

National Early Season Flu Vaccination Coverage

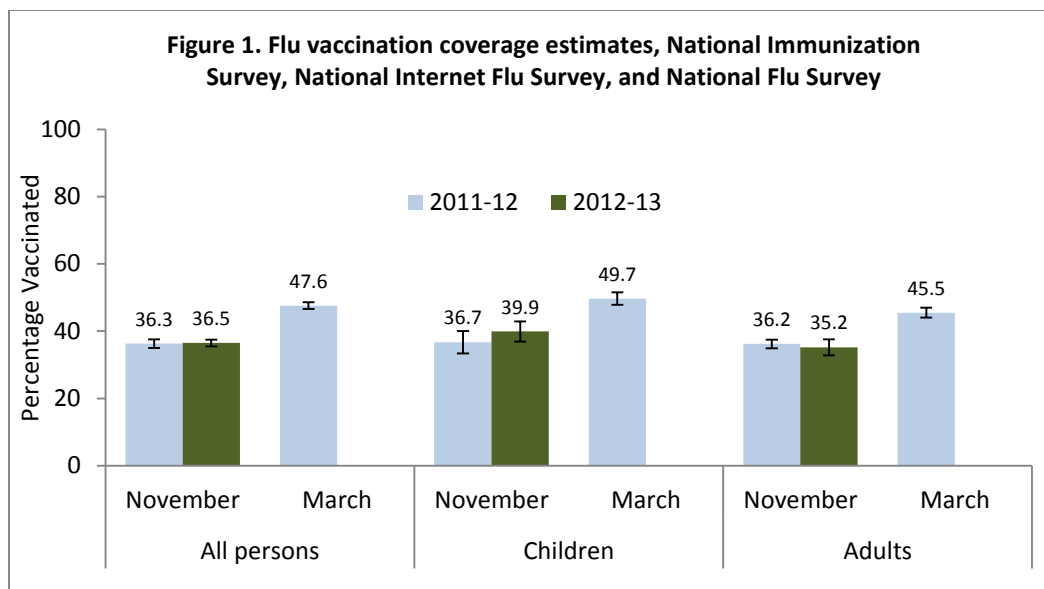
United States, 2012-13 Flu Season



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Data sources: National Immunization Survey and National Internet Flu Survey, November 2012



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Influenza (the flu) can be a serious disease that can lead to hospitalization and sometimes even death.

- Anyone can get sick from the flu.
- The severity of flu varies annually (1).
- Flu illnesses occur in people of all ages, resulting in lost days from work and school and doctor visits (1).
- An average of 226,000 hospitalizations and 3,000 to 49,000 flu-related deaths occurring each year (2, 3).

The first and most important step in protecting against the flu is to get a flu vaccination each season. CDC recommends that everyone ages 6 months and older get a flu vaccination each year (1).

Survey data were collected using an internet panel survey of adults (National Internet Flu Survey) conducted from November 2-15, 2012 and using an ongoing telephone survey of parents (National Immunization Survey) from October 4-November 17, 2012. The results of these survey data provide information for use by vaccination campaigns during National Influenza Vaccination Week (December 2-8, 2012). This report provides timely early flu season estimates (early to mid-November) of how many people in the United States received a flu vaccination. Final 2012-13 influenza season coverage estimates will be available after the end of the season.

Note:

This report compares November 2012 estimates with results from the November 2011 and March 2011 National Immunization Survey (NIS) and National Flu Survey (NFS). The survey methods for the child data collection was the same for the two seasons. The survey methods for the adult data changed. Last season the survey was a telephone survey while this season the survey was an internet survey; readers should be aware that the estimates for adults may not be directly comparable.

KEY FINDINGS

- Fewer than half of children and adults were vaccinated by early season (early to mid-November 2012);
 - 36.5% of people 6 months and older,
 - 39.9% of children, and
 - 35.2% of adults had received a flu vaccination.
- Flu vaccination coverage estimates were similar to those from the same time during the last flu season.
- Among children, early season flu vaccination coverage was similar across all the racial/ethnic groups.
- Among adults, Hispanics had lower flu vaccination coverage than both non-Hispanic white adults and non-Hispanic other or multiple race adults. Flu vaccination coverage was similar across all other racial/ethnic groups.
- Among both adults and children, the most common places for flu vaccination were medical locations. Retail settings and work places were other important venues for adults.
- Conclusions/Recommendations:
 - Flu vaccination coverage is similar to what it was during the same time last flu season.
 - More than 60% of Americans have not taken advantage of flu vaccination and the protection it offers from influenza and its complications.
 - Individuals should get flu vaccinations as soon as possible.
 - Providers should recommend a flu vaccination to all their patients and make plans to vaccinate their patients and staff, as well as get vaccinated themselves.
 - Vaccination providers and immunization programs should work to ensure reminder/recall systems are in place so that everyone is reminded to get a flu shot during the season.

