National Immunization Survey-Teen

A User's Guide for the 2016 Public-Use Data File

Centers for Disease Control and Prevention

National Center for Immunization and Respiratory Diseases

Presented by:

NORC at the University of Chicago

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National Center for Immunization and Respiratory Diseases, CDC – Laurie D. Elam-Evans, Holly A. Hill, and James A. Singleton.

NORC – Rachel Bavley, Ken Copeland, Vicki Pineau, Benjamin Skalland, Xian Tao, Kirk Wolter, and Michael Zeddies.

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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 and guardians; 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 a target for adolescents aged 13–15 years of 80% coverage with ≥ 1 Tdap, ≥ 1 MenACWY, and ≥ 3 HPV doses in females and males, and 90% coverage for ≥ 2 varicella vaccine doses. To fulfill the CII mandate of monitoring vaccination coverage and marking progress toward achieving those objectives, the National Immunization Survey (NIS) Family of Surveys with an adolescent component called the NIS-Teen was implemented by the National Center for Immunization and Respiratory Diseases (NCIRD) and the National Center for Health Statistics (NCHS) of the Centers for Disease Control and Prevention (CDC) in 2006 (http://www.cdc.gov/vaccines/imz-managers/nis/about.html).

The target population for the NIS-Teen is non-institutionalized adolescents aged 13–17 years living in United States households at the time of the interview. The official coverage estimates reported from the NIS-Teen are proportions of adolescents up-to-date with respect to the recommended numbers of doses of all routinely recommended vaccines for adolescents and selected catch-up vaccines (Robinson 2016). These vaccines and their recommended numbers of doses are:

- Tetanus, diphtheria, and acellular pertussis vaccine (Tdap) – 1 dose;
- Quadrivalent meningococcal vaccine (MenACWY) – 2 doses;
- Human papillomavirus vaccine (HPV) – 2 or 3 doses, depending on age at first dose[1];

[1] The 2-dose HPV vaccination schedule was approved in October 2016 for adolescents who received their first dose before age 15 (Meites, Kempe, and Markowitz, 2016). Therefore, it is unlikely that changes in vaccination due to the new recommendation would be reflected in the 2016 NIS-Teen data (see Walker et al., 2017).

- Measles, mumps, and rubella vaccine (MMR) – 2 doses;
- Hepatitis B vaccine (Hep B) – 3 doses;
- Varicella zoster (chicken pox) vaccine – 2 doses among adolescents with no varicella disease history;
- Hepatitis A vaccine (Hep A) – 2 doses; and
- Seasonal influenza vaccine – 1 dose annually.

The NIS-Teen is conducted as an add-on to the National Immunization Survey-Child (NIS-Child), which seeks to estimate vaccination coverage rates among 19–35 month-old children. The NIS-Child uses a random digit dialing (RDD) telephone survey to identify households containing children aged 19–35 months and interviews the adult who is most knowledgeable about the child's vaccinations. If such a household is identified and the NIS-Child interview is completed, the household is then screened for the presence of 13–17 year-old adolescents. Households that do not contain a 19–35 month old child are not administered the NIS-Child interview but are immediately screened for the presence of a 13–17 year-old adolescent. If a household containing one or more adolescents aged 13–17 years is identified, a 13–17 year-old adolescent is randomly chosen, and the adult who is most knowledgeable about the teen's vaccinations is interviewed. With consent of the teen's parent or guardian, the NIS-Teen also contacts (by mail) the teen's vaccination provider(s) to request information on vaccinations from the teen's medical records. NIS-Teen sampling, data collection, and weighting operations are conducted by NORC at the University of Chicago.

Samples of telephone numbers are drawn independently, for each calendar quarter, within selected geographical areas. For the 2016 NIS-Teen, there are 61 geographic strata for which vaccine coverage levels can be estimated, including 7 local areas; the remaining 54 are either an entire state, the District of Columbia, a territory (the U.S. Virgin Islands, Guam, or Puerto Rico), or a "rest of state" area. This design makes it possible to produce annual estimates of vaccination coverage levels within each of the 61

estimation areas with a specified degree of precision (a coefficient of variation of approximately 6.5%). Further, by using the same data collection methodology and survey instruments in all estimation areas, the NIS-Teen produces comparable vaccination coverage levels among estimation areas and over time.

When the NIS-Teen was first conducted in Quarter 4 of 2006 and Quarter 4 of 2007, the survey was designed to produce estimates at the national level only. Starting in 2008, the NIS-Teen was expanded to produce estimates in 56 areas, including the 50 states, District of Columbia and 5 local areas that receive federal Section 317 immunization grants (Bexar County, TX; City of Chicago, IL; City of Houston, TX; New York City, NY; Philadelphia County, PA). These areas are called *estimation areas*. **In 2016, the NIS-Teen included five additional estimation areas: El Paso County, TX; Dallas County, TX; the U.S. Virgin Islands; Guam; and Puerto Rico.** As noted throughout this report, some procedures differed for territories when compared to the rest of the United States, including the creation of separate survey weight variables for analysis that is to include territories.

Data for the U.S. Virgin Islands and Guam are not included in the 2016 public-use data file to protect respondent confidentiality, as the sampling fractions were large in these small-population areas. Interested researchers can access data for the U.S. Virgin Islands and Guam by submitting a proposal and working through the NCHS Research Data Center. The link and guidelines for developing a proposal are located at the following URL: www.cdc.gov/rdc.

In 2016, the NIS-Teen 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 2011 in order to address the rapid rise of cell-phone-only households. **Published estimates from the July-December 2016 National Health Interview Survey (NHIS) indicate that the number of households with only wireless telephones continues to increase. Approximately 60.7% of all children under 18 years of age—over 44 million children—live in households with only wireless telephones (Blumberg**

and Luke 2017). 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.

For the 2016 NIS-Teen landline sample, household interviews began on January 14, 2016 and ended on February 8, 2017; for the 2016 NIS-Teen cell-phone sample, household interviews began on January 14, 2016, and ended on February 9, 2017. Provider data collection extended from February 2016 through March 2017 for both sample sources. A total sample, including the territory samples, of approximately 13.3 million telephone numbers (5.1 million landline and 8.2 million cell-phone) yielded household interviews for 44,771 teens (9,502 landline and 35,269 cell-phone), 21,843 of whom (5,126 landline and 16,717 cell-phone) had adequate provider data (provider-reported vaccination data adequate to determine whether the teen was up-to-date with respect to the recommended vaccination schedule). The 2016 NIS-Teen public-use data file (which does not include data for the U.S. Virgin Islands and Guam) contains data for 43,071 teens with completed household interviews, and more extensive data (e.g., provider-reported vaccination histories and facility data) for 20,880 teens with adequate provider data (including 156 unvaccinated teens). Data were collected for the U.S. Virgin Islands and Guam in 2016, although teens in these areas are not included on the public-use data file in order to protect confidentiality.

NIS-Teen vaccination coverage estimates are based on provider-reported vaccination histories from adolescents with adequate provider data (APD). In 2014, the household questionnaire was shortened to reduce the length of the household interview, decrease respondent burden, and potentially improve survey response rates. Questions that were previously used to define APD were no longer available, thus necessitating a modification to the APD definition used by the NIS-Teen. See the Data User's Guide for the 2014 NIS-Teen Public-Use Data File for a description of this change. **NIS-Teen estimates for 2016 will be directly comparable to NIS-Teen estimates published since 2014, but not to estimates published prior to 2014.**

The weights included in this public-use data file allow data analysts the capability of conducting several different types of analysis, depending on interests and aims. One can choose to analyze all teens with completed household interviews or only the subset of teens for whom the provider-reported data are adequate. CDC publishes estimates of vaccination coverage based on provider-reported vaccination histories using the subset of teens for whom the provider-reported data are adequate. Parental reported vaccination status is subject to recall error (Dorell et al. 2011, Ojha et al. 2013). Also, one can choose to include or exclude teens who reside in territories in the analysis. Previous NIS-Teen public-use files have provided analysts with these capabilities as well.

The 2016 public-use data file includes only dual-frame weights. The CDC has determined that the dual-frame estimates are the best estimates for 2016 in terms of minimizing any bias due to the incompleteness of the landline sampling frame. Section 6 of this user's guide provides information about the creation of the weight variables included in the 2016 NIS-Teen public-use data file, and Section 8 provides guidance for their use.

Vaccination coverage estimates for 2016 are available on the *TeenVaxView* website, https://www.cdc.gov/vaccines/imz-managers/coverage/teenvaxview/index.html.

The accompanying codebook (NCIRD 2017) documents the contents of the 2016 NIS-Teen public-use data file, and Section 7 of this user's guide describes these contents in detail. For reference, Appendix D (Alphabetical Listing of Variables in the NIS-Teen Public-Use Data Files) provides a full list of variables in the 2016 and previous public-use data files.

Additional information on the NIS-Teen is available at: http://www.cdc.gov/vaccines/imz-managers/nis/about.html.

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

Information Dissemination Staff, NCIRD

1600 Clifton Road

Atlanta, GA 30333

E-mail: cdcinfo@cdc.gov

Internet: http://www.cdc.gov/vaccines/nis

2. Sample Design

The NIS-Teen uses two phases of data collection to obtain vaccination information for a large national probability sample of teens: (1) a RDD telephone survey designed to identify households with adolescents 13 to 17 years of age, followed by (2) the Provider Record Check, a mailed survey to teens' vaccination 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 Jain et al. (2009).

2.1. The NIS-Teen RDD Telephone Survey

The NIS-Teen RDD telephone survey phase uses independent, quarterly samples of telephone numbers. Sampling frames were provided by Marketing Systems Group (MSG). Landline telephone and cell-phone numbers were sampled within estimation areas in each quarter of 2016. Table E.1 (in Appendix E) lists the 61 estimation areas for the 2016 NIS-Teen by state or territory and shows the estimated number of teens living in each state or territory and estimation area in 2016.

Because the NIS-Teen is an add-on survey to the NIS-Child, the NIS-Teen uses the same sampling frames and sampling methodology as the NIS-Child. The NIS-Child uses the list-assisted method of RDD (Lepkowski 1988) to sample landline telephone numbers. 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. The sampling frame of telephone numbers is updated each quarter to reflect new telephone exchanges and area codes. Because directory listings are not available for cell phones, the NIS-Child 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 landline sample in the U.S.

Virgin Islands, Guam, and Puerto Rico, so the landline and cell-phone samples for these areas were selected without list-assistance.

The target sample size of completed telephone interviews in each estimation area is designed to achieve an approximately equal coefficient of variation of 6.5% for an estimator of vaccination coverage derived from provider-reported vaccination histories, given a true coverage parameter of 50%. Landline telephone sample sizes and cell-phone sample sizes were chosen such that they can be combined to meet the target coefficient of variation of 6.5%.

In 2016, including the U.S. territory samples, 48.8% of teens (53.9% of landline sample teens and 47.4% of cell-phone sample teens) with a completed household interview were determined to have adequate provider data. Excluding territories, these proportions were the same: 48.8% (53.9% for the landline sample and 47.4% for the cell-phone sample). The percentage of teens with adequate provider data varies among the non-territory estimation areas (from 40.3% in Dallas County, TX to 56.8% in Vermont). Among the U.S. territories, the percentages were 52.1% in the U.S. Virgin Islands, 60.9% in Guam, and 37.6% in Puerto Rico. The phrase "adequate provider data" means that sufficient vaccination history information was obtained from the provider(s) to determine whether the teen is up-to-date with respect to the recommended vaccination schedule. Beginning in 2014, the definition of adequate provider data was expanded to include all adolescents with provider-reported vaccination data; see the Data User's Guide for the 2014 NIS-Teen Public-Use Data File for a description of this change. Unvaccinated teens are also considered to have adequate provider data. These are teens for whom either (1) the respondent reported during the household interview that the teen had received no vaccinations and has no providers, or (2) the respondent reported during the household interview that the adolescent had received no vaccinations but has one or more providers, and those providers all reported administering no vaccinations. The number of unvaccinated teens in the sample is small **(160 in 2016**, including the U.S. territory samples).

The design and implementation of the NIS-Teen landline sample involve four procedures. First, statistical models predict the number of sample telephone numbers needed in each estimation area to meet the target precision requirements, and, from among the entire NIS-Child sample of telephone numbers, this number of telephone numbers are "flagged" to be part of the NIS-Teen sample. 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, plus numbers on the NIS do-not-call list, from the sample before the interviewers dial them. Fourth, the sample telephone numbers are matched against a national database of residential landline telephone numbers in order to obtain usable mailing addresses for as many sample households as possible. To promote participation in the NIS-Child and NIS-Teen, an advance letter is sent to identifiable mailing addresses approximately two weeks prior to the household interview.

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

- Prior to 2014, there was no process to remove non-working and non-residential cell-phone numbers before dialing them. Beginning in 2014 and 2015, an automated process was implemented to remove cell-phone numbers flagged as having no recent activity and that were therefore very likely to be non-working cell phones. In 2016, a different automated process found to be more efficient in removing non-working cell-phone numbers was used.
- 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-Teen Provider Record Check

At the end of the household interview, consent to contact the teen's vaccination provider(s) is requested from the parent/guardian. When oral consent is obtained, each provider is mailed an immunization history questionnaire (IHQ). This mail survey portion of the NIS-Teen is the Provider Record Check. 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 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. The data from the questionnaires are edited, entered, cleaned, and merged with the household information from the RDD survey to produce a teen-level record.

2.3. Summary of Data Collection

Table 1 presents selected operational results of NIS-Teen data collection for calendar year 2016 for the NIS-Teen sample. To facilitate comparisons with prior NIS-Teen surveys, the numbers in Table 1 and discussed in this section are presented separately for the landline and cell-phone samples, and exclude the U.S. territory samples. **Adolescents aged 13–17 years during 2016 data collection were born between January 1998 and February 2004.**

The total landline RDD sample (in replicates that were released for use) consisted of 4,796,054 telephone numbers. Of those, 2,913,092 were eliminated before release to the telephone centers by the automated procedure as non-working numbers, non-residential numbers, or numbers on the NIS do-not-call list. The remaining 1,882,962 numbers were sent to the telephone centers to be dialed and 267,368 households were identified as shown in Rows C and F. Among the identified households, 222,371 (83.2%) were successfully screened. Of these, 10,716 (4.8%) contained an age-eligible teen. Among these households, 8,712 (81.3%) completed the household interview.

The cell-phone sample (in replicates that were released for use) consisted of 7,822,067 telephone numbers. Of these, 2,236,447 were eliminated before release to the telephone centers by the automated procedure as inactive cell phones or numbers on the NIS do-not-call list and the remaining 5,585,620 were sent to the telephone centers to be dialed. A total of 911,770 active personal cell-phone numbers (APCNs) were identified as shown in Row F. Among the identified APCNs, 700,004 (76.8%) were successfully screened. Of these, 47,148 (6.7%) were deemed eligible for the NIS-Teen interview. Respondents were eligible if the cell phone belonged to an adult living in a household with at least one age-eligible teen. Among the identified eligible households, 33,324 (70.7%) 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 2016). **In 2016, the CASRO response rate (Row J) for the landline sample was 55.5%. The NIS-Teen CASRO response rate equals the product of the resolution rate (82.0%, Row E), the screening completion rate (83.2%, Row G), and the interview completion rate among eligible households (81.3%, Row I).** 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 teens. The interview completion rate is the percentage of households with one or more age-eligible teens that complete the household interview.

The CASRO response rate (Row J) for the cell-phone sample in 2016 was 29.5%. As with the landline sample, it equals the product of the resolution rate (54.4%, Row E), the screening completion rate (76.8%, Row G), and the interview completion rate among eligible households (70.7%, Row I).

The CASRO response rate (Row J) for the combined landline and cell-phone sample was 32.7% in 2016. See footnote 6 of Table 1 for a description of the calculation of the combined CASRO response rate.

Row K of Table 1 shows that household interviews were completed for 8,690 age-eligible teens in the landline sample and 33,304 teens in the cell-phone sample (or 41,994 age-eligible teens in total). These figures are smaller than those in Row I because some completed interviews were removed when edits to the teen's date of birth rendered the teen ineligible. Rows L through O give results for the Provider Record Check phase. Specifically, Row L gives the rate of obtaining oral consent from household respondents to contact their teen's vaccination providers – 61.5% for landline sample cases and 56.5% for cell-phone sample cases in 2016.

The number of immunization history questionnaires mailed to vaccination providers exceeds the number of completed interviews for teens with consent because some teens have more than one vaccination provider. **Of the questionnaires mailed to providers of teens from the landline sample, 7,373 (94.6%, Row N) were returned. Among the landline-sample teens with completed household interviews, 4,684 (53.9%, Row O) had adequate vaccination histories based on provider reporting (4,664) or were determined to be unvaccinated (20). The other 46.1% of teens lacked adequate provider data for a variety of reasons, such as the parent or guardian did not give consent to contact the teen's provider(s), the provider(s) did not respond, or the provider(s) responded but did not report any vaccinations for the teen despite the parent or guardian indicating that the teen has received vaccinations.**

Of the questionnaires mailed to providers of teens from the cell-phone sample, 26,016 (94.0%, Row N) were returned. Among the cell-phone-sample teens with completed household interviews, 15,791 (47.4%, Row O) had adequate vaccination histories based on provider reporting (15,659) or had no vaccinations based on household reporting (132).

Table 1: Selected Operational Results (Excluding U.S. Territories), National Immunization Survey – Teen, 2016

Row	Key Indicator	Landline Sample		Cell-Phone Sample		Combined Samples		Formula
		Number	Percent	Number	Percent	Number	Percent	
	Household Phase							
A	Total Selected Telephone Numbers in Released Replicates	4,796,054	--	7,822,067	--	12,618,121	--	--
B	Phone Numbers Resolved before Computer-Assisted Telephone Interviewing	2,913,092	60.7%	2,236,447	28.6%	5,149,539	40.8%	B/A
C	Total Phone Numbers Released to Telephone Centers	1,882,962	--	5,585,620	--	7,468,582	--	A-B
D	Advance Letters Mailed	716,621	38.1%	0	0.0%	716,621	9.6%	D/C
E	Resolved Phone Numbers[1] – *Resolution Rate*	3,935,103	82.0%	4,252,887	54.4%	8,187,990	64.9%	E/A
F	Households Identified – *WRN/APCN Rate*[2]	267,368	6.8%	911,770	21.4%	1,179,138	14.4%	F/E
G	Households Successfully Screened[3] – *Screener Completion Rate*	222,371	83.2%	700,004	76.8%	922,375	78.2%	G/F
H	Eligible Households – *Eligibility Rate*[4]	10,716	4.8%	47,148	6.7%	57,864	6.3%	H/G
I	Households with Completed Household Interviews – *Interview Completion Rate*	8,712	81.3%	33,324	70.7%	42,036	72.6%	I/H
J	CASRO Response Rate[5]	--	55.5%	--	29.5%	--	32.7%	E*G*I[6]
K	Age-Eligible Teens with Completed Household Interviews[7]	8,690	--	33,304	--	41,994	--	--
	Provider Phase							
L	Teens with Consent to Contact Vaccination Providers	5,341	61.5%	18,805	56.5%	24,146	57.5%	L/K
M	Immunization History Questionnaires Mailed to Providers	7,790	--	27,690	--	35,480	--	--
N	Immunization History Questionnaires Returned from Providers	7,373	94.6%	26,016	94.0%	33,389	94.1%	N/M
O	Teens with Adequate Provider Data	4,684 (includes 20 unvaccinated teens)	53.9%	15,791 (includes 132 unvaccinated teens)	47.4%	20,475 (includes 152 unvaccinated teens)	48.8%	O/K
	Modules							
P	Age-Eligible Teens with Completed Household Interview and Completed Health Insurance Module	5,765	66.3%	19,960	59.9%	25,725	61.3%	P/K

[1] Includes phone numbers resolved before CATI (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, 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, it reflects a combination of the non-minor-only cell-phone rate and the age-eligibility rate.

[5] CASRO, Council of American Survey Research Organizations.

[6] The response rate is the number of households with a completed household interview divided by the estimated number of eligible households in the sample. Within each sample type (landline or cell phone), the number of eligible households was estimated using the CASRO assumptions; these assumptions are that the rate of households among the unresolved telephone numbers is the same as the observed rate of households among the resolved telephone numbers, and the rate of eligible households among unscreened households is the same as the observed rate of eligible households among screened households. Under these assumptions, within each sample type the CASRO response rate is equal to the product of the resolution rate, the screener completion rate, and the interview completion rate. For the combined samples, we have defined the CASRO response rate as the total number of households with a completed interview divided by the estimated total number of eligible households across both sample types, where the estimated total number of eligible households is equal to the sum of the estimated number of eligible households in the landline sample (using CASRO assumptions) and the estimated number of eligible households in the cell-phone sample (using CASRO assumptions).

[7] Rows K-P reflect the removal of teens with an ineligible best date of birth.

In 2016, data from the Health Insurance Module (HIM) were collected. **Among the 8,690 teens in the landline sample with completed household interviews, 5,765 (66.3%, Row P) completed the HIM. Among the 33,304 teens in the cell-phone sample with completed household interviews, 19,960 (59.9%, Row P) completed the HIM.**

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

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 teen's vaccination history (generally the parent or guardian of the teen). Informed consent to contact the teen's vaccination provider(s) is obtained at the end of the interview.

Information in the NIS-Teen is collected and processed under high security. To ensure privacy of the respondents and confidentiality of sensitive information, standards have been established for release of data from this survey. All CDC staff and contractor staff involved with the NIS-Teen sign confidentiality agreements and follow instructions to prevent disclosure.

All information in the NIS-Teen 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)]. 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-Teen Questionnaires

This section describes the questionnaires used in the 2016 NIS-Teen telephone interview of households and in the NIS-Teen Provider Record Check.

3.1. Content of the Household Questionnaire

The computer-assisted telephone interview (CATI) questionnaire used in the RDD phase of NIS-Teen data collection consists of two parts: a screener to identify households with adolescents aged 13 through 17 years and an interview portion. The questionnaire is modeled on the Immunization Supplement to the National Health Interview Survey (NHIS) (NCHS 1999). The NIS-Teen 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-Teen household interview. The CATI questionnaire is available at http://www.cdc.gov/vaccines/imz-managers/nis/datasets.html.

The household is first screened for the presence of children aged 19 through 35 months. If the household contains such a child, the NIS-Child interview is conducted before the household is screened for the NIS-Teen survey; if the household does not contain such a child, the household immediately proceeds to the NIS-Teen screener.

In the NIS-Teen screener, the purpose of the survey is explained to the respondent, and the ages of all the children in the household are obtained. If the household contains one or more adolescents aged 13 through 17 years, a 13 through 17 year-old adolescent is randomly chosen to be the subject of the interview, this teen's date of birth is collected, and the respondent is asked whether he/she is the most knowledgeable person for this teen'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 name of the most knowledgeable person is recorded, and a

"callback" is scheduled for a later date. For cell-phone sample, prior to screening for age-eligibility the household is screened to ensure that the cell phone is used by an adult (i.e., to ensure it is not a minor-only cell phone).

Table 2: Content of the Household Interview, National Immunization Survey – Teen, 2016

Questionnaire Section	Content of Section
Section S	Screening questions to determine NIS eligibility
NIS-Teen Screener	Screening questions to roster children and to determine NIS-Teen eligibility
Section A (Guam only)	Vaccination history (asked if shot records are available)
Section B	Ever vaccinated and flu, Td/Tdap, meningococcal, and HPV vaccination questions
Section C	Teen and household health questions, demographic and socioeconomic questions
Section D	Provider information and request for consent to contact the teen's vaccination provider(s)
Section E	Health Insurance Module (HIM)

The standard NIS-Teen questionnaire formerly included Section A following the NIS-Teen Screener. After asking whether the respondent has a shot card of the teen's vaccination history, he/she was formerly asked whether the shot card was easily accessible. If so, the interview proceeded with Section A (which asked respondents with shot cards about the shots on the card), followed by Section C; if not, it proceeded with Section B followed by Section C. Beginning in Q1/2014, Section A was eliminated from the regular household questionnaire and all respondents were administered Section B. Section B was also shortened. The remaining Section B questions ask a limited set of questions regarding flu, Td/Tdap, meningococcal, and HPV vaccinations; questions about measles, varicella, hepatitis A, and hepatitis B vaccines were removed. In 2015, Section A was reinstated for Guam respondents; however, as described above in the Introduction, Guam and U.S. Virgin Islands data are not included in the 2016 public-use data file.

Section C collects information about the health of the selected teen, including recent doctor visits and history of chicken pox disease, asthma, and other health conditions. Section C obtains information that

includes the relationship of respondent to the teen, race and Hispanic origin of the teen, household income, educational attainment of the mother, and other information on the socioeconomic characteristics of the household and the teen.

In the Provider Section (Section D) of the NIS-Teen household interview, identifying information (such as name, address, and telephone number) for the teen's vaccination provider(s) is requested, as well as the full names of the teen and the respondent, so that NIS-Teen personnel can contact the provider(s) and identify the teen whose vaccination information the NIS-Teen is requesting. After this information is obtained, consent to contact the teen's vaccination provider(s) is requested. When oral consent and sufficient identifying information are obtained, the immunization history questionnaire is mailed to the teen's vaccination provider(s).

A Health Insurance Module (HIM) (Section E) is administered upon completion of the Provider Section to collect data regarding the types of medical insurance coverage the teen has had since age 11 years. If a respondent provided consent to contact medical providers and completed the Provider Section, 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 the Provider Section was the respondent asked the HIM.

3.2. Content of the Immunization History Questionnaire (IHQ)

The IHQ mailed 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 vaccination data from the providers of respondents to the Immunization Supplement to the National Health Interview Survey. The IHQ consists of two double-sided pages. Page 1 includes space for the label that gives the teen's name, date of birth, and sex. 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-Teen and the National Center for Immunization and Respiratory Diseases. The IHQ is available at http://www.cdc.gov/vaccines/imz-managers/nis/datasets.html.

4. Data Preparation and Processing Procedures

The household and provider data collection in the NIS-Teen 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 teen are consolidated into a single vaccination history, the editing continues. A quality assurance check is performed based on the name, sex, and date of birth of the teen to ensure that the provider completed the questionnaire for the correct teen and to confirm age-eligibility (age 13 through 17 years at time of interview). 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-Teen data involve 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 coding of verbatim responses for race and ethnicity. 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 warning screen, allowing the interviewer to correct errors in real time. This allows the interviewer to reconcile errors while the respondent is on the telephone. CATI warning screens focus on items critical to the survey, such as those that determine a teen'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 sampled telephone number and summary information for telephone numbers and households. The interview data file contains one record for each eligible sampled teen and all data the household reported for the teen.

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 teens, 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 centers. Checks also ensure that no duplicate households exist in the sample file and no duplicate teens 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 teen. 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% 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., Recombivax counts as Hep B). These translations come from a file that contains all such verbatim responses ever encountered in the NIS-Teen. Also, the provider data file is checked for duplicate records,

and exact duplicates are removed. If the provider data contain a date of birth, sex, or name for the teen that differs from the household interview for that teen, the questionnaire is re-examined to determine whether it may have been filled out for the incorrect teen. Provider data that appear to have been filled out for the wrong teen are removed from the provider database. When a teen has data from multiple providers, decision rules are applied to produce the most complete picture of the teen's vaccination history.

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

4.2. Limitations of Data Editing Procedures

Although data editing procedures were used for the NIS-Teen, the data user should be aware that some inconsistent data might remain in the public-use data file. The variables that indicate whether a teen is up-to-date on each vaccine or series (on which the estimates of vaccination coverage are based) are derived from provider-reported data, and the NIS-Teen 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, the provider-reported data are manually reviewed and edited to correct specific reporting errors. Some adolescents considered to have 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 teen's medical record. Even with these limitations, the NIS-Teen overall is a rich source of data for assessment of up-to-date status and age-appropriate vaccination. Also, NIS-Teen is the only source to provide comparable provider-reported vaccination data across states and local areas in the United States.

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 (NCIRD 2017). 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 (NCIRD 2017). 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-Teen 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 teens with a completed household interview – i.e., all teens appearing on the public-use data file. Missing values of health insurance variables are also imputed for teens with adequate provider data. 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 the 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 variable labels in the codebook (NCIRD 2017) identify variables that contain imputed values. These variables include the sex, Hispanic origin, race, and health insurance status of the teen; the education level, age group, marital status, and mobility status of the mother; and the income-to-poverty ratio of the household.

4.6. Vaccine-Specific Recoding of Verbatim Responses

On the IHQ, providers can list vaccinations in the "other" section of the IHQ shot grid. After data collection, these vaccinations 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 vaccinations are recoded into the appropriate category or categories (for combination vaccinations).

4.7. Subsets of the NIS-Teen Data

The NIS-Teen public-use data file contains data for all adolescents aged 13–17 years 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 teen with a completed household interview is assigned a weight (**RDDWT_D** for the United States, excluding territories; **RDDWT_D_TERR** for the United States, including territories) for use in estimation.

The NIS-Teen 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 teens with adequate provider data. For these teens, one or more providers returned the immunization history questionnaire that included vaccination data. Unvaccinated teens are also considered to have adequate provider data. As discussed in Section 7

below, the **PDAT2** variable identifies the teens with adequate provider data (**PDAT2**=1). These teens have a separate weight **(PROVWT_D** for the United States, excluding territories; **PROVWT_D_TERR** for the United States, including territories**),** which should be used to form estimates of vaccination coverage (see Section 6).

4.8. Confidentiality and Disclosure Avoidance

To prevent identification of participants in the NIS-Teen 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 collapsed or recoded.

5. Quality Control and Quality Assurance Procedures

A major contributor to NIS-Teen data quality is its sample management system, which in 2016 managed over 480 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-Teen 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) address 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 were 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% verification. The keying error rate is estimated, by way of a second verification process, to be less than 1%.

6. Sampling Weights

The two phases (RDD-phase and provider-phase) of data collection result in a separate sampling weight for each teen that has data at that phase. The RDD-phase sampling weights permit analyses of data from teens with completed household interviews. Each teen with adequate provider data (the subset of teens with completed household interviews on which official estimates of vaccination coverage are based) has at least one provider-phase sampling weight. In 2016, the dual-frame RDD-phase sampling weight variable for producing estimates for teens with completed household interviews in the United States excluding territories is called RDDWT_D; and the dual-frame RDD-phase weight variable for producing estimates for the United States including territories is called RDDWT_D_TERR. The dual-frame provider-phase sampling weight variable for producing estimates for teens with adequate provider data in the United States excluding territories is called PROVWT_D; and the dual-frame provider-phase weight variable for producing estimates for the United States including territories is called PROVWT_D_TERR. See Section 8 of this user's guide for more information about the weights included in the data file and the proper way to use them.

A sampling weight may be interpreted as the approximate number of teens in the target population that a teen in the sample represents. Thus, for example, the sum of the sampling weights of teens that are up-to-date (on a particular vaccine or series of vaccines) yields an estimate of the total number of teens in the target population who are up-to-date. Dividing this sum by the total of the sampling weights for all teens 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 telephone number'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, subsampling of one eligible teen in the household, non-response to the household interview, number of telephone lines in the

household, combination of landline and cell-phone sample sources, raking for differential coverage rates, 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-Teen sample, each teen with a completed household interview receives a base sampling weight. For all four quarters of the landline sample and cell-phone sample, the base sampling weight is equal to the total number 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.

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

Non-response occurs in population-based surveys when respondents cannot be reached during the survey period, are not available at the time of the interview, or refuse to participate. Thus, the sum of the base sampling weights of teens 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 can accurately reflect the number of teens in the target population that each sampled teen with a completed household interview represents.

Some sampled households with age-eligible teens fail to complete the household interview because of unit non-response: for some telephone numbers, it is never determined whether or not the number is a working residential number despite multiple call attempts; for some households it is never determined whether or not the household contains age-eligible teens; and some households with age-eligible teens do not complete the household interview. To compensate for these types of unit non-response, the sampling

weights of teens with a completed household interview are adjusted to account for the estimated number of age-eligible teens in households whose telephone numbers are never resolved; the estimated number of age-eligible teens in households that fail to complete the screening interview; and the estimated number of age-eligible teens in households that fail to complete the household interview because of unit non-response. For the landline sample, each of these adjustments is carried out within each estimation area 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 (i.e., weighting cells were formed from directory-listed versus non-directory-listed telephone number; by telephone exchanges with 75% or higher white population versus telephone exchanges with less than 75% white population; and MSA/non-MSA status). For the cell-phone sample, each of these adjustments is carried out within estimation area by forming weighting cells based on MSA/non-MSA status of the wire center associated with the cell-phone number. Each of the non-response adjustments for territories was done at the estimation area level. That is, no weighting cells were formed for territories. 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 into 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 Subsampling of One Teen per Household

In households with more than one teen, only one teen is selected randomly per household for the NIS-Teen interview. The non-response adjusted age screener weight is adjusted to account for the teens that

are not selected. Each household's age screener weight is adjusted by multiplying it by the total number of eligible teens reported in the household (up to a maximum of 3). This adjustment is performed in an identical manner for both the landline and cell-phone samples.

6.4. Adjustment for Interview Non-Response

Some households that are determined to be eligible fail to complete the household interview for the selected teen. To compensate for this third type of unit non-response, the sampling weights of teens with a completed household interview are adjusted to account for teens who live in households that failed to complete the household interview. Similar to the first two types of unit non-response, for the landline sample, the adjustment 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. For the cell-phone sample, the adjustment is carried out within estimation area by forming weighting cells based on MSA status. For territories, the interview non-response adjustment was done at the estimation area level, i.e., no weighting cells were formed for the territory interview non-response adjustment. Each weighting cell for the interview non-response adjustment must have sufficient responding cases (usually 15); cells with a deficient number of responding cases are collapsed with neighboring cells. The priority 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 non-responding records from the previous adjustment step are distributed to the weights of the responding records within each cell.

6.5. Adjustment for Multiple Telephone Lines and Deriving Annual Weights

Once the non-response-adjusted interview weights for teens 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 teen'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 teen'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).

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.

6.6. Post-Stratification

Survey weights for the landline and cell-phone samples must be combined to provide weights for the full target population of teens aged 13 to 17 years. Since the proportion of teens living in landline-only households is continually decreasing (and thus, the number of landline-only sample cases is small), teens in dual landline and cell-phone households from the landline sample are combined with teens in landline-only households and then adjusted to the combined population estimate of teens living in dual user and landline-only households within each estimation area. Teens in cell-phone-only households (from the cell-phone sample) within each estimation area are weighted to represent teens in cell-phone-only households. Next, since the landline and cell-phone sampling frames overlap in coverage of teens in landline and cell-phone dual-use households, teens in dual-user households from both samples are

combined based on the effective number of teens with a completed household interview within each sample type (landline, cell-phone), and are weighted to represent teens in dual-use households within each estimation area. Finally, teens in phoneless households, which are excluded from the dual-frame sample, are accounted for in the raking step described below.

The control totals used for the 2016 NIS-Teen are derived from a combination of 2015 census population estimates and the combined 2013, 2014, and 2015 one-year American Community Survey (ACS) data for the United States and Puerto Rico, with adjustments for mortality, foreign immigration, and migration between states to produce population totals as of July 1, 2016. For the U.S Virgin Islands and Guam, the control totals are derived from the 2010 Census data. The proportion of teens by detailed telephone status (landline-only, landline and cell-phone dual-user, cell-phone-only, phoneless) within each estimation area in the United States were derived using a similar small area modeling approach as described in Blumberg et al. (2011). These modeled telephone status estimates are applied to the control total for the total number of teens age 13 through 17 years in the estimation area to estimate the number of teens age 13 through 17 years by telephone status within the estimation area. To reduce sampling variability and improve the precision of estimation, extreme weights are trimmed within an estimation area. RDD sampling weight values exceeding the median weight plus three times the interquartile range of the weights within an estimation area are truncated to that threshold. This weight trimming prevents teens with unusually large weights from having an unusually large impact on vaccination coverage estimates.

The final step in adjusting the RDD sampling weights is a raking adjustment (Deming 1943) of the trimmed, telephone status adjusted weights. The raking procedure uses estimation area-level control totals for maternal education categories, teen's race/ethnicity, age group of the teen, sex of the teen, and telephone status. Raking makes it possible to incorporate additional variables into the weighting and to use more detailed categories for those variables. Briefly, raking takes each variable in turn and applies a proportional adjustment to the current weights of the teens 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. At this point, as before, the weights that exceed the median weight plus three times the interquartile range of the weights within an estimation area are truncated to that threshold. The raking step is applied again after the truncation of the weights and the weights are rechecked for extreme weights and truncated as before. The process is iterated up to five times.

The sampling weights after all the foregoing adjustments constitute the "RDD sampling weights" (RDDWT_D for the United States excluding territories; RDDWT_D_TERR for the United States including territories).

6.7. Adjustment for Provider Non-Response

Among the 41,994 teens with a completed household interview from the landline and cell-phone samples (excluding territories), 20,475 (48.8%) had adequate provider data. The definition of teens with adequate provider data includes unvaccinated teens. These are teens for whom the respondent reported during the household interview that the teen had received no vaccinations and has no providers, or for whom one or more providers were reported but those providers reported administering no vaccinations. **Among the 20,475 teens with adequate provider data, 152 were unvaccinated teens.** Failure to obtain adequate provider data for the remaining 51.2% was attributable to:

- parent or guardian not giving consent to contact the teen's vaccination provider(s) (42.3%);
- consent to contact vaccination providers obtained but no providers returned the immunization history questionnaire (4.0%); and
- one or more providers returned the immunization history questionnaire, but no providers reported any vaccination data, despite the parent or guardian indicating that the teen has received vaccinations (4.9%).

The 21,519 teens 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-Teen as a whole.

Empirical results for the NIS-Child 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. These factors indicate a potential lack of continuity of health care, and are associated with lower vaccination rates (Coronado et al. 2000). An adjustment is made to the RDD sampling weights of the NIS-Child to account for these differences; otherwise, estimated vaccination coverage rates may be biased. A similar adjustment is also made to the RDD sampling weights of the NIS-Teen.

To reduce potential bias in estimators of vaccination coverage attributable to partial non-response, a weighting-class adjustment is used in each estimation area (Brick and Kalton 1996). This adjustment involves three steps. In the first step, sampled teens 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). Teens that 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, teens in each class are comparable. Because of this comparability, any sub-sample of teens in a class may represent all teens in the class. Therefore, the weighting-class adjustment uses the teens with adequate provider data to represent all teens in the class.

In the second step of this weighting-class adjustment, within each class an adjustment factor redistributes the RDD sample weights of the teens with missing provider data to the weights of the teens that have adequate provider data. These adjusted sampling weights of teens with adequate provider data are initial non-response-adjusted provider-phase weights. The model for teens with adequate provider data includes significant main effects and significant two-way interactions between sample type (landline, cell-phone) and all other variables.

Within an estimation area, the sums of non-response adjusted weights of teens 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 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 teens with completed household interviews. Smith et al. (2001b, 2005) describe the development of this approach in more detail. These raked weights of teens with adequate provider data are called "final provider-phase weights" (PROVWT_D for the United States excluding territories and PROVWT_D_TERR for the United States including territories**).** Because of the comparability of teens within each weighting class, any estimate that uses data only from the teens with adequate provider data, along with their provider-phase sampling weights, will have less bias attributable to differences between teens with adequate provider data and teens with missing provider data.

Appendix B summarizes the distribution of the sampling weights in each estimation area.

After sampling weights were calculated for all children, they were stored in the variables RDDWT_D_TERR and PROVWT_D_TERR. These weight variables permit one to conduct analysis for all estimation areas, including territories. The weight variables RDDWT_D and PROVWT_D are equal to RDDWT_D_TERR and PROVWT_D_TERR for all teens except for teens in territories, for whom the

values of RDDWT_D and PROVWT_D are blank or missing. RDDWT_D and PROVWT_D permit one to conduct analysis of all estimation areas, excluding territories.

7. Contents of the Public-Use Data File

The NIS-Teen public-use data file contains a record for each eligible teen for whom Section C of the household interview was completed, along with household-reported vaccination information and demographic information about the teen and the teen's mother. For teens with immunization history questionnaires containing vaccination data returned by one or more providers, the file also contains provider characteristic variables, as well as variables based on the teen's synthesized provider-reported vaccination history: the age of the teen at each vaccination, the number of each type of vaccination received, and indicators of whether the teen 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 (NCIRD 2017). The codebook is divided into the ten sections described below and contains variable names, labels, and response frequencies (for categorical variables). The codebook also indicates the questionnaire item or items that serve as the ultimate source for each variable and, for selected variables, gives additional information about the variable in the "Notes" field.

Before describing the sections of the public-use data file below, we first summarize the differences between the 2015 and 2016 NIS-Teen public-use data files:

- **A new 2016 estimation area variable (ESTIAPT16) has been added and the 2015 estimation area variable (ESTIAPT15) has been dropped. (See Table 8.) Note that Puerto Rico teens are identified by ESTIAPT16=106 and Dallas County, Texas teens are identified by ESTIAPT16=52. Although data were collected for the U.S. Virgin Islands and Guam in 2016, teens in these areas are not included on the public-use data file in order to protect confidentiality.**

- **Beginning in Q1/2016, the name of the Meningococcal section of the IHQ shot grid was changed to explicitly refer to "Meningococcal– serogroups ACWY" rather than just "Meningococcal", and a new "Meningococcal– serogroup B" section was added with two type boxes: MenB-FHbp (Trumenba®) and MenB-4C (Bexsero®). Additionally, since Meningococcal shots are sometimes reported in the "other" section of the IHQ shot grid without specifying serogroup, a third Meningococcal shot category ("Meningococcal unknown serogroup") was created to store these shots, whereas previously they were coded in the single "Meningococcal" shot category. This has resulted in the addition of new vaccine type codes, as found in Appendix F. It has also required changes to the definitions and labels for several Meningococcal vaccination variables, as found in Appendix D. Finally, several new variables were added to store provider-reported vaccination information for the new "Meningococcal– serogroup B" and "Meningococcal unknown serogroup" shot categories, as listed in Table 3.**
- **Three new HPV up-to-date variables were added to reflect the new 2-dose HPV schedule in addition to the existing 3-dose HPV schedule, as listed in Table 4. The 2-dose schedule can be administered if the first dose is given before age 15 years and enough time passes between the 1st and 2nd doses. The three new variables indicate teens that are up-to-date based on either the 2-dose or the 3-dose schedule. Vaccination coverage estimates based on the 2- or 3-dose schedule released in the 2016 NIS-Teen MMWR report (Walker et al., 2017) used the P_UTDHPV_15INT variable.**

Table 3: New Provider-Reported Meningococcal Variables on the Public-Use Data File, National Immunization Survey - Teen, 2016

Variable Name	Label
P_N13MENB	NUMBER OF MENINGOCOCCAL SEROGROUP B SHOTS BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE.
P_N13MENB_BB	NUMBER OF MENINGOCOCCAL MENB-4C SHOTS BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE.
P_N13MENB_BT	NUMBER OF MENINGOCOCCAL MENB-FHBP SHOTS BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE.
P_N13MENB_BU	NUMBER OF MENINGOCOCCAL SEROGROUP B SHOTS OF UNKNOWN TYPE BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE.
P_N13MENU	NUMBER OF MENINGOCOCCAL-UNKNOWN SEROGROUP SHOTS BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE.
P_NUMMENB	NUMBER OF MENINGOCOCCAL SEROGROUP B SHOTS DETERMINED FROM PROVIDER INFO, EXCLUDING VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE.
P_NUMMENB_BB	NUMBER OF MENINGOCOCCAL MENB-4C SHOTS DETERMINED FROM PROVIDER INFO, EXCLUDING VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE.
P_NUMMENB_BT	NUMBER OF MENINGOCOCCAL MENB-FHBP SHOTS DETERMINED FROM PROVIDER INFO, EXCLUDING VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE.
P_NUMMENB_BU	NUMBER OF MENINGOCOCCAL SEROGROUP B SHOTS OF UNKNOWN TYPE DETERMINED FROM PROVIDER INFO, EXCLUDING VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE.
P_NUMMENU	NUMBER OF MENINGOCOCCAL-UNKNOWN SEROGROUP SHOTS DETERMINED FROM PROVIDER INFO, EXCLUDING VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE.
MENB_DAGE1 – MENB_DAGE9	AGE IN DAYS OF PROV-REPORTED MENINGOCOCCAL SEROGROUP B SHOT #1-9
MENB_MAGE1 – MENB_MAGE9	AGE IN MONTHS OF PROV-REPORTED MENINGOCOCCAL SEROGROUP B SHOT #1-9
MENB_AGE1 – MENB_AGE9	AGE IN YEARS OF PROV-REPORTED MENINGOCOCCAL SEROGROUP B SHOT #1-9
MENU_DAGE1 – MENU_DAGE9	AGE IN DAYS OF PROV-REPORTED MENINGOCOCCAL-UNKNOWN SEROGROUP SHOT #1-9

Variable Name	Label
MENU_MAGE1 – MENU_MAGE9	AGE IN MONTHS OF PROV-REPORTED MENINGOCOCCAL-UNKNOWN SEROGROUP SHOT #1-9
MENU_AGE1 – MENU_AGE9	AGE IN YEARS OF PROV-REPORTED MENINGOCOCCAL-UNKNOWN SEROGROUP SHOT #1-9

Table 4: New HPV Up-to-Date Variables on the Public-Use Data File, National Immunization Survey - Teen, 2016

Variable Name	Label	Numerator and Denominator	
P_UTDHPV_15	UP-TO-DATE FLAG (PROV INFO): 3+ HUMAN PAPILLOMAVIRUS SHOT, OR 2+ HUMAN PAPILLOMAVIRUS SHOT WITH FIRST SHOT RECEIVED BEFORE AGE 15, EXCLUDING VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE.	Num.:	3+ HPV or (2+ HPV with 1st dose <15y)
		Denom.:	All
P_UTDHPV_15INT	UP-TO-DATE FLAG (PROV INFO): 3+ HUMAN PAPILLOMAVIRUS SHOT, OR 2+ HUMAN PAPILLOMAVIRUS SHOT WITH FIRST SHOT RECEIVED BEFORE AGE 15 AND INTERVAL BETWEEN 1ST AND 2ND SHOTS AT LEAST 5 MONTHS-4 DAYS, EXCLUDING VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE.	Num.:	3+ HPV or (2+ HPV with 1st dose <15y and 2nd dose date – 1st dose date ≥ 5m – 4d)
		Denom.:	All
P_UTDHPV3C_15INT	UP-TO-DATE FLAG (PROV INFO): HPV CONDITIONAL COMPLETION RATE, INCLUDING COMPLETION VIA 3-SHOT OR 2-SHOT SERIES, EXCLUDING VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE.	Num.:	3+ HPV or (2+ HPV with 1st dose <15y and 2nd dose date – 1st dose date ≥ 5m – 4d)
		Denom.:	1+ HPV and ≥6m between 1st HPV and household interview date

- **A new variable INCPORAR_I was added to provide the household income-to-poverty ratio after missing values of household income were imputed. This variable is derived in the same way as INCPORAR except that it includes imputed values of household income.**
- **The health insurance variables TIS_INS_1, TIS_INS_2, TIS_INS_3, TIS_INS_3A, TIS_INS_4_5, TIS_INS_6, and TIS_INS_11 were removed, and replaced with the new**

health insurance variables INS_STAT_I, which indicates the teen's current insurance coverage status (private insurance, Medicaid, other insurance, or uninsured), and INS_BREAK_I, which indicates the continuity of the teen's insurance coverage since age 11 (i.e., if currently insured, whether there was ever a break in coverage, and if currently uninsured, whether there was any previous period of coverage). Unlike the former health insurance variables, INS_STAT_I and INS_BREAK_I reflect imputation of missing data and the recoding of verbatim responses, and are only available for teens with adequate provider data who reside in the non-territory United States. A detailed description of how these variables were coded can be found in Section 7.10.

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

SEQNUMT is the unique teen identifier. (Because only one teen is selected per household, **SEQNUMT** is also a unique household identifier.) **PDAT2** indicates which teens are considered to have adequate provider data. As described in Section 6 of this report, **RDDWT_D/RDDWT_D_TERR** and **PROVWT_D /PROVWT_D_TERR** are the final household- and provider-phase weights, respectively. **PROVWT_D/PROVWT_D_TERR** 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 and Health Information

Guam respondents who have a shot card available for the selected teen are administered Section A of the household questionnaire. However, because Guam and U.S. Virgin Islands data are not included on the 2016 public-use data file, as described above in the Introduction, and because Section A was administered only for Guam respondents, Section A variables are not included on the 2016 public-use data file.

All non-Guam respondents are administered Section B of the household questionnaire, where they are asked whether they recall the teen getting flu, Td/Tdap, meningococcal, and HPV vaccinations, and for the number of meningococcal and HPV vaccinations.

Respondents are then administered Section C of the household interview, wherein information about health of the selected teen and the teen's family, as well as demographic information about the teen and the teen's mother, is collected.

Section 2 of the public-use data file contains vaccination information collected in Section B, and the health information collected in Section C of the household questionnaire. **IMM_ANY** indicates whether the respondent reported that the teen has had a vaccination of any type. For each type of vaccine asked about in Section B (excluding seasonal influenza), a set of variables stores the information collected about that vaccine type; additional variables store the responses to the health questions in Section C.

The household-reported vaccination and health variables are described in more detail below.

7.2.1. Household-Reported Tetanus Vaccine Variables

Section B respondents that said the teen has received a vaccination of any type (IMM_ANY=1) are also asked whether they recall the teen getting any Tetanus booster vaccinations.

Variable TET_ANY indicates whether any Tetanus booster vaccinations were reported for the teen. All respondents reporting that the teen has not received any Tetanus booster vaccinations (both from the shot card and from recall), are then asked the reason the teen didn't receive Tetanus booster vaccinations. Variables **TET_REAS_1-TET_REAS_5, TET_REAS_7**, and **TET_REAS_10-TET_REAS_24** store the answers to this choose-all-that-apply question and reflect the coding of open-ended responses into the reason categories existing on the questionnaire as well as into newly-created reason categories.

7.2.2. Household-Reported Meningococcal Vaccine Variables

Section B respondents that said the teen has received a vaccination of any type (IMM_ANY=1) are asked whether they recall the teen getting any meningococcal vaccinations, and if so, they are asked for the number of meningococcal vaccinations they recall.

Variable MEN_ANY indicates whether any meningococcal vaccinations were reported for the teen. Variable MEN_NUM_TOT stores the total number of meningococcal vaccinations reported by the respondent.

All respondents reporting that the teen has not received any meningococcal vaccinations (both from the shot card and from recall), are then asked the reason the teen didn't receive meningococcal vaccinations. Variables **MEN_REAS_1-MEN_REAS_7** and **MEN_REAS_10-MEN_REAS_23** store the answers to this choose-all-that-apply question and reflect the coding of open-ended responses into the reason categories existing on the questionnaire as well as into newly-created reason categories.

7.2.3. Household-Reported Human Papillomavirus (HPV) Vaccine Variables

Section B respondents that said the teen has received a vaccination of any type (IMM_ANY=1) are asked whether they recall the teen getting any HPV vaccinations, and if so, they are asked for the number of HPV vaccinations they recall.

Variable HPVI_ANY indicates whether any HPV vaccinations were reported for the teen. Variable HPVI_NUM_TOT stores the total number of HPV vaccinations reported by the respondent.

All respondents reporting that the teen has received a vaccination of any type (IMM_ANY=1), regardless of whether they reported the teen has received an HPV vaccination, are asked whether a doctor or other health care professional has ever recommended that the teen receive HPV vaccinations (**HPVI_RECOM**), and if so, the respondent is asked at what age the doctor recommended the teen should start receiving HPV shots (variable not included on the public-use file).

All respondents reporting that the teen received fewer than three HPV vaccinations in total are asked how likely it is that the teen will receive HPV vaccinations in the next twelve months (**HPVI_INTENTR**). Those responding "Not too likely", "Not likely at all", or “Not Sure/Don’t Know” are asked the reason the teen won't receive HPV vaccinations in the next twelve months. Variables **HPVI_REAS_1-HPVI_REAS_3, HPVI_REAS_5-HPVI_REAS_6**, and **HPVI_REAS_9-HPVI_REAS_29** store the answers to this choose-all-that-apply question and reflect the coding of open-ended responses into the reason categories existing on the questionnaire as well as into newly-created reason categories.

Because Guam and U.S. Virgin Islands data are not included on the 2016 public-use data file, and because only Guam respondents were administered Section A, the household-reported HPV vaccination variables on the 2016 public-use data file are based only on Section B responses.

7.2.4. Household-Reported Health Variables

All respondents are asked whether the selected teen has ever had the chicken pox (**CPOX_HAD**) and, if so, they are asked the age of the teen in years at the time when the teen had the chicken pox (**CPOX_AGE**). Those unable to give an exact age are asked to report an age range (**CPOX_AGER**).

All respondents are then asked the age of the teen at the time of his or her last check-up (**CKUP_AGE**). If the teen's age at the last check-up was 13 years or more, the respondent is asked whether the teen had an 11-12 year old well-child exam (**CKUP_11_12**); if the respondent is unable or unwilling to answer this question he or she is asked whether or not the teen's last check-up was more than, exactly, or less than [age of teen - 12] years ago (**CKUP_LAST**).

