MONTHS OF AGE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE.						Y	Y	Y	Added in 2009 due to change to IHQ shotgrid.
P_NUMHM	NUMBER OF HIB-MERCK SHOTS BY 36 MONTHS OF AGE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE.						Y	Y	Y	Added in 2009 due to change to IHQ shotgrid.

Table F.1 Alphabetical Listing of Variables that are in the 2004-2011 Public-Use Data Files[1]

Variable Name	Variable Label[2]	Year of Data Collection								Notes[3]
		2004	2005	2006	2007	2008	2009	2010	2011	
P_NUMHS	NUMBER OF HIB-SANOFI SHOTS BY 36 MONTHS OF AGE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE.							Y	Y	Introduced in 2010.
P_NUMIPV	NUMBER OF IPV-ONLY SHOTS BY 36 MONTHS OF AGE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HH INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMMCN	NUMBER OF MEASLES-CONTAINING SHOTS OF UNKNOWN TYPE BY 36 MONTHS OF AGE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HH INTERVIEW DATE.			Y	Y	Y	Y	Y	Y	
P_NUMMMR	NUMBER OF MEASLES-CONTAINING SHOTS BY 36 MONTHS OF AGE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HH INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMMMRX	NUMBER OF MMR-ONLY SHOTS BY 36 MONTHS OF AGE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HH INTERVIEW DATE.			Y	Y	Y	Y	Y	Y	
P_NUMMMX	NUMBER OF MMR-CONTAINING SHOTS BY 36 MONTHS OF AGE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HH INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMMP	NUMBER OF MUMPS-ONLY SHOTS BY 36 MONTHS OF AGE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HH INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMMPR	NUMBER OF (MUMPS/RUBELLA)-ONLY SHOTS BY 36 MONTHS OF AGE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HH INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMMRV	NUMBER OF MMR/VARICELLA COMBO SHOTS BY 36 MONTHS OF AGE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HH INTERVIEW DATE.			Y	Y	Y	Y	Y	Y	
P_NUMMS	NUMBER OF MEASLES-ONLY SHOTS BY 36 MONTHS OF AGE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HH INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMMSM	NUMBER OF MEASLES/MUMPS COMBO SHOTS BY 36 MONTHS OF AGE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HH INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMMSR	NUMBER OF MEASLES/RUBELLA COMBO SHOTS BY 36 MONTHS OF AGE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HH INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMOLN	NUMBER OF POLIO SHOTS OF UNKNOWN TYPE BY 36 MONTHS OF AGE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HH INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMOPV	NUMBER OF OPV-ONLY SHOTS BY 36 MONTHS OF AGE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HH INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMPCC	NUMBER OF PCV CONJUGATE SHOTS BY 36 MONTHS OF AGE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HH INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	

Table F.1 Alphabetical Listing of Variables that are in the 2004-2011 Public-Use Data Files[1]

Variable Name	Variable Label[2]	Year of Data Collection								Notes[3]
		2004	2005	2006	2007	2008	2009	2010	2011	
P_NUMPCC13	NUMBER OF PNEUMOCOCCAL CONJUGATE-13 SHOTS BY 36 MONTHS OF AGE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE.							Y	Y	Introduced in 2010.
P_NUMPCC7	NUMBER OF PNEUMOCOCCAL CONJUGATE-7 SHOTS BY 36 MONTHS OF AGE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE.							Y	Y	Introduced in 2010.
P_NUMPCCN	NUMBER OF PNEUMOCOCCAL CONJUGATE SHOTS OF UNKNOWN TYPE BY 36 MONTHS OF AGE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE.							Y	Y	Introduced in 2010.
P_NUMPCN	NUMBER OF PCV SHOTS OF UNKNOWN TYPE BY 36 MONTHS OF AGE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HH INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMPCP	NUMBER OF PCV POLYSACCHARIDE SHOTS BY 36 MONTHS OF AGE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HH INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMPCV	NUMBER OF PNEUMOCOCCAL-CONTAINING SHOTS BY 36 MONTHS OF AGE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HH INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMPOL	NUMBER OF POLIO-CONTAINING SHOTS BY 36 MONTHS OF AGE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HH INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMRB	NUMBER OF RUBELLA-ONLY SHOTS BY 36 MONTHS OF AGE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HH INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMRG	NUMBER OF ROTARIX-GSK SHOTS BY 36 MONTHS OF AGE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE.						Y	Y	Y	Starting in 2009, rotavirus type boxes were added to the IHQ shot grid.
P_NUMRM	NUMBER OF ROTATEQ-MERCK SHOTS BY 36 MONTHS OF AGE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE.						Y	Y	Y	Starting in 2009, rotavirus type boxes were added to the IHQ shot grid.
P_NUMRO	NUMBER OF ROTAVIRUS SHOTS OF UNKNOWN TYPE BY 36 MONTHS OF AGE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE.						Y	Y	Y	Starting in 2009, rotavirus type boxes were added to the IHQ shot grid.
P_NUMROT	NUMBER OF ROTAVIRUS-CONTAINING SHOTS BY 36 MONTHS OF AGE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HH INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMTPM	NUMBER OF DTP-ONLY SHOTS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HH INTERVIEW DATE.	Y	Y	Y	Y	Y				Dropped in 2009 due to change to IHQ shotgrid.
P_NUMTPN	NUMBER OF DT-CONTAINING SHOTS OF UNKNOWN TYPE BY 36 MONTHS OF AGE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HH INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	

Table F.1 Alphabetical Listing of Variables that are in the 2004-2011 Public-Use Data Files[1]

Variable Name	Variable Label[2]	Year of Data Collection								Notes[3]
		2004	2005	2006	2007	2008	2009	2010	2011	
P_NUMVRC	NUMBER OF VARICELLA-CONTAINING SHOTS BY 36 MONTHS OF AGE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HH INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMVRN	NUMBER OF VARICELLA-CONTAINING SHOTS OF UNKNOWN TYPE BY 36 MONTHS OF AGE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HH INTERVIEW DATE.			Y	Y	Y	Y	Y	Y	
P_NUMVRX	NUMBER OF VARICELLA-ONLY SHOTS BY 36 MONTHS OF AGE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE HH INTERVIEW DATE.			Y	Y	Y	Y	Y	Y	
P_U12VRC	UTD (UP-TO-DATE) FLAG FOR PROVIDER 1+ VARICELLA-CONTAINING SHOT AT 12+ MONTHS, BY 36 MONTHS OF AGE	Y	Y	Y	Y	Y	Y	Y	Y	
P_UTD331	UTD (UP-TO-DATE) FLAG FOR PROVIDER 3:3:1 BY 36 MONTHS OF AGE, EXCLUDING ANY VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	
P_UTD431	UTD (UP-TO-DATE) FLAG FOR PROVIDER 4:3:1 BY 36 MONTHS OF AGE, EXCLUDING ANY VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	
P_UTD431H_ROUT_S	UTD (UP-TO-DATE) FLAG FOR PROVIDER 4:3:1:3 BY 36 MONTHS OF AGE, USING THE ROUTINE, STRICT DEFINITION OF HIB UTD, EXCLUDING ANY VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE.						Y	Y	Y	Added in 2009 due to new Hib vaccination recommendations.
P_UTD431H3_ROUT_S	UTD (UP-TO-DATE) FLAG FOR PROVIDER 4:3:1:3:3 BY 36 MONTHS OF AGE, USING THE ROUTINE, STRICT DEFINITION OF HIB UTD, EXCLUDING ANY VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE.						Y	Y	Y	Added in 2009 due to new Hib vaccination recommendations.
P_UTD431H31_ROUT_S	UTD (UP-TO-DATE) FLAG FOR PROVIDER 4:3:1:3:3:1 BY 36 MONTHS OF AGE (INCLUDES 1+ VARICELLA-CONTAINING AT AGE 12+ MTHS) USING THE ROUTINE, STRICT DEFINITION OF HIB UTD, EXCLUDING ANY VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE.						Y	Y	Y	Added in 2009 due to new Hib vaccination recommendations.
P_UTD431H313_ROUT_S	UTD (UP-TO-DATE) FLAG FOR PROVIDER 4:3:1:3:3:1:3 BY 36 MONTHS OF AGE (INCLUDES 1+ VARICELLA-CONTAINING AT AGE 12+ MTHS) USING THE ROUTINE, STRICT DEFINITION OF HIB UTD, EXCLUDING ANY VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE.						Y	Y	Y	Added in 2009 due to new Hib vaccination recommendations.
P_UTD431H314_ROUT_S	UTD (UP-TO-DATE) FLAG FOR PROVIDER 4:3:1:3:3:1:4 BY 36 MONTHS OF AGE (INCLUDES 1+ VARICELLA-CONTAINING AT AGE 12+ MTHS) USING THE ROUTINE, STRICT DEFINITION OF HIB UTD, EXCLUDING ANY VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE.						Y	Y	Y	Added in 2009 due to new Hib vaccination recommendations.
P_UTDFL1	UTD FLAG FOR PROVIDER SEASONAL INFLUENZA VARIABLE 1 BY 36 MONTHS OF AGE, EXCLUDING ANY VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	
P_UTDFL2	UTD FLAG FOR PROVIDER SEASONAL INFLUENZA VARIABLE 2 BY 36 MONTHS OF AGE, EXCLUDING ANY VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	

Table F.1 Alphabetical Listing of Variables that are in the 2004-2011 Public-Use Data Files[1]

Variable Name	Variable Label[2]	Year of Data Collection								Notes[3]
		2004	2005	2006	2007	2008	2009	2010	2011	
P_UTDFL3	UTD FLAG FOR PROVIDER SEASONAL INFLUENZA VARIABLE 3 BY 36 MONTHS OF AGE, EXCLUDING ANY VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE.				Y	Y	Y	Y	Y	
P_UTDH1N_1	UTD (UP-TO-DATE) FLAG FOR PROVIDER 1+ MONOVALENT 2009 H1N1 FLU VACCINATION BY 36 MONTHS OF AGE, EXCLUDING ANY VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE AND EXCLUDING VACCINATIONS GIVEN PRIOR TO 10/5/2009.							Y	Y	Introduced in 2010.
P_UTDH1N_2	UTD (UP-TO-DATE) FLAG FOR PROVIDER 2+ MONOVALENT 2009 H1N1 FLU VACCINATIONS BY 36 MONTHS OF AGE, EXCLUDING ANY VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE AND EXCLUDING VACCINATIONS GIVEN PRIOR TO 10/5/2009.							Y	Y	Introduced in 2010.
P_UTDHEP	UTD (UP-TO-DATE) FLAG FOR PROVIDER 3+ HEPATITIS B-CONTAINING SHOTS BY 36 MONTHS OF AGE, EXCLUDING ANY VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	
P_UTDHEPA1	**UTD (UP-TO-DATE) FLAG FOR PROVIDER 1+ HEPATITIS A-CONTAINING SHOTS BY 36 MONTHS OF AGE, EXCLUDING ANY VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE.**								**Y**	**Added 2011.**
P_UTDHEPA2	UTD (UP-TO-DATE) FLAG FOR PROVIDER 2+ HEPATITIS A-CONTAINING SHOTS BY 36 MONTHS OF AGE, EXCLUDING ANY VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE.							Y	Y	Introduced in 2010.
P_UTDHIB	UTD (UP-TO-DATE) FLAG FOR PROVIDER 3+ HIB-CONTAINING SHOTS BY 36 MONTHS OF AGE, EXCLUDING ANY VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	
P_UTDHIB_ROUT_S	UTD (UP-TO-DATE) FLAG FOR PROVIDER 3+ HIB DOSES BY 36 MONTHS OF AGE, BASED ON THE ROUTINE (NON-SHORTAGE) HIB RECOMMENDATIONS AND A STRICT TREATMENT OF HIB SHOTS OF UNKNOWN TYPE, EXCLUDING ANY VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE.						Y	Y	Y	Added in 2009 due to new Hib vaccination recommendations.
P_UTDHIB_SHORT_S	UTD (UP-TO-DATE) FLAG FOR PROVIDER 3+ HIB DOSES BY 36 MONTHS OF AGE, BASED ON THE HIB SHORTAGE RECOMMENDATIONS AND A STRICT TREATMENT OF HIB SHOTS OF UNKNOWN TYPE, EXCLUDING ANY VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE.						Y	Y	Y	Added in 2009 due to new Hib vaccination recommendations.
P_UTDMCV	UTD (UP-TO-DATE) FLAG FOR PROVIDER 1+ MEASLES-CONTAINING SHOT BY 36 MONTHS OF AGE, EXCLUDING ANY VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	
P_UTDMMX	UTD FLAG FOR PROVIDER 1+ MMR COMBO SHOT BY 36 MONTHS OF AGE, EXCLUDING ANY VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	
P_UTDPC3	UTD (UP-TO-DATE) FLAG FOR PROVIDER 3+ PNEUMOCOCCAL-CONTAINING SHOTS BY 36 MONTHS OF AGE, EXCLUDING ANY VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	

Table F.1 Alphabetical Listing of Variables that are in the 2004-2011 Public-Use Data Files[1]

