

## Alt Text for Box 5

**TABLE 1. Summary table of racial/ethnic differences in vaccination coverage among adults aged  $\geq 19$  years, by age group and increased-risk status — National Health Interview Survey, United States, 2018**

With whites as the reference group, there were differences in vaccination coverage for 48 of the 66 comparisons by vaccine and age/target groups (not including comparisons of the “other” race/ethnic group). These vaccination differences ranged from 5.8 percentage points for Asians compared with whites for hepatitis A vaccination among adults aged 19–49 years to -22.9 percentage points for blacks compared with whites for tetanus vaccination among adults aged 50–64 years and tetanus vaccination including pertussis vaccine among health care personnel (HCP) aged  $\geq 19$  years.

**TABLE 2. Average change in racial/ethnic percentage point differences in vaccination coverage among adults aged  $\geq 19$  years compared with whites, by age group and increased-risk status<sup>§</sup> — National Health Interview Survey, United States, 2010–2018**

During 2010–2018, vaccination differences between whites and blacks increased for tetanus vaccination (adults aged  $\geq 19$  years and aged 19–49 years), tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis (Tdap) vaccine (adults aged  $\geq 19$  years, and aged 19–64 years), hepatitis A vaccination (adults aged 19–49 years), hepatitis B vaccination (adults aged 19–49 years and HCP aged  $\geq 19$  years), and herpes zoster vaccination (adults aged  $\geq 60$  years and aged  $\geq 65$  years) (test for trend:  $p < 0.05$ ). Among Hispanics, vaccination differences increased over this time period compared with whites for tetanus vaccination (adults aged  $\geq 19$  years), Tdap (adults aged  $\geq 19$  years, 19–64 years, and  $\geq 65$  years), hepatitis A vaccination (adults aged 19–49 years), hepatitis B vaccination (HCP aged  $\geq 19$  years), and herpes zoster vaccination (adults aged  $\geq 60$  years and  $\geq 65$  years) (test for trend:  $p < 0.05$ ). For Asians, vaccination differences increased over this time period compared with whites for Tdap (adults aged  $\geq 19$  years and 19–64 years), and herpes zoster vaccination (adults aged  $\geq 65$  years) (test for trend:  $p < 0.05$ ). However, for Asians, vaccination differences decreased over this time period compared with whites for tetanus (Td or Tdap) vaccination (adults aged 19–49 years). For other racial/ethnic groups, vaccination differences increased over this time period compared with whites for Tdap (adults aged  $\geq 19$  years), and hepatitis B vaccination (HCP aged  $\geq 19$  years). Vaccination differences between whites, blacks, Hispanics, and persons reporting other race for the other vaccines and age groups did not change during this period.

**TABLE 3. Estimated proportion of adults  $\geq 19$  years who received influenza, by age group, increased-risk status, and race/ethnicity — National Health Interview Survey, United States, 2017–18 influenza season**

Influenza vaccination coverage for the 2017–18 season overall among adults aged  $\geq 19$  years was 46.1%, similar to the estimate for the 2016–17 season. Coverage among whites aged  $\geq 19$  years (49.3%) was higher than that for blacks (39.0%) and Hispanics (37.5%).

Among adults aged 19–49 years, influenza vaccination coverage for the 2017–18 season was 34.8%, similar to the estimate for the 2016–17 season. Coverage among whites aged 19–49 years (36.5%) was higher than that for blacks (30.2%) and Hispanics (30.5%). Coverage among whites aged 50–64 years (49.4%) was higher compared with Hispanics (42.0%). Coverage among whites aged  $\geq 65$  years (73.5%) was higher compared with blacks (59.7%).

