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Influenza, COVID-19, and Respiratory Syncytial Virus Vaccination Coverage Among Adults — United States, Fall 2024

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Abstract

The Advisory Committee on Immunization Practices (ACIP) recommends annual influenza and COVID-19 vaccination for all persons aged ≥6 months, including adults aged ≥18 years. ACIP also recommends a single lifetime dose of respiratory syncytial virus (RSV) vaccine for adults aged ≥75 years and for those aged 60–74 years who are at increased risk for severe RSV disease. Data from the National Immunization Survey-Adult COVID Module, a random-digit–dialed cellular telephone survey of U.S. adults aged ≥18 years, are used to monitor influenza, COVID-19, and RSV vaccination coverage. By the week ending November 9, 2024, an estimated 34.7% of adults aged ≥18 years reported having received an influenza vaccine, and 17.9% reported having received a COVID-19 vaccine for the 2024–25 respiratory virus season; 39.7% of adults aged ≥75 years, and 31.6% of adults aged 60–74 years at increased risk for severe RSV, had ever received an RSV vaccine. Coverage varied by jurisdiction and demographic characteristics and was lowest among younger adults and those without health insurance. Although early season estimates indicate that many adults are unprotected from respiratory virus infections, many appeared open to vaccination: overall, approximately 35% and 41% of adults aged ≥18 years reported that they definitely or probably will receive or were unsure about receiving influenza and COVID-19 vaccines, respectively, and 40% of adults aged ≥75 years reported that they definitely or probably will receive or were unsure about receiving RSV vaccine. Health care providers and immunization programs still have time to expand outreach activities and promote vaccination to increase coverage in preparation for the height of the respiratory virus season. Using these data can help health care providers and immunization programs identify undervaccinated populations and understand vaccination patterns to guide planning, implementation, and evaluation of vaccination activities.

Introduction

Influenza virus, SARS-CoV-2, and respiratory syncytial virus (RSV) typically circulate in the United States each year during the fall through early spring (*1*–*3*). These viruses can cause serious illness, particularly in adults aged ≥65 years, persons with certain medical conditions, and persons from some racial and ethnic minority populations (*4*,*5*). The Advisory Committee on Immunization Practices (ACIP) has recommended annual influenza vaccination since 2010 for all persons aged ≥6 months (*1*). In June 2024, ACIP recommended that all persons aged ≥6 months receive an updated 2024–2025 COVID-19 vaccine (*2*), and that all adults

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aged ≥75 years and those aged 60–74 years at increased risk for severe RSV receive a single lifetime dose of RSV vaccine* (*3*). CDC monitors coverage with these vaccines and makes these data available during the respiratory virus season for use in planning vaccination activities.† Data from the National Immunization Survey-Adult COVID Module, a random-digit–dialed telephone survey, were reviewed to assess influenza, COVID-19, and RSV vaccination coverage early in the fall respiratory virus season.

Methods

Data Source

The National Immunization Survey-Adult COVID Module (NIS-ACM) is a random-digit–dialed cellular telephone survey of adults aged ≥18 years in all 50 states, the District of Columbia, and selected local areas and U.S. territories.§ Data are weighted to represent the noninstitutionalized U.S. population.¶ The survey includes questions about receipt of COVID-19, influenza, and RSV vaccines, vaccination intent, behavioral and social drivers of vaccination, and sociodemographic characteristics.** Respondents were asked if they had received an influenza vaccine since July 1, 2024, a COVID-19 vaccine since August 22, 2024, or had ever received an RSV vaccine. For affirmative responses, respondents were asked the month and year of vaccination.††

Data Analysis

Data collected during the weeks ending September 7–November 9, 2024, are included in this analysis.§§ Vaccination coverage estimates were calculated for weekly data collection

* In June 2023, ACIP recommended that adults aged ≥60 years may receive a single dose of RSV vaccine, using shared clinical decision-making, which was the first time a vaccine for prevention of RSV-associated respiratory disease was recommended. The new recommendation made in June 2024 was for a single lifetime dose of RSV vaccine; adults who have previously received RSV vaccine are not recommended to receive another dose at this time.

† https://www.cdc.gov/respiratory-viruses/data/vaccination-trends.html; https://www.cdc.gov/respvaxview/about/#cdc_data_surveillance_section_2-dashboard

§ Local areas that received federal immunization funds under Section 317 of the Public Health Service Act are sampled separately in NIS. Local areas include Bexar County, Texas; Chicago, Illinois; Houston, Texas; New York, New York; and Philadelphia County, Pennsylvania. Three U.S. territories are sampled separately: Guam (April–July 2021, April–June 2022, April–July 2023, and April–July 2024 only), Puerto Rico, and the U.S. Virgin Islands (April–December 2021 and January–December 2023 only).

¶ NIS-ACM data are weighted to represent the noninstitutionalized U.S. population aged ≥18 years using population control totals for age group, sex, metropolitan statistical area status, education, Hispanic ethnicity, and race. https://www.cdc.gov/nis/about/

** https://www.cdc.gov/nis/media/pdfs/2024/11/NISACMQuestionnaireQ42024_508.pdf

†† Respondents reporting receipt of any COVID-19 vaccine after August 22, 2024, were considered vaccinated with the 2024–2025 COVID-19 vaccine, and respondents reporting receipt of an influenza vaccine after July 1, 2024, were considered vaccinated with the 2024–25 influenza vaccine.

§§ Sample sizes for data collected through November 9, 2024, and included for vaccination assessment in this analysis, were 136,195 for influenza, 112,040 for COVID-19, 79,566 for RSV for persons aged ≥75 years, and 8,667 for RSV for persons aged 60–74 years at increased risk for severe RSV disease. Respondents were excluded from the analysis if they did not answer the question or questions about receipt of vaccine or intent to be vaccinated and, for RSV, if they did not report age.

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periods using a nondecreasing composite estimation procedure with completed interviews from the current week combined with all previous weeks[¶¶] (*6*). Estimates of vaccination intent were based on interviews conducted each respective week and adjusted to the cumulative coverage estimate for that week. Influenza and COVID-19 vaccination coverage were estimated among adults aged ≥18 years; RSV vaccination coverage was estimated among adults aged ≥75 years and those aged 60–74 years at increased risk for severe RSV disease.[***] Differences were determined using t-tests with p-values <0.05 considered statistically significant. This activity was reviewed by CDC, deemed not research, and was conducted consistent with applicable federal law and CDC policy.[†††]

Results

Overall Vaccination Coverage and Intent

As of November 9, 2024, cumulative estimated coverage with 2024–2025 influenza and COVID-19 vaccines among adults aged ≥18 years was 34.7% and 17.9%, respectively. Estimated RSV vaccination coverage was 39.7% among adults aged ≥75 years and 31.6% among those aged 60–74 years at increased risk (Figure 1).

For the week ending November 9, among adults aged ≥18 years, 14.5% and 13.5% reported that they definitely will be vaccinated against influenza and COVID-19, respectively; among adults aged ≥75 years, 7.2% reported that they definitely will be vaccinated against RSV. An additional 20.5%, 27.1%, and 32.8% reported they probably will be vaccinated or were unsure whether they will be vaccinated, against influenza, COVID-19, and RSV, respectively. Together these estimates indicate that approximately 35% of adults aged ≥18 years were open to receiving influenza vaccine, 41% of adults aged ≥18 years were open to receiving COVID-19 vaccine, and 40% of adults aged ≥75 years were open to RSV vaccination. Across all weeks, the highest percentage who were unvaccinated and reported they probably will get vaccinated or were unsure was for RSV vaccine (range = 31.7%–38.6% among those aged ≥75 years and 33.8%–45.0% among those aged 60–74 years). The percentage of adults who reported that they probably or definitely will not get vaccinated for the week ending November 9 was highest for COVID-19 (41.6%) and lowest for RSV (20.3% among those aged ≥75 years and 14.8% among those aged 60–74 years).

Influenza vaccination coverage for the current season (week ending November 9, 2024) among adults aged ≥18 years (34.7%) was 0.9 percentage points higher than coverage during the corresponding period during the 2023–24 season (week ending November 11, 2023 [33.8%]) and among those aged ≥65 years, was 3.7 percentage points higher (58.6% versus 54.9%) (Supplementary Figure, https://stacks.cdc.gov/view/cdc/170357). Likewise, COVID-19 vaccination coverage among adults aged ≥18 years was 4.7 percentage points higher in the 2024–25 season (17.9%) than the 2023–24 season (13.2%) and among adults aged ≥65 years, was 13.7 percentage points higher (38.5% versus 24.8%).[§§§] RSV vaccination coverage increased somewhat from the end of June 2024, when ACIP made the new RSV vaccine recommendation, to the week ending November 9; among adults aged ≥75 years, coverage increased 9.6 percentage points (from 30.1% to 39.7%) and among adults aged 60–74 years at increased risk, coverage increased 8.7 percentage points (from 22.9% to 31.6%).