Variable Name	Variable Label[2]	Year of Data Collection								Notes[3]
		2004	2005	2006	2007	2008	2009	2010	2011	
P_UTDPCV	UTD (UP-TO-DATE) FLAG FOR PROVIDER 4+ PNEUMOCOCCAL-CONTAINING SHOTS BY 36 MONTHS OF AGE, EXCLUDING ANY VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	
P_UTDPCVB13	UTD (UP-TO-DATE) INDICATOR FOR PROVIDER 1+ PNEUMOCOCCAL VACCINATIONS OF TYPE CONJUGATE 13, GIVEN 4+ DOSES OF TYPE CONJUGATE 7, BY 36 MONTHS OF AGE, EXCLUDING ANY VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE.							Y	Y	Introduced in 2010.
P_UTDPOL	UTD (UP-TO-DATE) FLAG FOR PROVIDER 3+ POLIO-CONTAINING SHOTS BY 36 MONTHS OF AGE, EXCLUDING ANY VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	
P_UTDROT_S	UTD (UP-TO-DATE) FLAG FOR PROVIDER 3+ ROTAVIRUS DOSES BY 36 MONTHS OF AGE, BASED ON A STRICT TREATMENT OF ROTAVIRUS VACCINATIONS OF UNKNOWN TYPE, EXCLUDING ANY VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE.						Y	Y	Y	
P_UTDTP3	UTD (UP-TO-DATE) FLAG FOR PROVIDER 3+ DT-CONTAINING SHOTS BY 36 MONTHS OF AGE, EXCLUDING ANY VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	
P_UTDTP4	UTD (UP-TO-DATE) FLAG FOR PROVIDER 4+ DT-CONTAINING SHOTS BY 36 MONTHS OF AGE, EXCLUDING ANY VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	
PCV1_AGE	AGE IN MONTHS OF PROV-REPTD PNEUMOCOCCAL-CONTAINING SHOT #1	Y	Y	Y	Y	Y	Y	Y	Y	
PCV2_AGE	AGE IN MONTHS OF PROV-REPTD PNEUMOCOCCAL-CONTAINING SHOT #2	Y	Y	Y	Y	Y	Y	Y	Y	
PCV3_AGE	AGE IN MONTHS OF PROV-REPTD PNEUMOCOCCAL-CONTAINING SHOT #3	Y	Y	Y	Y	Y	Y	Y	Y	
PCV4_AGE	AGE IN MONTHS OF PROV-REPTD PNEUMOCOCCAL-CONTAINING SHOT #4	Y	Y	Y	Y	Y	Y	Y	Y	
PCV5_AGE	AGE IN MONTHS OF PROV-REPTD PNEUMOCOCCAL-CONTAINING SHOT #5	Y	Y	Y	Y	Y	Y	Y	Y	
PCV6_AGE	AGE IN MONTHS OF PROV-REPTD PNEUMOCOCCAL-CONTAINING SHOT #6	Y	Y	Y	Y	Y	Y	Y	Y	
PCV7_AGE	AGE IN MONTHS OF PROV-REPTD PNEUMOCOCCAL-CONTAINING SHOT #7	Y	Y	Y	Y	Y	Y	Y	Y	
PCV8_AGE	AGE IN MONTHS OF PROV-REPTD PNEUMOCOCCAL-CONTAINING SHOT #8	Y	Y	Y	Y	Y	Y	Y	Y	
PCV9_AGE	AGE IN MONTHS OF PROV-REPTD PNEUMOCOCCAL-CONTAINING SHOT #9		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
PDAT	CHILD HAS ADEQUATE PROVIDER DATA	Y	Y	Y	Y	Y	Y	Y	Y	
POL1_AGE	AGE IN MONTHS OF PROV-REPTD POLIO-CONTAINING SHOT #1	Y	Y	Y	Y	Y	Y	Y	Y	
POL2_AGE	AGE IN MONTHS OF PROV-REPTD POLIO-CONTAINING SHOT #2	Y	Y	Y	Y	Y	Y	Y	Y	
POL3_AGE	AGE IN MONTHS OF PROV-REPTD POLIO-CONTAINING SHOT #3	Y	Y	Y	Y	Y	Y	Y	Y	
POL4_AGE	AGE IN MONTHS OF PROV-REPTD POLIO-CONTAINING SHOT #4	Y	Y	Y	Y	Y	Y	Y	Y	
POL5_AGE	AGE IN MONTHS OF PROV-REPTD POLIO-CONTAINING SHOT #5	Y	Y	Y	Y	Y	Y	Y	Y	

Table F.1 Alphabetical Listing of Variables that are in the 2004-2011 Public-Use Data Files[1]

Variable Name	Variable Label[2]	Year of Data Collection								Notes[3]
		2004	2005	2006	2007	2008	2009	2010	2011	
POL6_AGE	AGE IN MONTHS OF PROV-REPTD POLIO-CONTAINING SHOT #6	Y	Y	Y	Y	Y	Y	Y	Y	
POL7_AGE	AGE IN MONTHS OF PROV-REPTD POLIO-CONTAINING SHOT #7	Y	Y	Y	Y	Y	Y	Y	Y	
POL8_AGE	AGE IN MONTHS OF PROV-REPTD POLIO-CONTAINING SHOT #8	Y	Y	Y	Y	Y	Y	Y	Y	
POL9_AGE	AGE IN MONTHS OF PROV-REPTD POLIO-CONTAINING SHOT #9		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
PROV_FAC	PROVIDER FACILITY TYPES	Y	Y	Y	Y	Y	Y	Y	Y	
PROVWT	**WEIGHT FOR CHILDREN WITH ADEQUATE PROVIDER DATA AND UNVACCINATED CHILDREN (EXCLUDING U.S. VIRGIN ISLANDS)**		**Y**	**Y**	**Y**	**Y**	**Y**	**Y**		**Removed in 2011 due to additional of dual-frame weights. Replaced by PROVWT_LL.**
PROVWT_D	**DUAL-FRAME WEIGHT FOR CHILDREN WITH ADEQUATE PROVIDER DATA AND UNVACCINATED CHILDREN**								**Y**	**Added 2011.**
PROVWT_LL	**LANDLINE-FRAME WEIGHT FOR CHILDREN WITH ADEQUATE PROVIDER DATA AND UNVACCINATED CHILDREN (EXCLUDING U.S. VIRGIN ISLANDS)**								**Y**	**Added 2011.**
PROVWTVI	**WEIGHT FOR CHILDREN WITH ADEQUATE PROVIDER DATA AND UNVACCINATED CHILDREN (INCLUDING U.S. VIRGIN ISLANDS)**						**Y**	**Y**		**Removed in 2011 due to additional of dual-frame weights. Replaced by PROVWTVI_LL.**
PROVWTVI_LL	**LANDLINE-FRAME WEIGHT FOR CHILDREN WITH ADEQUATE PROVIDER DATA AND UNVACCINATED CHILDREN (INCLUDING U.S. VIRGIN ISLANDS)**								**Y**	**Added 2011.**
PU431_31	UTD FLAG FOR PROVIDER 4:3:1::3:1 (4:3:1:3:3:1 EXCLUDING HIB; INCLUDES 1+ VARICELLA AT AGE 12+ MTHS) BY 36 MONTHS OF AGE, EXCLUDING ANY VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE.							Y	Y	Introduced in 2010.
PU431_314	UTD FLAG FOR PROVIDER 4:3:1::3:1:4 (4:3:1:3:3:1:4 EXCLUDING HIB; INCLUDES 1+ VARICELLA AT AGE 12+ MTHS) BY 36 MONTHS OF AGE, EXCLUDING ANY VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE.							Y	Y	Introduced in 2010.
PU431331	UTD FLAG FOR PROVIDER 4:3:1:3:3:1 (INCLUDES 1+ VARICELLA AT AGE 12+ MTHS) BY 36 MONTHS OF AGE, EXCLUDING ANY VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	
PU4313313	UTD FLAG FOR PROVIDER 4:3:1:3:3:1:3 (INCLUDES 1+ VARICELLA AT AGE 12+ MTHS) BY 36 MONTHS OF AGE, EXCLUDING ANY VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE.				Y	Y	Y	Y	Y	
PU4313314	UTD FLAG FOR PROVIDER 4:3:1:3:3:1:4 (INCLUDES 1+ VARICELLA AT AGE 12+ MTHS) BY 36 MONTHS OF AGE, EXCLUDING ANY VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE.				Y	Y	Y	Y	Y	
PUT43133	UTD FLAG FOR PROVIDER 4:3:1:3:3 BY 36 MONTHS OF AGE, EXCLUDING ANY VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	
PUTD4313	UTD FLAG FOR PROVIDER 4:3:1:3 BY 36 MONTHS OF AGE, EXCLUDING ANY VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	
Q5WEB1	INTEREST IN IHQ ON WEBSITE PROVIDER #1	Y								Question was not asked starting in 2005.
Q5WEB2	INTEREST IN IHQ ON WEBSITE PROVIDER #2	Y								Question was not asked starting in 2005.
Q5WEB3	INTEREST IN IHQ ON WEBSITE PROVIDER #3	Y								Question was not asked starting in 2005.
Q5WEB4	INTEREST IN IHQ ON WEBSITE PROVIDER #4	Y								Question was not asked starting in 2005.
Q5WEB5	INTEREST IN IHQ ON WEBSITE PROVIDER #5	Y								Question was not asked starting in 2005.
RACE_K	RACE OF CHILD (RECODE)	Y	Y	Y	Y	Y	Y	Y	Y	

Table F.1 Alphabetical Listing of Variables that are in the 2004-2011 Public-Use Data Files[1]

Variable Name	Variable Label[2]	Year of Data Collection								Notes[3]
		2004	2005	2006	2007	2008	2009	2010	2011	
RACEETHK	RACE/ETHNICITY OF CHILD (RECODE)	Y	Y	Y	Y	Y	Y	Y	Y	
RB1_AGE	AGE IN MONTHS OF PROV-REPTD RUBELLA-ONLY SHOT #1	Y	Y	Y	Y	Y	Y	Y	Y	
RB2_AGE	AGE IN MONTHS OF PROV-REPTD RUBELLA-ONLY SHOT #2	Y	Y	Y	Y	Y	Y	Y	Y	
RB3_AGE	AGE IN MONTHS OF PROV-REPTD RUBELLA-ONLY SHOT #3	Y	Y	Y	Y	Y	Y	Y	Y	
RB4_AGE	AGE IN MONTHS OF PROV-REPTD RUBELLA-ONLY SHOT #4	Y	Y	Y	Y	Y	Y	Y	Y	
RB5_AGE	AGE IN MONTHS OF PROV-REPTD RUBELLA-ONLY SHOT #5	Y	Y	Y	Y	Y	Y	Y	Y	
RB6_AGE	AGE IN MONTHS OF PROV-REPTD RUBELLA-ONLY SHOT #6	Y	Y	Y	Y	Y	Y	Y	Y	
RB7_AGE	AGE IN MONTHS OF PROV-REPTD RUBELLA-ONLY SHOT #7	Y	Y	Y	Y	Y	Y	Y	Y	
RB8_AGE	AGE IN MONTHS OF PROV-REPTD RUBELLA-ONLY SHOT #8	Y	Y	Y	Y	Y	Y	Y	Y	
RB9_AGE	AGE IN MONTHS OF PROV-REPTD RUBELLA-ONLY SHOT #9		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
RDDWT	**HH-PHASE CHILD INTERVIEW WEIGHT (EXCLUDING U.S. VIRGIN ISLANDS)**		**Y**	**Y**	**Y**	**Y**	**Y**	**Y**		**Removed in 2011 due to additional of dual-frame weights. Replaced by RDDWT_LL.**
RDDWT_D	**DUAL-FRAME HH-PHASE CHILD INTERIVEW WEIGHT**								**Y**	**Added 2011.**
RDDWT_LL	**LANDLINE-FRAME HH-PHASE CHILD INTERIVEW WEIGHT (EXCLUDING U.S. VIRGIN ISLANDS)**								**Y**	**Added 2011.**
RDDWTVI	**HH-PHASE CHILD INTERVIEW WEIGHT (INCLUDING U.S. VIRGIN ISLANDS)**						**Y**	**Y**		**Removed in 2011 due to additional of dual-frame weights. Replaced by RDDWTVI_LL.**
RDDWTVI_LL	**LANDLINE-FRAME HH-PHASE CHILD INTERIVEW WEIGHT (INCLUDING U.S. VIRGIN ISLANDS)**								**Y**	**Added 2011.**
REGISTRY	CHILD'S PROVIDERS REPORTED CHILD'S VACCINATIONS TO IMMUNIZATION REGISTRY	Y	Y	Y	Y	Y	Y	Y	Y	
RENT_OWN	IS HOME OWNED/BEING BOUGHT, RENTED, OR OCCUPIED BY SOME OTHER ARRANGEMENT?						Y	Y	Y	
ROT1_AGE	AGE IN MONTHS OF PROV-REPTD ROTAVIRUS-CONTAINING SHOT #1	Y	Y	Y	Y	Y	Y	Y	Y	
ROT2_AGE	AGE IN MONTHS OF PROV-REPTD ROTAVIRUS-CONTAINING SHOT #2	Y	Y	Y	Y	Y	Y	Y	Y	
ROT3_AGE	AGE IN MONTHS OF PROV-REPTD ROTAVIRUS-CONTAINING SHOT #3	Y	Y	Y	Y	Y	Y	Y	Y	
ROT4_AGE	AGE IN MONTHS OF PROV-REPTD ROTAVIRUS-CONTAINING SHOT #4	Y	Y	Y	Y	Y	Y	Y	Y	
ROT5_AGE	AGE IN MONTHS OF PROV-REPTD ROTAVIRUS-CONTAINING SHOT #5	Y	Y	Y	Y	Y	Y	Y	Y	
ROT6_AGE	AGE IN MONTHS OF PROV-REPTD ROTAVIRUS-CONTAINING SHOT #6	Y	Y	Y	Y	Y	Y	Y	Y	
ROT7_AGE	AGE IN MONTHS OF PROV-REPTD ROTAVIRUS-CONTAINING SHOT #7	Y	Y	Y	Y	Y	Y	Y	Y	
ROT8_AGE	AGE IN MONTHS OF PROV-REPTD ROTAVIRUS-CONTAINING SHOT #8	Y	Y	Y	Y	Y	Y	Y	Y	
ROT9_AGE	AGE IN MONTHS OF PROV-REPTD ROTAVIRUS-CONTAINING SHOT #9		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
SC_431	HH SHOT CARD REPORT OF 4:3:1 UP-TO-DATE			Y	Y	Y	Y	Y	Y	Added in 2006 as a partial replacement for the "FULL" and "C_" variables.
SC_4313	HH SHOT CARD REPORT OF 4:3:1:3 UP-TO-DATE			Y	Y	Y	Y	Y	Y	Added in 2006 as a partial replacement for the "FULL" and "C_" variables.
SC_43133	HH SHOT CARD REPORT OF 4:3:1:3:3 UP-TO-DATE			Y	Y	Y	Y	Y	Y	Added in 2006 as a partial replacement for the "FULL" and "C_" variables.
SC_DTP	HH SHOT CARD REPORT OF 4+ DT-CONTAINING UP-TO-DATE			Y	Y	Y	Y	Y	Y	Added in 2006 as a partial replacement for the "FULL" and "C_" variables.
SC_HEPB	HH SHOT CARD REPORT OF 3+ HEPATITIS B-CONTAINING UP-TO-DATE			Y	Y	Y	Y	Y	Y	Added in 2006 as a partial replacement for the "FULL" and "C_" variables.