All respondents are asked the number of times the teen has seen a health care professional in the last 12 months (**VISITS**); whether the teen has been told by a health professional that he or she has asthma (**ASTHMA**); whether the teen has ever been told by a health professional that he or she has a lung condition other than asthma, a heart condition, diabetes, a kidney condition, sickle cell anemia or other

anemia, or a weakened immune system caused by a chronic illness or by medicines taken for a chronic illness (**RISK_EVER**); whether the teen currently has any of these conditions (**RISK_NOW**); and whether any other members of the teen's household currently have any of these conditions (**RISK_HH**). Finally, the respondent is asked the number of times in the past 12 months the teen has missed school due to illness or injury (**NOSCHOOLR**).

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

Section 3 of the NIS-Teen public-use data file consists of information collected during the household screening interview and the demographic information collected in 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 been collapsed or recoded.

AGE is the age of the selected teen in years based on the teen's best date of birth and the screener completion date, and **SEX** gives the sex of the selected teen, with missing values imputed. The language in which the interview was conducted is stored in variable **LANGUAGE**, and **C5R** gives the relationship of the respondent to the selected teen.

C1R and **CHILDNM** give the number of people and children, respectively, in the household.

The teen'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. **EDUC_TR** gives the teen's grade in school at the time of the interview.

The age, education level, and marital status of the mother of the selected teen are stored in variables **AGEGRP_M_I, EDUC1**, and **MARITAL2 (married vs. not married)**, with missing values imputed.

The categorized total combined income for the teen'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. **INCPORAR_I gives the same ratio after missing values of family income have been imputed.** 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 teen's birth.

7.4. Section 4: Geographic Variables

Variables **ESTIAPT16** and **STATE** give the 2016 estimation area and state of residence, respectively, for each teen. **EST_GRANT** indicates which of the 50 states, District of Columbia, and 5 local areas that receive federal Section 317 immunization grants (Bexar County, TX; City of Chicago, IL; City of Houston, TX; New York City, NY; Philadelphia County, PA) the teen resides in.

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

Variable **D7** indicates whether the respondent gave consent to contact the teen'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 the cleaning or de-duplication of the initially-reported provider count. Variable **NUM_PROVR** gives the number of providers identified for teens with consent to contact the providers and reflects the cleaning and de-duplication of the initially-reported provider count. For teens without consent, **NUM_PROVR** is set to 0.

7.6. Section 6: Number of Responding Providers Variables

Variable **N_PRVR** indicates the number of providers returning IHQs with vaccination information for the teen. That is, **N_PRVR** is the number of IHQs that were returned for the teen that contain information on the IHQ shot grid.

7.7. Section 7: Characteristics of Providers Variables

This section summarizes the information collected in IHQ questions 5c, 6, and 7 across the teen's providers who returned IHQs containing vaccination (i.e., shot grid) data.

FACILITY indicates the facility type of the teen's vaccination providers based on responses to IHQ question 5c. If all of the teen's providers that returned IHQs containing shot grid data (see Section 6 variable **N_PRVR**) reported their facility type to be:

- a public health department-operated clinic, community health center, rural health clinic, migrant health center, Indian Health Service-operated center, tribal health facility, or urban Indian health care facility, then **FACILITY**=1 (all public facilities);
- a hospital-based clinic, then **FACILITY**=2 (all hospital facilities);
- a private practice, then **FACILITY**=3 (all private facilities);

- a military health care facility, WIC clinic, school-based health center, pharmacy, or other type of facility, then **FACILITY**=4 (all military/WIC/school/pharmacy or other facilities).

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

The Vaccines For Children (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 (http://www.cdc.gov/vaccines/programs/vfc/index.html). CDC buys vaccines at a discount and distributes them to awardees—i.e., state health departments and certain local and territorial public health agencies—which in turn distribute them at no charge to those private physicians' offices and public health clinics registered as VFC providers. **VFC_ORDER**, based on responses to IHQ question 6, indicates whether the teen's vaccination providers order vaccines from a state or local health department to administer to children. If all of the teen'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 teen'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 teen'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 teen'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 teen's providers returned an IHQ containing shot grid data, **VFC_ORDER**=4 (unknown). If none of the teen's providers returned an IHQ

containing shot grid data, **VFC_ORDER** is set to missing. Note that having a provider that orders VFC vaccine does not imply that the child is VFC-entitled; providers enrolled in the VFC program could also vaccinate children who are not VFC-entitled.

REGISTRY is based on responses to IHQ question 7 and indicates whether the teen's vaccination providers reported the teen's vaccinations to a community or state immunization registry (also known as an Immunization Information System, or IIS). If all of the teen'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 teen's providers that returned an IHQ containing shot grid data indicated that the practice reported to a registry and the teen'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 teen'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 teen's providers returned an IHQ containing shot grid data, **REGISTRY**=4 (unknown). If none of the teen'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 teen'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-Teen, 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 5 shows the vaccine categories and types for the 2016 NIS-Teen. 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.

For each vaccine category, Section 8 of the public-use data file contains a variable named **P_NUM*YYY*** – where "YYY" is the vaccine category abbreviation given in Table 5 – that stores the number of vaccinations in that vaccine category in the teen's synthesized provider-reported vaccination history. For each vaccine category and type combination, Section 8 also contains a variable named **P_NUM*YYY_TT*** – where "YYY" is the vaccine category abbreviation and "TT" is the vaccine type code given in Table 5 – that stores the number of vaccinations in that vaccine category of that vaccine type in the teen's synthesized provider-reported vaccination history.

For each **P_NUM*YYY*** and **P_NUM*YYY_TT*** variable described above, there are corresponding variables of the form **P_N13*YYY*** and **P_N13*YYY_TT*** that count only vaccinations that the teen received prior to age 13 years.

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 begin with "**P_UTD**"; 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 5) being included when determining whether the teen is up-to-date. For each "**P_UTD**" variable there is a corresponding variable whose name begins with "**P_U13**" that indicates whether the teen was up-to-date for the particular vaccine or vaccine series by age 13 years.

Note that it is possible that the administration of the NIS-Teen interview itself prompts some respondents to vaccinate their teens following the interview; to ensure that the vaccination rate estimates aren't artificially boosted because of this, the "**P_NUM**", "**P_N13**", "**P_UTD**", and "**P_U13**" variables in this

section of the public-use data file count only vaccinations received before the date the household interview was completed.

This section also contains some additional UTD variables specific to human papillomavirus (HPV) vaccines. **P_UTDHPV11**, **P_UTDHPV12**, and **P_UTDHPV13** are conditional up-to-date indicators showing whether a teen has received exactly 1, exactly 2, or 3 or more HPV vaccinations, given that the teen has received at least one. Teens that have received no HPV vaccinations will have missing values for these variables. **P_UTDHPV3C** is the conditional HPV vaccination series completion indicator for the 3-dose series. It indicates, among teens that have received at least one HPV vaccination, whether the teen completed the series of three doses. **This variable is limited to teens with at least one HPV vaccination where the interview completion date follows the date of the first HPV vaccination by at least 6 months, as 6 months is the minimum amount of time required to complete the 3-dose HPV vaccine series. P_UTDHPV_15 indicates teens that either have received 3 or more HPV doses or have received 2 or more HPV doses with the 1st dose before age 15 years. P_UTDHPV_15INT indicates teens that either have received 3 or more HPV doses or have received 2 or more HPV doses with the 1st dose before age 15 years and at least 5 months minus 4 days between the 1st and 2nd doses. P_UTDHPV3C_15INT is the conditional HPV vaccination series completion indicator for either the 3-dose or 2-dose series. This variable uses the same criteria as P_UTDHPV_15INT, but is limited to teens with at least one HPV vaccination and 6 months between the first HPV dose date and the household interview date.**

Finally, this section of the public-use data file contains variable **VRC_HIST**, which indicates whether the household respondent or any of the providers reported that the teen has had a history of chicken pox disease.

Table 5: Vaccine Categories and Vaccine Types, National Immunization Survey - Teen, 2016

Vaccine Category Abbreviation	Vaccine Category Description	Vaccine Type Code	Vaccine Type Description
TDP	Td/Tdap-containing, given after age 6 years	11	Td
TDP	Td/Tdap-containing, given after age 6 years	14	Tdap
TDP	Td/Tdap-containing, given after age 6 years	15	Td/Tdap-containing, unknown type
HEPB	Hepatitis B-containing	61	0.5 ml Recombivax
HEPB	Hepatitis B-containing	62	1.0 ml Recombivax
HEPB	Hepatitis B-containing	63	Engerix
HEPB	Hepatitis B-containing	64	Hepatitis B-only, unknown type
HEPB	Hepatitis B-containing	43	HepB-Hib
HEPB	Hepatitis B-containing	HB	Hepatitis B-containing, unknown type
FLU	Seasonal influenza-containing	FZ	Fluzone
FLU	Seasonal influenza-containing	FV	Fluvirin
FLU	Seasonal influenza-containing	FN	Injected influenza, other/unknown type
FLU	Seasonal influenza-containing	FM	Flumist
FLU	Seasonal influenza-containing	FL	Influenza-containing, unknown type
MCV	Measles-containing	30	MMR-only
MCV	Measles-containing	31	Measles-only
MCV	Measles-containing	32	Measles-Mumps (through backcoding)
MCV	Measles-containing	33	Measles-Rubella (through backcoding)
MCV	Measles-containing	VM	MMR-Varicella
MCV	Measles-containing	MM	Measles-containing, unknown type
VAR	Varicella-containing	VO	Varicella-only
VAR	Varicella-containing	VM	MMR-Varicella
VAR	Varicella-containing	VA	Varicella-containing, unknown type
HEPA	Hepatitis A-containing	HO	HepA-only (Havrix or Vaqta)
HEPA	Hepatitis A-containing	HA	HepA-containing, unknown type
PPS	Pneumococcal Polysaccharide	-	-
MEN	Meningococcal **serogroup ACWY**	80	MenACWY (Menactra or Menveo)
MEN	Meningococcal **serogroup ACWY**	81	MPSV4 (Menomune)
MEN	Meningococcal **serogroup ACWY**	82	Meningococcal **serogroup ACWY**, unknown type
MENB	**Meningococcal serogroup B**	**BT**	**MenB-FHbp**
MENB	**Meningococcal serogroup B**	**BB**	**MenB-4C**
MENB	**Meningococcal serogroup B**	**BU**	**Meningococcal serogroup B, unknown type**
MENU	**Meningococcal, unknown serogroup**	**-**	**-**
HPV	Human Papillomavirus	CV	Cervarix (2vHPV)
HPV	Human Papillomavirus	4V	Gardasil 4 (4vHPV)
HPV	Human Papillomavirus	9V	Gardasil 9 (9vHPV)
HPV	Human Papillomavirus	UV	Gardasil, unknown valency
HPV	Human Papillomavirus	HP	HPV, unknown type

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

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

For each vaccine category, variables ***YYY*_AGE1 - *YYY*_AGE9** store the age in years of the teen when the vaccination was administered for up to nine vaccinations in the teen's synthesized provider-reported vaccination history, where "**YYY**" is the vaccine category abbreviation given in Table 5. Variables ***YYY*_MAGE1 - *YYY*_MAGE9** store the age in months of the teen when each vaccination was administered. Variables ***YYY*_DAGE1 - *YYY*_DAGE9** store the age in days of the teen when each vaccination was administered. For vaccine categories that contain multiple vaccine types, variables **X*YYY*TY1 - X*YYY*TY9** give the corresponding vaccine type code (see Table 5).

For synthesized provider-reported seasonal influenza vaccinations, in addition to **FLU_AGE1 - FLU_AGE9** which give the age of the teen in years at the time of the vaccinations, variables **FLU_MONTH1 - FLU_MONTH9** and **FLU_YEAR1 - FLU_YEAR9** give the month and year for each vaccination, allowing users to assign a teen's seasonal influenza vaccinations to a particular flu season.

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-Teen public-use data 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-Teen 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-Teen data.

7.10. Section 10: Health Insurance Module Variables

The Health Insurance Module (HIM) (Section E) gathers information on the health insurance coverage of the selected teen. **Prior to 2016, seven variables containing HIM data were included in the NIS-Teen public-use data file:**

- **TIS_INS_1: "Is the teen covered by health insurance provided through employer or union?";**
- **TIS_INS_2: "Is the teen covered by any MEDICAID plan?";**
- **TIS_INS_3: "Is the teen covered by CHIP?";**
- **TIS_INS_3A: "Is the teen covered by any MEDICAID plan or CHIP?";**
- **TIS_INS_4_5: "Is the teen covered by Indian Health Service, Military Health Care, TRICARE, CHAMPUS, or CHAMP-VA?";**
- **TIS_INS_6: "Is the teen covered by any other health insurance or health care plan?"; and**
- **TIS_INS_11: "Since age 11, was there any time when the teen was not covered by health insurance?"**

In 2016, these variables were replaced by two health insurance variables which summarize the teen's health insurance status and history across all of the insurance questions listed above, while also incorporating the imputation of missing values and recoding of verbatim responses.

INS_STAT_I identifies the teen's current health insurance coverage status. If the teen has a form of private health insurance and is not covered by Medicaid, he/she is classified as (1) Private. If the teen is on any form of Medcaid, alone or in addition to other forms of insurance, he/she is classified as (2) Any Medicaid. If the teen is not covered by any kind of private insurance or Medicaid but is covered by some other type of health insurance (including, but not limited to, CHIP, Indian Health Service, Military Health Care, TRICARE, CHAMPUS, or CHAMP-VA), he/she is classified as (3) Other. If the teen is not covered by any kind of health insurance, he/she is classified as (4) Uninsured.

INS_BREAK_I describes the teen's coverage history since age 11 and indicates whether there have been any breaks in coverage during this period. A teen may be (1) currently insured but uninsured at some point since age 11, (2) currently insured and never uninsured since age 11, (3) currently uninsured but insured at some point since age 11, or (4) currently uninsured and never insured since age 11.

Both variables are available only for teens with adequate provider data who live in the non-territory United States.

8. Analytic and Reporting Guidelines

Data from the NIS-Teen public-use data file can be used to produce national, state, and estimation- area estimates of vaccination coverage rates using the **PROVWT_D** weight to obtain dual-frame estimates **(PROVWT_D_TERR** if territories are to be included).

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-Teen. The file includes estimation area and state identifiers (**ESTIAPT16** and **STATE**) as well as a stratum identifier, **STRATUM**. The sample is stratified by a combination of the sample frame (landline, cell-phone) and the 61 estimation areas.

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 CDC 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 2016 NIS-Teen public-use data file contains two teen-level sets of weights. The **RDDWT_D** variable gives the household-phase weight for all teens in the United States excluding territories (**RDDWT_D_TERR** if territories are to be included). These weights should be used to form estimates from teens with completed household interviews. The weights reflect the stratified sample design and also have been adjusted for unit non-response, for the selection of one teen per household, for the number of telephone lines in the household, for combining the landline and cell-phone samples, for calibration to population control totals, and for the exclusion of non-telephone teens. The weight variables **PROVWT_D/PROVWT_D_TERR** apply to teens with adequate provider data. These weights should

be used to form estimates of vaccination coverage using variables from Sections 7, 8, and 9 of the public-use data file (see Section 7 of this user's guide). Table 6 presents a summary of the appropriate weights and stratum variables to use for various types of analyses.

Table 6: Summary of Weights and Stratum Variables, National Immunization Survey - Teen, 2016

Weight Variable	Population*	Sample Frame	Strata	Stratum Variable
RDDWT_D	United States excluding territories	Dual Frame (Landline/Cell)	Sample Frame by Estimation Area	STRATUM
RDDWT_D_TERR	United States including territories	Dual Frame (Landline/Cell)	Sample Frame by Estimation Area	STRATUM
PROVWT_D	United States excluding territories, teens with adequate provider data	Dual Frame (Landline/Cell)	Sample Frame by Estimation Area	STRATUM
PROVWT_D_TERR	United States including territories, teens with adequate provider data	Dual Frame (Landline/Cell)	Sample Frame by Estimation Area	STRATUM

* Each weight will contain a missing value for all records that are not included in the population covered by the weight.

The NIS-Teen public-use data file does not contain any provider-level weights. The NIS-Teen does not sample providers directly; rather, they are included in the survey through the teens they vaccinate. A user of the file should not attempt provider-level analyses (e.g., estimate the percentage of providers in the United States that are private providers), because the NIS-Teen 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 teens with adequate provider data (**PDAT2 = 1**),

along with their final provider sampling weights (**PROVWT_D/PROVWT_D_TERR**). To summarize the statistical methodology by which vaccination coverage rates and their standard errors are obtained from these data, let Y_{hi} be an indicator, for the *i*th teen with adequate provider data in the *h*th stratum of the NIS-Teen sampling design, equal to 1 if the teen is up-to-date according to the provider data and 0 otherwise. Also, let W_{hi} denote the value of **PROVWT_D/PROVWT_D_TERR** for this teen. Then, letting $\hat{Y}_h = \sum_{i=1}^{n_h} W_{hi} Y_{hi}$ and $\hat{T}_h = \sum_{i=1}^{n_h} W_{hi}$, 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, and n_h denotes the number of sampled teens with adequate provider data in the *h*th stratum.

Letting *L* instead denote the number of strata 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 stratum).

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 $Z_{hi} = \frac{W_{hi}(Y_{hi} - \hat{\theta})}{\sum_{h=1}^{L} \hat{T}_h}$ 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-Teen can be implemented in specialized statistical software such as SUDAAN (Research Triangle Institute 2008), SAS (SAS Institute Inc. 2009), R (Lumley 2010), and Stata (Stata Corporation 2009). Appendix C 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. For all estimates, the variable **STRATUM** is used as the stratum variable and the household/teen identifier (**SEQNUMT**) is used as the primary sampling unit identifier. The data file should be sorted first on **STRATUM** and then on **SEQNUMT** within **STRATUM** before running the programs for SUDAAN and SAS.

8.3. Combining Multiple Years of NIS-Teen Data

8.3.1. Estimation of Multi-Year Means

With release of the 2016 NIS-Teen public-use data file, nine years of public-use NIS-Teen data are now available. The precision of estimates of vaccination coverage for sub-domains (e.g., by race/ethnicity of teen) within estimation areas or states can be improved by combining multiple years of NIS-Teen data. Data users should, however, be aware that estimates from combined years of NIS-Teen data represent an average over multiple years. Although combining multiple years of NIS-Teen 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-Teen, it is also possible that a teen could appear in more than one public-use data file. Finally, given the change to the definition of adequate provider data in 2014 and its effect on NIS-Teen vaccination coverage rate estimates as described in the introduction, users should exercise caution when interpreting results from a combination of years prior to 2014 with years 2014 and later.

To estimate a multi-year mean for a given NIS-Teen variable, the weights in each participating file (RDD-phase weights **RDDWT** in 2008-2011 and **RDDWT_D** in 2012-2016; and provider-phase weights **PROVWT** in 2008-2011 and **PROVWT_D** in 2012-2016) should be divided by the number of years being combined. For example, if data for 2014, 2015, and 2016 for teens with adequate provider data are to be combined, then the weights in the three files –**PROVWT_D** in each of 2014-2016 – should be divided by 3 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 teens aged 13 to 17 years. Furthermore, the teen ID numbers (**SEQNUMT**) 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:

YRSEQT = 1 * (**YEAR** || **SEQNUMT**);

YEAR is the 4-digit year variable for the NIS-Teen data year (e.g., 2016).

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, SUDAAN, R, or Stata.

There is an important complication for variance estimation when combining multiple years, because some estimation areas are removed and other new areas are added each year (see Section 2 above for more

information about rotating estimation areas). The variance strata for 2011-2016 are defined by the variables **STRATUM_D** (for 2011), and **STRATUM** (for 2012-2016), with **STRATUM_D** and **STRATUM** being a combination of the estimation area variable for that year and the sampling frame (landline or cell-phone). The estimation area variables **ESTIAPT11**, **ESTIAPT12**, **ESTIAPT13**, **ESTIAPT14**, **ESTIAPT15**, and **ESTIAPT16** define mutually exclusive and exhaustive geographic areas. However, they are not exactly the same areas. For example, **Dallas County, TX, was a separate estimation area in 2011 and 2016 but not in 2012-2015. El Paso County, TX, was a separate estimation area in 2011 and 2014-2016, but not in 2012 or 2013. Other areas, such as New York City, NY and Rest of New York, are estimation areas in all years.**

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 = **STRATUM_D**, for teens in the 2011 public-use data file

   = **STRATUM**, for teens in the 2012, 2013, 2014, 2015, and 2016 public-use data files

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 teen identification numbers, **YRSEQT**, 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 CDIAP (Common Denominator Estimation Area) variable set forth in Table 7 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 **YRSEQT**.

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 YRSEQT / PSULEV = 3;

the specification of weights by

WEIGHT NEWWT;

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

```
CLASS YEAR CDIAP STATE;
TABLES CDIAP;
```