Vaccination Coverage and Intent by Demographic Characteristics and Jurisdiction

Coverage with all vaccines was lowest among uninsured persons, and high percentages of those without insurance reported that they probably or definitely will not receive influenza vaccine (43.6%) or COVID-19 vaccine (44.3%) (Figure 2) (Supplementary Table 1, https://stacks.cdc.gov/view/cdc/170358). Coverage and intent to be vaccinated were generally higher among adults living in urban and suburban areas compared with those living in rural areas. Coverage with influenza and COVID-19 vaccines increased with age. Coverage with influenza vaccine was more than twice as high among adults aged ≥65 years (58.6%) as it was among those aged 18–29 years (23.1%). COVID-19 vaccination coverage among adults aged ≥65 years (38.5%) was more than five times that among those aged 18–29 years (7.2%). Among adults with any disability (versus those with no disability), RSV vaccination coverage was lower (33.1% versus 41.8% among those aged ≥75 years and 23.7% versus 34.2% among those aged 60–74 years at increased risk for severe RSV).

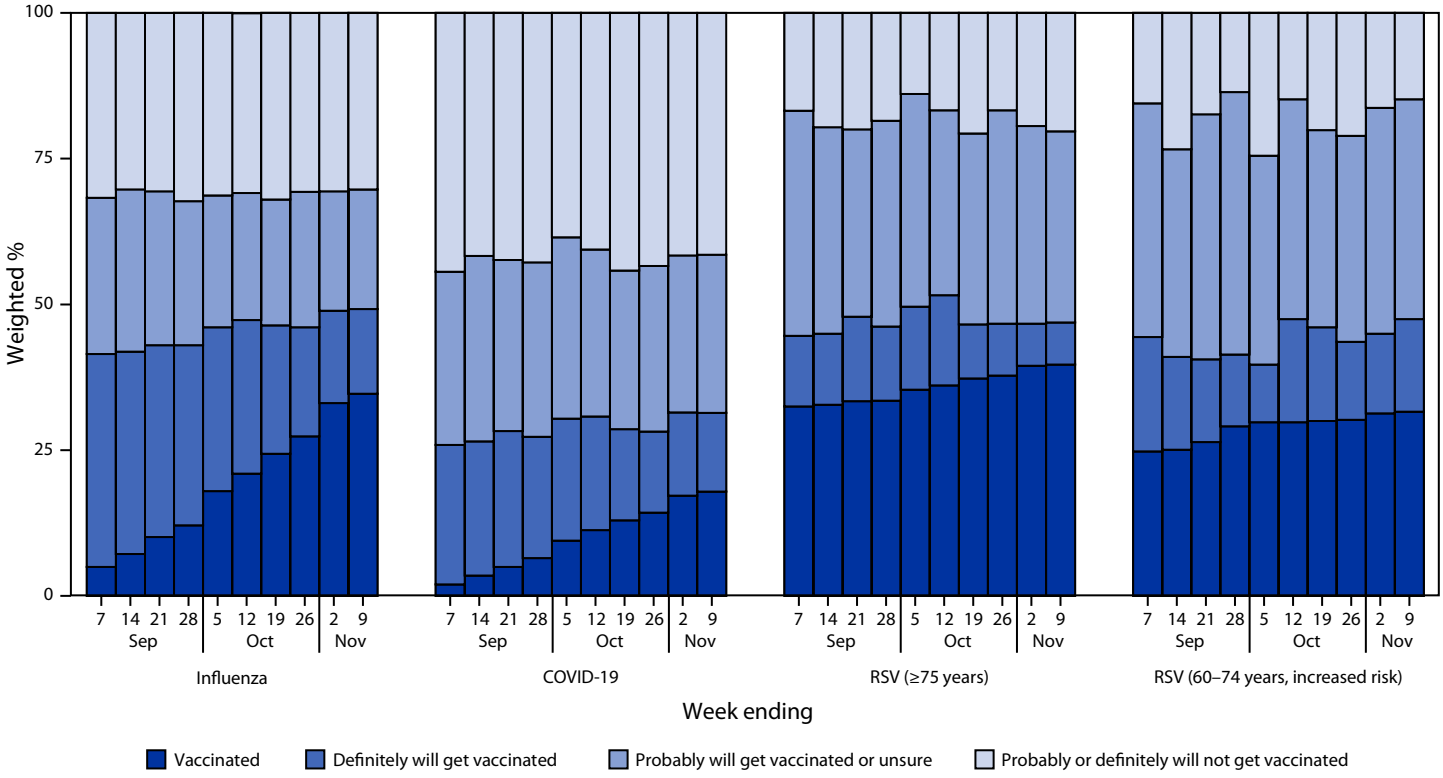
[¶¶] Data from all completed interviews from August 18, 2024–November 9, 2024 were used for influenza vaccine; from September 1, 2024–November 9, 2024, for COVID-19 vaccine; from September 24, 2023–November 9, 2024, for RSV vaccine for adults aged ≥75 years; and from August 25, 2024–November 9, 2024, for RSV vaccine for adults aged 60–74 years at increased risk for severe RSV disease. NIS-ACM health condition questions were updated starting August 25, 2024, to reflect the June 2024, RSV vaccination recommendations.

[***] The NIS-ACM questionnaire asks, "Do you have a health condition that may put you at higher risk for getting very sick from respiratory diseases, such as the flu, RSV, or COVID?" and specific health conditions are self-reported. A respondent was considered to be at increased risk for severe RSV disease based on previously defined criteria: chronic lung diseases, diabetes with insulin use, heart conditions, immunocompromised state, solid organ or blood stem cell transplant (including bone marrow transplant), cancer, liver disease, sickle cell disease or thalassemia, or residence in a nursing home. https://www.cdc.gov/mmwr/volumes/73/wr/mm7332e1.htm#B1_down

[†††] 45 C.F.R. part 46.102(l)(2), 21 C.F.R. part 56; 42 U.S.C. Sect. 241(d); 5 U.S.C. Sect. 552a; 44 U.S.C. Sect. 3501 et seq.

[§§§] The 2024–2025 COVID-19 vaccines were first available at the end of August 2024, approximately 3 weeks earlier than the 2023–2024 COVID-19 vaccines were first available, in mid-September 2023.

FIGURE 1. Weekly influenza, COVID-19, and respiratory syncytial virus vaccination status* and vaccination intent† among adults§ — National Immunization Survey-Adult COVID Module, United States, September 1–November 9, 2024



Abbreviation: RSV = respiratory syncytial virus.

* Estimates of vaccination coverage were calculated for November 3–9, 2024, using a nondecreasing composite estimation procedure that uses data from all completed interviews during August 18, 2024–November 9, 2024 (influenza vaccination among persons aged ≥18 years, 136,195); September 1, 2024–November 9, 2024 (COVID-19 vaccination among persons aged ≥18 years, 112,040); September 24, 2023–November 9, 2024 (RSV vaccination among persons aged ≥75 years, 79,566); and August 25, 2024–November 9, 2024 (RSV vaccination among persons aged 60–74 years, at increased risk for severe RSV disease, 8,667).

† Estimates for vaccination intent are based on interviews conducted during November 3–9, 2024, and were adjusted to the cumulative vaccination coverage estimate for that week. Influenza (9,445), COVID-19 (9,439), RSV vaccination intent among persons aged ≥75 years (984), and RSV vaccination intent among adults aged 60–74 years, at increased risk for severe RSV disease (644).

§ Estimates for influenza and COVID-19 vaccination coverage and vaccination intent are among adults aged ≥18 years. Estimates for RSV vaccination coverage and intent are among adults aged ≥75 years and 60–74 years at increased risk for severe RSV disease. A respondent was considered to be at increased risk for severe RSV disease based on previously defined criteria: chronic lung diseases, diabetes with insulin use, heart conditions, immunocompromised state, solid organ or blood stem cell transplant (including bone marrow transplant), cancer, liver disease, sickle cell disease or thalassemia, or residence in a nursing home. https://www.cdc.gov/mmwr/volumes/73/wr/mm7332e1.htm#B1_down

