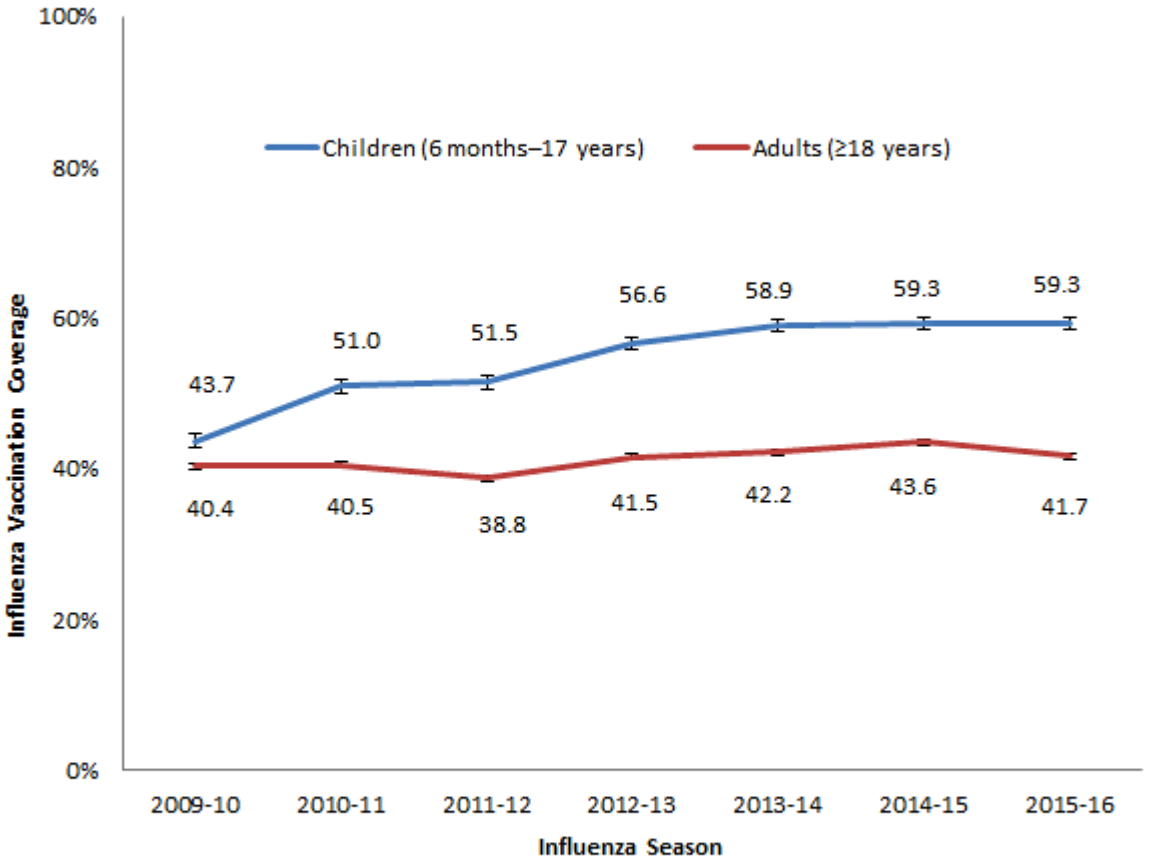
# Flu Vaccination Coverage

## United States, 2015-16 Influenza Season

Data sources: National Immunization Survey-Flu (NIS-Flu) and Behavioral Risk Factor Surveillance System (BRFSS)

**Figure 1. Seasonal Flu Vaccination Coverage by Age Group and Season, United States, 2009–2016**




Error bars represent 95% confidence intervals around the estimates.
The 2009-10 estimates do not include the influenza A (H1N1) pdm09 monovalent vaccine.
Starting with the 2011-12 season, adult estimates reflect changes in BRFSS survey methods: the addition of cellular telephone samples and a new weighting method.