or

```
CLASS YEAR CDIAP 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-Teen years. For example, a typical contrast of interest would be the difference between the vaccination coverage parameters in 2015 and in 2016. As when combining multiple years of NIS-Teen data to estimate multi-year means, users should exercise caution when combining multiple years of data to estimate multi-year contrasts. The composition of the population in a geographic area may change over time, and it is possible that a teen could appear in more than one public-use data file. Furthermore, given

the change in the definition of adequate provider data in 2014, users should be aware that NIS-Teen vaccination coverage estimates from 2014 and later, which use the revised definition, are not directly comparable to those from NIS-Teen 2013 and prior, which used the previous adequate provider data definition.

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 teen is in the 2011 public-use data file

= **PROVWT_D**, if the teen is in the 2012, 2013, 2014, 2015, or 2016 public-use data files.

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 measles-containing vaccine up-to-date estimate from 2015 to the 2016 estimate, SUDAAN users can use the following WEIGHT, VAR, and CONTRAST statements:

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

Table 7: Cross-Walk Between ESTIAPT08-ESTIAPT16 and Common Denominator Estimation Area (CDIAP), National Immunization Survey - Teen, 2016

CDIAP	Area Name	ESTIAPT08 (2008)	ESTIAPT09 (2009)	ESTIAPT10 (2010)	ESTIAPT11 (2011)	ESTIAPT12 (2012)	ESTIAPT13 (2013)	ESTIAPT14 (2014)	ESTIAPT15 (2015)	ESTIAPT16 (2016)
20	Alabama	20	20	20	20	20	20	20	20	20
74	Alaska	74	74	74	74	74	74	74	74	74
66	Arizona	66	66	66	66	66	66	66	66	66
46	Arkansas	46	46	46	46	46	46	46	46	46
	California									
68	CA-Los Angeles County	68	69	68	68	68	68	68	68	68
68	CA-Rest of State	68	68	68	68	68	68	68	68	68
60	Colorado	60	60	60	60	60	60	60	60	60
1	Connecticut	1	1	1	1	1	1	1	1	1
13	Delaware	13	13	13	13	13	13	13	13	13
12	District of Columbia	12	12	12	12	12	12	12	12	12
22	Florida	22	22	22	22	22	22	22	22	22
25	Georgia	25	25	25	25	25	25	25	25	25
72	Hawaii	72	72	72	72	72	72	72	72	72
75	Idaho	75	75	75	75	75	75	75	75	75
	Illinois									
35	IL-City of Chicago	35	35	35	35	35	35	35	35	35
34	IL-Rest of State	34	34	34	34	34	34	34	34	34
	Indiana									
36	IN-Lake County	36	96	36	36	36	36	36	36	36
36	IN-Marion County	36	37	36	36	36	36	36	36	36
36	IN-Rest of State	36	36	36	36	36	36	36	36	36
56	Iowa	56	56	56	56	56	56	56	56	56
57	Kansas	57	57	57	57	57	57	57	57	57
27	Kentucky	27	27	27	27	27	27	27	27	27
47	Louisiana	47	47	47	47	47	47	47	47	47
4	Maine	4	4	4	4	4	4	4	4	4

CDIAP	Area Name	ESTIAPT08 (2008)	ESTIAPT09 (2009)	ESTIAPT10 (2010)	ESTIAPT11 (2011)	ESTIAPT12 (2012)	ESTIAPT13 (2013)	ESTIAPT14 (2014)	ESTIAPT15 (2015)	ESTIAPT16 (2016)
14	Maryland	14	14	14	14	14	14	14	14	14
2	Massachusetts	2	2	2	2	2	2	2	2	2
38	Michigan	38	38	38	38	38	38	38	38	38
40	Minnesota	40	40	40	40	40	40	40	40	40
28	Mississippi	28	28	28	28	28	28	28	28	28
58	Missouri	58	58	58	58	58	58	58	58	58
61	Montana	61	61	61	61	61	61	61	61	61
59	Nebraska	59	59	59	59	59	59	59	59	59
73	Nevada	73	73	73	73	73	73	73	73	73
5	New Hampshire	5	5	5	5	5	5	5	5	5
8	New Jersey	8	8	8	8	8	8	8	8	8
49	New Mexico	49	49	49	49	49	49	49	49	49
	New York									
11	NY-City of New York	11	11	11	11	11	11	11	11	11
10	NY-Rest of State	10	10	10	10	10	10	10	10	10
29	North Carolina	29	29	29	29	29	29	29	29	29
62	North Dakota	62	62	62	62	62	62	62	62	62
41	Ohio	41	41	41	41	41	41	41	41	41
50	Oklahoma	50	50	50	50	50	50	50	50	50
76	Oregon	76	76	76	76	76	76	76	76	76
	Pennsylvania									
17	PA-Philadelphia County	17	17	17	17	17	17	17	17	17
16	PA-Rest of State	16	16	16	16	16	16	16	16	16
6	Rhode Island	6	6	6	6	6	6	6	6	6
30	South Carolina	30	30	30	30	30	30	30	30	30
63	South Dakota	63	63	63	63	63	63	63	63	63
31	Tennessee	31	31	31	31	31	31	31	31	31
	Texas									
55	TX-Bexar County	55	55	55	55	55	55	55	55	55

CDIAP	Area Name	ESTIAPT08 (2008)	ESTIAPT09 (2009)	ESTIAPT10 (2010)	ESTIAPT11 (2011)	ESTIAPT12 (2012)	ESTIAPT13 (2013)	ESTIAPT14 (2014)	ESTIAPT15 (2015)	ESTIAPT16 (2016)
54	TX-City of Houston	54	54	54	54	54	54	54	54	54
51	TX-Dallas County	51	52	52	52	51	51	51	**51**	**52**
51	TX-El Paso County	51	53	53	53	51	51	53	53	53
51	TX-Hidalgo County	51	51	51	51	51	51	51	**107**	**51**
51	TX-Rest of State	51	51	51	51	51	51	51	51	51
64	Utah	64	64	64	64	64	64	64	64	64
7	Vermont	7	7	7	7	7	7	7	7	7
18	Virginia	18	18	18	18	18	18	18	18	18
77	Washington	77	77	77	77	77	77	77	77	77
19	West Virginia	19	19	19	19	19	19	19	19	19
44	Wisconsin	44	44	44	44	44	44	44	44	44
65	Wyoming	65	65	65	65	65	65	65	65	65
-	Puerto Rico	-	-	-	-	-	-	106	106	106

9. Summary Tables

Appendix E contains seven tables. Appendix Table E.1 lists the 61 estimation areas for the 2016 NIS-Teen by state. At the national level and for each state and estimation area, it provides the estimated population total of teens 13 to 17 years of age in 2016 and (from 2016 NIS-Teen data collection) the number of teens with completed household interviews and number of teens with adequate provider data.

Appendix Tables E.2 through E.5 summarize pairs of variables: age of teen by maternal education (Appendix Table E.2), age of teen by family poverty status (Appendix Table E.3), race/ethnicity of teen by family poverty status (Appendix Table E.4), age of teen by race/ethnicity of teen (Appendix Table E.5), and age of teen by sex of teen (Appendix Table E.6). Each of these tables gives the unweighted and weighted counts of teens for whom the household interview was completed and the unweighted and weighted counts of teens with adequate provider data.

Appendix Table E.7 presents estimates of vaccination coverage and 95% confidence intervals obtained from SAS. The data user should obtain the same estimates from the 2016 NIS-Teen public-use data file.

Appendix F shows the vaccine type codes used in the 2016 NIS-Teen public-use data file.

Appendix G contains four tables and time-series charts**.** Table G.1 and Figure G.1 show key components of the NIS-Teen landline sample response rates and the landline sample CASRO response rates by year of the survey. Table G.2 and Figure G.2 show key components of the NIS-Teen cell-phone sample response rates and the cell-phone sample CASRO response rates. Table G.3 and Figure G.3 show the CASRO response rates for the combined landline and cell-phone samples. Table G.4 and Figure G.4 show vaccination coverage rate estimates since 2006.

Appendix H presents key response rate components and the CASRO response rate by estimation area in the 2016 NIS-Teen landline and cell-phone samples and presents the CASRO response rate for the combined landline and cell-phone samples by estimation area for 2016.

10. Assessment of Total Survey Error in the NIS-Teen

Assessing the validity of the NIS-Teen estimates of vaccination coverage is a critical and ongoing aspect of the NIS surveillance program. CDC frequently conducts evaluation studies and controlled experiments to understand the causes and impacts of sampling and nonsampling errors on the estimates and enable formulation of methodological refinements that have the demonstrated capacity to improve data quality. As landline phone use decreased and cell phone use increased dramatically over the past decade, and as the NIS Family of Surveys transitioned from a single-frame landline RDD sampling design to a dual-frame landline and cell phone RDD design, CDC has monitored the NIS estimates utilizing a Total Survey Error (TSE) approach.

TSE is the sum of the errors that arise at every step of a survey, including both sampling error and nonsampling errors such as coverage, nonresponse, and measurement errors (Mulry and Spencer, 1991). Pooling information from multiple evaluations of their precision and accuracy, we have conducted TSE analyses for the 2009-2013 NIS-Child and NIS-Teen data (Molinari et al. 2011; NORC 2011; Pineau et al. 2012; Pineau et al. 2013; Skalland et al. 2016; Wolter et al. 2017), including components for coverage error, nonresponse error, and sampling error. Figure 1 charts the estimated mean total error for 2009-2013 NIS-Teen vaccination coverage rate estimators using the base/design weights (i.e., unadjusted for nonresponse and not calibrated to population totals) and using the final weights. For ≥1 Tdap and ≥1 MenACWY, total error is smaller in the 2011-2013 period than in the 2009-2010, but this finding does not appear to hold for ≥1 HPV among females. Error estimates have tended to be lower when final weights are used than when base/design-weighted are used for for ≥1 Tdap and ≥1 MenACWY, but the results are mixed for ≥1 HPV among females.

For 2012 and 2013, the TSE model was extended to include a form of measurement error called "provider under-reporting" error, in addition to the coverage and nonresponse error components previously included in the model (Wolter et al. 2017). Sometimes also called "under-ascertainment," provider under-reporting error arises when a teen with adequate provider data is truly vaccinated but is reported as unvaccinated in the teen's provider-reported vaccination history. Under-reporting error can occur if the household respondent fails to nominate all of the teen's vaccination providers, if one or more of the teen's nominated vaccination providers fails to report a vaccination history for the teen, or if one or more of the teen's nominated providers reports a vaccination history but fails to report all of the vaccinations the teen has received. Figure 2 presents the estimated mean total error for 2012-2013 NIS-Teen vaccination coverage rate estimators, including components for coverage error, nonresponse error, under-reporting error, and sampling error, using the design weights and using the final weights. The addition of under-reporting error into the TSE model results in small, negative estimates of TSE for ≥1 Tdap and ≥1 MenACWY in 2013; the estimate of TSE for ≥1 HPV among females is small and positive when under-reporting error is included, but lower than when under-reporting error is not included in the TSE model. None of the mean TSE estimates for 2013 NIS-Teen in Figure 2 is statistically significantly different from zero.

Figure 1: Comparison of Estimated Mean Total Error for ≥1 Tdap, ≥1 MenACWY, and ≥1 HPV Vaccine Dose among Females by Survey Year, Including Components for Coverage Error, Nonresponse Error, and Sampling Error, National Immunization Survey - Teen, 2009-2013

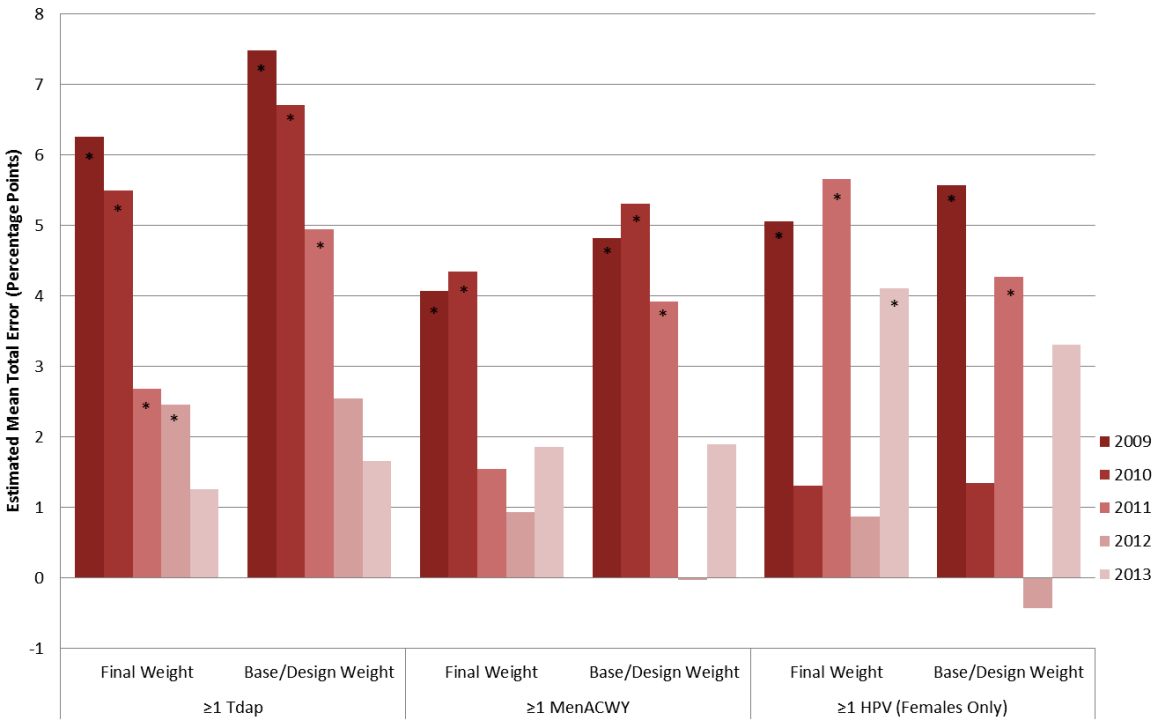
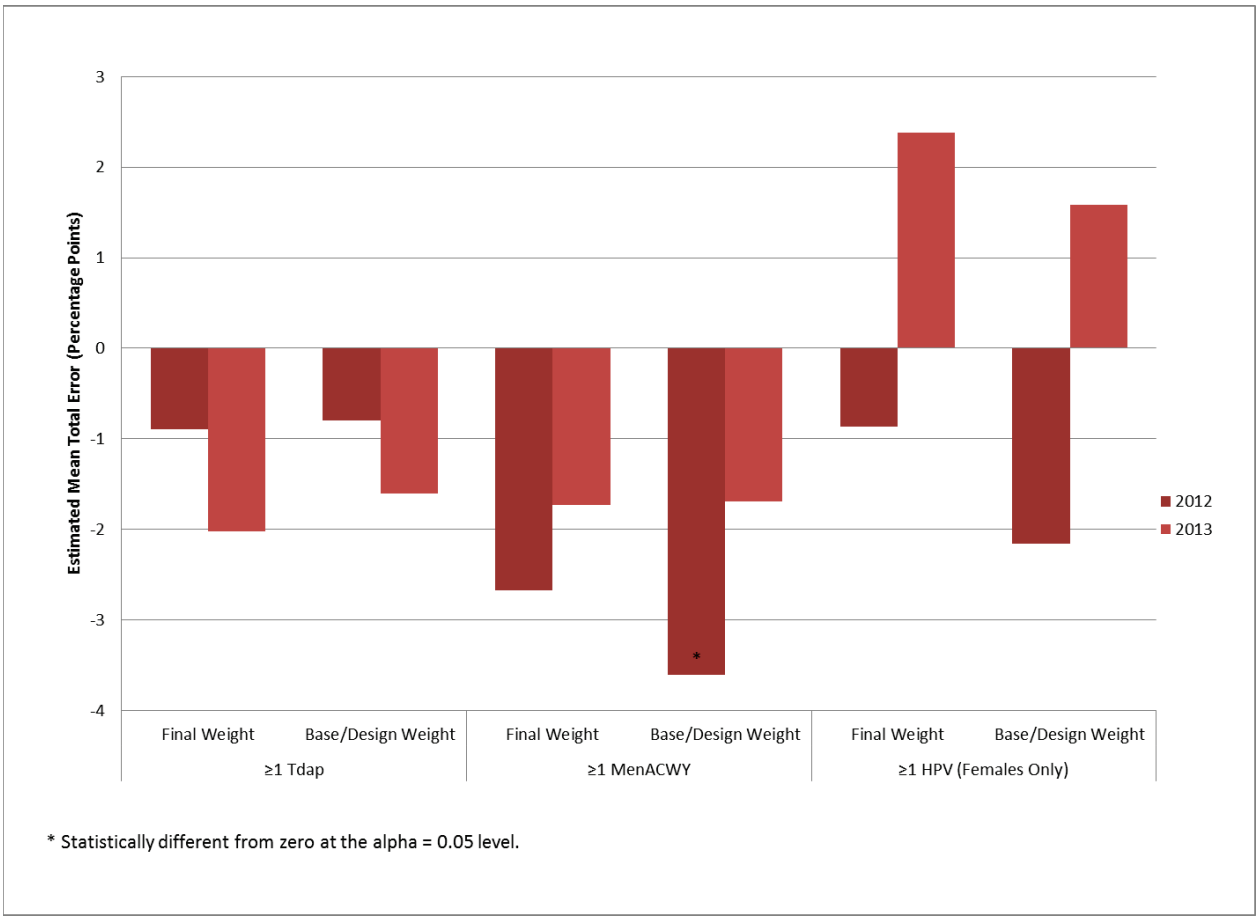


Figure 2: Comparison of Estimated Mean Total Error for ≥1 Tdap, ≥1 MenACWY, and ≥1 HPV Vaccine Dose among Females by Survey Year, Including Components for Coverage Error, Nonresponse Error, Under-Reporting Error, and Sampling Error, National Immunization Survey - Teen, 2012-2013



11. Limitations

The findings in this report are subject to at least four limitations. First, because NIS-Teen is a telephone survey, results are weighted to be representative of all adolescents aged 13 through 17 years. Although statistical adjustments were made to account for non-response and households without 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. Third, 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. Finally, analysis of trends across data years that span from 2010 and earlier to 2011-2016 are subject to potential bias that may remain after weighting adjustments because of the switch from landline to dual landline and cell-phone frames in 2011. In addition, analysis of trends across data years that span from 2011 to 2016 are subject to potential bias that may remain after weighting adjustments because of the expansions and reductions of the share of the total sample that came from the cell-phone frame across these years and because of the change in the definition of adequate provider data in 2014.

12. Citations for NIS-Teen Data

In publications please acknowledge the original data source. The citation for the 2016 NIS-Teen public-use data file is:

U.S. Department of Health and Human Services (DHHS). National Center for Immunization and Respiratory Diseases. The 2016 National Immunization Survey - Teen, Atlanta, GA: Centers for Disease Control and Prevention, 2017.

Information about the NIS-Teen is located at http://www.cdc.gov/vaccines/imz-managers/nis/about.html.

The NIS-Teen public-use data file is located at http://www.cdc.gov/vaccines/imz-managers/nis/datasets.html.

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

The following publications use past and current NIS-Teen data:

Attanasio L, McAlpine D. Accuracy of parental reports of children's HPV vaccine status: implications for estimates of disparities, 2009-2010. Public Health Rep 2014;129(3):237-44.

Beachler DC, Gonzales FA, Kobrin SC, Kreimer AR. HPV vaccination initiation after the routine-recommended ages of 11–12 in the United States. Papillomavirus Research 2016; 2:11–16.

Bednarczyk RA, Curran EA, Orenstein WA, Omer SB. Health Disparities in Human Papillomavirus Vaccine Coverage: Trends Analysis From the National Immunization Survey–Teen, 2008–2011. Clin Infect Dis. 2014 Jan;58(2):238-41.

Bednarczyk RA, Orenstein WA, Omer SB. Impact of Gender-Specific Human Papillomavirus Vaccine Recommendations on Uptake of Other Adolescent Vaccines: Analysis of the NIS-Teen (2008-2012). J Public Health Manag Pract 2015. Epub ahead of print.

Bednarczyk RA, Orenstein WA, Omer SB. Estimating the Number of Measles-Susceptible Children and Adolescents in the United States Using Data From the National Immunization Survey-Teen (NIS-Teen). Am J Epidemiol 2016;184(2):148-56.

Boakye EA, Tobo BB, Osazuwa-Peters N, Mohammed KA, Geneus CJ, Schootman M. A comparison of parent- and provider-reported human papillomavirus vaccination of adolescents. Am J Prev Med 2017;52(6):742–752.

Bugenske E, Stokley S, Kennedy A, Dorell C. Middle School Vaccination Requirements and Adolescent Vaccination Coverage. *Pediatrics.* 2012. Volume 129, Issue 6, p. 1056-1063.

Burdette AM, Webb NS, Hill TD, Jokinen-Gordon H. Race-specific trends in HPV vaccinations and provider recommendations: persistent disparities or social progress? Public Health 2017; 142:167-176.

Burdette A, Jokinen-Gordon H, Hill T. Social Determinates of HPV Vaccination Delay: Results from the National Immunization Survey of Teens. In: American Public Health Association 142nd Annual Meeting and Exposition. New Orleans, LA; 2014.

Cardemil CV, Cullen KA, Harris L, Greby SM, Santibanez TA. Factors Associated With Provider Reporting of Child and Adolescent Vaccination History to Immunization Information Systems: Results From the National Immunization Survey, 2006-2012. J Public Health Manag Pract 2015.

Centers for Disease Control and Prevention. National vaccination coverage among adolescents aged 13-17 years – United States, 2006. *MMWR.* 2007;56:885-8. Available at: http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5634a3.htm

Centers for Disease Control and Prevention. Vaccination coverage among adolescents aged 13-17 years-United States, 2007. *MMWR*. 2008:57(40):1100-1103. Available at: http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5740a2.htm

Centers for Disease Control and Prevention. National, state, and local area vaccination coverage among adolescents aged 13-17 years – United States, 2008. *MMWR*. 2009;58(36):997-1001. Available at: http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5836a2.htm

Centers for Disease Control and Prevention. National, State, and Local Area Vaccination Coverage among Adolescents Aged 13-17 years – United States, 2009. *MMWR*. 2010; 59 (32):1018-1023. Available at: http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5932a3.htm

Centers for Disease Control and Prevention. National, State, and Local Area Vaccination Coverage among Adolescents Aged 13-17 years – United States, 2010. *MMWR*. 2011; 60 (33):1117-1123. Available at: http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6033a1.htm

Centers for Disease Control and Prevention. National, State, and Local Area Vaccination Coverage among Adolescents Aged 13-17 years – United States, 2011. *MMWR*. 2012; 61 (34):671-677. Available at: http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6134a3.htm

Centers for Disease Control and Prevention. Human Papillomavirus Vaccination Coverage Among Adolescent Girls, 2007-2013, and Postlicensure Vaccine Safety Monitoring, 2006–2014 – United States *MMWR*. 2013; 63 (29):620-624. Available at: http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6329a3.htm

Centers for Disease Control and Prevention. National and State Vaccination Coverage among Adolescents Aged 13-17 years – United States, 2012. *MMWR*. 2013; 62 (34):685-693. Available at: http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6234a1.htm

Choi Y, Eworuke E, Segal R. What explains the different rates of human papillomavirus vaccination among adolescent males and females in the United States? Papillomavirus Research 2016;2:46–51

Cloessner EA, Stokley S, Yankey D, Markowitz LE. Timing of HPV vaccine intervals among United States teens with consideration to the current ACIP schedule and the WHO 2-dose schedule. Hum Vaccin Immunother 2016;12(6):1375-80.

Curtis CR, Dorell C, Yankey D, Jeyarajah J, Chesson H, Saraiya M, et al. National human papillomavirus vaccination coverage among adolescents aged 13-17 years – National Immunization Survey - Teen, United States, 2011. MMWR Surveill Summ 2014;63:61-70.

Darden PM, Thompson DM, Roberts JR, Hale JJ, Pope C, Naifeh M, Jacobson RM. Reasons for not vaccinating adolescents: National Immunization Survey of Teens, 2008-2010. *Pediatrics*. 2013. Volume 131, issue 4, p. 645-51. Responses to article: Dorell C, Stokley S, Yankey D, Jeyarajah J, Parental Intentions for HPV Vaccination of their Daughters, *Pediatrics* published online June 13, 2013; Rohit P, Ojha RP, The importance of considering changes in the eligible population over time when interpreting human papillomavirus vaccination trends, *Pediatrics* published online March 23, 2013

Dorell C, Jain N, Yankey D. Validity of Parent-Reported Vaccination Status for Adolescents Aged 13-17 Years, National Immunization Survey-Teen, 2008. 2011. *Public Health Reports*. Volume 126, Supplement 2, p. 60-69.

Dorell C, Yankey D, Strasser S. Parent-Reported Reasons for Nonreceipt of Recommended Adolescent Vaccinations, National Immunization Survey: Teen, 2009. *Clinical Pediatrics (Philadelphia)*. 2011 Dec;50(12):1116-24.

Dorell C, Stokley S, Yankey D, Markowitz L. Compliance with Recommended Dosing Intervals for HPV Vaccination among Females, 13-17 Years, National Immunization Survey-Teen, 2008-2009. *Vaccine*. 2012. Volume 30, Issue 3, p. 503-505.

Dorell C, Yankey D, Byrd K, Murphy T. Hepatitis A Vaccination Coverage among Adolescents in the United States. *Pediatrics.* 2012. Volume 129, Issue 2, p. 213-221.

Dorell C, Yankey D, Santibanez T, Markowitz L. Human Papillomavirus Vaccination Series Initiation and Completion, 2008-2009. *Pediatrics.* 2012. Volume 128, Issue 5, p. 830-839.

Dorell C, Yankey D, Strasser. Parent-reported Reasons for Nonreceipt of Recommended Adolescent Vaccinations, National Immunization Survey-Teen, 2009. *Clinical Pediatrics.* 2012. Volume 50, Issue 12, p. 1116-1124.

Dorell C, Yankey D, Kennedy A, Stokley S. Factors that influence parental vaccination decisions for adolescents, 13 to 17 years old: National Immunization Survey-Teen, 2010. *Clin Pediatr (Phila)*. 2013. Volume 52, issue 2, p. 162-70.

Dorell C, Yankey D, Jeyarajah J, Stokley S, Fisher A, Markowitz L, Smith PJ. Delay and refusal of human papillomavirus vaccine for girls, National Immunization Survey-Teen, 2010. *Clin Pediatr (Phila).* 2014 Mar;53(3):261-9.

Elam-Evans LD, Yankey D, Jeyarajah J, Singleton JA, Curtis RC, MacNeil J, Hariri S. National, regional, state, and selected local area vaccination coverage among adolescents aged 13-17 years – United States,

2013. MMWR. 2014 Jul 25;63(29):625-33. Available at: http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6329a4.htm

Gilkey MB, Magnus BE, Reiter PL, McRee AL, Dempsey AF, Brewer NT. The Vaccination Confidence Scale: a brief measure of parents' vaccination beliefs. Vaccine 2014;32(47):6259-65.

Gilkey MB, Reiter PL, Magnus BE, McRee AL, Dempsey AF, Brewer NT. Validation of the Vaccination Confidence Scale: A Brief Measure to Identify Parents at Risk for Refusing Adolescent Vaccines. Acad Pediatr 2016;16(1):42-9.

Gowda C, Dempsey A. Medicaid Reimbursement and the Uptake of Adolescent Vaccines. *Vaccine.* 2012. Volume 30, Issue 9, p. 1682-1689.

Henry KA, Warner EL, Ding Q, Kepka D. The Role of Geographic Factors in Human Papillomavirus (HPV) Vaccine Uptake Among Adolescent Girls in the United States. Cancer Epidemiol Biomarkers Prev 2015;24(4):758.

Henry KA, Stroup AM, Warner EL, Kepka D. Geographic Factors and Human Papillomavirus (HPV) Vaccination Initiation among Adolescent Girls in the United States. Cancer Epidemiol Biomarkers Prev 2016;25(2):309-17.

Hirth J, Kuo YF, Laz TH, Starkey JM, Rupp RE, Rahman M, et al. Concordance of adolescent human papillomavirus vaccination parental report with provider report in the National Immunization Survey-Teen (2008-2013). Vaccine 2016. Epub ahead of print.

Jacobson RM, Rogacki B, Thompson DM, Roberts JR, Margolis B, Darden PM. Vaccination Rates among Adolescents in Minnesota as Compared with the United States: Not "Above Average". Minn Med 2015;98(11-12):38-43.

Jain N, Hennessey K. Hepatitis B Vaccination Coverage among U.S. Adolescents, National Immunization Survey–Teen, 2006. *Journal of Adolescent Health.* 2009; 44:561-7 (Epub Dec 23 2008).

Jain N, Singleton JA, Montgomery M, Skalland B. Determining accurate vaccination coverage rates for adolescents: an overview of the methodology used in the National Immunization Survey-Teen 2006. *Public Health Reports.* 2009; 124:642-51.

Jain N, Stokley S, Cohn A. Receipt of Tetanus-Containing Vaccinations among Adolescents Aged 13-17 Years in the United States: National Immunization Survey-Teen, 2007. *Clinical Therapeutics*. 2010; 32 (8):1468-1478.

Jemal A, Simard EP, Dorell C, Noone Am, Markowitz LE, Kohler B, Eheman C, Saraiya M, Bandi P, Saslow D, Cronin KA, Watson M, Schiffman M, Henley SJ, Schymura MJ, Anderson RN, Yankey D, Edwards BK. Annual report to the nation on the status of cancer, 1975-2009, featuring the burden and trends in human papillomavirus (HPV)-associated cancers and HPV vaccination coverage levels. *J Natl Cancer Inst*. 2013 Volume 105, issue 3, p. 175-201.

Jeyarajah J, Elam-Evans LD, Stokley S, Smith PJ, Singleton JA. Human Papillomavirus Vaccination Coverage Among Girls Before 13 Years: A Birth Year Cohort Analysis of the National Immunization Survey-Teen, 2008-2013. Clin Pediatr (Phila) 2015. Epub ahead of print.

Johnson KL, Lin MY, Cabral H, Kazis LE, Katz IT. Variation in human papillomavirus vaccine uptake and acceptability between female and male adolescents and their caregivers. J Community Health 2017;42:522–532.

Johnson NB, Hayes LD, Brown K, Hoo EC, Ethier KA. CDC National Health Report: Leading Causes of Morbidity and Mortality and Associated Behavioral Risk and Protective Factors-United States, 2005-2013. MMWR Surveill Summ 2014;63:3-27.

Kepka D, Ding Q, Hawkins AJ, Warner EL, Boucher KM. Factors associated with early adoption of the HPV vaccine in US male adolescents include Hispanic ethnicity and receipt of other vaccines. Prev Med Rep 2016;4:98-102.

Kepka D, Ding Q, Warner EL, Spigarelli MG, Mooney K. High school females and those with other vaccinations most likely to complete the Human Papillomavirus vaccine. Prev Med Rep 2015;2:79-83.

Krakow M, Beavis A, Cosides O, Rositch AF. Characteristics of adolescents lacking provider-recommended human papillomavirus vaccination. Journal of Adolescent Health 2017; 60:619-622.

Lai D, Ding Q, Bodson J, Warner EL, Kepka D. Factors Associated with Increased HPV Vaccine Use in Rural-Frontier U.S. States. Public Health Nurs 2016;33(4):283-94.

Kawai K, O'Brien MA, Conway JH, Marshall GS, Kuter BJ. Factors associated with receipt of two doses of varicella vaccine among adolescents in the United States. *Pediatr Infect Dis J*. 2013. Volume 32, issue 5, p. 538-42.

Khare M, Montgomery M, Wouhib A, Singleton JA. Assessment of Bias in the National Immunization Survey–Teen: Benchmarking to the National Health Interview Survey, 2009, Presented at the Centers for Disease Control and Prevention Statistical Symposium, Atlanta, GA

Lindley MD, Smith PH, Rodewald LE. Vaccination Coverage among U.S. Adolescents Aged 13-17 Years Eligible for the Vaccines for Children Program, 2009. 2011. *Public Health Reports*. Volume 126, supplement 2, p. 124-126.

Lindley MC, Jeyarajah J, Yankey D, Curtis CR, Markowitz LE, Stokley S. Comparing human papillomavirus vaccine knowledge and intentions among parents of boys and girls. Hum Vaccin Immunother 2016;12(6):1519-27.

Lu PJ, Jain N, Cohn AC. Meningococcal conjugate vaccination among adolescents aged 13-17 years, United States, 2007. *Vaccine*. 2010. 28(11):2350-2355.

Lu PJ, Dorell, C, Yankey D, Santibanez T, Singleton J. A Comparison of Parent and Provider Reported Influenza Vaccination Status of Adolescents. *Vaccine*. 2012. Volume 30, Issue 22, p. 3278-3285.

Lu PJ, Santibanez TA, Williams WW, Zhang J, Ding H, Bryan L, et al. Surveillance of influenza vaccination coverage--United States, 2007-08 through 2011-12 influenza seasons. MMWR Surveill Summ 2013;62(4):1-28.

Lu PJ, Yankey D, Jeyarajah J, O'Halloran A, Elam-Evans L, Greby SM, et al. Hepatitis B vaccination among adolescents 13-17 years, United States, 2006-2012. Vaccine 2015;33(15):1855-64.

Lu PJ, Yankey D, Jeyarajah J, O'Halloran A, Elam-Evans LD, Smith PJ, et al. HPV Vaccination Coverage of Male Adolescents in the United States. Pediatrics 2015;136(5):839-49.

Mohammed KA, Geneus CJ, Osazuwa-Peters N, Boakye EA, Tobo BB, Burroughs TE. Disparities in provider recommendation of human papillomavirus vaccination for US adolescents. Journal of Adolescent Health 2016;59:592-598.

Mohammed KA, Vivian E, Loux TM, Arnold LD. Factors associated with parents' intent to vaccinate adolescents for human papillomavirus: findings from the 2014 National Immunization Survey–Teen. Prev Chronic Dis 2017;14:160314. DOI: https://doi.org/10.5888/pcd14.160314.

Montgomery M, Jain N, Singleton JA, Khare M. Assessment of Bias in the National Immunization Survey-Teen: Benchmarking to the National Health Interview Survey, 2008, Presented at the American Association for Public Opinion Research Annual Conference. Miami, FL

Moss JL, Reiter PL, Brewer NT. Correlates of human papillomavirus vaccine coverage: a state-level analysis. Sex Transm Dis 2015;42(2):71-5.

Moss JL, Gilkey MB, Rimer BK, Brewer NT. Disparities in collaborative patient-provider communication about human papillomavirus (HPV) vaccination. Hum Vaccin Immunother 2016;12(6):1476-83.

Moss JL, Reiter PL, Brewer NT. Concomitant Adolescent Vaccination in the U.S., 2007-2012. Am J Prev Med 2016. Epub ahead of print.

Moss JL, Reiter PL, Rimer BK, Brewer NT. Collaborative patient-provider communication and uptake of adolescent vaccines. Soc Sci Med 2016;159:100-7.

Moss JL, Reiter PL, Truong YK, Rimer BK, Brewer NT. School entry requirements and coverage of nontargeted adolescent vaccines. Pediatrics. 2016;138(6):e20161414.

Moss JL, Reiter PL, Rimer BK, Ribisl KM, Brewer NT. Summer Peaks in Uptake of Human Papillomavirus and Other Adolescent Vaccines in the United States. Cancer Epidemiol Biomarkers Prev 2016;25(2):274-81.

Myers J. Kentucky's improvement in administering Tdap for adolescents: The National Immunization Survey-Teen 2008-2012. Ky Nurse 2014;62(4):8.

Naifeh MM, Roberts JR, Margolis B, Thompson DM, Rogacki B, Jacobson RM, et al. Adolescent vaccination in Oklahoma: a work in progress. J Okla State Med Assoc 2014;107(9-10):510-6.

Niccolai LM, Mehta NR, Hadler JR. Racial/ethnic and poverty disparities in human papillomavirus vaccination completion. *Am J Prev Med*. 2011. Volume 41, issue 4, p. 428-33.

Ojha RP, Tota JE, Offut-Powell TN, Kloskey JL. Ashokkumar R, Gurney JG. The accuracy of human papillomavirus vaccination status based on adult proxy recall or household immunization records for adolescent females in the United States: results from the National Immunization Survey-Teen. *Ann Epidemiol*. 2013. Volume 23, issue 5, p. 281-5.

Perkins RB, Lin M, Silliman RA, Clark JA, Hanchate A. Why are U.S. girls getting meningococcal but not human papilloma virus vaccines? Comparison of factors associated with human papilloma virus and meningococcal vaccination among adolescent girls 2008 to 2012. Womens Health Issues 2015;25(2):97-104.

Perkins RB, Lin M, Wallington SF, Hanchate AD. Impact of school-entry and education mandates by states on HPV vaccination coverage: Analysis of the 2009-2013 National Immunization Survey-Teen. Hum Vaccin Immunother 2016;12(6):1615-22.

Pierre-Victor D, Trepka MJ, Page TF, Li T, Stephens DP, Madhivanan P. Impact of Louisiana's HPV vaccine awareness policy on HPV vaccination among 13- to 17-year-old females. Health Education & Behavior 2017; 44(4): 548–558.

Pierre-Victor D, Page TF, Trepka MJ, Stephens DP, Li T, Madhivanan P. Impact of Virginia's school-entry vaccine mandate on human papillomavirus vaccination among 13–17-year-old Females. JOURNAL OF WOMEN'S HEALTH 2017; 26(3): 266-275.

Polonijo AN, Carpiano RM. Social inequalities in adolescent human papillomavirus (HPV) vaccination: a test of fundamental cause theory. *Soc Sci Med*. 2013. Volume 82, p. 115-25.

Qualls-Hampton R, Taylor D, Nunnery T, Shuler M, Flynt-Wallington S. Physician influence and gender differences in adolescent HPV vaccine acceptance using the National Immunization Survey, 2010-2012. In: American Public Health Association 142nd Annual Meeting and Exposition New Orleans, LA; 2014.

Qualls-Hampton R, Taylor D, Nunnery T, Shuler M, Flynt-Wallington S. "Whatever ya say doc": A legislative approach to HPV vaccine acceptance among adolescents using the National Immunization Survey - Teen, 2010 - 2012. In: American Public Health Association 142nd Annual Meeting and Exposition New Orleans, LA; 2014.

Qualls-Hampton R, Taylor D, Nunnery T, Shuler M, Flynt-Wallington S. Geographic differences in parental perception & intention to vaccinate adolescent males for HPV, National Immunization Survey - Teen, 2010 - 2012. In: American Public Health Association 142nd Annual Meeting and Exposition New Orleans, LA; 2014.

Qualls-Hampton R, Taylor D, Nunnery T, Shuler M, Flynt-Wallington S. Parental perceptions and HPV vaccine initiation and completion: A gender comparison using the National Immunization Survey - Teen, 2010 - 2012. In: American Public Health Association 142nd Annual Meeting and Exposition New Orleans, LA; 2014.

Rahman M, Hirth JM, Berenson AB. Adherence to ACIP recommendation for human papillomavirus vaccine among US adolescent girls. J Community Health 2017;42:385–389.

Rahman M, McGrath CJ, Berenson AB. Geographic variation in human papillomavirus vaccination uptake among 13-17 year old adolescent girls in the United States. *Vaccine*. 2014 May 1;32(21):2394-8.

Rahman M, Laz TH, McGrath C, Berenson AB. Correlates of human papillomavirus vaccine series completion among young adult female initiators. Hum Vaccin Immunother 2014;10(8):2163-7.

Rahman M, Laz TH, McGrath CJ, Berenson AB. Provider recommendation mediates the relationship between parental human papillomavirus (HPV) vaccine awareness and HPV vaccine initiation and completion among 13- to 17-year-old U.S. adolescent children. Clin Pediatr (Phila) 2015;54(4):371-5.

Rahman M, McGrath CJ, Hirth JM, Berenson AB. Age at HPV vaccine initiation and completion among US adolescent girls: trend from 2008 to 2012. Vaccine 2015;33(5):585-7.

Rahman M, Laz TH, Berenson AB. Racial Disparity in Receiving a Physician Recommendation for Human Papillomavirus Vaccine among US Adolescent Girls: Trend from 2008 to 2012. Cancer Epidemiol Biomarkers Prev 2015;24(4):764.

Reagan-Steiner S, Yankey D, Jeyarajah J, Elam-Evans LD, Singleton JA, Curtis RC, MacNeil J, Markowitz L, Stokley S. National, regional, state, and selected local area vaccination coverage among adolescents aged 13-17 years - United States, 2014. MMWR. 2015 Jul 31;64(29):784-792. Available at: http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6429a3.htm

Reagan-Steiner S, Yankey D, Jeyarajah J, Elam-Evans LD, Curtis RC, MacNeil J, Markowitz LE, Singleton JA. National, regional, state, and selected local area vaccination coverage among adolescents aged 13-17 years - United States, 2016. MMWR. 2016 Aug 26;65(33):850-858. Available at: http://www.cdc.gov/mmwr/volumes/65/wr/mm6533a4.htm

Reiter PL, Katz ML, Paskett ED. HPV vaccination among adolescent females from Appalachia: implications for cervical cancer disparities. *Cancer Epidemiol Biomarkers Prev*. 2012. Volume 21, issue 12, p. 2220-30.

Reiter PL, Gilkey MB, Brewer NT. HPV Vaccination among adolescent males: results from the National Immunization Survey-Teen. *Vaccine*. 2013. Volume 31, issue 26, p.2816-21.

Reiter PL, Katz ML, Paskett ED. Correlates of HPV vaccination among adolescent females from Appalachia and reasons why their parents do not intend to vaccinate. *Vaccine*. 2013. Volume 31, issue 31, p. 3121-5.

Reiter PL, Gupta K, Brewer NT, Gilkey MB, Katz ML, Paskett ED, Smith JS. Provider-verified HPV vaccine coverage among a national sample of Hispanic adolescent females. *Cancer Epidemiol Biomarkers Prev.* 2014 May;23(5):742-54.

Reiter PL, Brewer NT, Gilkey MB, Katz ML, Paskett ED, Smith JS. Early adoption of the human papillomavirus vaccine among Hispanic adolescent males in the United States. Cancer 2014;120(20):3200-7.

Reiter PL, Brewer NT, Gilkey MB, Katz MP, ED., Smith J. HPV vaccination among Hispanic females in the United States: Results from the National Immunization Survey-Teen. In: American Public Health Association 142nd Annual Meeting and Exposition. New Orleans, LA; 2014.

Roberts JR, Naifeh M, Jacobson RM, Hinton E, O'Brien E, Rogacki B, et al. Adolescent Vaccination Performance in South Carolina Compared to the United States. J S C Med Assoc 2015;111(4):117-21.

Setse RW, Siberry GK, Moss WJ, Wheeling J, Bohannon BA, Dominguez KL. Meningococcal Conjugate and Tetanus Toxoid, Reduced Diphtheria Toxoid and Acellular Pertussis Vaccination Among HIV-infected Youth. Pediatr Infect Dis J 2016;35(5):e152-7.

Shen AK, O'Grady MJ, McDevitt RD, Pickreign JD, Laudenberger LK, Esber A, et al. How might immunization rates change if cost sharing is eliminated? Public Health Rep 2014;129(1):39-46.

Smith PJ, Lindley MC, Shefer A, Rodewald LE. Underinsurance and Adolescent Immunization Delivery in the U.S. *Pediatrics*. 2009;124(S5):S515-21.

Smith PJ, Marcuse EK, Seward JF, Zhao Z, Orenstein WA. Children and Adolescents Unvaccinated Against Measles: Geographic Clustering, Parents' Beliefs, and Missed Opportunities. Public Health Rep 2015;130(5):20.

Smith PJ, Stokley S, Bednarczyk RA, Orenstein WA, Omer SB. HPV vaccination coverage of teen girls: The influence of health care providers. Vaccine 2016;34(13):1604-10.

Stokley S, Cohn A, Jain N, McCauley MM. Compliance with recommendations and opportunities for vaccination at ages 11 to 12 years: evaluation of the 2009 national immunization survey-teen. *Archives of Pediatrics & Adolescent Medicine*. 2011 Sep;165(9):813-8

Stokley S, Cohn A, Dorell C, Hariri S, Yankey D, Messonnier N, Wortley P. Adolescent Vaccination Coverage Levels in the United States: 2006-2009. *Pediatrics.* 2012. Volume 128, Issue 6, p. 1078-1086.

Stokley S, Jeyarajah J, Yankey D, Cano M, Gee J, Roark J, Curtis RC, Markowitz L. Human papillomavirus vaccination coverage among adolescents, 2007-2013, and postlicensure vaccine safety monitoring, 2006-2014 - United States. *MMWR*. 2014 Jul 25;63(29):620-4. Available at: http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6329a3.htm

Thompson EL, Rosen BL, Vamos CA, Kadono M, Daley EM. Human papillomavirus vaccination: what are the reasons for nonvaccination among US adolescents? Journal of Adolescent Health 2017;61:288-293.

Walker TY, Elam-Evans LD, Singleton JA, Yankey D, Markowitz LE, Fredua B, Williams CL, Meyer SA, Stokley S. National, regional, state, and selected local area vaccination coverage among adolescents aged 13-17 years – United States, 2016. MMWR. 2017 Aug 25;66(33):874-82. DOI: http://dx.doi.org/10.15585/mmwr.mm6633a2.

Ylitalo KR1, Lee H, Mehta NK. Health care provider recommendation, human papillomavirus vaccination, and race/ethnicity in the US National Immunization Survey. *Am J Public Health*. 2013 Jan;103(1):164-9.

13. References

American Association for Public Opinion Research (2016). *Standard Definitions: Final Dispositions of Case Codes and Outcome Rates for Surveys*.

Bartlett, D.L., Ezzati-Rice, T.M., Stokley, S. and Zhao, Z (2001). Comparison of NIS and NHIS/NIPRCS Vaccination Coverage Estimates. *American Journal of Preventive Medicine,* Vol. 20, Issue 2, pp. 25-27

Blumberg, S.J. and Luke, J.V. (2017). Wireless substitution: Early release of estimates from the National Health Interview Survey, July-December 2016. National Center for Health Statistics. https://www.cdc.gov/nchs/data/nhis/earlyrelease/wireless201705.pdf

Blumberg, S.J., Luke, J.V., Ganesh, N., Davern, M.E., Boudreaux, M.H. and Soderberg, K. (2011). Wireless substitution: State-level estimates from the National Health Interview Survey, January 2007–June 2011. National Center for Health Statistics. http://www.cdc.gov/nchs/data/nhsr/nhsr039.pdf

Brick, J.M. and Kalton, G. (1996). Handling missing data in survey research. *Statistical Methods in Medical Research*, 5:215–238.

Centers for Disease Control and Prevention (1994). Reported vaccine-preventable diseases - United States, 1993, and the Childhood Immunization Initiative. *MMWR,* 43:57-60.

Centers for Disease Control and Prevention (2002). *National Immunization Survey: Guide to Quality Control Procedures.* http://www.cdc.gov/nchs/data/nis/qcman.pdf

Centers for Disease Control and Prevention (2012). Adding Households with Cell Phone Service to the National Immunization Survey (NIS), 2011. http://www.cdc.gov/vaccines/imz-managers/coverage/nis/child/dual-frame-sampling.html

Copeland, K.R., Khare, M., Ganesh, N., Zhao, Z., and Wouhib, A. (2009). An Evaluation of Sample Weighting in an RDD Survey with Multiple Population Controls. Presented at the Joint Statistical Meetings, Section on Survey Research Methods, American Statistical Association.

Copeland, K.R., Khare, M., Huang, R., Liu, L, Smith, P.J., and Wolter, K.M. (2011). "Assessment of Bias from Incomplete Frame Coverage and Other Sources in a Random Digit Dial Survey: Applications of a Supplement to the National Health Interview Survey." Presented at the American Association for Public Opinion Research Annual Conference.

Coronado, V.G., Maes, E.F., Rodewald, L.E., Chu, S., Battaglia, M.P., Hoaglin, D.C., Merced, N.L., Yusuf, H., Cordero, J.F., and Orenstein, W.A. (2000). Risk factors for underimmunization among 19-35 month-old children in the United States: National Immunization Survey, July 1996-June 1998. Unpublished manuscript, Centers for Disease Control and Prevention, Atlanta.

Council of American Survey Research Organizations (1982). On the Definition of Response Rates: A Special Report of the CASRO Task Force on Completion Rates. Council of American Survey Research Organizations.

Deming, W.E. (1943). *Statistical Adjustment of Data*. New York: Wiley.

Dorell C, Jain N, Yankey D. Validity of Parent-Reported Vaccination Status for Adolescents Aged 13-17 Years, National Immunization Survey-Teen, 2008. 2011. *Public Health Reports*. Volume 126, Supplement 2, p. 60-69.

Ezzati-Rice, T.M., Zell, E.R., Battaglia, M.P., Ching, P.L.Y.H., and Wright, R.A. (1995). The design of the National Immunization Survey. *1995 Proceedings of the Section on Survey Research Methods,* Alexandria, VA: American Statistical Association, pp. 668-672.

Ford, B.L. (1983). An overview of hot-deck procedures, in: *Incomplete data in sample surveys*, Madow W. G., Olkin I., Rubin D. B. (Eds.), Academic Press, New York, pp. 185-207.

Jain, N., Singleton, J., Montgomery, M., Skalland, B. (2009). Determining Accurate Vaccination Coverage Rates for Adolescents: The National Immunization Survey-Teen 206. *Public Health Reports*. 124 (5): 642-651.

Khare, M., Battaglia, M.P., Huggins, V.J., Stokley, S., Hoaglin, D.C., Wright, R.A., and Rodén, A.-S. (2000). Accuracy of vaccination dates reported by immunization providers in the National Immunization Survey. *2000 Proceedings of the Section on Survey Research Methods*. Alexandria, VA: American Statistical Association, pp. 665-670.

Khare, M., Battaglia, M.P., Stokley, S., Wright, R.A., and Huggins, V.J. (2001). Quality of immunization histories reported in the National Immunization Survey. *Proceedings of the International Conference on Quality in Official Statistics* (CD-ROM). Stockholm: Statistics Sweden.

Khare M and Wouhib A. Assessment of Potential Bias in Telephone Survey Estimates due to Noncontact and Noncoverage where Respondents Primarily use Wireless Telephones or do not have Landline Telephones. *Proceedings of the Federal Committee on Statistical Methodology Research Conference*. 2009. Available at: http://fcsm.sites.usa.gov/files/2014/05/2009FCSM_Khare_III-C.pdf

Lepkowski, J.M. (1988). Telephone sampling methods in the United States. *Telephone Survey Methodology*. Edited by Groves, R.M., Biemer, P.P., Lyberg, L.E., Massey, J.T., Nicholls, W.L., and Waksberg, J. New York: John Wiley & Sons, pp. 73-98.

Lumley, T. (2010). Survey Analysis in R. http://r-survey.r-forge.r-project.org/survey/index.html

Meites, E., Kempe, A., and Markowitz, L.E. (2016). Use of a 2-Dose Schedule for Human Papillomavirus Vaccination — Updated Recommendations of the Advisory Committee on Immunization Practices. *MMWR,* 65:1405-1408.

Molinari, N., Wolter, K., Skalland, B., Montgomery, R., Khare, M., Smith, P., and Singleton, J. (2011). *Quanitfying Bias in a Health Surey: Modeling Total Surey Error in the National Immunization Survey*. Statistics in Medicine, 505-515.

Mulry, M. H. and Spencer, B. C. (1991). Total Error in PES Estimates of Population. *Journal of the American Statistical Association,* 839-863.

National Center for Health Statistics (1999). National Health Interview Survey: Research for the 1995-2004 Redesign. *Vital and Health Statistics*, Series 2, No. 126 (DHHS publication no. (PHS) 99-1326). Hyattsville, MD: National Center for Health Statistics.

National Center for Immunization and Respiratory Diseases (2017). *National Immunization Survey - Teen 2016 Public-Use Data File: Documentation, Codebook and Frequencies*. Atlanta, GA.

National Committee for Quality Assurance (2016). NCQA Updates Quality Measure for HEDIS® 2017. http://www.ncqa.org/newsroom/details/ncqa-updates-quality-measures-for-hedis174-2017?ArtMID=11280&ArticleID=45&tabid=2659

NORC at the University of Chicago (NORC) (2011). *Modeling total Survey Error in the 2009 and 2010 NIS: Young Children and Teens.* Report submitted to the Centers for Disease Control and Prevention. Chicago, IL: NORC.

Ojha, R.P., Tota, J.E., Offut-Powell, T.N., Kloskey, J.L., Ashokkumar, R., and Gurney, J.G. (2013). The accuracy of human papillomavirus vaccination status based on adult proxy recall or household immunization records for adolescent females in the United States: results from the National Immunization Survey-Teen. Ann Epidemiol, 23(5): 281-285.

Pineau, V., Wolter, K., Skalland, B., Zeng, W., Zhao, Z. and Khare, M. (2012). *Modeling Total Survey Error in the 2010 National Immunization Survey (NIS): Pre-School Children and Teens.* Presented at the 2012 American Statistical Association (ASA) Joint Statistical Meetings, San Diego, CA.

Pineau, V., Wolter, K., Skalland, B., Zeng, W., Black, C., Dorell, C., Khare, M., and Yankey, D. (2013). *Modeling Total Surey Error in the 2011 National Immunization Survey (NIS): Pre-School Children and Teens.* Presented at the 2013 American Statistical Association (ASA) Joint Statistical Meetings, Montreal, Canada.

Research Triangle Institute (2008). *SUDAAN Language Manual, Release 9.0*. Research Triangle Park, NC: Research Triangle Institute.

Robinson, C.L. (2016). Advisory committee on immunization practices recommended immunization schedules for persons aged 0 through 18 years – United States, 2016. MMWR 65(4):86-87.

Rosenbaum, P.R. (1987). Model-based direct adjustment. *Journal of the American Statistical Association*, 82:387-394.

Rosenbaum, P.R. and Rubin, D.B. (1983). The central role of the propensity score in observational studies for causal effects. *Biometrika*, 70:41-55.

Rosenbaum, P.R. and Rubin, D.B. (1984). Reducing bias in observational studies using subclassification on the propensity score. *Journal of the American Statistical Association*, 79:516-534.

SAS Institute Inc. (2009). *SAS/STAT 9.2 User's Guide, Second Edition*. Cary, NC: SAS Institute Inc.

Skalland, B., Wolter, K., Ma, Q., Pineau, V., Singleton, J., Yankey, D., and Smith, P. (2016). A Total Survey Error Framework and Assessment for the 2013 National Immunization Survey. Presented at the International Total Survey Error Workshop, Sydney, Australia, October, 2016.

Smith, P.J., Battaglia, M.P., Huggins, V.J., Hoaglin, D.C., Rodén, A.-S., Khare, M., Ezzati-Rice, T.M., and Wright, R.A. (2001a). Overview of the sampling design and statistical methods used in the National Immunization Survey. *American Journal of Preventive Medicine*, 20(4S):17-24.

Smith, P.J., Rao, J.N.K., Battaglia, M.P., Ezzati-Rice, T.M., Daniels, D., and Khare, M. (2001b). Compensating for Provider Non-response Using Response Propensities to Form Adjustment Cells: The National Immunization Survey. *Vital and Health Statistics*, Series 2, No. 133 (DHHS publication no. (PHS) 2001-1333). Hyattsville, MD: National Center for Health Statistics.

Smith, P.J., Hoaglin, D.C., Battaglia, M.P., Khare, M., and Barker, L.E. (2005), *Statistical Methodology of the National Immunization Survey: 1994-2002*. National Center for Health Statistics. Vital Health Stat 2(138).

StataCorp (2009). *Stata Statistical Software: Release 9*. College Station, TX: StataCorp LP.Wall, T.P., Kochanek, K.M., Fitti, J.E., and Zell, E.R. (1995). The use of real time translation services in RDD telephone surveys. Presented at the 1995 Conference of the American Association for Public Opinion Research, Fort Lauderdale, FL.

Walker, T.Y., Elam-Evans, L.D., Singleton, J.A., Yankey, D., Markowitz, L.E., Fredua, B., et al. (2017). National, Regional, State, and Selected Local Area Vaccination Coverage Among Adolescents Aged 13–17 Years — United States, 2016. *MMWR,* 66:874-882.

Wolter, K., Pineau, V., Skalland, B., Zeng, W., Singleton, J., Khare, M., Zhao, Z., Yankey, D., and Smith, P. (2017). Total survey error assessment for socio-demographic subgroups in the 2012 U.S. National Immunization Survey. In Biemer, P., De Leeuw, E., Edwards, B., Kreuter, F., Lyberg, L., Tucker, C., and West, B. (Eds.) *Total Survey Error in Practice*, John Wiley & Sons, Inc., Hoboken, NJ, USA.

Zell, E.R., Ezzati-Rice, T.M., Battaglia, M.P., and Wright, R.A. (2000). National Immunization Survey: The methodology of a vaccination surveillance system. *Public Health Reports*, 115(1):65-77.

Appendix A: Glossary of Abbreviations and Terms

1:3:2:1	The series of 1 or more Td/Tdap vaccinations, 3 or more Hep B vaccinations (or 2 or more Hep B 1.0 ml Recombivax vaccinations), 2 or more MMR vaccinations, and 1 or more VAR vaccinations (or a history of chicken pox disease)
1:3:2:1:2	The series of 1 or more Td/Tdap vaccinations, 3 or more Hep B vaccinations (or 2 or more Hep B 1.0 ml Recombivax vaccinations), 2 or more MMR vaccinations, 1 or more MEN vaccinations, and 2 or more VAR vaccinations (or a history of chicken pox disease)
1:1:3	The series of 1 or more Tdap vaccinations at or after age 10 years, 1 or more MenACWY vaccinations and 3 or more HPV vaccinations prior to age 13 years.
AAPOR	American Association for Public Opinion Research
ACS	American Community Survey
APCN	Active Personal Cell-Phone Number
CASRO	Council of American Survey Research Organizations
CATI	Computer-assisted telephone interviewing
CDC	Centers for Disease Control and Prevention
CII	Childhood Immunization Initiative
CPS	Current Population Survey
DHHS	U.S. Department of Health and Human Services
DOB	Date of birth
FLU	Seasonal influenza vaccine
H1N1	Monovalent 2009 H1N1 Influenza Vaccine
Hep A	Hepatitis A vaccine
Hep B	Hepatitis B vaccine
HIM	Health insurance module
HPV	Human papillomavirus
IAP	Immunization Action Plan
IHQ	Immunization history questionnaire
MCV	Measles-containing vaccine

MenACWY	Quadrivalent meningococcal conjugate vaccine
MenB	Serogroup B meningococcal vaccine
MPSV4	Quadrivalent meningococcal polysaccharide vaccine
MEN	Meningococcal vaccine
MMR	Measles, mumps, and rubella vaccine
MSA	Metropolitan Statistical Area
NCHS	National Center for Health Statistics
NCIRD	National Center for Immunization and Respiratory Diseases
NIPRCS	National Immunization Provider Record Check Study
NIS	National Immunization Survey
NIS-Child	National Immunization Survey - Child
NIS-Teen	National Immunization Survey - Teen
NHIS	National Health Interview Survey
NIP	National Immunization Program
PPSV23	Pneumococcal polysaccharide vaccine
PRC	Provider Record Check
PUF	Public-use data file
PUMS	Public-Use Microdata Sample
RDD	Random digit dialing
SC	Shot card
Td	Tetanus and diphtheria toxoids adsorbed
Tdap	Tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis vaccine, adsorbed
UTD	Up-to-date
WRN	Working Residential Number
VFC	Vaccines for Children program
VAR	Varicella vaccine

Appendix B: Summary Statistics for Sampling Weights by Estimation Area

Table B.1: Distribution of Dual-Frame Sampling Weights* for Teens with Completed Household Interviews, National Immunization Survey - Teen, 2016

State/Estimation Area	n	Sum	Minimum	Maximum	Mean	Coefficient of Variation
U.S. National†	41,994	20,827,202.91	1.39	11,464.31	495.96	147.44
Alabama	688	314,879.93	15.96	1,382.70	457.67	65.82
Alaska	749	45,902.04	12.85	187.73	61.28	63.63
Arizona	719	460,970.33	27.55	2,267.95	641.13	74.56
Arkansas	712	198,268.23	51.94	837.30	278.47	60.39
California	785	2,536,636.86	8.14	11,464.31	3,231.38	81.45
Colorado	683	354,844.55	5.33	1,740.80	519.54	75.37
Connecticut	736	234,322.33	25.54	994.02	318.37	67.10
Delaware	751	57,853.07	13.93	229.99	77.03	59.53
District of Columbia	780	25,218.10	4.02	118.11	32.33	83.73
Florida	845	1,182,903.10	6.12	4,952.83	1,399.89	83.84
Georgia	748	715,803.84	2.38	3,118.27	956.96	75.82
Hawaii	635	80,076.23	27.95	335.64	126.10	53.59
Idaho	686	123,503.66	12.84	524.08	180.03	62.95
Illinois	1,398	846,121.67	1.39	2,055.43	605.24	66.62
IL-City of Chicago	381	152,167.29	1.39	1,332.52	399.39	70.98
IL-Rest of State	1,017	693,954.38	5.46	2,055.43	682.35	60.72
Indiana	685	452,620.40	5.64	2,100.00	660.76	68.95
Iowa	702	202,834.12	2.58	891.00	288.94	60.45
Kansas	610	197,991.83	20.34	987.41	324.58	61.63
Kentucky	648	284,856.03	14.16	1,341.64	439.59	63.04
Louisiana	712	305,923.28	10.14	1,277.32	429.67	64.53
Maine	659	76,036.65	18.73	353.46	115.38	63.06
Maryland	935	380,245.46	12.31	1,709.45	406.68	100.62
Massachusetts	750	408,137.33	15.52	1,612.24	544.18	63.96
Michigan	589	653,090.03	28.48	3,332.85	1,108.81	61.41
Minnesota	751	357,186.16	16.47	1,484.64	475.61	66.04
Mississippi	707	204,829.27	9.27	925.46	289.72	71.01
Missouri	753	391,847.61	34.62	1,750.77	520.38	71.57
Montana	688	62,956.67	10.70	252.44	91.51	59.40
Nebraska	637	128,088.42	20.33	629.74	201.08	61.78
Nevada	760	190,018.44	20.83	740.46	250.02	64.38
New Hampshire	630	80,431.45	19.95	376.97	127.67	64.17
New Jersey	859	576,617.83	7.29	2,161.71	671.27	74.06
New Mexico	704	136,477.18	10.17	553.17	193.86	58.79
New York	1,485	1,179,473.85	4.19	2,863.51	794.26	66.06
NY-City of New York	712	460,900.18	4.19	2,014.78	647.33	59.47
NY-Rest of State	773	718,573.67	8.34	2,863.51	929.59	64.05
North Carolina	771	655,800.22	8.58	2,798.56	850.58	70.64
North Dakota	562	43,777.97	16.44	227.37	77.90	59.15
Ohio	698	763,732.35	15.52	3,790.25	1,094.17	70.08
Oklahoma	653	263,262.41	18.02	1,351.45	403.16	71.33
Oregon	590	244,199.80	14.45	1,266.66	413.90	63.04

State/Estimation Area	n	Sum	Minimum	Maximum	Mean	Coefficient of Variation
Pennsylvania	1,738	777,581.18	10.87	2,354.09	447.40	118.20
PA-Philadelphia County	696	91,202.24	16.04	398.78	131.04	62.18
PA-Rest of State	1,042	686,378.94	10.87	2,354.09	658.71	89.89
Rhode Island	630	60,939.35	20.40	284.73	96.73	57.77
South Carolina	702	309,905.74	4.78	1,537.45	441.46	71.42
South Dakota	638	55,423.08	12.27	252.43	86.87	62.79
Tennessee	611	426,750.21	6.94	2,144.05	698.45	63.94
Texas	4,297	2,009,750.20	6.87	3,039.90	467.71	127.28
TX-Bexar County	688	140,516.31	16.48	698.54	204.24	73.05
TX-City of Houston	500	131,811.18	10.77	946.82	263.62	82.96
TX-Dallas County	729	178,950.03	13.21	783.06	245.47	72.79
TX-El Paso County	659	68,636.69	6.87	456.32	104.15	91.48
TX-Rest of State	1,721	1,489,836.00	7.48	3,039.90	865.68	87.63
Utah	607	246,482.98	11.58	1,209.60	406.07	60.81
Vermont	669	36,104.94	6.15	150.96	53.97	57.13
Virginia	906	526,293.67	2.51	2,793.07	580.90	125.36
Washington	720	444,993.93	12.89	2,068.83	618.05	69.87
West Virginia	659	107,232.56	12.50	530.40	162.72	68.37
Wisconsin	672	371,923.24	34.11	1,815.57	553.46	63.97
Wyoming	692	36,083.14	9.04	155.51	52.14	61.30
Puerto Rico	1,077	225,559.93	19.22	638.60	209.43	73.98
U.S. Virgin Islands	821	7,240.00	1.53	26.02	8.82	63.35
Guam	879	14,390.00	3.97	41.04	16.37	62.41

*Distribution of RDDWT_D_TERR.

† Excludes U.S. territories.

Table B.2: Distribution of Dual-Frame Sampling Weights* for Teens with Adequate Provider Data, National Immunization Survey - Teen, 2016

State/Estimation Area	n	Sum	Minimum	Maximum	Mean	Coefficient of Variation
U.S. National†	20,475	20,827,202.91	2.47	27,439.98	1,017.20	159.09
Alabama	333	314,879.93	68.94	2,979.35	945.59	64.26
Alaska	392	45,902.04	13.08	369.39	117.10	76.62
Arizona	329	460,970.33	61.45	5,001.67	1,401.13	74.47
Arkansas	352	198,268.23	97.56	1,652.75	563.26	65.10
California	327	2,536,636.86	13.07	27,439.98	7,757.30	80.33
Colorado	322	354,844.55	13.67	4,160.78	1,102.00	81.08
Connecticut	357	234,322.33	83.34	2,106.45	656.37	70.32
Delaware	375	57,853.07	16.13	476.14	154.27	68.72
District of Columbia	377	25,218.10	6.76	246.28	66.89	85.67
Florida	376	1,182,903.10	9.16	12,068.09	3,146.02	87.14
Georgia	367	715,803.84	4.50	6,919.19	1,950.42	81.12
Hawaii	317	80,076.23	46.29	738.62	252.61	60.78
Idaho	358	123,503.66	48.35	1,036.09	344.98	66.89
Illinois	605	846,121.67	2.47	4,996.09	1,398.55	72.43
IL-City of Chicago	157	152,167.29	2.47	3,301.10	969.22	81.36
IL-Rest of State	448	693,954.38	32.25	4,996.09	1,549.01	67.15
Indiana	350	452,620.40	17.85	4,088.22	1,293.20	71.23
Iowa	382	202,834.12	45.30	1,634.16	530.98	62.28
Kansas	322	197,991.83	36.23	2,046.11	614.88	66.07
Kentucky	333	284,856.03	24.83	2,557.28	855.42	64.27
Louisiana	336	305,923.28	149.01	2,763.09	910.49	59.24
Maine	347	76,036.65	43.74	631.29	219.13	64.08
Maryland	451	380,245.46	29.27	3,351.56	843.12	99.54
Massachusetts	374	408,137.33	28.01	3,343.64	1,091.28	63.87
Michigan	283	653,090.03	68.42	7,019.73	2,307.74	68.16
Minnesota	375	357,186.16	26.93	2,954.77	952.50	69.60
Mississippi	377	204,829.27	50.42	1,928.94	543.31	76.28
Missouri	360	391,847.61	73.17	3,538.02	1,088.47	79.38
Montana	375	62,956.67	23.77	546.93	167.88	77.11
Nebraska	330	128,088.42	24.91	1,287.38	388.15	69.11
Nevada	330	190,018.44	71.45	1,833.82	575.81	70.45
New Hampshire	313	80,431.45	31.58	831.05	256.97	66.37
New Jersey	422	576,617.83	17.78	4,460.71	1,366.39	76.73
New Mexico	374	136,477.18	47.25	1,141.39	364.91	67.28
New York	655	1,179,473.85	24.48	6,244.41	1,800.72	70.88
NY-City of New York	291	460,900.18	26.60	5,419.33	1,583.85	72.29
NY-Rest of State	364	718,573.67	24.48	6,244.41	1,974.10	68.34
North Carolina	366	655,800.22	30.41	6,035.31	1,791.80	77.93
North Dakota	293	43,777.97	20.53	441.92	149.41	60.39
Ohio	338	763,732.35	23.94	7,848.57	2,259.56	77.67
Oklahoma	281	263,262.41	79.59	3,262.64	936.88	75.30
Oregon	318	244,199.80	29.17	2,324.97	767.92	64.74
Pennsylvania	875	777,581.18	36.91	4,739.60	888.66	117.35
PA-Philadelphia County	349	91,202.24	36.91	853.81	261.32	65.12
PA-Rest of State	526	686,378.94	134.44	4,739.60	1,304.90	89.24
Rhode Island	326	60,939.35	32.32	529.65	186.93	61.74
South Carolina	314	309,905.74	11.34	3,516.14	986.96	78.39

State/Estimation Area	n	Sum	Minimum	Maximum	Mean	Coefficient of Variation
South Dakota	342	55,423.08	18.76	558.93	162.06	75.02
Tennessee	291	426,750.21	13.31	4,737.90	1,466.50	61.63
Texas	1,927	2,009,750.20	13.78	7,773.08	1,042.94	134.21
TX-Bexar County	334	140,516.31	51.70	1,398.18	420.71	72.84
TX-City of Houston	225	131,811.18	29.57	2,134.61	585.83	93.48
TX-Dallas County	294	178,950.03	49.24	2,304.15	608.67	82.64
TX-El Paso County	345	68,636.69	13.78	849.04	198.95	91.96
TX-Rest of State	729	1,489,836.00	32.76	7,773.08	2,043.67	88.51
Utah	317	246,482.98	28.69	2,360.91	777.55	65.84
Vermont	380	36,104.94	9.57	278.72	95.01	56.92
Virginia	451	526,293.67	3.31	5,132.90	1,166.95	129.59
Washington	361	444,993.93	35.37	4,205.63	1,232.67	75.89
West Virginia	313	107,232.56	59.32	1,180.40	342.60	67.66
Wisconsin	333	371,923.24	59.98	3,375.23	1,116.89	66.84
Wyoming	373	36,083.14	13.74	270.13	96.74	65.10
Puerto Rico	405	225,559.93	33.68	1,842.99	556.94	83.17
U.S. Virgin Islands	428	7,240.00	2.59	53.15	16.92	70.07
Guam	535	14,390.00	4.46	71.84	26.90	74.18

* Distribution of PROVWT_D_TERR.

† Excludes U.S. territories.

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

I. SUDAAN

```
*************************************************************************;
title1 'SUD_IAP.SAS';
*************************************************************************
THIS PROGRAM WILL PRODUCE ESTIMATION AREA ESTIMATES AND STANDARD ERRORS
FOR 2+ MMR VACCINATIONS (P_UTDMMR) 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:\nisteenpuf16'; *--- SPECIFY PATH TO SAS DATASET ---*;
libname library 'c:\nisteenpuf16'; *--- IF DATASET WAS CREATED WITH FORMATS STORED ---*;

*--- PERMANENTLY SPECIFY PATH TO LIBRARY ---*;
*--- OTHERWISE COMMENT THIS STATEMENT OUT ---*;
%let in_file=dd.nisteenpuf16; *--- NAME OF SAS DATASET ---*;
%let estiap=estiapt16; * --- ESTIMATION AREA VARIABLE TO USE ---*;
%let wt=provwt_d; * --- WEIGHT TO USE (PROVWT_D is the dual-frame weight excluding territories.
Use PROVWT_D_TERR to include territories) ---*;
%let strat=stratum; * --- STRATUM VARIABLE TO USE FOR VARIANCE ESTIMATION (Use
STRATUM for all estimates.) ---*;

Proc format;
/*
```

```
THE FOLLOWING FORMAT WILL BE USED FOR P_UTDMMR.
ORIGINAL VALUES OF P_UTDMMR ARE 1,0.
MUST BE CONVERTED TO 1,2 IN SUDAAN.
*/
value p  utdmmrf
1='2+ MMR Up-to-Date'
2='Not 2+ MMR Up-to-Date';

/*
THE FOLLOWING FORMAT WILL BE USED FOR THE ESTIMATION AREA.
*/
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"
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"
106 = "Puerto Rico"
;
Run;

data sud_file;
set &in  file. (keep= SEQNUMT P  UTDMMR &estiap. &wt. &strat.);
if P  UTDMMR=0 then P  UTDMMR=2; *--- CONVERT P  UTDMMR=0 TO P  UTDMMR=2 ---*;
NSEQNUMT=1*SEQNUMT; *---CONVERT TEEN ID SEQNUMT FROM CHARACTER TO
NUMERIC ---*;
run;

*=== SORT BY NEST VARIABLES: ESTIAP (STRATUM) NSEQNUMT (PRIMARY SAMPLING
UNIT) ===*;
proc sort data=sud_file;
by &strat. nseqnumt;
run;
proc crosstab data=sud_file filetype=sas design=wr;
weight &wt.;
nest &strat. nseqnumt;
subgroup &estiap. P_UTDMMR ;
levels 106 2 ;
tables &estiap. * P_UTDMMR ;
print nsum wsum rowper serow/style=nchs ;
rtitle "2+ MMR Estimates by Estimation Area";
rformat &estiap. estiapf.;
rformat P_UTDMMR p_utdmmrf.;
output rowper serow/filename=sud_est filetype=sas;
run;
```

```
proc print data=sud_est(where=(P_UTDMMR=1 and rowper ne .)) noobs label;
format &estiap. estiapf.;
var &estiap. rowper serow ;
label
rowper='Percent 2+ MMR Up-to-Date'
serow='Standard Error'
;
title "2+ MMR Estimates by Estimation Area";
run;


**********;
title1 'SUDSTATE.SAS';
*************************************************************************
THIS PROGRAM WILL PRODUCE STATE ESTIMATES AND STANDARD ERRORS
FOR 2+ MMR VACCINATIONS (P_UTDMMR) USING SAS CALLABLE SUDAAN.
NOTE : THE STATE VARIABLE IS BASED ON STATE FIPS CODES. THERE ARE
NO STATES WITH FIPS CODES 3,7,14,43,52,57-71,73-78.
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:\nisteenpuf16'; *--- SPECIFY PATH TO SAS DATASET ---*;
libname library 'c:\nisteenpuf16'; *--- IF DATASET WAS CREATED WITH FORMATS STORED ---*;

*--- PERMANENTLY SPECIFY PATH TO LIBRARY ---*;
*--- OTHERWISE COMMENT THIS STATEMENT OUT ---*;
%let in_file=dd.nisteenpuf16; *--- NAME OF SAS DATASET ---*;
%let estiap=estiapt16; * --- ESTIMATION AREA VARIABLE TO USE ---*;
%let wt=provwt_d; * --- WEIGHT TO USE (PROVWT_D is the dual-frame weight excluding territories.
Use PROVWT_D_TERR to include territories) ---*;
%let strat=stratum; * --- STRATUM VARIABLE TO USE FOR VARIANCE ESTIMATION (Use
STRATUM for all estimates) ---*;

PROC FORMAT;
/*
THE FOLLOWING FORMAT WILL BE USED FOR P_UTDMMR.
ORIGINAL VALUES OF P_UTDMMR ARE 1,0.
MUST BE CONVERTED TO 1,2 IN SUDAAN.
*/
value putmmrf
1='2+ MMR Up-to-Date'
2='Not 2+ MMR Up-to-Date'
;
```

```
/*
THE FOLLOWING FORMAT WILL BE USED FOR STATE.
*/
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 '
72 ='Puerto Rico '
;
run;
data sud_file;
set &in_file. (keep= SEQNUMT P_UTDMMR &estiap. STATE &wt. &strat.);
if P_UTDMMR=0 then P_UTDMMR=2; *** CONVERT P_UTDMMR=0 TO P_UTDMMR=2 ***;
NSEQNUMT=1*SEQNUMT; *** CONVERT TEEN ID SEQNUMT FROM CHARACTER TO
NUMERIC ***;
run;

*=== SORT BY NEST VARIABLES: ESTIAP (STRATUM) NSEQNUMT (PRIMARY SAMPLING
UNIT) ===*;
proc sort data=sud_file;
by &strat. nseqnumt;
run;

proc crosstab data=sud_file filetype=sas design=wr;
weight &wt.;
nest &strat. nseqnumt;
subgroup state P_UTDMMR ;
levels 72 2 ;
tables state * P_UTDMMR ;
print nsum wsum rowper serow/style=nchs ;
rtitle "2+ MMR ESTIMATES BY STATE";
rformat state statef.;
rformat P_UTDMMR p_utdmmrf.;
output rowper serow / filename=sud_est2 filetype=sas;
run;

*** EXCLUDE 3,7,14,43,52,57-71,73-78 THERE ARE NO STATES WITH THESE FIPS CODES *** ;
proc print data=sud_est2(where=(P_UTDMMR=1 and state notin (3,7,14,43,52) and
not(57<=STATE<=71) and not(73<=state<=78))) label noobs;
format state statef.;
var state rowper serow ;
label
rowper='Percent 2+ MMR Up-to-Date'
serow='Standard Error'
;
title "2+ MMR ESTIMATES BY STATE";
run;


**********;
```

```
title1 'PROG_3.SAS';
*********************************************************************
THIS PROGRAM WILL PRODUCE A TABLE OF HOUSEHOLD REPORT OF
THE TEEN HAVING ASTHMA BY STATE FOR ALL HOUSEHOLD COMPLETES USING
RDDWT.
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:\nisteenpuf16'; *--- SPECIFY PATH TO SAS DATASET ---*;
libname library 'c:\nisteenpuf16'; *--- IF DATASET WAS CREATED WITH FORMATS STORED ---*;

*--- PERMANENTLY SPECIFY PATH TO LIBRARY ---*;
*--- OTHERWISE COMMENT THIS STATEMENT OUT ---*;
%let in_file=dd.nisteenpuf16; *--- NAME OF SAS DATASET ---*;
%let estiap=estiapt16; * --- ESTIMATION VARIABLE TO USE ---*;
%let wt=rddwt_d; * --- WEIGHT TO USE (RDDWT_D is the dual-frame weight excluding territories.
Use RDDWT_D_TERR to include territories) ---*;
%let strat=stratum; * --- STRATUM VARIABLE TO USE FOR VARIANCE ESTIMATION (Use
STRATUM for all estimation) ---*;

PROC FORMAT;
/*
THE FOLLOWING FORMAT WILL BE USED FOR ASTHMA.
*/
value asthmaf
1='Yes'
2='No'
;
/*
THE FOLLOWING FORMAT WILL BE USED FOR STATE.
*/
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 '
72 ='Puerto Rico '
;
run;

data sud_file;
set &in_file. (keep= SEQNUMT &estiap. STATE ASTHMA &wt. &strat.);
```

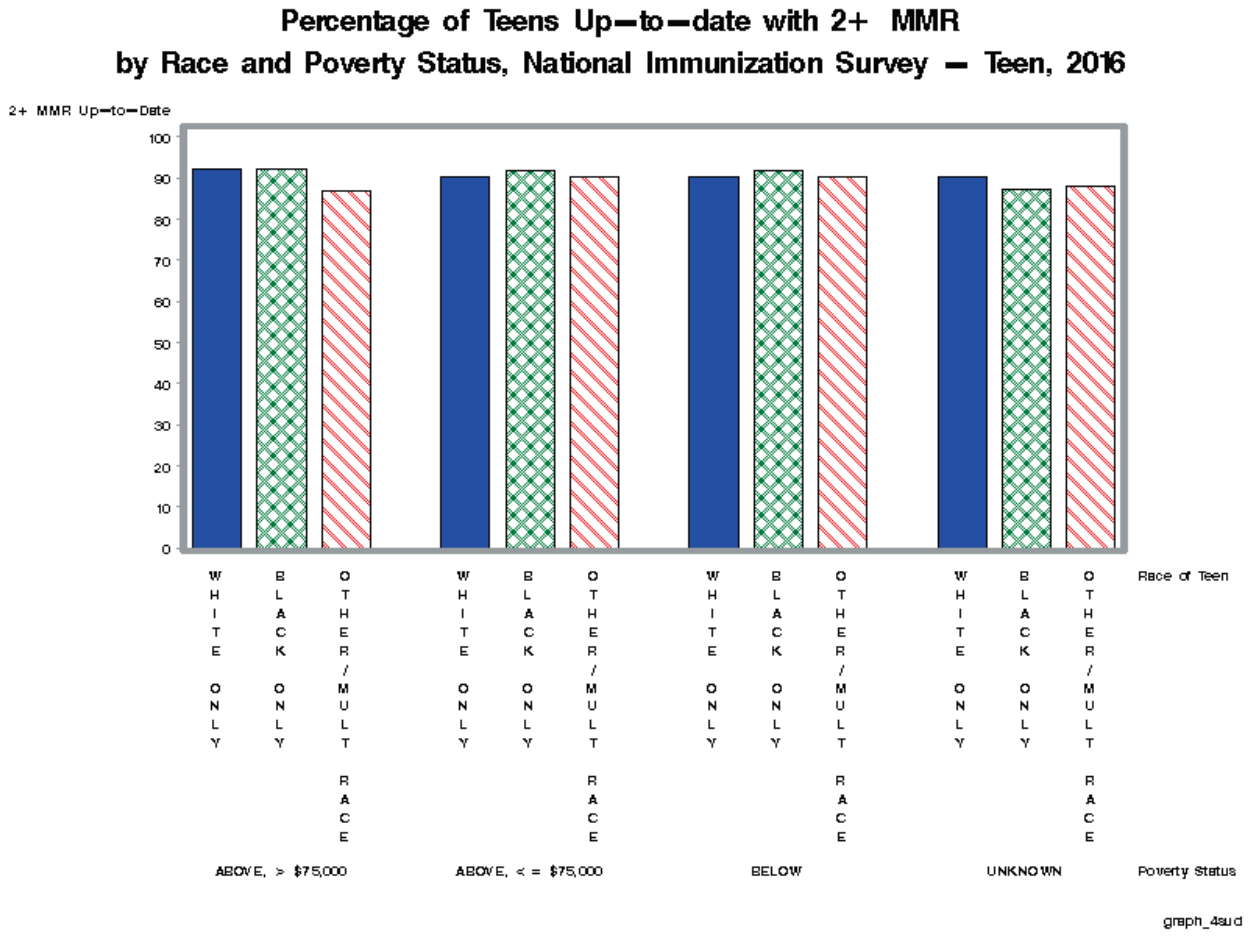
```
where ASTHMA in (1,2); *** KEEP ONLY CASES WITH NON-MISSING VALUES FOR ASTHMA
***;
NSEQNUMT=1*SEQNUMT; *** CONVERT TEEN ID SEQNUMT FROM CHARACTER TO
NUMERIC ***;
run;

*=== SORT BY NEST VARIABLES: ESTIAP (STRATUM) NSEQNUMT (PRIMARY SAMPLING
UNIT) ===*;
proc sort data=sud_file;
by &strat. NSEQNUMT;
run;

proc crosstab data=sud_file filetype=sas design=wr;
weight &wt.;
nest &strat. NSEQNUMT;
subgroup STATE ASTHMA ;
levels 72 2 ;
tables STATE * ASTHMA ;
print nsum wsum rowper serow/style=nchs ;
rtitle "ASTHMA ESTIMATES BY STATE";
rtitle "WEIGHT = &WT.";
rformat STATE statef.;
rformat ASTHMA asthmaf.;
output rowper serow / filename=sud_est3 filetype=sas;
run;

*** EXCLUDE 3,7,14,43,52,57-71,73-78 THERE ARE NO STATES WITH THESE FIPS CODES *** ;
proc print data=sud  est3(where=(ASTHMA=1 and STATE notin (3,7,14,43,52) and not(57<=STATE
<=71) and not(73<=state<=78))) label noobs;
format STATE statef.;
var STATE rowper serow ;
label
rowper='Percent ASTHMA = Yes'
serow='Standard Error'
;
title "HH REPORT OF TEEN HAVING ASTHMA BY STATE";
run;


**********;
title1 'PROG_4.SAS';
*************************************************************************
TABLE OF P_UTDMMR 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:\nisteenpuf16'; *--- SPECIFY PATH TO SAS DATASET ---*;
libname library 'c:\nisteenpuf16'; *--- IF DATASET WAS CREATED WITH FORMATS STORED ---*;

*--- SPECIFY THE PATH FOR WHERE YOU WANT THE CHART OUTPUT TO GO ---*;
libname out 'c:\nisteenpuf16';

%let in_file=dd.nisteenpuf16; *--- NAME OF SAS DATASET ---*;
%let estiap=estiapt16; * --- ESTIMATION VARIABLE TO USE ---*;
%let wt=provwt_d; * --- WEIGHT TO USE (PROVWT_D is the dual-frame weight excluding territories.
Use PROVWT_D_TERR to include territories) ---*;
%let qtr_lab=Q1/2016 - Q4/2016; *--- NIS-TEEN 4 QUARTER PERIOD ---*;
%let strat=stratum; * --- STRATUM VARIABLE TO USE FOR VARIANCE ESTIMATION (Use
STRATUM for all estimation) ---*;