Table F.1 Alphabetical Listing of Variables that are in the 2004-2011 Public-Use Data Files[1]

Variable Name	Variable Label[2]	Year of Data Collection								Notes[3]
		2004	2005	2006	2007	2008	2009	2010	2011	
SC_HIB	HH SHOT CARD REPORT OF 3+ HIB-CONTAINING UP-TO-DATE			Y	Y	Y	Y	Y	Y	Added in 2006 as a partial replacement for the "FULL" and "C_" variables.
SC_MCV	HH SHOT CARD REPORT OF 1+ MEASLES-CONTAINING UP-TO-DATE			Y	Y	Y	Y	Y	Y	Added in 2006 as a partial replacement for the "FULL" and "C_" variables.
SC_POL	HH SHOT CARD REPORT OF 3+ POLIO-CONTAINING UP-TO-DATE			Y	Y	Y	Y	Y	Y	Added in 2006 as a partial replacement for the "FULL" and "C_" variables.
SC_VRC	HH SHOT CARD REPORT OF 1+ VARICELLA-CONTAINING UP-TO-DATE			Y	Y	Y	Y	Y	Y	Added in 2006 as a partial replacement for the "FULL" and "C_" variables.
SEQNUMC	UNIQUE CHILD IDENTIFIER	Y	Y	Y	Y	Y	Y	Y	Y	
SEQNUMHH	UNIQUE HOUSEHOLD IDENTIFIER	Y	Y	Y	Y	Y	Y	Y	Y	
SEX	GENDER OF CHILD	Y	Y	Y	Y	Y	Y	Y	Y	
SHORT	Q1/2004 SHORT QUESTIONNAIRE EXPERIMENT FLAG	Y								There was no short questionnaire experiment in 2005.
SHOTCARD	SHOT CARD USE FLAG	Y	Y	Y	Y	Y	Y	Y	Y	
STATE	TRUE STATE OF RESIDENCE (STATE FIPS CODE)	Y	Y	Y	Y	Y	Y	Y	Y	
STRATUM_D	**STRATUM VARIABLE FOR DUAL-FRAME VARIANCE ESTIMATION**								**Y**	**Added 2011. Equal to sample frame by estimation area.**
TEL_SAMPFRAME	**SAMPLE FRAME INDICATOR**								**Y**	**Added 2011.**
U1D_HEP	**BIRTH DOSE HEPATITIS B-CONTAINING GIVEN FROM BIRTH TO DAY 1 FLAG**								**Y**	**Added 2011.**
U2D_HEP	**BIRTH DOSE HEPATITIS B-CONTAINING GIVEN FROM BIRTH TO DAY 2 FLAG**								**Y**	**Added 2011.**
U3D_HEP	**BIRTH DOSE HEPATITIS B-CONTAINING GIVEN FROM BIRTH TO DAY 3 FLAG**								**Y**	**Added 2011.**
VFC_I	DERIVED: IS TEEN VFC ELIGIBLE?						Y	Y	Y	
VFC_ORDER	DO CHILD'S PROVIDERS ORDER VACCINES FROM STATE/LOCAL HEALTH DEPT?			Y	Y	Y	Y	Y	Y	
VFC_PRO	PARTICIPATION OF CHILD'S PROVIDERS IN VACCINES FOR CHILDREN PROGRAM	Y	Y							Question was not asked starting in 2006.
VRC1_AGE	AGE IN MONTHS OF PROV-REPTD VARICELLA-CONTAINING SHOT #1	Y	Y	Y	Y	Y	Y	Y	Y	
VRC2_AGE	AGE IN MONTHS OF PROV-REPTD VARICELLA-CONTAINING SHOT #2	Y	Y	Y	Y	Y	Y	Y	Y	
VRC3_AGE	AGE IN MONTHS OF PROV-REPTD VARICELLA-CONTAINING SHOT #3	Y	Y	Y	Y	Y	Y	Y	Y	
VRC4_AGE	AGE IN MONTHS OF PROV-REPTD VARICELLA-CONTAINING SHOT #4	Y	Y	Y	Y	Y	Y	Y	Y	
VRC5_AGE	AGE IN MONTHS OF PROV-REPTD VARICELLA-CONTAINING SHOT #5		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
VRC6_AGE	AGE IN MONTHS OF PROV-REPTD VARICELLA-CONTAINING SHOT #6		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
VRC7_AGE	AGE IN MONTHS OF PROV-REPTD VARICELLA-CONTAINING SHOT #7		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
VRC8_AGE	AGE IN MONTHS OF PROV-REPTD VARICELLA-CONTAINING SHOT #8		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
VRC9_AGE	AGE IN MONTHS OF PROV-REPTD VARICELLA-CONTAINING SHOT #9		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
WGT	NEW WEIGHT FOR CHILDREN WITH ADEQUATE PROVIDER DATA AND UNVACCINATED CHILDREN	Y								Replaced by PROVWT starting in 2005.
WGT_RDD	RDD CHILD INTERVIEW WEIGHT	Y								Replaced by RDDWT starting in 2005.
XDTPTY1	DT-CONTAINING VACCINATION #1 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	
XDTPTY2	DT-CONTAINING VACCINATION #2 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	
XDTPTY3	DT-CONTAINING VACCINATION #3 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	
XDTPTY4	DT-CONTAINING VACCINATION #4 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	
XDTPTY5	DT-CONTAINING VACCINATION #5 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	
XDTPTY6	DT-CONTAINING VACCINATION #6 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	
XDTPTY7	DT-CONTAINING VACCINATION #7 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	
XDTPTY8	DT-CONTAINING VACCINATION #8 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	
XDTPTY9	DT-CONTAINING VACCINATION #9 TYPE CODE		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.

Table F.1 Alphabetical Listing of Variables that are in the 2004-2011 Public-Use Data Files[1]

Variable Name	Variable Label[2]	Year of Data Collection								Notes[3]
		2004	2005	2006	2007	2008	2009	2010	2011	
XFLUTY1	SEASONAL FLU-CONTAINING VACCINATION #1 TYPE CODE					Y	Y	Y	Y	Starting in 2008, influenza type boxes were added to the IHQ shot grid.
XFLUTY2	SEASONAL FLU-CONTAINING VACCINATION #2 TYPE CODE					Y	Y	Y	Y	Starting in 2008, influenza type boxes were added to the IHQ shot grid.
XFLUTY3	SEASONAL FLU-CONTAINING VACCINATION #3 TYPE CODE					Y	Y	Y	Y	Starting in 2008, influenza type boxes were added to the IHQ shot grid.
XFLUTY4	SEASONAL FLU-CONTAINING VACCINATION #4 TYPE CODE					Y	Y	Y	Y	Starting in 2008, influenza type boxes were added to the IHQ shot grid.
XFLUTY5	SEASONAL FLU-CONTAINING VACCINATION #5 TYPE CODE					Y	Y	Y	Y	Starting in 2008, influenza type boxes were added to the IHQ shot grid.
XFLUTY6	SEASONAL FLU-CONTAINING VACCINATION #6 TYPE CODE					Y	Y	Y	Y	Starting in 2008, influenza type boxes were added to the IHQ shot grid.
XFLUTY7	SEASONAL FLU-CONTAINING VACCINATION #7 TYPE CODE					Y	Y	Y	Y	Starting in 2008, influenza type boxes were added to the IHQ shot grid.
XFLUTY8	SEASONAL FLU-CONTAINING VACCINATION #8 TYPE CODE					Y	Y	Y	Y	Starting in 2008, influenza type boxes were added to the IHQ shot grid.
XFLUTY9	SEASONAL FLU-CONTAINING VACCINATION #9 TYPE CODE					Y	Y	Y	Y	Starting in 2008, influenza type boxes were added to the IHQ shot grid.
XH1NTY1	MONOVALENT 2009 H1N1 FLU VACCINATION #1 TYPE CODE							Y	Y	Introduced in 2010.
XH1NTY2	MONOVALENT 2009 H1N1 FLU VACCINATION #2 TYPE CODE							Y	Y	Introduced in 2010.
XH1NTY3	MONOVALENT 2009 H1N1 FLU VACCINATION #3 TYPE CODE							Y	Y	Introduced in 2010.
XH1NTY4	MONOVALENT 2009 H1N1 FLU VACCINATION #4 TYPE CODE							Y	Y	Introduced in 2010.
XH1NTY5	MONOVALENT 2009 H1N1 FLU VACCINATION #5 TYPE CODE							Y	Y	Introduced in 2010.
XH1NTY6	MONOVALENT 2009 H1N1 FLU VACCINATION #6 TYPE CODE							Y	Y	Introduced in 2010.
XH1NTY7	MONOVALENT 2009 H1N1 FLU VACCINATION #7 TYPE CODE							Y	Y	Introduced in 2010.
XH1NTY8	MONOVALENT 2009 H1N1 FLU VACCINATION #8 TYPE CODE							Y	Y	Introduced in 2010.
XH1NTY9	MONOVALENT 2009 H1N1 FLU VACCINATION #9 TYPE CODE							Y	Y	Introduced in 2010.
XHEPTY1	HEPATITIS B-CONTAINING VACCINATION #1 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	
XHEPTY2	HEPATITIS B-CONTAINING VACCINATION #2 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	
XHEPTY3	HEPATITIS B-CONTAINING VACCINATION #3 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	
XHEPTY4	HEPATITIS B-CONTAINING VACCINATION #4 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	
XHEPTY5	HEPATITIS B-CONTAINING VACCINATION #5 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	
XHEPTY6	HEPATITIS B-CONTAINING VACCINATION #6 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	
XHEPTY7	HEPATITIS B-CONTAINING VACCINATION #7 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	
XHEPTY8	HEPATITIS B-CONTAINING VACCINATION #8 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	
XHEPTY9	HEPATITIS B-CONTAINING VACCINATION #9 TYPE CODE		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
XHIBTY1	HIB-CONTAINING VACCINATION #1 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	
XHIBTY2	HIB-CONTAINING VACCINATION #2 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	
XHIBTY3	HIB-CONTAINING VACCINATION #3 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	
XHIBTY4	HIB-CONTAINING VACCINATION #4 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	

Table F.1 Alphabetical Listing of Variables that are in the 2004-2011 Public-Use Data Files[1]

Variable Name	Variable Label[2]	Year of Data Collection								Notes[3]
		2004	2005	2006	2007	2008	2009	2010	2011	
XHIBTY5	HIB-CONTAINING VACCINATION #5 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	
XHIBTY6	HIB-CONTAINING VACCINATION #6 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	
XHIBTY7	HIB-CONTAINING VACCINATION #7 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	
XHIBTY8	HIB-CONTAINING VACCINATION #8 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	
XHIBTY9	HIB-CONTAINING VACCINATION #9 TYPE CODE		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
XMMRTY1	MEASLES-CONTAINING VACCINATION #1 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	
XMMRTY2	MEASLES-CONTAINING VACCINATION #2 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	
XMMRTY3	MEASLES-CONTAINING VACCINATION #3 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	
XMMRTY4	MEASLES-CONTAINING VACCINATION #4 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	
XMMRTY5	MEASLES-CONTAINING VACCINATION #5 TYPE CODE		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
XMMRTY6	MEASLES-CONTAINING VACCINATION #6 TYPE CODE		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
XMMRTY7	MEASLES-CONTAINING VACCINATION #7 TYPE CODE		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
XMMRTY8	MEASLES-CONTAINING VACCINATION #8 TYPE CODE		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
XMMRTY9	MEASLES-CONTAINING VACCINATION #9 TYPE CODE		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
XPCVTY1	PNEUMOCOCCAL-CONTAINING VACCINATION #1 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	
XPCVTY2	PNEUMOCOCCAL-CONTAINING VACCINATION #2 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	
XPCVTY3	PNEUMOCOCCAL-CONTAINING VACCINATION #3 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	
XPCVTY4	PNEUMOCOCCAL-CONTAINING VACCINATION #4 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	
XPCVTY5	PNEUMOCOCCAL-CONTAINING VACCINATION #5 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	
XPCVTY6	PNEUMOCOCCAL-CONTAINING VACCINATION #6 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	
XPCVTY7	PNEUMOCOCCAL-CONTAINING VACCINATION #7 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	
XPCVTY8	PNEUMOCOCCAL-CONTAINING VACCINATION #8 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	
XPCVTY9	PNEUMOCOCCAL-CONTAINING VACCINATION #9 TYPE CODE		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
XPOLTY1	POLIO-CONTAINING VACCINATION #1 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	
XPOLTY2	POLIO-CONTAINING VACCINATION #2 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	
XPOLTY3	POLIO-CONTAINING VACCINATION #3 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	
XPOLTY4	POLIO-CONTAINING VACCINATION #4 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	
XPOLTY5	POLIO-CONTAINING VACCINATION #5 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	
XPOLTY6	POLIO-CONTAINING VACCINATION #6 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	
XPOLTY7	POLIO-CONTAINING VACCINATION #7 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	
XPOLTY8	POLIO-CONTAINING VACCINATION #8 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	
XPOLTY9	POLIO-CONTAINING VACCINATION #9 TYPE CODE		Y	Y	Y	Y	Y	Y	Y	Starting in 2005, nine shot variables are included for each vaccine category.
XROTTY1	ROTAVIRUS-CONTAINING VACCINATION #1 TYPE CODE						Y	Y	Y	Rotavirus vaccination types were added to the IHQ starting 2009.
XROTTY2	ROTAVIRUS-CONTAINING VACCINATION #2 TYPE CODE						Y	Y	Y	Rotavirus vaccination types were added to the IHQ starting 2009.
XROTTY3	ROTAVIRUS-CONTAINING VACCINATION #3 TYPE CODE						Y	Y	Y	Rotavirus vaccination types were added to the IHQ starting 2009.
XROTTY4	ROTAVIRUS-CONTAINING VACCINATION #4 TYPE CODE						Y	Y	Y	Rotavirus vaccination types were added to the IHQ starting 2009.
XROTTY5	ROTAVIRUS-CONTAINING VACCINATION #5 TYPE CODE						Y	Y	Y	Rotavirus vaccination types were added to the IHQ starting 2009.
XROTTY6	ROTAVIRUS-CONTAINING VACCINATION #6 TYPE CODE						Y	Y	Y	Rotavirus vaccination types were added to the IHQ starting 2009.
XROTTY7	ROTAVIRUS-CONTAINING VACCINATION #7 TYPE CODE						Y	Y	Y	Rotavirus vaccination types were added to the IHQ starting 2009.
XROTTY8	ROTAVIRUS-CONTAINING VACCINATION #8 TYPE CODE						Y	Y	Y	Rotavirus vaccination types were added to the IHQ starting 2009.