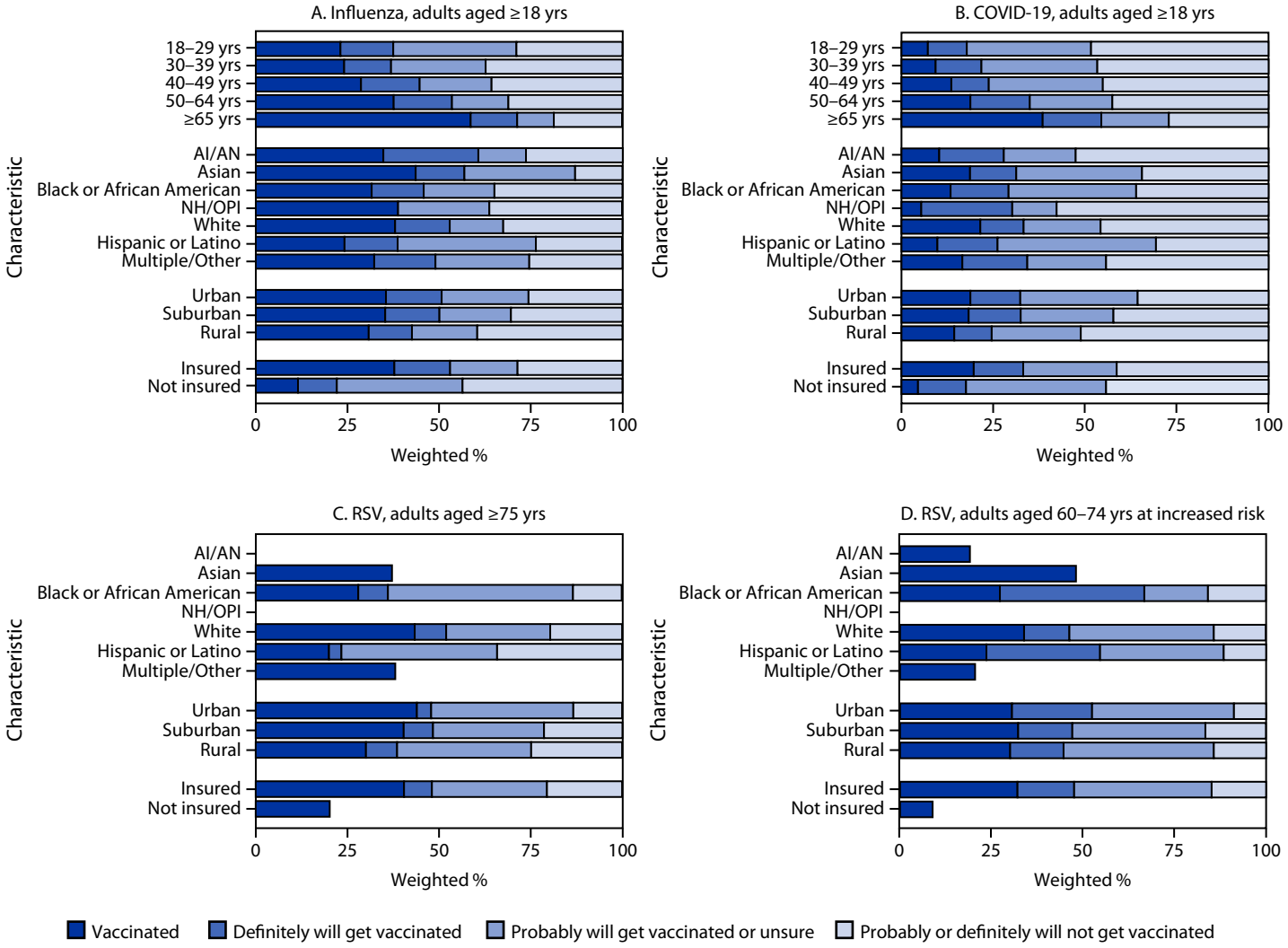
Vaccination coverage was generally higher among non-Hispanic Asian (Asian) and non-Hispanic White (White) adults, than among non-Hispanic Black or African American (Black), Hispanic or Latino (Hispanic), and non-Hispanic American Indian or Alaska Native (AI/AN) adults. The percentage of persons reporting that they probably or definitely will not get vaccinated with COVID-19 vaccine was higher among White adults than among Black and Hispanic adults.

Vaccination coverage varied by jurisdiction, ranging from 17.0% (Puerto Rico) to 50.5% (Maryland) for influenza vaccine, and from 5.2% (Puerto Rico) to 33.9% (Vermont) for COVID-19 vaccine (Table). RSV vaccination coverage estimates were not available at the jurisdiction level because of small sample sizes but varied by U.S. Department of Health and Human Services (HHS) region, with highest coverage among those aged ≥75 years in HHS Region 10 (Supplementary Table 2, https://stacks.cdc.gov/view/cdc/170359).

Discussion

As of November 9, 2024, self-reported receipt of influenza, COVID-19, and RSV vaccines among U.S. adults was low, particularly for certain demographic groups such as younger adults and those without insurance, and in some jurisdictions; RSV vaccination coverage has increased by only approximately 9–10 percentage points since ACIP's June 2024 recommendation. As of mid-October, influenza vaccination coverage was approximately equal to what it was at the same time during the 2023–24 influenza season but was 4.2 percentage points

FIGURE 2. Influenza (A), COVID-19 (B), and respiratory syncytial virus (C and D) vaccination status* and vaccination intent† among adults,§ by demographic characteristics¶, — National Immunization Survey-Adult COVID Module, United States, November 3–9, 2024**



Abbreviations: AI/AN = American Indian or Alaska Native; NH/OPI = Native Hawaiian or other Pacific Islander; RSV = respiratory syncytial virus.

* Estimates of vaccination coverage were calculated for November 3–9, 2024 using a nondecreasing composite estimation procedure that uses data from all completed interviews during August 18, 2024–November 9, 2024 (influenza vaccination among persons aged ≥18 years, 136,195); September 1, 2024–November 9, 2024 (COVID-19 vaccination among persons aged ≥18 years, 112,040); September 24, 2023–November 9, 2024 (RSV vaccination among persons aged ≥75 years, 79,566); and August 25, 2024–November 9, 2024 (RSV vaccination among persons aged 60–74 years, at increased risk for severe RSV disease, 8,667).

† Estimates for vaccination intent are based on interviews conducted during November 3–9, 2024, and were adjusted to the cumulative vaccination coverage estimate for that week. Influenza (9,445), COVID-19 (9,439), RSV intent among adults aged ≥75 years (984), and RSV vaccination intent among persons aged 60–74 years, at increased risk for severe RSV disease (644). Estimates for vaccination or vaccination intent are not shown for groups with sample size <30.

§ Estimates presented for influenza and COVID-19 vaccination coverage and vaccination intent are among adults aged ≥18 years. Estimates for RSV vaccination and intent are among adults aged ≥75 years and adults aged 60–74 years who are at increased risk for severe RSV disease. A respondent was considered to be at increased risk for severe RSV disease based on previously defined criteria: chronic lung diseases, diabetes with insulin use, heart conditions, immunocompromised state, solid organ or blood stem cell transplant (including bone marrow transplant), cancer, liver disease, sickle cell disease or thalassemia, or residence in a nursing home. https://www.cdc.gov/mmwr/volumes/73/wr/mm7332e1.htm#B1_down

¶ Persons of Hispanic or Latino (Hispanic) origin might be of any race but are categorized as Hispanic; all racial groups are non-Hispanic.

** Estimates are not shown for groups with sample size <30.

lower than it was at the same time during the 2022–23 influenza season (*7*).

Approximately 41% of adults aged ≥18 years and 40% of adults aged ≥75 years had not received COVID-19 and RSV vaccines, respectively, but reported that they definitely or probably plan to receive or are unsure about receiving the vaccines, suggesting they are open to vaccination. A health care provider recommendation for and offer of vaccination

are strongly associated with receipt of vaccination (*8*). Data from another CDC survey showed that a large proportion of adults open to RSV vaccination expressed concerns about lack of knowledge about RSV and the RSV vaccine, and lack of a provider recommendation for vaccination. Unvaccinated adults who were open to receiving 2024–2025 COVID-19 and influenza vaccines expressed concerns about side effects, being too busy, or not having gotten around to getting vaccinated (*9*). Making vaccinations available in provider offices, pharmacies, workplaces, and other convenient locations at convenient times, along with a strong provider recommendation for vaccination, could increase vaccination coverage. CDC has developed health care provider toolkits to empower providers with knowledge to make a strong recommendation for vaccination.¶¶¶

CDC's Bridge Access Program provided COVID-19 vaccines for adults without health insurance and those whose insurance did not cover all COVID-19 vaccination costs, but this program ended in August 2024. CDC is providing limited funding for uninsured adults to obtain free 2024–2025 COVID-19 vaccines from public health safety net providers.**** A national Vaccines for Adults program could help close the gap for adult immunization access by expanding access to all recommended routine and outbreak vaccines for under- and uninsured adults.

Programmatic measures that helped reduce disparities in coverage with the primary COVID-19 vaccination series, such as making vaccines available free of charge, use of trusted messengers, and bringing vaccines into communities through nontraditional settings (*10*), might increase equitable access to vaccination and decrease disparities for these recommended vaccines. CDC partners with community-based organizations, health care providers, and other trusted messengers to build vaccine confidence and awareness, including through the Partnering for Vaccine Equity (P4VE) program.†††† Communication and education campaigns,§§§§ such as Wild to Mild, Get My Flu Shot, and Risk Less. Do More., include various materials and resources to promote vaccination.

CDC makes vaccination coverage estimates rapidly available during the respiratory virus season.¶¶¶¶ In addition to data from the NIS-ACM, vaccination data are available from multiple sources and include coverage among children, pregnant persons, and Medicare beneficiaries, and national projected vaccination in pharmacies and medical offices. Jurisdiction- and HHS region–level estimates of influenza, COVID-19, and RSV vaccination coverage and intent stratified by demographic factors, and behavioral and social drivers of vaccination are available on CDC's RespVaxView dashboard.***** End-of-season influenza vaccination coverage estimates for children and adults beginning with the 2010–11 influenza season are available on FluVaxView.†††††

Limitations

The findings in this report are subject to at least four limitations. First, response rates for NIS-ACM were relatively low (<25%), although similar to those in other NIS surveys.§§§§§ Data were weighted to mitigate possible bias resulting from an incomplete sample frame (i.e., exclusion of households with no phone service or only landline telephones) or nonresponse, but some selection bias might persist. Second, all responses were self-reported; vaccination receipt and month and year of receipt of most recent dose might be subject to recall or social desirability bias. Third, NIS-ACM had relatively small sample sizes for the age groups recommended to receive RSV vaccine, limiting ability to report RSV vaccination coverage or intent estimates for some sociodemographic groups and by jurisdictions. Finally, the survey sampled noninstitutionalized U.S. adults; thus, adults who were incarcerated or who live in long-term care or nursing home facilities¶¶¶¶¶ might not be represented in the sample, although residents of nursing homes who have and use a personal mobile device are eligible to participate in the survey.