PROC FORMAT;
/*
THE FOLLOWING FORMAT WILL BE USED FOR P_UTDMMR.
ORIGINAL VALUES OF P_UTDMMR ARE 1,0.
MUST BE CONVERTED TO 1,2 IN SUDAAN.
*/
value p_utdmmrf
1='2+ MMR Up-to-date'
2='Not 2+ MMR Up-to-date'
;
/*
THE FOLLOWING FORMAT WILL BE USED FOR RACE_K.
*/
VALUE RACE_KF
1 = "WHITE ONLY"
2 = "BLACK ONLY"
3 = "OTHER AND MULTIPLE RACE"
;
/*
THE FOLLOWING FORMAT WILL BE USED FOR INCPOV1.
*/
VALUE INCPVR2F
1 = "ABOVE, > $75,000"
2 = "ABOVE, <= $75,000"
3 = "BELOW"
4 = "UNKNOWN"
;
run;

data sud_file;
set &in_file. (keep= SEQNUMT P_UTDMMR &estiap. RACE_K INCPOV1 PDAT2 &wt. &strat.);
```

```
NSEQNUMT=1*SEQNUMT; *** CONVERT TEEN ID SEQNUMT FROM CHARACTER TO
NUMERIC ***;
if P_UTDMMR=0 then P_UTDMMR=2; *** CONVERT P_UTDMMR=0 TO P_UTDMMR=2 ***;
run;

*=== SORT BY NEST VARIABLES: ESTIAP (STRATUM) NSEQNUMT (PRIMARY SAMPLING
UNIT) ===*;
proc sort data=sud_file;
by &strat. NSEQNUMT;
run;

proc freq data=sud_file;
where PDAT2=1;
tables P_UTDMMR INCPOV1 RACE_K;
title3 "Table 4A. &qtr_lab.: Unweighted Frequencies";
run;

proc crosstab data=sud_file filetype=sas design=wr;
weight &wt.;
nest &strat. NSEQNUMT;
subgroup INCPOV1 RACE_K P_UTDMMR ;
levels 4 3 2 ;
tables (INCPOV1 * RACE_K * P_UTDMMR) ;
print nsum wsum rowper="2+ MMR Up-to-Date (ROWPER)"
serow="Standard Error (SEROW)" /style=nchs ;
rtitle "Table 4B. &qtr_lab., Percent 2+ MMR Up-to-Date and Estimated Standard Errors";
rtitle "WEIGHT = &WT.";
rformat P_UTDMMR p_utdmmrf.;
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=(P_UTDMMR=1 and INCPOV1 > 0 and RACE_K > 0));
keep INCPOV1 RACE_K rowper serow;
label     rowper='2+ MMR Up-to-Date'
                  serow='Standard Error';
format  rowper 5.2
                  serow 5.2;
run;

proc print data=out.sud_est4 label;
format RACE_K race_kf.;
format INCPOV1 incpvr2f.;
title "& Table 4B. qtr_lab.: 2+ MMR ESTIMATES 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
P_UTDMMR 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:\nisteenpuf16'; *--- SPECIFY PATH TO SAS DATASET ---*;

%let out='c:\nisteenpuf16'; *--- 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=Q1/2016 - Q4/2016; *--- NIS-TEEN 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 Teen'
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 Teens Up-to-date with 2+ MMR";
```

```
TITLE2 HEIGHT=3 "by Race and Poverty Status, National Immunization Survey - Teen, 2016";
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;
```


Percentage of Teens Up—to—date with 2+ MMR
by Race and Poverty Status, National Immunization Survey — Teen, 2016
2+ MMR Up—to—Date
100
90
80
70
60
50
40
30
20
10
0
WHITE ONLY
BLACK ONLY
OTHER/MULTIRACE
ABOVE, > $75,000
ABOVE, < = $75,000
BELOW
UNKNOWN
Race of Teen
Poverty Status
graph_4sud

II. SAS

```
**********;
title1 'SAS_IAP.SAS';
*********************************************************************
THIS PROGRAM WILL PRODUCE ESTIMATION AREA ESTIMATES AND STANDARD ERRORS
FOR 2+ MMR VACCINATIONS (P_UTDMMR) USING SAS.
*********************************************************************;
options ps=78 ls=90 obs= max;

libname dd 'c:\nisteenpuf16'; *--- SPECIFY PATH TO SAS DATASET ---*;
libname library 'c:\nisteenpuf16'; *--- IF DATASET WAS CREATED WITH FORMATS STORED ---*;

*--- PERMANENTLY SPECIFY PATH TO LIBRARY ---*;
*--- OTHERWISE COMMENT THIS STATEMENT OUT ---*;
%let in_file=dd.nisteenpuf16; *--- NAME OF SAS DATASET ---*;
%let estiap=estiapt16; * --- ESTIMATION AREA VARIABLE TO USE ---*;
%let wt=provwt_d; * --- WEIGHT TO USE (PROVWT_D is the dual-frame weight excluding territories.
Use PROVWT_D_TERR to include territories) ---*;
%let strat=stratum; * --- STRATUM VARIABLE TO USE FOR VARIANCE ESTIMATION (Use
STRATUM for all estimation) ---*;

proc format;
value p  utdmmrf
0='Not 2+ MMR Up-To-Date'
1='2+ MMR 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"
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"
106 = "Puerto Rico"
;
run;

data sas_file;
set &in_file. (keep= SEQNUMT P_UTDMMR &estiap. &wt. &strat.);
run;

proc sort data = sas_file;
by &estiap.;
```

```
run;

title1 '2+ MMR Estimates by Estimation Area';
ods output Statistics=sas_est;
proc surveymeans data = sas_file nobs sum mean stderr;
stratum &strat.;
cluster SEQNUMT;
weight &wt.;
class P_UTDMMR;
var P_UTDMMR;
by &estiap.;
format P_UTDMMR p_utdmmrf.;
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='2+ MMR Up-To-Date')) noobs
label;
format &estiap. estiapf.;
format mean stderr 5.2;
var &estiap. mean stderr;
label
mean='Percent 2+ MMR Up-to-Date'
stderr='Standard Error';
title "2+ MMR Estimates by Estimation Area";
run;


**********;
title1 'SASSTATE.SAS';
*********************************************************************
THIS PROGRAM WILL PRODUCE STATE ESTIMATES AND STANDARD ERRORS
FOR 2+ MMR VACCINATIONS (P_UTDMMR) USING SAS.
NOTE : THE STATE VARIABLE IS BASED ON STATE FIPS CODES. THERE ARE
NO STATES WITH FIPS CODES 3,7,14,43,52,57-71,73-78.
*********************************************************************;
options ps=78 ls=90 obs= max;

libname dd 'c:\nisteenpuf16'; *--- SPECIFY PATH TO SAS DATASET ---*;
libname library 'c:\nisteenpuf16'; *--- IF DATASET WAS CREATED WITH FORMATS STORED ---*;
*--- PERMANENTLY SPECIFY PATH TO LIBRARY ---*;
*--- OTHERWISE COMMENT THIS STATEMENT OUT ---*;

%let in_file=dd.nisteenpuf16; *--- NAME OF SAS DATASET ---*;
%let estiap=estiapt16; * --- ESTIMATION AREA VARIABLE TO USE ---*;
```

```
%let wt=provwt_d; * --- WEIGHT TO USE (PROVWT_D is the dual-frame weight excluding territories.
Use PROVWT_D_TERR to include territories) ---*;
%let strat=stratum; * --- STRATUM VARIABLE TO USE FOR VARIANCE ESTIMATION (Use
STRATUM for all estimation) ---*;

proc format;
value p_utdmmrf
0='Not 2+ MMR Up-To-Date'
1='2+ MMR 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 '
72 ='Puerto Rico '
;
run;

data sas_file;
set &in_file. (keep= SEQNUMT P_UTDMMR &estiap. STATE &wt. &strat.);
run;

proc sort data = sas_file;
by state;
run;

title1 '2+ MMR ESTIMATES BY STATE';
ods output Statistics=sas  est2;
proc surveymeans data = sas_file nobs sum mean stderr;
stratum &strat.;
cluster SEQNUMT;
weight &wt.;
class P_UTDMMR;
var P_UTDMMR;
by STATE;
format P_UTDMMR p_utdmmrf.;
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='2+ MMR Up-To-Date')) noobs
label;
format STATE statef.;
format mean stderr 5.2;
var STATE mean stderr;
```

```
label
mean='Percent 2+ MMR Up-to-Date'
stderr='Standard Error';
title "2+ MMR ESTIMATES BY STATE";
run;


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

libname dd 'c:\nisteenpuf16'; *--- SPECIFY PATH TO SAS DATASET ---*;
libname library 'c:\nisteenpuf16'; *--- IF DATASET WAS CREATED WITH FORMATS STORED ---*;
*--- PERMANENTLY SPECIFY PATH TO LIBRARY ---*;
*--- OTHERWISE COMMENT THIS STATEMENT OUT ---*;

%let in_file=dd.nisteenpuf16; *--- NAME OF SAS DATASET ---*;
%let estiap=estiapt16; * --- ESTIMATION VARIABLE TO USE ---*;
%let wt=rddwt_d; * --- WEIGHT TO USE (RDDWT_D is the dual-frame weight excluding territories.
Use RDDWT_D_TERR to include territories) ---*;
%let strat=stratum; * --- STRATUM VARIABLE TO USE FOR VARIANCE ESTIMATION (Use
STRATUM for all estimation) ---*;

PROC FORMAT;
value asthmaf
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 '
72 ='Puerto Rico '
;
run;

data sas_file;
set &in  file. (keep= SEQNUMT &estiap. STATE ASTHMA &wt. &strat.);
where ASTHMA in (1,2); *** KEEP ONLY CASES WITH NON-MISSING VALUES FOR ASTHMA
***;
run;

proc sort data = sas_file;
by state;
run;
```

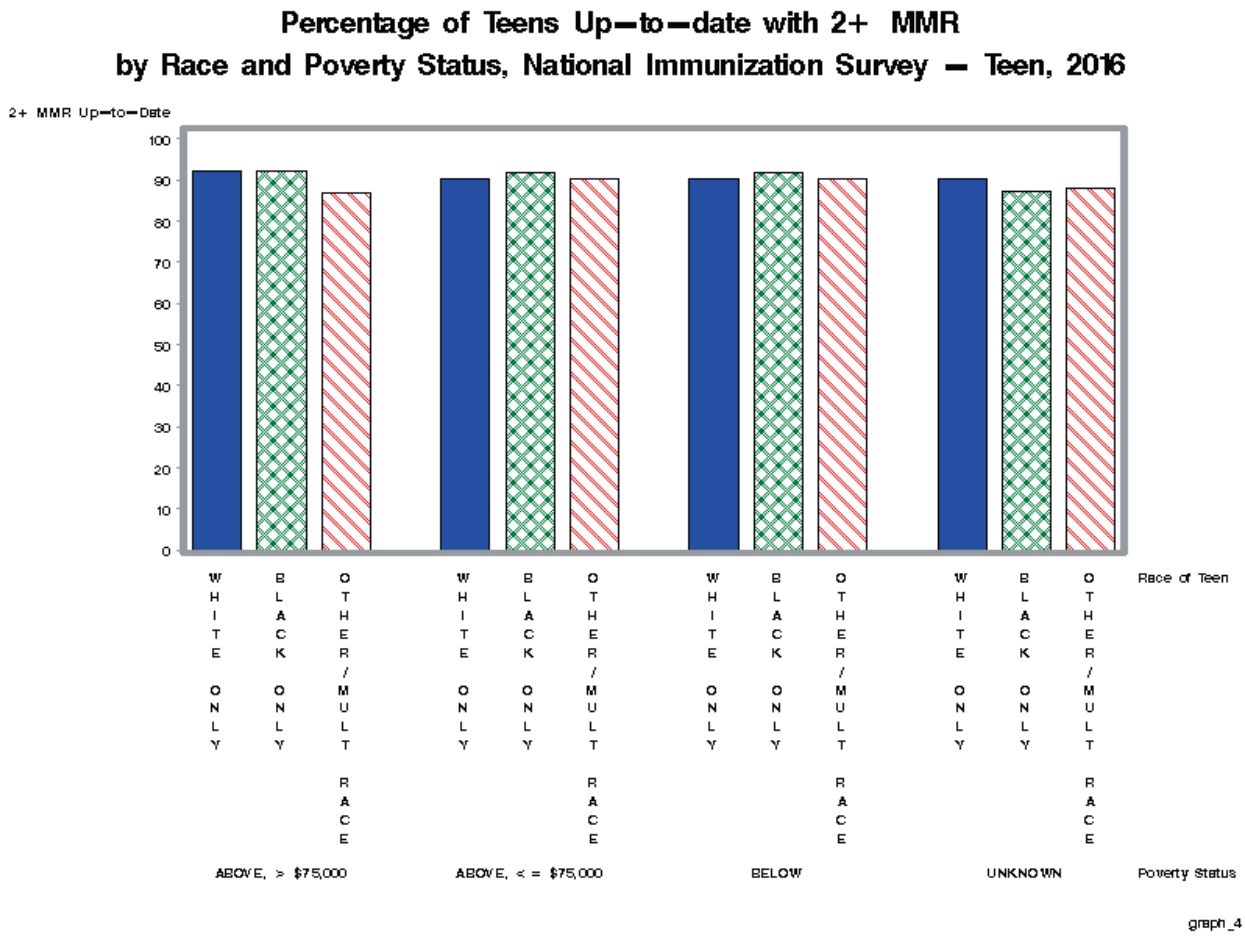
```
title1 'ASTHMA ESTIMATES BY STATE';
ods output Statistics=sas  est3;
proc surveymeans data = sas_file nobs sum mean stderr;
stratum &strat.;
cluster SEQNUMT;
weight &wt.;
class ASTHMA;
var ASTHMA;
by STATE;
format ASTHMA asthmaf.;
format state statef.;
run;

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 ASTHMA = Yes'
stderr='Standard Error';
title "HH REPORT OF TEEN HAVING ASTHMA BY STATE";
run;


**********;
title1 'SAS_PROG_4.SAS';
*************************************************************************
TABLE OF P_UTDMMR 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:\nisteenpuf16'; *--- SPECIFY PATH TO SAS DATASET ---*;
libname library 'c:\nisteenpuf16'; *--- IF DATASET WAS CREATED WITH FORMATS STORED ---*;
*--- PERMANENTLY SPECIFY PATH TO LIBRARY ---*;
*--- OTHERWISE COMMENT THIS STATEMENT OUT ---*;

libname out 'c:\nisteenpuf16'; *--- SPECIFY THE PATH FOR WHERE YOU WANT THE CHART
OUTPUT TO GO ---*;

%let in_file=dd.nisteenpuf16; *--- NAME OF SAS DATASET ---*;
%let estiap=estiapt16; * --- ESTIMATION VARIABLE TO USE ---*;
```

```
%let wt=provwt_d; * --- WEIGHT TO USE (PROVWT_D is the dual-frame weight excluding territories.
Use PROVWT_D_TERR to include territories) ---*;
%let strat=stratum; * --- STRATUM VARIABLE TO USE FOR VARIANCE ESTIMATION (Use
STRATUM for all estimation) ---*;
%let qtr_lab=Q1/2016 - Q4/2016; *--- NIS-TEEN 4 QUARTER PERIOD ---*;

PROC FORMAT;
value p_utdmmrf
0='Not 2+ MMR Up-To-Date'
1='2+ MMR 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= SEQNUMT P_UTDMMR &estiap. RACE_K INCPOV1 &wt. &strat. PDAT2);
run;

proc sort data = sas_file;
by incpov1 race_k;
run;

proc freq;
where PDAT2=1;
tables P_UTDMMR INCPOV1 RACE_K;
title1 "Table 4A. &qtr_lab.: Unweighted Frequencies";
run;

proc surveymeans data = sas_file nobs sum mean stderr;
ods output Domain=sas_est4;
stratum &strat.;
cluster SEQNUMT;
weight &wt.;
class P_UTDMMR;
var P_UTDMMR;
domain INCPOV1*RACE_K;
format P_UTDMMR p_utdmmrf.;
run;

data sas_est4;
```

```
set sas_est4 (rename=(INCPOV1=INCPOV1_char RACE_K=RACE_K_char));

*CONVERT TO PERCENT ESTIMATES;
mean = mean*100;
stderr = stderr*100;

*CONVERT BACK TO NUMERIC;
INCPOV1=1*INCPOV1_char;
RACE_K=1*RACE_K_char;

run;

proc print data=sas_est4(where=(varlevel='2+ MMR 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='2+ MMR Up-To-Date'
stderr='Standard Error';
title1 "Table 4B. &qtr_lab.: 2+ MMR ESTIMATES BY INCPOV1 BY RACE_K";
run;

data out.sas_est4;
set sas_est4(where=(varlevel='2+ MMR Up-To-Date'));
keep INCPOV1 RACE_K mean;
label mean='2+ MMR 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
P_UTDMMR 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:\nisteenpuf16'; *--- SPECIFY PATH TO SAS DATASET ---*;

%let out='c:\nisteenpuf16'; *--- 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=Q1/2016 - Q4/2016; *--- NIS-TEEN 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 Teen'
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 Teens Up-to-date with 2+ MMR";
TITLE2 HEIGHT=3 "by Race and Poverty Status, National Immunization Survey - Teen, 2016";
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;
```



III. ‘R’

```
#####################
title <- "R_IAP.R"
#########################################################################
#THIS PROGRAM WILL PRODUCE ESTIMATION AREA ESTIMATES AND STANDARD ERRORS
#FOR 2+ MMR VACCINATIONS (P_UTDMMR) USING R.
#
#R NOTES:
#1. R IS CASE SENSITIVE.
#2. A FILE PATH IS SEPARATED BY SLASH(/)
#########################################################################
library(survey) #TO USE svydesign(), svymean(), and svyby()
library(Hmisc) #TO USE prn()

dd <- "c:/nisteenpuf16" #"path-to-dataset"

#--- NAME OF R DATASET ---#
in.file <- paste(dd,"/NISTEENPUF16.RData",sep="")
#---READ R DATASET---#
load(in.file)
#---FORMAT---#
UTDMMRlevels=c(0,1)
UTDMMRlabels=c("NOT 2+ MMR UTD", "2+ MMR UTD")
ESTIAPlevels=c(1, 10, 106, 11, 12, 13, 14, 16, 17, 18, 19, 2, 20, 22, 25, 27, 28, 29, 30, 31, 34, 35, 36, 38, 4, 40, 41, 44, 46, 47,
49, 5, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 6, 60, 61, 62, 63, 64, 65, 66, 68, 7, 72, 73, 74, 75, 76, 77, 8)
ESTIAPlabels=c("CT", "NY-Rest of State", "Puerto Rico", "NY-City of New York", "DC", "DE", "MD", "PA-Rest of State",
"PA-Philadelphia County", "VA", "WV", "MA", "AL", "FL", "GA", "KY", "MS", "NC", "SC", "TN", "IL-Rest of State", "IL-
City of Chicago", "IN", "MI", "ME", "MN", "OH", "WI", "AR", "LA", "NM", "NH", "OK", "TX-Rest of State", "TX-Dallas
County", "TX-El Paso County", "TX-City of Houston", "TX-Bexar County", "IA", "KS", "MO", "NE", "RI", "CO", "MT", "ND",
"SD", "UT", "WY", "AZ", "CA", "VT", "HI", "NV", "AK", "ID", "OR", "WA", "NJ")

#---PROVWT_D WILL BE USED AS A WEIGHT (PROVWT_D IS THE DUAL-FRAME WEIGHT EXCLUDING
TERRITORIES USE PROVWT_D_TERR TO INCLUDE TERRITORIES---#
#---STRATUM WILL BE USED AS A STRATUM VARIABLE FOR VARIANCE ESTIMATION (USE STRATUM FOR
ALL ESTIMATION ---#
R_FILE <- subset(NISTEENPUF16, select=c(SEQNUMT, P_UTDMMR, ESTIAPT16, PROVWT_D, STRATUM))
names(R_FILE) <- c("SEQNUMT", "P_UTDMMR", "ESTIAP", "WT", "STRATUM")
R_FILE <- na.omit(R_FILE)
#---ASSIGN LABELS---#
R_FILE$P_UTDMMR <- factor(R_FILE$P_UTDMMR, levels=UTDMMRlevels, labels=UTDMMRlabels)
R_FILE$ESTIAP <- factor(R_FILE$ESTIAP, levels=ESTIAPlevels, labels=ESTIAPlabels)

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

#---U.S. TOTAL ESTIMATES AND STANDARD ERRORS---#
r_nation <- svymean(~P_UTDMMR, 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 2+ MMR ESTIMATES AT A NATIONWIDE LEVEL"
prn(r_nation_est, title)

#---ESTIMATION AREA ESTIMATES AND STANDARD ERRORS---#
r_est <- svyby(~P_UTDMMR, ~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 2+ MMR UTD", "STANDARD ERROR UTD")
title <- "PERCENT 2+ MMR ESTIMATES BY ESTIMATION AREA"
prn(r_est, title)


######################
title <- "R_STATE.R"
#############################################################################
#THIS PROGRAM WILL PRODUCE STATE ESTIMATES AND STANDARD ERRORS
#FOR 2+ MMR VACCINATIONS (P_UTDMMR) USING R.
#
#NOTE : THE STATE VARIABLE IS BASED ON STATE FIPS CODES. THERE ARE
#NO STATES WITH FIPS CODES 3,7,14,43,52,57-71,73-78.
#
#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:/nisteenpuf16" #"path-to-data"

#--- NAME OF R DATASET ---#
in.file <- paste(dd,"/NISTEENPUF16.RData",sep="")
#---READ R DATASET---#
load(in.file)
#---FORMAT---#
UTDMMRlevels=c(0,1)
UTDMMRlabels=c("NOT 2+ MMR UTD", "2+ MMR UTD")
STATElevels=c(1, 2, 4, 5, 6, 8, 9, 10, 11, 12, 13, 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, 44, 45, 46, 47, 48, 49, 50, 51, 53,
54, 55, 56, 72)
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",
```

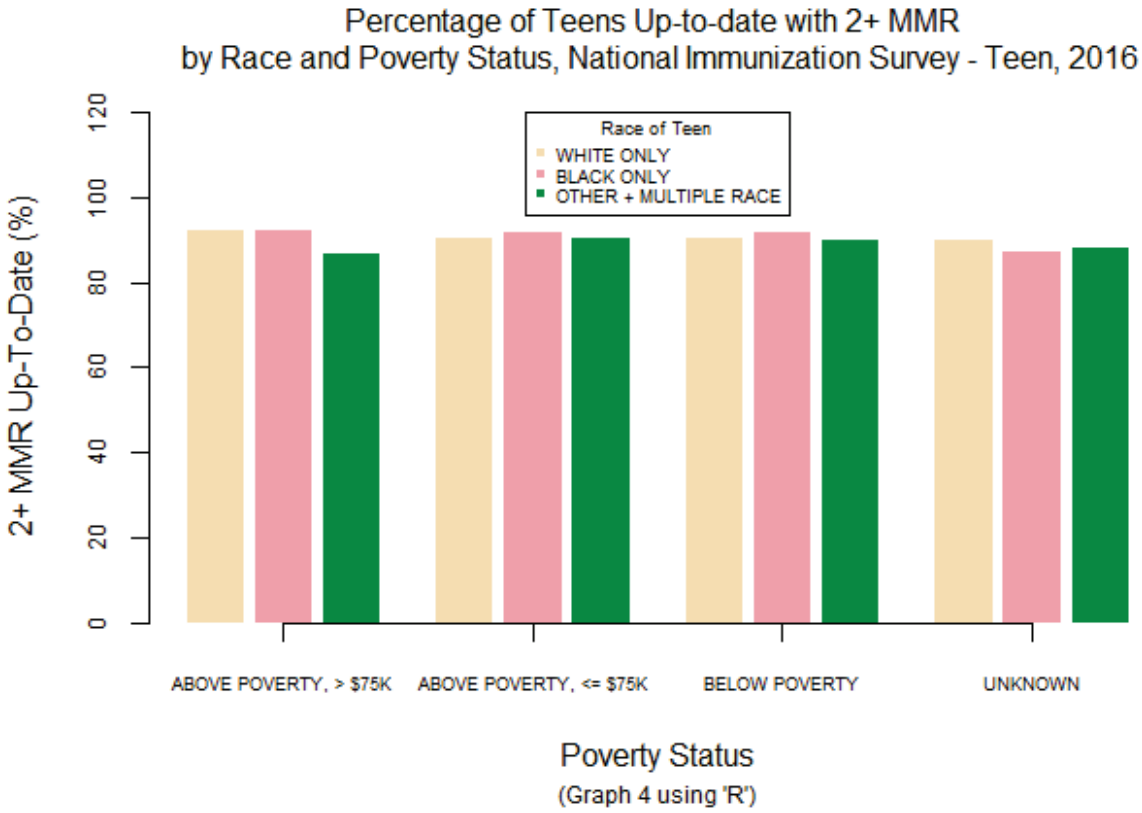
```
"MISSOURI",
"MONTANA",
"NEBRASKA",
"NEVADA",
"NEW HAMPSHIRE",
"NEW JERSEY",
"NEW MEXICO",
"NEW YORK",
"NORTH CAROLINA",
"NORTH DAKOTA",
"OHIO",
"OKLAHOMA",
"OREGON",
"PENNSYLVANIA",
"RHODE ISLAND",
"SOUTH CAROLINA",
"SOUTH DAKOTA",
"TENNESSEE",
"TEXAS",
"UTAH",
"VERMONT",
"VIRGINIA",
"WASHINGTON",
"WEST VIRGINIA",
"WISCONSIN",
"WYOMING",
"PUERTO RICO"
)
#--- PROVWT_D WILL BE USED AS A WEIGHT (PROVWT_D IS THE DUAL-FRAME WEIGHT EXCLUDING
TERRITORIES; USE PROVWT_D_TERR TO INCLUDE TERRITORIES ---#
#---STRATUM WILL BE USED AS A STRATUM VARIABLE FOR VARIANCE ESTIMATION (USE STRATUM FOR
ALL ESTIMATION ---#
R_FILE <- subset(NISTEENPUF16, select=c(SEQNUMT, P_UTDMMR, ESTIAPT16, STATE, PROVWT_D, STRATUM))
names(R_FILE) <- c("SEQNUMT", "P_UTDMMR", "ESTIAP", "STATE", "WT", "STRATUM")
R_FILE <- na.omit(R_FILE)
#---ASSIGN LABELS---#
R_FILE$P_UTDMMR <- factor(R_FILE$P_UTDMMR, levels=UTDMMRlevels, labels=UTDMMRlabels)
R_FILE$STATE <- factor(R_FILE$STATE, levels=STATElevels,
labels=STATElabels)
#---SPECIFY A SAMPLING DESIGN---#
svydsg <- svydesign(id=~SEQNUMT, strata=~STRATUM, weights=~WT, data=R_FILE)
#---STATE ESTIMATES AND STANDARD ERRORS---#
r_est2 <- svyby(~P_UTDMMR, ~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 2+ MMR UTD", "STANDARD ERROR UTD")
prn(r_est2, '2+ MMR ESTIMATES BY STATE')


######################
title <- "R_PROG_3.R"
#############################################################################
#THIS PROGRAM WILL PRODUCE A TABLE OF TEEN HAVING ASTHMA BY STATE FOR
#ALL HOUSEHOLD COMPLETES USING RDDWT. 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:/nisteenpuf16" #"path-to-dataset"

#--- NAME OF R DATASET ---#
in.file <- paste(dd,"/NISTEENPUF16.RData",sep="")
#---READ R DATASET---#
load(in.file)
#---FORMAT---#
ASTHMAlevels=c(1,2,77,99)
ASTHMAlabels=c("YES", "NO", "DON'T KNOW", "REFUSED")
STATElevels=c(1, 2, 4, 5, 6, 8, 9, 10, 11, 12, 13, 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, 44, 45, 46, 47, 48, 49, 50, 51, 53,
54, 55, 56, 72)
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",
"PUERTO RICO"
)
#--- RDDWT_D WILL BE USED AS A WEIGHT (RDDWT_D IS THE DUAL-FRAME WEIGHT EXCLUDING
TERRITORIES; USE RDDWT_D_TERR TO INCLUDE TERRITORIES---#
#---STRATUM WILL BE USED AS A STRATUM VARIABLE FOR VARIANCE ESTIMATION (USE STRATUM FOR
ALL ESTIMATION ---#
R_FILE <- subset(NISTEENPUF16, select=c(SEQNUMT, ESTIAPT16, STATE, ASTHMA, RDDWT_D, STRATUM))
names(R_FILE) <- c("SEQNUMT", "ESTIAP", "STATE", "ASTHMA", "WT", "STRATUM")

#LIMIT FILE TO CASES WITH NON-MISSING VALUES OF ASTHMA
R_FILE <- subset(R_FILE, ASTHMA %in% c(1,2))

#---ASSIGN LABELS---#
R_FILE$ASTHMA <- factor(R_FILE$ASTHMA, levels=ASTHMAlevels, labels=ASTHMAlabels)
R_FILE$STATE <- factor(R_FILE$STATE, levels=STATElevels, labels=STATElabels)
R_FILE <- na.omit(R_FILE)
summary(R_FILE$ASTHMA)

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

#---U.S. TOTAL ESTIMATES AND STANDARD ERRORS---#
r_nation <- svymean(~ASTHMA, 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 ASTHMA = YES ESTIMATES AT A NATIONWIDE LEVEL\n")

#---ASTHMA = YES ESTIMATES BY STATE---#
r_est3 <- svyby(~ASTHMA, ~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 ASTHMA=YES
names(r_est3) <- c("STATE", "PERCENT ASTHMA=YES", "STANDARD ERROR ASTHMA=Y")
prn(r_est3, 'PERCENT ASTHMA ESTIMATES BY STATE')


######################
title <- "PROG_4.R"
#############################################################################
#TABLE OF P_UTDMMR 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:/nisteenpuf16" #"path-to-dataset"

out <-"c:/nisteenpuf16" #"path where output will go"
```

```
#--- NAME OF R DATASET ---#
in.file <- paste(dd,"/NISTEENPUF16.RData",sep="")
#---READ R DATASET---#
load(in.file)
#---FORMAT---#
UTDMMRlevels=c(0,1)
UTDMMRlabels=c("NOT 2+ MMR UTD", "2+ MMR 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, <= $75K", "BELOW POVERTY", "UNKNOWN")
#--- PROVWT_D WILL BE USED AS A WEIGHT (PROVWT_D IS THE DUAL-FRAME WEIGHT EXCLUDING
TERRITORIES; USE PROVWT_D_TERR TO INCLUDE TERRITORIES ---#
#---STRATUM WILL BE USED AS A STRATUM VARIABLE FOR VARIANCE ESTIMATION (USE STRATUM FOR
ALL ESTIMATION ---#
R_FILE <- subset(NISTEENPUF16, select=c(SEQNUMT, P_UTDMMR, ESTIAPT16, RACE_K, INCPOV1, PROVWT_D,
STRATUM, PDAT2))
names(R_FILE) <- c("SEQNUMT", "P_UTDMMR", "ESTIAP", "RACE_K", "INCPOV1", "WT", "STRATUM", "PDAT2")
#---ASSIGN LABELS---#
R_FILE$P_UTDMMR <- factor(R_FILE$P_UTDMMR, levels=UTDMMRlevels, labels=UTDMMRlabels, exclude=NULL)
R_FILE$RACE_K <- factor(R_FILE$RACE_K, levels=RACE_PUFlevels, labels=RACE_PUFlabels, exclude=NULL)
R_FILE$INCPOV1 <- factor(R_FILE$INCPOV1, levels=INCPOVlevels,labels=INCPOVlabels, exclude=NULL)
#---UNWEIGHTED FREQUENCIES---#
unwt_freq <- function(UNWT.VAR){#FUNCTION TO PRINT UNWEIGHTED FREQUENCIES
unwt.tab <- wtd.table(UNWT.VAR, weights= NULL, type='table')
unwtd.freq <- data.frame(cbind(
unwt.tab, round(unwt.tab/sum(unwt.tab)*100,2),
cumsum(unwt.tab), cumsum(round(unwt.tab/sum(unwt.tab)*100,2))))
names(unwtd.freq) <- c("Frequency", "Percent", "Cumulative Frequency", "Cumulative Percent")
unwtd.title <- paste('Table 4A. Q1/2016 - Q4/2016', 'UNWEIGHTED FREQUENCIES', label(UNWT.VAR), sep="\n")
label(unwtd.freq) <- unwtd.title
print(unwtd.freq)
}
unwt_freq(R_FILE$P_UTDMMR[R_FILE$PDAT2 == 1])
unwt_freq(R_FILE$INCPOV1[R_FILE$PDAT2 == 1])
unwt_freq(R_FILE$RACE_K[R_FILE$PDAT2 == 1])
R_FILE <- na.omit(R_FILE)
#---SPECIFY A SAMPLING DESIGN---#
svydsg <- svydesign(id=~SEQNUMT, strata=~STRATUM, weights=~WT, data=R_FILE)
#---PERCENT 2+ MMR UP-TO-DATE AND ESTIMATED STANDARD ERRORS---#
r_est4 <- svyby(~P_UTDMMR, ~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-TO-DATE CASES
names(r_est4) <- c("RACE", "INCOME", "PERCENT_UTD", "STANDARD_ERROR_UTD")
title <- "Table 4B. Q1/2016 - Q4/2016, 2+ MMR ESTIMATES BY INCPOV1 BY RACE_K"
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_16", sep=""))


######################
title <- "GRAPH_4.R"
#############################################################################
#THIS PROGRAM BUILDS OFF OF THE PROGRAM PROG_4. IT PRODUCES A CHART OF
#P_UTDMMR BY INCPOV1 BY RACE_K. IT CREATES A BAR GRAPH IN R
#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:/nisteenpuf16" #---SPECIFY PATH TO R DATASET THAT WAS THE OUTPUT OF R_PROG_4---#

