

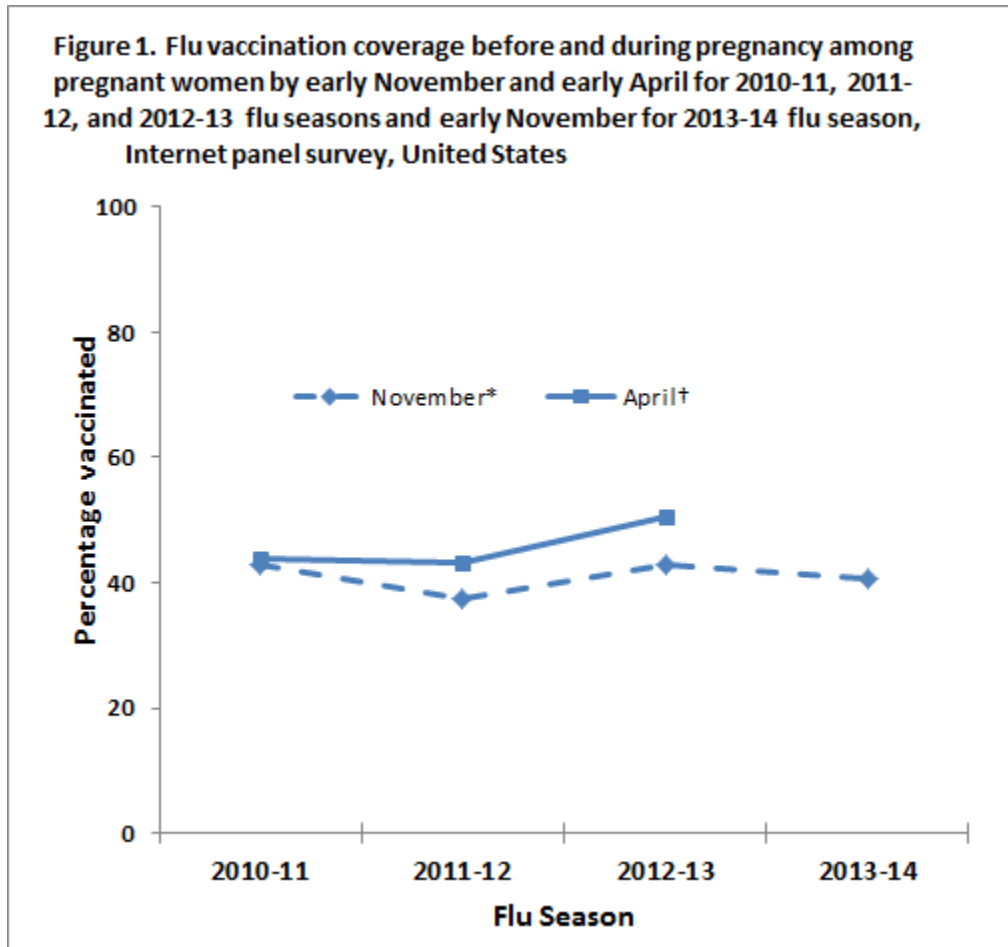
# Pregnant Women and Flu Vaccination

Internet Panel Survey, United States, November 2013



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Influenza (flu) can cause severe illness among pregnant women and result in preterm labor and increased risk for hospitalization and death (1).

- The best way for pregnant women to protect themselves from the flu is to get a flu shot (1).
  - CDC, the American College of Obstetricians and Gynecologists, the American College of Nurse Midwives, and the American Academy of Family Physicians recommend flu shots for all women who are pregnant during the flu season (1-4).

Infants younger than 6 months are at high risk of severe complications from the flu, but they are too young to be vaccinated (1, 5).

- Infants whose mothers get the flu shot while pregnant have a lower risk of flu illness and flu -related hospitalizations during the first 6 months of life (1, 6-7).

Vaccination coverage among pregnant women increased in 2009-10, but has been relatively stable since that time.

- Before the 2009-10 season, flu vaccination coverage among women pregnant at the time of interview was below 30.0%, as measured by the National Health Interview Survey (NHIS) and Behavioral Risk Factor Surveillance System (BRFSS) (8, 9).
- During the 2009-10 flu season, seasonal flu vaccination coverage was 38.0% as measured by BRFSS, 32.1% as measured by the National 2009 H1N1 Flu Survey (NHFS), and 47.1% as measured by the Pregnancy Risk Assessment Monitoring System (PRAMS)<sup>5</sup> (9-11).
- Vaccination coverage has been relatively stable since the 2010-11 season. Vaccination coverage among women vaccinated before or during pregnancy measured by the Internet panel surveys was measured as 43.9% in the 2010-11 flu season and 43.2% in the 2011-12 flu season<sup>1</sup> (CDC, unpublished data). In the 2012-13 flu season, 50.5% were vaccinated (12).
  - The increase from 43.2% to 50.5% was likely at least partly due to a change in survey methodology. Vaccination eligibility during the 2012-13 flu season was extended by a month to include vaccinations given in July-April rather than the previous August-April period.

CDC analyzed data from an Internet panel survey conducted October 30-November 13, 2013, among women who were pregnant any time since August 2013. The results of this survey provide information for use in vaccination campaigns during National Influenza Vaccination Week (December 8-14, 2013). This report provides early flu season (early November) estimates of vaccine uptake by pregnant women. Final 2013-14 flu season coverage estimates for pregnant women will become available after the end of the flu season.

## KEY FINDINGS

- As of early November 2013, flu vaccination coverage among pregnant women was 40.7%, similar to 2012-13 early season vaccination coverage (42.9%).
  - In the previous two flu seasons, vaccination coverage increased by approximately 6-8 percentage points from the early season to the end of the season.
- Most women (97.6%) reported visiting a doctor or other medical professional at least once since July 1, 2013; among these women, 50.8% reported receiving a recommendation for vaccination from a doctor or other medical professional and were offered the vaccination during the same visit, 16.7% received only a recommendation and no offer of vaccination during the visit, and 32.5% did not receive a recommendation for flu vaccination.
- Women who received a recommendation for vaccination from a doctor or other medical professional and were offered the vaccination during the same visit were:
  - Twice as likely to be vaccinated (64.6%) as women who received only a recommendation for vaccination and no offer to be vaccinated during the same visit (31.6%)
  - Six and a half times as likely to be vaccinated as women who did not receive a recommendation for vaccination (10.0%)

