# Results from the November 2010 National Flu Survey--United States, 2010-11 Influenza Season

The 2010-11 influenza season is the first season for which influenza vaccination is recommended for all persons age 6 months and older.(1) The 2010-11 influenza vaccine protects against an influenza A (H3N2) virus, an influenza B virus, and the 2009 H1N1 virus that caused much illness in 2009-10.(1) As of November 5, 2010, vaccine manufacturers reported that about 160 million doses of influenza vaccine had been distributed in the United States, which is the most influenza vaccine ever distributed in one influenza season in the United States. CDC conducted the National Flu Survey (NFS) during November 1-14, 2010 to provide in-season estimates of influenza vaccination coverage and knowledge, attitudes, and behaviors regarding influenza vaccines nationally and in 20 local areas during the 2010-11 influenza season. Using data from the November NFS, this report describes national estimates of the proportion vaccinated by approximately November 7, place of vaccination, and opinions about vaccination.

## Key Findings

- By approximately November 7, 2010, 32.8% (95% confidence interval [CI] half-width ±2.4) of persons aged 6 months and older, 30.6% (±5.0) of children, and 33.5% ±2.5 of adults had already received influenza vaccination. (Table 1)
- Influenza vaccination coverage varied by local area for both children (range: 24.7% to 45.4%) and adults (range: 26.9% to 45.0%). (Table 2)
- Many people who have not yet been vaccinated are interested in going out and doing so. Among those not yet vaccinated, 15% answered they will definitely get vaccinated and 25% reported they will probably get vaccinated.
- Overall, 42.6% ±2.6 of people aged 6 months and older have received or definitely intend to receive influenza vaccination this influenza season; including those who say they will probably receive vaccination, the percentage is 59.3% ±2.7. (Table 1)
- The most common place of vaccination among both adults and children was a doctor's office. Common non-medically-related places of influenza vaccination reported included 20.3% of adults vaccinated at pharmacies, supermarkets or other stores, 18.5% of adults vaccinated at the workplace, and 8.7% of children vaccinated at school. (Figure 1)
- Opinions about the efficacy and safety of this year's vaccine were favorable. Most adults thought this year's influenza vaccine was either very safe (46.1% ± 2.8) or somewhat safe (37.3% ± 2.8). Most adults thought this year's influenza vaccine was either very effective (37.6% ± 2.7) or somewhat effective (44.2% ± 2.8) in preventing the flu. (Table 3)
- The majority of adults overall reported their chances of getting sick with flu if not vaccinated were somewhat low (29.2%) or very low (25.7%). (Table 3) Among adults not yet vaccinated, the perception of somewhat or very low risk of getting sick with flu if not vaccinated ranged from 31.3% for those definitely

intending to get vaccinated, 49.2% for those reporting they probably will get vaccinated, 69.8% for those reporting they probably will not get vaccinated, and 94.8% for those reporting they definitely will not get vaccinated.

- As in previous years, racial and ethnic disparities in influenza vaccination coverage continue to exist. For all persons 6 months and older, influenza vaccination coverage for non-Hispanic whites was 35.8% ± 2.8, while coverage was lower for non-Hispanic blacks (27.1% ± 7.2) and Hispanics (25.4% ± 6.3).

**Table 1. Influenza vaccination coverage and intent to receive influenza vaccination as of approximately November 7, 2010, November 2010 National Flu Survey, United States**