Data Sources and Methods | Limitations

Influenza (flu) is a contagious illness caused by flu viruses. Flu illnesses can be mild to severe, with severe illnesses possibly resulting in hospitalization or death. Some people, such as older people, young children, people with certain health conditions, and pregnant women, are at high risk for serious flu complications. To reduce sickness and death caused by influenza in the United States, the Advisory Committee on Immunization Practices (ACIP) recommends annual flu vaccination for all persons aged ≥6 months who do not have contraindications to vaccination.(1) Optimally, people should receive their flu vaccinations before the start of flu activity in the community;

therefore, if possible, health care providers should offer flu vaccinations by the end of October and continue to offer vaccinations as long as flu viruses are circulating.(1)

For this report, CDC analyzed data from the National Immunization Survey-Flu (NIS-Flu) for children 6 months through 17 years and the Behavioral Risk Factor Surveillance System (BRFSS) for adults ≥18 years to estimate national flu vaccination coverage from the 2015–16 flu season. Coverage estimates are presented by age group, gender, race/ethnicity, and for adults, by the presence of a medical condition (e.g., asthma, diabetes, heart disease, chronic obstructive pulmonary disease, or cancers other than skin cancer) that increases a person's risk for flu-related complications.

Additional estimates of flu vaccination coverage by age, race/ethnicity, and month of vaccination for the 2015–16 and earlier seasons for each state, Health and Human Services (HHS) region, and overall for the United States are provided on FluVaxView as interactive maps, figures, and tables. Selected estimates for local areas and territories are also available. Coverage estimates for health care personnel are reported in the *Morbidity and Mortality Weekly Report* (MMWR) and estimates for pregnant women are reported in a separate online report.

## Key Findings

- Flu vaccination coverage among children for the 2015-16 season did not change from the 2014-15 season.
- Flu vaccination coverage among adults decreased by 1.9 percentage points for the 2015-16 season compared with the 2014-15 season.
- State variability in child and adult flu vaccination coverage continues to be large.

## Who Was Vaccinated?

- **Coverage by Age Group**
  - All Ages (6 months and older)
  - Children (6 months through 17 years)
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- **Coverage by Sex**
  - Children (6 months through 17 years)
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- **Estimated Number of Persons Vaccinated**

# Coverage by Age Group

## All Ages (6 months and older)

- Among all people ≥6 months, flu vaccination coverage during the 2015–16 flu season was 45.6%, which was a 1.5 percentage point decrease compared with the 2014-15 season (47.1%).
- State-specific flu vaccination coverage among all people ≥6 months ranged from 36.8% (Nevada) to 56.6% (South Dakota).

| Table 1: Flu Vaccination Coverage,* United States,† 2015–16 Season | | | |
|---|---|---|---|
| **Age Group** | **Unweighted Sample Size** | **%‡ ± 95% CI§** | **Difference from the 2014–15 Season ± 95% CI** |
| All People ≥6 months | 446,013 | **45.6** ± 0.4 | -1.5 ± 0.5‖ |
| Children (6 months−17 years) | 126,846 | **59.3** ± 0.8 | 0.0 ± 1.1 |
| Adults (≥18 years) | 319,167 | **41.7** ± 0.4 | -1.9 ± 0.6‖ |

Footnotes | Data Sources and Methods | Limitations

## Children (6 months through 17 years)

- Flu vaccination coverage among children 6 months through 17 years decreased with increasing age:
  - 6–23 months: 75.3%
  - 2–4 years: 66.8%
  - 5–12 years: 61.8%
  - 13–17 years: 46.8%
- Among children 6 months through 17 years, coverage with one or more doses of flu vaccine was 59.3%, unchanged from the 2014–15 season (59.3%).
- State-specific flu vaccination coverage for children 6 months through 17 years ranged from 41.7% (Wyoming) to 77.9% (Rhode Island).

| Table 2. Flu Vaccination Coverage* by Age Group, Children 6 Months–17 Years, United States,† 2015–16 Season | | | |
|---|---|---|---|
| **Age Group** | **Unweighted Sample Size** | **%‡ ± 95% CI§** | **Difference from the 2014-15 Season ± 95% CI** |
| 6 months–17 years | 126,846 | **59.3** ± 0.8 | 0.0 ± 1.1 |
| 6 months–4 years | 38,713 | **70.0** ± 1.4 | -0.4 ± 1.9 |
| 6–23 months | 14,827 | **75.3** ± 1.7 | 0.7 ± 2.5 |
| 2–4 years | 23,886 | **66.8** ± 1.8 | -1.0 ± 2.5 |
| 5–17 years | 88,133 | **55.9** ± 0.9 | 0.1 ± 1.3 |
| 5–12 years | 54,825 | **61.8** ± 1.2 | 0.0 ± 1.6 |
| 13–17 years | 33,308 | **46.8** ± 1.4 | 0.2 ± 2.0 |

Footnotes | Data Sources and Methods | Limitations

Estimates of the reported place of influenza vaccination by age group are also available.