WHO WAS VACCINATED?

Coverage Estimates By Age Group

All Ages (≥ 6 months)

- Flu vaccination coverage early in the 2012-13 season was 36.5% which was similar to where we were at this time last flu season (36.3%; Table 1)

Table 1. Flu vaccination coverage by age group, early 2012-13 season, National Immunization Survey and National Internet Flu Survey		
	November 2011 %* ± 95% CI†	November 2012 % ± 95% CI
Overall (≥ 6 months)	36.3 ± 1.3	36.5 ± 1.0
Children (6 months-17 years)	36.7 ± 3.3	39.9 ± 3.0
Adults (≥ 18 years)	36.2 ± 1.3	35.2 ± 2.4
Footnotes (p 13) Data Source and Methods (p 10) Limitations (p 12)		

Children (6 months through 17 years)

- Early season flu vaccination coverage as of mid-November with one or more doses for all children was 39.9%, similar to coverage estimates from the same time the previous season (Table 2).
- Children ages 5-12 years had an increase in coverage of about 6 percentage points compared to the same time last season.
- Flu vaccination coverage was highest in children 6 months to 4 years (49.3%) and lowest among children 13-17 years (29.7%).

Table 2. Flu vaccination coverage among children, early 2012-13 season, National Immunization Survey		
	November 2011 %* ± 95% CI	November 2012 % ± 95% CI
All children (6 months-17 years)	36.7 ± 3.3	39.9 ± 3.0
6 months-4 years	48.8 ± 8.6	49.3 ± 6.3
5-12 years	36.5 ± 4.2	42.3 ± 3.8
13-17 years	25.8 ± 4.1	29.7 ± 5.7
Footnotes (p 13) Data Source and Methods (p 10) Limitations (p 12)		

Adults (ages 18 years and older)

- Among adults ≥ 18 years, flu vaccination coverage was 35.2%, similar to the same time last season (Table 3).
- All adult age groups had similar coverage as last flu season by this time.
- Flu vaccination coverage among adults increased as age increased. Vaccination coverage among adults was highest among adults ≥ 65 years (59.2%) and lowest among adults 18-49 years (26.3%).
- Adults 18-64 years with high-risk conditions had higher coverage (42.1%) than 18-64 year olds without high risk conditions (25.7%)

Table 3. Flu vaccination coverage among adults, early 2012-13 season, National Internet Flu Survey compared to 2011 National Flu Survey

	November 2011 (NFS) %* \pm 95% CI [†]	November 2012 (NIFS) % \pm 95% CI
All adults (≥ 18 years)	36.2 \pm 1.3	35.2 \pm 2.4
18-49 years	27.2 \pm 1.7	26.3 \pm 3.1
50-64 years	39.8 \pm 2.1	37.9 \pm 4.3
18-64 years	30.9 \pm 1.4	30.0 \pm 2.5
18-64 years, HR	41.5 \pm 3.0	42.1 \pm 5.0
18-64 years, non-HR	27.3 \pm 1.6	25.7 \pm 2.9
65+ years	62.3 \pm 2.2	59.2 \pm 6.1

[Footnotes \(p 13\)](#) | [Data Source and Methods \(p 10\)](#) | [Limitations \(p 12\)](#)

Flu Vaccination Coverage by Race/Ethnicity

Children (6 months through 17 years)

- In these early season estimates, there were no statistically significant differences between any of the race/ethnicity groups (Table 4).
- Within race/ethnicity group, there were no differences between early-season estimates compared to the previous early-season estimates.

Table 4. Flu vaccination coverage among children by race and ethnicity, early 2012-13 season, National Immunization Survey		
	November 2011 %* ± 95% CI [†]	November 2012 % ± 95% CI
Children (6 months-17 years)	36.7 ± 3.3	39.9 ± 3.0
Hispanic	36.5 ± 6.9	42.4 ± 7.1
Non-Hispanic, White only	37.2 ± 4.4	39.8 ± 3.8
Non-Hispanic, Black only	37.1 ± 7.8	39.0 ± 8.4
Non-Hispanic, Other or multiple race	32.6 ± 7.7	42.1 ± 8.0
Footnotes (p 13) Data Source and Methods (p 10) Limitations (p 12)		

Adults (ages 18 years and older)

- There were only two early season differences between the race/ethnicity groups (Table 5).
 - Non-Hispanic white adults (37.4%) had higher coverage than Hispanic adults (29.5%).
 - Non-Hispanic other or multiple race adults (37.2%) had higher coverage than Hispanic adults (29.5%).
- There was a 5 percentage point increase in coverage among non-Hispanic black adults compared to the previous early season estimate; however, survey methodology changed between the two years. This finding needs to be confirmed using other sources.
 - There were no other significant changes within the other race/ethnicity groups.