Table F.1 Alphabetical Listing of Variables that are in the 2004-2011 Public-Use Data Files[1]

Variable Name	Variable Label[2]	Year of Data Collection								Notes[3]
		2004	2005	2006	2007	2008	2009	2010	2011	
XROTTY9	ROTAVIRUS-CONTAINING VACCINATION #9 TYPE CODE						Y	Y	Y	Rotavirus vaccination types were added to the IHQ starting 2009.
XVRCTY1	VARICELLA-CONTAINING VACCINATION #1 TYPE CODE			Y	Y	Y	Y	Y	Y	Varicella vaccination types were added to the IHQ starting 2006.
XVRCTY2	VARICELLA-CONTAINING VACCINATION #2 TYPE CODE			Y	Y	Y	Y	Y	Y	Varicella vaccination types were added to the IHQ starting 2006.
XVRCTY3	VARICELLA-CONTAINING VACCINATION #3 TYPE CODE			Y	Y	Y	Y	Y	Y	Varicella vaccination types were added to the IHQ starting 2006.
XVRCTY4	VARICELLA-CONTAINING VACCINATION #4 TYPE CODE			Y	Y	Y	Y	Y	Y	Varicella vaccination types were added to the IHQ starting 2006.
XVRCTY5	VARICELLA-CONTAINING VACCINATION #5 TYPE CODE			Y	Y	Y	Y	Y	Y	Varicella vaccination types were added to the IHQ starting 2006.
XVRCTY6	VARICELLA-CONTAINING VACCINATION #6 TYPE CODE			Y	Y	Y	Y	Y	Y	Varicella vaccination types were added to the IHQ starting 2006.
XVRCTY7	VARICELLA-CONTAINING VACCINATION #7 TYPE CODE			Y	Y	Y	Y	Y	Y	Varicella vaccination types were added to the IHQ starting 2006.
XVRCTY8	VARICELLA-CONTAINING VACCINATION #8 TYPE CODE			Y	Y	Y	Y	Y	Y	Varicella vaccination types were added to the IHQ starting 2006.
XVRCTY9	VARICELLA-CONTAINING VACCINATION #9 TYPE CODE			Y	Y	Y	Y	Y	Y	Varicella vaccination types were added to the IHQ starting 2006.
YEAR	YEAR OF INTERVIEW	Y	Y	Y	Y	Y	Y	Y	Y	

1 For a list of variables that appeared in one or more (but not all) public use files from 1995-2004, see "Alphabetical Listing of Variables that are Not Available in All Public-Use Data Files, National Immunization Survey, 1995-2004": www.cdc.gov/nchs/data/nis/pufvariables1995to2004.pdf

2 If the variable appeared in the 2011 public use file, then the 2011 label is given; otherwise the label from the most recent public use file in which the variable appeared is given.

3 Starting in 2005, a code of 77 is used for "Don't Know" responses and a code of 99 is used for "Refused" responses.

Appendix G

Summary Tables

Table G.1: Estimated Population Totals and Sample Sizes of Children 19-35 Months of Age by State and Estimation Area, National Immunization Survey, 2011

State/Estimation Area	ESTIAP11	Estimated Population Total of Children	Number of Children with Complete Household Interviews	Number of Children with Adequate Provider Data	Percent of Children with Adequate Provider Data
Total U.S.[1]		5,993,201	26,741	19,144	71.6
Alabama	20	90,063	539	399	74.0
Alaska	74	12,463	397	278	70.0
Arizona	66	135,912	424	279	65.8
Arkansas	46	56,899	460	322	70.0
California		766,808	599	407	67.9
Colorado	60	100,618	564	403	71.5
Connecticut	1	58,563	557	386	69.3
Delaware	13	16,984	457	326	71.3
District of Columbia	12	10,113	535	369	69.0
Florida	22	321,764	503	346	68.8
Georgia	25	206,821	482	359	74.5
Hawaii	72	27,044	430	296	68.8
Idaho	75	35,170	363	282	77.7
Illinois					
IL-City of Chicago	35	63,316	579	411	71.0
IL-Rest of State	34	180,911	507	351	69.2
Indiana	36	126,343	519	382	73.6
Iowa	56	58,405	411	313	76.2
Kansas	57	59,803	483	359	74.3
Kentucky	27	80,570	386	281	72.8
Louisiana	47	92,684	480	307	64.0
Maine	4	19,055	380	294	77.4
Maryland					
MD-Prince George's County	103	17,951	455	312	68.6
MD-Rest of State	14	92,952	506	345	68.2
Massachusetts	2	109,138	427	295	69.1
Michigan	38	166,313	525	386	73.5
Mississippi	28	102,650	370	278	75.1
Missouri	58	17,599	431	328	76.1
Minnesota	40	63,205	416	292	70.2
Montana	61	113,279	536	397	74.1
Nebraska	59	38,926	356	276	77.5
Nevada	73	57,495	405	306	75.6
New Hampshire	5	19,814	331	244	73.7
New Jersey	8	162,451	551	372	67.5
New Mexico	49	42,427	439	332	75.6
New York					
NY-City of New York	11	172,766	511	312	61.1
NY-Rest of State	10	175,122	408	274	67.2

Table G.1: Estimated Population Totals and Sample Sizes of Children 19-35 Months of Age by State and Estimation Area, National Immunization Survey, 2011

State/Estimation Area	ESTIAP11	Estimated Population Total of Children	Number of Children with Complete Household Interviews	Number of Children with Adequate Provider Data	Percent of Children with Adequate Provider Data
North Carolina	29	188,399	412	287	69.7
North Dakota	62	12,874	316	247	78.2
Ohio	41	208,269	394	284	72.1
Oklahoma	50	79,358	440	303	68.9
Oregon	76	68,339	401	296	73.8
Pennsylvania					
PA-Philadelphia County	17	34,113	408	290	71.1
PA-Rest of State	16	178,857	520	381	73.3
Rhode Island	6	17,343	485	367	75.7
South Carolina	30	89,396	368	269	73.1
South Dakota	63	16,741	346	254	73.4
Tennessee	31	121,578	411	297	72.3
Texas					
TX-Bexar County	55	39,701	537	350	65.2
TX-City of Houston	54	73,408	426	314	73.7
TX-Dallas County	52	62,309	489	320	65.4
TX-El Paso County	53	20,951	357	270	75.6
TX-Rest of State	51	394,828	602	429	71.3
Utah	64	77,311	442	353	79.9
Vermont	7	8,492	393	276	70.2
Virginia	18	152,773	596	394	66.1
Washington		132,649	384	295	76.8
West Virginia	19	29,061	501	373	74.5
Wisconsin	44	102,461	403	307	76.2
Wyoming	65	11,595	388	289	74.5
U.S. Virgin Islands[2]	95	2,446	564	390	69.1

[1]'Total U.S.' excludes the U.S. Virgin Islands.

[2] Landline-frame only. There was no cell-phone sample in the U.S. Virgin Islands.

Table G.2: Estimated Population Totals and Sample Sizes for Age Group by Maternal Education, National Immunization Survey, 2011[1]

Age Group in Months	Maternal Education	Children with Completed Household Interviews		Children with Adequate Provider Data	
		Unweighted Completes	Weighted Completes[2]	Unweighted Completes	Weighted Completes[3]
19-23	<12 Years	800	344,576	591	363,513
19-23	12 Years	1,392	504,397	982	478,491
19-23	>12, Non College Graduate	1,985	372,406	1,419	379,904
19-23	College Grad	3,523	551,947	2,518	551,417
24-29	<12 Years	884	391,896	659	388,526
24-29	12 Years	1,424	565,664	1,028	567,816
24-29	>12, Non College Graduate	2,260	460,376	1,612	467,051
24-29	College Grad	3,909	631,437	2,812	625,981
30-35	<12 Years	1,038	437,847	769	433,888
30-35	12 Years	1,860	623,173	1,314	635,244
30-35	>12, Non College Graduate	2,716	448,849	1,907	446,556
30-35	College Grad	4,950	660,633	3,533	654,813
Total		26,741	5,993,201	19,144	5,993,201

[1] Excludes the U.S. Virgin Islands.
[2] Weighted by RDDWT_D.
[3] Weighted by PROVWT_D.

Table G.3: Estimated Population Totals and Sample Sizes for Age Group by Poverty Status, National Immunization Survey, 2011[1]

Age Group in Months	Poverty Status	Children with Completed Household Interviews		Children with Adequate Provider Data	
		Unweighted Completes	Weighted Completes[2]	Unweighted Completes	Weighted Completes[3]
19-23 Months	Above poverty, > $75K	2,738	395,224	2,021	403,897
19-23 Months	Above poverty, <= $75K	2,848	626,821	2,021	622,806
19-23 Months	Below poverty	1,702	625,875	1,287	628,161
19-23 Months	Unknown	412	125,406	181	118,462
24-29 Months	Above poverty, > $75K	3,156	477,527	2,327	471,496
24-29 Months	Above poverty, <= $75K	3,009	705,435	2,164	725,227
24-29 Months	Below poverty	1,878	735,621	1,403	746,307
24-29 Months	Unknown	434	130,792	217	106,343
30-35 Months	Above poverty, > $75K	4,020	514,783	2,977	514,981
30-35 Months	Above poverty, <= $75K	3,821	763,952	2,700	771,438
30-35 Months	Below poverty	2,210	759,213	1,616	756,719
30-35 Months	Unknown	513	132,554	230	127,364
Total		26,741	5,993,201	19,144	5,993,201

[1] Excludes the U.S. Virgin Islands.
[2] Weighted by RDDWT_D.
[3] Weighted by PROVWT_D.

Table G.4: Estimated Population Totals and Sample Sizes for Race/Ethnicity by Poverty Status, National Immunization Survey, 2011[1]

Race/Ethnicity[2]	Poverty Status	Children with Completed Household Interviews		Children with Adequate Provider Data	
		Unweighted Completes	Weighted Completes[3]	Unweighted Completes	Weighted Completes[4]
Hispanic	Above poverty, > $75K	833	160,459	601	161,983
Hispanic	Above poverty, <= $75K	1,487	477,277	1,040	491,700
Hispanic	Below poverty	2,010	891,931	1,518	858,679
Hispanic	Unknown	293	143,354	164	158,208
Non-Hispanic White Only	Above poverty, > $75K	7,345	968,442	5,553	963,342
Non-Hispanic White Only	Above poverty, <= $75K	6,226	1,138,414	4,535	1,149,312
Non-Hispanic White Only	Below poverty	1,915	612,645	1,443	654,511
Non-Hispanic White Only	Unknown	706	152,428	288	104,377
Non-Hispanic Black Only	Above poverty, > $75K	622	82,630	386	79,117
Non-Hispanic Black Only	Above poverty, <= $75K	946	260,979	617	259,806
Non-Hispanic Black Only	Below poverty	1,138	407,315	799	398,425
Non-Hispanic Black Only	Unknown	216	50,264	105	50,876
Non-Hispanic Other & Multi-Racial	Above poverty, > $75K	1,114	176,003	785	185,933
Non-Hispanic Other & Multi-Racial	Above poverty, <= $75K	1,019	219,538	693	218,653
Non-Hispanic Other & Multi-Racial	Below poverty	727	208,817	546	219,573
Non-Hispanic Other & Multi-Racial	Unknown	144	42,704	71	38,707
Total		26,741	5,993,201	19,144	5,993,201

[1] Excludes the U.S. Virgin Islands.
[2] Race/Ethnicity is self-reported and mutually exclusive.
[3] Weighted by RDDWT_D.
[4] Weighted by PROVWT_D.

Table G.5: Estimated Population Totals and Sample Sizes for Age Group by Race/Ethnicity, National Immunization Survey, 2011[1]

Age Group in Months	Race/Ethnicity of Child[2]	Children with Completed Household Interviews		Children with Adequate Provider Data	
		Unweighted Completes	Weighted Completes[3]	Unweighted Completes	Weighted Completes[4]
19-23 Months	Hispanic	1,316	516,938	937	508,901
19-23 Months	Non-Hispanic White Only	4,662	841,940	3,398	834,664
19-23 Months	Non-Hispanic Black Only	836	215,330	553	220,409
19-23 Months	Non-Hispanic Other & Multi-Racial	886	199,117	622	209,352
24-29 Months	Hispanic	1,444	535,178	1,061	539,228
24-29 Months	Non-Hispanic White Only	5,119	993,850	3,755	988,716
24-29 Months	Non-Hispanic Black Only	988	305,673	652	303,685
24-29 Months	Non-Hispanic Other & Multi-Racial	926	214,672	643	217,745
30-35 Months	Hispanic	1,863	620,904	1,325	622,441
30-35 Months	Non-Hispanic White Only	6,411	1,036,139	4,666	1,048,162
30-35 Months	Non-Hispanic Black Only	1,098	280,185	702	264,129
30-35 Months	Non-Hispanic Other & Multi-Racial	1,192	233,274	830	235,769
Total		26,741	5,993,201	19,144	5,993,201

[1] Excludes the U.S. Virgin Islands.
[2] Race/Ethnicity is self-reported and mutually exclusive.
[3] Weighted by RDDWT_D.
[4] Weighted by PROVWT_D.

