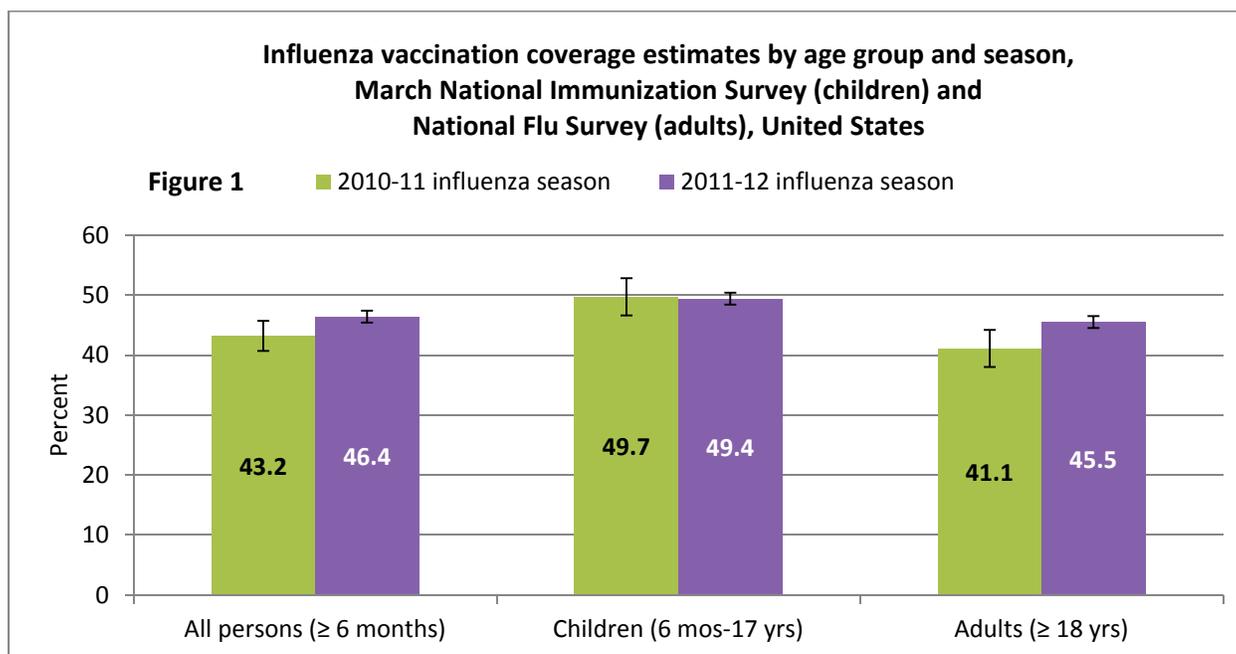


March Flu Vaccination Coverage United States, 2011-12 Influenza Season



Purpose

CDC routinely monitors influenza vaccination coverage to assess the impact of influenza vaccination programs in different populations. This report provides interim national estimates of influenza vaccination coverage for the 2011-12 influenza season.

Key Findings

The 2011-12 influenza vaccination coverage estimates and key findings reported here are preliminary. These results might differ from final end-of-season coverage estimates which are expected in September, 2012.

Preliminary estimates for the 2011-12 season suggest that:

- Overall, 46% of people 6 months and older were vaccinated during the 2011-12 season, a slight increase when compared with the 2010-11 season (Figure 1).
 - **Children:** Vaccine uptake for the 2011-12 season was similar for children compared with the 2010-11 season.
 - **Adults:** Vaccine uptake for the 2011-12 season increased slightly for adults compared with the 2010-11 season.
- Among children, Hispanics had higher vaccination coverage than non-Hispanic white and non-Hispanic black children.
- Among adults, coverage was highest among non-Hispanic whites compared with other racial and ethnic groups.

- The most common places for vaccination among both adults and children were at medical locations, but retail settings and workplaces were other important venues for adults.

Key Limitations

Vaccinated individuals may be more likely to respond to surveys about immunizations than non-vaccinated individuals, individuals may not correctly remember if they (or their children) were vaccinated, and individuals with landline telephones may differ from the general population. Therefore, these surveys likely overestimate influenza vaccination coverage. Using the preliminary coverage estimates, 141 million individuals would have been vaccinated. However, only 132.1 million doses of influenza vaccine were distributed during the 2011-12 season.¹ While these telephone surveys likely overestimate vaccination coverage, the results for the 2011-12 season are directly comparable with estimates from the 2010-11 season.