Table 5. Flu vaccination coverage among adults by race and ethnicity, early 2012-13 season, National Internet Flu Survey

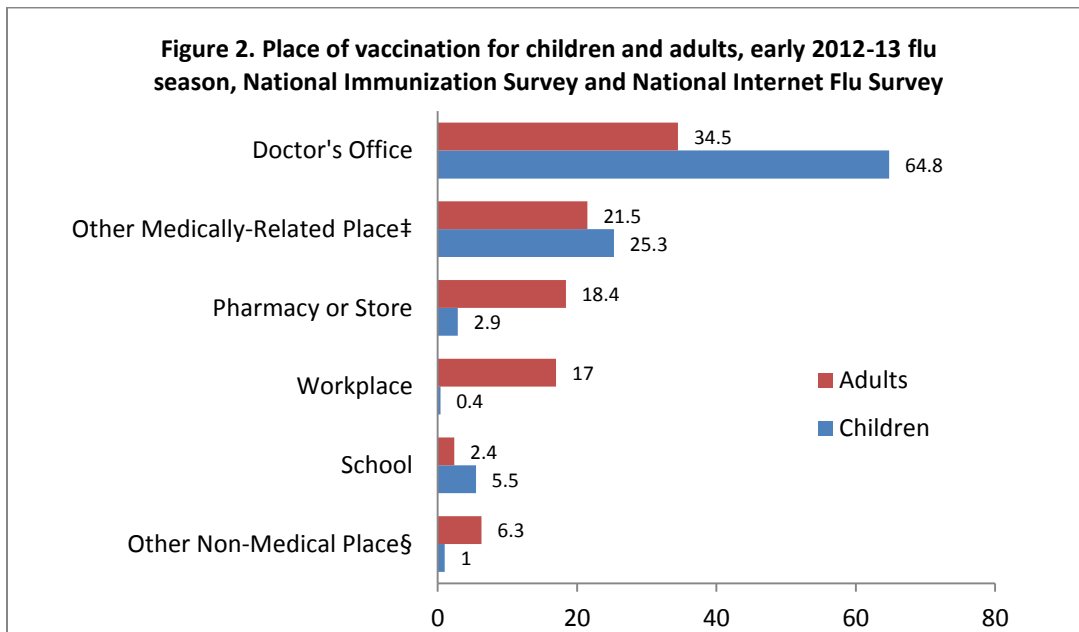
	November 2011 (NFS) %* ± 95% CI †	November 2012 (NIFS) % ± 95% CI *
Adults (≥ 18 years)	36.2 ± 1.3	35.2 ± 2.4
Hispanic	26.0 ± 3.5	29.5 ± 4.5
Non-Hispanic, White only	39.9 ± 1.5	37.4 ± 2.5
Non-Hispanic, Black only	28.0 ± 3.4	33.4 ± 4.1
Non-Hispanic, Other or multiple race	34.8 ± 4.6	37.2 ± 4.7

[Footnotes](#) (p 13) | [Data Source and Methods](#) (p 7) | [Limitations](#) (p 9)

Place of Vaccination

The most common place of vaccination among both adults (34.5%) and children (64.8%) was a doctor's office (Figure 2). These results are similar to results from the early 2011-12 season when 31.6% of adults and 63.3% of children were vaccinated in doctor's offices.

Other common places of flu vaccination reported by adults during the 2012-13 season included medical places other than doctor's offices (21.5%), pharmacies or stores (18.4%), and workplaces (17.0%). The next most common places of flu vaccination for children were medically related places other than doctor's offices (25.3%) and schools (5.5%).