Implications for Public Health Practice

Early season estimates of vaccination coverage among U.S. adults with influenza, COVID-19, and RSV vaccines are low and indicate that many adults lack the protection from respiratory virus infections afforded by vaccines. However, many unvaccinated adults reported that they definitely or probably will get vaccinated or were unsure, suggesting they are open to vaccination. Vaccination is recommended to continue while viruses are circulating during the 2024–25 respiratory virus season. Health care providers and immunization programs still have time to expand outreach and promote vaccination

¶¶¶ https://www.cdc.gov/respiratory-viruses/hcp/index.html; https://www.cdc.gov/vaccines/covid-19/; https://www.cdc.gov/flu/professionals/index.htm; https://www.cdc.gov/respiratory-viruses/tools-resources/index.html

**** https://www.cdc.gov/covid/vaccines/getting-your-covid-19-vaccine.html#cdc_getting_your_vaccine_find_pay-paying-for-covid-19-vaccines

†††† https://www.cdc.gov/vaccine-equity/php/about/; https://www.cdc.gov/vaccine-equity/php/partner-spotlights/index.html

§§§§ https://www.hhs.gov/risk-less-do-more/index.html; https://www.cdc.gov/flu-resources/php/toolkit/

¶¶¶¶ https://www.cdc.gov/respiratory-viruses/data/index.html; https://www.cdc.gov/respvaxview/about/

***** https://www.cdc.gov/respvaxview/dashboards/vaccination-behavioral-social-drivers.html

††††† https://www.cdc.gov/fluvaxview/coverage-by-season/

§§§§§ https://www.cdc.gov/nis/about/#cdc_survey_profile_surveys_used-current-and-past-surveys

¶¶¶¶¶ https://www.cdc.gov/mmwr/volumes/73/wr/mm7346a2.htm?s_cid=mm7346a2_w

TABLE. Influenza and COVID-19 vaccination coverage* among adults aged ≥18 years, by jurisdiction — National Immunization Survey-Adult COVID Module, United States by week ending November 9, 2024

Jurisdiction	Influenza		COVID-19	
	Cumulative unweighted no.	% Vaccinated† (95% CI)	Cumulative unweighted no.	% Vaccinated† (95% CI)
Alabama	3,401	28.7 (24.5–32.9)	2,890	11.1 (8.7–13.5)
Alaska	1,488	38.2 (23.6–52.8)	1,090	10.3 (6.3–14.4)
Arizona	1,027	47.2 (33.2–61.3)	784	32.0 (19.9–44.0)
Arkansas	1,425	31.3 (23.9–38.6)	1,173	12.5 (5.5–19.4)
California	4,176	38.7 (31.6–45.9)	3,325	20.5 (15.8–25.1)
Colorado	3,561	42.2 (31.1–53.3)	3,202	19.0 (12.6–25.4)
Connecticut	490	46.6 (34.8–58.4)	440	20.7 (11.5–29.8)
Delaware	2,721	41.5 (36.5–46.5)	2,199	24.0 (20.4–27.6)
District of Columbia	3,424	46.9 (42.4–51.3)	2,991	32.7 (29.0–36.3)
Florida	1,330	22.7 (16.2–29.1)	1,125	12.9 (7.6–18.1)
Georgia	1,211	27.2 (18.7–35.6)	905	12.4 (7.0–17.7)
Hawaii	4,359	44.6 (39.6–49.7)	3,634	26.6 (22.3–30.8)
Idaho	1,020	37.1 (20.5–53.6)	950	15.5 (5.0–25.9)
Illinois	6,260	37.2 (33.3–41.0)	5,065	21.0 (18.1–24.0)
Indiana	2,751	33.1 (28.9–37.3)	2,207	15.2 (12.4–18.1)
Iowa	1,066	48.3 (34.9–61.7)	653	27.7 (16.8–38.6)
Kansas	2,083	40.5 (33.0–48.0)	1,466	19.2 (14.3–24.2)
Kentucky	1,676	35.7 (24.2–47.1)	1,265	14.7 (7.8–21.5)
Louisiana	2,572	28.7 (22.6–34.8)	2,029	6.7 (4.4–9.1)
Maine	3,208	42.6 (37.5–47.7)	2,932	29.2 (24.8–33.6)
Maryland	1,278	50.5 (39.2–61.8)	1,105	24.9 (15.7–34.1)
Massachusetts	3,429	42.5 (37.7–47.3)	2,929	25.9 (22.2–29.7)
Michigan	885	38.4 (27.6–49.2)	699	22.0 (13.2–30.7)
Minnesota	3,192	36.0 (31.3–40.6)	2,840	29.9 (24.7–35.2)
Mississippi	1,508	27.4 (21.1–33.6)	1,167	8.5 (5.1–12.0)
Missouri	1,273	36.8 (25.2–48.5)	896	18.1 (9.2–26.9)
Montana	4,171	33.0 (23.7–42.3)	3,838	17.5 (11.3–23.6)
Nebraska	1,553	39.2 (28.7–49.6)	1,263	16.2 (9.7–22.7)
Nevada	1,819	29.1 (17.8–40.4)	1,518	18.3 (8.2–28.5)
New Hampshire	3,861	41.6 (37.4–45.8)	3,190	25.8 (22.6–29.0)
New Jersey	3,297	39.2 (34.7–43.6)	2,713	19.0 (15.8–22.2)
New Mexico	2,954	32.2 (21.1–43.3)	2,552	19.0 (11.0–27.1)
New York	4,473	33.8 (29.4–38.1)	3,779	15.7 (12.9–18.5)
North Carolina	2,757	33.1 (26.5–39.7)	2,038	13.8 (9.5–18.1)
North Dakota	1,690	37.7 (28.3–47.0)	1,229	18.1 (10.9–25.3)
Ohio	996	32.7 (22.7–42.7)	861	15.6 (9.7–21.6)
Oklahoma	2,941	31.2 (26.2–36.3)	2,340	12.0 (8.9–15.1)
Oregon	2,676	38.6 (31.1–46.1)	2,211	28.6 (22.0–35.3)
Pennsylvania	6,516	35.9 (32.6–39.2)	5,426	17.7 (15.4–19.9)
Puerto Rico	3,725	17.0 (12.4–21.5)	2,763	5.2 (2.6–7.8)
Rhode Island	868	38.2 (27.6–48.8)	612	21.1 (14.3–28.0)
South Carolina	3,100	35.3 (31.2–39.3)	2,737	14.6 (12.1–17.1)
South Dakota	2,238	36.1 (28.0–44.2)	1,952	18.8 (12.5–25.1)
Tennessee	965	33.9 (23.0–44.8)	705	20.5 (10.7–30.3)
Texas	10,066	32.5 (26.4–38.6)	8,224	15.1 (10.5–19.7)
Utah	374	30.0 (16.2–43.8)	329	21.9 (9.0–34.8)
Vermont	1,793	43.2 (29.1–57.4)	1,416	33.9 (22.2–45.6)
Virginia	3,933	40.0 (35.8–44.2)	3,237	21.0 (18.1–23.9)
Washington	1,239	28.6 (19.7–37.5)	1,051	20.4 (13.1–27.7)
West Virginia	3,924	31.1 (27.6–34.6)	3,406	13.7 (11.5–16.0)
Wisconsin	1,341	36.5 (26.5–46.6)	874	22.9 (14.7–31.0)
Wyoming	2,111	30.2 (22.5–37.9)	1,815	11.1 (7.0–15.2)
Range across jurisdictions	—	**17.0–50.5**	—	**5.2–33.9**

* Estimates of vaccination coverage were calculated for November 3–9, 2024, using a nondecreasing composite estimation procedure that uses data from all completed interviews during August 18, 2024–November 9, 2024 (influenza coverage among persons aged ≥18 years, 136,195); September 1, 2024–November 9, 2024 (COVID-19 vaccination coverage among persons aged ≥18 years, 112,040).
† Weighted percentage.

Summary

What is already known about this topic?

The Advisory Committee on Immunization Practices recommends that all persons aged ≥6 months, including adults aged ≥18 years, receive annual influenza and COVID-19 vaccines, and that all adults aged ≥75 years and those aged 60–74 years at increased risk for severe respiratory syncytial virus (RSV) disease receive 1 dose of RSV vaccine.

What is added by this report?

By November 9, 2024, an estimated 34.7% and 17.9% of adults aged ≥18 years had received influenza and COVID-19 vaccines, respectively, for the 2024–25 season; 39.7% of adults aged ≥75 years and 31.6% of adults aged 60–74 years at increased risk for severe RSV disease had ever received RSV vaccine. Many unvaccinated adults reported intent to get vaccinated.

What are the implications for public health practice?