## Adults (18 years and older)

- Coverage among adults 18 years and older increased with increasing age:
  - 18–49 years: 32.7%
  - 50–64 years: 43.6%
  - ≥65 years: 63.4%
- Among adults ≥18 years, coverage was 41.7%, which was 1.9 percentage points lower than coverage in the 2014–15 season (43.6%).
  - Adults 50-64 years had a decrease in coverage of 3.4 percentage points compared to the 2014-15 season, while adults 65 years and older had a decrease in coverage of 3.3 percentage points. Adults 18-49 years did not have a statistically significant decrease in coverage.
- State-specific coverage for adults 18 years and older ranged from 33.3% (Nevada) to 52.3% (South Dakota).

| Table 3. Flu Vaccination Coverage* by Age Group, Adults 18 Years and Older, United States,† 2015–16 Season | | | |
|---|---|---|---|
| **Age Group** | **Unweighted Sample Size** | **%‡ ± 95% CI§** | **Difference from the 2014-15 Season ± 95% CI** |
| ≥18 years | 319,167 | **41.7** ± 0.4 | -1.9 ± 0.6‖ |
| 18–64 years | 205,848 | **36.3** ± 0.6 | -1.7 ± 0.8‖ |
| 18–64 years at high risk¶ | 53,798 | **46.0** ± 1.2 | -1.6 ± 1.7 |
| 18–64 years not at high risk | 149,939 | **33.5** ± 0.6 | -1.8 ± 0.8‖ |
| 18–49 years | 105,988 | **32.7** ± 0.8 | -0.8 ± 1.1 |
| 18–49 years at high risk | 18,662 | **39.5** ± 2.0 | 0.2 ± 2.7 |
| 18–49 years not at high risk | 86,111 | **31.5** ± 0.8 | -1.1 ± 1.1 |
| 50–64 years | 99,860 | **43.6** ± 0.8 | -3.4 ± 1.1‖ |
| ≥65 years | 113,319 | **63.4** ± 0.8 | -3.3 ± 1.1‖ |

Footnotes | Data Sources and Methods | Limitations

## Coverage by Sex

### Children (6 months through 17 years)

- There were no differences in flu vaccination coverage between male and female children.

### Adults (18 years and older)

- For adults, flu vaccination coverage was higher among females than males for every age group except adults ≥65 years.

| Table 4. Flu Vaccination Coverage* by Sex, United States,† 2015–16 Season | | | | |
|---|---|---|---|---|
| | Male | | Female | |
| Age Group | Unweighted Sample Size | %‡ ± 95% CI§ | Unweighted Sample Size | % ± 95% CI |
| **All Ages** | | | | |
| ≥6 months | 203,475 | **43.0** ± 0.7** | 242,529 | **48.2** ± 0.5** |
| **Children** | | | | |
| 6 months–17 years | 65,774 | **59.3** ± 1.1 | 61,072 | **59.3** ± 1.1 |
| 6 months–4 years | 19,993 | **70.9**± 1.8 | 18,720 | **69.2** ± 1.9 |
| 6–23 months | 7,684 | **75.4** ± 2.4 | 7,143 | **75.3** ± 2.5 |
| 2–4 years | 12,309 | **68.2** ± 2.5 | 11,577 | **65.4** ± 2.7 |
| 5–12 years | 28,463 | **61.5**± 1.6 | 26,362 | **62.0** ± 1.7 |
| 13–17 years | 17,318 | **46.5** ± 1.9 | 15,990 | **47.1** ± 1.9 |
| **Adults** | | | | |
| ≥18 years | 137,701 | **38.1** ± 0.8** | 181,457 | **45.2** ± 0.6** |
| 18–64 years | 93,139 | **32.8** ± 0.8** | 112,704 | **39.8** ± 0.8** |
| 18–64 years at high risk¶ | 21,519 | **44.3** ± 2.2** | 32,276 | **47.3** ± 1.4** |
| 18–64 years not at high risk | 70,503 | **30.0** ± 0.8** | 79,434 | **37.2** ± 1.0** |
| 18–49 years | 49,615 | **29.0** ± 1.0** | 56,368 | **36.6** ± 1.0** |
| 18–49 years at high risk | 6,953 | **36.6** ± 3.7** | 11,706 | **41.9** ± 2.2** |
| 18–49 years not at high risk | 41,978 | **27.9** ± 1.0** | 44,131 | **35.5** ± 1.2** |
| 50–64 years | 43,524 | **41.1** ± 1.4** | 56,336 | **45.8** ± 1.2** |
| ≥65 years | 44,562 | **63.1** ± 1.2 | 68,753 | **63.5** ± 1.0 |