[Previous Year](#) | [Footnotes \(p 13\)](#) | [Data Source and Methods \(p 10\)](#) | [Limitations \(p 12\)](#)

WHAT CAN BE DONE? (Recommendations)

Although many adults (35.2%) and children (39.9%) were vaccinated early in the 2012-13 flu season, more than half of the United States population \geq 6 months was not vaccinated against flu. Continued efforts are needed to increase vaccination coverage during the next few months of this season, and in future seasons, including:

- **Decrease racial and ethnic disparities:**
 - Racial and ethnic disparities remain among adults when compared with non-Hispanic whites. Continued efforts to increase vaccination coverage among adults in other racial and ethnic groups are necessary to decrease these disparities.
 - Immunization programs should work with leaders in black, Hispanic, and American Indian and Alaska Native communities to ensure all members have access to and receive flu vaccination.
 - Work with providers in these communities to encourage them to offer flu vaccination.
- **Implement proven strategies to increase vaccination coverage:**
 - Increased effort is needed to implement strategies necessary to increase flu vaccination coverage.
 - Patients are much more likely to get vaccinated when health care providers strongly recommend their patients get vaccinated.
 - Standing orders, client reminder and recall systems, and provider reminders are also important strategies proven to increase vaccination.
 - The Community Guide for Preventive Services provides guidance on effective interventions aimed to increase the use of universally recommended vaccines, as well as targeted interventions for people at higher risk for severe illness from influenza, including older adults, pregnant women, young children and persons with medical conditions such as asthma, heart disease, diabetes, neurologic conditions, and people that may have a weakened immune system.

DATA SOURCE AND METHODS

The 2012-13 flu vaccination coverage estimates and findings reported here are early season estimates. These results will likely differ from final end-of-season coverage estimates which are expected in September 2013.

The estimates in this report are based on two different data sources. Estimates for children are based on data from the National Immunization Survey (NIS) while estimates for adults are based on data from the November national Internet Flu Survey (NIFS). NIS data from October-November 2012 are compared to NIS data from October-November 2011. Adult NIFS data from November 2012 were compared to results from the November National Flu Survey (NFS) from November 2011.

National Immunization Survey

The National Immunization Survey (NIS) is an ongoing, national, random-digit-dialed (RDD) telephone survey of households with children conducted by NORC at the University of Chicago and sponsored by CDC. The survey includes the NIS-Child for households with children who are 19–35 months and the NIS-Teen for households with children 13–17 years. For households with children 6–18 months and 3–12 years, a short flu vaccination module is conducted. Sampling for the NIS is done by list-assisted RDD sampling of both landline and cellular telephones. Sample selection is carried out separately for landline and cellular telephone numbers. Advance letters are sent to landline households for which the telephone number could be matched to an address. The survey interviewers conduct the survey in both English and Spanish; interviews are conducted in other languages using language line interpretation services.

Flu vaccination coverage estimates presented in this report are based upon interviews conducted from October 4 - November 17, 2012. A total of 17,024 NIS interviews were completed for children age 6 months to 17 years. Of these 9,459 were by landline telephone and 7,565 were by cellphone. For reporting place of vaccination, three weeks of NIS interviews (October 28 – November 17, 2012) were combined; therefore the place of vaccination estimates are based on 3,591 vaccinated children.

Flu vaccination coverage estimates represent approximately the cumulative proportion of persons vaccinated as of November 14, 2012 and were calculated using an enhanced estimation strategy that resembles the Kaplan Meier estimation procedure (described

elsewhere in detail) (4). The flu vaccination coverage estimates represent receipt of at least one dose. Receipt of two doses in children less than 9 years old will be available at the end of the flu season. Place of vaccination was estimated using simple weighted proportions. All estimates were weighted based upon the probability of selection of the telephone number, including adjustments for non-response at the telephone number resolution and household screening stages, probability of selecting the child of interest within the household, and for person non-response. The data were also weighted using a ratio adjustment to population controls (age, sex, race/ethnicity, and geographic area). All NIS estimates reported here were calculated by NORC at the University of Chicago, utilizing weights they developed.

National Internet Flu Survey

The adult estimates are based on data from the November 2012 National Internet Flu Survey (NIFS) conducted by GfK Custom Research, LLC for the University of Michigan, and sponsored by the CDC, to rapidly collect flu vaccination-related data during the 2012-13 flu season. The survey was conducted using: 1) a probability-based panel designed to be representative of the U.S. population, and 2) an opt-in, non-probability-based sample. The survey was conducted in both English and Spanish.