out <- "c:/nisteenpuf16" #---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_16",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#
utdmmr <- 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(utdmmr, beside=TRUE, space=c(0.2,1),
col = c("wheat", "lightpink2", "forestgreen"),
axis.lty = 1,
sub="(Graph 4 using 'R')", cex.sub=0.5, ylim=c(0,120),
xlab="Poverty Status",
ylab="2+ MMR Up-To-Date (%)", cex=0.5, cex.names=0.5, border=NA)
legend("top", rownames(utdmmr), col=c("wheat", "lightpink2",
"forestgreen"), title="Race of Teen", pch=15, cex=0.5)
title1 <- "Percentage of Teens Up-to-date with 2+ MMR \n"
title2 <- "by Race and Poverty Status, National Immunization Survey - Teen, 2016\n"
mtext(paste(title1,title2), cex=0.75)
```


Percentage of Teens Up-to-date with 2+ MMR
by Race and Poverty Status, National Immunization Survey - Teen, 2016
Race of Teen
WHITE ONLY
BLACK ONLY
OTHER + MULTIPLE RACE
2+ MMR Up-To-Date (%)
0
20
40
60
80
100
120
ABOVE POVERTY, > $75K
ABOVE POVERTY, <= $75K
BELOW POVERTY
UNKNOWN
Poverty Status
(Graph 4 using 'R')

Appendix D: Alphabetical Listing of Variables in the NIS-Teen Public-Use Data Files

Table D.1 Alphabetical Listing of Variables in the Public-Use Data Files, National Immunization Survey - Teen, 2008-2016

Variable Name	Variable Label	2008	2009	2010	2011	2012	2013	2014	2015	2016	Notes
AGE	AGE IN YEARS OF SELECTED TEEN	Y	Y	Y	Y	Y	Y	Y	Y	Y	
AGEGRP_M_I	MOTHER'S AGE CATEGORIES (RECODE)	Y	Y	Y	Y	Y	Y	Y	Y	Y	
ASTHMA	HAS TEEN BEEN TOLD BY DOCTOR OR OTHER HEALTH PROFESSIONAL THAT HE/SHE HAS ASTHMA?	Y	Y	Y	Y	Y	Y	Y	Y	Y	
C1R	NUMBER OF PEOPLE IN HOUSEHOLD (RECODE)	Y	Y	Y	Y	Y	Y	Y	Y	Y	
C5R	RELATIONSHIP OF RESPONDENT TO TEEN (RECODE)	Y	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	Y	
CHILDNM	NUMBER OF CHILDREN UNDER 18 YEARS OF AGE IN HH (RECODE)	Y	Y	Y	Y	Y	Y	Y	Y	Y	
CKUP_11_12	DID TEEN HAVE AN 11-12 YEAR OLD WELL-CHILD EXAM OR CHECK-UP?	Y	Y	Y	Y	Y	Y	Y	Y	Y	
CKUP_AGE	AGE IN YEARS AT LAST CHECK-UP	Y	Y	Y	Y	Y	Y	Y	Y	Y	
CKUP_LAST	WAS TEEN'S LAST CHECK-UP MORE OR LESS THAN (AGE - 12) YEARS AGO?	Y	Y	Y	Y	Y	Y	Y	Y	Y	
CPOX_AGE	AGE IN YEARS WHEN HAD CHICKEN POX DISEASE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
CPOX_AGER	AGE RANGE WHEN HAD CHICKEN POX DISEASE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
CPOX_HAD	TEEN EVER HAD CHICKEN POX DISEASE?	Y	Y	Y	Y	Y	Y	Y	Y	Y	
D6R	NUMBER OF PROVIDERS IDENTIFIED BY RESPONDENT (NOT DE-DUPLICATED) (RECODE)	Y	Y	Y	Y	Y	Y	Y	Y	Y	
D7	CONSENT TO OBTAIN VACCINATION RECORDS FROM PROVIDERS	Y	Y	Y	Y	Y	Y	Y	Y	Y	
EDUC_TR	TEEN'S CURRENT GRADE IN SCHOOL (RECODE)	Y	Y	Y	Y	Y	Y	Y	Y	Y	
EDUC1	EDUCATION LEVEL OF MOTHER WITH 4 CATEGORIES (RECODE)	Y	Y	Y	Y	Y	Y	Y	Y	Y	
EST_GRANT	AREA OF RESIDENCE PER THE 56 CORE NIS GRANTEE AREAS					Y	Y	Y	Y	Y	Added in 2012. Includes the 56 core NIS awardee areas.
ESTIAPT08	ESTIMATION AREA OF RESIDENCE	Y									
ESTIAPT09	ESTIMATION AREA OF RESIDENCE		Y								
ESTIAPT10	ESTIMATION AREA OF RESIDENCE			Y							

Variable Name	Variable Label	2008	2009	2010	2011	2012	2013	2014	2015	2016	Notes
ESTIAPT11	ESTIMATION AREA OF RESIDENCE				Y						
ESTIAPT12	ESTIMATION AREA OF RESIDENCE					Y					
ESTIAPT13	ESTIMATION AREA OF RESIDENCE						Y				
ESTIAPT14	ESTIMATION AREA OF RESIDENCE							Y			
ESTIAPT15	**ESTIMATION AREA OF RESIDENCE**								**Y**		
ESTIAPT16	**ESTIMATION AREA OF RESIDENCE**									**Y**	
FACILITY	FACILITY TYPES FOR TEEN'S PROVIDERS	Y	Y	Y	Y	Y	Y	Y	Y	Y	
FLU_AGE	AGE OF TEEN IN YEARS AT HH-REPORTED INFLUENZA VACCINATION RECEIVED MOST RECENTLY	Y									Dropped in 2009 due to mid-year questionnaire changes.
FLU_AGE1	AGE IN YEARS OF PROV-REPORTED SEASONAL INFLUENZA VACCINATION IN PAST THREE YEARS #1	Y	Y	Y	Y	Y	Y	Y	Y	Y	
FLU_AGE2	AGE IN YEARS OF PROV-REPORTED SEASONAL INFLUENZA VACCINATION IN PAST THREE YEARS #2	Y	Y	Y	Y	Y	Y	Y	Y	Y	
FLU_AGE3	AGE IN YEARS OF PROV-REPORTED SEASONAL INFLUENZA VACCINATION IN PAST THREE YEARS #3	Y	Y	Y	Y	Y	Y	Y	Y	Y	
FLU_AGE4	AGE IN YEARS OF PROV-REPORTED SEASONAL INFLUENZA VACCINATION IN PAST THREE YEARS #4	Y	Y	Y	Y	Y	Y	Y	Y	Y	
FLU_AGE5	AGE IN YEARS OF PROV-REPORTED SEASONAL INFLUENZA VACCINATION IN PAST THREE YEARS #5	Y	Y	Y	Y	Y	Y	Y	Y	Y	
FLU_AGE6	AGE IN YEARS OF PROV-REPORTED SEASONAL INFLUENZA VACCINATION IN PAST THREE YEARS #6	Y	Y	Y	Y	Y	Y	Y	Y	Y	
FLU_AGE7	AGE IN YEARS OF PROV-REPORTED SEASONAL INFLUENZA VACCINATION IN PAST THREE YEARS #7	Y	Y	Y	Y	Y	Y	Y	Y	Y	
FLU_AGE8	AGE IN YEARS OF PROV-REPORTED SEASONAL INFLUENZA VACCINATION IN PAST THREE YEARS #8	Y	Y	Y	Y	Y	Y	Y	Y	Y	
FLU_AGE9	AGE IN YEARS OF PROV-REPORTED SEASONAL INFLUENZA VACCINATION IN PAST THREE YEARS #9	Y	Y	Y	Y	Y	Y	Y	Y	Y	
FLU_ANY_REC	HH-REPORT: HAS TEEN RECEIVED ANY INFLUENZA VACCINATIONS IN PAST 12 MONTHS? (RECALL)	Y									Dropped in 2009 due to mid-year questionnaire changes.
FLU_ANY_SC	HH-REPORT: HAS TEEN RECEIVED ANY INFLUENZA VACCINATIONS IN PAST 12 MONTHS? (SHOTCARD)	Y									Dropped in 2009 due to mid-year questionnaire changes.

Variable Name	Variable Label	2008	2009	2010	2011	2012	2013	2014	2015	2016	Notes
FLU_DAGE1	AGE IN DAYS OF PROV-REPORTED SEASONAL INFLUENZA VACCINATION IN PAST THREE YEARS #1				Y	Y	Y	Y	Y	Y	
FLU_DAGE2	AGE IN DAYS OF PROV-REPORTED SEASONAL INFLUENZA VACCINATION IN PAST THREE YEARS #2				Y	Y	Y	Y	Y	Y	
FLU_DAGE3	AGE IN DAYS OF PROV-REPORTED SEASONAL INFLUENZA VACCINATION IN PAST THREE YEARS #3				Y	Y	Y	Y	Y	Y	
FLU_DAGE4	AGE IN DAYS OF PROV-REPORTED SEASONAL INFLUENZA VACCINATION IN PAST THREE YEARS #4				Y	Y	Y	Y	Y	Y	
FLU_DAGE5	AGE IN DAYS OF PROV-REPORTED SEASONAL INFLUENZA VACCINATION IN PAST THREE YEARS #5				Y	Y	Y	Y	Y	Y	
FLU_DAGE6	AGE IN DAYS OF PROV-REPORTED SEASONAL INFLUENZA VACCINATION IN PAST THREE YEARS #6				Y	Y	Y	Y	Y	Y	
FLU_DAGE7	AGE IN DAYS OF PROV-REPORTED SEASONAL INFLUENZA VACCINATION IN PAST THREE YEARS #7				Y	Y	Y	Y	Y	Y	
FLU_DAGE8	AGE IN DAYS OF PROV-REPORTED SEASONAL INFLUENZA VACCINATION IN PAST THREE YEARS #8				Y	Y	Y	Y	Y	Y	
FLU_DAGE9	AGE IN DAYS OF PROV-REPORTED SEASONAL INFLUENZA VACCINATION IN PAST THREE YEARS #9				Y	Y	Y	Y	Y	Y	
FLU_MAGE1	AGE IN MONTHS OF PROV-REPORTED SEASONAL INFLUENZA VACCINATION IN PAST THREE YEARS #1				Y	Y	Y	Y	Y	Y	
FLU_MAGE2	AGE IN MONTHS OF PROV-REPORTED SEASONAL INFLUENZA VACCINATION IN PAST THREE YEARS #2				Y	Y	Y	Y	Y	Y	
FLU_MAGE3	AGE IN MONTHS OF PROV-REPORTED SEASONAL INFLUENZA VACCINATION IN PAST THREE YEARS #3				Y	Y	Y	Y	Y	Y	
FLU_MAGE4	AGE IN MONTHS OF PROV-REPORTED SEASONAL INFLUENZA VACCINATION IN PAST THREE YEARS #4				Y	Y	Y	Y	Y	Y	
FLU_MAGE5	AGE IN MONTHS OF PROV-REPORTED SEASONAL INFLUENZA VACCINATION IN PAST THREE YEARS #5				Y	Y	Y	Y	Y	Y	
FLU_MAGE6	AGE IN MONTHS OF PROV-REPORTED SEASONAL INFLUENZA VACCINATION IN PAST THREE YEARS #6				Y	Y	Y	Y	Y	Y	
FLU_MAGE7	AGE IN MONTHS OF PROV-REPORTED SEASONAL INFLUENZA VACCINATION IN PAST THREE YEARS #7				Y	Y	Y	Y	Y	Y	
FLU_MAGE8	AGE IN MONTHS OF PROV-REPORTED SEASONAL INFLUENZA VACCINATION IN PAST THREE YEARS #8				Y	Y	Y	Y	Y	Y	
FLU_MAGE9	AGE IN MONTHS OF PROV-REPORTED SEASONAL INFLUENZA VACCINATION IN PAST THREE YEARS #9				Y	Y	Y	Y	Y	Y	
FLU_MONTH	MONTH OF HH-REPORTED INFLUENZA VACCINATION RECEIVED MOST RECENTLY	Y									Dropped in 2009 due to mid-year questionnaire changes.

Variable Name	Variable Label	2008	2009	2010	2011	2012	2013	2014	2015	2016	Notes
FLU_MONTH1	MONTH OF PROV-REPORTED SEASONAL INFLUENZA VACCINATION IN PAST THREE YEARS #1	Y	Y	Y	Y	Y	Y	Y	Y	Y	
FLU_MONTH2	MONTH OF PROV-REPORTED SEASONAL INFLUENZA VACCINATION IN PAST THREE YEARS #2	Y	Y	Y	Y	Y	Y	Y	Y	Y	
FLU_MONTH3	MONTH OF PROV-REPORTED SEASONAL INFLUENZA VACCINATION IN PAST THREE YEARS #3	Y	Y	Y	Y	Y	Y	Y	Y	Y	
FLU_MONTH4	MONTH OF PROV-REPORTED SEASONAL INFLUENZA VACCINATION IN PAST THREE YEARS #4	Y	Y	Y	Y	Y	Y	Y	Y	Y	
FLU_MONTH5	MONTH OF PROV-REPORTED SEASONAL INFLUENZA VACCINATION IN PAST THREE YEARS #5	Y	Y	Y	Y	Y	Y	Y	Y	Y	
FLU_MONTH6	MONTH OF PROV-REPORTED SEASONAL INFLUENZA VACCINATION IN PAST THREE YEARS #6	Y	Y	Y	Y	Y	Y	Y	Y	Y	
FLU_MONTH7	MONTH OF PROV-REPORTED SEASONAL INFLUENZA VACCINATION IN PAST THREE YEARS #7	Y	Y	Y	Y	Y	Y	Y	Y	Y	
FLU_MONTH8	MONTH OF PROV-REPORTED SEASONAL INFLUENZA VACCINATION IN PAST THREE YEARS #8	Y	Y	Y	Y	Y	Y	Y	Y	Y	
FLU_MONTH9	MONTH OF PROV-REPORTED SEASONAL INFLUENZA VACCINATION IN PAST THREE YEARS #9	Y	Y	Y	Y	Y	Y	Y	Y	Y	
FLU_PLACE	KIND OF PLACE TEEN RECEIVED MOST RECENT FLU SHOT OR SPRAY	Y									Dropped in 2009 due to mid-year questionnaire changes.
FLU_TYPE	TYPE OF HH-REPORTED INFLUENZA VACCINATION RECEIVED MOST RECENTLY	Y									Dropped in 2009 due to mid-year questionnaire changes.
FLU_YEAR	YEAR OF HH-REPORTED INFLUENZA VACCINATION RECEIVED MOST RECENTLY	Y									Dropped in 2009 due to mid-year questionnaire changes.
FLU_YEAR1	YEAR OF PROV-REPORTED SEASONAL INFLUENZA VACCINATION IN PAST THREE YEARS #1	Y	Y	Y	Y	Y	Y	Y	Y	Y	
FLU_YEAR2	YEAR OF PROV-REPORTED SEASONAL INFLUENZA VACCINATION IN PAST THREE YEARS #2	Y	Y	Y	Y	Y	Y	Y	Y	Y	
FLU_YEAR3	YEAR OF PROV-REPORTED SEASONAL INFLUENZA VACCINATION IN PAST THREE YEARS #3	Y	Y	Y	Y	Y	Y	Y	Y	Y	
FLU_YEAR4	YEAR OF PROV-REPORTED SEASONAL INFLUENZA VACCINATION IN PAST THREE YEARS #4	Y	Y	Y	Y	Y	Y	Y	Y	Y	

Variable Name	Variable Label	2008	2009	2010	2011	2012	2013	2014	2015	2016	Notes
FLU_YEAR5	YEAR OF PROV-REPORTED SEASONAL INFLUENZA VACCINATION IN PAST THREE YEARS #5	Y	Y	Y	Y	Y	Y	Y	Y	Y	
FLU_YEAR6	YEAR OF PROV-REPORTED SEASONAL INFLUENZA VACCINATION IN PAST THREE YEARS #6	Y	Y	Y	Y	Y	Y	Y	Y	Y	
FLU_YEAR7	YEAR OF PROV-REPORTED SEASONAL INFLUENZA VACCINATION IN PAST THREE YEARS #7	Y	Y	Y	Y	Y	Y	Y	Y	Y	
FLU_YEAR8	YEAR OF PROV-REPORTED SEASONAL INFLUENZA VACCINATION IN PAST THREE YEARS #8	Y	Y	Y	Y	Y	Y	Y	Y	Y	
FLU_YEAR9	YEAR OF PROV-REPORTED SEASONAL INFLUENZA VACCINATION IN PAST THREE YEARS #9	Y	Y	Y	Y	Y	Y	Y	Y	Y	
H1N_AGE1	AGE IN YEARS OF PROV-REPORTED MONOVALENT 2009 H1N1 INFLUENZA VACCINATION #1			Y	Y	Y					
H1N_AGE2	AGE IN YEARS OF PROV-REPORTED MONOVALENT 2009 H1N1 INFLUENZA VACCINATION #2			Y	Y	Y					
H1N_AGE3	AGE IN YEARS OF PROV-REPORTED MONOVALENT 2009 H1N1 INFLUENZA VACCINATION #3			Y	Y	Y					
H1N_AGE4	AGE IN YEARS OF PROV-REPORTED MONOVALENT 2009 H1N1 INFLUENZA VACCINATION #4			Y	Y	Y					
H1N_AGE5	AGE IN YEARS OF PROV-REPORTED MONOVALENT 2009 H1N1 INFLUENZA VACCINATION #5			Y	Y	Y					
H1N_AGE6	AGE IN YEARS OF PROV-REPORTED MONOVALENT 2009 H1N1 INFLUENZA VACCINATION #6			Y	Y	Y					
H1N_AGE7	AGE IN YEARS OF PROV-REPORTED MONOVALENT 2009 H1N1 INFLUENZA VACCINATION #7			Y	Y	Y					
H1N_AGE8	AGE IN YEARS OF PROV-REPORTED MONOVALENT 2009 H1N1 INFLUENZA VACCINATION #8			Y	Y	Y					
H1N_AGE9	AGE IN YEARS OF PROV-REPORTED MONOVALENT 2009 H1N1 INFLUENZA VACCINATION #9			Y	Y	Y					
H1N_DAGE1	AGE IN DAYS OF PROV-REPORTED MONOVALENT 2009 H1N1 INFLUENZA VACCINATION #1				Y	Y					
H1N_DAGE2	AGE IN DAYS OF PROV-REPORTED MONOVALENT 2009 H1N1 INFLUENZA VACCINATION #2				Y	Y					
H1N_DAGE3	AGE IN DAYS OF PROV-REPORTED MONOVALENT 2009 H1N1 INFLUENZA VACCINATION #3				Y	Y					
H1N_DAGE4	AGE IN DAYS OF PROV-REPORTED MONOVALENT 2009 H1N1 INFLUENZA VACCINATION #4				Y	Y					
H1N_DAGE5	AGE IN DAYS OF PROV-REPORTED MONOVALENT 2009 H1N1 INFLUENZA VACCINATION #5				Y	Y					
H1N_DAGE6	AGE IN DAYS OF PROV-REPORTED MONOVALENT 2009 H1N1 INFLUENZA VACCINATION #6				Y	Y					

Variable Name	Variable Label	2008	2009	2010	2011	2012	2013	2014	2015	2016	Notes
H1N_DAGE7	AGE IN DAYS OF PROV-REPORTED MONOVALENT 2009 H1N1 INFLUENZA VACCINATION #7				Y	Y					
H1N_DAGE8	AGE IN DAYS OF PROV-REPORTED MONOVALENT 2009 H1N1 INFLUENZA VACCINATION #8				Y	Y					
H1N_DAGE9	AGE IN DAYS OF PROV-REPORTED MONOVALENT 2009 H1N1 INFLUENZA VACCINATION #9				Y	Y					
H1N_MAGE1	AGE IN MONTHS OF PROV-REPORTED MONOVALENT 2009 H1N1 INFLUENZA VACCINATION #1				Y	Y					
H1N_MAGE2	AGE IN MONTHS OF PROV-REPORTED MONOVALENT 2009 H1N1 INFLUENZA VACCINATION #2				Y	Y					
H1N_MAGE3	AGE IN MONTHS OF PROV-REPORTED MONOVALENT 2009 H1N1 INFLUENZA VACCINATION #3				Y	Y					
H1N_MAGE4	AGE IN MONTHS OF PROV-REPORTED MONOVALENT 2009 H1N1 INFLUENZA VACCINATION #4				Y	Y					
H1N_MAGE5	AGE IN MONTHS OF PROV-REPORTED MONOVALENT 2009 H1N1 INFLUENZA VACCINATION #5				Y	Y					
H1N_MAGE6	AGE IN MONTHS OF PROV-REPORTED MONOVALENT 2009 H1N1 INFLUENZA VACCINATION #6				Y	Y					
H1N_MAGE7	AGE IN MONTHS OF PROV-REPORTED MONOVALENT 2009 H1N1 INFLUENZA VACCINATION #7				Y	Y					
H1N_MAGE8	AGE IN MONTHS OF PROV-REPORTED MONOVALENT 2009 H1N1 INFLUENZA VACCINATION #8				Y	Y					
H1N_MAGE9	AGE IN MONTHS OF PROV-REPORTED MONOVALENT 2009 H1N1 INFLUENZA VACCINATION #9				Y	Y					
H1N_MONTH1	MONTH OF PROV-REPORTED MONOVALENT 2009 H1N1 INFLUENZA VACCINATION #1			Y	Y	Y					
H1N_MONTH2	MONTH OF PROV-REPORTED MONOVALENT 2009 H1N1 INFLUENZA VACCINATION #2			Y	Y	Y					
H1N_MONTH3	MONTH OF PROV-REPORTED MONOVALENT 2009 H1N1 INFLUENZA VACCINATION #3			Y	Y	Y					
H1N_MONTH4	MONTH OF PROV-REPORTED MONOVALENT 2009 H1N1 INFLUENZA VACCINATION #4			Y	Y	Y					
H1N_MONTH5	MONTH OF PROV-REPORTED MONOVALENT 2009 H1N1 INFLUENZA VACCINATION #5			Y	Y	Y					
H1N_MONTH6	MONTH OF PROV-REPORTED MONOVALENT 2009 H1N1 INFLUENZA VACCINATION #6			Y	Y	Y					
H1N_MONTH7	MONTH OF PROV-REPORTED MONOVALENT 2009 H1N1 INFLUENZA VACCINATION #7			Y	Y	Y					
H1N_MONTH8	MONTH OF PROV-REPORTED MONOVALENT 2009 H1N1 INFLUENZA VACCINATION #8			Y	Y	Y					

Variable Name	Variable Label	2008	2009	2010	2011	2012	2013	2014	2015	2016	Notes
H1N_MONTH9	MONTH OF PROV-REPORTED MONOVALENT 2009 H1N1 INFLUENZA VACCINATION #9			Y	Y	Y					
H1N_YEAR1	YEAR OF PROV-REPORTED MONOVALENT 2009 H1N1 INFLUENZA VACCINATION #1			Y	Y	Y					
H1N_YEAR2	YEAR OF PROV-REPORTED MONOVALENT 2009 H1N1 INFLUENZA VACCINATION #2			Y	Y	Y					
H1N_YEAR3	YEAR OF PROV-REPORTED MONOVALENT 2009 H1N1 INFLUENZA VACCINATION #3			Y	Y	Y					
H1N_YEAR4	YEAR OF PROV-REPORTED MONOVALENT 2009 H1N1 INFLUENZA VACCINATION #4			Y	Y	Y					
H1N_YEAR5	YEAR OF PROV-REPORTED MONOVALENT 2009 H1N1 INFLUENZA VACCINATION #5			Y	Y	Y					
H1N_YEAR6	YEAR OF PROV-REPORTED MONOVALENT 2009 H1N1 INFLUENZA VACCINATION #6			Y	Y	Y					
H1N_YEAR7	YEAR OF PROV-REPORTED MONOVALENT 2009 H1N1 INFLUENZA VACCINATION #7			Y	Y	Y					
H1N_YEAR8	YEAR OF PROV-REPORTED MONOVALENT 2009 H1N1 INFLUENZA VACCINATION #8			Y	Y	Y					
H1N_YEAR9	YEAR OF PROV-REPORTED MONOVALENT 2009 H1N1 INFLUENZA VACCINATION #9			Y	Y	Y					
HEPA_AGE_SC1	AGE OF TEEN IN YEARS AT HH-REPORTED HEPATITIS A SHOT #1 (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
HEPA_AGE_SC2	AGE OF TEEN IN YEARS AT HH-REPORTED HEPATITIS A SHOT #2 (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
HEPA_AGE_SC3	AGE OF TEEN IN YEARS AT HH-REPORTED HEPATITIS A SHOT #3 (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
HEPA_AGE_SC4	AGE OF TEEN IN YEARS AT HH-REPORTED HEPATITIS A SHOT #4 (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
HEPA_AGE_SC5	AGE OF TEEN IN YEARS AT HH-REPORTED HEPATITIS A SHOT #5 (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire

Variable Name	Variable Label	2008	2009	2010	2011	2012	2013	2014	2015	2016	Notes
HEPA_AGE_SC6	AGE OF TEEN IN YEARS AT HH-REPORTED HEPATITIS A SHOT #6 (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
HEPA_AGE_SC7	AGE OF TEEN IN YEARS AT HH-REPORTED HEPATITIS A SHOT #7 (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
HEPA_AGE_SC8	AGE OF TEEN IN YEARS AT HH-REPORTED HEPATITIS A SHOT #8 (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
HEPA_AGE1	AGE IN YEARS OF PROV-REPORTED HEPATITIS A-CONTAINING SHOT #1	Y	Y	Y	Y	Y	Y	Y	Y	Y	
HEPA_AGE2	AGE IN YEARS OF PROV-REPORTED HEPATITIS A-CONTAINING SHOT #2	Y	Y	Y	Y	Y	Y	Y	Y	Y	
HEPA_AGE3	AGE IN YEARS OF PROV-REPORTED HEPATITIS A-CONTAINING SHOT #3	Y	Y	Y	Y	Y	Y	Y	Y	Y	
HEPA_AGE4	AGE IN YEARS OF PROV-REPORTED HEPATITIS A-CONTAINING SHOT #4	Y	Y	Y	Y	Y	Y	Y	Y	Y	
HEPA_AGE5	AGE IN YEARS OF PROV-REPORTED HEPATITIS A-CONTAINING SHOT #5	Y	Y	Y	Y	Y	Y	Y	Y	Y	
HEPA_AGE6	AGE IN YEARS OF PROV-REPORTED HEPATITIS A-CONTAINING SHOT #6	Y	Y	Y	Y	Y	Y	Y	Y	Y	
HEPA_AGE7	AGE IN YEARS OF PROV-REPORTED HEPATITIS A-CONTAINING SHOT #7	Y	Y	Y	Y	Y	Y	Y	Y	Y	
HEPA_AGE8	AGE IN YEARS OF PROV-REPORTED HEPATITIS A-CONTAINING SHOT #8	Y	Y	Y	Y	Y	Y	Y	Y	Y	
HEPA_AGE9	AGE IN YEARS OF PROV-REPORTED HEPATITIS A-CONTAINING SHOT #9	Y	Y	Y	Y	Y	Y	Y	Y	Y	
HEPA_ANY_REC	HH-REPORT: HAS TEEN EVER RECEIVED ANY HEPATITIS A SHOTS? (RECALL)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
HEPA_ANY_SC	HH-REPORT: HAS TEEN EVER RECEIVED ANY HEPATITIS A SHOTS? (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
HEPA_DAGE1	AGE IN DAYS OF PROV-REPORTED HEPATITIS A-CONTAINING SHOT #1				Y	Y	Y	Y	Y	Y	
HEPA_DAGE2	AGE IN DAYS OF PROV-REPORTED HEPATITIS A-CONTAINING SHOT #2				Y	Y	Y	Y	Y	Y	

Variable Name	Variable Label	2008	2009	2010	2011	2012	2013	2014	2015	2016	Notes
HEPA_DAGE3	AGE IN DAYS OF PROV-REPORTED HEPATITIS A-CONTAINING SHOT #3				Y	Y	Y	Y	Y	Y	
HEPA_DAGE4	AGE IN DAYS OF PROV-REPORTED HEPATITIS A-CONTAINING SHOT #4				Y	Y	Y	Y	Y	Y	
HEPA_DAGE5	AGE IN DAYS OF PROV-REPORTED HEPATITIS A-CONTAINING SHOT #5				Y	Y	Y	Y	Y	Y	
HEPA_DAGE6	AGE IN DAYS OF PROV-REPORTED HEPATITIS A-CONTAINING SHOT #6				Y	Y	Y	Y	Y	Y	
HEPA_DAGE7	AGE IN DAYS OF PROV-REPORTED HEPATITIS A-CONTAINING SHOT #7				Y	Y	Y	Y	Y	Y	
HEPA_DAGE8	AGE IN DAYS OF PROV-REPORTED HEPATITIS A-CONTAINING SHOT #8				Y	Y	Y	Y	Y	Y	
HEPA_DAGE9	AGE IN DAYS OF PROV-REPORTED HEPATITIS A-CONTAINING SHOT #9				Y	Y	Y	Y	Y	Y	
HEPA_MAGE1	AGE IN MONTHS OF PROV-REPORTED HEPATITIS A-CONTAINING SHOT #1				Y	Y	Y	Y	Y	Y	
HEPA_MAGE2	AGE IN MONTHS OF PROV-REPORTED HEPATITIS A-CONTAINING SHOT #2				Y	Y	Y	Y	Y	Y	
HEPA_MAGE3	AGE IN MONTHS OF PROV-REPORTED HEPATITIS A-CONTAINING SHOT #3				Y	Y	Y	Y	Y	Y	
HEPA_MAGE4	AGE IN MONTHS OF PROV-REPORTED HEPATITIS A-CONTAINING SHOT #4				Y	Y	Y	Y	Y	Y	
HEPA_MAGE5	AGE IN MONTHS OF PROV-REPORTED HEPATITIS A-CONTAINING SHOT #5				Y	Y	Y	Y	Y	Y	
HEPA_MAGE6	AGE IN MONTHS OF PROV-REPORTED HEPATITIS A-CONTAINING SHOT #6				Y	Y	Y	Y	Y	Y	
HEPA_MAGE7	AGE IN MONTHS OF PROV-REPORTED HEPATITIS A-CONTAINING SHOT #7				Y	Y	Y	Y	Y	Y	
HEPA_MAGE8	AGE IN MONTHS OF PROV-REPORTED HEPATITIS A-CONTAINING SHOT #8				Y	Y	Y	Y	Y	Y	
HEPA_MAGE9	AGE IN MONTHS OF PROV-REPORTED HEPATITIS A-CONTAINING SHOT #9				Y	Y	Y	Y	Y	Y	
HEPA_NUM_REC	NUMBER OF HH-REPORTED HEPATITIS A SHOTS RECEIVED (RECALL)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
HEPA_NUM_SC	NUMBER OF HH-REPORTED HEPATITIS A SHOTS RECEIVED (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire

Variable Name	Variable Label	2008	2009	2010	2011	2012	2013	2014	2015	2016	Notes
HEPA_NUM_TOT	NUMBER OF HH-REPORTED HEPATITIS A SHOTS RECEIVED (TOTAL)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
HEPA_RECOM	HAD OR HAS DOCTOR OR OTHER HEALTH CARE PROFESSIONAL EVER RECOMMENDED HEPATITIS A SHOTS?	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
HEPB_AGE_SC1	AGE OF TEEN IN YEARS AT HH-REPORTED HEPATITIS B SHOT #1 (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
HEPB_AGE_SC2	AGE OF TEEN IN YEARS AT HH-REPORTED HEPATITIS B SHOT #2 (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
HEPB_AGE_SC3	AGE OF TEEN IN YEARS AT HH-REPORTED HEPATITIS B SHOT #3 (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
HEPB_AGE_SC4	AGE OF TEEN IN YEARS AT HH-REPORTED HEPATITIS B SHOT #4 (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
HEPB_AGE_SC5	AGE OF TEEN IN YEARS AT HH-REPORTED HEPATITIS B SHOT #5 (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
HEPB_AGE_SC6	AGE OF TEEN IN YEARS AT HH-REPORTED HEPATITIS B SHOT #6 (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
HEPB_AGE_SC7	AGE OF TEEN IN YEARS AT HH-REPORTED HEPATITIS B SHOT #7 (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
HEPB_AGE_SC8	AGE OF TEEN IN YEARS AT HH-REPORTED HEPATITIS B SHOT #8 (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
HEPB_AGE1	AGE IN YEARS OF PROV-REPORTED HEPATITIS B-CONTAINING SHOT #1	Y	Y	Y	Y	Y	Y	Y	Y	Y	
HEPB_AGE2	AGE IN YEARS OF PROV-REPORTED HEPATITIS B-CONTAINING SHOT #2	Y	Y	Y	Y	Y	Y	Y	Y	Y	

Variable Name	Variable Label	2008	2009	2010	2011	2012	2013	2014	2015	2016	Notes
HEPB_AGE3	AGE IN YEARS OF PROV-REPORTED HEPATITIS B-CONTAINING SHOT #3	Y	Y	Y	Y	Y	Y	Y	Y	Y	
HEPB_AGE4	AGE IN YEARS OF PROV-REPORTED HEPATITIS B-CONTAINING SHOT #4	Y	Y	Y	Y	Y	Y	Y	Y	Y	
HEPB_AGE5	AGE IN YEARS OF PROV-REPORTED HEPATITIS B-CONTAINING SHOT #5	Y	Y	Y	Y	Y	Y	Y	Y	Y	
HEPB_AGE6	AGE IN YEARS OF PROV-REPORTED HEPATITIS B-CONTAINING SHOT #6	Y	Y	Y	Y	Y	Y	Y	Y	Y	
HEPB_AGE7	AGE IN YEARS OF PROV-REPORTED HEPATITIS B-CONTAINING SHOT #7	Y	Y	Y	Y	Y	Y	Y	Y	Y	
HEPB_AGE8	AGE IN YEARS OF PROV-REPORTED HEPATITIS B-CONTAINING SHOT #8	Y	Y	Y	Y	Y	Y	Y	Y	Y	
HEPB_AGE9	AGE IN YEARS OF PROV-REPORTED HEPATITIS B-CONTAINING SHOT #9	Y	Y	Y	Y	Y	Y	Y	Y	Y	
HEPB_ANY_REC	HH-REPORT: HAS TEEN EVER RECEIVED ANY HEPATITIS B SHOTS? (RECALL)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
HEPB_ANY_SC	HH-REPORT: HAS TEEN EVER RECEIVED ANY HEPATITIS B SHOTS? (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
HEPB_DAGE1	AGE IN DAYS OF PROV-REPORTED HEPATITIS B-CONTAINING SHOT #1				Y	Y	Y	Y	Y	Y	
HEPB_DAGE2	AGE IN DAYS OF PROV-REPORTED HEPATITIS B-CONTAINING SHOT #2				Y	Y	Y	Y	Y	Y	
HEPB_DAGE3	AGE IN DAYS OF PROV-REPORTED HEPATITIS B-CONTAINING SHOT #3				Y	Y	Y	Y	Y	Y	
HEPB_DAGE4	AGE IN DAYS OF PROV-REPORTED HEPATITIS B-CONTAINING SHOT #4				Y	Y	Y	Y	Y	Y	
HEPB_DAGE5	AGE IN DAYS OF PROV-REPORTED HEPATITIS B-CONTAINING SHOT #5				Y	Y	Y	Y	Y	Y	
HEPB_DAGE6	AGE IN DAYS OF PROV-REPORTED HEPATITIS B-CONTAINING SHOT #6				Y	Y	Y	Y	Y	Y	
HEPB_DAGE7	AGE IN DAYS OF PROV-REPORTED HEPATITIS B-CONTAINING SHOT #7				Y	Y	Y	Y	Y	Y	
HEPB_DAGE8	AGE IN DAYS OF PROV-REPORTED HEPATITIS B-CONTAINING SHOT #8				Y	Y	Y	Y	Y	Y	
HEPB_DAGE9	AGE IN DAYS OF PROV-REPORTED HEPATITIS B-CONTAINING SHOT #9				Y	Y	Y	Y	Y	Y	

Variable Name	Variable Label	2008	2009	2010	2011	2012	2013	2014	2015	2016	Notes
HEPB_MAGE1	AGE IN MONTHS OF PROV-REPORTED HEPATITIS B-CONTAINING SHOT #1				Y	Y	Y	Y	Y	Y	
HEPB_MAGE2	AGE IN MONTHS OF PROV-REPORTED HEPATITIS B-CONTAINING SHOT #2				Y	Y	Y	Y	Y	Y	
HEPB_MAGE3	AGE IN MONTHS OF PROV-REPORTED HEPATITIS B-CONTAINING SHOT #3				Y	Y	Y	Y	Y	Y	
HEPB_MAGE4	AGE IN MONTHS OF PROV-REPORTED HEPATITIS B-CONTAINING SHOT #4				Y	Y	Y	Y	Y	Y	
HEPB_MAGE5	AGE IN MONTHS OF PROV-REPORTED HEPATITIS B-CONTAINING SHOT #5				Y	Y	Y	Y	Y	Y	
HEPB_MAGE6	AGE IN MONTHS OF PROV-REPORTED HEPATITIS B-CONTAINING SHOT #6				Y	Y	Y	Y	Y	Y	
HEPB_MAGE7	AGE IN MONTHS OF PROV-REPORTED HEPATITIS B-CONTAINING SHOT #7				Y	Y	Y	Y	Y	Y	
HEPB_MAGE8	AGE IN MONTHS OF PROV-REPORTED HEPATITIS B-CONTAINING SHOT #8				Y	Y	Y	Y	Y	Y	
HEPB_MAGE9	AGE IN MONTHS OF PROV-REPORTED HEPATITIS B-CONTAINING SHOT #9				Y	Y	Y	Y	Y	Y	
HEPB_NUM_REC	NUMBER OF HH-REPORTED HEPATITIS B SHOTS RECEIVED (RECALL)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
HEPB_NUM_SC	NUMBER OF HH-REPORTED HEPATITIS B SHOTS RECEIVED (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
HEPB_NUM_TOT	NUMBER OF HH-REPORTED HEPATITIS B SHOTS RECEIVED (TOTAL)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
HEPB_SCH	DID TEEN RECEIVE HEPATITIS B SHOTS BECAUSE OF SCHOOL REQUIREMENT?	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
HH_FLU	HH REPORT OF NUMBER OF SEASONAL INFLUENZA-CONTAINING VACCINATIONS RECEIVED IN THE 12 MONTHS PRIOR TO INTERVIEW			Y							
HH_H1N	HH REPORT OF NUMBER OF MONOVALENT 2009 H1N1 INFLUENZA VACCINATIONS RECEIVED IN THE TWELVE MONTHS PRIOR TO INTERVIEW			Y							
HPV_AGE1	AGE IN YEARS OF PROV-REPORTED HUMAN PAPILLOMAVIRUS SHOT #1	Y	Y	Y	Y	Y	Y	Y	Y	Y	

Variable Name	Variable Label	2008	2009	2010	2011	2012	2013	2014	2015	2016	Notes
HPV_AGE2	AGE IN YEARS OF PROV-REPORTED HUMAN PAPILLOMAVIRUS SHOT #2	Y	Y	Y	Y	Y	Y	Y	Y	Y	
HPV_AGE3	AGE IN YEARS OF PROV-REPORTED HUMAN PAPILLOMAVIRUS SHOT #3	Y	Y	Y	Y	Y	Y	Y	Y	Y	
HPV_AGE4	AGE IN YEARS OF PROV-REPORTED HUMAN PAPILLOMAVIRUS SHOT #4	Y	Y	Y	Y	Y	Y	Y	Y	Y	
HPV_AGE5	AGE IN YEARS OF PROV-REPORTED HUMAN PAPILLOMAVIRUS SHOT #5	Y	Y	Y	Y	Y	Y	Y	Y	Y	
HPV_AGE6	AGE IN YEARS OF PROV-REPORTED HUMAN PAPILLOMAVIRUS SHOT #6	Y	Y	Y	Y	Y	Y	Y	Y	Y	
HPV_AGE7	AGE IN YEARS OF PROV-REPORTED HUMAN PAPILLOMAVIRUS SHOT #7	Y	Y	Y	Y	Y	Y	Y	Y	Y	
HPV_AGE8	AGE IN YEARS OF PROV-REPORTED HUMAN PAPILLOMAVIRUS SHOT #8	Y	Y	Y	Y	Y	Y	Y	Y	Y	
HPV_AGE9	AGE IN YEARS OF PROV-REPORTED HUMAN PAPILLOMAVIRUS SHOT #9	Y	Y	Y	Y	Y	Y	Y	Y	Y	
HPV_DAGE1	AGE IN DAYS OF PROV-REPORTED HUMAN PAPILLOMAVIRUS SHOT #1				Y	Y	Y	Y	Y	Y	
HPV_DAGE2	AGE IN DAYS OF PROV-REPORTED HUMAN PAPILLOMAVIRUS SHOT #2				Y	Y	Y	Y	Y	Y	
HPV_DAGE3	AGE IN DAYS OF PROV-REPORTED HUMAN PAPILLOMAVIRUS SHOT #3				Y	Y	Y	Y	Y	Y	
HPV_DAGE4	AGE IN DAYS OF PROV-REPORTED HUMAN PAPILLOMAVIRUS SHOT #4				Y	Y	Y	Y	Y	Y	
HPV_DAGE5	AGE IN DAYS OF PROV-REPORTED HUMAN PAPILLOMAVIRUS SHOT #5				Y	Y	Y	Y	Y	Y	
HPV_DAGE6	AGE IN DAYS OF PROV-REPORTED HUMAN PAPILLOMAVIRUS SHOT #6				Y	Y	Y	Y	Y	Y	
HPV_DAGE7	AGE IN DAYS OF PROV-REPORTED HUMAN PAPILLOMAVIRUS SHOT #7				Y	Y	Y	Y	Y	Y	
HPV_DAGE8	AGE IN DAYS OF PROV-REPORTED HUMAN PAPILLOMAVIRUS SHOT #8				Y	Y	Y	Y	Y	Y	
HPV_DAGE9	AGE IN DAYS OF PROV-REPORTED HUMAN PAPILLOMAVIRUS SHOT #9				Y	Y	Y	Y	Y	Y	
HPV_MAGE1	AGE IN MONTHS OF PROV-REPORTED HUMAN PAPILLOMAVIRUS SHOT #1				Y	Y	Y	Y	Y	Y	
HPV_MAGE2	AGE IN MONTHS OF PROV-REPORTED HUMAN PAPILLOMAVIRUS SHOT #2				Y	Y	Y	Y	Y	Y	
HPV_MAGE3	AGE IN MONTHS OF PROV-REPORTED HUMAN PAPILLOMAVIRUS SHOT #3				Y	Y	Y	Y	Y	Y	

Variable Name	Variable Label	2008	2009	2010	2011	2012	2013	2014	2015	2016	Notes
HPV_MAGE4	AGE IN MONTHS OF PROV-REPORTED HUMAN PAPILLOMAVIRUS SHOT #4				Y	Y	Y	Y	Y	Y	
HPV_MAGE5	AGE IN MONTHS OF PROV-REPORTED HUMAN PAPILLOMAVIRUS SHOT #5				Y	Y	Y	Y	Y	Y	
HPV_MAGE6	AGE IN MONTHS OF PROV-REPORTED HUMAN PAPILLOMAVIRUS SHOT #6				Y	Y	Y	Y	Y	Y	
HPV_MAGE7	AGE IN MONTHS OF PROV-REPORTED HUMAN PAPILLOMAVIRUS SHOT #7				Y	Y	Y	Y	Y	Y	
HPV_MAGE8	AGE IN MONTHS OF PROV-REPORTED HUMAN PAPILLOMAVIRUS SHOT #8				Y	Y	Y	Y	Y	Y	
HPV_MAGE9	AGE IN MONTHS OF PROV-REPORTED HUMAN PAPILLOMAVIRUS SHOT #9				Y	Y	Y	Y	Y	Y	
HPVI_AGE_SC1	AGE OF TEEN IN YEARS AT HH-REPORTED HUMAN PAPILLOMAVIRUS SHOT #1 (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
HPVI_AGE_SC2	AGE OF TEEN IN YEARS AT HH-REPORTED HUMAN PAPILLOMAVIRUS SHOT #2 (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
HPVI_AGE_SC3	AGE OF TEEN IN YEARS AT HH-REPORTED HUMAN PAPILLOMAVIRUS SHOT #3 (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
HPVI_AGE_SC4	AGE OF TEEN IN YEARS AT HH-REPORTED HUMAN PAPILLOMAVIRUS SHOT #4 (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
HPVI_AGE_SC5	AGE OF TEEN IN YEARS AT HH-REPORTED HUMAN PAPILLOMAVIRUS SHOT #5 (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
HPVI_AGE_SC6	AGE OF TEEN IN YEARS AT HH-REPORTED HUMAN PAPILLOMAVIRUS SHOT #6 (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
HPVI_AGE_SC7	AGE OF TEEN IN YEARS AT HH-REPORTED HUMAN PAPILLOMAVIRUS SHOT #7 (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire

Variable Name	Variable Label	2008	2009	2010	2011	2012	2013	2014	2015	2016	Notes
HPVI_AGE_SC8	AGE OF TEEN IN YEARS AT HH-REPORTED HUMAN PAPILLOMAVIRUS SHOT #8 (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
HPVI_ANY_REC	HH-REPORT: HAS TEEN EVER RECEIVED ANY HUMAN PAPILLOMAVIRUS SHOTS? (RECALL)	Y	Y	Y	Y	Y	Y	Y			Replaced by HPVI_ANY in 2015.
HPVI_ANY_SC	HH-REPORT: HAS TEEN EVER RECEIVED ANY HUMAN PAPILLOMAVIRUS SHOTS? (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
HPVI_ANY	HH-REPORT: HAS TEEN EVER RECEIVED ANY HUMAN PAPILLOMAVIRUS SHOTS?								Y	Y	Added in 2015.
HPVI_HEARD	HAVE YOU EVER HEARD OF HUMAN PAPILLOMAVIRUS?	Y	Y	Y	Y						Dropped in 2012 due to questionnaire changes.
HPVI_INTENTR	HOW LIKELY IS IT TEEN WILL RECEIVE HPV SHOTS IN NEXT 12 MONTHS?			Y	Y	Y	Y	Y	Y	Y	
HPVI_KNOW	HAVE YOU EVER HEARD OF THE CERVICAL CANCER VACCINE, HPV SHOT, OR GARDASIL?	Y	Y	Y	Y						Dropped in 2012 due to questionnaire changes.
HPVI_NUM_REC	NUMBER OF HH-REPORTED HUMAN PAPILLOMAVIRUS SHOTS RECEIVED (RECALL)	Y	Y	Y	Y	Y	Y	Y			Dropped in 2015.
HPVI_NUM_SC	NUMBER OF HH-REPORTED HUMAN PAPILLOMAVIRUS SHOTS RECEIVED (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
HPVI_NUM_TOT	NUMBER OF HH-REPORTED HUMAN PAPILLOMAVIRUS SHOTS RECEIVED (TOTAL)	Y	Y	Y	Y	Y	Y		Y	Y	Dropped in 2014 due to shortened questionnaire; added back in 2015.
HPVI_REAS_1	MAIN REASON TEEN WILL NOT RECEIVE HUMAN PAPILLOMAVIRUS SHOTS IN THE NEXT 12 MONTHS: NOT RECOMMENDED	Y	Y	Y	Y	Y	Y	Y	Y	Y	
HPVI_REAS_10	MAIN REASON TEEN WILL NOT RECEIVE HUMAN PAPILLOMAVIRUS SHOTS IN THE NEXT 12 MONTHS: COSTS	Y	Y	Y	Y	Y	Y	Y	Y	Y	
HPVI_REAS_11	MAIN REASON TEEN WILL NOT RECEIVE HUMAN PAPILLOMAVIRUS SHOTS IN THE NEXT 12 MONTHS: SAFETY CONCERN/SIDE EFFECTS	Y	Y	Y	Y	Y	Y	Y	Y	Y	

Variable Name	Variable Label	2008	2009	2010	2011	2012	2013	2014	2015	2016	Notes
HPVI_REAS_12	MAIN REASON TEEN WILL NOT RECEIVE HUMAN PAPILLOMAVIRUS SHOTS IN THE NEXT 12 MONTHS: EFFECTIVENESS CONCERN	Y	Y	Y	Y	Y	Y	Y	Y	Y	
HPVI_REAS_13	MAIN REASON TEEN WILL NOT RECEIVE HUMAN PAPILLOMAVIRUS SHOTS IN THE NEXT 12 MONTHS: CHILD FEARFUL	Y	Y	Y	Y	Y	Y	Y	Y	Y	
HPVI_REAS_14	MAIN REASON TEEN WILL NOT RECEIVE HUMAN PAPILLOMAVIRUS SHOTS IN THE NEXT 12 MONTHS: CHILD SHOULD MAKE DECISION	Y	Y	Y	Y	Y	Y	Y	Y	Y	
HPVI_REAS_15	MAIN REASON TEEN WILL NOT RECEIVE HUMAN PAPILLOMAVIRUS SHOTS IN THE NEXT 12 MONTHS: COLLEGE SHOT	Y	Y	Y	Y	Y	Y	Y	Y	Y	
HPVI_REAS_16	MAIN REASON TEEN WILL NOT RECEIVE HUMAN PAPILLOMAVIRUS SHOTS IN THE NEXT 12 MONTHS: DON'T BELIEVE IN IMMUNIZATIONS	Y	Y	Y	Y	Y	Y	Y	Y	Y	
HPVI_REAS_17	MAIN REASON TEEN WILL NOT RECEIVE HUMAN PAPILLOMAVIRUS SHOTS IN THE NEXT 12 MONTHS: FAMILY/PARENTAL DECISION	Y	Y	Y	Y	Y	Y	Y	Y	Y	
HPVI_REAS_18	MAIN REASON TEEN WILL NOT RECEIVE HUMAN PAPILLOMAVIRUS SHOTS IN THE NEXT 12 MONTHS: HANDICAPPED/SPECIAL NEEDS/ILLNESS	Y	Y	Y	Y	Y	Y	Y	Y	Y	
HPVI_REAS_19	MAIN REASON TEEN WILL NOT RECEIVE HUMAN PAPILLOMAVIRUS SHOTS IN THE NEXT 12 MONTHS: RELIGION/ORTHODOX	Y	Y	Y	Y	Y	Y	Y	Y	Y	
HPVI_REAS_2	MAIN REASON TEEN WILL NOT RECEIVE HUMAN PAPILLOMAVIRUS SHOTS IN THE NEXT 12 MONTHS: NOT NEEDED OR NOT NECESSARY	Y	Y	Y	Y	Y	Y	Y	Y	Y	
HPVI_REAS_20	MAIN REASON TEEN WILL NOT RECEIVE HUMAN PAPILLOMAVIRUS SHOTS IN THE NEXT 12 MONTHS: TIME	Y	Y	Y	Y	Y	Y	Y	Y	Y	
HPVI_REAS_21	MAIN REASON TEEN WILL NOT RECEIVE HUMAN PAPILLOMAVIRUS SHOTS IN THE NEXT 12 MONTHS: MORE INFO/NEW VACCINE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
HPVI_REAS_22	MAIN REASON TEEN WILL NOT RECEIVE HUMAN PAPILLOMAVIRUS SHOTS IN THE NEXT 12 MONTHS: ALREADY UP-TO-DATE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
HPVI_REAS_23	MAIN REASON TEEN WILL NOT RECEIVE HUMAN PAPILLOMAVIRUS SHOTS IN THE NEXT 12 MONTHS: NOT AVAILABLE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
HPVI_REAS_24	MAIN REASON TEEN WILL NOT RECEIVE HUMAN PAPILLOMAVIRUS SHOTS IN THE NEXT 12 MONTHS: NOT A SCHOOL REQUIREMENT	Y	Y	Y	Y	Y	Y	Y	Y	Y	

Variable Name	Variable Label	2008	2009	2010	2011	2012	2013	2014	2015	2016	Notes
HPVI_REAS_25	MAIN REASON TEEN WILL NOT RECEIVE HUMAN PAPILLOMAVIRUS SHOTS IN THE NEXT 12 MONTHS: INCREASED SEXUAL ACTIVITY CONCERN	Y	Y	Y	Y	Y	Y	Y	Y	Y	
HPVI_REAS_26	MAIN REASON TEEN WILL NOT RECEIVE HUMAN PAPILLOMAVIRUS SHOTS IN THE NEXT 12 MONTHS: NO OB/GYN	Y	Y	Y	Y	Y	Y	Y	Y	Y	
HPVI_REAS_27	MAIN REASON TEEN WILL NOT RECEIVE HUMAN PAPILLOMAVIRUS SHOTS IN THE NEXT 12 MONTHS: ALREADY SEXUALLY ACTIVE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
HPVI_REAS_28	MAIN REASON TEEN WILL NOT RECEIVE HUMAN PAPILLOMAVIRUS SHOTS IN THE NEXT 12 MONTHS: NO DOCTOR OR DOCTOR'S VISIT NOT SCHEDULED	Y	Y	Y	Y	Y	Y	Y	Y	Y	
HPVI_REAS_29	MAIN REASON TEEN WILL NOT RECEIVE HUMAN PAPILLOMAVIRUS SHOTS IN THE NEXT 12 MONTHS: CHILD IS MALE			Y	Y	Y	Y	Y	Y	Y	
HPVI_REAS_3	MAIN REASON TEEN WILL NOT RECEIVE HUMAN PAPILLOMAVIRUS SHOTS IN THE NEXT 12 MONTHS: LACK OF KNOWLEDGE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
HPVI_REAS_30	**MAIN REASON TEEN WILL NOT RECEIVE HUMAN PAPILLOMAVIRUS SHOTS IN THE NEXT 12 MONTHS: INTEND TO COMPLETE BUT HAVE NOT YET/ALREADY PLANNED**									**Y**	**Added in 2016.**
HPVI_REAS_31	**MAIN REASON TEEN WILL NOT RECEIVE HUMAN PAPILLOMAVIRUS SHOTS IN THE NEXT 12 MONTHS: DIFFICULTY MAKING OR GETTING TO APPOINTMENT/TRANSPORTATION PROBLEMS**									**Y**	**Added in 2016.**
HPVI_REAS_5	MAIN REASON TEEN WILL NOT RECEIVE HUMAN PAPILLOMAVIRUS SHOTS IN THE NEXT 12 MONTHS: NOT SEXUALLY ACTIVE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
HPVI_REAS_6	MAIN REASON TEEN WILL NOT RECEIVE HUMAN PAPILLOMAVIRUS SHOTS IN THE NEXT 12 MONTHS: NOT APPROPRIATE AGE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
HPVI_REAS_9	MAIN REASON TEEN WILL NOT RECEIVE HUMAN PAPILLOMAVIRUS SHOTS IN THE NEXT 12 MONTHS: OTHER REASON	Y	Y	Y	Y	Y	Y	Y	Y	Y	
HPVI_RECOM	HAD OR HAS DOCTOR OR OTHER HEALTH CARE PROFESSIONAL EVER RECOMMENDED THAT TEEN RECEIVE HPV SHOTS?	Y	Y	Y	Y	Y	Y	Y	Y	Y	
I_HISP_K	IS TEEN HISPANIC OR LATINO?	Y	Y	Y	Y	Y	Y	Y	Y	Y	
IMM_ANY	HH-REPORT: HAS TEEN EVER RECEIVED ANY VACCINATIONS?	Y	Y	Y	Y	Y	Y	Y	Y	Y	
INCPORAR	INCOME TO POVERTY RATIO (RECODE)	Y	Y	Y	Y	Y	Y	Y	Y	Y	

Variable Name	Variable Label	2008	2009	2010	2011	2012	2013	2014	2015	2016	Notes
INCPORAR_I	**INCOME TO POVERTY RATIO: IMPUTED (RECODE)**									**Y**	**Added in 2016.**
INCPOV1	POVERTY STATUS	Y	Y	Y	Y	Y	Y	Y	Y	Y	
INCQ298A	FAMILY INCOME CATEGORIES (RECODE)	Y	Y	Y	Y	Y	Y	Y	Y	Y	
INS_BREAK_I	**CONTINUITY OF INSURANCE COVERAGE SINCE AGE 11: IMPUTED**									**Y**	**Added in 2016.**
INS_STAT_I	**INSURANCE STATUS: IMPUTED**									**Y**	**Added in 2016.**
LANGUAGE	LANGUAGE IN WHICH INTERVIEW WAS CONDUCTED	Y	Y	Y	Y	Y	Y	Y	Y	Y	
MARITAL	MARITAL STATUS OF MOTHER: IMPUTED (COLLAPSED)	Y									Replaced by MARITAL2 starting 2009.
MARITAL2	MARITAL STATUS OF MOTHER (RECODE)		Y	Y	Y	Y	Y	Y	Y	Y	Replaces MARITAL2 starting 2009.
MCV_AGE_SC1	AGE OF TEEN IN YEARS AT HH-REPORTED MEASLES OR MMR SHOT #1 (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
MCV_AGE_SC2	AGE OF TEEN IN YEARS AT HH-REPORTED MEASLES OR MMR SHOT #2 (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
MCV_AGE_SC3	AGE OF TEEN IN YEARS AT HH-REPORTED MEASLES OR MMR SHOT #3 (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
MCV_AGE_SC4	AGE OF TEEN IN YEARS AT HH-REPORTED MEASLES OR MMR SHOT #4 (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
MCV_AGE_SC5	AGE OF TEEN IN YEARS AT HH-REPORTED MEASLES OR MMR SHOT #5 (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
MCV_AGE_SC6	AGE OF TEEN IN YEARS AT HH-REPORTED MEASLES OR MMR SHOT #6 (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
MCV_AGE_SC7	AGE OF TEEN IN YEARS AT HH-REPORTED MEASLES OR MMR SHOT #7 (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire

Variable Name	Variable Label	2008	2009	2010	2011	2012	2013	2014	2015	2016	Notes
MCV_AGE_SC8	AGE OF TEEN IN YEARS AT HH-REPORTED MEASLES OR MMR SHOT #8 (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
MCV_AGE1	AGE IN YEARS OF PROV-REPORTED MEASLES-CONTAINING SHOT #1	Y	Y	Y	Y	Y	Y	Y	Y	Y	
MCV_AGE2	AGE IN YEARS OF PROV-REPORTED MEASLES-CONTAINING SHOT #2	Y	Y	Y	Y	Y	Y	Y	Y	Y	
MCV_AGE3	AGE IN YEARS OF PROV-REPORTED MEASLES-CONTAINING SHOT #3	Y	Y	Y	Y	Y	Y	Y	Y	Y	
MCV_AGE4	AGE IN YEARS OF PROV-REPORTED MEASLES-CONTAINING SHOT #4	Y	Y	Y	Y	Y	Y	Y	Y	Y	
MCV_AGE5	AGE IN YEARS OF PROV-REPORTED MEASLES-CONTAINING SHOT #5	Y	Y	Y	Y	Y	Y	Y	Y	Y	
MCV_AGE6	AGE IN YEARS OF PROV-REPORTED MEASLES-CONTAINING SHOT #6	Y	Y	Y	Y	Y	Y	Y	Y	Y	
MCV_AGE7	AGE IN YEARS OF PROV-REPORTED MEASLES-CONTAINING SHOT #7	Y	Y	Y	Y	Y	Y	Y	Y	Y	
MCV_AGE8	AGE IN YEARS OF PROV-REPORTED MEASLES-CONTAINING SHOT #8	Y	Y	Y	Y	Y	Y	Y	Y	Y	
MCV_AGE9	AGE IN YEARS OF PROV-REPORTED MEASLES-CONTAINING SHOT #9	Y	Y	Y	Y	Y	Y	Y	Y	Y	
MCV_ANY_REC	HH-REPORT: HAS TEEN EVER RECEIVED ANY MMR/MEASLES SHOTS? (RECALL)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
MCV_ANY_SC	HH-REPORT: HAS TEEN EVER RECEIVED ANY MMR/MEASLES SHOTS? (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
MCV_DAGE1	AGE IN DAYS OF PROV-REPORTED MEASLES-CONTAINING SHOT #1				Y	Y	Y	Y	Y	Y	
MCV_DAGE2	AGE IN DAYS OF PROV-REPORTED MEASLES-CONTAINING SHOT #2				Y	Y	Y	Y	Y	Y	
MCV_DAGE3	AGE IN DAYS OF PROV-REPORTED MEASLES-CONTAINING SHOT #3				Y	Y	Y	Y	Y	Y	
MCV_DAGE4	AGE IN DAYS OF PROV-REPORTED MEASLES-CONTAINING SHOT #4				Y	Y	Y	Y	Y	Y	
MCV_DAGE5	AGE IN DAYS OF PROV-REPORTED MEASLES-CONTAINING SHOT #5				Y	Y	Y	Y	Y	Y	
MCV_DAGE6	AGE IN DAYS OF PROV-REPORTED MEASLES-CONTAINING SHOT #6				Y	Y	Y	Y	Y	Y	

Variable Name	Variable Label	2008	2009	2010	2011	2012	2013	2014	2015	2016	Notes
MCV_DAGE7	AGE IN DAYS OF PROV-REPORTED MEASLES-CONTAINING SHOT #7				Y	Y	Y	Y	Y	Y	
MCV_DAGE8	AGE IN DAYS OF PROV-REPORTED MEASLES-CONTAINING SHOT #8				Y	Y	Y	Y	Y	Y	
MCV_DAGE9	AGE IN DAYS OF PROV-REPORTED MEASLES-CONTAINING SHOT #9				Y	Y	Y	Y	Y	Y	
MCV_MAGE1	AGE IN MONTHS OF PROV-REPORTED MEASLES-CONTAINING SHOT #1				Y	Y	Y	Y	Y	Y	
MCV_MAGE2	AGE IN MONTHS OF PROV-REPORTED MEASLES-CONTAINING SHOT #2				Y	Y	Y	Y	Y	Y	
MCV_MAGE3	AGE IN MONTHS OF PROV-REPORTED MEASLES-CONTAINING SHOT #3				Y	Y	Y	Y	Y	Y	
MCV_MAGE4	AGE IN MONTHS OF PROV-REPORTED MEASLES-CONTAINING SHOT #4				Y	Y	Y	Y	Y	Y	
MCV_MAGE5	AGE IN MONTHS OF PROV-REPORTED MEASLES-CONTAINING SHOT #5				Y	Y	Y	Y	Y	Y	
MCV_MAGE6	AGE IN MONTHS OF PROV-REPORTED MEASLES-CONTAINING SHOT #6				Y	Y	Y	Y	Y	Y	
MCV_MAGE7	AGE IN MONTHS OF PROV-REPORTED MEASLES-CONTAINING SHOT #7				Y	Y	Y	Y	Y	Y	