Footnotes | Data Sources and Methods | Limitations

# Coverage by Race/Ethnicity

## All Ages (6 months and older)

- The patterns of racial/ethnic differences in influenza vaccination coverage estimates differ for children and adults, but estimates for children and adults combined (all people ≥6 months) are presented here.
- Among people ≥6 months, coverage for non-Hispanic whites (46.6%) was higher than that of non-Hispanic blacks (42.8%), Hispanics (43.9%), and people of other or multiple races (42.4%).
- In addition to the previously mentioned differences, coverage for Asians (51.3%) was higher than non-Hispanic whites (46.6%), non-Hispanic blacks (42.8%), Hispanics (43.9%), AI/ANs (46.0%), and people of other or multiple races (42.4%). For all other racial/ethnic group comparisons, there were no statistically significant differences.
- Among all people ≥6 months, coverage during the 2015–16 season decreased by 1.9 percentage points for non-Hispanic whites compared with the 2014–15 season; there were no statistically significant changes in the other racial/ethnic groups.

**Table 5. Flu Vaccination Coverage* by Race/Ethnicity, People 6 Months and Older, United States,† 2015–16 Season**

| Race/Ethnicity†† | Unweighted Sample Size | %‡ ± 95% CI§ | Difference from the 2014-15 Season ± 95% CI |
|---|---|---|---|
| Overall | 446,013 | **45.6** ± 0.4 | -1.5 ± 0.5‖ |
| White only, non-Hispanic | 323,931 | **46.6** ± 0.5 | -1.9 ± 0.7‖ |
| Black only, non-Hispanic | 38,499 | **42.8** ± 1.3 | -1.0 ± 1.8 |
| Hispanic | 44,020 | **43.9** ± 1.4 | -0.4 ± 1.9 |
| Other, non-Hispanic (Total) | 35,069 | **47.1** ± 1.9 | -0.5 ± 2.5 |
| Asian | 12,368 | **51.3** ± 2.7 | 0.3 ± 4.0 |
| American Indian/Alaska Native (AI/AN) | 6,611 | **46.0** ± 3.6 | 0.8 ± 5.1 |
| Other or multiple races‡‡ | 16,090 | **42.4** ± 2.9 | -1.9 ± 3.8 |

Footnotes | Data Sources and Methods | Limitations

## Children (6 months through 17 years)

- Asian children (73.5%) had higher parental-reported flu vaccination coverage than non-Hispanic white children (55.3%), non-Hispanic black children (60.9%), Hispanic children (64.7%), AI/AN children (60.7%), and children of other or multiple races (57.0%).
- Additionally, non-Hispanic white children (55.3%) had lower parental-reported flu vaccination coverage than non-Hispanic black children (60.9%) and Hispanic children (64.7%). Non-Hispanic black children (60.9%) had lower flu vaccination coverage than Hispanic children (64.7%). Children of other or multiple races (57.0%) had lower coverage than non-Hispanic black children (60.9%) and Hispanic children (64.7%). For all other racial/ethnic group comparisons, there were no statistically significant differences.
- Among children, estimated coverage during the 2015–16 season did not change compared with the 2014–15 season for any of the racial/ethnic groups.