**TABLE 4. Estimated proportion of adults aged  $\geq 19$  years who received any tetanus and Tdap vaccination, by age group, increased-risk status, and race/ethnicity — National Health Interview Survey, United States, 2018**

In 2018, whites had higher tetanus vaccination coverage (68.3%) among adults aged  $\geq 19$  years compared with blacks (50.2%), Hispanics (54.0%), and Asians (54.7%). Whites had higher tetanus vaccination coverage across age groups (19–49, 50–64, and  $\geq 65$  years) compared with blacks, Hispanics, and Asians. Whites had higher tetanus vaccination including pertussis vaccine coverage (36.7%) among adults aged  $\geq 19$  years compared with blacks (20.1%), Hispanics (20.5%), and Asians (25.6%). Whites had higher tetanus vaccination including pertussis vaccine coverage across age groups (19–49, 50–64, and  $\geq 65$  years) compared with blacks, Hispanics and Asians. The difference in vaccination coverage between whites and other racial/ethnic groups in 2018 increased for respondents aged  $\geq 19$  years and 19–64 years compared with differences measured in 2017.

**TABLE 5. Estimated proportion of adults aged  $\geq 60$  years who received herpes zoster vaccination, by age group and race/ethnicity — National Health Interview Survey, United States, 2018**

Among adults aged 50–64 years, 11.5% reported herpes zoster vaccination, similar to the estimate for 2017. Whites aged 50–64 years had higher herpes vaccination coverage (13.4%) compared with blacks (6.0%) and Hispanics (6.9%). Among adults aged 60–64 years, 22.5% reported herpes zoster vaccination, similar to the estimate for 2017. Whites aged 60–64 years had higher herpes vaccination coverage (25.4%) compared with blacks (10.8%), and Hispanics (15.3%). Among adults aged  $\geq 65$  years, 39.5% reported herpes zoster vaccination, similar to the estimates for 2017. Whites aged  $\geq 65$  years had higher herpes zoster vaccination coverage (44.0%) compared with blacks (22.6%), Hispanics (21.7%), and Asians (32.5%).

**TABLE 6. Estimated proportion of adults aged  $\geq 19$  years who received selected vaccinations, by age group, increased-risk status, and health insurance status<sup>†</sup> — National Health Interview Survey, United States, 2018**

Vaccination coverage was lower among adults without health insurance compared with those with

health insurance for influenza vaccination (aged  $\geq 19$  years, 19–49 years, and 50–64 years); pneumococcal vaccination (aged 19–64 at increased risk); tetanus vaccination (all ages); Tdap vaccine (adults aged  $\geq 19$  years and 19–64 years); hepatitis A vaccination (aged  $\geq 19$  years overall and among travelers); hepatitis B vaccination (aged  $\geq 19$  years, 19–49 years, and  $\geq 19$  years among travelers); herpes zoster vaccination (aged  $\geq 60$  years); and human papillomavirus (HPV) vaccination among females and males (aged 19–26 years). The difference in coverage between those with health insurance compared with those without health insurance ranged from 4.0 percentage points for hepatitis A among adults aged  $\geq 19$  years to 33.2 percentage points for influenza vaccination among those aged  $\geq 19$  years.

Vaccination coverage was higher among adults with private health insurance compared with those with public health insurance for influenza vaccination (aged 19–49 years and  $\geq 65$  years); pneumococcal vaccination among adults aged  $\geq 65$  years; tetanus vaccination (all ages); tetanus vaccination including pertussis vaccine (all ages); hepatitis A vaccination among adults aged  $\geq 19$  years (overall and travelers); hepatitis B vaccination (among adults aged  $\geq 19$  years and 19–49 years, travelers aged  $\geq 19$  years, and those with diabetes aged  $\geq 19$  years and  $\geq 60$  years), and herpes zoster vaccination (all ages); and HPV vaccination among females aged 19–26 years. Vaccination coverage was lower among adults with private insurance compared with those with public insurance for influenza vaccination among adults aged  $\geq 19$  years (48.2% versus 52.4%, respectively) and pneumococcal vaccination among adults aged 19–64 years at increased risk (21.6% versus 33.4%, respectively).