Table G.6: Estimated Population Totals and Sample Sizes for Age Group by Gender, National Immunization Survey, 2011[1]

Age Group in Months	Gender	Children with Completed Household Interviews		Children with Adequate Provider Data	
		Unweighted Completes	Weighted Completes[2]	Unweighted Completes	Weighted Completes[3]
19-23 Months	Male	3,938	895,775	2,812	876,384
19-23 Months	Female	3,759	877,054	2,698	896,942
24-29 Months	Male	4,394	1,072,005	3,179	1,087,050
24-29 Months	Female	4,076	977,017	2,930	962,223
30-35 Months	Male	5,425	1,098,183	3,823	1,102,911
30-35 Months	Female	5,130	1,070,400	3,696	1,066,813
Total		26,741	5,993,201	19,144	5,993,201

[1] Excludes the U.S. Virgin Islands.
[2] Weighted by RDDWT_D.
[3] Weighted by PROVWT_D.

Table G.7: Sample Sizes for Shot Card Use by Presence of Adequate Provider Data, National Immunization Survey, 2011[1]

Shot Card Use	Presence of Adequate Provider Data	Unweighted RDD Completes	Percent	Weighted RDD Completes[2]	Percent
Shot card	Adequate provider data	5,801	21.7	1,234,546	20.6
Shot card	Non-adequate provider data	1,297	4.9	292,511	4.9
Not shot card	Adequate provider data	13,343	49.9	2,978,569	49.7
Not shot card	Non-adequate provider data	6,300	23.6	1,487,574	24.8
Total		26,741	100.0	5,993,201	100.0

[1] Excludes the U.S. Virgin Islands.
[1] Weighted by RDDWT_D.

Table G.8: Estimated Vaccination Coverage* with Individual Vaccines and Selected Vaccination Series
Among Children 19-35 Months of Age by State and Local Area
US, National Immunization Survey,Q1/2011-Q4/2011[†]