Background

Annual influenza vaccination is the primary way to prevent influenza and its complications.² The severity of influenza varies annually with about:

- 3,000 to 49,000 influenza-related deaths occurring each year³
- 226,000 influenza-related hospitalizations on average each year⁴

CDC recommends annual influenza vaccination for all persons 6 months and older.² To estimate influenza vaccination coverage during the 2011-12 season, CDC analyzed:

- March 2012 National Immunization Survey (NIS) data for children 6 months through 17 years of age
- March 2012 National Flu Survey (NFS) data for adults ≥ 18 years of age

This report summarizes the findings from these surveys and compares March 2012 estimates with results from the March 2011 NIS and NFS. Estimates of vaccination uptake from the March NIS and NFS may differ from final end-of-season coverage estimates. Therefore, the trends reported here may not be reflected in final end-of-season coverage estimates.

Who Received Vaccine?

Coverage estimates for the 2011-12 season were compared with estimates from surveys conducted at the same time during the 2010-11 season. Coverage estimates for age and race/ethnicity subgroups for the 2011-12 season were compared to determine if any differences in vaccination coverage exist by age or race/ethnicity. All differences reported here are statistically significant.

- [Coverage Estimates by Age Group](#)
 - [All Ages](#)
 - [Children](#)
 - [Adults](#)
- [Coverage Estimates by Race/Ethnicity](#)
 - [Children](#)
 - [Adults](#)
 - [Place of Vaccination](#)

COVERAGE ESTIMATES BY AGE GROUP

All Ages (≥ 6 months)

- Estimated influenza vaccination coverage during the 2011-12 season was 46.4%, a small increase from 43.2% the same time the previous season (Table 1).

Table 1. Influenza vaccination coverage by age group, March National Immunization Survey and National Flu Survey

	March 2011 % ± 95% CI *	March 2012 % ± 95% CI *
Overall (≥ 6 months)	43.2 ± 2.5	46.4 ± 1.3
Children (6 months-17 years)	49.7 ± 3.1	49.4 ± 2.2
Adults (≥ 18 years)	41.1 ± 3.1	45.5 ± 1.5

* Percentages are weighted to the U.S. population; CI-Confidence interval half-width

Children (6 months through 17 years)

- Estimated vaccination coverage with one or more doses for all children was 49.4%, similar to coverage estimates from the same time the previous season (Table 2).
- Estimated coverage among children was highest in younger children and was lower in older age groups. Estimated coverage was highest in children 6 to 23 months (67.5%) and lowest among children 5-17 years (45.1%).
- Estimated coverage for all child age groups was similar to the same time the previous season.

Table 2. Influenza vaccination coverage among children, March National Immunization Survey

	March 2011 % ± 95% CI *	March 2012 % ± 95% CI *
Children (6 months-17 years)	49.7 ± 3.1	49.4 ± 2.2
6-23 months	66.3 ± 10.3 [§]	67.5 ± 7.0
2-4 years	54.4 ± 8.9	58.5 ± 5.5
5-17 years	46.6 ± 3.5	45.1 ± 2.4

* Percentages are weighted to the U.S. population; CI-Confidence interval half-width

§Estimate may not be reliable, confidence interval half-width >10.

Adults

- Among adults ≥ 18 years, estimated vaccination coverage was 45.5%, an increase from 41.1% the same time the previous season (Table 3).
- Estimated 2011-12 coverage among adults 18-49 years increased by 7 percentage points compared with the 2010-11 season.
- Estimated coverage among adults increased with each increase in adult age group. Estimated coverage among adults was highest among adults ≥ 65 years (70.8%) and lowest among adults 18-49 years (35.8%).
- Estimated coverage among adults 50 to 64 years or ≥ 65 years did not differ when compared with the same time the previous season.

Table 3. Influenza vaccination coverage among adults, March National Flu Survey

	March 2011 % \pm 95% CI *	March 2012 % \pm 95% CI *
Adults (≥ 18 years)	41.1 \pm 3.1	45.5 \pm 1.5
18-49 years	28.6 \pm 4.1	35.8 \pm 2.1
50-64 years	47.7 \pm 5.6	51.0 \pm 2.6
65+ years	74.7 \pm 4.8	70.8 \pm 2.3

* Percentages are weighted to the U.S. population; CI=Confidence interval half-width

COVERAGE ESTIMATES BY RACE/ETHNICITY

Children (6 months-17 years)

- Estimated coverage among Hispanic children (60.9%) was higher than non-Hispanic white children (44.9%) and non-Hispanic black children (48.2%) (Table 4).
- Estimated coverage among non-Hispanic other race children (53.6%) was higher than non-Hispanic white children (44.9%).
- Estimated coverage was similar among non-Hispanic white children (44.9%) and non-Hispanic black children (48.2%).
- Estimated coverage among non-Hispanic other race children (53.6%) was similar to Hispanic children (60.9%) and non-Hispanic black children (48.2%).
- Among children, there was no difference in 2011-12 coverage by race and ethnicity compared with 2010-2011 coverage estimates from the same time the previous season.