Influenza vaccination coverage was lower among adults aged 19–49 years across insurance status categories compared with adults aged 50–64 years and  $\geq 65$  years. Pneumococcal vaccination coverage was lower among adults with health insurance aged 19–64 years at increased risk compared with adults with health insurance aged  $\geq 65$  years. Compared with adults with health insurance aged 19–49 years, tetanus vaccination coverage was lower among adults with health insurance aged  $\geq 65$  years. Tdap coverage was lower among adults with health insurance aged  $\geq 65$  years compared with adults with health insurance aged 19–64 years. Hepatitis B vaccination coverage among adults with diabetes aged  $\geq 60$  years with health insurance was lower compared with coverage among adults with health insurance aged 19–59 years with diabetes. Herpes zoster coverage among adults with health insurance aged  $\geq 65$  years was higher compared with coverage among adults with health insurance aged 60–64 years.

**TABLE 7. Adjusted vaccination coverage among adults aged  $\geq 19$  years, by age group, increased risk status, and health insurance status<sup>†</sup> — National Health Interview Survey, United States, 2018**

Adults without health insurance were significantly less likely than those with health insurance to be vaccinated after adjusting for confounders for influenza (aged  $\geq 19$  years) (adjusted prevalence ratio (APR)=0.8); pneumococcal vaccination (aged 19–64 years at increased risk and  $\geq 65$  years) (APR=0.9, and 0.5, respectively); tetanus vaccination including pertussis vaccine (aged  $\geq 19$  years) (APR)=0.9); hepatitis A vaccination (aged  $\geq 19$  years and travelers aged  $\geq 19$  years) (APR=1.0, and 0.9, respectively);

hepatitis B vaccination (aged  $\geq 19$  years and 19–49 years) (APR=0.9, and 0.9, respectively); and HPV vaccination (males aged 19–26 years and males aged 19–26 years who reported first HPV dose at 19–26 years) (APR=0.8, and 1.0, respectively). The difference in adjusted vaccination coverage between respondents with and without health insurance for whom the difference was statistically significant ranged from 2.7% (hepatitis A vaccination among adults aged  $\geq 19$  years) to 25.4% (pneumococcal vaccination among adults aged  $\geq 65$  years).

**TABLE 8. Estimated proportion of adults aged  $\geq 19$  years who received selected vaccinations, by age group, increased-risk status, health insurance status, and having a usual place for health care — National Health Interview Survey, United States, 2018**

Generally, adults with a usual place for health care were more likely to report having received recommended vaccinations than those who did not have a usual place for health care, regardless of whether they had health insurance. Among adults with health insurance, coverage was higher among those who reported having a usual place for health care compared with those who did not have a usual place for health care for influenza vaccination (all ages); pneumococcal vaccination (all ages); Tdap vaccine (aged  $\geq 19$  years and 19–64 years); herpes zoster vaccination (aged  $\geq 60$  years and  $\geq 65$  years); and HPV vaccination (males aged 19–26 years). Among adults with health insurance, vaccination coverage was higher among those without a usual place of care compared with those with a usual place of care for hepatitis A (aged  $\geq 19$  years), and hepatitis B vaccination (aged  $\geq 19$  years). Among adults without health insurance, coverage was higher among adults who had a usual place for health care compared with those who did not for influenza vaccination among adults aged  $\geq 19$  years, 19–49 years, and 50–64 years; and tetanus vaccination among adults aged  $\geq 19$  years and 50–64 years.