	3+DTaP[ǂ]	4+DTaP[ǂ]	3+Polio[§]	1+MMR[ǁ]	3+Hib[¶]	Hib-PS**	Hib-FS[††]	3+HepB[‡‡]	Hep B Birth dose[§§]	1+Var[ǁǁ]	3+PCV[¶¶]	4+PCV***	1+HepA[ƒ]	2+HepA[†††]	Rotavirus[‡‡‡]	4:3:1[§§§]	4:3:1:3[ǁǁǁ]	(4:3:1:2*)[¶¶¶]	(4:3:1:3*)****	4:3:1:3:3:1[ς]	4:3:1:-:3:1[ς]	4:3:1:2*:3:1[ςς]	4:3:1:3*:3:1[ςς]	4:3:1:3:3:1:4[ςςς]	4:3:1:-:3:1:4[ςςς]	4:3:1:2*:3:1:4[ςςςς]	4:3:1:3*:3:1:4[ςςςς]
US National	95.5±0.5	84.6±1.0	93.9±0.6	91.6±0.8	94.0±0.6	94.2±0.6	80.4±1.1	91.1±0.7	68.6±1.3	90.8±0.7	93.6±0.6	84.4±1.0	81.2±1.0	52.2±1.4	67.3±1.3	82.6±1.0	81.9±1.0	81.9±1.0	75.4±1.2	77.0±1.1	77.6±1.1	77.0±1.1	71.0±1.2	73.3±1.2	73.6±1.2	73.3±1.2	68.5±1.3
Alabama	97.1±1.8	87.5±4.7	96.2±2.0	94.0±2.9	96.4±2.1	96.4±2.1	79.6±5.6	91.2±3.5	75.3±5.8	94.2±2.8	96.4±2.0	85.2±5.1	84.8±4.3	53.7±6.5	75.5±5.7	85.8±4.8	84.8±4.9	84.8±4.9	75.9±5.8	79.2±5.3	79.5±5.3	79.2±5.3	71.0±6.0	72.9±5.9	73.3±5.9	72.9±5.9	68.8±6.1
Alaska	93.7±3.5	77.4±6.4	93.3±3.5	90.8±3.9	89.7±4.4	92.1±4.0	83.8±5.3	93.3±3.5	63.9±7.1	87.2±4.5	90.9±4.1	78.2±6.0	85.0±4.9	48.9±7.6	55.6±7.5	76.9±6.4	75.5±6.6	75.5±6.6	71.3±6.9	73.2±6.7	74.5±6.6	73.2±6.7	69.0±7.0	67.7±7.1	69.0±7.0	67.7±7.1	64.7±7.3
Arizona	95.9±2.5	86.0±6.0	93.8±2.9	86.7±6.7	93.7±3.6	94.4±3.3	82.4±6.8	87.0±6.0	71.2±8.2	87.9±5.9	93.1±3.6	83.3±6.4	87.5±5.8	51.2±9.1	64.6±8.7	79.9±7.3	78.8±7.5	78.8±7.5	74.6±8.0	68.1±8.7	69.2±8.6	68.1±8.7	64.2±8.9	64.0±8.9	65.1±8.8	64.0±8.9	60.4±9.0
Arkansas	95.5±2.5	84.5±5.5	95.8±2.3	93.7±3.2	92.9±4.0	92.9±4.0	77.0±6.3	90.0±4.3	81.9±6.9	93.0±3.4	91.7±4.8	79.1±6.4	63.0±7.6	33.2±7.2	62.1±7.5	82.6±5.8	82.2±5.8	82.2±5.8	73.4±6.8	79.1±6.1	79.1±6.1	79.1±6.1	70.5±7.0	71.5±7.1	71.5±7.1	71.5±7.1	66.0±7.5
California	96.5±1.7	87.7±3.9	94.1±2.5	91.0±3.7	95.0±2.3	95.0±2.3	81.9±4.5	90.3±3.2	58.4±6.3	91.8±2.8	96.1±1.8	86.1±4.0	88.0±3.6	59.6±6.4	71.1±5.8	86.2±4.0	85.2±4.2	85.2±4.2	76.8±5.1	80.4±4.7	81.4±4.6	80.4±4.7	72.5±5.4	77.4±5.0	78.0±4.9	77.4±5.0	70.1±5.6
Colorado	91.2±5.1	81.0±7.7	89.8±5.2	88.4±5.4	90.9±5.3	91.0±5.3	76.5±8.3	88.0±5.2	57.8±8.4	88.6±5.3	87.3±6.7	78.7±7.7	67.5±8.5	46.8±8.5	67.7±8.1	78.7±7.7	77.7±7.8	77.7±7.8	72.5±8.3	75.8±7.8	75.8±7.8	75.8±7.8	70.8±8.3	70.3±8.5	70.3±8.5	70.3±8.5	65.7±8.7
Connecticut	97.5±1.8	88.8±3.6	96.7±2.4	95.0±2.6	96.3±2.5	96.3±2.5	84.5±4.8	94.1±2.6	71.1±5.6	94.1±3.0	97.0±1.9	91.6±3.2	83.8±4.9	53.9±6.8	69.6±6.0	86.1±4.1	85.8±4.1	85.8±4.1	79.9±5.1	81.2±4.8	81.4±4.8	81.2±4.8	76.2±5.4	79.0±5.0	79.0±5.0	79.0±5.0	74.6±5.5
Delaware	94.0±4.6	83.7±6.0	92.1±4.9	90.6±5.1	93.5±4.8	93.5±4.8	78.6±6.2	83.8±6.3	68.4±6.7	90.5±5.1	91.8±4.9	84.5±6.0	81.6±6.1	54.5±7.3	72.5±6.9	80.2±6.3	80.2±6.3	80.2±6.3	73.5±6.6	72.1±6.9	72.1±6.9	72.1±6.9	66.8±7.0	68.6±7.0	68.6±7.0	68.6±7.0	63.5±7.0
Dist. of Columbia	95.0±2.7	87.4±4.6	93.2±3.4	93.5±3.0	94.5±2.6	94.5±2.6	83.5±5.1	91.6±3.3	74.1±6.6	93.7±2.8	93.1±2.9	83.8±5.1	89.5±4.3	55.8±7.3	62.1±7.0	86.5±4.7	85.3±4.8	85.3±4.8	80.3±5.5	81.4±5.2	82.3±5.1	81.4±5.2	77.3±5.7	76.3±5.8	76.3±5.8	76.3±5.8	73.1±6.1
Florida	97.4±2.0	84.6±5.3	95.1±2.7	90.8±4.1	94.7±2.8	95.2±2.7	80.5±6.0	94.5±2.8	52.7±6.9	90.0±4.3	94.0±3.3	80.9±5.5	78.0±5.5	45.4±6.9	59.5±6.7	82.3±5.5	81.2±5.5	81.6±5.5	73.4±6.6	77.8±5.8	78.5±5.7	78.1±5.8	70.2±6.7	71.4±6.2	71.6±6.2	71.4±6.2	66.7±6.8
Georgia	97.1±1.7	87.5±4.4	96.7±1.8	94.1±2.8	96.7±2.0	96.7±2.0	77.7±6.0	96.2±2.1	82.1±4.9	93.2±3.3	95.6±2.5	85.6±5.1	92.0±3.5	65.3±6.5	66.0±6.6	86.6±4.5	86.6±4.5	86.6±4.5	74.4±6.2	83.9±5.0	83.9±5.0	83.9±5.0	71.8±6.4	79.5±5.6	79.5±5.6	79.5±5.6	69.5±6.5
Hawaii	98.4±1.1	90.6±4.1	94.8±3.9	94.2±3.5	96.5±2.3	96.5±2.3	86.2±4.9	92.0±5.4	72.9±8.0	91.2±5.0	97.7±1.7	89.9±4.3	78.6±6.5	51.9±8.3	58.7±8.3	86.4±5.6	85.9±5.6	85.9±5.6	81.4±6.1	80.7±6.8	81.1±6.8	80.7±6.8	77.0±7.0	78.4±6.9	78.5±6.9	78.4±6.9	74.8±7.1
Idaho	94.7±3.1	79.0±6.6	94.5±3.1	89.5±4.8	94.7±3.1	94.9±3.1	75.0±7.3	86.3±5.4	70.2±7.5	86.0±5.6	93.4±3.3	84.1±5.7	84.2±6.2	45.2±8.6	62.0±8.2	78.2±6.7	78.2±6.7	78.2±6.7	67.9±7.8	68.8±7.6	68.8±7.6	68.8±7.6	59.3±8.3	66.9±7.7	66.9±7.7	66.9±7.7	58.1±8.4
Illinois	95.4±2.6	84.0±4.6	94.1±2.7	90.8±3.3	94.7±2.6	94.7±2.6	79.9±5.1	92.2±3.0	69.4±5.2	91.5±3.1	92.8±3.1	82.7±4.5	71.2±5.6	42.8±5.5	64.1±5.5	80.8±4.8	80.8±4.8	80.5±4.8	72.4±5.5	77.3±4.9	77.6±4.9	77.3±4.9	70.2±5.6	71.8±5.2	71.8±5.2	71.8±5.2	66.3±5.7
IL-City of Chicago	96.7±2.6	87.7±5.1	94.1±3.3	90.6±4.5	94.4±3.4	94.4±3.4	85.7±5.0	91.5±3.7	77.3±6.1	90.7±4.2	96.2±2.7	83.0±5.6	81.7±5.9	50.9±7.7	68.3±7.4	84.5±5.6	83.8±5.7	83.8±5.7	80.8±5.9	78.4±6.2	79.1±6.1	78.4±6.2	75.8±6.3	74.1±6.5	74.1±6.5	74.1±6.5	72.9±6.6
IL-Rest of State	94.9±3.4	82.7±6.0	94.1±3.5	90.8±4.2	94.8±3.4	94.9±3.4	77.9±6.6	92.5±3.8	66.6±6.8	91.8±3.9	91.6±4.0	82.6±5.8	67.5±7.2	40.0±6.9	62.6±7.0	79.5±6.2	79.4±6.2	79.4±6.2	69.4±7.1	76.9±6.3	77.0±6.3	76.9±6.3	68.2±7.2	71.0±6.7	71.1±6.7	71.0±6.7	64.0±7.3
Indiana	95.7±2.8	82.2±5.5	93.3±3.4	90.6±3.9	92.3±4.0	92.3±4.0	77.3±5.9	91.3±3.8	83.4±4.6	90.3±3.8	92.5±3.8	81.4±5.7	79.4±5.0	50.5±6.7	63.9±6.7	80.8±5.6	79.1±5.9	79.1±5.9	74.9±6.1	73.4±6.2	74.9±6.0	73.4±6.2	69.3±6.4	70.1±6.3	70.1±6.3	70.1±6.3	66.4±6.5
Iowa	94.5±3.7	85.7±5.5	93.8±3.9	86.7±5.6	93.9±3.9	93.9±3.9	82.0±6.1	89.4±4.7	69.4±6.6	88.2±5.1	93.8±3.8	87.6±5.1	70.3±6.9	48.8±7.3	69.9±7.0	82.0±6.1	82.0±6.1	82.0±6.1	76.1±6.7	78.9±6.3	78.9±6.3	78.9±6.3	73.2±6.8	77.1±6.4	77.1±6.4	77.1±6.4	71.6±6.9
Kansas	93.5±4.1	87.6±5.1	92.6±4.3	91.0±4.4	92.1±4.4	92.1±4.4	81.4±6.4	93.8±3.4	77.7±7.4	89.6±4.7	93.1±4.1	85.5±5.4	89.4±4.5	60.8±8.2	63.6±8.2	85.0±5.4	84.1±5.6	84.1±5.6	78.3±6.6	81.1±6.0	81.9±5.8	81.1±6.0	75.3±6.9	79.0±6.2	79.7±6.1	79.0±6.2	73.5±7.1
Kentucky	96.3±3.5	87.2±5.6	94.9±3.8	91.4±4.9	94.4±4.4	94.4±4.4	84.5±5.9	95.4±3.7	83.3±6.3	91.6±4.9	93.9±4.5	86.2±5.7	69.1±7.6	48.5±8.6	66.0±7.7	85.3±6.0	85.1±6.0	85.1±6.0	81.8±6.3	82.4±6.4	82.6±6.4	82.4±6.4	79.1±6.7	80.3±6.5	80.6±6.5	80.3±6.5	77.6±6.8
Louisiana	98.7±1.3	84.2±5.1	98.5±1.3	92.6±3.6	96.5±2.5	96.5±2.5	80.1±5.9	97.1±1.7	76.7±6.0	91.7±3.9	98.5±1.2	85.3±5.2	87.9±4.2	55.5±7.0	68.9±6.9	83.6±5.1	81.8±5.4	81.8±5.4	76.2±6.1	79.5±5.6	81.4±5.4	79.5±5.6	74.1±6.2	74.6±6.2	76.5±6.0	74.6±6.2	69.6±6.7
Maine	95.3±3.2	88.9±4.5	93.9±3.5	90.3±4.0	93.0±3.8	93.0±3.8	80.4±5.4	88.4±4.2	68.8±6.2	86.4±4.5	91.4±4.2	85.9±4.9	62.4±6.4	40.5±6.7	59.4±6.7	86.4±4.7	85.1±5.0	85.1±5.0	75.8±5.9	79.1±5.4	79.9±5.3	79.1±5.4	71.5±6.1	76.6±5.6	76.6±5.6	76.6±5.6	69.0±6.2
Maryland	97.4±2.1	89.5±3.8	95.8±2.8	95.2±2.6	96.0±2.4	96.0±2.4	83.9±4.9	90.8±3.5	75.1±5.5	93.9±2.9	93.9±3.2	88.0±4.7	83.3±4.8	55.5±6.1	66.0±6.0	87.7±4.1	86.8±4.7	86.8±4.7	82.0±5.0	81.1±5.1	82.1±4.6	81.1±5.1	76.9±5.3	77.8±5.4	78.0±5.4	77.8±5.4	73.8±5.5
MD-Prince George's County	97.4±2.1	87.5±5.3	97.2±2.1	94.6±3.3	94.4±3.3	94.4±3.3	77.2±6.4	90.9±4.5	81.9±5.6	92.5±4.1	93.6±3.6	86.8±4.9	85.4±5.3	50.0±7.3	68.5±7.0	86.2±5.5	84.3±5.7	84.3±5.7	74.3±6.8	78.9±6.3	80.8±6.1	78.9±6.3	70.0±7.0	75.9±6.4	76.9±6.3	75.9±6.4	67.6±7.1
MD-Rest of Maryland	97.4±2.5	89.9±4.5	95.5±3.3	95.3±3.0	96.3±2.8	96.3±2.8	85.1±5.7	90.8±4.1	73.8±6.4	94.1±3.3	94.0±3.7	88.2±5.5	82.8±5.6	56.6±7.1	65.5±7.0	88.0±4.8	87.2±5.5	87.2±5.5	83.4±5.8	81.6±6.0	82.4±5.4	81.6±6.0	78.2±6.2	78.1±6.3	78.2±6.3	78.1±6.3	75.0±6.4
Massachusetts	98.0±2.0	88.4±6.2	97.2±2.2	93.1±4.8	97.1±2.3	97.1±2.3	91.8±7.9	93.2±3.3	70.0±7.3	92.0±4.2	98.0±2.0	87.8±6.4	76.0±7.0	55.5±7.9	80.0±6.4	85.5±6.7	85.5±6.7	85.5±6.7	78.0±8.1	80.3±7.0	80.3±7.0	80.3±7.0	73.0±8.1	76.9±7.3	76.9±7.3	76.9±7.3	70.7±8.2
Michigan	90.2±5.8	81.7±6.7	89.8±5.8	87.6±6.2	89.1±5.9	89.1±5.9	73.4±7.4	89.0±5.8	79.7±6.7	86.5±6.3	89.3±5.8	80.2±7.1	78.4±6.7	53.5±7.8	63.7±7.6	80.3±6.8	79.6±6.8	79.6±6.8	70.7±7.5	76.4±7.0	77.0±6.9	76.4±7.0	68.0±7.6	71.2±7.4	71.8±7.4	71.2±7.4	66.2±7.6
Minnesota	96.9±3.3	86.7±6.1	96.1±3.4	96.0±3.4	95.4±4.1	95.7±4.1	82.6±6.2	94.1±3.6	56.8±8.0	88.7±5.6	97.6±2.8	88.6±5.3	79.5±5.9	52.6±8.0	72.0±8.0	86.0±6.2	85.4±6.2	85.7±6.2	79.1±6.5	79.0±6.8	79.3±6.8	79.3±6.8	73.4±6.9	74.6±6.9	74.9±6.9	74.9±6.9	72.0±6.9
Mississippi	94.3±4.0	80.8±6.4	91.9±4.8	89.6±4.9	94.1±4.0	94.1±4.0	79.4±6.5	90.5±4.5	76.1±6.8	90.6±4.5	93.2±4.3	83.0±6.0	66.7±7.2	42.6±7.8	69.3±7.8	78.2±6.8	78.1±6.8	78.1±6.8	74.5±7.1	73.8±7.1	73.9±7.1	73.8±7.1	70.2±7.3	71.2±7.3	71.3±7.3	71.2±7.3	67.8±7.5
Missouri	91.3±4.1	80.8±5.3	89.3±4.2	88.2±4.0	90.0±4.3	90.3±4.2	76.2±5.7	87.5±4.5	72.9±5.8	87.1±4.1	88.4±4.5	79.2±5.5	73.2±5.6	46.5±6.2	62.7±6.2	78.2±5.5	77.6±5.5	77.6±5.5	72.7±5.9	72.7±5.7	73.0±5.7	72.7±5.7	68.3±6.0	67.6±6.0	67.9±6.0	67.6±6.0	64.1±6.2
Montana	91.0±5.2	76.8±7.9	85.9±6.8	87.8±5.2	86.6±6.6	88.8±5.8	73.8±7.9	90.8±4.4	81.1±5.9	85.6±5.5	88.7±5.7	77.2±7.9	67.1±7.8	43.9±9.1	59.8±8.8	75.8±7.9	74.1±8.2	75.7±7.9	67.4±8.4	71.0±8.3	72.7±8.0	72.6±8.0	64.6±8.5	65.0±8.8	66.8±8.6	66.7±8.6	59.6±8.8
Nebraska	98.7±1.1	92.3±3.9	98.1±1.3	95.3±3.5	94.9±3.6	94.9±3.6	86.0±5.8	91.2±4.5	77.5±6.1	94.1±3.6	97.0±2.6	93.7±4.0	89.3±4.5	69.2±7.3	75.5±7.2	91.6±4.0	89.1±4.9	89.1±4.9	83.9±6.0	82.9±5.6	84.1±5.3	82.9±5.6	77.8±6.4	82.5±5.6	82.6±5.6	82.5±5.6	77.6±6.5
Nevada	94.6±3.9	75.2±8.0	94.8±3.6	90.5±4.6	94.8±3.6	94.8±3.6	77.3±7.7	89.9±5.0	65.2±8.8	88.2±5.3	94.1±3.9	78.9±7.5	86.5±6.5	52.8±8.9	56.6±9.0	72.7±8.1	72.5±8.1	72.5±8.1	70.1±8.3	66.7±8.5	66.9±8.5	66.7±8.5	65.4±8.5	65.8±8.5	66.0±8.5	65.8±8.5	64.7±8.5
New Hampshire	94.6±3.5	84.6±5.8	94.4±3.5	92.0±4.1	94.9±3.4	94.9±3.4	82.9±6.2	90.3±4.3	70.7±6.9	87.0±5.3	93.6±3.8	85.1±5.9	77.4±6.4	54.6±7.7	74.2±6.8	83.8±5.8	83.7±5.8	83.7±5.8	79.5±6.5	75.4±6.7	75.6±6.7	75.4±6.7	72.2±7.1	72.4±7.1	72.6±7.1	72.4±7.1	70.8±7.2
New Jersey	95.9±2.7	86.7±4.1	93.6±3.0	91.3±3.5	95.6±2.8	96.1±2.6	82.6±5.0	92.7±3.3	47.3±6.2	92.2±3.4	93.6±3.3	83.9±5.1	76.9±5.1	42.8±6.1	56.3±6.2	83.8±4.4	83.3±4.4	83.8±4.4	75.4±5.4	79.1±4.9	79.6±4.8	79.6±4.8	71.5±5.6	73.9±5.6	73.9±5.6	73.9±5.6	67.9±5.9
New Mexico	94.7±3.1	86.7±4.7	93.8±3.3	93.1±3.6	94.2±3.2	94.3±3.2	81.7±5.5	91.7±3.5	64.0±7.6	90.3±4.4	92.2±3.7	84.6±5.0	86.2±5.1	50.0±7.7	72.9±6.6	85.5±4.8	85.1±4.9	85.1±4.9	78.6±5.7	80.0±5.5	80.4±5.5	80.0±5.5	74.2±6.4	75.2±6.0	75.6±6.0	75.2±6.0	69.8±6.7
New York	94.3±2.5	82.6±3.9	92.6±2.7	91.0±2.8	92.4±2.8	92.4±2.8	77.8±4.3	89.1±3.7	53.7±5.1	88.0±3.8	91.0±3.1	82.3±3.9	73.0±4.4	41.9±5.1	60.7±5.1	80.3±4.0	79.0±4.1	79.0±4.1	72.9±4.5	70.3±5.1	71.6±5.0	70.3±5.1	64.4±5.2	65.1±5.1	65.1±5.1	65.1±5.1	61.3±5.2
NY-City of New York	94.4±3.4	83.2±5.4	92.6±3.6	91.5±3.6	93.2±3.5	93.2±3.5	78.6±6.1	89.1±5.3	46.3±7.4	90.2±3.9	90.8±4.0	82.9±5.2	73.7±5.9	43.8±7.2	60.5±7.2	81.0±5.6	80.8±5.6	80.8±5.6	74.1±6.3	72.2±6.8	72.4±6.8	72.2±6.8	65.7±7.2	66.4±7.0	66.6±7.0	66.4±7.0	62.5±7.2
NY-Rest of State	94.2±3.7	82.0±5.5	92.6±4.0	90.6±4.3	91.6±4.4	91.6±4.4	77.1±6.1	89.1±5.1	61.0±7.0	85.9±6.3	91.3±4.6	81.8±5.9	72.4±6.5	40.0±7.2	60.9±7.2	79.6±5.8	77.2±6.1	77.2±6.1	71.6±6.4	68.3±7.4	70.8±7.4	68.3±7.4	63.2±7.4	63.7±7.5	63.7±7.5	63.7±7.5	60.2±7.5
North Carolina	94.0±5.0	81.3±7.5	93.5±5.0	92.3±5.1	92.8±5.3	93.0±5.3	73.8±8.1	90.8±5.3	75.0±6.7	89.6±5.6	93.1±5.2	84.5±7.1	69.3±7.8	40.8±7.6	70.5±7.6	79.6±7.5	79.6±7.5	79.6±7.5	70.3±8.1	75.3±7.7	75.3±7.7	75.3±7.7	66.9±8.1	73.3±7.7	73.3±7.7	73.3±7.7	65.6±8.1
North Dakota	96.5±3.2	89.7±4.8	93.5±4.9	95.8±3.0	94.8±3.6	96.0±3.0	86.4±5.6	94.1±4.6	83.4±6.6	90.8±5.2	95.1±3.8	88.1±6.2	88.7±6.1	63.0±9.0	74.9±8.4	86.3±6.0	85.6±6.1	85.6±6.1	81.8±6.7	84.1±6.2	84.8±6.1	84.1±6.2	80.5±6.8	82.8±6.5	83.5±6.4	82.8±6.5	79.1±7.0
Ohio	96.7±2.6	85.2±7.3	94.7±3.6	93.3±4.2	96.6±2.6	96.6±2.6	85.9±6.9	95.8±2.5	81.9±6.2	93.4±3.9	94.5±3.2	83.8±6.8	73.0±7.1	44.7±8.2	64.3±7.9	83.9±7.5	83.9±7.5	83.9±7.5	82.0±7.5	80.6±7.5	80.6±7.5	80.6±7.5	78.8±7.6	76.4±8.3	76.4±8.3	76.4±8.3	74.7±8.3
Oklahoma	95.4±2.6	84.1±5.3	93.8±3.2	94.0±3.3	92.6±3.9	92.6±3.9	77.4±6.4	92.7±3.7	70.9±6.8	90.5±4.3	93.3±3.3	79.8±5.8	89.3±4.7	62.6±7.2	57.6±7.4	83.6±5.4	82.6±5.5	82.6±5.5	72.8±6.7	77.3±6.1	78.3±6.0	77.3±6.1	69.2±6.9	72.0±6.5	72.7±6.4	72.0±6.5	66.0±7.0
Oregon	92.5±4.4	76.6±7.8	90.2±4.6	90.6±4.2	90.2±5.2	91.2±4.9	72.3±7.9	85.3±5.4	66.5±7.5	89.3±4.4	90.2±4.7	79.9±7.3	84.0±6.0	56.6±8.0	62.2±8.0	73.6±7.8	72.4±8.0	72.4±8.0	66.3±8.1	67.0±8.1	67.0±8.1	67.0±8.1	62.2±8.2	65.2±8.1	65.2±8.1	65.2±8.1	61.7±8.2
Pennsylvania	98.0±1.3	85.8±3.8	96.8±1.6	92.8±2.7	96.8±1.6	96.8±1.6	85.1±3.8	91.5±3.1	72.8±5.0	93.0±2.6	95.0±2.3	88.1±3.6	85.5±3.7	59.2±5.3	76.6±4.5	82.8±4.0	81.7±4.2	81.7±4.2	76.6±4.6	75.4±4.7	76.2±4.7	75.4±4.7	71.5±4.9	72.7±4.9	73.0±4.9	72.7±4.9	69.7±5.0

Table G.8: Estimated Vaccination Coverage* with Individual Vaccines and Selected Vaccination Series Among Children 19-35 Months of Age by State and Local Area US, National Immunization Survey,Q1/2011-Q4/2011[†]