Table 4. Estimated influenza vaccination coverage among children by race and ethnicity, March National Immunization Survey

	March 2011 % \pm 95% CI *	March 2012 % \pm 95% CI *
Children (6 months-17 years)		
Hispanic	61.2 \pm 7.7	60.9 \pm 5.5
Non-Hispanic, White	45.6 \pm 3.6	44.9 \pm 2.5
Non-Hispanic, Black	48.3 \pm 9.1	48.2 \pm 5.8
Non-Hispanic, Other	49.4 \pm 11.1 [§]	53.6 \pm 6.5

* Percentages are weighted to the U.S. population; CI=Confidence Interval half-width

§Estimate may not be reliable, confidence interval half-width >10 .

Adults (≥18 years of age)

- Estimated coverage was higher for non-Hispanic white adults (49.1%) compared with non-Hispanic black (35.6%), Hispanic (38.8%), and non-Hispanic other or multiple race (40.3%) adults (Table 5).
- Estimated coverage was similar among Hispanic (38.8%), non-Hispanic black (35.6%), and non-Hispanic other race (40.3%) adults.
- Estimated coverage was higher during the 2011-12 season compared with the same time during the 2010-11 season for Hispanic, non-Hispanic white, and non-Hispanic other race adults. Vaccination coverage among non-Hispanic black adults was similar to the same time the previous season.

Table 5. Estimated influenza vaccination coverage among adults by race and ethnicity, March National Flu Survey

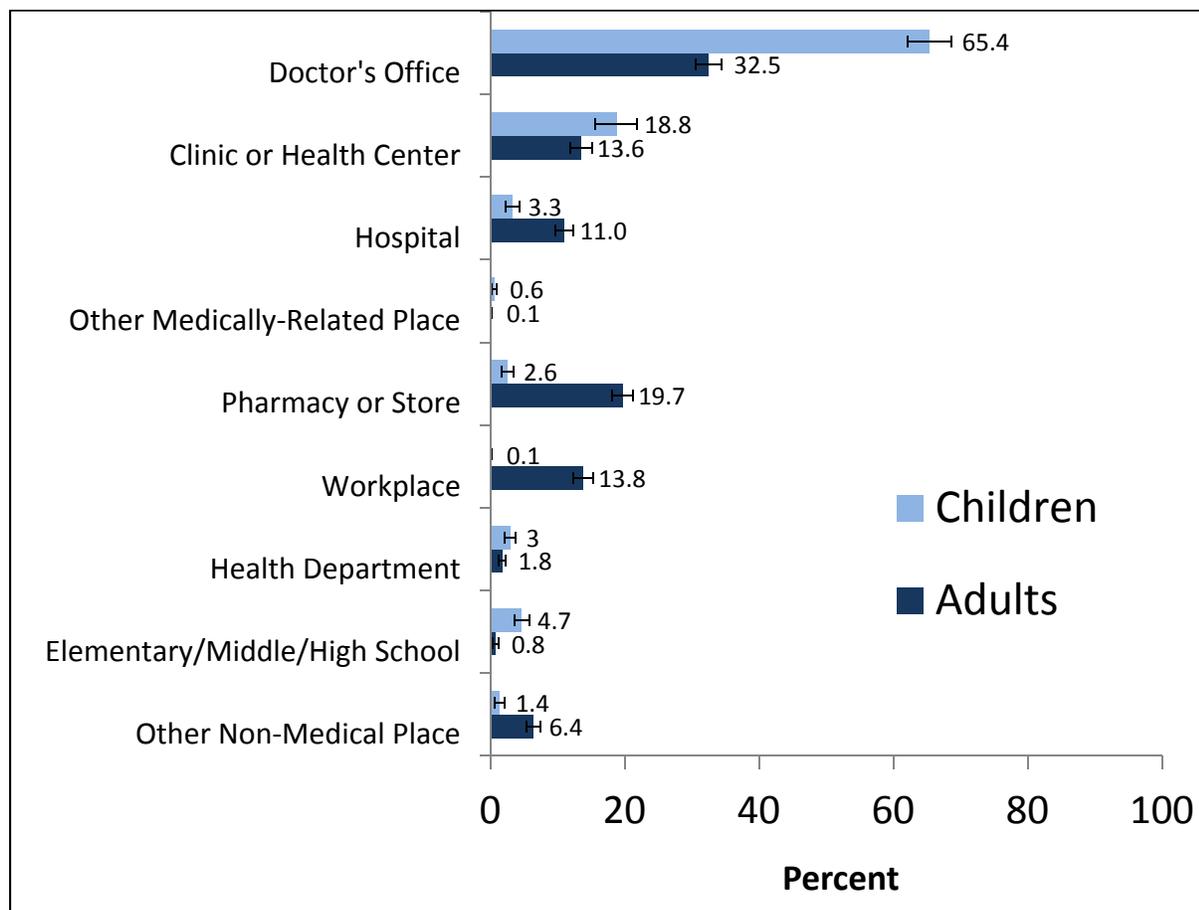
	March 2011 % ± 95% CI *	March 2012 % ± 95% CI *
Adults (≥ 18 years)		
Hispanic	29.3 ± 7.9	38.8 ± 4.7
Non-Hispanic, White only	44.9 ± 3.6	49.1 ± 1.7
Non-Hispanic, Black only	38.2 ± 11.3 [§]	35.6 ± 4.6
Non-Hispanic, Other or multiple race	28.8 ± 8.6	40.3 ± 5.3