For the probability-based panel, the sample was stratified by age group and by race/ethnicity. For this ongoing panel, participants are initially chosen by a random selection of telephone numbers and residential addresses. Persons in selected households are then invited by telephone or by mail to participate in the web-enabled KnowledgePanel®. For those who agree to participate, but do not already have Internet access, GfK provides both a laptop and ISP connection at no cost. People who already have computers and Internet service participate using their own equipment. Panelists then receive unique log-in information for accessing surveys online, and then are sent emails throughout each month inviting them to participate in surveys. The field period for data collection for the NIFS probability-based panel sample was November 2 - 14, 2012. On November 2, 2012 a survey invitation was sent to a sample consisting of 2,611 panel members. The November 2 sample excluded members in states that were impacted by Hurricane Sandy. On November 5, 2012, the remaining panel sample was fielded to 923 panel members who resided in states affected by Hurricane Sandy (NH, VT, MA, RI, CT, NY, NY, PA, DE, MD, DC, VA, WV, and NC). A total of 2,349 completed the probability-based panel survey portion of NIFS. The estimates in Tables 1 and 3 and both figures are based upon these data.

The opt-in, non-probability sample, was conducted because the probability-based panel sample did not contain a large enough sample of black and Hispanic adults aged 65 and older. The field period for data collection for the opt-in sample was November 5 -15, 2012. A total of 3,659 (2708 panel augment and 951 opt-in) respondents completed the non-probability portion of the NIFS. The estimates in Table 5 are based on the probability and the non-probability data combined, for a total of 6,008 respondents. All NIFS estimates reported here were calculated by the University of Michigan and utilizing weights developed by GfK.

Additional Methods

Flu vaccination estimates as of November for the 2012-13 season were compared with estimates from surveys conducted at the same time during the 2011-12 season. From the 2011-12 to the 2012-13 season, for children, there was no change in the survey mechanism. For adults, there was a change. As described above, the 2012-13 data was collected using NIFS, an internet panel survey. For the 2011-12 season, estimates for adults were collected using the National Flu Survey, a telephone based survey that has been described in detail previously (details at [National Mid-Season Flu Vaccination Coverage, November 2011-12 Influenza Season, United States](#)).

Flu vaccination coverage estimates for age and race/ethnicity subgroups for the 2012-13 season were compared using t-tests to determine if any differences existed. All differences reported here were statistically significant with a p-level less than 0.05.

To produce a national estimate of flu vaccination coverage for all persons ≥6 months, the estimates from the NIS for children and from NIFS for adults were combined by weighting them by population size (based on census population counts).

LIMITATIONS

- The findings reported here are early season estimates and will likely increase for the final end-of-season coverage estimates.
- Comparisons of early season estimates from the 2012-13 to the prior season for adults and for all persons 6 months and older should be interpreted with caution because the survey methods for adults differed. (See [note](#).)
- Children 6 months-8 years may require two doses of flu vaccination to optimize immunity ([1](#)); estimates in this report reflect parental-report of at least one dose and not whether those children requiring two doses were fully immunized.
- NIS is a telephone survey that excludes households with no telephone service. Non-coverage and nonresponse bias may remain after weighting adjustments.
- The adult estimates in this report are based upon NIFS, an internet panel survey. Although the internet panel was probability based, the estimates may not represent all adults in the United States.
- All data rely upon self-report and are not validated with medical records; validity studies have shown that parental report (for children) and self-report (for adults) may overestimate flu vaccination coverage.

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RELATED LINKS

- [FluVaxView - Influenza Vaccination Coverage](#)
- [Presentation to the Advisory Committee on Immunization Practices on "Influenza Vaccination Distribution and Coverage, United States, 2010-2011 and 2011-2012 Seasons" \[1.4 MB, 30 pages\]](#)
- [March Flu Vaccination Coverage, National Immunization Survey and National Flu Survey, March 2012](#)
- [Results from the November 2011 National Flu Survey – United States, 2010-11 Influenza Season](#)
- [Results from the March 2011 National Flu Survey – United States, 2010-11 Influenza Season \[570 KB, 8 pages\]](#)
- [Results from the November 2010 National Flu Survey – United States, 2010-11 Influenza Season \[652 KB, 7 pages\]](#)
- [National Immunization Survey](#)
- [US Vaccination Coverage Reported via NIS](#)
- [National Flu Survey](#)
- [CDC Influenza awareness campaign media relations toolkit, 2011 \[550 KB, 23 pages\]](#)
- [Follow CDC Flu on Twitter: @CDCFlu](#)

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3. Thompson WW, Shay DK, Weintraub E et al. Influenza-associated hospitalizations in the United States. JAMA 2004;292:1333-1340.
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FOOTNOTES

* All percentages in the table are weighted to the U.S. population.

† CI=Confidence interval half-width.

‡ Other medically-related place includes hospital, clinic or health center, local health department, and other unspecified medically-related place. Pharmacy or store includes pharmacy or drug store and local supermarket or grocery store.

§ Other non-medical place includes senior center, military-related place, other school, such as college or trade school, home and other unspecified non-medical place.