MCV_MAGE8	AGE IN MONTHS OF PROV-REPORTED MEASLES-CONTAINING SHOT #8				Y	Y	Y	Y	Y	Y	
MCV_MAGE9	AGE IN MONTHS OF PROV-REPORTED MEASLES-CONTAINING SHOT #9				Y	Y	Y	Y	Y	Y	
MCV_NUM_REC	NUMBER OF HH-REPORTED MMR/MEASLES SHOTS RECEIVED (RECALL)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
MCV_NUM_SC	NUMBER OF HH-REPORTED MMR/MEASLES SHOTS RECEIVED (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
MCV_NUM_TOT	NUMBER OF HH-REPORTED MMR/MEASLES SHOTS RECEIVED (TOTAL)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
MEN_AGE_SC1	AGE OF TEEN IN YEARS AT HH-REPORTED MENINGOCOCCAL SHOT #1 (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire

Variable Name	Variable Label	2008	2009	2010	2011	2012	2013	2014	2015	2016	Notes
MEN_AGE_SC2	AGE OF TEEN IN YEARS AT HH-REPORTED MENINGOCOCCAL SHOT #2 (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
MEN_AGE_SC3	AGE OF TEEN IN YEARS AT HH-REPORTED MENINGOCOCCAL SHOT #3 (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
MEN_AGE_SC4	AGE OF TEEN IN YEARS AT HH-REPORTED MENINGOCOCCAL SHOT #4 (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
MEN_AGE_SC5	AGE OF TEEN IN YEARS AT HH-REPORTED MENINGOCOCCAL SHOT #5 (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
MEN_AGE_SC6	AGE OF TEEN IN YEARS AT HH-REPORTED MENINGOCOCCAL SHOT #6 (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
MEN_AGE_SC7	AGE OF TEEN IN YEARS AT HH-REPORTED MENINGOCOCCAL SHOT #7 (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
MEN_AGE_SC8	AGE OF TEEN IN YEARS AT HH-REPORTED MENINGOCOCCAL SHOT #8 (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
MEN_AGE1	AGE IN YEARS OF PROV-REPORTED MENINGOCOCCAL **SEROGROUP ACWY** SHOT #1	Y	Y	Y	Y	Y	Y	Y	Y	Y	
MEN_AGE2	AGE IN YEARS OF PROV-REPORTED MENINGOCOCCAL **SEROGROUP ACWY** SHOT #2	Y	Y	Y	Y	Y	Y	Y	Y	Y	
MEN_AGE3	AGE IN YEARS OF PROV-REPORTED MENINGOCOCCAL **SEROGROUP ACWY** SHOT #3	Y	Y	Y	Y	Y	Y	Y	Y	Y	
MEN_AGE4	AGE IN YEARS OF PROV-REPORTED MENINGOCOCCAL **SEROGROUP ACWY** SHOT #4	Y	Y	Y	Y	Y	Y	Y	Y	Y	
MEN_AGE5	AGE IN YEARS OF PROV-REPORTED MENINGOCOCCAL **SEROGROUP ACWY** SHOT #5	Y	Y	Y	Y	Y	Y	Y	Y	Y	
MEN_AGE6	AGE IN YEARS OF PROV-REPORTED MENINGOCOCCAL **SEROGROUP ACWY** SHOT #6	Y	Y	Y	Y	Y	Y	Y	Y	Y	
MEN_AGE7	AGE IN YEARS OF PROV-REPORTED MENINGOCOCCAL **SEROGROUP ACWY** SHOT #7	Y	Y	Y	Y	Y	Y	Y	Y	Y	

Variable Name	Variable Label	2008	2009	2010	2011	2012	2013	2014	2015	2016	Notes
MEN_AGE8	AGE IN YEARS OF PROV-REPORTED MENINGOCOCCAL **SEROGROUP ACWY** SHOT #8	Y	Y	Y	Y	Y	Y	Y	Y	Y	
MEN_AGE9	AGE IN YEARS OF PROV-REPORTED MENINGOCOCCAL **SEROGROUP ACWY** SHOT #9	Y	Y	Y	Y	Y	Y	Y	Y	Y	
MEN_ANY_REC	HH-REPORT: HAS TEEN EVER RECEIVED ANY MENINGITIS SHOTS? (RECALL)	Y	Y	Y	Y	Y	Y	Y			Replaced by MEN_ANY in 2015.
MEN_ANY_SC	HH-REPORT: HAS TEEN EVER RECEIVED ANY MENINGITIS SHOTS? (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
MEN_ANY	HH-REPORT: HAS TEEN EVER RECEIVED ANY MENINGITIS SHOTS?								Y	Y	Added in 2015
MEN_DAGE1	AGE IN DAYS OF PROV-REPORTED MENINGOCOCCAL **SEROGROUP ACWY** SHOT #1				Y	Y	Y	Y	Y	Y	
MEN_DAGE2	AGE IN DAYS OF PROV-REPORTED MENINGOCOCCAL **SEROGROUP ACWY** SHOT #2				Y	Y	Y	Y	Y	Y	
MEN_DAGE3	AGE IN DAYS OF PROV-REPORTED MENINGOCOCCAL **SEROGROUP ACWY** SHOT #3				Y	Y	Y	Y	Y	Y	
MEN_DAGE4	AGE IN DAYS OF PROV-REPORTED MENINGOCOCCAL **SEROGROUP ACWY** SHOT #4				Y	Y	Y	Y	Y	Y	
MEN_DAGE5	AGE IN DAYS OF PROV-REPORTED MENINGOCOCCAL **SEROGROUP ACWY** SHOT #5				Y	Y	Y	Y	Y	Y	
MEN_DAGE6	AGE IN DAYS OF PROV-REPORTED MENINGOCOCCAL **SEROGROUP ACWY** SHOT #6				Y	Y	Y	Y	Y	Y	
MEN_DAGE7	AGE IN DAYS OF PROV-REPORTED MENINGOCOCCAL **SEROGROUP ACWY** SHOT #7				Y	Y	Y	Y	Y	Y	
MEN_DAGE8	AGE IN DAYS OF PROV-REPORTED MENINGOCOCCAL **SEROGROUP ACWY** SHOT #8				Y	Y	Y	Y	Y	Y	
MEN_DAGE9	AGE IN DAYS OF PROV-REPORTED MENINGOCOCCAL **SEROGROUP ACWY** SHOT #9				Y	Y	Y	Y	Y	Y	
MEN_MAGE1	AGE IN MONTHS OF PROV-REPORTED MENINGOCOCCAL **SEROGROUP ACWY** SHOT #1				Y	Y	Y	Y	Y	Y	
MEN_MAGE2	AGE IN MONTHS OF PROV-REPORTED MENINGOCOCCAL **SEROGROUP ACWY** SHOT #2				Y	Y	Y	Y	Y	Y	
MEN_MAGE3	AGE IN MONTHS OF PROV-REPORTED MENINGOCOCCAL **SEROGROUP ACWY** SHOT #3				Y	Y	Y	Y	Y	Y	
MEN_MAGE4	AGE IN MONTHS OF PROV-REPORTED MENINGOCOCCAL **SEROGROUP ACWY** SHOT #4				Y	Y	Y	Y	Y	Y	
MEN_MAGE5	AGE IN MONTHS OF PROV-REPORTED MENINGOCOCCAL **SEROGROUP ACWY** SHOT #5				Y	Y	Y	Y	Y	Y	

Variable Name	Variable Label	2008	2009	2010	2011	2012	2013	2014	2015	2016	Notes
MEN_MAGE6	AGE IN MONTHS OF PROV-REPORTED MENINGOCOCCAL **SEROGROUP ACWY** SHOT #6				Y	Y	Y	Y	Y	Y	
MEN_MAGE7	AGE IN MONTHS OF PROV-REPORTED MENINGOCOCCAL **SEROGROUP ACWY** SHOT #7				Y	Y	Y	Y	Y	Y	
MEN_MAGE8	AGE IN MONTHS OF PROV-REPORTED MENINGOCOCCAL **SEROGROUP ACWY** SHOT #8				Y	Y	Y	Y	Y	Y	
MEN_MAGE9	AGE IN MONTHS OF PROV-REPORTED MENINGOCOCCAL **SEROGROUP ACWY** SHOT #9				Y	Y	Y	Y	Y	Y	
MEN_NUM_REC	NUMBER OF HH-REPORTED MENINGITIS SHOTS RECEIVED (RECALL)	Y	Y	Y	Y	Y	Y	Y			Dropped in 2015.
MEN_NUM_SC	NUMBER OF HH-REPORTED MENINGITIS SHOTS RECEIVED (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
MEN_NUM_TOT	NUMBER OF HH-REPORTED MENINGITIS SHOTS RECEIVED (TOTAL)	Y	Y	Y	Y	Y	Y		Y	Y	Dropped in 2014 due to shortened questionnaire; added back in 2015.
MEN_REAS_1	MAIN REASON TEEN DID NOT RECEIVE MENINGITIS SHOTS: NOT RECOMMENDED	Y	Y	Y	Y	Y	Y	Y	Y	Y	
MEN_REAS_10	MAIN REASON TEEN DID NOT RECEIVE MENINGITIS SHOTS: COSTS	Y	Y	Y	Y	Y	Y	Y	Y	Y	
MEN_REAS_11	MAIN REASON TEEN DID NOT RECEIVE MENINGITIS SHOTS: SAFETY CONCERN/SIDE EFFECTS	Y	Y	Y	Y	Y	Y	Y	Y	Y	
MEN_REAS_12	MAIN REASON TEEN DID NOT RECEIVE MENINGITIS SHOTS: EFFECTIVENESS CONCERN	Y	Y	Y	Y	Y	Y	Y	Y	Y	
MEN_REAS_13	MAIN REASON TEEN DID NOT RECEIVE MENINGITIS SHOTS: CHILD FEARFUL	Y	Y	Y	Y	Y	Y	Y	Y	Y	
MEN_REAS_14	MAIN REASON TEEN DID NOT RECEIVE MENINGITIS SHOTS: CHILD SHOULD MAKE DECISION	Y	Y	Y	Y	Y	Y	Y	Y	Y	
MEN_REAS_15	MAIN REASON TEEN DID NOT RECEIVE MENINGITIS SHOTS: COLLEGE SHOT	Y	Y	Y	Y	Y	Y	Y	Y	Y	
MEN_REAS_16	MAIN REASON TEEN DID NOT RECEIVE MENINGITIS SHOTS: DON'T BELIEVE IN VACCINATIONS	Y	Y	Y	Y	Y	Y	Y	Y	Y	
MEN_REAS_17	MAIN REASON TEEN DID NOT RECEIVE MENINGITIS SHOTS: FAMILY/PARENTAL DECISION	Y	Y	Y	Y	Y	Y	Y	Y	Y	
MEN_REAS_18	MAIN REASON TEEN DID NOT RECEIVE MENINGITIS SHOTS: HANDICAPPED/SPECIAL NEEDS/ILLNESS	Y	Y	Y	Y	Y	Y	Y	Y	Y	
MEN_REAS_19	MAIN REASON TEEN DID NOT RECEIVE MENINGITIS SHOTS: RELIGION/ORTHODOX	Y	Y	Y	Y	Y	Y	Y	Y	Y	

Variable Name	Variable Label	2008	2009	2010	2011	2012	2013	2014	2015	2016	Notes
MEN_REAS_2	MAIN REASON TEEN DID NOT RECEIVE MENINGITIS SHOTS: LACK OF KNOWLEDGE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
MEN_REAS_20	MAIN REASON TEEN DID NOT RECEIVE MENINGITIS SHOTS: TIME	Y	Y	Y	Y	Y	Y	Y	Y	Y	
MEN_REAS_21	MAIN REASON TEEN DID NOT RECEIVE MENINGITIS SHOTS: MORE INFO/NEW VACCINE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
MEN_REAS_22	MAIN REASON TEEN DID NOT RECEIVE MENINGITIS SHOTS: ALREADY UP-TO-DATE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
MEN_REAS_23	MAIN REASON TEEN DID NOT RECEIVE MENINGITIS SHOTS: NO DOCTOR OR DOCTOR'S VISIT NOT SCHEDULED	Y	Y	Y	Y	Y	Y	Y	Y	Y	
MEN_REAS_24	**MAIN REASON TEEN DID NOT RECEIVE MENINGITIS SHOTS: INTEND TO COMPLETE BUT HAVE NOT YET/ALREADY PLANNED**									**Y**	**Added in 2016.**
MEN_REAS_25	**MAIN REASON TEEN DID NOT RECEIVE MENINGITIS SHOTS: DIFFICULTY MAKING OR GETTING TO APPOINTMENT/TRANSPORTATION PROBLEMS**									**Y**	**Added in 2016.**
MEN_REAS_3	MAIN REASON TEEN DID NOT RECEIVE MENINGITIS SHOTS: NOT NEEDED OR NOT NECESSARY	Y	Y	Y	Y	Y	Y	Y	Y	Y	
MEN_REAS_4	MAIN REASON TEEN DID NOT RECEIVE MENINGITIS SHOTS: NOT SCHOOL REQUIREMENT	Y	Y	Y	Y	Y	Y	Y	Y	Y	
MEN_REAS_5	MAIN REASON TEEN DID NOT RECEIVE MENINGITIS SHOTS: NOT AVAILABLE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
MEN_REAS_6	MAIN REASON TEEN DID NOT RECEIVE MENINGITIS SHOTS: NOT APPROPRIATE AGE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
MEN_REAS_7	MAIN REASON TEEN DID NOT RECEIVE MENINGITIS SHOTS: OTHER REASON	Y	Y	Y	Y	Y	Y	Y	Y	Y	
MEN_RECOM	HAD OR HAS DOCTOR OR OTHER HEALTH CARE PROFESSIONAL EVER RECOMMENDED THAT TEEN RECEIVE MENINGITIS SHOTS?	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
MENB_AGE1	**AGE IN YEARS OF PROV-REPORTED MENINGOCOCCAL SEROGROUP B SHOT #1**									**Y**	**Added in 2016.**
MENB_AGE2	**AGE IN YEARS OF PROV-REPORTED MENINGOCOCCAL SEROGROUP B SHOT #2**									**Y**	**Added in 2016.**
MENB_AGE3	**AGE IN YEARS OF PROV-REPORTED MENINGOCOCCAL SEROGROUP B SHOT #3**									**Y**	**Added in 2016.**
MENB_AGE4	**AGE IN YEARS OF PROV-REPORTED MENINGOCOCCAL SEROGROUP B SHOT #4**									**Y**	**Added in 2016.**
MENB_AGE5	**AGE IN YEARS OF PROV-REPORTED MENINGOCOCCAL SEROGROUP B SHOT #5**									**Y**	**Added in 2016.**

Variable Name	Variable Label	2008	2009	2010	2011	2012	2013	2014	2015	2016	Notes
MENB_AGE6	AGE IN YEARS OF PROV-REPORTED MENINGOCOCCAL SEROGROUP B SHOT #6									Y	Added in 2016.
MENB_AGE7	AGE IN YEARS OF PROV-REPORTED MENINGOCOCCAL SEROGROUP B SHOT #7									Y	Added in 2016.
MENB_AGE8	AGE IN YEARS OF PROV-REPORTED MENINGOCOCCAL SEROGROUP B SHOT #8									Y	Added in 2016.
MENB_AGE9	AGE IN YEARS OF PROV-REPORTED MENINGOCOCCAL SEROGROUP B SHOT #9									Y	Added in 2016.
MENB_DAGE1	AGE IN DAYS OF PROV-REPORTED MENINGOCOCCAL SEROGROUP B SHOT #1									Y	Added in 2016.
MENB_DAGE2	AGE IN DAYS OF PROV-REPORTED MENINGOCOCCAL SEROGROUP B SHOT #2									Y	Added in 2016.
MENB_DAGE3	AGE IN DAYS OF PROV-REPORTED MENINGOCOCCAL SEROGROUP B SHOT #3									Y	Added in 2016.
MENB_DAGE4	AGE IN DAYS OF PROV-REPORTED MENINGOCOCCAL SEROGROUP B SHOT #4									Y	Added in 2016.
MENB_DAGE5	AGE IN DAYS OF PROV-REPORTED MENINGOCOCCAL SEROGROUP B SHOT #5									Y	Added in 2016.
MENB_DAGE6	AGE IN DAYS OF PROV-REPORTED MENINGOCOCCAL SEROGROUP B SHOT #6									Y	Added in 2016.
MENB_DAGE7	AGE IN DAYS OF PROV-REPORTED MENINGOCOCCAL SEROGROUP B SHOT #7									Y	Added in 2016.
MENB_DAGE8	AGE IN DAYS OF PROV-REPORTED MENINGOCOCCAL SEROGROUP B SHOT #8									Y	Added in 2016.
MENB_DAGE9	AGE IN DAYS OF PROV-REPORTED MENINGOCOCCAL SEROGROUP B SHOT #9									Y	Added in 2016.
MENB_MAGE1	AGE IN MONTHS OF PROV-REPORTED MENINGOCOCCAL SEROGROUP B SHOT #1									Y	Added in 2016.
MENB_MAGE2	AGE IN MONTHS OF PROV-REPORTED MENINGOCOCCAL SEROGROUP B SHOT #2									Y	Added in 2016.
MENB_MAGE3	AGE IN MONTHS OF PROV-REPORTED MENINGOCOCCAL SEROGROUP B SHOT #3									Y	Added in 2016.
MENB_MAGE4	AGE IN MONTHS OF PROV-REPORTED MENINGOCOCCAL SEROGROUP B SHOT #4									Y	Added in 2016.
MENB_MAGE5	AGE IN MONTHS OF PROV-REPORTED MENINGOCOCCAL SEROGROUP B SHOT #5									Y	Added in 2016.
MENB_MAGE6	AGE IN MONTHS OF PROV-REPORTED MENINGOCOCCAL SEROGROUP B SHOT #6									Y	Added in 2016.
MENB_MAGE7	AGE IN MONTHS OF PROV-REPORTED MENINGOCOCCAL SEROGROUP B SHOT #7									Y	Added in 2016.

Variable Name	Variable Label	2008	2009	2010	2011	2012	2013	2014	2015	2016	Notes
MENB_MAGE8	AGE IN MONTHS OF PROV-REPORTED MENINGOCOCCAL SEROGROUP B SHOT #8									Y	Added in 2016.
MENB_MAGE9	AGE IN MONTHS OF PROV-REPORTED MENINGOCOCCAL SEROGROUP B SHOT #9									Y	Added in 2016.
MENU_AGE1	AGE IN YEARS OF PROV-REPORTED MENINGOCOCCAL-UNKNOWN SEROGROUP SHOT #1									Y	Added in 2016.
MENU_AGE2	AGE IN YEARS OF PROV-REPORTED MENINGOCOCCAL-UNKNOWN SEROGROUP SHOT #2									Y	Added in 2016.
MENU_AGE3	AGE IN YEARS OF PROV-REPORTED MENINGOCOCCAL-UNKNOWN SEROGROUP SHOT #3									Y	Added in 2016.
MENU_AGE4	AGE IN YEARS OF PROV-REPORTED MENINGOCOCCAL-UNKNOWN SEROGROUP SHOT #4									Y	Added in 2016.
MENU_AGE5	AGE IN YEARS OF PROV-REPORTED MENINGOCOCCAL-UNKNOWN SEROGROUP SHOT #5									Y	Added in 2016.
MENU_AGE6	AGE IN YEARS OF PROV-REPORTED MENINGOCOCCAL-UNKNOWN SEROGROUP SHOT #6									Y	Added in 2016.
MENU_AGE7	AGE IN YEARS OF PROV-REPORTED MENINGOCOCCAL-UNKNOWN SEROGROUP SHOT #7									Y	Added in 2016.
MENU_AGE8	AGE IN YEARS OF PROV-REPORTED MENINGOCOCCAL-UNKNOWN SEROGROUP SHOT #8									Y	Added in 2016.
MENU_AGE9	AGE IN YEARS OF PROV-REPORTED MENINGOCOCCAL-UNKNOWN SEROGROUP SHOT #9									Y	Added in 2016.
MENU_DAGE1	AGE IN DAYS OF PROV-REPORTED MENINGOCOCCAL-UNKNOWN SEROGROUP SHOT #1									Y	Added in 2016.
MENU_DAGE2	AGE IN DAYS OF PROV-REPORTED MENINGOCOCCAL-UNKNOWN SEROGROUP SHOT #2									Y	Added in 2016.
MENU_DAGE3	AGE IN DAYS OF PROV-REPORTED MENINGOCOCCAL-UNKNOWN SEROGROUP SHOT #3									Y	Added in 2016.
MENU_DAGE4	AGE IN DAYS OF PROV-REPORTED MENINGOCOCCAL-UNKNOWN SEROGROUP SHOT #4									Y	Added in 2016.
MENU_DAGE5	AGE IN DAYS OF PROV-REPORTED MENINGOCOCCAL-UNKNOWN SEROGROUP SHOT #5									Y	Added in 2016.
MENU_DAGE6	AGE IN DAYS OF PROV-REPORTED MENINGOCOCCAL-UNKNOWN SEROGROUP SHOT #6									Y	Added in 2016.
MENU_DAGE7	AGE IN DAYS OF PROV-REPORTED MENINGOCOCCAL-UNKNOWN SEROGROUP SHOT #7									Y	Added in 2016.
MENU_DAGE8	AGE IN DAYS OF PROV-REPORTED MENINGOCOCCAL-UNKNOWN SEROGROUP SHOT #8									Y	Added in 2016.
MENU_DAGE9	AGE IN DAYS OF PROV-REPORTED MENINGOCOCCAL-UNKNOWN SEROGROUP SHOT #9									Y	Added in 2016.

Variable Name	Variable Label	2008	2009	2010	2011	2012	2013	2014	2015	2016	Notes
MENU_MAGE1	**AGE IN MONTHS OF PROV-REPORTED MENINGOCOCCAL-UNKNOWN SEROGROUP SHOT #1**									**Y**	**Added in 2016.**
MENU_MAGE2	**AGE IN MONTHS OF PROV-REPORTED MENINGOCOCCAL-UNKNOWN SEROGROUP SHOT #2**									**Y**	**Added in 2016.**
MENU_MAGE3	**AGE IN MONTHS OF PROV-REPORTED MENINGOCOCCAL-UNKNOWN SEROGROUP SHOT #3**									**Y**	**Added in 2016.**
MENU_MAGE4	**AGE IN MONTHS OF PROV-REPORTED MENINGOCOCCAL-UNKNOWN SEROGROUP SHOT #4**									**Y**	**Added in 2016.**
MENU_MAGE5	**AGE IN MONTHS OF PROV-REPORTED MENINGOCOCCAL-UNKNOWN SEROGROUP SHOT #5**									**Y**	**Added in 2016.**
MENU_MAGE6	**AGE IN MONTHS OF PROV-REPORTED MENINGOCOCCAL-UNKNOWN SEROGROUP SHOT #6**									**Y**	**Added in 2016.**
MENU_MAGE7	**AGE IN MONTHS OF PROV-REPORTED MENINGOCOCCAL-UNKNOWN SEROGROUP SHOT #7**									**Y**	**Added in 2016.**
MENU_MAGE8	**AGE IN MONTHS OF PROV-REPORTED MENINGOCOCCAL-UNKNOWN SEROGROUP SHOT #8**									**Y**	**Added in 2016.**
MENU_MAGE9	**AGE IN MONTHS OF PROV-REPORTED MENINGOCOCCAL-UNKNOWN SEROGROUP SHOT #9**									**Y**	**Added in 2016.**
MOBIL_I	GEOGRAPHIC MOBILITY STATUS: STATE OF RESIDENCE AT BIRTH VERSUS CURRENT STATE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
N_PRVR	NUMBER OF IHQS WITH VACCINATION INFORMATION FOR THE TEEN (RECODE)	Y	Y	Y	Y	Y	Y	Y	Y	Y	
NOSCHOOLR	DURING PAST 12 MONTHS, ABOUT HOW MANY DAYS DID TEEN MISS SCHOOL BECAUSE OF ILLNESS OR INJURY? (RECODE)	Y	Y	Y	Y	Y	Y	Y	Y	Y	
NUM_CELLS_HH	NUMBER OF WORKING CELL PHONES HOUSEHOLD MEMBERS HAVE AVAILABLE FOR PERSONAL USE		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	Y	Y	Y	Y	Y	
NUM_PHONE	NUMBER OF RESIDENTIAL TELEPHONE NUMBERS IN HOUSEHOLD (EXCLUDING CELL PHONES)		Y	Y	Y	Y	Y	Y	Y	Y	
NUM_PROVR	NUMBER OF VALID, UNIQUE PROVIDERS IDENTIFIED BY RESPONDENT (FOR TEENS WITH CONSENT) (RECODE)	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_N13FLU	NUMBER OF SEASONAL INFLUENZA VACCINATIONS IN THE PAST THREE YEARS BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_N13FLU_FL	NUMBER OF SEASONAL INFLUENZA VACCINATIONS OF UNKNOWN TYPE IN PAST THREE YEARS BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	

Variable Name	Variable Label	2008	2009	2010	2011	2012	2013	2014	2015	2016	Notes
P_N13FLU_FM	NUMBER OF SEASONAL FLUMIST VACCINATIONS IN PAST THREE YEARS BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_N13FLU_FN	NUMBER OF INJECTED SEASONAL INFLUENZA SHOTS OF OTHER/UNKNOWN TYPE IN PAST THREE YEARS BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_N13FLU_FV	NUMBER OF SEASONAL FLUVIRIN SHOTS IN PAST THREE YEARS BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_N13FLU_FZ	NUMBER OF SEASONAL FLUZONE SHOTS IN PAST THREE YEARS BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_N13H1N	NUMBER OF MONOVALENT 2009 H1N1 INFLUENZA VACCINATIONS BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE AND EXCLUDING VACCINATIONS GIVEN PRIOR TO 10/5/2009.			Y	Y	Y					
P_N13H1N_1L	NUMBER OF MONOVALENT 2009 H1N1 INFLUENZA VACCINATIONS OF UNKNOWN TYPE BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE AND EXCLUDING VACCINATIONS GIVEN PRIOR TO 10/5/2009.			Y	Y	Y					
P_N13H1N_1M	NUMBER OF INHALED NASAL MONOVALENT 2009 H1N1 INFLUENZA SPRAY VACCINATIONS BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE AND EXCLUDING VACCINATIONS GIVEN PRIOR TO 10/5/2009.			Y	Y	Y					
P_N13H1N_1N	NUMBER OF INJECTED MONOVALENT 2009 H1N1 INFLUENZA VACCINATIONS BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE AND EXCLUDING VACCINATIONS GIVEN PRIOR TO 10/5/2009.			Y	Y	Y					
P_N13HEPA	NUMBER OF HEPATITIS A-CONTAINING SHOTS BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_N13HEPA_HA	NUMBER OF HEPATITIS A-CONTAINING SHOTS OF UNKNOWN TYPE BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	

Variable Name	Variable Label	2008	2009	2010	2011	2012	2013	2014	2015	2016	Notes
P_N13HEPA_HO	NUMBER OF HEPATITIS A-ONLY SHOTS BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_N13HEPB	NUMBER OF HEPATITIS B-CONTAINING SHOTS BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_N13HEPB_43	NUMBER OF HEPB/HIB COMBO SHOTS BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_N13HEPB_61	NUMBER OF HEPATITIS B 0.5 ML RECOMBIVAX SHOTS BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_N13HEPB_62	NUMBER OF HEPATITIS B 1.0 ML RECOMBIVAX SHOTS BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_N13HEPB_63	NUMBER OF HEPATITIS B ENGERIX SHOTS BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_N13HEPB_64	NUMBER OF HEPATITIS B-ONLY SHOTS OF UNKNOWN TYPE BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_N13HEPB_HB	NUMBER OF HEPATITIS B-CONTAINING SHOTS OF UNKNOWN TYPE BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_N13HPV	NUMBER OF HUMAN PAPILLOMAVIRUS SHOTS BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_N13HPV_4V	NUMBER OF HPV-GARDASIL (4vHPV) SHOTS BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.					Y	Y	Y	Y	Y	Renamed from P_N13HPV_GD in 2015.
P_N13HPV_9V	NUMBER OF HPV-GARDASIL 9 (9vHPV) SHOTS BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.								Y	Y	Added in 2015.
P_N13HPV_CV	NUMBER OF HPV-CERVARIX SHOTS BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.					Y	Y	Y	Y	Y	

Variable Name	Variable Label	2008	2009	2010	2011	2012	2013	2014	2015	2016	Notes
P_N13HPV_HP	NUMBER OF HPV SHOTS OF UNKNOWN TYPE BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.					Y	Y	Y	Y	Y	
P_N13HPV_UV	NUMBER OF HPV-GARDASIL, UNKNOWN VALENCY SHOTS BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.								Y	Y	Added in 2015.
P_N13MCV	NUMBER OF MEASLES-CONTAINING SHOTS BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_N13MCV_30	NUMBER OF MMR-ONLY SHOTS BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_N13MCV_31	NUMBER OF MEASLES-ONLY SHOTS BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_N13MCV_32	NUMBER OF MEASLES-MUMPS SHOTS BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_N13MCV_33	NUMBER OF MEASLES-RUBELLA SHOTS BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_N13MCV_MM	NUMBER OF MEASLES-CONTAINING SHOTS OF UNKNOWN TYPE BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_N13MCV_VM	NUMBER OF MMR/VARICELLA SHOTS BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_N13MEN	NUMBER OF MENINGOCOCCAL **SEROGROUP ACWY** SHOTS BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_N13MEN_80	NUMBER OF MENINGOCOCCAL MCV4 SHOTS BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_N13MEN_81	NUMBER OF MENINGOCOCCAL MPSV4 SHOTS BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_N13MEN_82	NUMBER OF MENINGOCOCCAL **SEROGROUP ACWY** SHOTS OF UNKNOWN TYPE BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	

Variable Name	Variable Label	2008	2009	2010	2011	2012	2013	2014	2015	2016	Notes
P_N13MENB	**NUMBER OF MENINGOCOCCAL SEROGROUP B SHOTS BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.**									**Y**	**Added in 2016.**
P_N13MENB_BB	**NUMBER OF MENINGOCOCCAL MENB-4C SHOTS BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.**									**Y**	**Added in 2016.**
P_N13MENB_BT	**NUMBER OF MENINGOCOCCAL MENB-FHPB SHOTS BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.**									**Y**	**Added in 2016.**
P_N13MENB_BU	**NUMBER OF MENINGOCOCCAL SEROGROUP B SHOTS OF UNKNOWN TYPE BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.**									**Y**	**Added in 2016.**
P_N13MENU	**NUMBER OF MENINGOCOCCAL-UNKNOWN SEROGROUP SHOTS BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.**									**Y**	**Added in 2016.**
P_N13MMR	NUMBER OF MMR-CONTAINING SHOTS BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_N13PPS	NUMBER OF PNEUMOCOCCAL POLYSACCHARIDE SHOTS BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_N13TDAP_POST10	NUMBER OF TDAP SHOTS SINCE AGE 10 YEARS AND BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_N13TDAP_POST7	NUMBER OF TDAP SHOTS SINCE AGE 7 YEARS AND BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.			Y	Y	Y	Y	Y	Y	Y	
P_N13TDP	NUMBER OF TD/TDAP-CONTAINING SHOTS BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_N13TDP_11	NUMBER OF TD-ONLY SHOTS BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_N13TDP_14	NUMBER OF TDAP-ONLY SHOTS BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	

Variable Name	Variable Label	2008	2009	2010	2011	2012	2013	2014	2015	2016	Notes
P_N13TDP_15	NUMBER OF TD/TDAP-CONTAINING SHOTS OF UNKNOWN TYPE BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_N13TDP_POST10	NUMBER OF TD/TDAP-CONTAINING SHOTS SINCE AGE 10 YEARS AND BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_N13VRC	NUMBER OF VARICELLA-CONTAINING SHOTS BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_N13VRC_POST1	NUMBER OF VARICELLA-CONTAINING SHOTS AT 12+ MONTHS OF AGE AND BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_N13VRC_VA	NUMBER OF VARICELLA-CONTAINING SHOTS OF UNKNOWN TYPE BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_N13VRC_VM	NUMBER OF MMR/VARICELLA SHOTS BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_N13VRC_VO	NUMBER OF VARICELLA-ONLY SHOTS BY AGE 13 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMFLU	NUMBER OF SEASONAL INFLUENZA VACCINATIONS IN THE PAST THREE YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMFLU_FL	NUMBER OF SEASONAL INFLUENZA VACCINATIONS OF UNKNOWN TYPE IN PAST THREE YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMFLU_FM	NUMBER OF SEASONAL FLUMIST VACCINATIONS IN PAST THREE YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMFLU_FN	NUMBER OF INJECTED SEASONAL INFLUENZA SHOTS OF OTHER/UNKNOWN TYPE IN PAST THREE YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMFLU_FV	NUMBER OF SEASONAL FLUVIRIN SHOTS IN PAST THREE YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	

Variable Name	Variable Label	2008	2009	2010	2011	2012	2013	2014	2015	2016	Notes
P_NUMFLU_FZ	NUMBER OF SEASONAL FLUZONE SHOTS IN PAST THREE YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMH1N	NUMBER OF MONOVALENT 2009 H1N1 INFLUENZA VACCINATIONS DETERMINED FROM PROVIDER INFO, EXCLUDING VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE AND EXCLUDING VACCINATIONS GIVEN PRIOR TO 10/5/2009.			Y	Y	Y					
P_NUMH1N_1L	NUMBER OF MONOVALENT 2009 H1N1 INFLUENZA VACCINATIONS OF UNKNOWN TYPE DETERMINED FROM PROVIDER INFO, EXCLUDING VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE AND EXCLUDING VACCINATIONS GIVEN PRIOR TO 10/5/2009.			Y	Y	Y					
P_NUMH1N_1M	NUMBER OF INHALED NASAL MONOVALENT 2009 H1N1 INFLUENZA SPRAY VACCINATIONS DETERMINED FROM PROVIDER INFO, EXCLUDING VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE AND EXCLUDING VACCINATIONS GIVEN PRIOR TO 10/5/2009.			Y	Y	Y					
P_NUMH1N_1N	NUMBER OF INJECTED MONOVALENT 2009 H1N1 INFLUENZA VACCINATIONS DETERMINED FROM PROVIDER INFO, EXCLUDING VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE AND EXCLUDING VACCINATIONS GIVEN PRIOR TO 10/5/2009.			Y	Y	Y					
P_NUMHEPA	NUMBER OF HEPATITIS A-CONTAINING SHOTS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMHEPA_HA	NUMBER OF HEPATITIS A-CONTAINING SHOTS OF UNKNOWN TYPE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMHEPA_HO	NUMBER OF HEPATITIS A-ONLY SHOTS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMHEPB	NUMBER OF HEPATITIS B-CONTAINING SHOTS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMHEPB_43	NUMBER OF HEPB/HIB COMBO SHOTS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMHEPB_61	NUMBER OF HEPATITIS B 0.5 ML RECOMBIVAX SHOTS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMHEPB_62	NUMBER OF HEPATITIS B 1.0 ML RECOMBIVAX SHOTS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	

Variable Name	Variable Label	2008	2009	2010	2011	2012	2013	2014	2015	2016	Notes
P_NUMHEPB_63	NUMBER OF HEPATITIS B ENGERIX SHOTS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMHEPB_64	NUMBER OF HEPATITIS B-ONLY SHOTS OF UNKNOWN TYPE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMHEPB_HB	NUMBER OF HEPATITIS B-CONTAINING SHOTS OF UNKNOWN TYPE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMHPV	NUMBER OF HUMAN PAPILLOMAVIRUS SHOTS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMHPV_4V	NUMBER OF HPV-GARDASIL (4vHPV) SHOTS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.					Y	Y	Y	Y	Y	Renamed from P_NUMHPV_GD in 2015.
P_NUMHPV_9V	NUMBER OF HPV-GARDASIL 9 (9vHPV) SHOTS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.								Y	Y	Added in 2015.
P_NUMHPV_CV	NUMBER OF HPV-CERVARIX SHOTS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.					Y	Y	Y	Y	Y	
P_NUMHPV_HP	NUMBER OF HPV SHOTS OF UNKNOWN TYPE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.					Y	Y	Y	Y	Y	
P_NUMHPV_UV	NUMBER OF HPV-GARDASIL, UNKNOWN VALENCY SHOTS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.								Y	Y	Added in 2015.
P_NUMMCV	NUMBER OF MEASLES-CONTAINING SHOTS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMMCV_30	NUMBER OF MMR-ONLY SHOTS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMMCV_31	NUMBER OF MEASLES-ONLY SHOTS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMMCV_32	NUMBER OF MEASLES-MUMPS SHOTS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMMCV_33	NUMBER OF MEASLES-RUBELLA SHOTS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	

Variable Name	Variable Label	2008	2009	2010	2011	2012	2013	2014	2015	2016	Notes
P_NUMMCV_MM	NUMBER OF MEASLES-CONTAINING SHOTS OF UNKNOWN TYPE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMMCV_VM	NUMBER OF MMR/VARICELLA SHOTS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMMEN	NUMBER OF MENINGOCOCCAL **SEROGROUP ACWY** SHOTS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMMEN_80	NUMBER OF MENINGOCOCCAL MCV4 SHOTS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMMEN_81	NUMBER OF MENINGOCOCCAL MPSV4 SHOTS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMMEN_82	NUMBER OF MENINGOCOCCAL **SEROGROUP ACWY** SHOTS OF UNKNOWN TYPE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMMENB	**NUMBER OF MENINGOCOCCAL SEROGROUP B SHOTS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.**									**Y**	**Added in 2016.**
P_NUMMENB_BB	**NUMBER OF MENINGOCOCCAL MENB-4C SHOTS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.**									**Y**	**Added in 2016.**
P_NUMMENB_BT	**NUMBER OF MENINGOCOCCAL MENB-FHPB SHOTS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.**									**Y**	**Added in 2016.**
P_NUMMENB_BU	**NUMBER OF MENINGOCOCCAL SEROGROUP B SHOTS OF UNKNOWN TYPE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.**									**Y**	**Added in 2016.**
P_NUMMENU	**NUMBER OF MENINGOCOCCAL-UNKNOWN SEROGROUP SHOTS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.**									**Y**	**Added in 2016.**
P_NUMMMR	NUMBER OF MMR-CONTAINING SHOTS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMPPS	NUMBER OF PNEUMOCOCCAL POLYSACCHARIDE SHOTS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	

Variable Name	Variable Label	2008	2009	2010	2011	2012	2013	2014	2015	2016	Notes
P_NUMTDAP_POST10	NUMBER OF TDAP SHOTS SINCE AGE 10 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMTDAP_POST7	NUMBER OF TDAP SHOTS SINCE AGE 7 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.			Y	Y	Y	Y	Y	Y	Y	
P_NUMTDP	NUMBER OF TD/TDAP-CONTAINING SHOTS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMTDP_11	NUMBER OF TD-ONLY SHOTS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMTDP_14	NUMBER OF TDAP-ONLY SHOTS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMTDP_15	NUMBER OF TD/TDAP-CONTAINING SHOTS OF UNKNOWN TYPE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMTDP_POST10	NUMBER OF TD/TDAP-CONTAINING SHOTS SINCE AGE 10 YEARS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMVRC	NUMBER OF VARICELLA-CONTAINING SHOTS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMVRC_POST1	NUMBER OF VARICELLA-CONTAINING SHOTS AT 12+ MONTHS OF AGE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMVRC_VA	NUMBER OF VARICELLA-CONTAINING SHOTS OF UNKNOWN TYPE DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMVRC_VM	NUMBER OF MMR/VARICELLA SHOTS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_NUMVRC_VO	NUMBER OF VARICELLA-ONLY SHOTS DETERMINED FROM PROVIDER INFO, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_U13113	UP-TO-DATE FLAG (PROV INFO): 1:1:3 SERIES BEFORE AGE 13 YEARS, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.								Y	Y	Added in 2015.
P_U131321	UP-TO-DATE FLAG (PROV INFO): 1:3:2:1 SERIES BEFORE AGE 13 YEARS, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	

Variable Name	Variable Label	2008	2009	2010	2011	2012	2013	2014	2015	2016	Notes
P_U1313212	UP-TO-DATE FLAG (PROV INFO): 1:3:2:1:2 SERIES BEFORE AGE 13 YEARS, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_U13FLU0607	UP-TO-DATE FLAG (PROV INFO): 1+ INFLUENZA VACCINATION BETWEEN SEPT 1, 2006 AND JAN 31, 2007, BEFORE AGE 13 YEARS, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y									
P_U13FLU0708	UP-TO-DATE FLAG (PROV INFO): 1+ SEASONAL INFLUENZA VACCINATION BETWEEN SEPT 1, 2007 AND JAN 31, 2008, BEFORE AGE 13 YEARS, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y								
P_U13FLU0809	UP-TO-DATE FLAG (PROV INFO): 1+ SEASONAL INFLUENZA VACCINATION BETWEEN SEPT 1, 2008 AND JAN 31, 2009, BEFORE AGE 13 YEARS, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y							
P_U13FLU0910	UP-TO-DATE FLAG (PROV INFO): 1+ SEASONAL INFLUENZA VACCINATION BETWEEN SEPT 1, 2009 AND JAN 31, 2010, BEFORE AGE 13 YEARS, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.		Y	Y	Y						
P_U13FLU1011	UP-TO-DATE FLAG (PROV INFO): 1+ SEASONAL INFLUENZA VACCINATION BETWEEN SEPT 1, 2010 AND JAN 31, 2011, BEFORE AGE 13 YEARS, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.			Y	Y	Y					
P_U13FLU1112	UP-TO-DATE FLAG (PROV INFO): 1+ SEASONAL INFLUENZA VACCINATION BETWEEN SEPT 1, 2011 AND JAN 31, 2012, BEFORE AGE 13 YEARS, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.				Y	Y	Y				
P_U13FLU1213	UP-TO-DATE FLAG (PROV INFO): 1+ SEASONAL INFLUENZA VACCINATION BETWEEN SEPT 1, 2012 AND JAN 31, 2013, BEFORE AGE 13 YEARS, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.					Y	Y	Y			
P_U13FLU1314	**UP-TO-DATE FLAG (PROV INFO): 1+ SEASONAL INFLUENZA VACCINATION BETWEEN SEPT 1, 2013 AND JAN 31, 2014, BEFORE AGE 13 YEARS, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.**						**Y**	**Y**	**Y**		**Removed in 2016 to reflect provider-reported flu vaccinations from previous 3 flu seasons.**
P_U13FLU1415	UP-TO-DATE FLAG (PROV INFO): 1+ SEASONAL INFLUENZA VACCINATION BETWEEN SEPT 1, 2014 AND JAN 31, 2015, BEFORE AGE 13 YEARS, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.							Y	Y	Y	

Variable Name	Variable Label	2008	2009	2010	2011	2012	2013	2014	2015	2016	Notes
P_U13FLU1516	UP-TO-DATE FLAG (PROV INFO): 1+ SEASONAL INFLUENZA VACCINATION BETWEEN SEPT 1, 2015 AND JAN 31, 2016, BEFORE AGE 13 YEARS, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.								Y	Y	
P_U13FLU1617	**UP-TO-DATE FLAG (PROV INFO): 1+ SEASONAL INFLUENZA VACCINATION BETWEEN SEPT 1, 2016 AND JAN 31, 2017, BEFORE AGE 13 YEARS, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.**									**Y**	**Added in 2016 to reflect provider-reported flu vaccinations from previous 3 flu seasons.**
P_U13H1N_1	UP-TO-DATE FLAG (PROV INFO): 1+ MONOVALENT 2009 H1N1 FLU VACCINATION BEFORE AGE 13 YEARS, EXCLUDING VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE AND EXCLUDING VACCINATIONS GIVEN PRIOR TO 10/5/2009.			Y	Y	Y					
P_U13H1N_2	UP-TO-DATE FLAG (PROV INFO): 2+ MONOVALENT 2009 H1N1 FLU VACCINATIONS BEFORE AGE 13 YEARS, EXCLUDING VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE AND EXCLUDING VACCINATIONS GIVEN PRIOR TO 10/5/2009.			Y	Y	Y					
P_U13HEPA	UP-TO-DATE FLAG (PROV INFO): 2+ HEPATITIS A-CONTAINING SHOTS BEFORE AGE 13 YEARS, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_U13HEPB	UP-TO-DATE FLAG (PROV INFO): 2+ HEPB 1.0 ML RECOMBIVAX SHOTS BEFORE AGE 13 YEARS, OR 3+ ANY COMBINATION OF HEPATITIS B-CONTAINING SHOTS BEFORE AGE 13 YEARS, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_U13HPV	UP-TO-DATE FLAG (PROV INFO): 1+ HUMAN PAPILLOMAVIRUS SHOT BEFORE AGE 13 YEARS, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_U13HPV3	UP-TO-DATE FLAG (PROV INFO): 3+ HUMAN PAPILLOMAVIRUS SHOTS BEFORE AGE 13 YEARS, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.			Y	Y	Y	Y	Y	Y	Y	
P_U13MCV	UP-TO-DATE FLAG (PROV INFO): 2+ MEASLES-CONTAINING SHOTS BEFORE AGE 13 YEARS, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_U13MEN	UP-TO-DATE FLAG (PROV INFO): 1+ MENINGOCOCCAL **SEROGROUP ACWY** SHOT BEFORE AGE 13 YEARS, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	

Variable Name	Variable Label	2008	2009	2010	2011	2012	2013	2014	2015	2016	Notes
P_U13MMR	UP-TO-DATE FLAG (PROV INFO): 2+ MMR-CONTAINING SHOTS BEFORE AGE 13 YEARS, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_U13PPS	UP-TO-DATE FLAG (PROV INFO): 1+ PNEUMOCOCCAL POLYSACCHARIDE SHOT BEFORE AGE 13 YEARS, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_U13TD	UP-TO-DATE FLAG (PROV INFO): 1+ TD/TDAP-CONTAINING SHOT BEFORE AGE 13 YEARS, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_U13TDAP	UP-TO-DATE FLAG (PROV INFO): 1+ TDAP-ONLY SHOT SINCE AGE 10 YEARS AND BEFORE AGE 13 YEARS, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_U13TDAP7	UP-TO-DATE FLAG (PROV INFO): 1+ TDAP-ONLY SHOT SINCE AGE 7 YEARS AND BEFORE AGE 13 YEARS, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.			Y	Y	Y	Y	Y	Y	Y	
P_U13VRC	UP-TO-DATE FLAG (PROV INFO): 1+ VARICELLA-CONTAINING SHOT AT 12+ MONTHS OF AGE AND BEFORE AGE 13 YEARS, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_U13VRC2	UP-TO-DATE FLAG (PROV INFO): 2+ VARICELLA-CONTAINING SHOTS AT 12+ MONTHS OF AGE AND BEFORE AGE 13 YEARS, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_UTD1321	UP-TO-DATE FLAG (PROV INFO): 1:3:2:1 SERIES, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_UTD13212	UP-TO-DATE FLAG (PROV INFO): 1:3:2:1:2 SERIES, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_UTDFLU0607	UP-TO-DATE FLAG (PROV INFO): 1+ INFLUENZA VACCINATION BETWEEN SEPT 1, 2006 AND JAN 31, 2007, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y									
P_UTDFLU0708	UP-TO-DATE FLAG (PROV INFO): 1+ SEASONAL INFLUENZA VACCINATION BETWEEN SEPT 1, 2007 AND JAN 31, 2008, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y								
P_UTDFLU0809	UP-TO-DATE FLAG (PROV INFO): 1+ SEASONAL INFLUENZA VACCINATION BETWEEN SEPT 1, 2008 AND JAN 31, 2009, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y							
P_UTDFLU0910	UP-TO-DATE FLAG (PROV INFO): 1+ SEASONAL INFLUENZA VACCINATION BETWEEN SEPT 1, 2009 AND JAN 31, 2010, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.		Y	Y	Y						

Variable Name	Variable Label	2008	2009	2010	2011	2012	2013	2014	2015	2016	Notes
P_UTDFLU1011	UP-TO-DATE FLAG (PROV INFO): 1+ SEASONAL INFLUENZA VACCINATION BETWEEN SEPT 1, 2010 AND JAN 31, 2011, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.			Y	Y	Y					
P_UTDFLU1112	UP-TO-DATE FLAG (PROV INFO): 1+ SEASONAL INFLUENZA VACCINATION BETWEEN SEPT 1, 2011 AND JAN 31, 2012, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.				Y	Y	Y				
P_UTDFLU1213	UP-TO-DATE FLAG (PROV INFO): 1+ SEASONAL INFLUENZA VACCINATION BETWEEN SEPT 1, 2012 AND JAN 31, 2013, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.					Y	Y	Y			
P_UTDFLU1314	**UP-TO-DATE FLAG (PROV INFO): 1+ SEASONAL INFLUENZA VACCINATION BETWEEN SEPT 1, 2013 AND JAN 31, 2014, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.**						**Y**	**Y**	**Y**		
P_UTDFLU1415	UP-TO-DATE FLAG (PROV INFO): 1+ SEASONAL INFLUENZA VACCINATION BETWEEN SEPT 1, 2014 AND JAN 31, 2015, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.							Y	Y	Y	
P_UTDFLU1516	UP-TO-DATE FLAG (PROV INFO): 1+ SEASONAL INFLUENZA VACCINATION BETWEEN SEPT 1, 2015 AND JAN 31, 2016, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.								Y	Y	