	3+DTaP[ǂ]	4+DTaP[‡]	3+Polio[§]	1+MMR[‖]	3+Hib[¶]	Hib-PS**	Hib-FS[††]	3+HepB[‡‡]	Hep B Birth dose[§§]	1+Var[‖‖]	3+PCV[¶¶]	4+PCV***	1+HepA[#]	2+HepA[†††]	Rotavirus[‡‡‡]	4:3:1[§§§]	4:3:1:3[‖‖‖]	(4:3:1:2*)[¶¶¶]	(4:3:1:3*)****	4:3:1:3:3:1[€]	4:3:1:-:3:1[ς]	4:3:1:2*:3:1[€€]	4:3:1:3*:3:1[ςς]	4:3:1:3:3:1:4[€€€]	4:3:1:-:3:1:4[ςςς]	4:3:1:2*:3:1:4[€€€€]	4:3:1:3*:3:1:4[ςςςς]
PA-Philadelphia County	96.6±2.4	85.4±5.6	94.7±3.8	93.1±4.0	95.6±2.8	95.6±2.8	78.3±6.6	86.9±5.2	75.6±6.3	92.3±4.0	92.8±3.9	83.7±5.8	86.2±5.2	61.7±7.1	68.9±7.0	82.6±6.1	81.9±6.2	81.9±6.2	75.0±6.8	75.0±6.7	75.6±6.6	75.0±6.7	70.1±7.0	70.3±7.0	70.3±7.0	70.3±7.0	67.5±7.1
PA-Rest of State	98.2±1.4	85.9±4.5	97.2±1.8	92.8±3.1	97.1±1.8	97.1±1.8	86.4±4.4	92.4±3.6	72.2±5.9	93.1±3.0	95.4±2.6	89.0±4.1	85.4±4.3	58.8±6.2	78.0±5.2	82.8±4.7	81.6±4.8	81.6±4.8	76.9±5.3	75.5±5.5	76.3±5.5	75.5±5.5	71.7±5.7	73.2±5.6	73.5±5.6	73.2±5.6	70.1±5.8
Rhode Island	97.1±2.7	84.5±5.4	97.4±2.2	96.6±2.0	97.3±2.2	97.9±1.7	78.5±6.3	96.1±2.9	73.2±6.1	93.7±2.5	95.5±2.8	91.3±3.5	80.9±5.9	49.3±6.9	75.7±6.3	83.1±5.5	82.6±5.5	82.6±5.5	71.2±6.5	79.5±5.6	80.0±5.6	79.5±5.6	68.5±6.6	76.7±5.8	76.7±5.8	76.7±5.8	67.3±6.6
South Carolina	94.6±3.5	79.5±6.1	94.5±3.5	89.3±4.9	93.2±3.9	93.6±3.8	76.5±6.6	92.8±3.7	69.2±7.0	89.6±4.8	92.6±4.2	80.7±6.3	75.6±6.5	42.6±7.5	55.8±7.6	78.3±6.2	78.2±6.2	78.2±6.2	69.8±7.1	74.1±6.5	74.1±6.5	74.1±6.5	66.5±7.2	69.8±7.0	69.8±7.0	69.8±7.0	65.1±7.3
South Dakota	92.9±5.4	75.8±9.7	92.9±5.4	89.2±6.9	91.1±5.6	91.1±5.6	NA	92.1±5.5	70.9±9.6	84.8±8.1	88.3±6.8	NA	59.7±9.9	29.3±7.9	NA	74.9±9.7	74.1±9.7	74.1±9.7	NA	71.0±9.9	71.3±9.9	71.0±9.9	NA	NA	NA	NA	NA
Tennessee	95.8±2.6	81.9±5.8	93.4±3.4	91.1±3.9	93.1±3.8	93.1±3.8	81.5±5.9	91.5±3.7	61.9±7.1	90.7±4.0	94.8±2.9	86.2±4.8	89.8±3.9	55.7±7.2	71.1±6.6	81.1±5.8	79.9±6.1	79.9±6.1	77.5±6.2	73.9±6.5	75.1±6.3	73.9±6.5	72.0±6.6	72.1±6.6	73.3±6.4	72.1±6.6	70.4±6.7
Texas	94.7±1.7	82.7±3.7	92.9±2.0	94.3±1.7	93.7±1.9	93.7±1.9	84.1±2.9	90.6±2.2	78.6±3.8	94.1±1.6	93.7±2.0	86.9±2.7	91.0±2.9	60.2±4.6	72.3±3.8	81.6±3.7	80.9±3.8	80.9±3.8	78.4±3.8	76.3±3.9	76.9±3.9	76.3±3.9	74.0±4.0	74.6±3.9	74.9±3.9	74.6±3.9	72.7±4.0
TX-Bexar County	90.2±4.7	77.0±6.3	89.4±4.8	91.5±4.1	91.0±4.6	91.0±4.6	78.9±5.9	88.5±4.7	63.1±6.9	94.1±3.4	92.3±3.9	83.6±5.6	87.4±4.8	55.2±7.1	69.1±6.6	76.7±6.3	76.7±6.3	76.7±6.3	74.2±6.4	71.7±6.6	71.7±6.6	71.7±6.6	69.7±6.6	69.4±6.8	69.4±6.8	69.4±6.8	67.4±6.8
TX-City of Houston	95.4±3.2	87.2±4.7	94.0±3.6	95.3±2.9	94.0±3.5	94.0±3.5	83.4±5.6	88.3±4.5	79.6±5.8	95.0±3.0	94.6±3.4	88.0±4.6	93.5±3.5	64.9±7.2	65.6±8.0	85.3±5.0	84.1±5.2	84.1±5.2	78.3±6.1	75.3±6.4	76.5±6.3	75.3±6.4	71.0±6.8	72.9±6.6	73.9±6.5	72.9±6.6	69.4±6.9
TX-Dallas County	91.2±4.9	78.9±6.3	87.5±5.4	90.8±4.3	89.5±5.1	89.9±5.0	78.1±6.3	90.5±4.1	82.9±4.8	88.5±4.8	89.2±5.2	80.1±6.0	87.5±4.9	55.2±7.4	62.7±7.3	77.9±6.3	77.5±6.4	77.5±6.4	73.8±6.6	73.7±6.6	74.1±6.5	73.7±6.6	70.2±6.8	70.9±6.7	71.3±6.7	70.9±6.7	68.1±6.9
TX-El Paso County	93.0±4.3	79.1±6.6	90.7±4.6	92.8±4.1	92.6±4.3	92.6±4.3	78.5±6.5	89.0±4.6	80.5±6.1	90.8±4.6	91.8±4.6	80.7±6.1	87.6±5.4	53.8±7.7	72.8±7.0	77.6±6.7	77.6±6.7	77.6±6.7	74.1±6.8	73.0±7.1	73.0±7.1	73.0±7.1	69.4±7.1	69.0±7.2	69.0±7.2	69.0±7.2	67.7±7.1
TX-Rest of State	95.7±2.3	83.1±5.3	94.0±2.7	95.1±2.3	94.6±2.6	94.6±2.6	86.0±4.0	91.3±3.1	79.3±5.5	95.1±2.2	94.4±2.7	88.4±3.8	91.6±4.2	60.9±6.6	75.4±5.2	82.2±5.4	81.5±5.4	81.5±5.4	79.8±5.5	77.5±5.6	78.2±5.5	77.5±5.6	75.8±5.7	76.3±5.6	76.6±5.6	76.3±5.6	74.9±5.7
Utah	93.9±3.0	82.0±5.6	93.3±3.0	88.8±4.6	92.1±3.8	92.1±3.8	77.1±6.2	88.9±4.5	74.2±6.8	83.6±5.7	91.5±3.6	80.1±5.9	87.8±4.7	55.6±7.3	68.1±6.8	80.2±5.8	78.5±6.1	78.5±6.1	74.6±6.4	71.1±6.8	72.9±6.6	71.1±6.8	68.2±6.9	68.6±6.9	70.3±6.7	68.6±6.9	66.7±6.9
Vermont	97.6±1.7	88.2±4.7	96.0±2.2	95.3±2.3	96.3±2.1	96.3±2.1	82.3±5.4	91.7±3.4	23.1±5.8	85.4±5.0	95.0±2.5	89.3±4.0	70.9±6.2	44.4±7.1	65.7±6.8	86.0±4.9	85.6±4.9	85.6±4.9	77.5±5.9	76.7±5.9	77.1±5.8	76.7±5.9	69.6±6.5	73.4±6.2	73.4±6.2	73.4±6.2	67.5±6.6
Virginia	96.5±3.1	84.4±6.0	94.3±3.9	89.0±5.2	96.2±3.2	96.2±3.2	79.1±6.5	87.8±5.2	64.4±7.9	88.2±5.3	91.8±4.8	83.5±6.0	78.8±6.2	52.3±7.9	75.4±6.5	83.0±6.1	82.9±6.1	82.9±6.1	75.6±6.7	77.0±6.6	77.1±6.6	77.0±6.6	71.1±7.0	72.1±6.9	72.2±6.9	72.1±6.9	68.3±7.1
Washington	91.2±4.8	85.5±5.3	90.0±4.8	89.3±4.4	88.2±5.2	89.3±5.0	77.5±6.1	86.1±5.2	71.7±6.5	87.8±4.7	90.4±4.8	85.7±5.3	82.2±5.3	51.4±7.4	67.7±6.7	82.7±5.6	81.1±5.7	81.1±5.7	73.9±6.3	76.0±6.0	77.5±5.8	76.0±6.0	68.7±6.5	74.4±6.1	75.3±6.0	74.4±6.1	68.1±6.5
West Virginia	92.4±3.4	78.4±5.1	91.2±3.6	85.8±4.3	91.2±3.6	91.2±3.6	71.0±5.6	86.6±4.5	60.7±6.1	86.5±4.3	89.2±3.9	77.5±5.3	84.6±4.5	56.0±6.2	60.2±6.2	75.0±5.4	73.9±5.4	73.9±5.4	66.8±5.8	69.3±5.8	70.4±5.7	69.3±5.8	63.2±6.0	66.6±5.9	67.0±5.9	66.6±5.9	60.9±6.1
Wisconsin	96.9±2.1	88.4±5.4	95.2±2.9	94.9±2.7	94.2±3.3	94.2±3.3	81.9±5.9	90.8±5.1	74.5±6.6	90.2±4.6	95.0±2.8	90.1±4.2	77.1±6.2	48.5±7.7	73.8±7.3	86.4±5.6	85.1±5.8	85.1±5.8	76.1±7.0	81.5±6.3	82.3±6.2	81.5±6.3	72.8±7.3	79.2±6.5	79.2±6.5	79.2±6.5	70.9±7.4
Wyoming	89.6±9.0	75.5±9.5	86.8±9.2	85.6±9.1	86.3±9.3	86.5±9.3	69.6±9.8	82.2±9.3	70.8±7.3	86.8±8.8	88.2±9.0	74.2±9.7	67.3±9.0	45.3±8.9	52.2±9.2	74.4±9.6	72.8±9.6	72.8±9.6	65.8±9.8	70.3±9.5	71.2±9.5	70.3±9.5	63.6±9.7	62.3±9.6	63.2±9.7	62.3±9.6	59.1±9.5
U.S. Virgin Island	78.6±5.1	61.8±5.7	77.2±5.2	73.6±5.2	75.4±5.2	75.7±5.2	53.1±5.9	79.2±4.7	78.6±4.7	70.6±5.4	73.4±5.3	53.6±5.8	25.9±5.2	9.5±3.4	18.1±4.7	60.0±5.8	57.9±5.8 51.9±8.0	57.9±5.8 36.0±7.6	50.5±5.9	53.6±5.8	55.1±5.8	53.6±5.8	46.8±5.9	46.0±5.8	46.3±5.8	46.0±5.8	41.9±5.8

* Estimate=NA (Not Available) if the unweighted sample size for the denominator was <30 or (CI half width)/Estimate > 0.588 or (CI half width) >10.

Estimates presented as point estimate (%) ± 95% Confidence Interval.

[†] Children in the Q1/2011-Q4/2011 National Immunization Survey were born from January 2008 through May 2010.

[ǂ] 3 or more doses of any diphtheria and tetanus toxoids and pertussis vaccines including diphtheria and tetanus toxoids, and any acellular pertussis vaccine (DTaP/DTP/DT).

[‡] 4 or more doses of DTaP.

[§] 3 or more doses of any poliovirus vaccine.

[‖] 1 or more doses of measles-mumps-rubella vaccine.

[¶] 3 or more doses of *Haemophilus influenzae* type b (Hib) vaccine.

[**] Primary series Hib: ≥2 or ≥3 doses of *Haemophilus influenzae* type b (Hib), depending on brand type.

[††] Full series Hib: ≥3 or ≥4 doses of Hib vaccine depending on product type received (includes primary series plus the booster dose).

[‡‡] 3 or more doses of hepatitis B vaccine.

[§§] 1 or more doses of hepatitis B vaccine administered between birth and age 3 days.

[‖‖] 1 or more doses of varicella at or after child's first birthday, unadjusted for history of varicella illness.

[¶¶] 3 or more doses of pneumococcal conjugate vaccine (PCV).

[***] 4 or more doses of PCV.

[#] 1 or more doses of hepatitis A vaccine

[†††] 2 or more doses of hepatitis A vaccine.

[‡‡‡] ≥2 or ≥3 doses of Rotavirus vaccine, depending on product type received (≥2 doses for Rotarix® [RVl] or ≥3 doses for RotaTeq® [RV5]).

[§§§] 4 or more doses of DTaP, 3 or more doses of poliovirus vaccine, and 1 or more doses of any MMR vaccine.

[‖‖‖] 4:3:1 plus 3 or more doses of Hib vaccine of any type.

[¶¶¶] 4:3:1 plus the primary series Hib.

[****] 4:3:1 plus the full series Hib.

[€] 4:3:1 plus 3 or more doses of Hib vaccine of any type, 3 or more doses of HepB vaccine, and 1 or more doses of varicella vaccine.

[ς] 4:3:1 plus 3 or more doses of HepB vaccine and 1 or more doses of varicella vaccine. Hib vaccine is excluded.

[€€] 4:3:1 plus primary series of Hib vaccine, 3 or more doses of HepB vaccine, and 1 or more doses of varicella vaccine.

[ςς] 4:3:1 plus full series of Hib vaccine, 3 or more doses of HepB vaccine, and 1 or more doses of varicella vaccine.

[€€€] 4:3:1 plus ≥3 doses of Hib vaccine of any type, 3 or more doses of HepB, 1 or more doses of varicella vaccine, and 4 or more doses of PCV.

[ςςς] 4:3:1 plus 3 or more doses of HepB vaccine, 1 or more doses of varicella vaccine, and 4 or more doses of PCV. Hib vaccine is excluded.