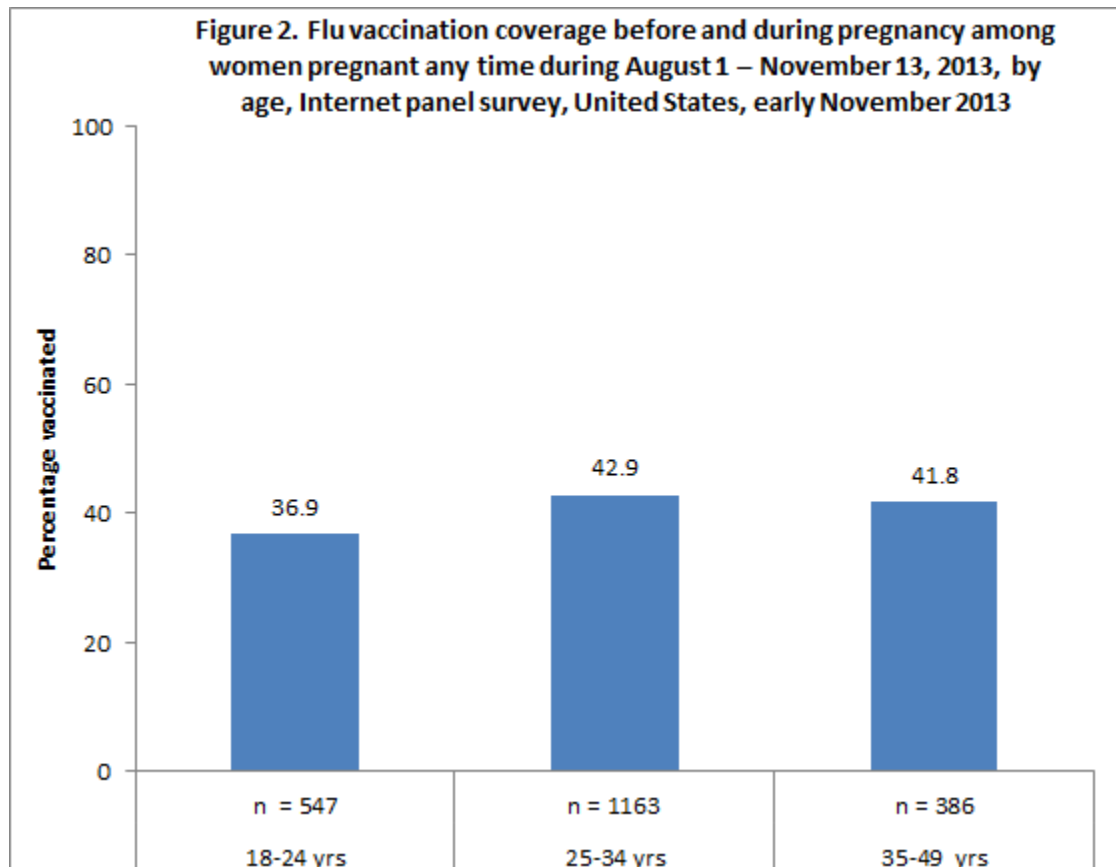
### Conclusion/Recommendation:

- Health care providers are encouraged to recommend flu shots to pregnant women and offer the shot onsite during the same office visit throughout the flu season to prevent the flu.

## WHO WAS VACCINATED?

### Coverage by Age Group

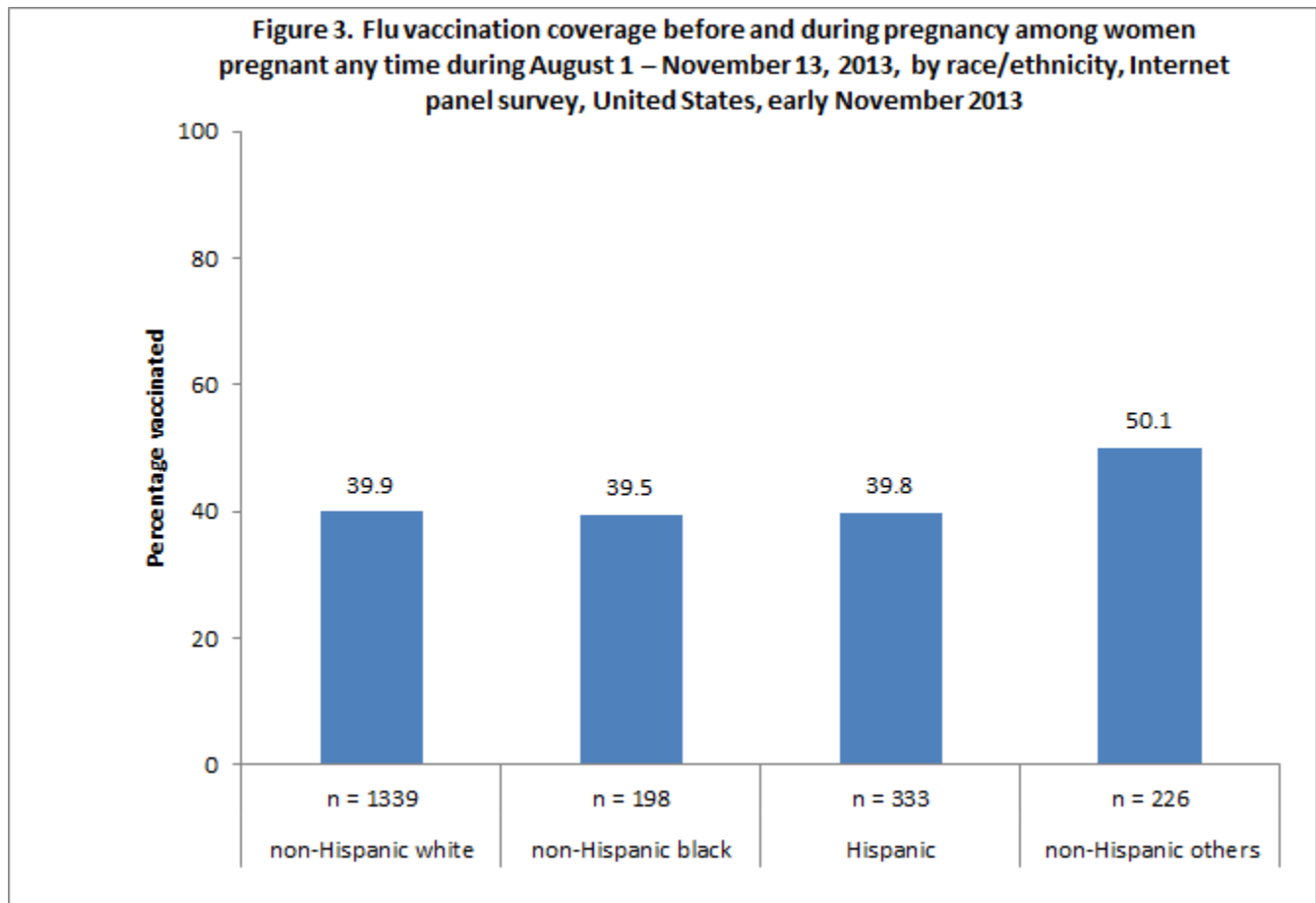
- Younger pregnant women (18-24 years) were less likely to be vaccinated (36.9%) than pregnant women 25-34 years (42.9%). Vaccination coverage was similar among pregnant women 25-34 years and 35-49 years.
  - Coverage among pregnant women 35-49 years was lower in November 2013 compared to the November 2012 survey (41.8% vs. 49.1%). Coverage among women in other age groups was similar in both surveys.