Health care providers and immunization programs still have time to expand outreach and promote vaccination activities to increase coverage in preparation for the height of the respiratory virus season.

activities to improve vaccination coverage, especially before persons gather with friends and family during the winter holidays. Immunization programs and vaccination partners are encouraged to use CDC data dashboards and tools, as well as other data sources available to them, such as immunization information system data, to identify undervaccinated populations and better understand vaccination patterns, attitudes and behaviors, and systemic barriers to vaccination to help tailor vaccination activities to improve coverage and health equity.

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References

1. Grohskopf LA, Ferdinands JM, Blanton LH, Broder KR, Loehr J. Prevention and control of seasonal influenza with vaccines: recommendations of the Advisory Committee on Immunization Practices—United States, 2024–25 influenza season. MMWR Recomm Rep 2024;73:1–25. PMID:39197095 https://doi.org/10.15585/mmwr.rr7305a1
2. Panagiotakopoulos L, Moulia DL, Godfrey M, et al. Use of COVID-19 vaccines for persons aged ≥6 months: recommendations of the Advisory Committee on Immunization Practices—United States, 2024–2025. MMWR Morb Mortal Wkly Rep 2024;73:819–24. PMID:39298394 https://doi.org/10.15585/mmwr.mm7337e2
3. Britton A, Roper LE, Kotton CN, et al. Use of respiratory syncytial virus vaccines in adults aged ≥60 years: updated recommendations of the Advisory Committee on Immunization Practices—United States, 2024. MMWR Morb Mortal Wkly Rep 2024;73:696–702. PMID:39146277 https://doi.org/10.15585/mmwr.mm7332e1
4. Black CL, O'Halloran A, Hung MC, et al.; Influenza-Associated Hospitalization Surveillance Network. Vital signs: influenza hospitalizations and vaccination coverage by race and ethnicity—United States, 2009–10 through 2021–22 influenza seasons. MMWR Morb Mortal Wkly Rep 2022;71:1366–73. PMID:36302226 https://doi.org/10.15585/mmwr.mm7143e1
5. Mackey K, Ayers CK, Kondo KK, et al. Racial and ethnic disparities in COVID-19–related infections, hospitalizations, and deaths: a systematic review. Ann Intern Med 2021;174:362–73. PMID:33253040 https://doi.org/10.7326/M20-6306
6. Copeland KR, Ganesh N, Liu L, Santibanez TA, Singleton JA. Statistical improvements in weekly-updated cumulative estimates of flu vaccination coverage for children in the United States. In: proceedings of the Survey Research Methods Section, American Statistical Association, August 8–12, 2021. http://www.asasrms.org/Proceedings/y2021/files/1912282.pdf
7. CDC. Weekly flu vaccination dashboard. Atlanta, GA: US Department of Health and Human Services, CDC; 2024. https://www.cdc.gov/fluvaxview/dashboard
8. Nguyen KH, Yankey D, Lu PJ, et al. Report of health care provider recommendation for COVID-19 vaccination among adults, by recipient COVID-19 vaccination status and attitudes—United States, April–September 2021. MMWR Morb Mortal Wkly Rep 2021;70:1723–30. PMID:34914669 https://doi.org/10.15585/mmwr.mm7050a1
9. CDC. Vaccination concerns, issues, and motivators. Atlanta, GA: US Department of Health and Human Services, CDC; 2024. https://www.cdc.gov/respvaxview/dashboards/vaccination-concerns-motivators.html
10. Kriss JL, Hung MC, Srivastav A, et al. COVID-19 vaccination coverage, by race and ethnicity—National Immunization Survey Adult COVID Module, United States, December 2020–November 2021. MMWR Morb Mortal Wkly Rep 2022;71:757–63. PMID:35679179 https://doi.org/10.15585/mmwr.mm7123a2

Coverage with Influenza, Respiratory Syncytial Virus, and COVID-19 Vaccines Among Nursing Home Residents — National Healthcare Safety Network, United States, November 2024

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Abstract

Nursing home residents are at elevated risk for severe complications from respiratory viruses, including SARS-CoV-2, influenza, and respiratory syncytial virus (RSV). Nursing homes are required to report COVID-19 vaccination coverage and can voluntarily report influenza and RSV vaccination coverage among residents to CDC's National Healthcare Safety Network. The purpose of this study was to assess COVID-19, influenza, and RSV vaccination coverage among nursing home residents early in the 2024–25 respiratory virus season. As of November 10, 2024, 29.7% of nursing home residents had received a 2024–2025 COVID-19 vaccine. Among residents at facilities that elected to report vaccination against influenza (59.4% of facilities) and RSV (51.8% of facilities), 58.4% had received influenza vaccination, and 17.9% had received RSV vaccination. Vaccination coverage varied by U.S. Department of Health and Human Services region, social vulnerability index level, and facility size. Addressing low coverage with COVID-19, influenza, and RSV vaccines is a priority to protect residents who are susceptible to severe outcomes associated with respiratory illnesses.

Introduction

Nursing home residents are at elevated risk for severe complications from respiratory viruses, including SARS-CoV-2 (*1*), influenza (*2*), and respiratory syncytial virus (RSV) (*3*). The Advisory Committee on Immunization Practices (ACIP) recommends that all persons aged ≥6 months receive a 2024–2025 COVID-19 vaccine* and an annual influenza vaccine.† ACIP also recommends that all nursing home residents aged ≥60 years receive 1 dose of RSV vaccine (*4*). Since 2021, the Centers for Medicare & Medicaid Services (CMS) has required nursing homes to report weekly aggregate COVID-19 vaccination coverage among residents to CDC's National Healthcare Safety Network (NHSN).§ Since October 2023, nursing homes may also voluntarily report weekly aggregate resident influenza and RSV vaccination coverage data to NHSN.¶ The purpose of this study was to assess COVID-19, influenza, and RSV vaccination coverage among nursing home residents early in the 2024–25 respiratory virus season.

Methods

Data Collection and Analysis

Nursing homes electronically report the number of residents who occupied a bed at the facility for ≥1 day during the week of data collection and the number of residents who received the 2024–2025 COVID-19 and influenza vaccines and RSV vaccine. Data reported from CMS-certified nursing homes for the week of November 10, 2024, were used for analysis.** Representativeness of facilities voluntarily reporting influenza and RSV vaccination coverage was assessed by comparing facility and county characteristics among reporting facilities to all facilities enrolled in NHSN. Estimates of coverage (percentage of residents vaccinated) with COVID-19, influenza, and RSV vaccines, and 95% CIs were estimated using Poisson regression models. For each vaccine, coverage was stratified by U.S. Department of Health and Human Services (HHS) region,†† county-level social vulnerability index (SVI)

* As of October 23, 2024, ACIP also recommends that persons aged ≥65 years and those who are moderately or severely immunocompromised receive a second dose of 2024–2025 COVID-19 vaccine 6 months after receipt of the first dose (https://www.cdc.gov/covid/vaccines/stay-up-to-date.html). The data used for this study were collected <6 months after the 2024–2025 COVID-19 vaccine was released and reflect receipt of the first dose of 2024–2025 COVID-19 vaccine.

† https://www.cdc.gov/flu/vaccines/index.html

§ https://www.federalregister.gov/d/2021-10122

¶ https://www.cdc.gov/nhsn/pdfs/covid19/ltcf/vax-rpv-protocol-ltc-residents-oct-2023-508.pdf

** Facilities were included if they were actively enrolled in the NHSN Long-Term Care Component and had ever reported nonzero vaccination denominator data. Facilities were excluded from the coverage estimates if they reported zero residents or did not report data for either the week of November 10, 2024, or the week of November 3, 2024 (1,072 facilities were excluded for COVID-19; 6,126 were excluded for influenza; and 7,284 were excluded for RSV).

†† https://www.hhs.gov/about/agencies/iea/regional-offices/index.html

tertile,[§§] and facility-size tertile.[¶¶] All analyses were conducted using SAS (version 9.4; SAS Institute). Nonoverlapping 95% CIs were considered to represent statistically significant differences. This activity was reviewed by CDC, deemed not research, and was conducted consistent with applicable federal law and CDC policy.[***]

Results

Representativeness of Voluntary Influenza and RSV Reporters

Influenza and RSV vaccination coverage as of November 10, 2024, was voluntarily reported by 8,974 (59.4%) and 7,816 (51.8%), respectively, among 15,100 CMS-certified nursing homes. Among facilities voluntarily reporting coverage, the distributions of facilities by HHS region, SVI, and facility size were comparable to distributions among all CMS-certified nursing homes enrolled in NHSN (Table).

2024–2025 COVID-19 Vaccination Coverage

COVID-19 vaccination coverage was reported by 14,028 (92.9%) nursing homes. Approximately three in 10 (29.7%) nursing home residents received the 2024–2025 COVID-19 vaccine, with coverage ranging from 19.8% in HHS Region 6 to 38.6% in HHS Region 8. COVID-19 vaccination coverage was highest in the least socially vulnerable counties (33.6%) and in small facilities (34.7%) and lowest in large facilities (28.0%).