* Percentages are weighted to the U.S. population; CI=Confidence Interval half-width
§Estimate may not be reliable, confidence interval half-width >10.

Place of Vaccination

- The most common place of vaccination among both adults (32.5%) and children (65.4%) was a doctor's office (Figure 2). These results are similar to results from the 2010-11 season when 31.6% of adults and 60.2% of children were vaccinated in doctor's offices.
- Other common places of influenza vaccination reported for adults during the 2011-12 season included medically related places besides doctor's offices (24.7%), pharmacies or stores (19.7%), and workplaces (13.8%). The second most common places of influenza vaccination for children were medically related places other than doctor's offices (22.7%).

Figure 2. Place of Vaccination for children and adults, March National Flu Survey



What Action To Take?

Although many adults (45.5%) and children (49.4%) were vaccinated during the 2011-12 influenza season, more than half of the United States population ≥ 6 months was not vaccinated against influenza. Continued efforts are needed to increase vaccination coverage, 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.
- **Implement proven strategies to increase vaccination coverage:** Increased effort is needed to implement strategies necessary to increase influenza vaccination coverage during upcoming influenza seasons.
 - Strong recommendations by providers for their patients to get vaccinated are effective in increasing patient acceptance of vaccination.
 - Standing orders, client reminder and recall systems, and provider reminders are also important strategies proven to increase vaccination uptake.
 - The [Community Guide for Preventive Services](#) provides guidance on effective interventions to increase the use of [universally recommended vaccines](#), as well as [targeted interventions](#) for people at higher risk for contracting the respective disease.

Data Sources and Methods

The estimates in this report are based on two different data sources. Estimates for children are based on a set of March 2012 [National Immunization Survey \(NIS\)](#) data, while estimates for adults are based on data from the March 2012 [National Flu Survey \(NFS\)](#).

National Immunization Survey

The NIS is an ongoing, national landline and cellular list-assisted random-digit-dialed (RDD) telephone survey of households with children who are 19–35 months or 13–17 years (NIS-Teen) at the time of interview. For children 6–18 months and 3–12 years identified during screening households for NIS and NIS-Teen, a short influenza vaccination module was conducted.

Sampling for the NIS is done by list-assisted RDD sampling of both landline and cellular telephones. Sample selection was carried out separately for landline and cellular telephone numbers. Interviews for the March 2012 NIS sample were conducted February 26 through March 31, 2012. Advance letters were sent to landline households for which the telephone number could be matched to an address. The survey interviewers conducted the survey in both English and Spanish; interviews were conducted in other languages using language line interpretation services.

A total of 9,874 NIS frame interviews were completed for children in the March 2012 data set. All estimates were weighted with weights derived based upon the probability of selection of the telephone number, incorporating 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 are also weighted using a ratio adjustment to population controls (age, sex, race/ethnicity, and geographic area).

National Flu Survey

These estimates are based on data from the March 2012 National Flu Survey (NFS) conducted by CDC to rapidly collect influenza vaccination-related data during the 2011-12 influenza season. The purpose of the March survey is to provide rapid estimates of influenza vaccination coverage to inform influenza immunization stakeholders and the public on the progress towards reaching influenza coverage objectives.