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## Coverage by Race/Ethnicity

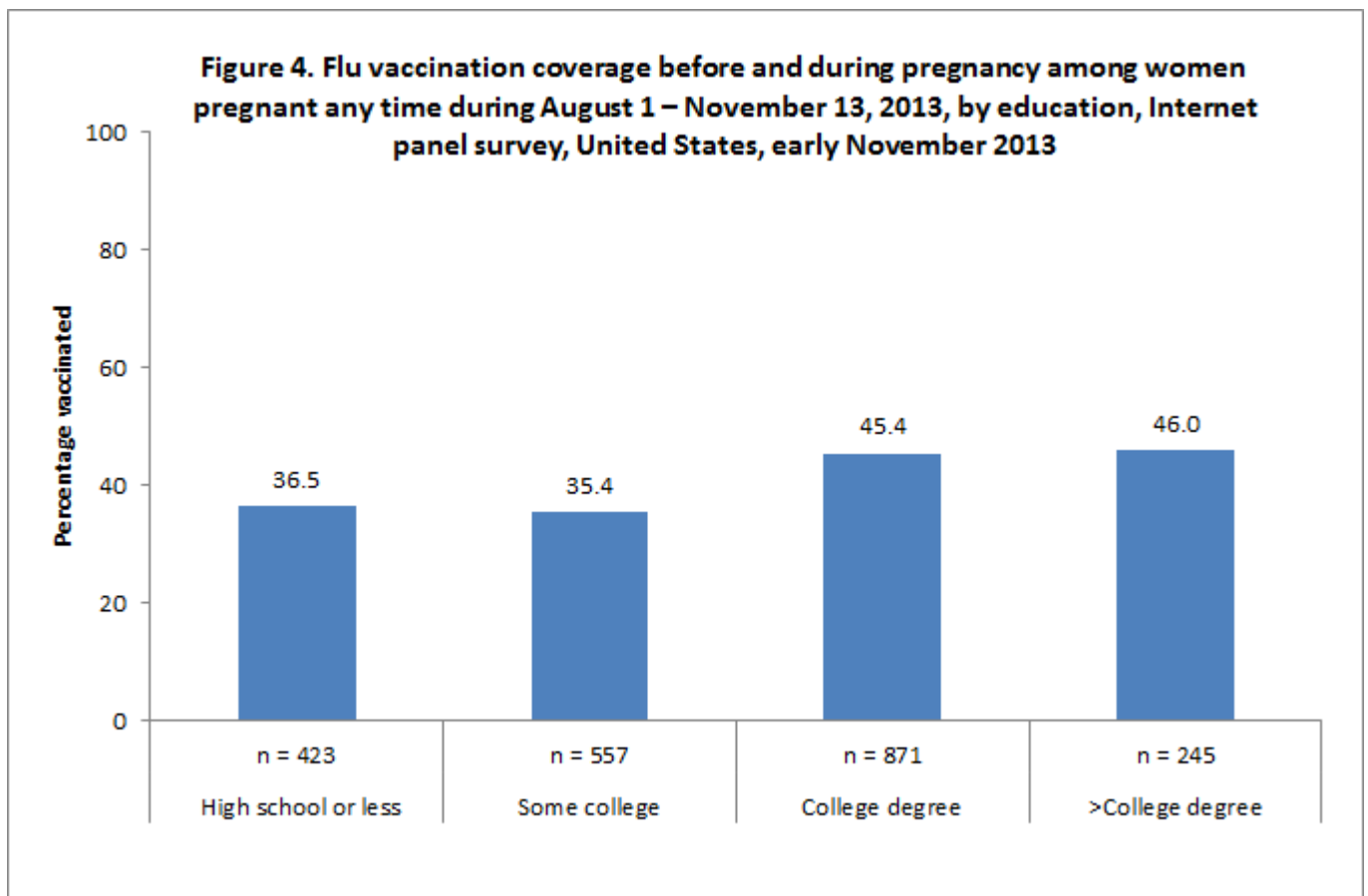
- Flu vaccination coverage was 50.1% among non-Hispanic other women, higher than coverage for women in all other racial/ethnic groups.
- Compared to the 2012 early season estimate, coverage in November 2013 was higher among non-Hispanic other women (50.1% vs. 42.2%) and lower among Hispanic women (39.8% vs. 55.1%).



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## Coverage by Education

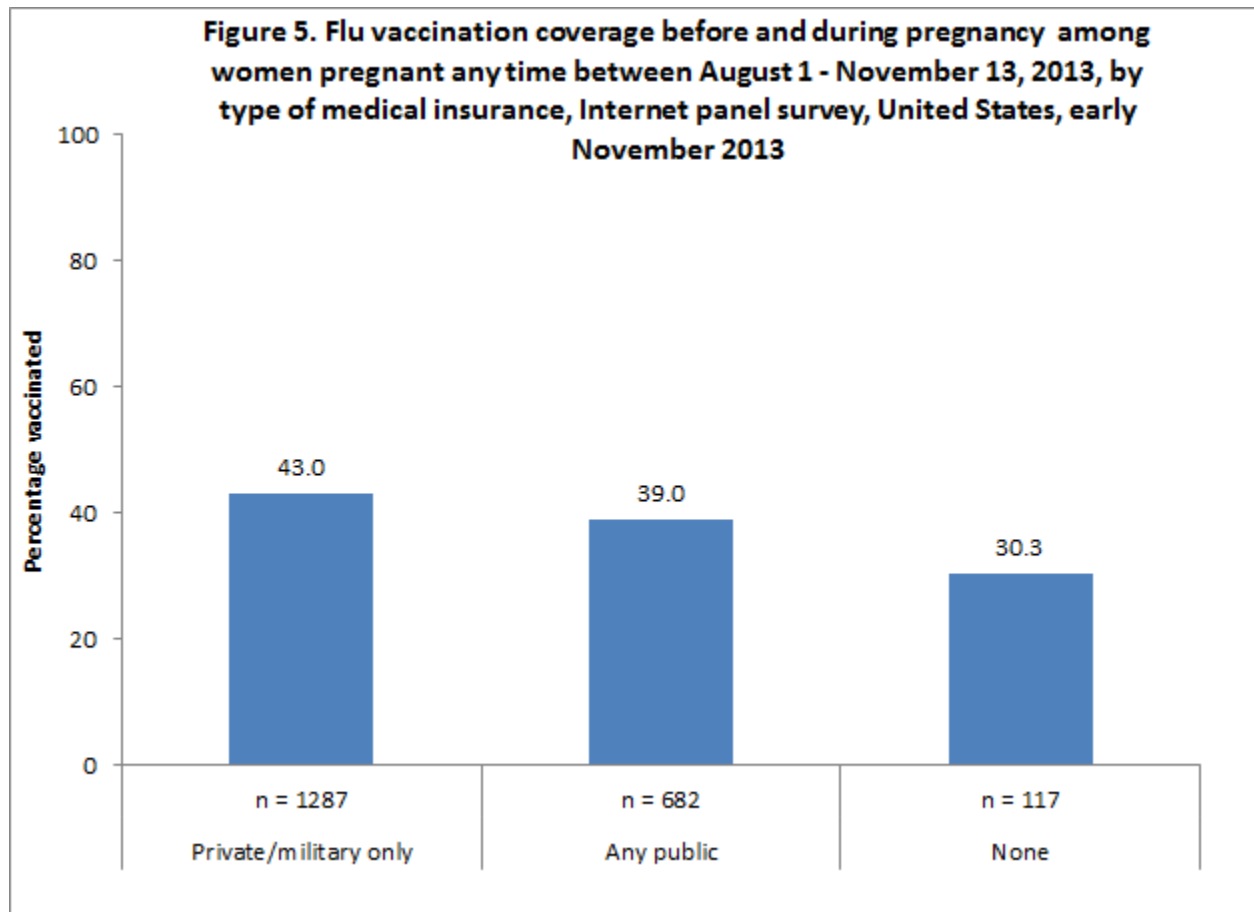
- Vaccination coverage was lower among pregnant women with a high school diploma or less (36.5%) or some college (35.4%) compared to women with a college degree (45.4%) or more than a college degree (46.0%).
- Compared to the 2012 early season estimate, coverage was lower in November 2013 among women with a high school diploma or less (36.5% vs. 42.3%) and among women with more than a college degree (46.0% vs. 58.6%). Coverage for other educational groups was similar in early November 2012 and early November 2013.