[€€€€] 4:3:1 plus primary series Hib vaccine, 3 or more doses of HepB, 1 or more doses of varicella vaccine, and 4 or more doses of PCV.

[ςςςς] 4:3:1 plus full series Hib vaccine, 3 or more doses of HepB, 1 or more doses of varicella vaccine, and 4 or more doses of PCV.

Appendix H

Trends in Landline-Frame NIS Response Rates and Vaccination Coverage Rates, 1995-2011

Table H.1: Key Indicators[1] from Landline Household and Provider Data Collection by Survey Year, National Immunization Survey, 1995-2011[2]

Survey Year	Resolution Rate (%)	Screener Completion Rate (%)	Interview Completion Rate (%)	CASRO Response Rate (%)	Children with Adequate Provider Data (%)
1995	96.5	96.4	93.5	87.1	50.6
1996	94.3	96.8	94.0	85.8	63.4
1997	92.1	97.9	93.8	84.6	69.7
1998	90.4	97.8	93.6	82.7	67.1
1999	88.6	97.0	93.4	80.2	65.4
2000	88.1	96.0	93.1	78.7	67.4
2001	86.8	96.2	91.1	76.1	70.4
2002	84.8	96.6	90.6	74.2	67.6
2003	83.6	94.0	88.7	69.8	68.9
2004	83.8	94.8	92.0	73.1	71.0
2005	83.3	92.8	84.2	65.1	63.6
2006	83.3	90.5	85.6	64.5	70.4
2007	82.9	90.2	86.8	64.9	68.6
2008	82.3	90.3	85.1	63.2	71.0
2009	82.9	92.4	83.2	63.8	68.7
2010	83.3	91.5	83.6	63.8	71.2
2011[3]	83.0	90.7	81.7	61.6	72.3

[1] For the definition of the key indicators see Table 1 of NIS Data User's Guides for the survey year of interest.

[2] Excludes the U.S. Virgin Islands.

[3] Landline sample only; to allow year-to-year comparisons, excludes cell-phone sample.

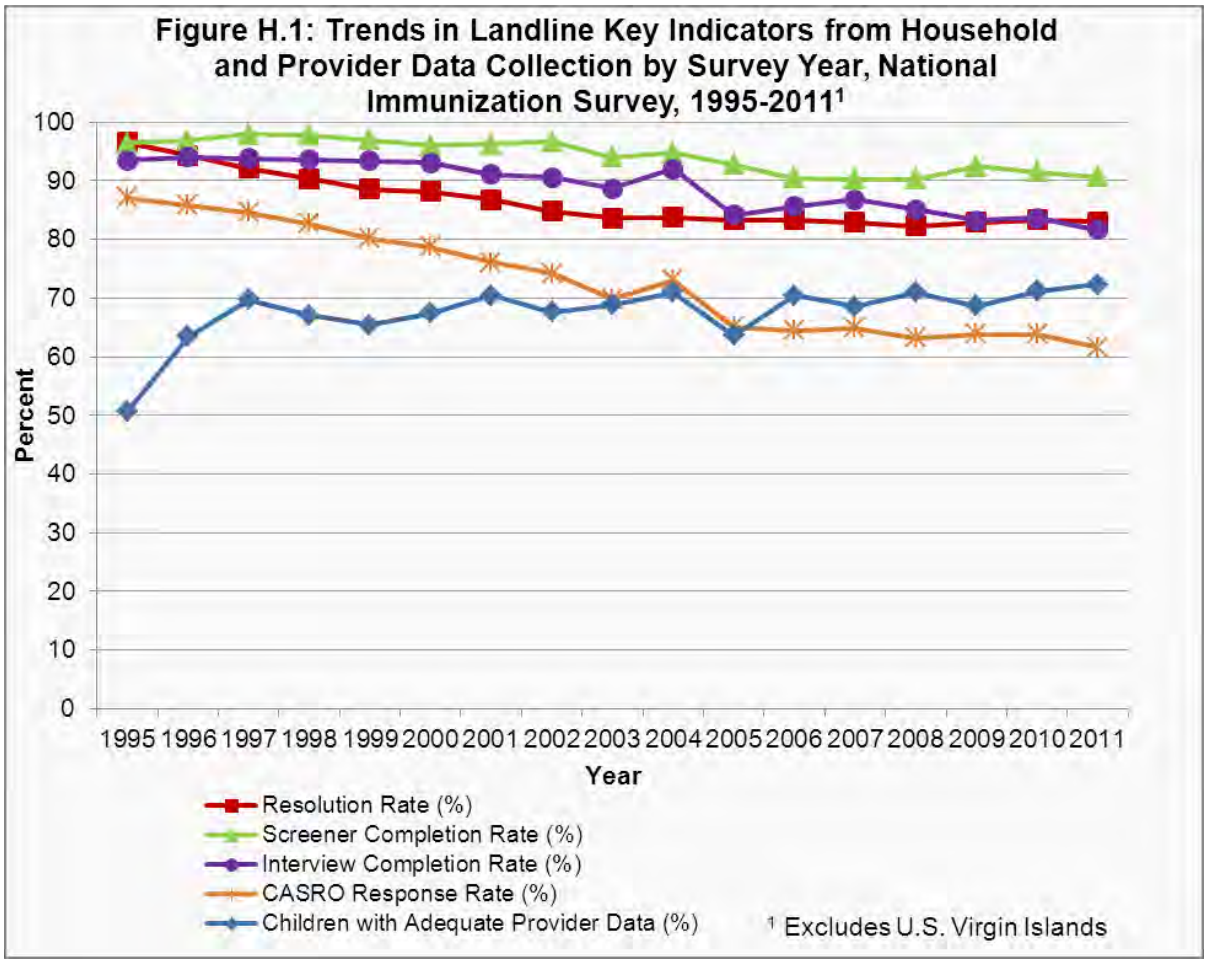


Figure H.1 provides a graphical representation of the data contained in table H.1. It shows how selected key indicators from the household and provider data collection performed throughout the years, from 1995 to present. We observe that the trend in the data collection rates is going downward, with the exception of the percentage of children with adequate provider data, which has been essentially flat since 1997. Note that these data reflect the landline sample only.

Table H.2: Vaccine-Specific Coverage Levels Among Children Age 19-35 months in the United States by Survey Year, National Immunization Survey, 1995-2011[1]

Survey Year	4+ DTaP	3+ Polio	1+ MCV	3+ Hib^	3+ Hep B	1+ Varicella*	4+ PCV	4:3:1†	4:3:1:3‡
1995	78.4	87.8	89.8	91.2	67.9	N.A.	N.A.	76.0	73.7
1996	81.1	91.0	90.6	91.4	81.8	12.0	N.A.	78.4	76.4
1997	81.5	90.7	90.4	92.5	83.6	25.8	N.A.	77.9	76.2
1998	83.9	90.8	92	93.4	87.0	43.2	N.A.	80.6	79.2
1999	83.3	89.6	91.5	93.5	88.1	57.5	N.A.	79.9	78.4
2000	81.7	89.5	90.5	93.4	90.3	67.8	N.A.	77.6	76.2
2001	82.1	89.4	91.4	93.0	88.9	76.3	N.A.	78.6	77.2
2002	81.6	90.2	91.6	93.1	89.9	80.6	N.A.	78.5	77.5
2003	84.8	91.6	93.0	93.9	92.4	84.8	N.A.	82.2	81.3
2004	85.5	91.6	93.0	93.5	92.4	87.5	N.A.	83.5	82.5
2005	85.7	91.7	91.5	93.9	92.9	87.9	53.7	83.1	82.4
2006	85.2	92.8	92.3	93.4	93.3	89.2	68.4	83.1	82.2
2007	84.5	92.6	93.2	92.6	92.7	90.0	75.3	82.8	80.1
2008	84.6	93.6	92.1	90.9	93.5	90.7	80.1	82.5	79.6
2009	83.9	92.8	90.0	83.6	92.4	89.6	80.4	81.5	73.4
2010	84.4	93.3	91.5	90.4	91.8	90.4	83.3	82.0	78.8
2011[2]	85.3	93.9	91.6	94.1	90.7	90.9	84.8	83.3	82.6

[1] Excludes the U.S. Virgin Islands.

[2] Landline sample only; to allow year-to-year comparisons, excludes cell-phone sample.

^ Beginning in 2009, the number of doses required to be up-to-date on Hib depends on the manufacturer of the vaccine. However, the figures shown here refer to 3 or more doses of Hib vaccine regardless of manufacturer.
* Varicella was added to the NIS in 1996.
† Four or more doses of DTaP, three or more doses of poliovirus vaccine, and one or more doses of any MCV.
‡ Four or more doses of DTaP, three or more does of poliovirus vaccine, and one or more doses of any MCV, and three or more doses of Hib.

Source: http://www.cdc.gov/nip/coverage

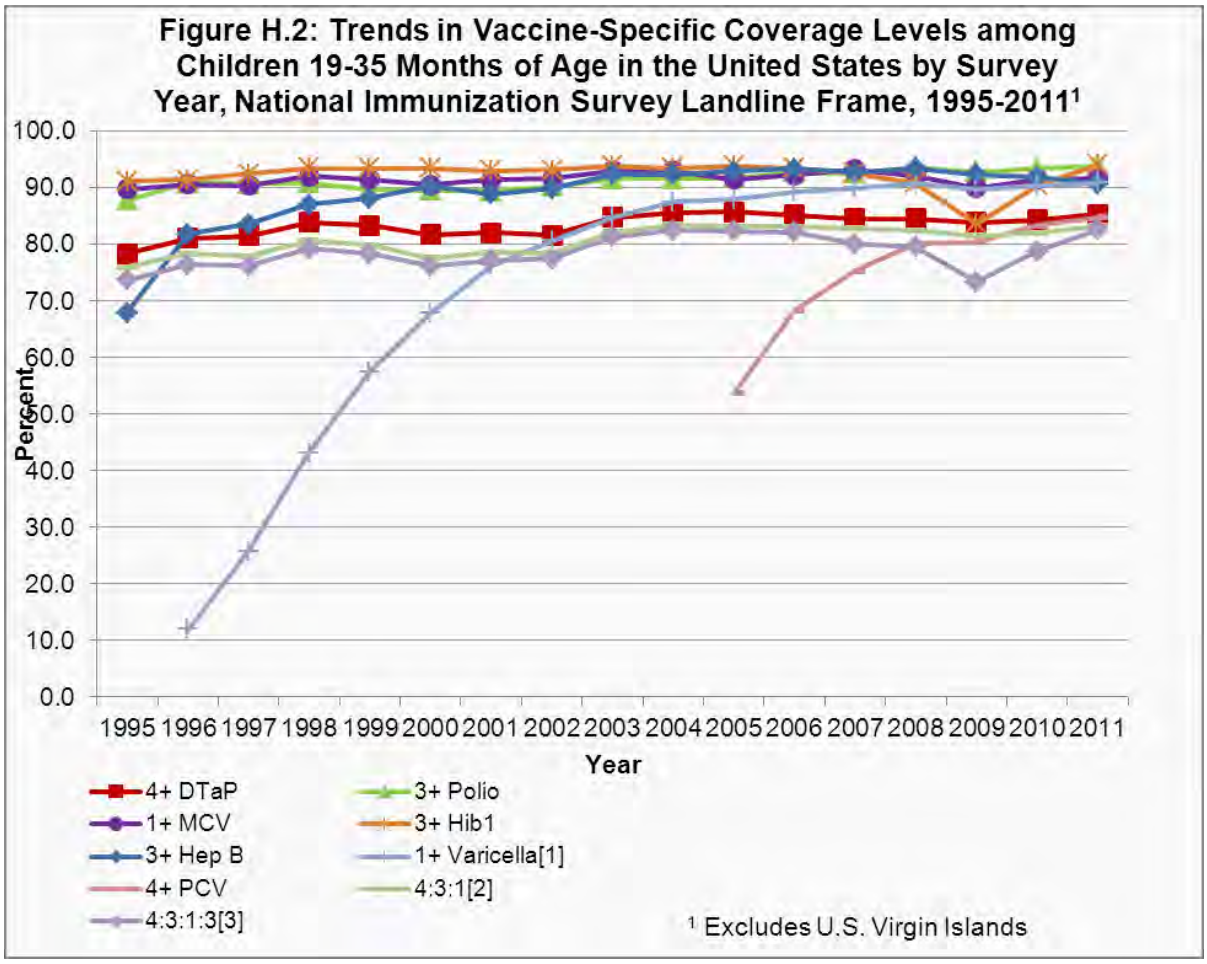


Figure H.2 provides a graphical representation of the data contained in Table H.2. It displays the trend in vaccine-specific coverage levels among children age 19-35 months from 1995 to 2011. We observe that the trend in the vaccination coverage levels is slightly upward for the longer established vaccines, while the early trends for new vaccines are strongly upward. Note that these data reflect the landline sample only.

Appendix I

Vaccine Type Codes

Table I.1: 2011 NIS Vaccine Type Codes

Vaccine Code	Description
03	DTaP/DTP-containing, unknown type
04	DTaP
07	DTaP-Hib
08	DTaP-HepB-IPV
20	OPV
21	IPV
22	Polio-containing, unknown type
30	Measles-mumps-rubella
31	Measles only
32	Measles-mumps
33	Measles-rubella
43	HepB-Hib
44	Hib-only, unknown type
60	HepB-only
70	Pneumococcal conjugate, unknown type
71	Pneumococcal polysaccharide
72	Pneumococcal-containing, unknown type
73	Pneumococcal conjugate-7
74	Pneumococcal conjugate-13
D3	DTaP-IPV-Hib
FL	Seasonal influenza, unknown type
FM	Seasonal influenza spray
FN	Injected seasonal influenza
1L	Monovalent 2009 H1N1 influenza, unknown type
1M	Monovalent 2009 H1N1 influenza spray
1N	Injected monovalent 2009 H1N1 influenza
HB	HepB-containing, unknown type
HI	Hib-containing, unknown type
HM	Hib-only (Merck)
H2	Hib-only (Sanofi or GSK)
MM	Measles-containing, unknown type

RG	Rotarix (GSK)
RM	Rotateq (Merck)
RO	Rotavirus-containing, unknown type
VA	Varicella-containing, unknown type
VM	MMR-varicella
VO	Varicella-only