P_UTDFLU1617	**UP-TO-DATE FLAG (PROV INFO): 1+ SEASONAL INFLUENZA VACCINATION BETWEEN SEPT 1, 2016 AND JAN 31, 2017, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.**									**Y**	
P_UTDH1N_1	UP-TO-DATE FLAG (PROV INFO): 1+ MONOVALENT 2009 H1N1 FLU VACCINATION, EXCLUDING VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE AND EXCLUDING VACCINATIONS GIVEN PRIOR TO 10/5/2009.			Y	Y	Y					
P_UTDH1N_2	UP-TO-DATE FLAG (PROV INFO): 2+ MONOVALENT 2009 H1N1 FLU VACCINATIONS, EXCLUDING VACCINATIONS AFTER THE HOUSEHOLD INTERVIEW DATE AND EXCLUDING VACCINATIONS GIVEN PRIOR TO 10/5/2009.			Y	Y	Y					
P_UTDHEPA	UP-TO-DATE FLAG (PROV INFO): 2+ HEPATITIS A-CONTAINING SHOTS, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_UTDHEPA1	UP-TO-DATE FLAG (PROV INFO): 1+ HEPATITIS A-CONTAINING SHOT, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.				Y	Y	Y	Y	Y	Y	

Variable Name	Variable Label	2008	2009	2010	2011	2012	2013	2014	2015	2016	Notes
P_UTDHEPB	UP-TO-DATE FLAG (PROV INFO): 2+ HEPB 1.0 ML RECOMBIVAX SHOTS, OR 3+ ANY COMBINATION OF HEPATITIS B-CONTAINING SHOTS, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_UTDHPV	UP-TO-DATE FLAG (PROV INFO): 1+ HUMAN PAPILLOMAVIRUS SHOT, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_UTDHPV_15	**UP-TO-DATE FLAG (PROV INFO): 3+ HUMAN PAPILLOMAVIRUS SHOTS, OR 2+ HUMAN PAPILLOMAVIRUS SHOTS WITH FIRST SHOT RECEIVED BEFORE AGE 15, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.**									**Y**	**Added in 2016.**
P_UTDHPV_15INT	**UP-TO-DATE FLAG (PROV INFO): 3+ HUMAN PAPILLOMAVIRUS SHOTS, OR 2+ HUMAN PAPILLOMAVIRUS SHOTS WITH FIRST SHOT RECEIVED BEFORE AGE 15 AND INTERVAL BETWEEN 1ST AND 2ND SHOTS AT LEAST 5 MONTHS-4 DAYS, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.**									**Y**	**Added in 2016.**
P_UTDHPV_9V	UP-TO-DATE FLAG (PROV INFO): 1+ HUMAN PAPILLOMAVIRUS SHOT OF TYPE GARDASIL 9 (9vHPV), EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.								Y	Y	Added in 2015.
P_UTDHPV11	UP-TO-DATE FLAG (PROV INFO): 1 HUMAN PAPILLOMAVIRUS SHOT GIVEN 1+ SHOT, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.				Y	Y	Y	Y	Y	Y	
P_UTDHPV12	UP-TO-DATE FLAG (PROV INFO): 2 HUMAN PAPILLOMAVIRUS SHOTS GIVEN 1+ SHOT, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.				Y	Y	Y	Y	Y	Y	
P_UTDHPV13	UP-TO-DATE FLAG (PROV INFO): 3+ HUMAN PAPILLOMAVIRUS SHOTS GIVEN 1+ SHOT, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.				Y	Y	Y	Y	Y	Y	
P_UTDHPV2	UP-TO-DATE FLAG (PROV INFO): 2+ HUMAN PAPILLOMAVIRUS SHOTS, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.				Y	Y	Y	Y	Y	Y	
P_UTDHPV2_9V	UP-TO-DATE FLAG (PROV INFO): 2+ HUMAN PAPILLOMAVIRUS SHOTS OF TYPE GARDASIL 9 (9vHPV), EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.								Y	Y	Added in 2015.
P_UTDHPV3	UP-TO-DATE FLAG (PROV INFO): 3+ HUMAN PAPILLOMAVIRUS SHOTS, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.			Y	Y	Y	Y	Y	Y	Y	

Variable Name	Variable Label	2008	2009	2010	2011	2012	2013	2014	2015	2016	Notes
P_UTDHPV3_9V	UP-TO-DATE FLAG (PROV INFO): 3+ HUMAN PAPILLOMAVIRUS SHOTS OF TYPE GARDASIL 9 (9vHPV), EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.								Y	Y	Added in 2015.
P_UTDHPV3C	UP-TO-DATE FLAG (PROV INFO): HPV CONDITIONAL COMPLETION RATE, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.				Y	Y	Y	Y	Y	Y	
P_UTDHPV3C_15INT	**UP-TO-DATE FLAG (PROV INFO): HPV CONDITIONAL COMPLETION RATE, INCLUDING COMPLETION VIA 3-SHOT OR 2-SHOT SERIES, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.**									**Y**	**Added in 2016.**
P_UTDHPV3C_9V	UP-TO-DATE FLAG (PROV INFO): HPV CONDITIONAL COMPLETION RATE, COUNTING ONLY SHOTS OF TYPE GARDASIL 9 (9vHPV), EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.								Y	Y	Added in 2015.
P_UTDMCV	UP-TO-DATE FLAG (PROV INFO): 2+ MEASLES-CONTAINING SHOTS, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_UTDMEN	UP-TO-DATE FLAG (PROV INFO): 1+ MENINGOCOCCAL **SEROGROUP ACWY** SHOT, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_UTDMENACWY	UP-TO-DATE FLAG (PROV INFO): 1+ MENINGOCOCCAL **SEROGROUP ACWY**-CONJUGATE SHOT OR MENINGOCOCCAL **SEROGROUP ACWY**-UNKNOWN TYPE SHOT, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.				Y	Y	Y	Y	Y	Y	
P_UTDMMR	UP-TO-DATE FLAG (PROV INFO): 2+ MMR-CONTAINING SHOTS, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_UTDPPS	UP-TO-DATE FLAG (PROV INFO): 1+ PNEUMOCOCCAL POLYSACCHARIDE SHOT, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_UTDTD	UP-TO-DATE FLAG (PROV INFO): 1+ TD/TDAP-CONTAINING SHOT, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_UTDTD_POST10	UP-TO-DATE FLAG (PROV INFO): 1+ TD-ONLY SHOT SINCE AGE 10 YEARS, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.				Y	Y	Y	Y	Y	Y	
P_UTDTDAP	UP-TO-DATE FLAG (PROV INFO): 1+ TDAP-ONLY SHOT SINCE AGE 10 YEARS, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	

Variable Name	Variable Label	2008	2009	2010	2011	2012	2013	2014	2015	2016	Notes
P_UTDTDAP7	UP-TO-DATE FLAG (PROV INFO): 1+ TDAP-ONLY SHOT SINCE AGE 7 YEARS, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.			Y	Y	Y	Y	Y	Y	Y	
P_UTDTDP_POST10	UP-TO-DATE FLAG (PROV INFO): 1+ TD/TDAP-CONTAINING SHOT SINCE AGE 10 YEARS, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.				Y	Y	Y	Y	Y	Y	
P_UTDVRC	UP-TO-DATE FLAG (PROV INFO): 1+ VARICELLA-CONTAINING SHOT AT 12+ MONTHS OF AGE, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_UTDVRC_NOHIST4	UP-TO-DATE FLAG (PROV INFO): 1+ VARICELLA-CONTAINING SHOT AT 4+ YEARS OF AGE, NO HISTORY OF CHICKEN POX DISEASE, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.				Y	Y	Y	Y	Y	Y	
P_UTDVRC2	UP-TO-DATE FLAG (PROV INFO): 2+ VARICELLA-CONTAINING SHOTS AT 12+ MONTHS OF AGE, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.	Y	Y	Y	Y	Y	Y	Y	Y	Y	
P_UTDVRC2_NOHIST4	UP-TO-DATE FLAG (PROV INFO): 2+ VARICELLA-CONTAINING SHOTS AT 4+ YEARS OF AGE, NO HISTORY OF CHICKEN POX DISEASE, EXCLUDING ANY VACCINATIONS AFTER THE RDD INTERVIEW DATE.				Y	Y	Y	Y	Y	Y	
PDAT	ADEQUATE PROVIDER DATA FLAG	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to change in adequate provider data definition
PDAT2	ADEQUATE PROVIDER DATA FLAG							Y	Y	Y	Added in 2014 due to change in adequate provider data definition
PPS_AGE1	AGE IN YEARS OF PROV-REPORTED PNEUMOCOCCAL POLYSACCHARIDE SHOT #1	Y	Y	Y	Y	Y	Y	Y	Y	Y	
PPS_AGE2	AGE IN YEARS OF PROV-REPORTED PNEUMOCOCCAL POLYSACCHARIDE SHOT #2	Y	Y	Y	Y	Y	Y	Y	Y	Y	
PPS_AGE3	AGE IN YEARS OF PROV-REPORTED PNEUMOCOCCAL POLYSACCHARIDE SHOT #3	Y	Y	Y	Y	Y	Y	Y	Y	Y	
PPS_AGE4	AGE IN YEARS OF PROV-REPORTED PNEUMOCOCCAL POLYSACCHARIDE SHOT #4	Y	Y	Y	Y	Y	Y	Y	Y	Y	
PPS_AGE5	AGE IN YEARS OF PROV-REPORTED PNEUMOCOCCAL POLYSACCHARIDE SHOT #5	Y	Y	Y	Y	Y	Y	Y	Y	Y	

Variable Name	Variable Label	2008	2009	2010	2011	2012	2013	2014	2015	2016	Notes
PPS_AGE6	AGE IN YEARS OF PROV-REPORTED PNEUMOCOCCAL POLYSACCHARIDE SHOT #6	Y	Y	Y	Y	Y	Y	Y	Y	Y	
PPS_AGE7	AGE IN YEARS OF PROV-REPORTED PNEUMOCOCCAL POLYSACCHARIDE SHOT #7	Y	Y	Y	Y	Y	Y	Y	Y	Y	
PPS_AGE8	AGE IN YEARS OF PROV-REPORTED PNEUMOCOCCAL POLYSACCHARIDE SHOT #8	Y	Y	Y	Y	Y	Y	Y	Y	Y	
PPS_AGE9	AGE IN YEARS OF PROV-REPORTED PNEUMOCOCCAL POLYSACCHARIDE SHOT #9	Y	Y	Y	Y	Y	Y	Y	Y	Y	
PPS_DAGE1	AGE IN DAYS OF PROV-REPORTED PNEUMOCOCCAL POLYSACCHARIDE SHOT #1				Y	Y	Y	Y	Y	Y	
PPS_DAGE2	AGE IN DAYS OF PROV-REPORTED PNEUMOCOCCAL POLYSACCHARIDE SHOT #2				Y	Y	Y	Y	Y	Y	
PPS_DAGE3	AGE IN DAYS OF PROV-REPORTED PNEUMOCOCCAL POLYSACCHARIDE SHOT #3				Y	Y	Y	Y	Y	Y	
PPS_DAGE4	AGE IN DAYS OF PROV-REPORTED PNEUMOCOCCAL POLYSACCHARIDE SHOT #4				Y	Y	Y	Y	Y	Y	
PPS_DAGE5	AGE IN DAYS OF PROV-REPORTED PNEUMOCOCCAL POLYSACCHARIDE SHOT #5				Y	Y	Y	Y	Y	Y	
PPS_DAGE6	AGE IN DAYS OF PROV-REPORTED PNEUMOCOCCAL POLYSACCHARIDE SHOT #6				Y	Y	Y	Y	Y	Y	
PPS_DAGE7	AGE IN DAYS OF PROV-REPORTED PNEUMOCOCCAL POLYSACCHARIDE SHOT #7				Y	Y	Y	Y	Y	Y	
PPS_DAGE8	AGE IN DAYS OF PROV-REPORTED PNEUMOCOCCAL POLYSACCHARIDE SHOT #8				Y	Y	Y	Y	Y	Y	
PPS_DAGE9	AGE IN DAYS OF PROV-REPORTED PNEUMOCOCCAL POLYSACCHARIDE SHOT #9				Y	Y	Y	Y	Y	Y	
PPS_MAGE1	AGE IN MONTHS OF PROV-REPORTED PNEUMOCOCCAL POLYSACCHARIDE SHOT #1				Y	Y	Y	Y	Y	Y	
PPS_MAGE2	AGE IN MONTHS OF PROV-REPORTED PNEUMOCOCCAL POLYSACCHARIDE SHOT #2				Y	Y	Y	Y	Y	Y	
PPS_MAGE3	AGE IN MONTHS OF PROV-REPORTED PNEUMOCOCCAL POLYSACCHARIDE SHOT #3				Y	Y	Y	Y	Y	Y	
PPS_MAGE4	AGE IN MONTHS OF PROV-REPORTED PNEUMOCOCCAL POLYSACCHARIDE SHOT #4				Y	Y	Y	Y	Y	Y	
PPS_MAGE5	AGE IN MONTHS OF PROV-REPORTED PNEUMOCOCCAL POLYSACCHARIDE SHOT #5				Y	Y	Y	Y	Y	Y	
PPS_MAGE6	AGE IN MONTHS OF PROV-REPORTED PNEUMOCOCCAL POLYSACCHARIDE SHOT #6				Y	Y	Y	Y	Y	Y	
PPS_MAGE7	AGE IN MONTHS OF PROV-REPORTED PNEUMOCOCCAL POLYSACCHARIDE SHOT #7				Y	Y	Y	Y	Y	Y	

Variable Name	Variable Label	2008	2009	2010	2011	2012	2013	2014	2015	2016	Notes
PPS_MAGE8	AGE IN MONTHS OF PROV-REPORTED PNEUMOCOCCAL POLYSACCHARIDE SHOT #8				Y	Y	Y	Y	Y	Y	
PPS_MAGE9	AGE IN MONTHS OF PROV-REPORTED PNEUMOCOCCAL POLYSACCHARIDE SHOT #9				Y	Y	Y	Y	Y	Y	
PROVWT	FINAL PROVIDER-PHASE WEIGHT (EXCLUDING U.S. VIRGIN ISLANDS)	Y	Y	Y							
PROVWT_D	FINAL DUAL-FRAME PROVIDER-PHASE WEIGHT (EXCLUDES TERRITORIES)				Y	Y	Y	Y	Y	Y	
PROVWT_LL	FINAL LANDLINE PROVIDER-PHASE WEIGHT (EXCLUDING U.S. VIRGIN ISLANDS)				Y						
PROVWTVI	FINAL PROVIDER-PHASE WEIGHT (INCLUDING U.S. VIRGIN ISLANDS)		Y	Y							
PROVWTVI_D	FINAL PROVIDER-PHASE WEIGHT (INCLUDING U.S. VIRGIN ISLANDS)					Y					
PROVWTVIGU_D	FINAL PROVIDER-PHASE WEIGHT (INCLUDING U.S. VIRGIN ISLANDS AND GUAM)						Y				
PROVWT_D_TERR	FINAL PROVIDER-PHASE WEIGHT (INCLUDING TERRITORIES)							Y	Y	Y	
PROVWTVI_LL	FINAL LANDLINE PROVIDER-PHASE WEIGHT (INCLUDING U.S. VIRGIN ISLANDS)				Y						
RACE_K	RACE OF TEEN WITH MULTIRACE CATEGORY (RECODE)	Y	Y	Y	Y	Y	Y	Y	Y	Y	
RACEETHK	RACE/ETHNICITY OF TEEN WITH MULTIRACE CATEGORY (RECODE)	Y	Y	Y	Y	Y	Y	Y	Y	Y	
RDDWT	FINAL HOUSEHOLD-PHASE WEIGHT (EXCLUDING U.S. VIRGIN ISLANDS)	Y	Y	Y							
RDDWT_D	FINAL DUAL-FRAME RDD-PHASE WEIGHT (EXCLUDES TERRITORIES)				Y	Y	Y	Y	Y	Y	
RDDWT_LL	FINAL LANDLINE HOUSEHOLD-PHASE WEIGHT (EXCLUDING U.S. VIRGIN ISLANDS)				Y						
RDDWTVI	FINAL HOUSEHOLD-PHASE WEIGHT (INCLUDING U.S. VIRGIN ISLANDS)		Y	Y							
RDDWTVI_D	FINAL HOUSEHOLD-PHASE WEIGHT (INCLUDING U.S. VIRGIN ISLANDS)					Y					
RDDWTVIGU_D	FINAL HOUSEHOLD-PHASE WEIGHT (INCLUDING U.S. VIRGIN ISLANDS AND GUAM)						Y				
RDDWT_D_TERR	FINAL RDD-PHASE WEIGHT (INCLUDING TERRITORIES)							Y	Y	Y	
RDDWTVI_LL	FINAL LANDLINE HOUSEHOLD-PHASE WEIGHT (INCLUDING U.S. VIRGIN ISLANDS)				Y						
REGISTRY	DID TEEN'S PROVIDERS REPORT TEEN'S IMMUNIZATIONS TO IMMUNIZATION REGISTRY?	Y	Y	Y	Y	Y	Y	Y	Y	Y	

Variable Name	Variable Label	2008	2009	2010	2011	2012	2013	2014	2015	2016	Notes
RENT_OWN	IS HOME OWNED/BEING BOUGHT, RENTED, OR OCCUPIED BY SOME OTHER ARRANGEMENT?		Y	Y	Y	Y	Y	Y	Y	Y	
RISK_EVER	HAS DOCTOR, NURSE, OR OTHER HEALTH CARE PROFESSIONAL EVER SAID THAT TEEN HAS HAD ANY OF THE FOLLOWING HEALTH CONDITIONS?	Y	Y	Y	Y	Y	Y	Y	Y	Y	
RISK_HH	DO ANY OTHER MEMBERS OF TEEN'S HOUSEHOLD HAVE ANY OF THE FOLLOWING HEALTH CONDITIONS?	Y	Y	Y	Y	Y	Y	Y	Y	Y	
RISK_NOW	DOES TEEN STILL HAVE ANY OF THESE CONDITIONS?	Y	Y	Y	Y	Y	Y	Y	Y	Y	
SEQNUMT	UNIQUE TEEN IDENTIFIER	Y	Y	Y	Y	Y	Y	Y	Y	Y	
SEX	SEX OF TEEN	Y	Y	Y	Y	Y	Y	Y	Y	Y	
SHOTCARD_ALL	HH-REPORT: DOES SHOT RECORD INCLUDE ALL VACCINATIONS?	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
STATE	TRUE STATE OF RESIDENCE (STATE FIPS CODE)	Y	Y	Y	Y	Y	Y	Y	Y	Y	
STRATUM	STRATUM VARIABLE FOR VARIANCE ESTIMATION					Y	Y	Y	Y	Y	
STRATUM_D	STRATUM VARIABLE FOR DUAL-FRAME VARIANCE ESTIMATION				Y						
TDP_AGE1	AGE IN YEARS OF PROV-REPORTED TD/TDAP-CONTAINING SHOT #1	Y	Y	Y	Y	Y	Y	Y	Y	Y	
TDP_AGE2	AGE IN YEARS OF PROV-REPORTED TD/TDAP-CONTAINING SHOT #2	Y	Y	Y	Y	Y	Y	Y	Y	Y	
TDP_AGE3	AGE IN YEARS OF PROV-REPORTED TD/TDAP-CONTAINING SHOT #3	Y	Y	Y	Y	Y	Y	Y	Y	Y	
TDP_AGE4	AGE IN YEARS OF PROV-REPORTED TD/TDAP-CONTAINING SHOT #4	Y	Y	Y	Y	Y	Y	Y	Y	Y	
TDP_AGE5	AGE IN YEARS OF PROV-REPORTED TD/TDAP-CONTAINING SHOT #5	Y	Y	Y	Y	Y	Y	Y	Y	Y	
TDP_AGE6	AGE IN YEARS OF PROV-REPORTED TD/TDAP-CONTAINING SHOT #6	Y	Y	Y	Y	Y	Y	Y	Y	Y	
TDP_AGE7	AGE IN YEARS OF PROV-REPORTED TD/TDAP-CONTAINING SHOT #7	Y	Y	Y	Y	Y	Y	Y	Y	Y	
TDP_AGE8	AGE IN YEARS OF PROV-REPORTED TD/TDAP-CONTAINING SHOT #8	Y	Y	Y	Y	Y	Y	Y	Y	Y	
TDP_AGE9	AGE IN YEARS OF PROV-REPORTED TD/TDAP-CONTAINING SHOT #9	Y	Y	Y	Y	Y	Y	Y	Y	Y	
TDP_DAGE1	AGE IN DAYS OF PROV-REPORTED TD/TDAP-CONTAINING SHOT #1				Y	Y	Y	Y	Y	Y	
TDP_DAGE2	AGE IN DAYS OF PROV-REPORTED TD/TDAP-CONTAINING SHOT #2				Y	Y	Y	Y	Y	Y	

Variable Name	Variable Label	2008	2009	2010	2011	2012	2013	2014	2015	2016	Notes
TDP_DAGE3	AGE IN DAYS OF PROV-REPORTED TD/TDAP-CONTAINING SHOT #3				Y	Y	Y	Y	Y	Y	
TDP_DAGE4	AGE IN DAYS OF PROV-REPORTED TD/TDAP-CONTAINING SHOT #4				Y	Y	Y	Y	Y	Y	
TDP_DAGE5	AGE IN DAYS OF PROV-REPORTED TD/TDAP-CONTAINING SHOT #5				Y	Y	Y	Y	Y	Y	
TDP_DAGE6	AGE IN DAYS OF PROV-REPORTED TD/TDAP-CONTAINING SHOT #6				Y	Y	Y	Y	Y	Y	
TDP_DAGE7	AGE IN DAYS OF PROV-REPORTED TD/TDAP-CONTAINING SHOT #7				Y	Y	Y	Y	Y	Y	
TDP_DAGE8	AGE IN DAYS OF PROV-REPORTED TD/TDAP-CONTAINING SHOT #8				Y	Y	Y	Y	Y	Y	
TDP_DAGE9	AGE IN DAYS OF PROV-REPORTED TD/TDAP-CONTAINING SHOT #9				Y	Y	Y	Y	Y	Y	
TDP_MAGE1	AGE IN MONTHS OF PROV-REPORTED TD/TDAP-CONTAINING SHOT #1				Y	Y	Y	Y	Y	Y	
TDP_MAGE2	AGE IN MONTHS OF PROV-REPORTED TD/TDAP-CONTAINING SHOT #2				Y	Y	Y	Y	Y	Y	
TDP_MAGE3	AGE IN MONTHS OF PROV-REPORTED TD/TDAP-CONTAINING SHOT #3				Y	Y	Y	Y	Y	Y	
TDP_MAGE4	AGE IN MONTHS OF PROV-REPORTED TD/TDAP-CONTAINING SHOT #4				Y	Y	Y	Y	Y	Y	
TDP_MAGE5	AGE IN MONTHS OF PROV-REPORTED TD/TDAP-CONTAINING SHOT #5				Y	Y	Y	Y	Y	Y	
TDP_MAGE6	AGE IN MONTHS OF PROV-REPORTED TD/TDAP-CONTAINING SHOT #6				Y	Y	Y	Y	Y	Y	
TDP_MAGE7	AGE IN MONTHS OF PROV-REPORTED TD/TDAP-CONTAINING SHOT #7				Y	Y	Y	Y	Y	Y	
TDP_MAGE8	AGE IN MONTHS OF PROV-REPORTED TD/TDAP-CONTAINING SHOT #8				Y	Y	Y	Y	Y	Y	
TDP_MAGE9	AGE IN MONTHS OF PROV-REPORTED TD/TDAP-CONTAINING SHOT #9				Y	Y	Y	Y	Y	Y	
TEL_SAMPFRAME	SAMPLE FRAME INDICATOR (LANDLINE OR CELL-PHONE)				Y						
TET_AGE_SC1	AGE OF TEEN IN YEARS AT HH-REPORTED TETANUS BOOSTER SHOT #1 (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
TET_AGE_SC2	AGE OF TEEN IN YEARS AT HH-REPORTED TETANUS BOOSTER SHOT #2 (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire

Variable Name	Variable Label	2008	2009	2010	2011	2012	2013	2014	2015	2016	Notes
TET_AGE_SC3	AGE OF TEEN IN YEARS AT HH-REPORTED TETANUS BOOSTER SHOT #3 (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
TET_AGE_SC4	AGE OF TEEN IN YEARS AT HH-REPORTED TETANUS BOOSTER SHOT #4 (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
TET_AGE_SC5	AGE OF TEEN IN YEARS AT HH-REPORTED TETANUS BOOSTER SHOT #5 (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
TET_AGE_SC6	AGE OF TEEN IN YEARS AT HH-REPORTED TETANUS BOOSTER SHOT #6 (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
TET_AGE_SC7	AGE OF TEEN IN YEARS AT HH-REPORTED TETANUS BOOSTER SHOT #7 (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
TET_AGE_SC8	AGE OF TEEN IN YEARS AT HH-REPORTED TETANUS BOOSTER SHOT #8 (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
TET_ANY_REC	HH-REPORT: HAS TEEN EVER RECEIVED ANY TETANUS BOOSTER SHOTS? (RECALL)	Y	Y	Y	Y	Y	Y	Y			Replaced by TET_ANY in 2015.
TET_ANY_SC	HH-REPORT: HAS TEEN EVER RECEIVED ANY TETANUS BOOSTER SHOTS? (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
TET_ANY	HH-REPORT: HAS TEEN EVER RECEIVED ANY TETANUS BOOSTER SHOTS?								Y	Y	Added in 2015.
TET_LAST_AGE	AGE IN YEARS AT LAST TETANUS BOOSTER SHOT (RECALL)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
TET_LAST_TYPE	TYPE OF LAST TETANUS BOOSTER SHOT (RECALL)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire

Variable Name	Variable Label	2008	2009	2010	2011	2012	2013	2014	2015	2016	Notes
TET_NUM_SC	NUMBER OF HH-REPORTED TETANUS BOOSTER SHOTS RECEIVED (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
TET_PLACE_1	KIND OF PLACE TEEN RECEIVED TETANUS BOOSTER SHOT AFTER AGE 7 YEARS: DOCTOR'S OFFICE	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
TET_PLACE_10	KIND OF PLACE TEEN RECEIVED TETANUS BOOSTER SHOT AFTER AGE 7 YEARS: HOSPITAL-BASED CLINIC					Y	Y				Dropped in 2014 due to shortened questionnaire
TET_PLACE_11	KIND OF PLACE TEEN RECEIVED TETANUS BOOSTER SHOT AFTER AGE 7 YEARS: WHILE HOSPITALIZED					Y	Y				Dropped in 2014 due to shortened questionnaire
TET_PLACE_12	KIND OF PLACE TEEN RECEIVED TETANUS BOOSTER SHOT AFTER AGE 7 YEARS: ELEMENTARY/MIDDLE/HIGH SCHOOL					Y	Y				Dropped in 2014 due to shortened questionnaire
TET_PLACE_2	KIND OF PLACE TEEN RECEIVED TETANUS BOOSTER SHOT AFTER AGE 7 YEARS: EMERGENCY ROOM	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
TET_PLACE_3	KIND OF PLACE TEEN RECEIVED TETANUS BOOSTER SHOT AFTER AGE 7 YEARS: HEALTH DEPARTMENT	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
TET_PLACE_4	KIND OF PLACE TEEN RECEIVED TETANUS BOOSTER SHOT AFTER AGE 7 YEARS: CLINIC OR HEALTH CENTER	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
TET_PLACE_5	KIND OF PLACE TEEN RECEIVED TETANUS BOOSTER SHOT AFTER AGE 7 YEARS: HOSPITAL	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
TET_PLACE_6	KIND OF PLACE TEEN RECEIVED TETANUS BOOSTER SHOT AFTER AGE 7 YEARS: OTHER MEDICALLY-RELATED PLACE	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
TET_PLACE_7	KIND OF PLACE TEEN RECEIVED TETANUS BOOSTER SHOT AFTER AGE 7 YEARS: PHARMACY OR DRUG STORE	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire

Variable Name	Variable Label	2008	2009	2010	2011	2012	2013	2014	2015	2016	Notes
TET_PLACE_8	KIND OF PLACE TEEN RECEIVED TETANUS BOOSTER SHOT AFTER AGE 7 YEARS: WORKPLACE	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
TET_PLACE_9	KIND OF PLACE TEEN RECEIVED TETANUS BOOSTER SHOT AFTER AGE 7 YEARS: OTHER NON-MEDICALLY-RELATED PLACE	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
TET_REAS_1	MAIN REASON TEEN DID NOT RECEIVE TETANUS BOOSTER SHOTS: NOT RECOMMENDED	Y	Y	Y	Y	Y	Y	Y	Y	Y	
TET_REAS_10	MAIN REASON TEEN DID NOT RECEIVE TETANUS BOOSTER SHOTS: COSTS	Y	Y	Y	Y	Y	Y	Y	Y	Y	
TET_REAS_11	MAIN REASON TEEN DID NOT RECEIVE TETANUS BOOSTER SHOTS: SAFETY CONCERN/SIDE EFFECTS	Y	Y	Y	Y	Y	Y	Y	Y	Y	
TET_REAS_12	MAIN REASON TEEN DID NOT RECEIVE TETANUS BOOSTER SHOTS: EFFECTIVENESS CONCERN	Y	Y	Y	Y	Y	Y	Y	Y	Y	
TET_REAS_13	MAIN REASON TEEN DID NOT RECEIVE TETANUS BOOSTER SHOTS: CHILD FEARFUL	Y	Y	Y	Y	Y	Y	Y	Y	Y	
TET_REAS_14	MAIN REASON TEEN DID NOT RECEIVE TETANUS BOOSTER SHOTS: CHILD SHOULD MAKE DECISION	Y	Y	Y	Y	Y	Y	Y	Y	Y	
TET_REAS_15	MAIN REASON TEEN DID NOT RECEIVE TETANUS BOOSTER SHOTS: COLLEGE SHOT	Y	Y	Y	Y	Y	Y	Y	Y	Y	
TET_REAS_16	MAIN REASON TEEN DID NOT RECEIVE TETANUS BOOSTER SHOTS: DON'T BELIEVE IN VACCINATIONS	Y	Y	Y	Y	Y	Y	Y	Y	Y	
TET_REAS_17	MAIN REASON TEEN DID NOT RECEIVE TETANUS BOOSTER SHOTS: FAMILY/PARENTAL DECISION	Y	Y	Y	Y	Y	Y	Y	Y	Y	
TET_REAS_18	MAIN REASON TEEN DID NOT RECEIVE TETANUS BOOSTER SHOTS: HANDICAPPED/SPECIAL NEEDS/ILLNESS	Y	Y	Y	Y	Y	Y	Y	Y	Y	
TET_REAS_19	MAIN REASON TEEN DID NOT RECEIVE TETANUS BOOSTER SHOTS: RELIGION/ORTHODOX	Y	Y	Y	Y	Y	Y	Y	Y	Y	
TET_REAS_2	MAIN REASON TEEN DID NOT RECEIVE TETANUS BOOSTER SHOTS: LACK OF KNOWLEDGE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
TET_REAS_20	MAIN REASON TEEN DID NOT RECEIVE TETANUS BOOSTER SHOTS: TIME	Y	Y	Y	Y	Y	Y	Y	Y	Y	
TET_REAS_21	MAIN REASON TEEN DID NOT RECEIVE TETANUS BOOSTER SHOTS: MORE INFO/NEW VACCINE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
TET_REAS_22	MAIN REASON TEEN DID NOT RECEIVE TETANUS BOOSTER SHOTS: ALREADY UP-TO-DATE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
TET_REAS_23	MAIN REASON TEEN DID NOT RECEIVE TETANUS BOOSTER SHOTS: NOT AVAILABLE	Y	Y	Y	Y	Y	Y	Y	Y	Y	

Variable Name	Variable Label	2008	2009	2010	2011	2012	2013	2014	2015	2016	Notes
TET_REAS_24	MAIN REASON TEEN DID NOT RECEIVE TETANUS BOOSTER SHOTS: NOT A SCHOOL REQUIREMENT	Y	Y	Y	Y	Y	Y	Y	Y	Y	
TET_REAS_25	**MAIN REASON TEEN DID NOT RECEIVE TETANUS BOOSTER SHOTS: INTEND TO COMPLETE BUT HAVE NOT YET/ALREADY PLANNED**									**Y**	**Added in 2016.**
TET_REAS_26	**MAIN REASON TEEN DID NOT RECEIVE TETANUS BOOSTER SHOTS: DIFFICULTY MAKING OR GETTING TO APPOINTMENT/TRANSPORTATION PROBLEMS**									**Y**	**Added in 2016.**
TET_REAS_3	MAIN REASON TEEN DID NOT RECEIVE TETANUS BOOSTER SHOTS: NOT NEEDED OR NOT NECESSARY	Y	Y	Y	Y	Y	Y	Y	Y	Y	
TET_REAS_4	MAIN REASON TEEN DID NOT RECEIVE TETANUS BOOSTER SHOTS: NO DOCTOR OR DOCTOR'S VISIT NOT SCHEDULED	Y	Y	Y	Y	Y	Y	Y	Y	Y	
TET_REAS_5	MAIN REASON TEEN DID NOT RECEIVE TETANUS BOOSTER SHOTS: NOT APPROPRIATE AGE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
TET_REAS_7	MAIN REASON TEEN DID NOT RECEIVE TETANUS BOOSTER SHOTS: OTHER REASON	Y	Y	Y	Y	Y	Y	Y	Y	Y	
TET_RECOM	HAD OR HAS DOCTOR OR OTHER HEALTH CARE PROFESSIONAL EVER RECOMMENDED THAT TEEN RECEIVE TETANUS BOOSTER SHOTS?	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
TET_TYPE1	TYPE OF HH-REPORTED TETANUS BOOSTER SHOT #1	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
TET_TYPE2	TYPE OF HH-REPORTED TETANUS BOOSTER SHOT #2	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
TET_TYPE3	TYPE OF HH-REPORTED TETANUS BOOSTER SHOT #3	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
TET_TYPE4	TYPE OF HH-REPORTED TETANUS BOOSTER SHOT #4	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
TET_TYPE5	TYPE OF HH-REPORTED TETANUS BOOSTER SHOT #5	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire

Variable Name	Variable Label	2008	2009	2010	2011	2012	2013	2014	2015	2016	Notes
TET_TYPE6	TYPE OF HH-REPORTED TETANUS BOOSTER SHOT #6	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
TET_TYPE7	TYPE OF HH-REPORTED TETANUS BOOSTER SHOT #7	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
TET_TYPE8	TYPE OF HH-REPORTED TETANUS BOOSTER SHOT #8	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
TIS_INS_1	**IS TEEN COVERED BY HEALTH INSURANCE PROVIDED THROUGH EMPLOYER OR UNION?**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**		**Dropped in 2016.**
TIS_INS_11	**SINCE AGE 11, ANY TIME WHEN TEEN WAS NOT COVERED BY ANY HEALTH INSURANCE?**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**		**Dropped in 2016.**
TIS_INS_2	**IS TEEN COVERED BY ANY MEDICAID PLAN?**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**		**Dropped in 2016.**
TIS_INS_3	**IS TEEN COVERED BY CHIP?**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**		**Dropped in 2016.**
TIS_INS_3A	**IS TEEN COVERED BY ANY MEDICAID PLAN OR CHIP?**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**		**Dropped in 2016.**
TIS_INS_4	IS TEEN COVERED BY INDIAN HEALTH SERVICE?	Y									Replaced by TIS_INS_4_5 starting 2009.
TIS_INS_4_5	**IS TEEN COVERED BY INDIAN HEALTH SERVICE, MILITARY HEALTH CARE, TRICARE, CHAMPUS, OR CHAMP-VA?**		**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**		**Replaced TIS_INS_4 and TIS_INS_5 starting 2009. Dropped in 2016.**
TIS_INS_5	IS TEEN COVERED BY MILITARY HEALTH CARE, TRICARE, CHAMPUS, OR CHAMP-VA?	Y									Replaced by TIS_INS_4_5 starting 2009.
TIS_INS_6	**IS TEEN COVERED BY ANY OTHER HEALTH INSURANCE OR HEALTH CARE PLAN?**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**		**Dropped in 2016.**
VFC_I	DERIVED: IS TEEN VFC ELIGIBLE?		Y	Y	Y						
VFC_ORDER	DO TEEN'S PROVIDERS ORDER VACCINES FROM STATE/LOCAL HEALTH DEPT?	Y	Y	Y	Y	Y	Y	Y	Y	Y	
VISITS	IN PAST 12 MONTHS NUMBER OF TIMES TEEN HAS SEEN A DOCTOR OR OTHER HEALTH CARE PROFESSIONAL	Y	Y	Y	Y	Y	Y	Y	Y	Y	

Variable Name	Variable Label	2008	2009	2010	2011	2012	2013	2014	2015	2016	Notes
VRC_AGE_SC1	AGE OF TEEN IN YEARS AT HH-REPORTED VARICELLA SHOT #1 (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
VRC_AGE_SC2	AGE OF TEEN IN YEARS AT HH-REPORTED VARICELLA SHOT #2 (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
VRC_AGE_SC3	AGE OF TEEN IN YEARS AT HH-REPORTED VARICELLA SHOT #3 (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
VRC_AGE_SC4	AGE OF TEEN IN YEARS AT HH-REPORTED VARICELLA SHOT #4 (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
VRC_AGE_SC5	AGE OF TEEN IN YEARS AT HH-REPORTED VARICELLA SHOT #5 (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
VRC_AGE_SC6	AGE OF TEEN IN YEARS AT HH-REPORTED VARICELLA SHOT #6 (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
VRC_AGE_SC7	AGE OF TEEN IN YEARS AT HH-REPORTED VARICELLA SHOT #7 (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
VRC_AGE_SC8	AGE OF TEEN IN YEARS AT HH-REPORTED VARICELLA SHOT #8 (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
VRC_AGE1	AGE IN YEARS OF PROV-REPORTED VARICELLA-CONTAINING SHOT #1	Y	Y	Y	Y	Y	Y	Y	Y	Y	
VRC_AGE2	AGE IN YEARS OF PROV-REPORTED VARICELLA-CONTAINING SHOT #2	Y	Y	Y	Y	Y	Y	Y	Y	Y	
VRC_AGE3	AGE IN YEARS OF PROV-REPORTED VARICELLA-CONTAINING SHOT #3	Y	Y	Y	Y	Y	Y	Y	Y	Y	
VRC_AGE4	AGE IN YEARS OF PROV-REPORTED VARICELLA-CONTAINING SHOT #4	Y	Y	Y	Y	Y	Y	Y	Y	Y	
VRC_AGE5	AGE IN YEARS OF PROV-REPORTED VARICELLA-CONTAINING SHOT #5	Y	Y	Y	Y	Y	Y	Y	Y	Y	

Variable Name	Variable Label	2008	2009	2010	2011	2012	2013	2014	2015	2016	Notes
VRC_AGE6	AGE IN YEARS OF PROV-REPORTED VARICELLA-CONTAINING SHOT #6	Y	Y	Y	Y	Y	Y	Y	Y	Y	
VRC_AGE7	AGE IN YEARS OF PROV-REPORTED VARICELLA-CONTAINING SHOT #7	Y	Y	Y	Y	Y	Y	Y	Y	Y	
VRC_AGE8	AGE IN YEARS OF PROV-REPORTED VARICELLA-CONTAINING SHOT #8	Y	Y	Y	Y	Y	Y	Y	Y	Y	
VRC_AGE9	AGE IN YEARS OF PROV-REPORTED VARICELLA-CONTAINING SHOT #9	Y	Y	Y	Y	Y	Y	Y	Y	Y	
VRC_ANY_REC	HH-REPORT: HAS TEEN EVER RECEIVED ANY VARICELLA SHOTS? (RECALL)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
VRC_ANY_SC	HH-REPORT: HAS TEEN EVER RECEIVED ANY VARICELLA SHOTS? (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
VRC_DAGE1	AGE IN DAYS OF PROV-REPORTED VARICELLA-CONTAINING SHOT #1				Y	Y	Y	Y	Y	Y	
VRC_DAGE2	AGE IN DAYS OF PROV-REPORTED VARICELLA-CONTAINING SHOT #2				Y	Y	Y	Y	Y	Y	
VRC_DAGE3	AGE IN DAYS OF PROV-REPORTED VARICELLA-CONTAINING SHOT #3				Y	Y	Y	Y	Y	Y	
VRC_DAGE4	AGE IN DAYS OF PROV-REPORTED VARICELLA-CONTAINING SHOT #4				Y	Y	Y	Y	Y	Y	
VRC_DAGE5	AGE IN DAYS OF PROV-REPORTED VARICELLA-CONTAINING SHOT #5				Y	Y	Y	Y	Y	Y	
VRC_DAGE6	AGE IN DAYS OF PROV-REPORTED VARICELLA-CONTAINING SHOT #6				Y	Y	Y	Y	Y	Y	
VRC_DAGE7	AGE IN DAYS OF PROV-REPORTED VARICELLA-CONTAINING SHOT #7				Y	Y	Y	Y	Y	Y	
VRC_DAGE8	AGE IN DAYS OF PROV-REPORTED VARICELLA-CONTAINING SHOT #8				Y	Y	Y	Y	Y	Y	
VRC_DAGE9	AGE IN DAYS OF PROV-REPORTED VARICELLA-CONTAINING SHOT #9				Y	Y	Y	Y	Y	Y	
VRC_HIST	HISTORY OF CHICKEN POX REPORTED BY THE HOUSEHOLD OR BY ANY PROVIDER	Y	Y	Y	Y	Y	Y	Y	Y	Y	
VRC_MAGE1	AGE IN MONTHS OF PROV-REPORTED VARICELLA-CONTAINING SHOT #1				Y	Y	Y	Y	Y	Y	
VRC_MAGE2	AGE IN MONTHS OF PROV-REPORTED VARICELLA-CONTAINING SHOT #2				Y	Y	Y	Y	Y	Y	

Variable Name	Variable Label	2008	2009	2010	2011	2012	2013	2014	2015	2016	Notes
VRC_MAGE3	AGE IN MONTHS OF PROV-REPORTED VARICELLA-CONTAINING SHOT #3				Y	Y	Y	Y	Y	Y	
VRC_MAGE4	AGE IN MONTHS OF PROV-REPORTED VARICELLA-CONTAINING SHOT #4				Y	Y	Y	Y	Y	Y	
VRC_MAGE5	AGE IN MONTHS OF PROV-REPORTED VARICELLA-CONTAINING SHOT #5				Y	Y	Y	Y	Y	Y	
VRC_MAGE6	AGE IN MONTHS OF PROV-REPORTED VARICELLA-CONTAINING SHOT #6				Y	Y	Y	Y	Y	Y	
VRC_MAGE7	AGE IN MONTHS OF PROV-REPORTED VARICELLA-CONTAINING SHOT #7				Y	Y	Y	Y	Y	Y	
VRC_MAGE8	AGE IN MONTHS OF PROV-REPORTED VARICELLA-CONTAINING SHOT #8				Y	Y	Y	Y	Y	Y	
VRC_MAGE9	AGE IN MONTHS OF PROV-REPORTED VARICELLA-CONTAINING SHOT #9				Y	Y	Y	Y	Y	Y	
VRC_NUM_REC	NUMBER OF HH-REPORTED VARICELLA SHOTS RECEIVED (RECALL)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
VRC_NUM_SC	NUMBER OF HH-REPORTED VARICELLA SHOTS RECEIVED (SHOTCARD)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
VRC_NUM_TOT	NUMBER OF HH-REPORTED VARICELLA SHOTS RECEIVED (TOTAL)	Y	Y	Y	Y	Y	Y				Dropped in 2014 due to shortened questionnaire
XFLUTY1	SEASONAL INFLUENZA VACCINATION IN PAST THREE YEARS #1 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XFLUTY2	SEASONAL INFLUENZA VACCINATION IN PAST THREE YEARS #2 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XFLUTY3	SEASONAL INFLUENZA VACCINATION IN PAST THREE YEARS #3 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XFLUTY4	SEASONAL INFLUENZA VACCINATION IN PAST THREE YEARS #4 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XFLUTY5	SEASONAL INFLUENZA VACCINATION IN PAST THREE YEARS #5 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XFLUTY6	SEASONAL INFLUENZA VACCINATION IN PAST THREE YEARS #6 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XFLUTY7	SEASONAL INFLUENZA VACCINATION IN PAST THREE YEARS #7 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XFLUTY8	SEASONAL INFLUENZA VACCINATION IN PAST THREE YEARS #8 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	

Variable Name	Variable Label	2008	2009	2010	2011	2012	2013	2014	2015	2016	Notes
XFLUTY9	SEASONAL INFLUENZA VACCINATION IN PAST THREE YEARS #9 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XH1NTY1	MONOVALENT 2009 H1N1 INFLUENZA VACCINATION #1 TYPE CODE			Y	Y	Y					
XH1NTY2	MONOVALENT 2009 H1N1 INFLUENZA VACCINATION #2 TYPE CODE			Y	Y	Y					
XH1NTY3	MONOVALENT 2009 H1N1 INFLUENZA VACCINATION #3 TYPE CODE			Y	Y	Y					
XH1NTY4	MONOVALENT 2009 H1N1 INFLUENZA VACCINATION #4 TYPE CODE			Y	Y	Y					
XH1NTY5	MONOVALENT 2009 H1N1 INFLUENZA VACCINATION #5 TYPE CODE			Y	Y	Y					
XH1NTY6	MONOVALENT 2009 H1N1 INFLUENZA VACCINATION #6 TYPE CODE			Y	Y	Y					
XH1NTY7	MONOVALENT 2009 H1N1 INFLUENZA VACCINATION #7 TYPE CODE			Y	Y	Y					
XH1NTY8	MONOVALENT 2009 H1N1 INFLUENZA VACCINATION #8 TYPE CODE			Y	Y	Y					
XH1NTY9	MONOVALENT 2009 H1N1 INFLUENZA VACCINATION #9 TYPE CODE			Y	Y	Y					
XHEPATY1	HEPATITIS A-CONTAINING VACCINATION #1 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XHEPATY2	HEPATITIS A-CONTAINING VACCINATION #2 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XHEPATY3	HEPATITIS A-CONTAINING VACCINATION #3 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XHEPATY4	HEPATITIS A-CONTAINING VACCINATION #4 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XHEPATY5	HEPATITIS A-CONTAINING VACCINATION #5 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XHEPATY6	HEPATITIS A-CONTAINING VACCINATION #6 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XHEPATY7	HEPATITIS A-CONTAINING VACCINATION #7 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XHEPATY8	HEPATITIS A-CONTAINING VACCINATION #8 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XHEPATY9	HEPATITIS A-CONTAINING VACCINATION #9 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XHEPBTY1	HEPATITIS B-CONTAINING VACCINATION #1 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XHEPBTY2	HEPATITIS B-CONTAINING VACCINATION #2 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XHEPBTY3	HEPATITIS B-CONTAINING VACCINATION #3 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XHEPBTY4	HEPATITIS B-CONTAINING VACCINATION #4 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XHEPBTY5	HEPATITIS B-CONTAINING VACCINATION #5 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XHEPBTY6	HEPATITIS B-CONTAINING VACCINATION #6 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XHEPBTY7	HEPATITIS B-CONTAINING VACCINATION #7 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XHEPBTY8	HEPATITIS B-CONTAINING VACCINATION #8 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XHEPBTY9	HEPATITIS B-CONTAINING VACCINATION #9 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	

Variable Name	Variable Label	2008	2009	2010	2011	2012	2013	2014	2015	2016	Notes
XHPVTY1	HUMAN PAPILLOMAVIRUS VACCINATION #1 TYPE CODE					Y	Y	Y	Y	Y	
XHPVTY2	HUMAN PAPILLOMAVIRUS VACCINATION #2 TYPE CODE					Y	Y	Y	Y	Y	
XHPVTY3	HUMAN PAPILLOMAVIRUS VACCINATION #3 TYPE CODE					Y	Y	Y	Y	Y	
XHPVTY4	HUMAN PAPILLOMAVIRUS VACCINATION #4 TYPE CODE					Y	Y	Y	Y	Y	
XHPVTY5	HUMAN PAPILLOMAVIRUS VACCINATION #5 TYPE CODE					Y	Y	Y	Y	Y	
XHPVTY6	HUMAN PAPILLOMAVIRUS VACCINATION #6 TYPE CODE					Y	Y	Y	Y	Y	
XHPVTY7	HUMAN PAPILLOMAVIRUS VACCINATION #7 TYPE CODE					Y	Y	Y	Y	Y	
XHPVTY8	HUMAN PAPILLOMAVIRUS VACCINATION #8 TYPE CODE					Y	Y	Y	Y	Y	
XHPVTY9	HUMAN PAPILLOMAVIRUS VACCINATION #9 TYPE CODE					Y	Y	Y	Y	Y	
XMCVTY1	MEASLES-CONTAINING VACCINATION #1 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XMCVTY2	MEASLES-CONTAINING VACCINATION #2 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XMCVTY3	MEASLES-CONTAINING VACCINATION #3 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XMCVTY4	MEASLES-CONTAINING VACCINATION #4 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XMCVTY5	MEASLES-CONTAINING VACCINATION #5 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XMCVTY6	MEASLES-CONTAINING VACCINATION #6 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XMCVTY7	MEASLES-CONTAINING VACCINATION #7 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XMCVTY8	MEASLES-CONTAINING VACCINATION #8 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XMCVTY9	MEASLES-CONTAINING VACCINATION #9 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XMENBTY1	**MENINGOCOCCAL SEROGROUP B VACCINATION #1 TYPE CODE**									**Y**	**Added in 2016.**
XMENBTY2	**MENINGOCOCCAL SEROGROUP B VACCINATION #2 TYPE CODE**									**Y**	**Added in 2016.**
XMENBTY3	**MENINGOCOCCAL SEROGROUP B VACCINATION #3 TYPE CODE**									**Y**	**Added in 2016.**
XMENBTY4	**MENINGOCOCCAL SEROGROUP B VACCINATION #4 TYPE CODE**									**Y**	**Added in 2016.**
XMENBTY5	**MENINGOCOCCAL SEROGROUP B VACCINATION #5 TYPE CODE**									**Y**	**Added in 2016.**
XMENBTY6	**MENINGOCOCCAL SEROGROUP B VACCINATION #6 TYPE CODE**									**Y**	**Added in 2016.**
XMENBTY7	**MENINGOCOCCAL SEROGROUP B VACCINATION #7 TYPE CODE**									**Y**	**Added in 2016.**
XMENBTY8	**MENINGOCOCCAL SEROGROUP B VACCINATION #8 TYPE CODE**									**Y**	**Added in 2016.**
XMENBTY9	**MENINGOCOCCAL SEROGROUP B VACCINATION #9 TYPE CODE**									**Y**	**Added in 2016.**
XMENTY1	MENINGOCOCCAL **SEROGROUP ACWY** VACCINATION #1 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	

Variable Name	Variable Label	2008	2009	2010	2011	2012	2013	2014	2015	2016	Notes
XMENTY2	MENINGOCOCCAL **SEROGROUP ACWY** VACCINATION #2 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XMENTY3	MENINGOCOCCAL **SEROGROUP ACWY** VACCINATION #3 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XMENTY4	MENINGOCOCCAL **SEROGROUP ACWY** VACCINATION #4 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XMENTY5	MENINGOCOCCAL **SEROGROUP ACWY** VACCINATION #5 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XMENTY6	MENINGOCOCCAL **SEROGROUP ACWY** VACCINATION #6 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XMENTY7	MENINGOCOCCAL **SEROGROUP ACWY** VACCINATION #7 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XMENTY8	MENINGOCOCCAL **SEROGROUP ACWY** VACCINATION #8 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XMENTY9	MENINGOCOCCAL **SEROGROUP ACWY** VACCINATION #9 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XTDPTY1	TD/TDAP-CONTAINING VACCINATION #1 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XTDPTY2	TD/TDAP-CONTAINING VACCINATION #2 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XTDPTY3	TD/TDAP-CONTAINING VACCINATION #3 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XTDPTY4	TD/TDAP-CONTAINING VACCINATION #4 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XTDPTY5	TD/TDAP-CONTAINING VACCINATION #5 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XTDPTY6	TD/TDAP-CONTAINING VACCINATION #6 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XTDPTY7	TD/TDAP-CONTAINING VACCINATION #7 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XTDPTY8	TD/TDAP-CONTAINING VACCINATION #8 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XTDPTY9	TD/TDAP-CONTAINING VACCINATION #9 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XVRCTY1	VARICELLA-CONTAINING VACCINATION #1 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XVRCTY2	VARICELLA-CONTAINING VACCINATION #2 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XVRCTY3	VARICELLA-CONTAINING VACCINATION #3 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XVRCTY4	VARICELLA-CONTAINING VACCINATION #4 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XVRCTY5	VARICELLA-CONTAINING VACCINATION #5 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XVRCTY6	VARICELLA-CONTAINING VACCINATION #6 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XVRCTY7	VARICELLA-CONTAINING VACCINATION #7 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XVRCTY8	VARICELLA-CONTAINING VACCINATION #8 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
XVRCTY9	VARICELLA-CONTAINING VACCINATION #9 TYPE CODE	Y	Y	Y	Y	Y	Y	Y	Y	Y	
YEAR	SAMPLING YEAR	Y	Y	Y	Y	Y	Y	Y	Y	Y	

Appendix E: Summary Tables

Table E.1: Estimated Population Totals and Sample Sizes of Teens 13-17 Years of Age by State and Estimation Area, National Immunization Survey - Teen, 2016

State/Estimation Area	ESTIAPT16	Estimated Population Total of Teens	Number of Teens with Complete Household Interviews	Number of Teens with Adequate Provider Data	Percent of Teens with Adequate Provider Data