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## Coverage by Type of Medical Insurance

- Pregnant women who reported having private/military or public medical insurance at the time of the survey had higher vaccination coverage (43.0% and 39.0%, respectively) than pregnant women who reported not having insurance (30.3%).
  - 6.3% of pregnant women reported not having medical insurance.
- These estimates are similar to the results from early November 2012.

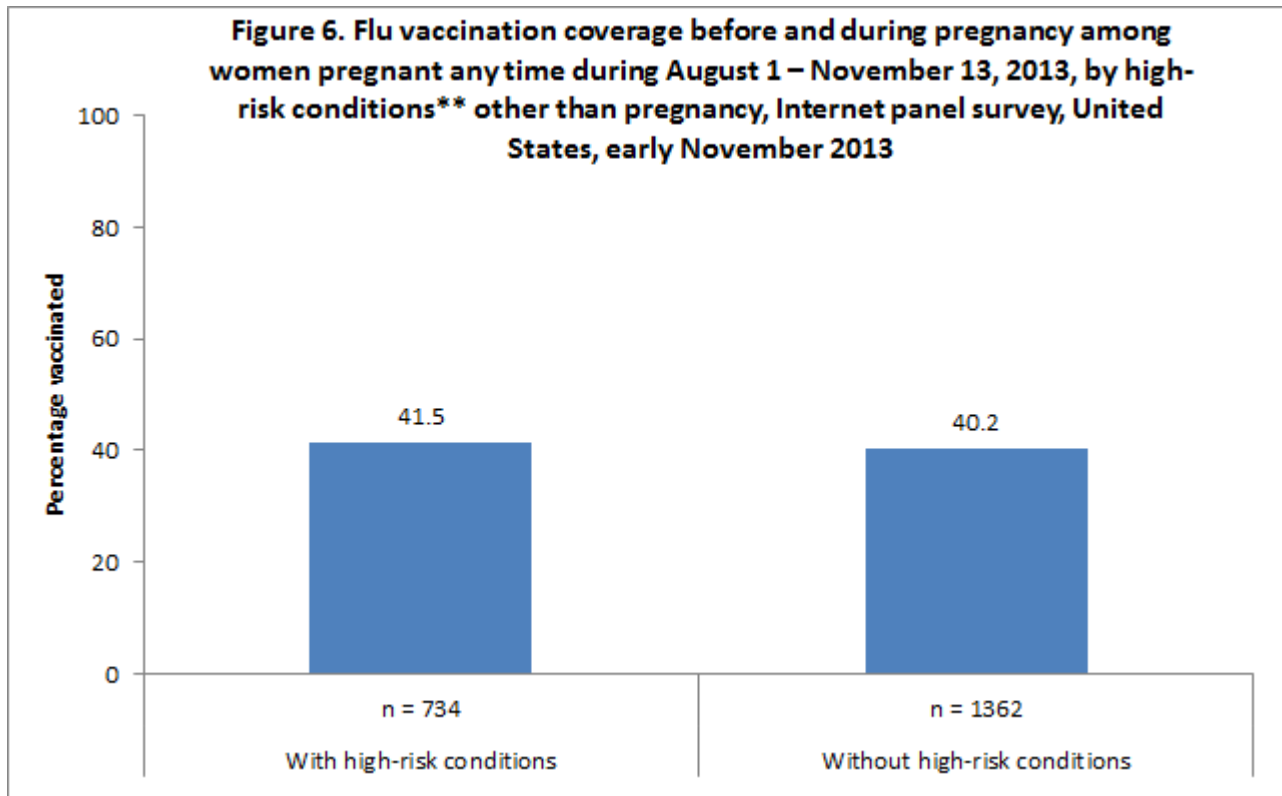


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## Coverage by Other High-Risk Conditions