Among adults with health insurance and a usual place for healthcare, influenza vaccination coverage was lower among adults aged 19–49 years (40.7%) compared with adults aged 50–64 years (53.4%) and  $\geq 65$  years (73.9%), and pneumococcal vaccination coverage was lower among adults aged 19–64 years (26.1%) at increased risk compared with adults aged  $\geq 65$  years (70.4%). Compared with adults aged 19–49 years (67.8%), tetanus vaccination coverage was lower among adults aged 50–64 years (65.7%) and  $\geq 65$  years (59.7%), while Tdap coverage was lower among adults aged  $\geq 65$  years (22.7%) compared with adults aged 19–64 years (37.0%). Hepatitis B vaccination coverage among adults with diabetes aged  $\geq 60$  years (15.5%) was lower compared with coverage among adults aged 19–59 years with diabetes (34.4%). Herpes zoster coverage among adults aged  $\geq 65$  years (40.4%) was higher compared with coverage among adults aged 60–64 years (24.3%). Similar differences in coverage by age were observed among adults with health insurance without a usual place of care for influenza vaccination, pneumococcal vaccination, tetanus vaccination, and Tdap vaccination. Among persons without health insurance, few comparisons by age could be made since many of the estimates were suppressed due to small sample size ( $n < 30$ ) or relative standard error (standard error/estimates)  $> 0.3$ .

**TABLE 9. Estimated proportion of adults aged  $\geq 19$  years who received selected vaccinations, by age group, increased-risk status, health insurance status, and physician contacts<sup>§</sup> — National Health Interview Survey, United States, 2018**

Vaccination coverage was generally higher among those reporting having at least one physician contact in the past year compared with those who had not visited a physician in the past year, regardless of whether the respondent had health insurance, and vaccination coverage generally increased with increasing physician contacts. Hepatitis A vaccination coverage among persons aged  $\geq 19$  years, travelers aged  $\geq 19$  years, and persons with chronic liver conditions aged  $\geq 19$  years did not differ by number of physician contacts.

Among adults who had health insurance and reported having had  $\geq 10$  physician contacts within the past year, 20.1%–87.5% reported not receiving a vaccine or vaccine series that either is recommended for all persons or are recommended for those with some specific indication: not receiving influenza vaccination (100 minus vaccination coverage), 39.6% [aged  $\geq 19$  years], 52.6% [aged 19–49 years], 41.8% [aged 50–64 years], 20.1% [aged  $\geq 65$  years]; not receiving pneumococcal vaccination, 64.0% [increased risk, aged 19–64 years], 22.0% [aged  $\geq 65$  years]; not receiving tetanus vaccination, 29.2% [aged  $\geq 19$  years], 23.0% [aged 19–49 years], 30.0% [aged 50–64 years], 37.2% [aged  $\geq 65$  years]; not receiving Tdap vaccine, 60.8% [aged  $\geq 19$  years], 54.6% [aged 19–64 years], 75.3% [aged  $\geq 65$  years]; not receiving hepatitis A vaccination, 87.5% [aged  $\geq 19$  years], 79.3% [travelers aged  $\geq 19$  years], 75.6% [chronic liver conditions aged  $\geq 19$  years]; not receiving hepatitis B vaccination, 67.5% [aged  $\geq 19$  years], 49.6% [aged 19–49 years], 57.7% [travelers aged  $\geq 19$  years], 65.7% [adults aged  $\geq 19$  years with chronic liver conditions], 77.6% [adults aged  $\geq 19$  years with diabetes], 63.8% [adults aged 19–59 with diabetes], 86.1% [adults aged  $\geq 60$  years with diabetes]; not receiving herpes zoster vaccination, 61.3% [aged  $\geq 60$  years], 73.6% [aged 60–64 years], 57.0% [aged  $\geq 65$  years]; and not receiving HPV vaccination, 39.0% [females aged 19–26 years] and 41.8% [males aged 19–26 years].