Influenza Vaccination Coverage

Among the 59.4% of facilities that voluntarily reported influenza vaccination data, more than one half (58.4%) of residents had received an influenza vaccine. Coverage ranged from 50.9% in HHS Region 10 to 64.1% in HHS Region 1. Influenza vaccination coverage was highest in the least socially vulnerable counties (60.8%) and in small facilities (62.9%) and was lowest in large facilities (56.7%).

RSV Vaccination Coverage

Among the 51.8% of nursing homes that voluntarily reported RSV vaccination data, approximately one in six (17.9%) residents had received an RSV vaccine. Coverage ranged from 9.3% in HHS Region 6 to 29.2% in HHS Region 8. RSV vaccination coverage was highest in the least socially vulnerable counties (21.3%) and in small facilities (24.1%) and lowest in the most socially vulnerable counties (15.3%) and large facilities (15.9%).

Overall Vaccination Coverage by Region

Among HHS regions, HHS Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming) had the highest coverage with COVID-19 and RSV vaccines and the second highest coverage with influenza vaccine. Within Region 8, coverage with COVID-19 and RSV vaccines was highest in South Dakota, and influenza vaccination coverage was highest in North Dakota (Figure).

Discussion

As of November 10, 2024, coverage with COVID-19, influenza, and RSV vaccines among nursing home residents reported to NHSN was low. Compared with coverage among nursing home residents reported to NHSN as of November 12, 2023, this season's COVID-19 vaccination coverage was higher (29.7% versus 24.0% in 2023),[†††] but influenza vaccination coverage was lower (58.4% versus 68.3% in 2023) (NHSN, unpublished data, 2023). Coverage with a one-time dose of RSV vaccine increased from 6.7% as of November 12, 2023, to 17.9% as of November 10, 2024 (NHSN, unpublished data 2023). Compared with COVID-19 vaccination coverage among adults aged ≥65 years and RSV vaccination coverage among adults aged ≥75 years reported by the National Immunization Survey (NIS) Adult COVID-19 Module for the week ending November 9, 2024, (38.5% and 39.7%, respectively), COVID-19 and RSV vaccination coverage among nursing home residents reported to NHSN was lower (29.7% and 17.9%, respectively). In contrast, influenza vaccination coverage among nursing home residents (58.4%) was similar to that of the general adult population aged ≥65 years (58.6%) (*5*). Although data from NHSN and NIS cannot be directly compared because of methodological differences, these directional differences in COVID-19 and RSV vaccination coverage are consistent with those observed during the 2023–24 respiratory virus season (*6*) and might reflect barriers to respiratory virus vaccination in nursing homes.

During each week of October 2024, approximately 5,500 nursing home residents received a diagnosis of COVID-19,[§§§] and 360 were hospitalized after having received

[§§] SVI considers socioeconomic status, household characteristics, race, ethnicity, housing type, and transportation. Counties in a lower SVI tertile are less socially vulnerable than are those in an upper SVI tertile. SVI categories were based on the tertile distribution of the SVI of the counties where the facilities are located (low: ≤0.38; medium: >0.38 to ≤0.66; and high: >0.66). Thirty facilities were excluded because they were located in counties that did not have an assigned SVI score. https://www.atsdr.cdc.gov/place-health/php/svi/?CDC_AAref_Val=https://www.atsdr.cdc.gov/placeandhealth/svi/index.html

[¶¶] Facility size category was based on the tertile distribution of the total number of residents per facility (small: ≤60 residents; medium: 61–96 residents; and large: ≥97 residents).

[***] 45 C.F.R. part 46.102(l)(2), 21 C.F.R. part 56; 42 U.S.C. Sect. 241(d); 5 U.S.C. Sect. 552a; 44 U.S.C. Sect. 3501 et seq.

[†††] https://www.cdc.gov/nhsn/covid19/ltc-vaccination-dashboard.html

[§§§] https://www.cdc.gov/nhsn/covid19/ltc-report-overview.html

TABLE. Estimates* of 2024–2025 COVID-19, annual influenza, and respiratory syncytial virus vaccination coverage among nursing home residents — National Healthcare Safety Network, United States, November 2024†

Characteristic	Total no. of facilities (%)	2024–2025 COVID-19 vaccination coverage				Influenza vaccination coverage				RSV vaccination coverage			
		No. of facilities reporting (%)	No. of residents	No. of vaccinated residents	Coverage, % (95% CI)	No. of facilities reporting (%)	No. of residents	No. of vaccinated residents	Coverage, % (95% CI)	No. of facilities reporting (%)	No. of residents	No. of vaccinated residents	Coverage, % (95% CI)
Total	**15,100 (100)**	**14,028 (92.9)**	**1,218,546**	**361,869**	**29.7 (29.6–29.8)**	**8,974 (59.4)**	**765,333**	**447,108**	**58.4 (58.2–58.6)**	**7,816 (51.8)**	**661,075**	**118,433**	**17.9 (17.8–18.0)**
HHS Region§													
Region 1	**817 (5.4)**	769 (5.5)	73,106	24,531	33.6 (33.1–34.0)	497 (5.5)	45,007	28,832	64.1 (63.3–64.8)	441 (5.6)	40,050	8,059	20.1 (19.7–20.6)
Region 2	**972 (6.4)**	923 (6.6)	137,894	40,691	29.5 (29.2–29.8)	655 (7.3)	94,823	57,277	60.4 (59.9–60.9)	570 (7.3)	81,664	16,139	19.8 (19.5–20.1)
Region 3	**1,385 (9.2)**	1,277 (9.1)	130,990	39,563	30.2 (29.9–30.5)	762 (8.5)	76,113	47,501	62.4 (61.8–63.0)	674 (8.6)	66,698	12,815	19.2 (18.9–19.5)
Region 4	**2,686 (17.8)**	2,542 (18.1)	243,111	59,869	24.6 (24.4–24.8)	1,706 (19.0)	163,452	87,206	53.4 (53.0–53.7)	1,425 (18.2)	133,244	16,080	12.1 (11.9–12.3)
Region 5	**3,278 (21.7)**	2,940 (21.0)	226,122	70,236	31.1 (30.8–31.3)	1,841 (20.5)	136,077	78,153	57.4 (57.0–57.8)	1,659 (21.2)	121,830	26,265	21.6 (21.3–21.8)
Region 6	**2,056 (13.6)**	1,934 (13.8)	147,304	29,175	19.8 (19.6–20.0)	1,114 (12.4)	83,897	49,958	59.5 (59.0–60.1)	908 (11.6)	68,727	6,405	9.3 (9.1–9.6)
Region 7	**1,426 (9.4)**	1,312 (9.4)	79,373	29,140	36.7 (36.3–37.1)	848 (9.4)	50,183	30,769	61.3 (60.6–62.0)	752 (9.6)	44,303	9,922	22.4 (22.0–22.8)
Region 8	**585 (3.9)**	550 (3.9)	34,996	13,520	38.6 (38.0–39.3)	347 (3.9)	20,722	13,119	63.3 (62.2–64.4)	319 (4.1)	19,312	5,642	29.2 (28.5–30.0)
Region 9	**1,471 (9.7)**	1,376 (9.8)	119,747	46,026	38.4 (38.1–38.8)	951 (10.6)	78,819	46,025	58.4 (57.9–58.9)	842 (10.8)	70,468	14,044	19.9 (19.6–20.3)
Region 10	**424 (2.8)**	405 (2.9)	25,903	9,118	35.2 (34.5–35.9)	253 (2.8)	16,240	8,268	50.9 (49.8–52.0)	226 (2.9)	14,779	3,062	20.7 (20.0–21.5)
SVI¶													
Low	**5,027 (33.4)**	4,658 (33.2)	368,111	123,812	33.6 (33.4–33.8)	2,995 (33.4)	230,535	140,221	60.8 (60.5–61.1)	2,697 (34.5)	206,461	43,950	21.3 (21.1–21.5)
Medium	**5,037 (33.4)**	4,671 (33.3)	430,902	122,844	28.5 (28.3–28.7)	2,904 (32.4)	263,658	150,058	56.9 (56.6–57.2)	2,492 (31.9)	222,922	38,968	17.5 (17.3–17.7)
High	**5,006 (33.2)**	4,672 (33.3)	417,151	114,261	27.4 (27.2–27.6)	3,051 (34.0)	268,848	155,162	57.7 (57.4–58.0)	2,609 (33.4)	230,245	35,247	15.3 (15.1–15.5)
Facility size**													
Small	**5,181 (34.3)**	4,691 (33.4)	199,347	69,131	34.7 (34.4–34.9)	3,170 (35.3)	133,628	84,094	62.9 (62.5–63.4)	2,778 (35.5)	117,250	28,242	24.1 (23.8–24.4)
Medium	**5,012 (33.2)**	4,682 (33.4)	368,525	110,595	30.0 (29.8–30.2)	2,955 (32.9)	232,199	136,676	58.9 (58.6–59.2)	2,583 (33.0)	203,116	35,932	17.7 (17.5–17.9)
Large	**4,907 (32.5)**	4,655 (33.2)	650,674	182,143	28.0 (27.9–28.1)	2,849 (31.7)	399,506	226,338	56.7 (56.4–56.9)	2,455 (31.4)	340,709	54,259	15.9 (15.8–16.1)

Abbreviations: HHS = U.S. Department of Health and Human Services; RSV = respiratory syncytial virus; SVI = social vulnerability index.