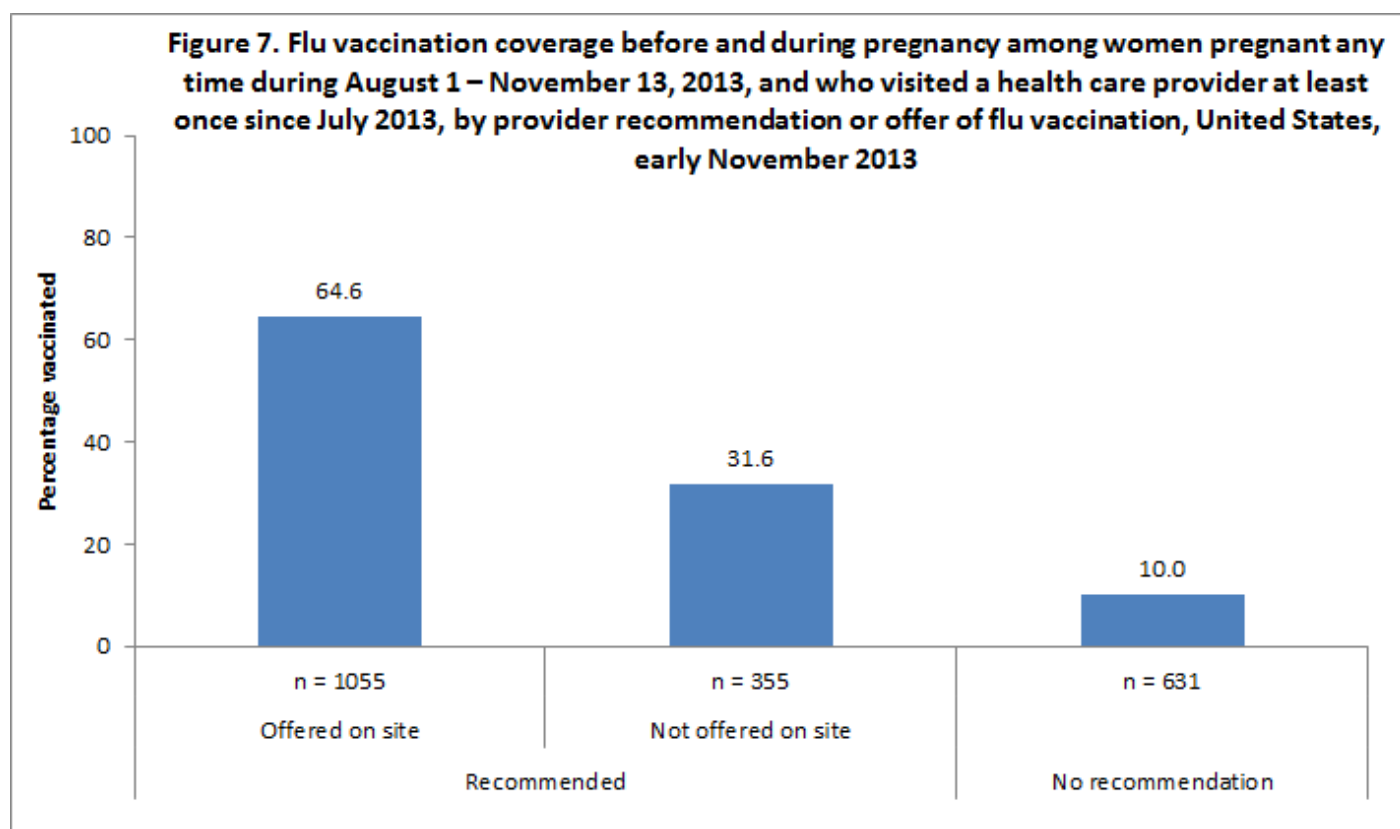
- Women with an additional high-risk condition other than pregnancy that increases the risk of severe flu had similar vaccination coverage (41.5%) to women with no additional high-risk conditions (40.2%).
- Compared to the November 2012 survey, coverage in November 2013 was lower among women with high-risk conditions other than pregnancy (41.5% vs. 57.7%), and coverage increased among women without additional high-risk conditions (40.2% vs. 34.4%).



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## Coverage by Health Care Provider Recommendation and Offer

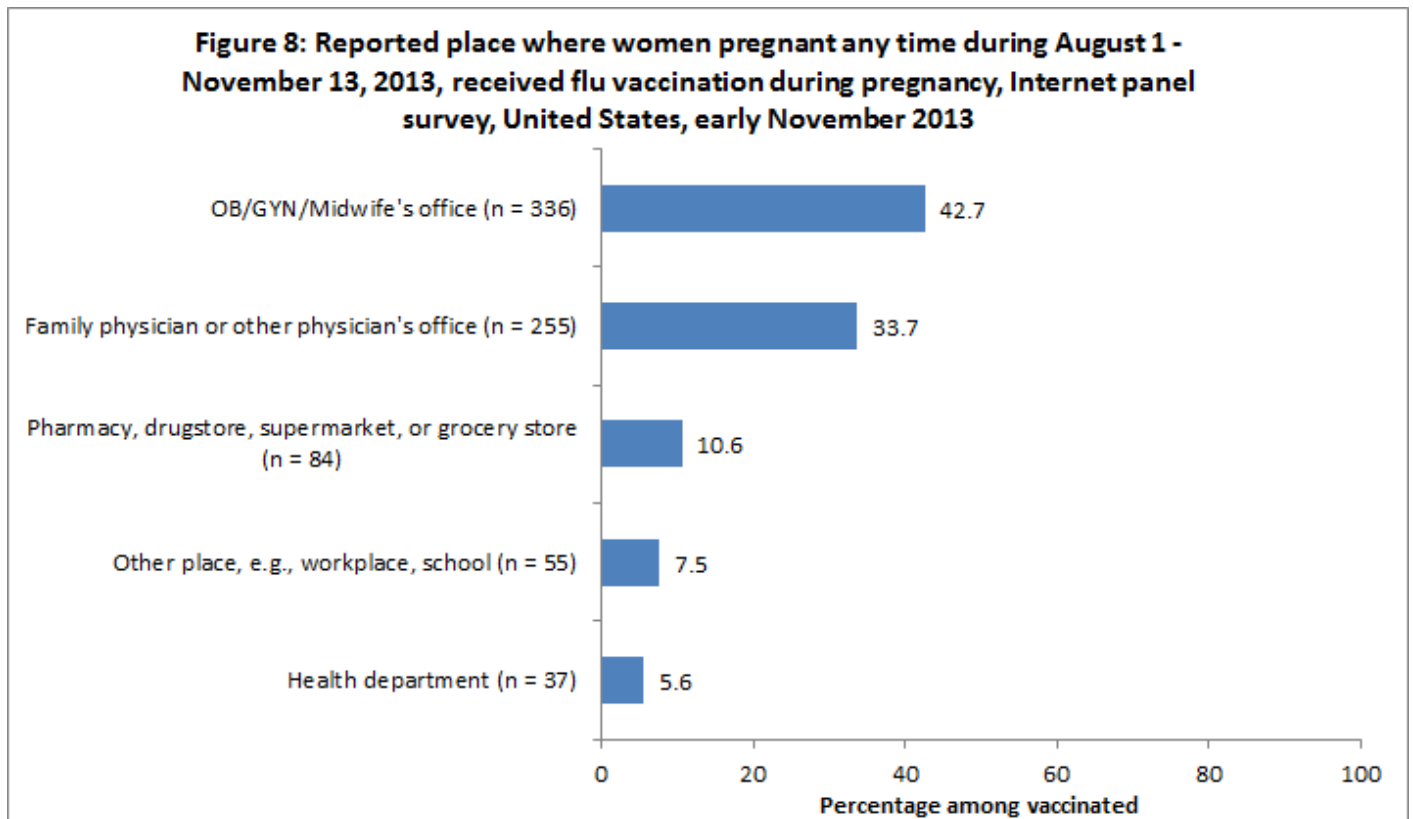
- Most women (97.6%) reported visiting a doctor or other medical professional at least once since July 1, 2013; among these women, 50.8% reported receiving a recommendation for flu vaccination from their provider and were offered the vaccine during the same visit, 16.7% received only a recommendation but were not offered the vaccine during the same visit, and 32.5% received neither an offer nor a recommendation for flu vaccination.
- Flu vaccination coverage among pregnant women was highest (64.6%) when their doctor or other medical professional recommended the vaccine and offered to give the vaccine during the same visit.
  - 31.6% of pregnant women were vaccinated when they received only a recommendation from their doctor or other medical professional but no offer of vaccination during the same visit
  - 10.0% of pregnant women were vaccinated when they did not receive a recommendation for vaccination from their doctor or other medical professional
- Similar relationships of vaccination coverage with provider recommendations and offering of flu vaccination were reported from the November 2012 survey.