**Table 6. Flu Vaccination Coverage* by Race/Ethnicity, Children 6 Months–17 Years, United States,† 2015–16 Season**

| Race/Ethnicity†† | Unweighted Sample Size | %‡ ± 95% CI§ | Difference from the 2014-15 Season ± 95% CI |
|---|---|---|---|
| Overall | 126,846 | **59.3** ± 0.8 | 0.0 ± 1.1 |
| White only, non-Hispanic | 73,660 | **55.3** ± 0.9 | -0.7 ± 1.3 |
| Black only, non-Hispanic | 13,717 | **60.9** ± 2.1 | 2.6 ± 3.3 |
| Hispanic | 23,568 | **64.7** ± 2.0 | 0.5 ± 2.7 |
| Other, non-Hispanic (Total) | 15,901 | **64.8** ± 2.4 | -1.2 ± 3.3 |
| Asian | 6,002 | **73.5** ± 3.5 | 1.4 ± 4.9 |
| American Indian/Alaska Native (AI/AN) | 1,867 | **60.7** ± 7.4 | -6.3 ± 9.5 |
| Other or multiple races¶¶ | 8,032 | **57.0** ± 3.1 | -3.0 ± 4.5 |

Footnotes | Data Sources and Methods | Limitations

Additional race/ethnicity estimates by age group are also available.

## Adults (18 years and older)

- Among adults, self-reported flu vaccination coverage for non-Hispanic whites (44.5%) was higher than for non-Hispanic blacks (36.6%), Hispanics (34.4%), and adults of other or multiple races (36.4%).
- Additionally, Asian adults (44.0%) reported higher flu vaccination coverage than non-Hispanic blacks (36.6%), Hispanics (34.4%), and adults of other or multiple races (36.4%). AI/AN adults (42.9%) reported higher flu vaccination coverage than non-Hispanic blacks (36.6%), Hispanics (34.4%), and adults of other or multiple races (36.4%). For all other racial/ethnic group comparisons, there were no statistically significant differences.
- Among adults, coverage during the 2015–16 season decreased by 2.2 percentage points for non-Hispanic white adults compared with the 2014–15 season; there were no statistically significant changes in the other racial/ethnic groups.

**Table 7. Flu Vaccination Coverage* by Race/Ethnicity, Adults 18 Years and Older, United States,† 2015–16 Season**

| Race/Ethnicity†† | Unweighted Sample Size | %‡ ± 95% CI§ | Difference from the 2014-15 Season ± 95% CI |
|---|---|---|---|
| Overall | 319,167 | **41.7** ± 0.4 | -1.9 ± 0.6‖ |
| White only, non-Hispanic | 250,271 | **44.5** ± 0.6 | -2.2 ± 0.8‖ |
| Black only, non-Hispanic | 24,782 | **36.6** ± 1.6 | -2.1 ± 2.3 |
| Hispanic | 20,452 | **34.4** ± 1.8 | -0.6 ± 2.5 |
| Other, non-Hispanic (Total) | 19,168 | **41.0** ± 2.4 | -0.3 ± 3.3 |
| Asian | 6,366 | **44.0** ± 3.3 | -0.4 ± 5.0 |
| American Indian/Alaska Native (AI/AN) | 4,744 | **42.9** ± 4.1 | 2.2 ± 5.8 |
| Other or multiple races‡‡ | 8,058 | **36.4** ± 3.9 | -1.0 ± 5.1 |

Footnotes | Data Sources and Methods | Limitations

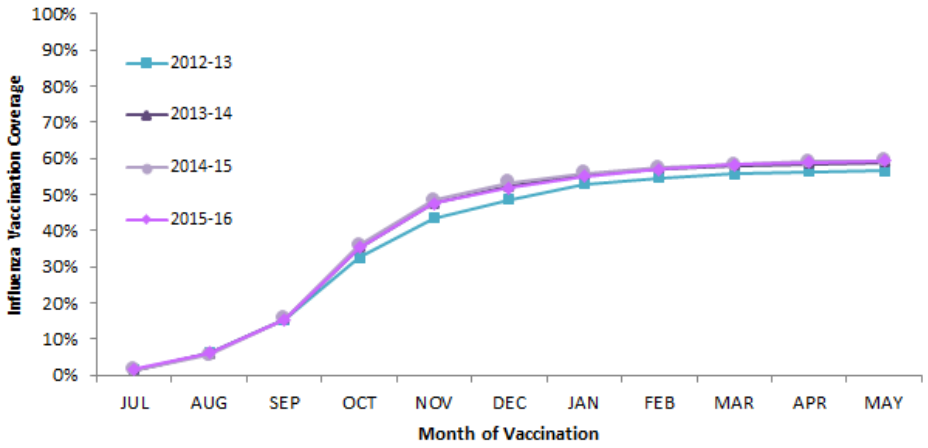
Additional race/ethnicity estimates by age group are also available.