* Estimates of coverage (percentage of residents vaccinated) with COVID-19, influenza, and RSV vaccines, and 95% CIs were calculated using Poisson regression models.

† Data reported from nursing homes for the week of November 10, 2024 (or the preceding week if data for November 10, 2024, were not available) were used for analysis. Facilities were excluded from the coverage estimates if they reported zero residents or did not report data for either the week of November 10, 2024, or the week of November 3, 2024 (1,072 facilities were excluded for COVID-19; 6,126 were excluded for influenza; and 7,284 were excluded for RSV).

§ https://www.hhs.gov/about/agencies/iea/regional-offices/index.html

¶ https://www.atsdr.cdc.gov/place-health/php/svi/?CDC_AAref_Val=https://www.atsdr.cdc.gov/placeandhealth/svi/index.html. SVI categories were based on the tertile distribution of the SVI of the counties where the facilities are located. Low: ≤0.38; medium: >0.38 to ≤0.66; and high: >0.66. Thirty facilities were located in counties that did not have an assigned SVI score.

** Facility size category was based on the tertile distribution of the total number of residents per facility. Small: ≤60 residents; medium: 61–96 residents; and large: ≥97 residents.

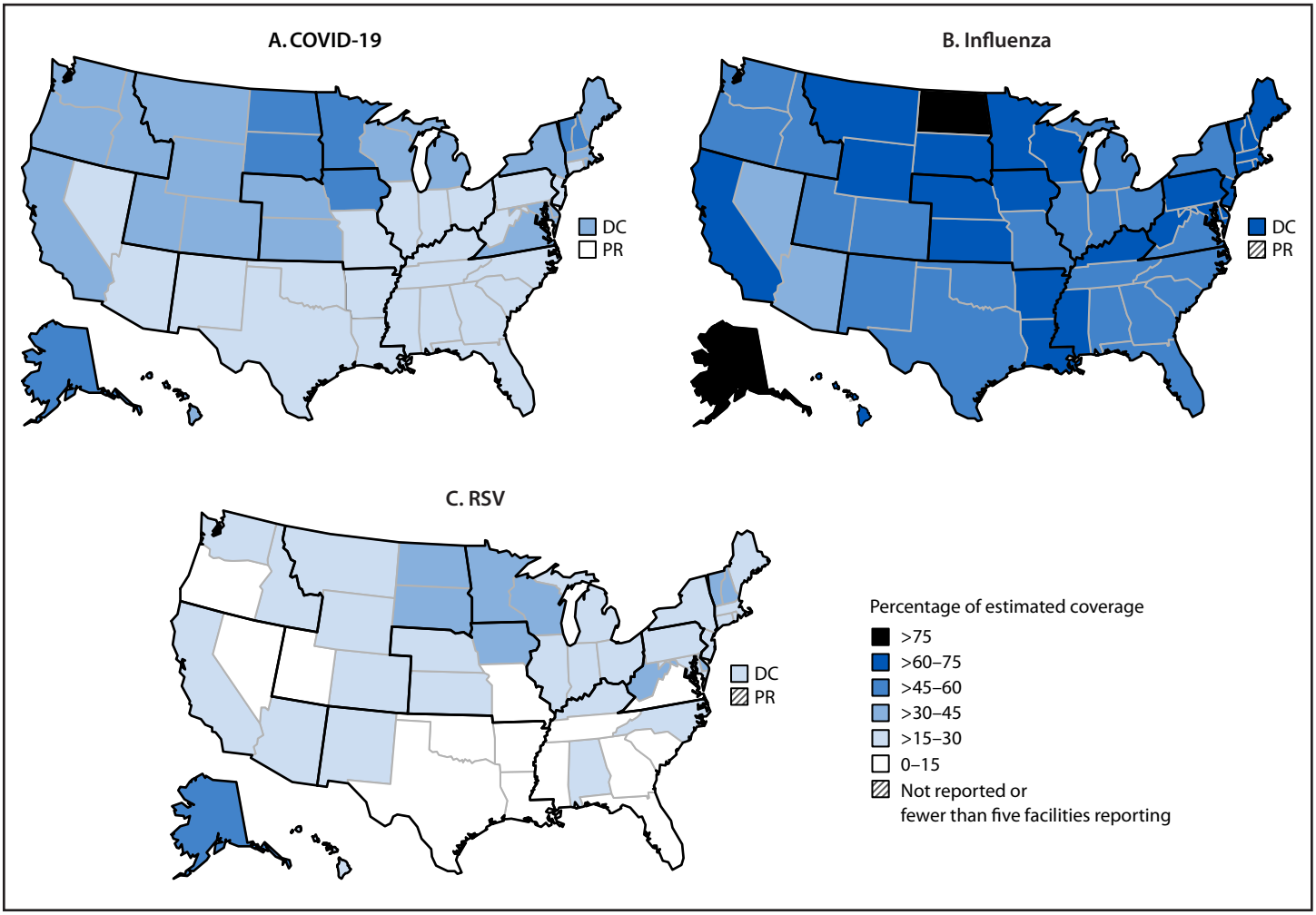
a positive COVID-19 test result (NHSN, unpublished data, 2024).¶¶¶ During the 2023–24 respiratory virus season, adults aged ≥65 years accounted for 70% of all COVID-19–associated hospitalizations, and approximately one in six adults hospitalized with COVID-19 was a nursing home resident (*7*). These findings are consistent with a report indicating that COVID-19–associated hospitalizations among nursing home residents during the 2023–24 respiratory virus season peaked at 7.1 per 10,000 residents, approximately eight times the peak weekly rate of 0.87 per 10,000 among all U.S. adults aged ≥70 years, the age group with the highest COVID-19–associated hospitalization rate (*8*).

Demand for vaccines is low among nursing home residents, as it is among other U.S. populations.**** Mistrust in institutions and concerns about safety, efficacy, the rapid development

¶¶¶ NHSN defines COVID-19–associated hospitalization as a hospital admission within 10 days after a laboratory-confirmed SARS-CoV-2 infection.

**** https://www.cdc.gov/covidvaxview/weekly-dashboard/adult-vaccination-coverage.html

FIGURE. Estimates* of percentage of coverage with 2024–2025 COVID-19 vaccine (A), influenza vaccine (B), and respiratory syncytial virus vaccine (C) among nursing home residents, by U.S. jurisdiction and U.S. Department of Health and Human Services region† — National Healthcare Safety Network, United States, November 2024§



Abbreviations: DC = District of Columbia; PR = Puerto Rico; RSV = respiratory syncytial virus.

* Estimates of coverage (percentage of residents vaccinated) with 2024–2025 COVID-19, influenza, and RSV vaccine and 95% CIs were calculated using Poisson regression models.

† https://www.hhs.gov/about/agencies/iea/regional-offices/index.html

§ Data reported from nursing homes for the week of November 10, 2024 (or the preceding week if data for November 10, 2024, were not available) were used for analysis. Facilities were excluded from the coverage estimates if they reported zero residents or did not report data for either the week of November 10, 2024, or the week of November 3, 2024 (1,072 facilities were excluded for COVID-19; 6,126 were excluded for influenza; and 7,284 were excluded for RSV).

and approval of the vaccines, and type of vaccine (i.e., mRNA) are the most commonly reported factors contributing to COVID-19 vaccine hesitancy (*9*). Misinformation and doubts regarding efficacy also might contribute to hesitancy about other vaccines (*9*). A strong recommendation for vaccination by facility health care providers and leadership can help overcome vaccine hesitancy among residents and their families.†††† During both the 2023–24 respiratory virus season and the 2024–25 season to date, coverage with all three vaccines was highest in small nursing homes and in nursing homes in North Dakota and South Dakota, suggesting that staff members in small facilities might be better able to build trust with residents and families and mitigate barriers to vaccination (*6*) and that efforts by states to develop strong relationships among stakeholders are effective.§§§§

Among persons aged ≥60 years hospitalized with RSV during July 2022–June 2023, 17% were long-term care

†††† https://www.cdc.gov/long-term-care-facilities/hcp/respiratory-virus-toolkit/index.html

§§§§ https://www.washingtonpost.com/opinions/2023/12/05/covid-vaccine-nursing-homes-dakota/; https://www.washingtonpost.com/opinions/2023/12/07/lessons-nursing-home-covid-vaccine/?utm_campaign

Summary

What is already known about this topic?

Nursing home residents are at increased risk for severe COVID-19, influenza, and respiratory syncytial virus (RSV) illness. Vaccination reduces risk for severe outcomes from these vaccine-preventable respiratory diseases.

What is added by this report?

As of November 10, 2024, 30% of nursing home residents had received a 2024–2025 COVID-19 vaccine. Among residents at nursing home facilities that elected to report vaccination against influenza (59% of facilities) and RSV (52% of facilities), 58% had received influenza vaccination, and only 18% had received RSV vaccination.

What are the implications for public health practice?