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## Place of Vaccination

- The most common place reported for receiving flu vaccination during pregnancy was in the office of an obstetrician/gynecologist or midwife (42.7%).
- The proportion of pregnant women who were vaccinated in the office of an obstetrician/gynecologist or midwife was lower in the November 2013 survey compared to the November 2012 survey (42.7% vs. 49.9%).

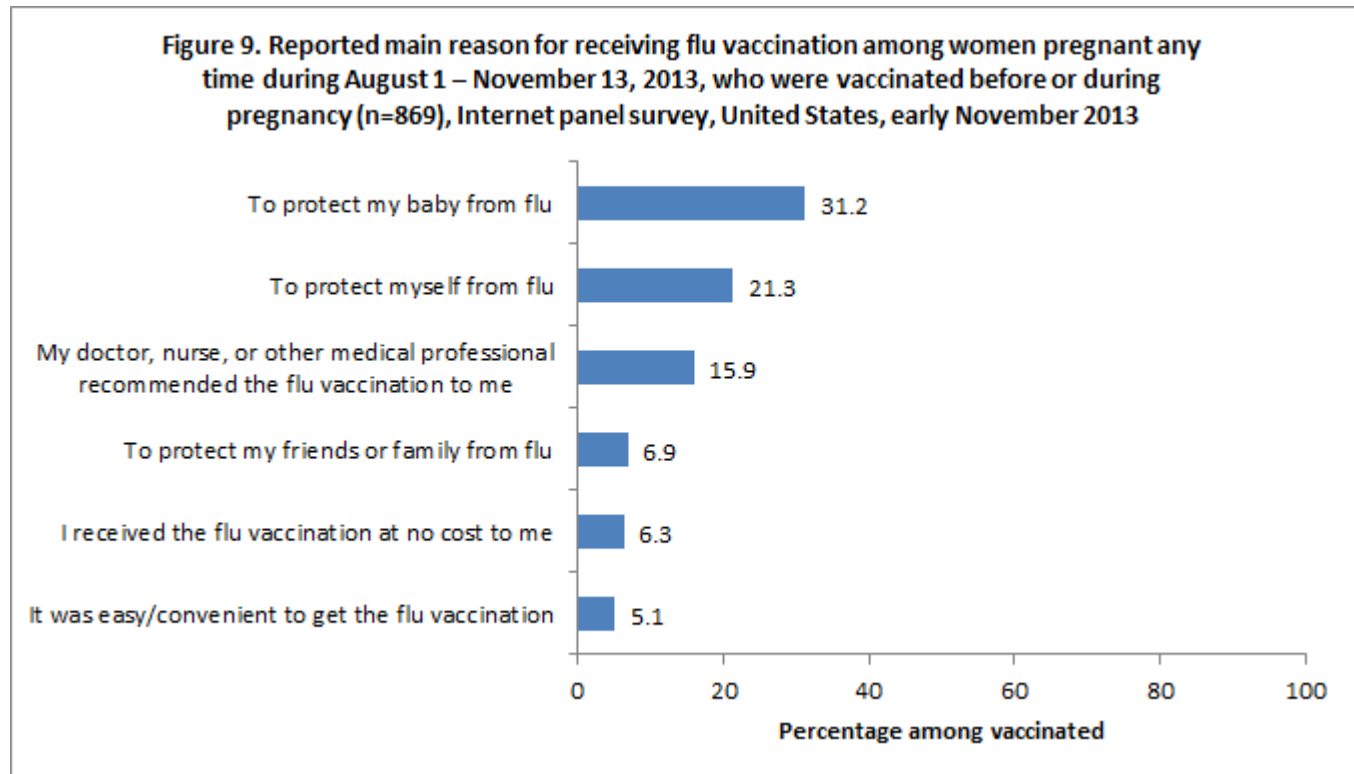


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## Main Reason for Receiving Vaccination

Respondents who were vaccinated at the time of the survey were asked to report their main reason for receiving a flu shot.

- The most common reason reported by respondents for receiving a flu shot was to protect their baby from flu (31.2%).
- The second most common reason reported was to protect themselves from flu (21.3%).