Among adults with health insurance and at least one physician contact, influenza vaccination coverage was lower among adults aged 19–49 years compared with adults aged 50–64 years and  $\geq 65$  years, and among adults with health insurance and no physician contacts, influenza vaccination coverage was lower among adults aged 19–49 years compared with adults aged 50–64 years and  $\geq 65$  years. Among adults with health insurance regardless of number of physician contacts, pneumococcal vaccination coverage was lower among adults aged 19–64 years at increased risk compared with adults aged  $\geq 65$  years, tetanus vaccination coverage was lower among adults aged  $\geq 65$  years compared with adults aged 19–49 years, while Tdap coverage was lower among adults aged  $\geq 65$  years compared with adults aged 19–64 years. Among adults with health insurance and at least one physician contact, hepatitis B vaccination coverage among adults with diabetes aged  $\geq 60$  years was lower compared with coverage among adults aged 19–59 years with diabetes, and herpes zoster coverage among adults aged  $\geq 65$  years was higher compared with coverage among adults aged 60–64 years.

**TABLE 10. Estimated proportion of adults aged  $\geq 19$  years who received selected vaccinations, by age group, increased-risk status, nativity, number of years living in the United States, and citizenship — National Health Interview Survey, United States, 2018**

Nativity was categorized as U.S.–born (persons born in one of the 50 States or the District of Columbia); or foreign–born (persons who were not born in one of the 50 States or the District of Columbia).

Generally, vaccination coverage among U.S.–born respondents was significantly higher than that of foreign–born respondents including influenza vaccination (aged  $\geq 19$  years), pneumococcal vaccination (all ages), tetanus vaccination (all ages), Tdap vaccine (all ages), hepatitis B vaccination (aged  $\geq 19$  years, 19–49 years, and travelers aged  $\geq 19$  years), herpes zoster vaccination (all ages), and HPV vaccination among females aged 19–26 years.

Vaccination coverage was significantly higher for foreign–born persons living in the United States  $\geq 10$  years compared with those living in the United States  $< 10$  years for influenza vaccination (aged  $\geq 19$  years), but lower for hepatitis A vaccination (adults aged  $\geq 19$  years overall and among travelers aged  $\geq 19$  years) and hepatitis B vaccination (adults aged  $\geq 19$  years overall, and travelers aged  $\geq 19$  years). Coverage among foreign–born adults who were U.S. citizens was higher than that for foreign–born adults who were not U.S. citizens for influenza vaccination (aged  $\geq 19$  years, 19–49 years, and 50–64 years); tetanus vaccination (aged 19–49 years); tetanus vaccination including pertussis vaccine (aged 19–64 years); hepatitis B vaccination (aged  $\geq 19$  years and 19–49 years); and herpes zoster vaccination (aged  $\geq 60$  years).

Influenza vaccination coverage was lower among adults aged 19–49 years compared with adults aged 50–64 years and  $\geq 65$  years among U.S.–born adults, foreign–born adults, and foreign–born adults who lived in U.S.  $\geq 10$  years and who reported being U.S. citizens. Pneumococcal vaccination coverage was lower among adults aged 19–64 years at increased risk compared with adults aged  $\geq 65$  years among U.S.–born, foreign–born adults, and foreign–born adults who live in U.S.  $\geq 10$  years, who are U.S. citizens, and who reported being non-U.S. citizens. Compared with adults aged 19–49 years, tetanus vaccination coverage was lower among adults aged  $\geq 65$  years among U.S.–born, foreign–born adults, and foreign–born adults who lived in U.S.  $\geq 10$  years and who are U.S. citizens. Where comparisons could be made, Tdap coverage was lower among adults aged  $\geq 65$  years compared with adults aged 19–64 years. Hepatitis B vaccination coverage among adults with diabetes aged  $\geq 60$  years among U.S.–born, foreign–born adults, and foreign–born adults who lived in U.S.  $\geq 10$  years and who are U.S. citizens was lower compared with coverage among adults aged 19–59 years with diabetes. Herpes zoster coverage among adults aged  $\geq 65$  years was higher compared with coverage among adults aged 60–64 years among U.S.–born, foreign–born adults, and foreign–born adults who lived in U.S.  $\geq 10$  years and who are U.S. citizens.