| | Un–weighted sample size No. | Already Vaccinated % ± 95% CI * | Already Vaccinated or Definitely Intend to be vaccinated % ± 95% CI | Already Vaccinated or Probably or Definitely Intend to be vaccinated % ± 95% CI |
|---|---|---|---|---|
| **Overall** | **46,908** | **32.8 ± 2.4** | **42.6 ± 2.6** | **59.3 ± 2.7** |
| **By age group:** | | | | |
| 6m-4 years | 2,373 | 44.4 ± 11.2† | 59.2 ± 11.9† | 81.5 ± 8.9 |
| 5-12 years | 3,789 | 28.2 ± 7.0 | 41.7 ± 7.4 | 63.4 ± 7.4 |
| 13-17 years | 2,851 | 21.4 ± 9.3 | 30.0 ± 9.5 | 57.6 ± 10.6† |
| All children (6m-17years) | 9,013 | 30.6 ± 5.0 | 42.9 ± 5.3 | 66.5 ± 5.2 |
| 18-49 years, HR†† | 3,170 | 32.8 ± 7.9 | 42.5 ± 8.3 | 60.5 ± 8.6 |
| 18-49 years, non-HR | 12,731 | 19.9 ± 3.5 | 26.6 ± 3.8 | 44.2 ± 4.5 |
| 18-49 years, HR unknown | 1,053 | 27.1 ± 15.7† | 34.0 ± 15.6† | 56.4 ± 15.2† |
| 50-64 years | 11,139 | 38.0± 4.7 | 50.6 ± 4.9 | 62.6 ± 4.7 |
| 65+ years | 9,802 | 64.3± 4.8 | 74.0 ± 4.4 | 80.7 ± 3.9 |
| All adults | 37,895 | 33.5 ± 2.5 | 42.5 ± 2.7 | 57.1 ± 2.7 |
| **By race/ethnicity:** | | | | |
| Hispanic | 6,068 | 25.4 ± 6.3 | 35.9 ± 6.6 | 62.6 ± 7.2 |
| Non-Hispanic, White only | 31,191 | 35.8 ± 2.8 | 45.3 ± 3.0 | 58.0 ± 3.1 |
| Non-Hispanic, Black only | 6,233 | 27.1 ± 7.2 | 35.7 ± 8.0 | 60.3 ± 8.1 |
| Non-Hispanic, Other or multiple race | 3,416 | 31.3 ± 10.9† | 45.6 ± 10.2† | 64.1 ± 8.9 |

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

† Estimate may not be reliable, confidence interval half-width >10.0

†† High risk includes asthma, other lung problems, diabetes, heart disease, kidney problems, anemia, weakened immune system caused by a chronic illness or by medicines taken for a chronic illness.

**Table 2. Child and adult Influenza vaccination coverage and intent to receive influenza vaccination as of approximately November 7, 2010, November 2010 National Flu Survey, United States and 20 local areas***

| | Child (6 months to 17 years) | | Adult (18 years or older) | |
|---|---|---|---|---|
| | Already Vaccinated % ± 95% CI | Already Vaccinated or Definitely Intend to be vaccinated % ± 95% CI | Already Vaccinated % ± 95% CI | Already Vaccinated or Definitely Intend to be vaccinated % ± 95% CI |
| National | 30.6 ± 5.0 | 42.9 ± 5.3 | 33.5 ± 2.5 | 42.5 ± 2.7 |
| Selected counties‡, AR | 45.4 ± 10.1† | 62.4 ± 9.2 | 32.8 ± 3.9 | 46.5 ± 4.4 |
| Maricopa County, AZ | 26.2 ± 6.8 | 39.7 ± 7.6 | 29.7 ± 3.3 | 37.5 ± 3.6 |
| Fresno County, CA | 34.2 ± 5.7 | 52.7 ± 6.0 | 28.1 ± 2.8 | 39.4 ± 3.2 |
| Los Angeles County, CA | 30.1 ± 7.0 | 45.4 ± 7.6 | 26.9 ± 3.1 | 36.9 ± 3.4 |
| Selected counties¥, CO | 34.3 ± 8.3 | 52.6 ± 8.4 | 33.9 ± 3.7 | 45.6 ± 4.3 |
| Selected counties*, CT | 32.8 ± 8.0 | 54.2 ± 7.6 | 39.4 ± 3.2 | 50.5 ± 3.5 |
| District of Columbia | 39.3 ± 10.9† | 56.8 ± 10.8† | 30.7 ± 4.5 | 45.4 ± 5.5 |
| Selected counties†, GA | 27.4 ± 6.4 | 46.3 ± 7.9 | 28.3 ± 3.7 | 39.4 ± 4.2 |
| Chicago, IL | 28.2 ± 6.5 | 45.2 ± 7.4 | 31.5 ± 3.4 | 43.8 ± 3.7 |
| Cumberland County, ME | 33.6 ± 6.6 | 56.9 ± 7.3 | 38.6 ± 3.4 | 49.2 ± 3.7 |
| Washtenaw County, MI | 35.4 ± 6.7 | 52.5 ± 7.1 | 37.0 ± 3.9 | 46.7 ± 4.3 |
| Selected counties€, MN | 35.8 ± 5.8 | 55.9 ± 6.1 | 42.7 ± 3.3 | 51.9 ± 3.5 |
| Selected counties††, NH | 24.7 ± 6.0 | 51.4 ± 6.9 | 45.0 ± 3.3 | 54.8 ± 3.4 |
| Selected counties**, NM | 37.8 ± 7.2 | 55.8 ± 7.4 | 38.3 ± 3.6 | 50.2 ± 3.8 |
| New York City, NY | 25.8 ± 5.6 | 48.3 ± 7.0 | 27.4 ± 2.8 | 39.5 ± 3.2 |
| Philadelphia, PA | 38.4 ± 9.9 | 62.9 ± 9.6 | 34.1 ± 3.9 | 49.1 ± 4.5 |
| Davidson County, TN | 33.6 ± 8.0 | 53.1 ± 8.8 | 31.8 ± 4.0 | 42.8 ± 4.7 |
| Bexar County, TX | 33.8 ± 7.8 | 52.5 ± 8.1 | 32.1 ± 3.3 | 43.9 ± 3.8 |
| Houston, TX | 31.0 ± 10.2† | 46.8 ± 10.6† | 29.5 ± 4.1 | 36.5 ± 4.5 |
| Seattle, WA | 29.8 ± 8.5 | 49.3 ± 9.4 | 33.1 ± 4.3 | 44.5 ± 4.7 |