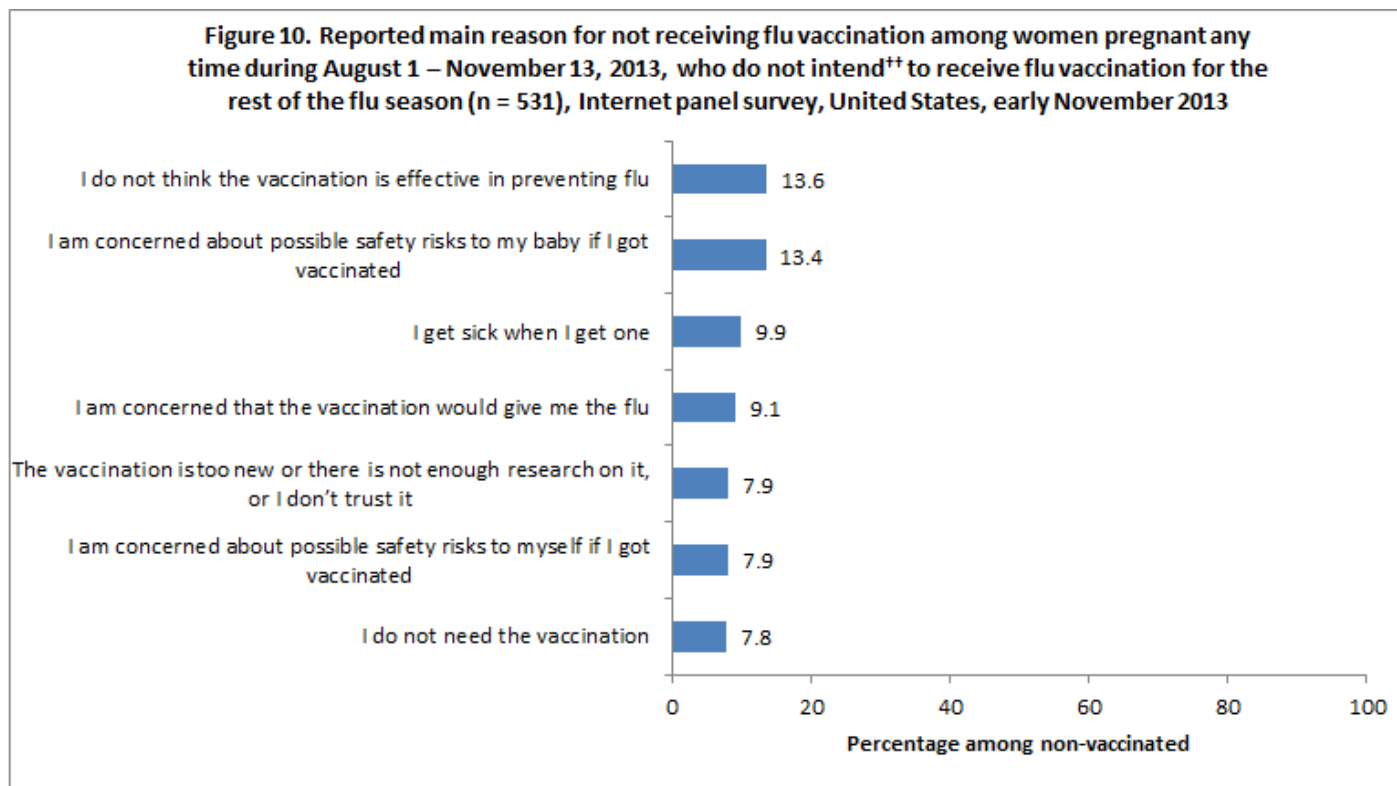


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## Main Reason for Not Receiving Vaccination

Unvaccinated respondents who reported that they did not intend to be vaccinated<sup>††</sup> were asked to report their main reason for not receiving a flu shot.

- The two most common reasons reported for not intending to receive a flu shot were belief that the flu vaccine is not effective in preventing the flu (13.6%) and concern about the safety risk to the unborn baby (13.4%).
- Barriers to vaccination access, such as of lack of medical insurance or cost, lack of time, unavailability of the vaccine, and lack of knowledge regarding where to get the vaccine were infrequently reported as a main reason for not receiving a flu shot.



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## WHAT CAN BE DONE? (Recommendations)

Overall, early 2013-14 season estimates of flu vaccination coverage before or during pregnancy among women pregnant anytime during August through the time of the survey were similar to 2012-13 early season estimates. Flu vaccination coverage was highest among women who reported that their doctor or other medical professional recommended the flu vaccine and offered to administer the vaccine during the same visit (64.6%). Coverage estimates were substantially lower among women who reported receiving only a recommendation without an offer of vaccine or not receiving a recommendation at all. Concern about safety of the unborn baby and perceived efficacy of the flu vaccine were the most common reasons for not receiving a flu vaccination (reported by 13.4% and 13.6% of unvaccinated respondents). Continued efforts are needed to improve flu vaccination coverage among pregnant women, including:

**Increase the proportion of pregnant women who receive a recommendation and offer for flu vaccination from their doctor or other medical professional:**

- Doctor or other medical professional recommendation is associated with vaccination during pregnancy.
- If more pregnant women receive both a recommendation and offer of flu vaccination from their doctor or other medical professional, vaccination coverage should increase.

**Continue to vaccinate pregnant women throughout the flu season:**

- Many pregnant women have not been vaccinated as of early November and remain vulnerable to flu infection.
- Ideally, providers should encourage all pregnant women to receive vaccination before flu activity increases in their community. Peak flu activity in the United States most often occurs in January or February.
- Providers should continue to offer flu shots to unvaccinated pregnant women for the duration of the flu season, even if flu activity has decreased in their community. More than one strain of flu may cause illness in a single flu season.

**Inform pregnant women about flu and the safety and efficacy of the flu vaccine:**

- Health care providers and immunization programs should provide pregnant women with accurate information on:
  - The risk of the flu and related complications, including hospitalization and death, for pregnant women and their babies
  - The benefits and safety of flu vaccination for mothers and their babies
  - The protection transferred to unborn babies by vaccination during pregnancy, since infants younger than 6 months old cannot be vaccinated themselves
- Information is available at:
  - [Pregnant Women and Influenza \(Flu\)](#)
  - [Pregnant Women and the Flu Shot: Fact Sheet](#)
  - [Pregnancy and Influenza Vaccine Safety](#)
  - [Influenza Vaccination of Pregnant Women: Letter to Providers](#)
  - [Tips for Mom and Mom with support throughout pregnancy through free text messages on topics like prenatal care, baby health, parenting, vaccination, and more](#)

The November Internet panel survey of pregnant women is designed to provide timely estimates of national flu vaccination coverage and to assess the effectiveness of current vaccination efforts. The follow-up survey in April 2014 will provide end-of-season flu vaccination coverage estimates.

## DATA SOURCE & METHODS

CDC conducted an Internet panel survey from October 30–November 13, 2013, to provide early season estimates of flu vaccination coverage and information on knowledge, attitudes, and behaviors related to flu vaccination among pregnant women. Women 18–49 years who were pregnant at any time since August 1, 2013, were recruited from SurveySpot, a general population Internet panel. SurveySpot is the same recruitment mechanism that was used in the November 2012 survey. Eligible respondents were either pregnant at the time of the survey or had recently been pregnant. Of 2,185 panel members who were eligible and started the survey, 2,109 (96.5%) completed the online survey. The sample was weighted to reflect the age group, racial/ethnic, and geographic distribution of the total U.S. population of pregnant women during 1995–2008 (13–14).

Survey respondents were asked if they had a flu vaccination since July 1, 2013, and if yes, in which month and whether it was before, during, or after pregnancy. Pregnancy status questions included whether respondents were currently pregnant or pregnant at any time since August 1, 2013, and if so, what were the actual months of pregnancy. Respondents were asked their beginning and end (or expected delivery) date of the pregnancy. Women who reported receiving vaccination since July 1, 2013, and who were vaccinated before or during pregnancy were counted as vaccinated. This differs slightly from the methodology used in previous Internet panel surveys (15–16). In surveys conducted prior to the 2012–13 flu season, the vaccination period was measured from August 1 until the time of survey. Beginning with the November 2012 survey, the vaccination period was extended by one month to July 1 until the time of survey. Additionally, published estimates prior to the April 2013 survey include vaccinations received before, during, or after pregnancy, while estimates in this report exclude vaccinations received after pregnancy. For comparison, estimates from prior seasons were recalculated using the same definition as in this report (i.e., women who were vaccinated before or during pregnancy), and thus may differ from previously published estimates.