# Coverage by Month

## Children (6 months through 17 years)

- Among children 6 months through 17 years, cumulative coverage across the months of vaccination was similar for the 2015–16 season compared with the 2014–15 season (Figure 2).

**Figure 2. Cumulative Monthly Influenza Vaccination Coverage Estimates by Influenza Season, Children 6 Months–17 Years, United States**

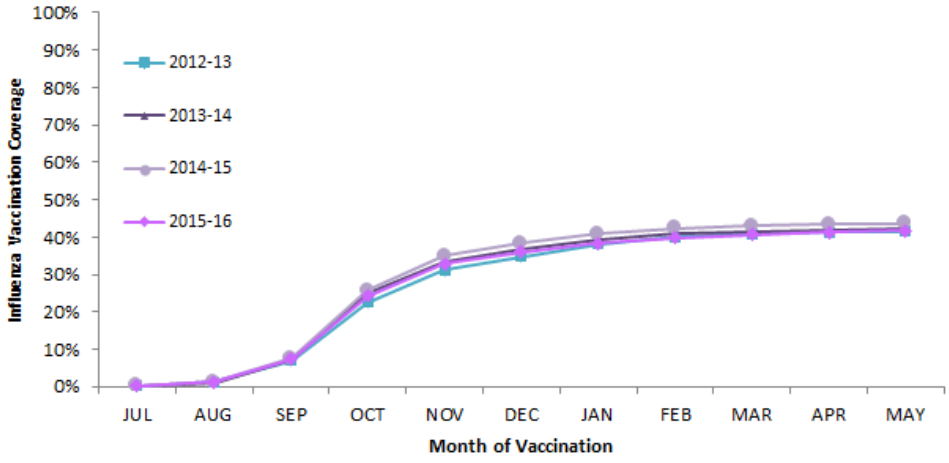



Data Sources and Methods | Limitations

## Adults (18 years and older)

- Among adults ≥18 years, cumulative coverage across the months of vaccination was slightly lower for the 2015–16 season compared with the 2014–15 season (Figure 3).

**Figure 3. Cumulative Monthly Influenza Vaccination Coverage Estimates by Influenza Season, Adults ≥18 Years, United States**




Data Sources and Methods | Limitations

## Estimated Number of People Vaccinated

Based on reports of vaccination from survey respondents, the estimated number of persons who received one or more seasonal flu vaccinations was 42.0 million (95% Confidence Interval [CI] 41.5–42.6 million) children (6 months through 17 years) and 102.4 million (95% CI 101.4–103.4 million) adults (≥18 years), for an estimated 144.5 million (95% CI 142.9–146.0 million) people vaccinated against seasonal flu during July 2015 through May 2016 among the U.S. population. These estimates do not include second doses given to children. The actual number of doses of flu vaccine distributed during the 2015-16 season was 146.4 million, indicating that the flu vaccination coverage estimates in this report are high. Overestimates of doses may be due to a combination of factors, including respondents having higher coverage than persons not surveyed (response bias), recall bias, or other factors. Examples of studies in which medical record validation has been compared with adult patient or parent report of vaccination estimated that coverage by parental report was seven percentage points too high for children 6-59 months, and coverage by self-report was 5-11 percentage points too high for adults ≥65 years.(2;3) Thus, while numbers of doses administered cannot be validated with these data, the NIS-Flu and BRFSS surveys do provide important information regarding yearly trends in reported vaccination over time.