*n~1,400 per local area surveyed
‡Arkansas, Ashley, Bradley, Chicot, Cleveland, Desha, Drew, Jefferson, Lee, Lincoln, Monroe, Phillips, Prairie, and St. Francis counties
¥Denver, Jefferson, Adams, Arapahoe, and Douglas counties
* New Haven, Hartford, and Middlesex counties
† Gwinnett and Fulton counties
€ Anoka, Carver, Dakota, Hennepin, Ramsey, Scott, and Washington counties
†† Belknap, Coos, and Grafton counties
** Sandoval, Santa Fe, Bernalillo, and Valencia counties
† Estimate may not be reliable if confidence interval half-width >10.0.

Figure 1. Place of Vaccination, based on National Flu Survey (NFS) interviews conducted during November 1-14, 2010, United States

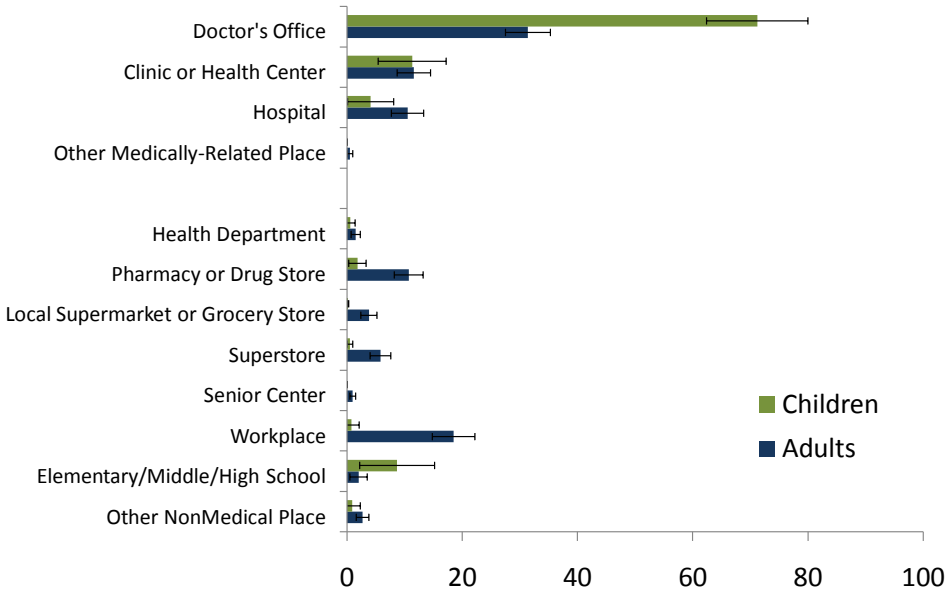


**Table 3. Adults Opinions about Influenza Vaccination and Disease, 2010-11 influenza season, November 2010 National Flu Survey, United States**