The sample was a list-assisted RDD sample of both landline and cellular telephones. Sample selection was carried out separately for landline and cellular telephone numbers. Interviews for the March NFS were conducted March 1 through March 29, 2011. An advance letter was sent to landline households for which the telephone number could be matched to an address. The survey interviewers conducted the survey in both English and Spanish; interviews were conducted in other languages using language line interpretation services. To achieve a higher proportional representation of three racial/ethnic groups – Hispanic, non-Hispanic black, and non-Hispanic Asian – selected geographic areas were oversampled. For the landline sample, selected counties were oversampled, and for the cellular phone sample, selected states were oversampled.

The Council of American Survey Research Organizations (CASRO) response rate was 31.4% for landline and 18.3% for cellular telephones. A total of 12,082 interviews were completed for adults (9,791 from landline and 2,291 from cellular only/mainly households). All estimates were weighted with weights derived based upon the probability of selection of the telephone number (incorporating the oversampling of geographic areas), incorporating adjustments for non-response at the telephone number resolution and household screening stages, probability of selecting the adult/child of interest within the household, and for person non-response. The data are also weighted using a ratio adjustment to population controls (age, sex, race/ethnicity, and geographic area).

Limitations

- These surveys likely overestimate influenza vaccination coverage. Using the preliminary survey estimates, 141 million individuals would have been vaccinated. However, only 132.1 million doses of influenza vaccine were distributed during the 2011-12 season.¹ While these telephone surveys likely overestimate vaccination coverage, the results for the 2011-12 season are directly comparable to estimates from the 2010-11 season.
- The 2011-12 influenza vaccination coverage estimates and key findings reported here are preliminary end-of-season estimates and may not be reflected in final end-of-season coverage estimates.
- Children 6 months-8 years may require two doses of influenza vaccination to optimize immunity;² influenza vaccination coverage estimates in this report reflect reported receipt of at least one dose and not whether those children requiring two doses were fully immunized.
- NIS and NFS are telephone surveys excluding households with no telephone service. Non-coverage and nonresponse bias may remain after weighting adjustments.
- All data rely upon self-report and are not validated with medical records; validity studies have shown that parental report (for children) may overestimate influenza vaccination coverage.
- The NFS is a rapid survey with specific focus on influenza vaccination, and thus is also susceptible to nonresponse bias from reduced follow-up time for persons not responding to early call attempts, and self-selection based on the survey topic.

Related Links

- FluVaxView: <http://www.cdc.gov/flu/professionals/vaccination/vaccinecoverage.htm>
- Presentation to the Advisory Committee on Immunization Practices on “Influenza Vaccination Distribution and Coverage, United States, 2010-2011 and 2011-2012 Seasons”:
<http://www.cdc.gov/vaccines/recs/acip/downloads/mtg-slides-oct11/04-Singleton-Influenza.pdf>
- National Immunization Survey: <http://www.cdc.gov/nchs/nis.htm>
- US Vaccination Coverage Reported via NIS: <http://www.cdc.gov/vaccines/stats-surv/nis/default.htm#nis>
- National Flu Survey: http://www.cdc.gov/nchs/nis/national_flu_survey.htm
- Results from the November 2011 National Flu Survey – United States, 2010-11 Influenza Season:
<http://www.cdc.gov/flu/professionals/vaccination/national-flu-survey.htm>
- Results from the March 2011 National Flu Survey – United States, 2010-11 Influenza Season:
<http://www.cdc.gov/flu/pdf/professionals/vaccination/fluvacsurvey.pdf>
- Results from the November 2010 National Flu Survey – United States, 2010-11 Influenza Season:
http://www.cdc.gov/flu/pdf/professionals/vaccination/nationalflusurvey_nov2010results.pdf
- CDC Influenza awareness campaign media relations toolkit, 2011:
http://www.cdc.gov/flu/pdf/nivw/NIVW_Media_Toolkit_112011.pdf
- Follow CDC Flu on Twitter: [@CDCFlu](https://twitter.com/CDCFlu)

References

1. Seasonal Influenza Vaccine & Total Doses Distributed. Available at:
<http://www.cdc.gov/flu/professionals/vaccination/vaccinesupply.htm>.
2. CDC. Estimates of Deaths Associated with Seasonal Influenza—United States, 1976—2007. MMWR 2010; 59(33);1057-1062. Available at: <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5933a1.htm>.
3. CDC. Prevention and control of influenza with vaccines: recommendations of the Advisory Committee on Immunization Practices (ACIP), 2010. MMWR 2011;60(33);1128-1132. Available at:
<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6033a3.htm>.
4. Thompson WW, Shay DK, Weintraub E, et al. Influenza-associated hospitalizations in the United States. JAMA 2004; 292(11): 1333-40.