All respondents were asked if their doctor or other medical professional had recommended or offered the flu vaccine, and if yes, had offered them flu vaccination during the same office visit. They were also asked about their attitudes toward and beliefs about flu and flu vaccination.

Weighted analyses were conducted using SAS v9.2 survey procedures. Because the opt-in Internet panel sample was based on those who initially self-selected for participation in the panel rather than a random probability sample, statistical measures such as calculation of confidence intervals and tests of differences cannot be performed (17). A difference of five percentage points was considered a notable difference.

### Sample Demographics

- A total of 2,096 women pregnant any time from August 1–November 13, 2013, were included in the survey.
  - By age, 547 (34.6%) were 18–24 years, 1,163 (49.2%) were 25–34 years, and 386 (16.3%) were 35–49 years.
  - By race/ethnicity, 333 (22.9%) were Hispanic, 1,339 (49.4%) were non-Hispanic white, 198 (19.0%) were non-Hispanic black, and 226 (8.7%) were non-Hispanic other.
  - By education, 423 (22.5%) were high school graduates or less, 557 (27.9%) were women with some college, 871 (39.1%) were women with a college degree, and 245 (10.6%) were women with greater than a college degree.
  - By type of medical insurance, 1,297 (57.6%) were women with private or military insurance only, 682 (36.1%) were women with any public insurance, and 117 (6.3%) were women with no insurance at all.
  - By high-risk conditions\*\*, 734 (35.0%) were women with high-risk conditions and 1,362 (65.0%) were women without high-risk conditions.

## LIMITATIONS

These results are preliminary and should be interpreted with caution. The follow-up Internet panel survey in April 2014 will assess flu vaccination coverage at the end of the flu season. State-specific estimates of flu vaccination coverage for the 2013-14 season will be provided later from the Pregnancy Risk Assessment Monitoring System (PRAMS). National coverage estimates from the Behavioral Risk Factor Surveillance System (BRFSS) and National Health Interview Survey (NHIS) will be provided later for comparison to the Internet panel survey estimates.

The findings in the report are subject to several limitations.

- The sample was not necessarily representative of all pregnant women in the United States, because the survey was conducted among a smaller group of volunteers who were already enrolled in SurveySpot rather than a randomly-selected sample.
- Some bias might remain after weighting adjustments, given the exclusion of women with no Internet access and the self-selection processes for entry into the panel and participation in the survey. Estimates might be biased if the selection processes for entry into the Internet panel and a woman's decision to participate in this particular survey were related to receipt of vaccination.
- All vaccination results are based on self-report and not validated by medical record review.
- Estimates from this report might not be directly comparable to estimates in published November reports from previous seasons for three reasons:
  1. Women were considered as vaccinated in this report if they were vaccinated before or during pregnancy, while in the November reports from the 2010-11 through 2012-13 seasons, women who received vaccination after pregnancy were also counted as vaccinated
  2. The vaccination period was extended to July 1, while in 2010-11 and 2011-12 influenza seasons the vaccination period started on August 1
  3. In the 2012 November survey, women who were pregnant any time since July 1 were included, whereas in this report women who were pregnant any time since August 1 were included (18-20)
- Estimates from Internet panel surveys may not be directly comparable to estimates from population-based surveys. Compared with the estimates from BRFSS, estimates of flu vaccination among pregnant women from the Internet panel surveys were similar for the 2010-11 season (43.9% vs. 39.7%) and 2011-12 season (43.2% vs. 39%) (*CDC, unpublished data*).
- Comparing 2010-11 flu season vaccination estimates from the same 21 states in both the Internet panel survey and the PRAMS, the Internet panel survey estimate for vaccination before and during pregnancy among women pregnant anytime during October 2010-January 2011 (44.9%) was close to the estimate from PRAMS (45.6%)(21).

Despite these limitations, Internet panel surveys are a useful surveillance tool for timely early season and postseason evaluation of flu vaccination coverage and knowledge, attitude, practice, and barrier data.

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## RELATED LINKS

- Influenza vaccination coverage: [FluVaxView](#)
- [2012-13 end-of-season MMWR](#)
- [2012-13 early season online report](#)
- [2011-12 end-of-season MMWR](#)
- [2011-12 early season online report](#)
- [2010-2011 end-of-season MMWR](#)
- [2010-2011 early season online report](#)
- [Flu vaccination accepted by pregnant women not linked with miscarriage](#)
- [Pregnancy Risk Assessment Monitoring System website](#)
- [Prevention and Control of Influenza with Vaccines: Recommendations of the Advisory Committee on Immunization Practices \(ACIP\)-United States, 2013-14 influenza Season](#)
- [Text4Baby](#)
- [SSI](#)
- [SurveySpot](#)
- [Follow CDC Flu on Twitter: @CDCFlu](#)

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## FOOTNOTES

\* Vaccinated before or during pregnancy as of early November based on women who provided a response to vaccination status questions and who were pregnant any time during August-November 2010 for 2010-11 flu season (n=1,496), August -November 2011 for 2011-12 flu season (n=2,047), August-November 2012 for 2012-13 flu season (n=1,796), and August -November 2013 for 2013-14 flu season (n=2,096). Beginning in the 2012-13 season, women vaccinated since July 1 were counted as vaccinated. In prior seasons, only women vaccinated since August 1 were counted as vaccinated.

† Vaccinated before or during pregnancy as of mid-April based on women who provided a response to vaccination status questions and who were pregnant anytime during October 2010-January 2011 for 2010-11 flu season (n=1,457), October 2011-January 2012 for 2011-12 flu season (n=1,660), and October 2012-January 2013 for 2012-13 flu season (n=1,702). Beginning in the 2012-13 season, women vaccinated since July 1 were counted as vaccinated. In prior seasons, women vaccinated since August 1 were counted as vaccinated.

§ These estimates include women who may have been vaccinated after their pregnancy ended. The PRAMS estimate includes pregnant women from 21 states and is not a national estimate.

¶ These estimates differ from published estimates from the 2010-11 and 2011-12 Internet panel surveys because they do not count vaccinations reported after pregnancy had ended, whereas published estimates did count women who were vaccinated before, during, or after pregnancy as vaccinated. Additionally, the 2010-11 and 2011-12 estimates counted vaccinations from August-April of each flu season. The 2012-13 season estimate counted vaccinations from July-April.

\*\* Currently have conditions other than pregnancy associated with increased risk for serious medical complications from flu, including chronic asthma, a lung condition other than asthma, a heart condition, diabetes, a kidney condition, a liver condition, a weakened immune system caused by a chronic illness or by medicines taken for a chronic illness, or obesity.

†† Includes unvaccinated respondents who reported that they probably or definitely do not intend to be vaccinated before the end of the flu season.