| Belief Question | % ± 95% CI* | % ± 95% CI | % ± 95% CI | % ± 95% CI |
|---|---|---|---|---|
| How effective do you think the flu vaccination is in preventing the flu? | Very Effective | Somewhat effective | Not too effective | Not at all effective |
| | 37.6 ± 2.7 | 44.2 ± 2.8 | 6.2 ± 1.3 | 3.2 ± 0.8 |
| If you do not get a flu vaccination this fall or winter, what are your chances of getting sick with the flu? | Very high | Somewhat high | Somewhat low | Very low |
| | 14.2 ± 2.0 | 27.7 ± 2.5 | 29.2 ± 2.5 | 25.7 ± 2.5 |
| How safe do you think the flu vaccine is? | Very safe | Somewhat safe | Somewhat unsafe | Very unsafe |
| | 46.1 ± 2.8 | 37.3 ± 2.8 | 9.4 ± 1.6 | 3.4 ± 1.1 |

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

## Summary and Public Health Implications

The 2010-11 influenza season is the first season for the universal recommendation for influenza vaccination of all persons aged ≥ 6 months. http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5908a1.htm?s_cid=rr5908a1_w. This report from early in the 2010-11 season shows that the percentage of both adults and children vaccinated against influenza is encouraging, but many more still need to be protected. With about 33% of persons vaccinated by early November, coverage this season is similar to or higher than trivalent seasonal influenza vaccination coverage near the same time last year (25% by end of October and 34% by end of November, 2009) (CDC unpublished data). Surveillance data indicate that the percentage of viruses testing positive for influenza nationally began to increase in November 2010, led by sharp increases in the southeast region of the country. This increase in the number of specimens testing positive for influenza is an early signal that flu activity is picking up. In most years, flu activity in the US doesn't peak until January or February, although the timing of influenza activity can vary year to year and vary by community, as demonstrated by high levels of activity already reported by the state of Georgia in mid-November. (http://www.cdc.gov/flu/weekly/summary.htm) Thus, those who intend to get vaccinated should be vaccinated as soon as possible. Seasonal influenza vaccines are safe and effective, and providers are encouraged to continue vaccination efforts through February or March, given the occurrence of influenza later in the season. Flu vaccines are offered in many locations, including doctor's offices, clinics, health departments, pharmacies and college health centers, as well as by many employers, and in some schools.

In-season estimates of influenza vaccination coverage, such as those from this report, can help immunization program assess influenza vaccine coverage to date, including among different target populations, to assess the effectiveness of current efforts. They can also be used to determine if new or additional efforts or activities are needed, including during this influenza season.

## Data Source and Methods

The estimates are based on data from the November 2010 National Flu Survey (NFS), one of two surveys (one in November and one in March) planned as part of a CDC-sponsored pilot project to rapidly collect influenza vaccination-related data. The purpose of the November survey was to provide within season data to inform programs for possible modification of their vaccination and communication strategies for the influenza season. As part of the pilot project, data will again be collected in March 2011, at the end of the influenza season. Twenty local areas[1] were selected for inclusion in the pilot project based

[1] The areas included were: Anoka, Carver, Dakota, Hennepin, Ramsey, Scott, and Washington counties, MN; Sandoval, Santa Fe, Bernalillo, and Valencia counties, NM; Seattle, WA; Washtenaw County, MI; Philadelphia, PA; Davidson County, TN; Bexar County, TX ; Denver, Jefferson, Adams, Arapahoe, and Douglas counties, CO; New Haven, Hartford, and Middlesex counties, CT; Gwinnett and Fulton counties, GA; District of Columbia; Chicago, IL; New York City, NY; Cumberland County, ME; Belknap, Coos, and Grafton counties, NH; Arkansas, Ashley, Bradley,

upon various criteria.[2] In addition to the local areas, an additional stratum of data collection was added that included all areas of the U.S. other than the 20 local areas. The NFS is being conducted by NORC at the University of Chicago under contract with the CDC.