## What Can Be Done?

For children, flu vaccination coverage was similar for the 2015-16 season compared with the 2014-15 season while there was a decrease for adults, particularly adults 50-64 years and 65 years and older. Differences in coverage among racial/ethnic populations by age group and variation in coverage by state were noted and consistent with findings from prior flu seasons. Flu vaccination coverage for the 2015-16 season for all groups except children 6-23 months was below the Healthy People 2020 targets[§§] of 70% vaccination coverage for persons 6 months through 17 years and ≥18 years.(4)

Strategies to increase flu vaccination coverage in the United States include:

- Encouraging use of evidence-based practices at medical sites to increase access to vaccination services (e.g., reducing client costs and vaccination programs in schools and WIC settings), increasing community demand for vaccinations (e.g., client reminder/recall systems), and ensuring that all those who visit a provider during the flu season receive a vaccination recommendation and offer from their provider (e.g., standing orders and provider reminders).(5)
- Expanding access through use of non-traditional settings (e.g., pharmacy, workplace, and school venues) to reach individuals outside of traditional physicians' offices during the flu season.(6)
- Broadening use of interventions to remove barriers to accessing vaccination.(7)
- Encouraging multi-sector collaborations, including culturally relevant communications to reach specific target populations, and implementing effective interventions to reduce vaccination disparities in the United States.(8)
- Additional strategies are described in the Community Guide for Preventive Services.(5)

Updated recommendations have been published for the 2016-17 flu season.(1) Updated information includes 1) the composition of U.S. seasonal flu vaccines; 2) the expected flu vaccine products available for the 2016-17 season; and 3) an interim recommendation to not use the live, attenuated influenza vaccine (LAIV) for the 2016-17 season due to concerns about effectiveness of LAIV against influenza A (H1N1) viruses.(1)

## Data Sources and Methods

CDC analyzed NIS-Flu and BRFSS data collected September (BRFSS) or October (NIS-Flu) 2015 through June 2016 (or as available) from all 50 states and the District of Columbia to estimate national and state-level flu vaccination coverage for vaccines administered from July 2015 through May 2016 for the 2015–16 flu season. These findings were compared with 2014–15 flu season estimates. Estimates are also included as a supplemental table to this report for Guam, Puerto Rico, the U.S. Virgin Islands, and select local areas.

The NIS-Flu has three components: the NIS, which includes households with children 19–35 months, the NIS-Teen, which includes households with children 13–17 years, and a short flu vaccination module, which is conducted for households with children 6–18 months and 3–12 years. The NIS-Flu is a national dual landline and cellular list-assisted random-digit-dialed telephone survey of households. Respondents ≥18 years were asked if their child had received a flu vaccination since July 1, 2015, and, if so, in which month and year; this information was parental reported and not verified by medical records. The range of the Council of American Survey and Research Organizations (CASRO) response rates for the NIS-Flu across the components of the NIS-Flu were 53.5% to 57.9% for landline and 29.9% to 32.2% for cellular telephones.

BRFSS is an ongoing state-based monthly telephone survey which collects information on health conditions and risk behaviors from randomly selected people ≥18 years among the U.S. population. BRFSS respondents were asked if they had received a flu vaccine in the past 12 months, and if so, in which month and year; this information was self-reported and not verified by medical records. The median state BRFSS response rate was 47.0% for September–December 2015 and 46.6% for January–June 2016. Starting in 2011, BRFSS methods changed by adding persons in households with only cellular telephone service and improving weighting procedures; these changes were reflected in the 2011–12 and subsequent flu vaccination coverage estimates.(9)

Flu vaccination coverage estimates from both surveys were calculated using Kaplan-Meier survival analysis to determine the cumulative flu vaccination coverage (≥1 dose) July 2015 through May 2016 using monthly interview data collected September (BRFSS) or October (NIS-Flu) 2015 through June 2016. NIS-Flu data were used to estimate coverage for children 6 months through 17 years and BRFSS data were used to estimate coverage for adults ≥18 years. Coverage estimates for all persons ≥6 months were determined using combined state-level monthly estimates weighted by the age-specific populations of each state.[10] For the 18.2% of NIS-Flu and 6.7% of BRFSS participants who indicated they had been vaccinated but had a missing month and year of vaccination, information was imputed from donor pools matched for week of interview, age group, state of residence, and race/ethnicity. Information on high-risk conditions was missing for 1.0% of adults and race/ethnicity was missing for 1.4% of adults; adults with missing data were not included in the estimates by risk condition or race/ethnicity.