U.S. National*		20,827,203	41,994	20,475	48.76
Alabama	20	314,880	688	333	48.40
Alaska	74	45,902	749	392	52.34
Arizona	66	460,970	719	329	45.76
Arkansas	46	198,268	712	352	49.44
California	68	2,536,637	785	327	41.66
Colorado	60	354,845	683	322	47.14
Connecticut	1	234,322	736	357	48.51
Delaware	13	57,853	751	375	49.93
District of Columbia	12	25,218	780	377	48.33
Florida	22	1,182,903	845	376	44.50
Georgia	25	715,804	748	367	49.06
Hawaii	72	80,076	635	317	49.92
Idaho	75	123,504	686	358	52.19
Illinois		846,122	1,398	605	43.28
IL-City of Chicago	35	152,167	381	157	41.21
IL-Rest of State	34	693,954	1,017	448	44.05
Indiana	36	452,620	685	350	51.09
Iowa	56	202,834	702	382	54.42
Kansas	57	197,992	610	322	52.79
Kentucky	27	284,856	648	333	51.39
Louisiana	47	305,923	712	336	47.19
Maine	4	76,037	659	347	52.66
Maryland	14	380,245	935	451	48.24
Massachusetts	2	408,137	750	374	49.87
Michigan	38	653,090	589	283	48.05
Minnesota	40	357,186	751	375	49.93
Mississippi	28	204,829	707	377	53.32
Missouri	58	391,848	753	360	47.81
Montana	61	62,957	688	375	54.51
Nebraska	59	128,088	637	330	51.81
Nevada	73	190,018	760	330	43.42
New Hampshire	5	80,431	630	313	49.68
New Jersey	8	576,618	859	422	49.13
New Mexico	49	136,477	704	374	53.13
New York		1,179,474	1,485	655	44.11
NY-City of New York	11	460,900	712	291	40.87
NY-Rest of State	10	718,574	773	364	47.09
North Carolina	29	655,800	771	366	47.47
North Dakota	62	43,778	562	293	52.14
Ohio	41	763,732	698	338	48.42
Oklahoma	50	263,262	653	281	43.03

State/Estimation Area	ESTIAPT16	Estimated Population Total of Teens	Number of Teens with Complete Household Interviews	Number of Teens with Adequate Provider Data	Percent of Teens with Adequate Provider Data
Oregon	76	244,200	590	318	53.90
Pennsylvania		777,581	1,738	875	50.35
PA-Philadelphia County	17	91,202	696	349	50.14
PA-Rest of State	16	686,379	1,042	526	50.48
Rhode Island	6	60,939	630	326	51.75
South Carolina	30	309,906	702	314	44.73
South Dakota	63	55,423	638	342	53.61
Tennessee	31	426,750	611	291	47.63
Texas		2,009,750	4,297	1,927	44.85
TX-Bexar County	55	140,516	688	334	48.55
TX-City of Houston	54	131,811	500	225	45.00
TX-Dallas County	52	178,950	729	294	40.33
TX-El Paso County	53	68,637	659	345	52.35
TX-Rest of State	51	1,489,836	1,721	729	42.36
Utah	64	246,483	607	317	52.22
Vermont	7	36,105	669	380	56.80
Virginia	18	526,294	906	451	49.78
Washington	77	444,994	720	361	50.14
West Virginia	19	107,233	659	313	47.50
Wisconsin	44	371,923	672	333	49.55
Wyoming	65	36,083	692	373	53.90
Puerto Rico	106	225,560	1,077	405	37.60
U.S. Virgin Islands	95	7,240	821	428	52.13
Guam	105	14,390	879	535	60.86

* Excludes U.S. territories.

Table E.2: Estimated Population Totals and Sample Sizes by Age of Teen by Maternal Education, National Immunization Survey - Teen, 2016

Age of Teen in Years	Maternal Education	TEENS WITH COMPLETED HOUSEHOLD INTERVIEWS* Unweighted Completes	TEENS WITH COMPLETED HOUSEHOLD INTERVIEWS* Weighted Completes†	TEENS WITH ADEQUATE PROVIDER DATA* Unweighted Completes	TEENS WITH ADEQUATE PROVIDER DATA* Weighted Completes§
13	<12 Years	830	502,086	471	577,238
13	12 Years	1,331	907,530	670	906,891
13	>12, Non College Graduate	2,125	1,027,739	1,020	924,133
13	College Grad	3,935	1,589,479	2,048	1,646,470
14	<12 Years	931	614,033	481	598,148
14	12 Years	1,317	906,059	635	923,826
14	>12, Non College Graduate	2,298	1,021,724	1,158	1,063,725
14	College Grad	3,922	1,646,328	1,982	1,574,547
15	<12 Years	904	640,493	453	618,285
15	12 Years	1,459	949,044	669	949,186
15	>12, Non College Graduate	2,221	1,049,877	1,089	1,113,580
15	College Grad	3,894	1,625,062	1,902	1,702,870
16	<12 Years	837	491,185	434	479,764
16	12 Years	1,482	989,946	660	977,064
16	>12, Non College Graduate	2,296	1,048,363	1,097	1,090,673
16	College Grad	4,104	1,674,618	1,999	1,697,535
17	<12 Years	747	529,709	361	511,205
17	12 Years	1,408	929,533	616	918,177
17	>12, Non College Graduate	2,195	1,055,010	1,007	1,008,403
17	College Grad	3,758	1,629,384	1,723	1,545,482
Total		41,994	20,827,203	20,475	20,827,203

* Excludes U.S. territories.

† Weighted by dual-frame weight RDDWT_D.

§ Weighted by dual-frame weight PROVWT_D.

Table E.3: Estimated Population Totals and Sample Sizes by Age of Teen by Poverty Status, National Immunization Survey - Teen, 2016

Age of Teen in Years	Poverty Status	TEENS WITH COMPLETED HOUSEHOLD INTERVIEWS* Unweighted Completes	TEENS WITH COMPLETED HOUSEHOLD INTERVIEWS* Weighted Completes†	TEENS WITH ADEQUATE PROVIDER DATA* Unweighted Completes	TEENS WITH ADEQUATE PROVIDER DATA* Weighted Completes§
13	Above poverty, > $75K	3,723	1,511,020	1,981	1,554,694
13	Above poverty, <= $75K	2,660	1,382,376	1,337	1,386,788
13	Below poverty	1,311	827,126	758	889,310
13	Unknown	527	306,312	133	223,940
14	Above poverty, > $75K	3,897	1,568,616	2,009	1,566,659
14	Above poverty, <= $75K	2,715	1,395,943	1,368	1,441,538
14	Below poverty	1,293	898,227	733	896,962
14	Unknown	563	325,359	146	255,087
15	Above poverty, > $75K	3,820	1,573,618	1,932	1,677,882
15	Above poverty, <= $75K	2,750	1,394,330	1,307	1,412,457
15	Below poverty	1,305	979,977	712	978,916
15	Unknown	603	316,551	162	314,666
16	Above poverty, > $75K	3,987	1,628,255	1,955	1,620,659
16	Above poverty, <= $75K	2,884	1,405,172	1,393	1,486,320
16	Below poverty	1,248	876,655	683	873,421
16	Unknown	600	294,030	159	264,635
17	Above poverty, > $75K	3,715	1,603,614	1,749	1,571,421
17	Above poverty, <= $75K	2,752	1,444,801	1,259	1,392,537
17	Below poverty	1,091	802,430	575	795,435
17	Unknown	550	292,791	124	223,875
Total		41,994	20,827,203	20,475	20,827,203

* Excludes U.S. territories.

† Weighted by dual-frame weight RDDWT_D.

§ Weighted by dual-frame weight PROVWT_D.

Table E.4: Estimated Population Totals and Sample Sizes by Race/Ethnicity by Poverty Status, National Immunization Survey - Teen, 2016

Race/Ethnicity of Teen†	Poverty Status	TEENS WITH COMPLETED HOUSEHOLD INTERVIEWS* Unweighted Completes	TEENS WITH COMPLETED HOUSEHOLD INTERVIEWS* Weighted Completes§	TEENS WITH ADEQUATE PROVIDER DATA* Unweighted Completes	TEENS WITH ADEQUATE PROVIDER DATA* Weighted Completes¶
Hispanic	Above poverty, > $75K	1,709	972,015	785	981,071
Hispanic	Above poverty, <= $75K	2,380	1,650,416	1,139	1,709,866
Hispanic	Below poverty	2,064	1,751,574	1,111	1,661,150
Hispanic	Unknown	618	469,706	188	480,709
Non-Hispanic White Only	Above poverty, > $75K	14,203	5,572,615	7,343	5,671,956
Non-Hispanic White Only	Above poverty, <= $75K	8,047	3,563,983	3,971	3,543,770
Non-Hispanic White Only	Below poverty	2,111	1,208,328	1,199	1,249,959
Non-Hispanic White Only	Unknown	1,554	672,238	370	520,179
Non-Hispanic Black Only	Above poverty, > $75K	1,175	554,272	477	501,985
Non-Hispanic Black Only	Above poverty, <= $75K	1,726	1,095,164	767	1,155,618
Non-Hispanic Black Only	Below poverty	1,215	974,688	651	1,020,044
Non-Hispanic Black Only	Unknown	363	261,742	95	183,314
Non-Hispanic Other & Multiple Race	Above poverty, > $75K	2,055	786,222	1,021	836,303
Non-Hispanic Other & Multiple Race	Above poverty, <= $75K	1,608	713,059	787	710,387
Non-Hispanic Other & Multiple Race	Below poverty	858	449,825	500	502,892
Non-Hispanic Other & Multiple Race	Unknown	308	131,356	71	98,000
Total		41,994	20,827,203	20,475	20,827,203

* Excludes U.S. territories.

† Race/ethnicity is respondent-reported and the categories presented here are mutually exclusive.

§ Weighted by dual-frame weight RDDWT_D.

¶ Weighted by dual-frame weight PROVWT_D.

Table E.5: Estimated Population Totals and Sample Sizes by Age of Teen by Race/Ethnicity, National Immunization Survey - Teen, 2016

Age of Teen in Years	Race/Ethnicity of Teen†	TEENS WITH COMPLETED HOUSEHOLD INTERVIEWS* Unweighted Completes	TEENS WITH COMPLETED HOUSEHOLD INTERVIEWS* Weighted Completes§	TEENS WITH ADEQUATE PROVIDER DATA* Unweighted Completes	TEENS WITH ADEQUATE PROVIDER DATA* Weighted Completes¶
13	Hispanic	1,375	935,800	708	949,638
13	Non-Hispanic White Only	5,002	2,143,564	2,576	2,136,681
13	Non-Hispanic Black Only	866	555,442	405	551,076
13	Non-Hispanic Other & Multiple Races	978	392,028	520	417,338
14	Hispanic	1,435	1,029,421	692	1,020,837
14	Non-Hispanic White Only	5,139	2,147,735	2,636	2,088,437
14	Non-Hispanic Black Only	917	579,622	432	627,343
14	Non-Hispanic Other & Multiple Races	977	431,366	496	423,629
15	Hispanic	1,370	1,027,429	633	1,033,811
15	Non-Hispanic White Only	5,192	2,184,827	2,593	2,261,853
15	Non-Hispanic Black Only	936	613,084	421	626,807
15	Non-Hispanic Other & Multiple Races	980	439,136	466	461,450
16	Hispanic	1,364	909,583	663	926,733
16	Non-Hispanic White Only	5,465	2,317,165	2,661	2,327,896
16	Non-Hispanic Black Only	909	560,924	387	560,251
16	Non-Hispanic Other & Multiple Races	981	416,440	479	430,156
17	Hispanic	1,227	941,478	527	901,777
17	Non-Hispanic White Only	5,117	2,223,872	2,417	2,170,997
17	Non-Hispanic Black Only	851	576,793	345	495,484
17	Non-Hispanic Other & Multiple Races	913	401,493	418	415,010
Total		41,994	20,827,203	20,475	20,827,203

* Excludes U.S. territories.

† Race/ethnicity is respondent-reported and the categories presented here are mutually exclusive.

§ Weighted by dual-frame weight RDDWT_D.

¶ Weighted by dual-frame weight PROVWT_D.

Table E.6: Estimated Population Totals and Sample Sizes by Age and Sex of Teen, National Immunization Survey - Teen, 2016

Age of Teen in Years	Sex	TEENS WITH COMPLETED HOUSEHOLD INTERVIEWS* Unweighted Completes	TEENS WITH COMPLETED HOUSEHOLD INTERVIEWS* Weighted Completes†	TEENS WITH ADEQUATE PROVIDER DATA* Unweighted Completes	TEENS WITH ADEQUATE PROVIDER DATA* Weighted Completes§
13	Male	4,294	2,034,046	2,202	2,043,347
13	Female	3,927	1,992,788	2,007	2,011,385
14	Male	4,470	2,156,296	2,253	2,169,381
14	Female	3,998	2,031,848	2,003	1,990,865
15	Male	4,385	2,119,832	2,160	2,158,109
15	Female	4,093	2,144,644	1,953	2,225,812
16	Male	4,590	2,185,235	2,228	2,184,336
16	Female	4,129	2,018,877	1,962	2,060,699
17	Male	4,251	2,137,978	1,971	2,078,215
17	Female	3,857	2,005,658	1,736	1,905,053
Total		41,994	20,827,203	20,475	20,827,203

* Excludes U.S. territories.

† Weighted by dual-frame weight RDDWT_D.

§ Weighted by dual-frame weight PROVWT_D.

Table E.7: Estimated Vaccination Coverage*†, With Selected Vaccines Among Adolescents Aged 13-17 Years§, by State and Selected Area -- National Immunization Survey - Teen, United States, 2016

	BOTH SEXES ≥ 1 Td or Tdap¶	BOTH SEXES ≥ 1 Tdap**	BOTH SEXES ≥ 1 MenACWY††	FEMALE ≥1 dose HPV§§	FEMALE ≥ 3 doses HPV, or ≥ 2 doses HPV with age and interval restriction***	MALE ≥1 dose HPV§§	MALE ≥ 3 doses HPV, or ≥ 2 doses HPV with age and interval restriction***	BOTH SEXES ≥1 dose HPV§§	BOTH SEXES ≥ 3 doses HPV, or ≥ 2 doses HPV with age and interval restriction***
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
US National†††	90.6(±0.8)	88.0(±0.9)	82.2(±1.0)	65.1(±1.7)	49.5(±1.9)	56.0(±1.7)	37.5(±1.7)	60.4(±1.2)	43.4(±1.3)
Alabama	92.8(±3.1)	91.7(±3.3)	72.4(±5.7)	54.2(±9.1)	46.5(±9.2)	49.2(±8.9)	24.7(±7.5)	51.7(±6.4)	35.4(±6.2)
Alaska	80.7(±4.8)	79.4(±4.9)	67.0(±5.7)	61.9(±8.6)	47.8(±9.0)	60.3(±8.4)	39.1(±8.6)	61.1(±6.0)	43.3(±6.3)
Arizona	88.5(±4.2)	84.3(±4.9)	85.2(±4.8)	65.4(±8.8)	46.6(±9.6)	60.9(±9.0)	41.7(±9.4)	63.1(±6.3)	44.1(±6.8)
Arkansas	91.6(±3.2)	91.0(±3.3)	89.1(±3.6)	53.3(±9.5)	35.5(±9.0)	55.4(±8.1)	33.6(±7.7)	54.4(±6.2)	34.5(±5.9)
California	85.1(±5.1)	82.1(±5.5)	79.7(±5.6)	78.0(±8.5)	58.3(±10.5)	67.3(±8.5)	40.3(±8.9)	72.6(±6.0)	49.1(±7.0)
Colorado	88.9(±4.4)	87.5(±4.6)	77.5(±5.7)	68.3(±9.7)	52.1(±10.3)	58.8(±9.4)	44.0(±9.6)	63.5(±6.7)	48.0(±7.0)
Connecticut	95.3(±3.0)	93.9(±3.3)	93.9(±3.1)	68.9(±8.1)	56.9(±8.7)	55.8(±9.1)	41.5(±9.0)	62.2(±6.2)	49.0(±6.3)
Delaware	89.9(±3.7)	87.5(±4.0)	87.3(±4.3)	78.3(±7.0)	66.8(±8.0)	63.3(±8.3)	47.3(±8.6)	70.7(±5.5)	56.9(±6.0)
Dist. of Columbia	90.2(±3.7)	86.5(±4.4)	86.9(±4.8)	80.7(±7.4)	65.1(±9.3)	77.7(±7.4)	58.8(±9.2)	79.2(±5.2)	62.0(±6.5)
Florida	93.7(±3.4)	89.7(±4.3)	76.3(±5.6)	58.4(±9.6)	46.4(±9.8)	53.5(±9.1)	34.5(±8.8)	55.9(±6.7)	40.4(±6.6)
Georgia	95.9(±2.4)	92.8(±3.6)	91.4(±3.6)	77.0(±7.3)	55.4(±9.1)	58.0(±9.4)	36.2(±9.0)	67.3(±6.1)	45.6(±6.6)
Hawaii	83.6(±5.0)	82.2(±5.1)	75.8(±5.7)	71.7(±8.7)	61.5(±9.2)	58.3(±8.9)	46.9(±8.8)	64.8(±6.3)	54.0(±6.5)
Idaho	89.8(±3.6)	87.5(±3.9)	86.5(±4.5)	59.8(±8.9)	43.4(±8.8)	54.7(±8.6)	30.0(±7.9)	57.2(±6.2)	36.5(±5.9)
Illinois	94.7(±2.1)	91.0(±2.7)	83.9(±3.7)	68.5(±6.5)	52.6(±7.0)	58.7(±6.8)	43.2(±6.8)	63.5(±4.7)	47.8(±4.9)
IL-City of Chicago	94.6(±3.7)	84.2(±7.5)	91.1(±5.1)	79.7(±11.4)	65.3(±13.0)	66.8(±13.8)	46.4(±14.3)	73.1(±9.1)	55.7(±10.0)
IL-Rest of State	94.8(±2.5)	92.5(±2.8)	82.3(±4.3)	66.0(±7.5)	49.8(±8.0)	56.9(±7.7)	42.6(±7.6)	61.4(±5.4)	46.1(±5.6)
Indiana	90.6(±4.0)	89.5(±4.1)	88.0(±4.5)	53.9(±9.4)	43.5(±9.5)	36.9(±8.3)	24.7(±7.4)	45.2(±6.4)	33.9(±6.1)
Iowa	91.0(±3.2)	89.2(±3.6)	74.9(±5.1)	64.4(±8.2)	47.4(±8.5)	57.2(±8.1)	43.8(±8.2)	60.7(±5.8)	45.5(±5.9)
Kansas	88.8(±4.1)	87.3(±4.5)	69.7(±5.9)	62.4(±9.0)	45.6(±9.3)	41.7(±9.2)	26.0(±8.2)	51.8(±6.5)	35.6(±6.3)
Kentucky	91.3(±3.3)	89.0(±3.8)	85.9(±4.2)	54.8(±9.2)	39.7(±9.3)	41.6(±8.7)	28.5(±8.2)	48.0(±6.4)	34.0(±6.2)
Louisiana	95.4(±2.4)	93.7(±3.1)	90.9(±3.4)	69.9(±8.2)	50.8(±9.1)	51.5(±8.5)	33.2(±8.1)	60.5(±6.0)	41.8(±6.2)
Maine	90.0(±3.4)	87.5(±3.9)	83.5(±4.8)	73.1(±8.0)	64.3(±8.4)	67.1(±8.3)	48.2(±8.7)	70.0(±5.8)	56.0(±6.2)
Maryland	87.2(±4.6)	85.0(±4.8)	84.8(±5.1)	69.0(±8.5)	51.8(±9.2)	60.2(±8.9)	44.5(±9.1)	64.5(±6.2)	48.1(±6.5)
Massachusetts	98.2(±1.1)	96.7(±1.7)	90.4(±3.6)	77.6(±7.1)	62.0(±8.5)	65.5(±7.9)	51.4(±8.3)	71.4(±5.4)	56.6(±6.0)
Michigan	95.5(±2.4)	93.6(±3.3)	95.0(±2.5)	70.5(±9.0)	55.4(±9.9)	52.5(±9.9)	34.6(±9.2)	61.3(±6.9)	44.8(±7.0)
Minnesota	91.8(±3.6)	89.7(±4.0)	85.2(±4.5)	58.1(±8.9)	46.4(±8.9)	60.1(±8.2)	42.0(±8.4)	59.1(±6.1)	44.1(±6.1)

	BOTH SEXES ≥ 1 Td or Tdap¶	BOTH SEXES ≥ 1 Tdap**	BOTH SEXES ≥ 1 MenACWY††	FEMALE ≥1 dose HPV§§	FEMALE ≥ 3 doses HPV, or ≥ 2 doses HPV with age and interval restriction***	MALE ≥1 dose HPV§§	MALE ≥ 3 doses HPV, or ≥ 2 doses HPV with age and interval restriction***	BOTH SEXES ≥1 dose HPV§§	BOTH SEXES ≥ 3 doses HPV, or ≥ 2 doses HPV with age and interval restriction***
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Mississippi	83.0(±4.9)	82.0(±5.0)	57.4(±6.3)	47.8(±9.2)	33.9(±8.9)	43.6(±8.8)	24.5(±7.4)	45.6(±6.4)	29.1(±5.8)
Missouri	85.7(±4.5)	83.9(±4.6)	66.2(±6.3)	55.0(±9.3)	38.5(±9.2)	48.3(±9.3)	33.3(±8.7)	51.6(±6.6)	35.8(±6.4)
Montana	86.9(±4.5)	85.7(±4.6)	67.6(±6.0)	68.2(±8.1)	52.5(±8.9)	43.0(±8.8)	27.9(±7.9)	55.3(±6.4)	39.9(±6.3)
Nebraska	90.8(±3.8)	86.8(±4.6)	80.2(±5.1)	69.4(±9.0)	50.6(±9.5)	58.3(±8.8)	41.3(±9.1)	63.7(±6.3)	45.9(±6.6)
Nevada	88.6(±4.4)	87.1(±4.6)	78.7(±5.4)	64.6(±8.7)	43.0(±9.1)	65.1(±8.8)	37.0(±9.2)	64.9(±6.2)	39.9(±6.5)
New Hampshire	96.4(±2.7)	95.3(±2.8)	88.0(±4.2)	70.6(±8.1)	56.5(±9.1)	69.3(±8.6)	46.3(±9.6)	69.9(±5.9)	51.2(±6.7)
New Jersey	94.0(±2.9)	89.9(±3.7)	91.7(±3.2)	66.0(±7.9)	50.1(±8.4)	51.2(±8.6)	35.8(±8.0)	58.5(±6.0)	42.8(±5.9)
New Mexico	88.1(±4.0)	84.3(±4.5)	77.8(±5.0)	63.1(±8.4)	49.0(±8.8)	57.9(±8.4)	37.0(±8.1)	60.5(±6.0)	42.9(±6.0)
New York	94.1(±2.1)	91.1(±2.6)	89.2(±2.9)	75.0(±5.6)	61.3(±6.5)	68.2(±5.8)	50.3(±6.4)	71.5(±4.1)	55.7(±4.6)
NY-City of New York	92.5(±3.3)	88.9(±4.1)	89.6(±4.3)	81.9(±7.0)	69.9(±8.7)	71.9(±8.4)	53.9(±9.6)	76.8(±5.5)	61.7(±6.6)
NY-Rest of State	95.2(±2.7)	92.6(±3.3)	89.0(±3.8)	70.5(±8.0)	55.8(±9.0)	65.9(±7.9)	48.0(±8.5)	68.1(±5.6)	51.8(±6.2)
North Carolina	90.0(±3.9)	89.1(±4.0)	75.7(±5.6)	57.9(±8.9)	46.9(±9.0)	57.1(±9.2)	35.7(±9.0)	57.5(±6.4)	41.2(±6.4)
North Dakota	92.9(±3.5)	92.0(±3.7)	92.0(±3.6)	68.3(±9.5)	60.2(±9.8)	66.9(±8.5)	45.5(±9.1)	67.6(±6.3)	52.7(±6.7)
Ohio	92.8(±3.8)	90.8(±4.2)	79.6(±5.6)	57.6(±9.3)	42.5(±9.2)	55.0(±9.6)	41.1(±9.6)	56.2(±6.7)	41.8(±6.7)
Oklahoma	90.9(±4.3)	89.6(±4.5)	73.6(±6.5)	63.8(±10.3)	43.6(±10.4)	50.3(±10.1)	35.0(±9.6)	56.9(±7.2)	39.2(±7.1)
Oregon	86.2(±5.1)	83.2(±5.5)	70.5(±6.0)	62.6(±9.6)	50.3(±9.7)	60.9(±8.5)	44.7(±8.9)	61.7(±6.4)	47.5(±6.6)
Pennsylvania	95.0(±2.1)	92.0(±2.6)	92.7(±2.6)	72.0(±6.5)	58.0(±7.3)	57.2(±7.2)	44.4(±7.1)	64.4(±5.0)	51.0(±5.1)
PA-Philadelphia	92.5(±3.2)	89.8(±3.7)	91.2(±3.4)	88.2(±5.7)	76.2(±7.6)	73.7(±7.3)	61.1(±8.1)	80.7(±4.8)	68.4(±5.7)
PA-Rest of State	95.3(±2.3)	92.3(±3.0)	92.9(±2.9)	69.9(±7.4)	55.6(±8.2)	54.9(±8.0)	42.1(±7.9)	62.3(±5.6)	48.7(±5.7)
Rhode Island	97.3(±1.7)	95.4(±2.3)	96.4(±2.3)	90.1(±5.3)	73.0(±8.7)	87.8(±5.1)	68.7(±8.4)	88.9(±3.7)	70.8(±6.0)
South Carolina	81.8(±5.5)	77.5(±6.2)	68.9(±6.7)	50.5(±10.4)	30.8(±9.2)	38.2(±9.0)	27.4(±8.3)	44.2(±7.0)	29.1(±6.2)
South Dakota	80.3(±5.6)	79.4(±5.7)	65.7(±6.3)	61.7(±9.6)	47.3(±9.8)	50.4(±9.0)	30.5(±8.1)	55.9(±6.6)	38.6(±6.4)
Tennessee	90.6(±4.1)	89.3(±4.3)	76.3(±5.8)	55.3(±9.8)	36.9(±9.3)	55.3(±9.2)	35.2(±9.3)	55.3(±6.7)	36.0(±6.6)
Texas	87.9(±2.4)	85.0(±2.7)	85.5(±2.7)	54.5(±5.4)	39.7(±5.4)	44.3(±5.0)	26.5(±4.2)	49.3(±3.7)	32.9(±3.5)
TX-Bexar County	90.9(±3.9)	85.4(±4.7)	87.2(±4.7)	58.3(±9.6)	45.2(±9.7)	48.5(±9.0)	33.3(±8.3)	53.4(±6.6)	39.2(±6.5)
TX-City of Houston	87.0(±6.7)	86.2(±6.8)	82.9(±7.7)	59.4(±13.3)	44.2(±13.1)	65.9(±11.0)	48.6(±12.1)	62.6(±8.7)	46.4(±8.9)
TX-El Paso County	88.1(±5.3)	83.4(±6.0)	91.6(±4.0)	78.4(±8.8)	69.0(±9.4)	81.1(±7.1)	63.2(±9.5)	79.8(±5.6)	66.0(±6.7)
TX-Dallas County	84.8(±5.4)	83.0(±5.6)	87.7(±4.8)	48.8(±11.1)	24.3(±8.4)	42.7(±9.7)	23.6(±7.5)	45.7(±7.4)	23.9(±5.6)
TX-Rest of State	88.0(±3.1)	85.2(±3.5)	85.0(±3.5)	53.3(±7.0)	39.2(±7.0)	40.6(±6.5)	22.5(±5.3)	46.8(±4.8)	30.7(±4.5)
Utah	83.9(±4.9)	83.9(±4.9)	76.6(±5.6)	58.8(±9.4)	41.3(±9.3)	40.9(±9.0)	20.3(±7.4)	49.7(±6.6)	30.5(±6.0)

	BOTH SEXES ≥ 1 Td or Tdap[¶]	BOTH SEXES ≥ 1 Tdap**	BOTH SEXES ≥ 1 MenACWY[††]	FEMALE ≥1 dose HPV[§§]	FEMALE ≥ 3 doses HPV, or ≥ 2 doses HPV with age and interval restriction***	MALE ≥1 dose HPV[§§]	MALE ≥ 3 doses HPV, or ≥ 2 doses HPV with age and interval restriction***	BOTH SEXES ≥1 dose HPV[§§]	BOTH SEXES ≥ 3 doses HPV, or ≥ 2 doses HPV with age and interval restriction***
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Vermont	95.9(±2.2)	93.8(±2.8)	86.4(±3.9)	71.2(±8.2)	58.4(±8.6)	69.5(±7.3)	53.1(±7.8)	70.3(±5.5)	55.7(±5.8)
Virginia	88.8(±5.1)	87.1(±5.2)	71.5(±7.1)	50.7(±11.2)	41.1(±10.9)	56.4(±10.0)	37.4(±10.0)	53.6(±7.5)	39.2(±7.4)
Washington	89.5(±4.3)	86.8(±4.6)	75.1(±5.8)	70.9(±8.0)	55.2(±9.3)	58.9(±8.8)	44.0(±8.9)	64.8(±6.0)	49.5(±6.5)
West Virginia	92.4(±3.3)	89.7(±3.7)	89.0(±3.9)	58.5(±9.5)	49.7(±9.7)	50.0(±9.3)	33.0(±8.7)	54.2(±6.7)	41.2(±6.6)
Wisconsin	96.5(±1.8)	91.6(±3.6)	85.6(±4.3)	68.1(±8.9)	53.6(±9.6)	56.0(±8.6)	37.8(±8.5)	61.9(±6.2)	45.5(±6.5)
Wyoming	88.2(±4.2)	86.7(±4.4)	54.2(±6.1)	50.4(±9.0)	33.9(±8.3)	36.9(±8.1)	19.9(±6.6)	43.4(±6.0)	26.7(±5.3)
U.S. Virgin Islands	81.6(±4.5)	78.9(±4.7)	61.3(±5.6)	43.8(±8.5)	26.6(±7.8)	40.1(±7.9)	19.0(±6.6)	41.9(±5.8)	22.6(±5.1)
Guam	79.0(±4.3)	77.5(±4.3)	77.1(±4.2)	76.9(±6.3)	55.8(±7.7)	58.5(±7.0)	33.2(±6.6)	67.4(±4.8)	44.2(±5.2)
Puerto Rico	92.8(±2.9)	91.2(±3.2)	89.2(±3.6)	80.8(±7.1)	61.9(±8.9)	71.1(±7.6)	44.1(±8.7)	75.8(±5.3)	52.8(±6.3)

[*] Estimate presented as point estimate (%) ± 95% confidence interval (CI). Estimate=NA (Not Available) if the unweighted sample size for the denominator was <30 or (95% CI half width)/Estimate > 0.6.

[†] Estimates with 95% CI half-widths >10 may not be reliable.

[§] Adolescents in the 2016 NIS-Teen were born between January 1998 and February 2004. Vaccination coverage estimates include only adolescents who had adequate provider-reported immunization records.

[¶] ≥1 dose of tetanus toxoid-diphtheria vaccine (Td) or tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis (Tdap) at or after age ten years.

[**] ≥1 dose of tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis (Tdap) at or after age ten years.

[††] ≥1 dose of quadrivalent meningococcal conjugate vaccine or meningococcal-unknown type vaccine.

[§§] ≥1 dose of human papillomavirus vaccine, either 9-valent (9vHPV), quadrivalent (4vHPV), or bivalent (2vHPV).

*** ≥3 doses of human papillomavirus vaccine, or ≥ 2 doses with the first dose before age 15 and at least 5 months minus 4 days between the first and second dose.

[†††] Excludes U.S. territories.

Appendix F: Vaccine Type Codes

Table F.1: Vaccine Type Codes, National Immunization Survey - Teen, 2016

Vaccine Code	Description
11	Td
14	Tdap
15	Td/Tdap-containing, unknown subtype
30	MMR-only
31	Measles-only
32	Measles-Mumps
33	Measles-Rubella
43	HepB-Hib
4V	Human Papillomavirus, Gardasil (quadrivalent)
61	0.5 ml Recombivax
62	1.0 ml Recombivax
63	Engerix
64	Hepatitis B-only, unknown subtype checked
80	MenACWY (Menactra, Menveo)
81	MPSV4 (Menomune)
82	Meningococcal **serogroup ACWY**, unknown subtype
9V	Human Papillomavirus, Gardasil (9-valent)
BB	**MenB-4C**
BT	**MenB-FHbp**
BU	**Meningococcal serogroup B, unknown subtype**
CV	Human Papillomavirus, Cervarix (bivalent)
FL	Seasonal Flu-containing, unknown subtype
FM	Seasonal Flumist
FN	Injected Seasonal Flu, other/unknown subtype
FV	Seasonal Fluvirin
FZ	Seasonal Fluzone
HA	Hepatitis A-containing, unknown subtype
HB	Hepatitis B-containing, unknown subtype
HO	Hepatitis A-only (Havrix or Vaqta)
HP	Human Papillomavirus, unknown subtype
MM	Measles-containing, unknown subtype

Vaccine Code	Description
VA	Varicella-containing, unknown subtype
VM	MMR-Varicella
VO	Varicella-only
UV	Human Papillomavirus, Gardasil (unknown valency)

Appendix G: Trends in the NIS-Teen Response Rates and Vaccination Coverage Rates, 2006-2016

Table G.1: Key Indicators* from Landline Sample Household and Provider Data Collection by Survey Year, National Immunization Survey - Teen, 2006-2016†

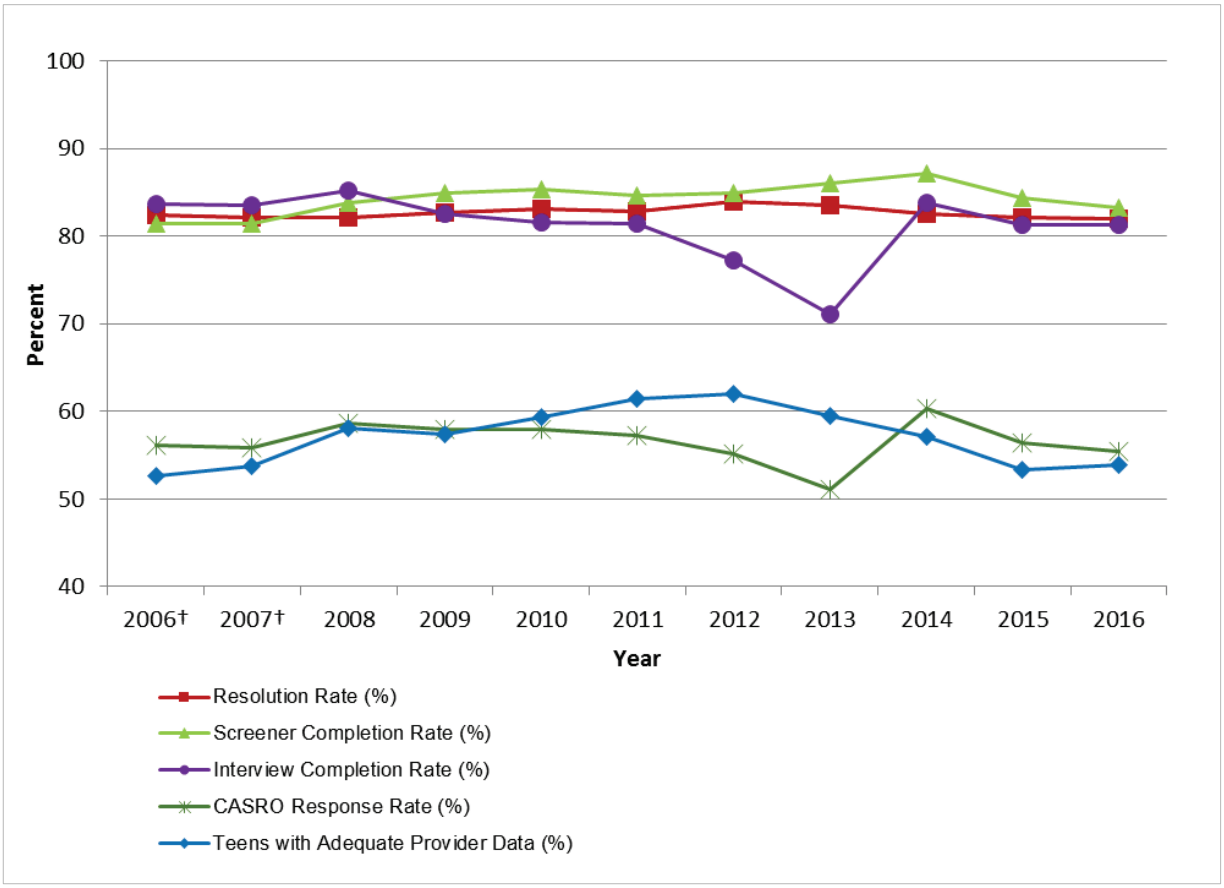
Survey Year	Resolution Rate (%)	Screener Completion Rate (%)	Interview Completion Rate (%)	CASRO Response Rate (%)	Teens with Adequate Provider Data (%)
2006§	82.4	81.4	83.7	56.2	52.7
2007§	82.2	81.5	83.5	55.9	53.8
2008	82.2	83.8	85.2	58.7	58.1
2009	82.7	85.0	82.5	58.0	57.4
2010	83.1	85.4	81.6	57.9	59.4
2011	82.9	84.7	81.5	57.2	61.5
2012	84.0	84.9	77.2	55.1	62.0
2013	83.5	86.1	71.1	51.1	59.5
2014	82.6	87.2	83.8	60.3	57.1
2015	82.2	84.4	81.3	56.4	53.4
2016	82.0	83.2	81.3	55.5	53.9

* For the definitions of the key indicators see Table 1 of NIS-Teen Data User's Guides for the survey year of interest.

† Excludes U.S. territories.

§ In 2006 and 2007, NIS-Teen was conducted only in Quarter 4.

Figure G.1: Trends in Landline Sample Key Indicators from Household and Provider Data Collection by Survey Year, National Immunization Survey - Teen, 2006-2016*



* Excludes U.S. territories.

† In 2006 and 2007, NIS-Teen was conducted only in Quarter 4.

Figure G.1 presents a graphical representation of the data contained in Table G.1. It shows how selected key indicators from landline sample household and provider data collection performed throughout the years, from 2006 to present. Note that these data apply to the landline sample only.

Table G.2: Key Indicators* from Cell-Phone Sample Household and Provider Data Collection by Survey Year, National Immunization Survey - Teen, 2011-2016†

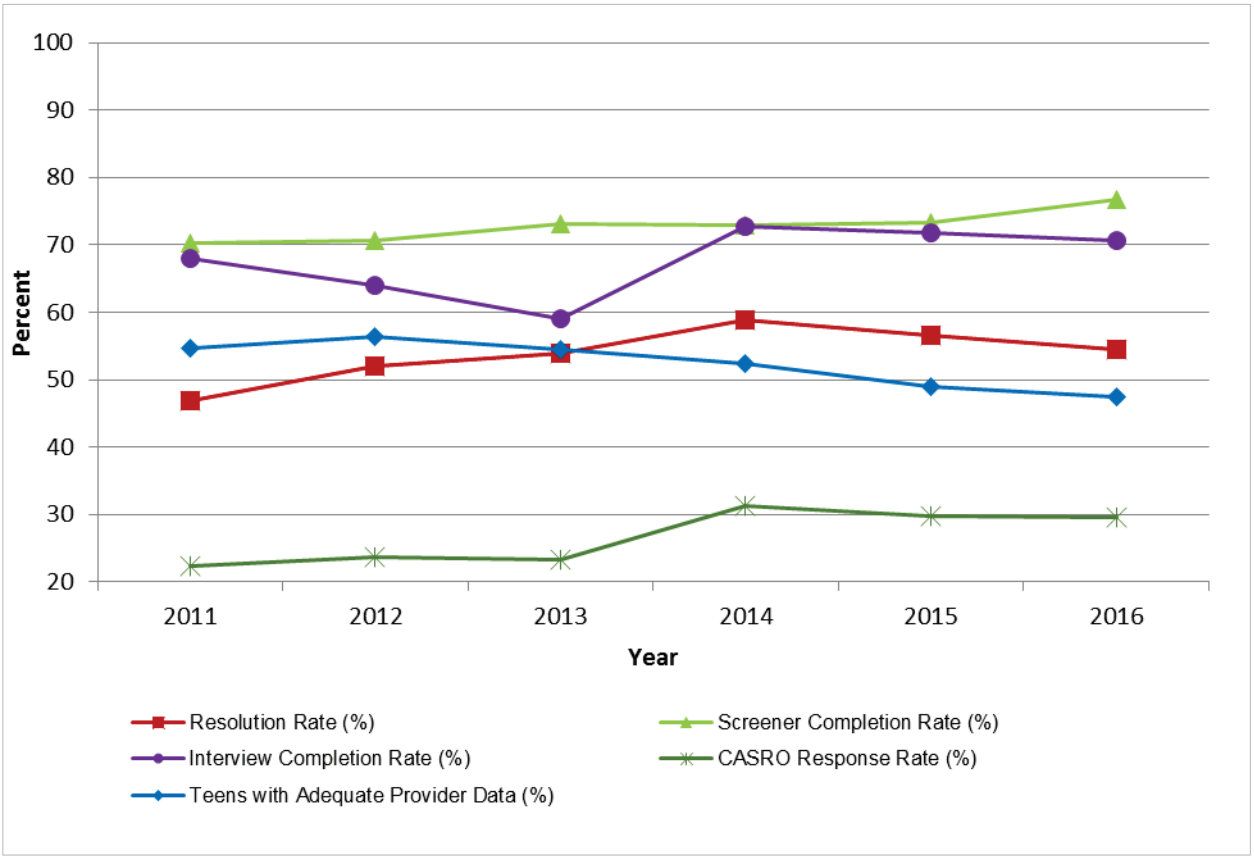
Survey Year§	Resolution Rate (%)	Screener Completion Rate (%)	Interview Completion Rate (%)	CASRO Response Rate (%)	Teens with Adequate Provider Data (%)
2011	46.9	70.2	68.0	22.4	54.6
2012	52.0	70.6	64.0	23.6	56.4
2013	53.9	73.1	59.1	23.3	54.5
2014	58.9	72.9	72.7	31.2	52.3
2015	56.6	73.4	71.7	29.8	48.9
2016	54.4	76.8	70.7	29.5	47.4

* For the definitions of the key indicators see Table 1 of NIS-Teen Data User's Guides for the survey year of interest.

† Excludes U.S. territories.

§ Cell-phone sample was added to the NIS-Teen in 2011.

Figure G.2: Trends in Cell-Phone Sample Key Indicators from Household and Provider Data Collection by Survey Year, National Immunization Survey - Teen, 2011-2016*



* Excludes U.S. territories.

Figure G.2 presents a graphical representation of the data contained in Table G.2. It shows how selected key indicators from cell-phone sample household and provider data collection performed from 2011 to present. Note that these data apply to the cell-phone sample only. Cell-phone sample was added to the NIS in 2011.

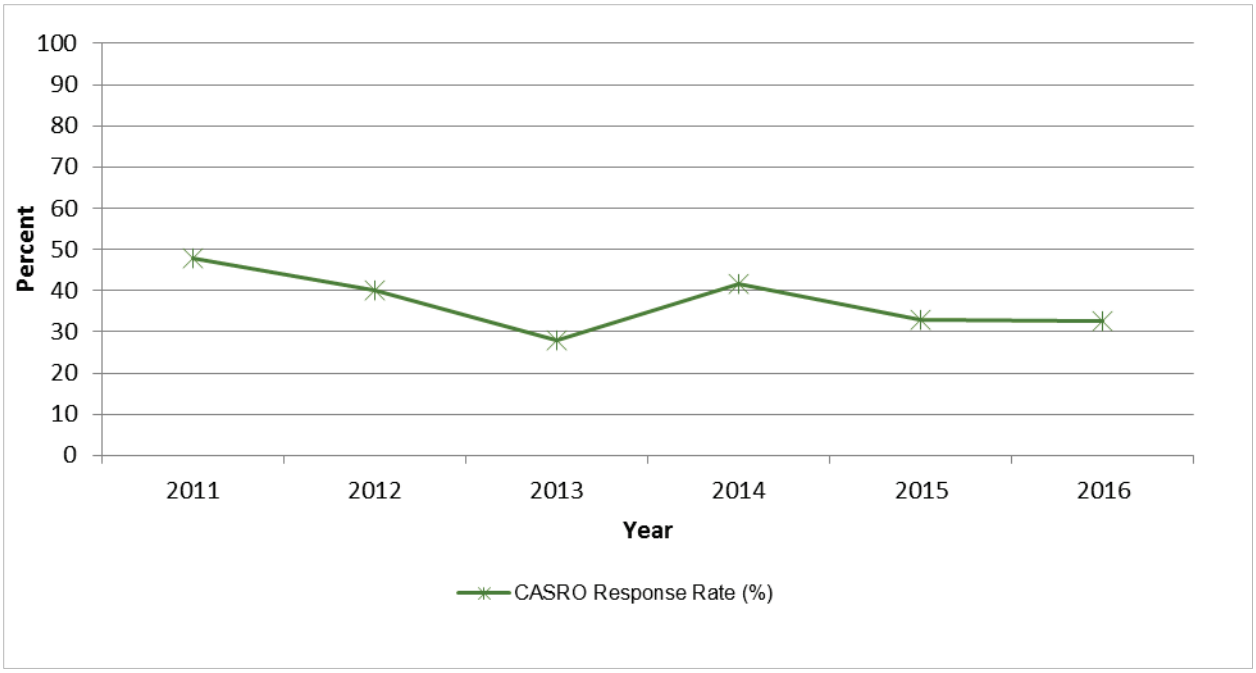
Table G.3: CASRO Response Rate for the Combined Landline and Cell-Phone Samples by Survey Year, National Immunization Survey - Teen, 2011-2016*

Survey Year†	CASRO Response Rate (%)
2011	47.7
2012	40.0
2013	28.0
2014	41.6
2015	32.9
2016	32.7

* Excludes U.S. territories.

† Cell-phone sample was added to the NIS-Teen in 2011.

Figure G.3: Trend in CASRO Response Rate for the Combined Landline and Cell-Phone Samples by Survey Year, National Immunization Survey - Teen, 2011-2016*



* Excludes U.S. territories.

The response rate is the number of households with a completed household interview divided by the estimated number of eligible households in the sample. Within each sample type (landline or cell phone), the number of eligible households was estimated using the CASRO assumptions; these assumptions are that the rate of households among the unresolved telephone numbers is the same as the observed rate of households among the resolved telephone numbers, and the rate of eligible households among unscreened households is the same as the observed rate of eligible households among screened households. Under these assumptions, within each sample type the CASRO response rate is equal to the product of the resolution rate, the screener completion rate, and the interview completion rate. For the combined samples, we have defined the CASRO response rate as the total number of households with a completed interview divided by the estimated total number of eligible households across both sample types, where the estimated total number of eligible households is equal to the sum of the estimated number of eligible households in the landline sample (using CASRO assumptions) and the estimated number of eligible households in the cell-phone sample (using CASRO assumptions). Table G.3 presents the CASRO response rate calculated in this way for the combined landline and cell-phone samples, by survey year, and Figure G.3 presents a graphical representation. Because the CASRO response rate is lower for the cell-phone sample than for the landline sample, the CASRO response rate for the combined landline and cell-phone samples was lower in years with a larger cell-phone sample and higher in years with a smaller cell-phone sample.

Table G.4: Vaccine-Specific Coverage Levels among Teens Age 13-17 Years in the United States by Survey Year, National Immunization Survey - Teen, 2006-2016*

Survey Year	≥ 1 Td or Tdap[†]	≥ 1 Tdap Since Age 10[§]	≥ 1 MenACWY[¶]	FEMALE ≥ 1 Dose HPV**	FEMALE ≥ 3 Doses HPV[††]	MALE ≥ 1 Dose HPV**	MALE ≥ 3 Doses HPV[††]	≥2 MMR[§§]	≥ 3 HepB[¶¶]	VARICELLA History of Varicella Disease***	VARICELLA ≥ 2 Doses Varicella Vaccine if Had No History of Varicella Disease
2006[†††]	60.1	10.8	11.7					86.9	81.3	69.9	
2007[†††]	72.3	30.4	32.4	25.1				88.9	87.6	65.8	18.8
2008	72.2	40.8	41.8	37.2	17.9			89.3	87.9	59.8	34.1
2009	76.2	55.6	53.6	44.3	26.7			89.1	89.9	52.7	48.6
2010	81.2	68.7	62.6	48.7	31.9			90.4	91.6	44.7	58.1
2011[§§§]	85.3	78.2	70.5	53.0	34.8	8.3	1.3	91.1	92.3	36.6	68.3
2012	88.5	84.6	74.0	53.8	33.4	20.8	6.8	91.4	92.8	30.6	74.9
2013	89.1	86.0	77.8	57.3	37.6	34.6	13.9	91.8	93.2	25.4	78.5
2014[¶¶¶]	89.8	87.6	79.3	60.0	39.7	41.7	21.6	90.7	91.4	21.0	81.0
2015	89.6	86.4	81.3	62.8	41.9	49.8	28.1	90.7	91.1	17.8	86.1
2016	90.6	88.0	82.2	65.1	43.0	56.0	31.5	90.9	91.4	15.2	85.6

* Excludes U.S. territories.

[†] ≥1 dose of tetanus toxoid-diphtheria vaccine (Td) or tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis (Tdap) at or after age ten years.

[§] ≥1 tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis (Tdap) since at or after age ten years.

[¶] ≥1 quadrivalent meningococcal conjugate vaccine or meningococcal -unknown type vaccine.

** ≥1 human papillomavirus vaccine, 9-valent (9vHPV), quadrivalent (4vHPV) or bivalent (2vHPV).

[††] ≥3 human papillomavirus vaccine, 9-valent (9vHPV), quadrivalent (4vHPV) or bivalent (2vHPV). Some adolescents may have received more than the three recommended HPV doses.

[§§] ≥ 2 doses of measles-mumps-rubella vaccine.

[¶¶] ≥3 doses of hepatitis B vaccine.

*** By parent/guardian report or provider records.

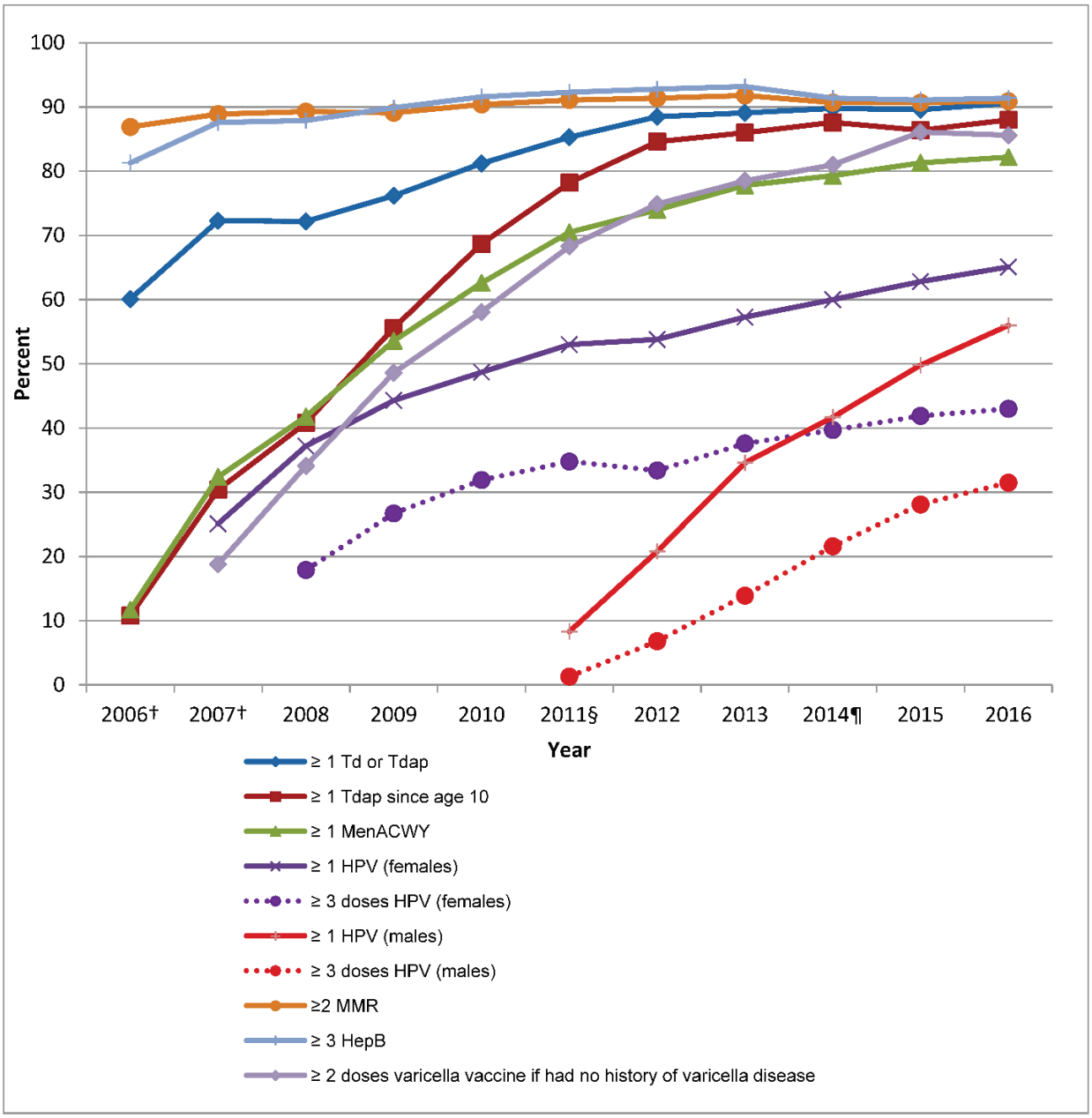
[†††] In 2006 and 2007, NIS-Teen was conducted only in Quarter 4.

[§§§] Prior to 2011, estimates are single-frame, landline-sample estimates. From 2011 onward, estimates are dual-frame (landline plus cell-phone) estimates.

Source: http://www.cdc.gov/vaccines/imz-managers/coverage/nis/teen/index.html

[¶¶¶] Revised definition of adequate provider data (APD) implemented.

Figure G.4: Trends in Vaccine-Specific Coverage Levels among Teens Aged 13-17 Years in the United States by Survey Year, National Immunization Survey - Teen, 2006-2016*



* Excludes U.S. territories.

† In 2006 and 2007, NIS-Teen was conducted only in Quarter 4.

§ Prior to 2011, estimates are single-frame, landline-sample estimates. From 2011 onward, estimates are dual-frame (landline plus cell-phone) estimates.

¶ Revised definition of adequate provider data (APD) implemented.

Figure G.4 presents a graphical representation of selected data contained in Table G.4. It displays the trend in selected vaccine-specific coverage levels among teens aged 13-17 years from 2006 to 2016. Note that these data apply to the landline sample only from 2006-2010, and to the dual-frame sample from 2011 forward.

Appendix H: Key NIS-Teen Response Rates by Area

Table H.1: Key Indicators* for the Landline Sample by Estimation Area, National Immunization Survey - Teen, 2016

State/Estimation Area	Resolution Rate (%)	Screener Completion Rate (%)	Interview Completion Rate (%)	CASRO Response Rate (%)	Teens with Adequate Provider Data (%)
U.S. National†	82.0	83.2	81.3	55.5	53.9
Alabama	83.6	84.5	84.4	59.5	48.8
Alaska	88.3	83.7	87.6	64.7	56.3
Arizona	83.3	83.7	79.8	55.6	45.4
Arkansas	85.6	87.5	79.4	59.4	53.1
California	81.3	79.9	80.9	52.6	46.7
Colorado	84.0	83.4	79.7	55.8	48.9
Connecticut	77.0	81.3	82.2	51.5	54.8
Delaware	75.1	82.6	80.2	49.8	58.1
District of Columbia	82.1	83.1	83.4	56.9	47.3
Florida	81.9	83.6	79.4	54.4	42.3
Georgia	82.8	81.9	76.3	51.7	55.3
Hawaii	84.2	78.8	74.3	49.3	56.0
Idaho	86.1	85.5	91.6	67.4	55.8
Illinois	85.0	82.7	81.8	57.5	49.2
IL-City of Chicago	86.0	81.5	78.8	55.2	47.4
IL-Rest of State	83.4	84.1	84.7	59.4	50.7
Indiana	84.6	86.0	82.8	60.2	56.6
Iowa	86.7	88.0	89.0	67.9	56.2
Kansas	84.9	85.6	85.8	62.4	64.5
Kentucky	82.3	83.8	82.3	56.7	59.8
Louisiana	84.6	83.5	77.5	54.8	53.3
Maine	80.9	87.7	84.3	59.8	60.2
Maryland	77.7	80.5	79.0	49.5	54.7
Massachusetts	75.0	80.9	80.5	48.9	53.6
Michigan	84.6	84.9	78.9	56.7	50.8
Minnesota	84.9	85.9	82.0	59.8	63.0
Mississippi	85.5	84.6	84.8	61.4	58.0
Missouri	83.2	86.1	84.2	60.4	55.9
Montana	85.2	85.4	84.6	61.5	66.7
Nebraska	83.3	86.4	79.6	57.3	55.7
Nevada	77.8	81.7	79.1	50.3	47.5

State/Estimation Area	Resolution Rate (%)	Screener Completion Rate (%)	Interview Completion Rate (%)	CASRO Response Rate (%)	Teens with Adequate Provider Data (%)
New Hampshire	78.0	81.9	81.8	52.3	55.3
New Jersey	76.2	78.9	75.9	45.7	52.2
New Mexico	86.4	85.5	83.9	62.0	59.2
New York	76.7	78.4	77.1	46.4	49.3
NY-City of New York	76.6	76.4	73.8	43.2	43.3
NY-Rest of State	76.9	80.9	80.7	50.2	55.2
North Carolina	80.0	83.6	78.3	52.3	56.9
North Dakota	87.3	87.8	81.5	62.5	56.0
Ohio	83.6	84.4	81.8	57.8	56.0
Oklahoma	84.2	84.7	86.0	61.3	47.1
Oregon	86.0	88.1	88.3	66.9	55.4
Pennsylvania	79.0	82.2	80.2	52.1	54.7
PA-Philadelphia County	80.6	82.4	77.4	51.3	52.0
PA-Rest of State	76.7	82.1	82.0	51.6	56.3
Rhode Island	74.3	82.6	78.4	48.1	52.7
South Carolina	82.1	83.7	76.3	52.4	49.2
South Dakota	88.5	86.2	85.1	64.9	65.6
Tennessee	83.9	84.4	85.9	60.9	51.4
Texas	84.5	81.3	76.9	52.8	50.2
TX-Bexar County	80.4	81.5	78.0	51.1	63.5
TX-City of Houston	85.8	79.7	74.1	50.7	47.7
TX-Dallas County	85.3	81.4	77.1	53.5	47.8
TX-El Paso County	85.0	82.4	74.5	52.2	59.1
TX-Rest of State	83.0	82.6	80.8	55.4	43.5
Utah	85.6	83.2	91.7	65.2	54.5
Vermont	81.1	85.9	83.7	58.3	65.9
Virginia	78.3	81.6	83.0	53.1	53.5
Washington	83.7	83.1	81.5	56.7	56.7
West Virginia	76.6	84.6	77.0	49.9	50.7
Wisconsin	82.2	86.0	88.6	62.6	55.3
Wyoming	85.1	86.0	91.6	67.1	55.5
Puerto Rico	90.8	87.0	59.5	47.0	34.3
U.S. Virgin Islands	93.5	90.2	76.2	64.3	57.4
Guam	89.2	78.2	65.5	45.7	62.3

* For the definition of the key indicators see Table 1.

† Excludes U.S. territories.

Table H.2: Key Indicators* for the Cell-Phone Sample by Estimation Area, National Immunization Survey - Teen, 2016

Area	Resolution Rate (%)	Screener Completion Rate (%)	Interview Completion Rate (%)	CASRO Response Rate (%)	Children with Adequate Provider Data (%)
U.S. National†	54.4	76.8	70.7	29.5	47.4
Alabama	56.9	76.7	69.2	30.2	48.3
Alaska	69.2	81.8	75.7	42.9	51.0
Arizona	52.6	76.4	73.5	29.5	45.8
Arkansas	61.8	78.3	72.8	35.2	48.9
California	48.3	74.8	65.3	23.6	40.2
Colorado	51.3	77.6	72.6	28.9	46.6
Connecticut	44.5	76.4	67.3	22.9	45.7
Delaware	50.1	76.3	67.5	25.8	47.6
District of Columbia	56.7	77.3	71.2	31.2	48.8
Florida	50.2	77.1	66.5	25.7	44.9
Georgia	54.3	76.7	68.3	28.4	47.5
Hawaii	49.6	74.2	70.3	25.9	48.3
Idaho	52.1	78.0	80.4	32.6	51.6
Illinois	59.0	76.7	67.6	30.6	41.9
IL-City of Chicago	63.0	76.5	67.1	32.3	38.5
IL-Rest of State	57.0	76.8	67.8	29.7	43.0
Indiana	53.4	78.7	70.0	29.4	49.6
Iowa	57.6	80.7	72.2	33.6	54.0
Kansas	64.3	78.7	72.8	36.8	50.2
Kentucky	54.8	77.3	71.4	30.3	49.8
Louisiana	60.7	76.0	68.6	31.6	45.8
Maine	49.4	79.4	76.8	30.1	50.1
Maryland	52.7	78.9	72.6	30.2	46.4
Massachusetts	52.2	76.1	68.3	27.2	48.4
Michigan	54.3	77.3	72.2	30.3	47.3
Minnesota	51.6	78.3	76.1	30.7	47.1
Mississippi	58.6	76.5	69.1	31.0	52.4
Missouri	55.5	79.1	73.0	32.1	46.2
Montana	59.4	81.1	76.2	36.7	51.6
Nebraska	64.1	78.8	74.2	37.5	50.8
Nevada	49.4	76.2	69.3	26.1	42.0
New Hampshire	49.3	76.7	73.0	27.6	47.3

Area	Resolution Rate (%)	Screener Completion Rate (%)	Interview Completion Rate (%)	CASRO Response Rate (%)	Children with Adequate Provider Data (%)
New Jersey	49.5	72.8	64.7	23.3	47.9
New Mexico	55.6	77.7	71.6	30.9	51.7
New York	50.0	74.9	65.2	24.4	42.2
NY-City of New York	50.9	74.1	62.4	23.5	39.9
NY-Rest of State	48.7	76.3	69.2	25.7	44.2
North Carolina	52.1	76.3	68.6	27.3	45.4
North Dakota	65.6	81.7	74.6	40.0	51.3
Ohio	52.0	77.9	70.1	28.4	46.8
Oklahoma	61.0	76.8	72.1	33.8	42.1
Oregon	49.0	79.3	76.0	29.6	53.5
Pennsylvania	53.9	75.8	66.9	27.3	49.2
PA-Philadelphia County	54.1	75.7	66.7	27.3	49.7
PA-Rest of State	48.2	76.0	69.4	25.4	48.9
Rhode Island	46.1	74.7	69.2	23.8	51.4
South Carolina	53.3	77.1	70.8	29.1	43.8
South Dakota	61.3	79.8	73.0	35.7	50.5
Tennessee	54.4	76.0	71.0	29.3	46.8
Texas	49.8	74.0	67.6	24.9	44.0
TX-Bexar County	53.6	75.3	69.2	27.9	47.0
TX-City of Houston	49.5	73.0	70.4	25.4	44.0
TX-Dallas County	47.3	73.7	66.6	23.2	39.0
TX-El Paso County	48.9	74.2	64.4	23.4	50.9
TX-Rest of State	55.7	70.6	60.3	23.7	42.2
Utah	54.5	74.7	74.0	30.1	51.7
Vermont	49.1	78.2	76.6	29.4	52.1
Virginia	51.3	76.5	73.4	28.8	48.6
Washington	47.4	77.4	75.7	27.8	48.2
West Virginia	52.4	77.2	74.4	30.1	46.7
Wisconsin	53.8	78.1	73.6	30.9	48.1
Wyoming	76.4	79.6	78.4	47.7	53.4
Puerto Rico	57.8	83.0	64.8	31.1	38.4
U.S. Virgin Islands	75.8	83.3	66.2	41.9	51.0
Guam	52.3	76.5	58.1	23.2	59.2

* For the definition of the key indicators see Table 1.

† Excludes U.S. territories.

Table H.3: CASRO Response Rate for the Combined Landline and Cell-Phone Samples* by Estimation Area, National Immunization Survey - Teen, 2016

Area	CASRO Response Rate (%)
U.S. National†	32.7
Alabama	33.2
Alaska	46.7
Arizona	32.5
Arkansas	37.3
California	27.7
Colorado	33.4
Connecticut	27.7
Delaware	28.6
District of Columbia	33.3
Florida	28.7
Georgia	31.6
Hawaii	28.5
Idaho	35.0
Illinois	33.5
IL-City of Chicago	36.0
IL-Rest of State	32.2
Indiana	33.0
Iowa	37.5
Kansas	39.7
Kentucky	32.6
Louisiana	34.4
Maine	34.3
Maryland	39.4
Massachusetts	31.2
Michigan	33.5
Minnesota	34.0
Mississippi	33.6
Missouri	34.8
Montana	39.6
Nebraska	40.3
Nevada	29.5
New Hampshire	31.8
New Jersey	27.5
New Mexico	34.1

Area	CASRO Response Rate (%)
New York	27.8
NY-City of New York	26.3
NY-Rest of State	29.9
North Carolina	30.1
North Dakota	42.5
Ohio	31.4
Oklahoma	36.8
Oregon	33.5
Pennsylvania	30.1
PA-Philadelphia County	28.5
PA-Rest of State	41.5
Rhode Island	27.0
South Carolina	31.5
South Dakota	39.1
Tennessee	32.2
Texas	27.0
TX-Bexar County	28.9
TX-City of Houston	27.6
TX-Dallas County	24.5
TX-El Paso County	25.6
TX-Rest of State	43.9
Utah	33.4
Vermont	34.9
Virginia	35.8
Washington	32.0
West Virginia	32.5
Wisconsin	34.4
Wyoming	51.0
Puerto Rico	33.2
U.S. Virgin Islands	44.4
Guam	31.5

* For the definition of the CASRO response rate for the combined landline and cell-phone samples, see footnote 6 of Table 1.

† Excludes U.S. territories.