The sample for the NFS was a list-assisted random digit-dial (RDD) sample of both landline and cell telephones. Sample telephone numbers were selected to be representative for 20 selected local areas in addition to a national sample. Sample selection was carried out separately for landline and cell telephone numbers. Cell telephone numbers were assigned to an area by the wire center the telephone was activated.

Interviews for the November NFS were conducted November 1 through November 14, 2010. 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 with Language Line interpretation services used to conduct the survey in other languages. Households were screened into the survey based on the presence of a household member 18 years of age or older. Cell telephone respondents were screened into the survey if they were a "cell telephone only" household (i.e., they reported that they do not maintain a landline telephone in their household) or a “cell telephone mostly” household (i.e., they maintain a landline but make and receive most of their calls on a cell telephone), and they were 18 years of age or older. For the landline sample, the youngest male 18 years and older currently at home was selected for inclusion. If there were no males at home, the youngest female 18 years and older was selected for inclusion in the survey. This screening method is a tested approach for balancing the age and gender of respondents. For the cell telephone sample, the adult who answered the cell phone was asked about flu vaccinations. For interviews pertaining to children, the adult respondent was asked the ages of all children in the household younger than 18 years in both the landline and the cell telephone samples. One child was then randomly selected and the adult respondent was asked about the influenza vaccination status of that child. On average, four call attempts were made for each sampled number released to the telephone center.

The survey questionnaire included questions about: prior influenza season vaccination status, current influenza season vaccination status, and knowledge and behaviors related to flu vaccinations. Respondents who said they had not been vaccinated this influenza season were asked about their intention to receive a flu vaccination this influenza season. Demographic questions were included as were questions about health conditions were asked to ascertain the high-risk status for influenza-related complications.

During the 2010 NFS, the Council of American Survey Research Organizations (CASRO)(2) response rate was 34.8% for landlines and 19.2% for cell phones. The CASRO response rate is the product of the percentage of telephone lines identified as residential or non-

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Chicot, Cleveland, Desha, Drew, Jefferson, Lee, Lincoln, Monroe, Phillips, Prairie, and St. Francis counties, AR; Maricopa County, AZ; Los Angeles County, CA; Fresno County, CA; Houston, TX.

[2] Cities/local areas were chosen after evaluating several factors including: existing CDC funded programs related to influenza surveillance or influenza immunization, existence of school-located influenza vaccination clinics, ability to utilize the data provided to make in-season modifications of their influenza vaccination program, geographic location, and population size.

residential (74.8% landline, 47.0% cell), the percentage of known households with a completed screening interview (98.6% landline, 77.5% cell), and the percentage of eligible respondents who complete the interview (47.2% landline, 52.7% cell). A total of 37,988 interviews were completed for adults aged 18 years and older: 29,068 were completed from landline households and 8,920 from cell phone only/mainly households. In addition, 9,108 interviews were completed for children 6 months to 17 years of age: 6,750 were completed from landline households and 2,358 from cell phone only/mainly households. 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 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).

There are at least three limitations to the estimates obtained through the NFS in this report. First, interviews were conducted during November 1-14, and vaccinations reported as of the date of the interview; thus, the vaccination coverage estimates reflect approximately the cumulative percent of persons vaccinated by the midpoint of the interview period. Second, all data rely upon self-report and are not validated with medical records. Third, non-response bias may remain after weighting adjustments.

## References


(1) CDC. Prevention and control of influenza with vaccines: recommendations of the Advisory Committee on Immunization Practices (ACIP), 2010. *MMWR Recomm Rep* 2010; 59(RR-8):1-62.

(2) Frankel LR. The report of the CASRO Task Force on Response Rates. In: Wiseman F, editor. Improving data quality in sample surveys. Cambridge, MA: Marketing Science Institute, 1983.


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