Results from both surveys were weighted and analyzed using SAS and SUDAAN statistical software to account for the complex survey design. Differences between groups and between 2014–15 and 2015–16 seasons were determined using t-tests with significance at $p<0.05$. Differences mentioned in this report were statistically significant.

## Limitations

The estimates in this report are subject to the following limitations. First, flu vaccination status was based on self or parental report and not validated with medical records and, thus, is subject to respondent recall bias.(2;3) A recent study of children 6-23 months included estimates of flu coverage with ≥1 doses based upon provider report; when these are compared with the parental reported estimates found on FluVaxView, the parental reported estimates were between 12-17 percentage points higher than provider report for the 2010-11 through 2012-13 flu seasons.(11) Also in this study, racial/ethnic differences among children 6-23 months were identified based on provider-reported vaccination status, but the pattern of racial/ethnic vaccination differences was different than patterns found on FluVaxView based on parental report.(11) Incomplete records and reporting, however, might affect provider reported vaccination histories.(11) Second, response rates for NIS-Flu and BRFSS surveys were low and nonresponse bias may remain even after weighting adjustments. A comparison of NIS-Flu estimates with those from NHIS suggests that the NIS-Flu estimates have a slight upward nonresponse bias.(12;13) Third, combining NIS-Flu and BRFSS estimates allowed estimation of coverage for all persons ≥6 months; however, differences in survey methodology (e.g., different sampling frame, survey design, exact survey question wording, response rates, and weighting) may result in different levels of bias that are averaged for this group. Fourth, the number of persons vaccinated was overestimated, evidenced by a higher number vaccinated than doses distributed as has occurred previously.(14) Finally, some age-by-state-specific estimates in the accompanying interactive reports may not be reliable due to large confidence intervals. Estimates flagged as potentially unreliable should be interpreted with caution.

## Authors

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## Related Links

**National Immunization Survey-Flu (NIS-Flu):**

- About the National Immunization Surveys

**Behavioral Risk Factor Surveillance System (BRFSS):**

- Behavioral Risk Factor Surveillance System

**NIS-Flu/BRFSS vaccination coverage reports:**

- FluVaxView
- AdultVaxView

**General information about flu:**

- Seasonal Influenza (Flu)
- Weekly U.S. Influenza Surveillance Report

## Footnotes

* Estimates of the percentage of people vaccinated are based on interviews conducted beginning September (BRFSS) or October (NIS-Flu) 2015 through June 2016 and reported vaccinations from July 2015 through May 2016.

† Excludes U.S territories.

‡ Percentage vaccinated. Percentages are weighted to the U.S. population. Month of vaccination was imputed for respondents with missing month of vaccination data.

§ Confidence interval (CI) half-widths.

‖ Statistically significant difference between the 2015-16 season and the 2014-15 season by t-test (P<0.05).

¶ Selected high-risk conditions; includes people with asthma, diabetes, heart disease, chronic obstructive pulmonary disease, or cancers other than skin cancer.

** Statistically significant difference between male and female estimates by t-test (P<0.05).

†† Race is reported by respondent; people of Hispanic ethnicity may be of any race.

‡‡ Includes Native Hawaiian or other Pacific Islander, multiracial, and other races.

§§ The National Health Interview Survey (NHIS) is the data source used to monitor the Healthy People objectives for influenza vaccination (IID-12.11-14). Final NHIS estimates for the 2015-16 season will be available by September 2017. A comparison of estimates from NIS-Flu and BRFSS to NHIS is available.

## References

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(2) MacDonald R, Baken L, Nelson A, Nichol KL. Validation of self-report of influenza and pneumococcal vaccination status in elderly outpatients. Am J Prev Med 1999;16:173-177.

(3) Brown C, Clayton-Boswell H, Chaves SS, et al. Validity of parental report of influenza vaccination in young children seeking medical care. Vaccine 2011;29:9488-9492.

(4) U.S. Department of Health and Human Services. Healthy People 2020. Topics and Objectives:Immunization and Infectious Diseases. https://www.healthypeople.gov/2020/topics-objectives/topic/immunization-and-infectious-diseases [serial online] 2015; Accessed September 11, 2015.

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