Addressing low vaccination coverage against COVID-19, influenza, and RSV is a priority to protect residents susceptible to severe outcomes of respiratory illnesses.

residents (*3*); in June 2024, ACIP expanded its recommendation for RSV vaccine to include vaccination of all nursing home residents aged ≥60 years (*4*). However, RSV vaccination coverage among nursing home residents remains low, suggesting that barriers to vaccination still exist. The higher cost of RSV[¶¶¶¶] and COVID-19[*****] vaccines, compared with influenza vaccine, can increase the cost of vaccination for nursing homes and residents. RSV vaccines are billable to Medicare Part D, and some nursing homes do not have systems in place for Part D billing. This study found that coverage with all three vaccines was highest in counties with lower social vulnerability, suggesting that barriers related to cost and billing disproportionately affect nursing homes with limited resources.

Given the multiple barriers to achieving high vaccination coverage, a combination of approaches is needed. CDC and CMS developed the Billing Medicare for Respiratory Vaccines fact sheet for nursing homes.[†††††] CDC provides NHSN surveillance data to state and local health departments and CMS Quality Innovation Networks-Quality Improvement Organizations to help guide direct outreach to facilities with low COVID-19 vaccination coverage. CDC has also increased its tailored guidance and supporting materials for nursing home settings and older adults, including webinars, the Viral Respiratory Pathogens Toolkit for Nursing Homes, and the Why Get Vaccinated counseling sheet.[§§§§§] In addition, the HHS-funded Risk Less. Do More. campaign to improve vaccine confidence is aimed at older adults and includes a focus on nursing home residents.[¶¶¶¶¶]

Limitations

The findings of this report are subject to at least three limitations. First, reporting of influenza and RSV vaccination coverage is optional. Facilities that elected to report these data might be more likely to offer influenza or RSV vaccines. However, similarities in distribution of facility characteristics between voluntary reporters and all facilities suggest that facilities voluntarily reporting these data are similar to all facilities. Second, a substantial increase in the number of facilities reporting influenza vaccination (from 22.1% to 59.4%) and RSV vaccination (from 21.1% to 51.8%) between the previous season (the week of November 12, 2023) and this season (the week of November 10, 2024), limits direct comparison. Finally, vaccination data reported to NHSN are not disaggregated by age; RSV vaccination coverage was calculated among residents of all ages, not just the approximately 91% of nursing home residents aged ≥60 years (*10*). RSV vaccination coverage among residents aged ≥60 years was likely higher than the overall reported coverage.

Implications for Public Health Practice

Most nursing home residents have not been afforded the protection offered by vaccination against severe COVID-19, influenza, and RSV disease during the 2024–25 respiratory virus season. Addressing low coverage of vaccination against COVID-19, influenza, and RSV must be prioritized, and larger facilities and those in counties with high social vulnerability could benefit from effective interventions. Although CDC and other federal agencies have programs in place to address both the financial and vaccine hesitancy–related barriers to vaccination in nursing homes, more needs to be done at every level to protect nursing home residents, who constitute one of the population groups at highest risk for severe respiratory disease.

¶¶¶¶ https://www.mcknights.com/news/ask-the-care-expert-about-billing-for-rsv-vaccines/

***** https://www.mcknights.com/news/new-covid-vaccines-available-but-payment-issues-complicate-access-for-nursing-homes/

††††† https://www.cms.gov/files/document/billing-medicare-respiratory-vaccines.pdf

§§§§§ https://www.cdc.gov/vaccines/hcp/downloads/ltcf-why-get-vaccinated.pdf

¶¶¶¶¶ https://www.hhs.gov/risk-less-do-more/index.html

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References

1. Bagchi S, Mak J, Li Q, et al. Rates of COVID-19 among residents and staff members in nursing homes—United States, May 25–November 22, 2020. MMWR Morb Mortal Wkly Rep 2021;70:52–5. PMID:33444301 https://doi.org/10.15585/mmwr.mm7002e2
2. Lansbury LE, Brown CS, Nguyen-Van-Tam JS. Influenza in long-term care facilities. Influenza Other Respir Viruses 2017;11:356–66. PMID:28691237 https://doi.org/10.1111/irv.12464
3. Havers FP, Whitaker M, Melgar M, et al. Characteristics and outcomes among adults aged ≥60 years hospitalized with laboratory-confirmed respiratory syncytial virus—RSV-NET, 12 states, July 2022–June 2023. MMWR Morb Mortal Wkly Rep 2023;72:1075–82. PMID:37796742 https://doi.org/10.15585/mmwr.mm7240a1
4. Britton A, Roper LE, Kotton CN, et al. Use of respiratory syncytial virus vaccines in adults aged ≥60 years: updated recommendations of the Advisory Committee on Immunization Practices—United States, 2024. MMWR Morb Mortal Wkly Rep 2024;73:696–702. PMID:39146277 https://doi.org/10.15585/mmwr.mm7332e1
5. Kriss JL, Black CL, Razzaghi H, et al. Influenza, COVID-19, and respiratory syncytial virus vaccination coverage among adults—United States, fall 2024. MMWR Morb Mortal Wkly Rep 2024;73:1044–57. https://www.cdc.gov/mmwr/volumes/73/wr/mm7346a1.htm?s_cid=mm7346a1_w
6. Reses HE, Dubendris H, Haas L, et al. Coverage with influenza, respiratory syncytial virus, and updated COVID-19 vaccines among nursing home residents—National Healthcare Safety Network, United States, December 2023. MMWR Morb Mortal Wkly Rep 2023;72:1371–6. PMID:38127673 https://doi.org/10.15585/mmwr.mm7251a3
7. Taylor CA, Patel K, Pham H, et al. COVID-19–associated hospitalizations among U.S. adults aged ≥18 years—COVID-NET, 12 states, October 2023–April 2024. MMWR Morb Mortal Wkly Rep 2024;73:869–75. PMID:39361542 https://doi.org/10.15585/mmwr.mm7339a2
8. Franklin D, Barbre K, Rowe TA, et al. COVID-19 vaccination coverage, and rates of SARS-CoV-2 infection and COVID-19–associated hospitalization among residents in nursing homes—National Healthcare Safety Network, United States, October 2023–February 2024. MMWR Morb Mortal Wkly Rep 2024;73:339–44. PMID:38635474 https://doi.org/10.15585/mmwr.mm7315a3
9. Nwachukwu G, Rihan A, Nwachukwu E, Uduma N, Elliott KS, Tiruneh YM. Understanding COVID-19 vaccine hesitancy in the United States: a systematic review. Vaccines (Basel) 2024;12:747. PMID:39066385 https://doi.org/10.3390/vaccines12070747
10. Tu W, Li R, Stump TE, et al. Age-specific rates of hospital transfers in long-stay nursing home residents. Age Ageing 2022;51:afab232. PMID:34850811 https://doi.org/10.1093/ageing/afab232

Detection of Real-Time Changes in Direction of COVID-19 Transmission Using National- and State-Level Epidemic Trends Based on R_t Estimates — United States Overall and New Mexico, April–October 2024

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Abstract

Public health practitioners rely on timely surveillance data for planning and decision-making; however, surveillance data are often subject to delays. Epidemic trend categories, based on time-varying effective reproductive number (R_t) estimates that use nowcasting methods, can mitigate reporting lags in surveillance data and detect changes in community transmission before reporting is completed. CDC analyzed the performance of epidemic trend categories for COVID-19 during summer 2024 in the United States and at the state level in New Mexico. COVID-19 epidemic trend categories were estimated and released in real time based on preliminary data, then retrospectively compared with final emergency department (ED) visit data to determine their ability to detect or confirm real-time changes in subsequent ED visits. Across the United States and in New Mexico, epidemic trend categories were an early indicator of increases in COVID-19 community transmission, signifying increases in COVID-19 community transmission in May, and a confirmatory indicator that decreasing COVID-19 ED visits reflected actual decreases in COVID-19 community transmission in September, rather than incomplete reporting. Public health decision-makers can use epidemic trend categories, in combination with other surveillance indicators, to understand whether COVID-19 community transmission and subsequent ED visits are increasing, decreasing, or not changing; this information can guide communications decisions.

Introduction

Epidemiologists, public health practitioners, and the public rely on surveillance data to guide decisions and plan public health interventions. Data timeliness is a critical factor in making accurate real-time assessments; however, surveillance data are often subject to delays, including biologic delays, from the time a person is infected until an observable event occurs (e.g., positive test result, emergency department [ED] visit, or hospitalization), and reporting delays, from the time the observable event occurs until the event is reported to local health jurisdictions. Such delays make it difficult to determine whether infections are increasing, not changing, or decreasing until after all data have been fully reported, which might be days to weeks after the events of interest have taken place. Because the number of infections or events at a given point in time is unknown, certain surveillance metrics, such as ED visits, can provide information about trends in community transmission.

In May 2024, the Center for Forecasting and Outbreak Analytics, in collaboration with the National Center for Immunization and Respiratory Diseases and the National Syndromic Surveillance Program (NSSP), began publishing weekly epidemic trend categories for COVID-19, based on time-varying effective reproductive number (R_t) estimates and nowcasted ED visit data online.[§] In advance of the 2024–25 respiratory virus season, CDC analyzed the performance of weekly national epidemic trend categories and collaborated with the New Mexico Department of Health to determine state-level epidemic trend categories for COVID-19 compared with raw ED visit data during April 19–October 18, 2024.

Methods

Data Source and Nowcasting

Epidemic trend categories are determined based on R_t (i.e., the average number of new infections caused by each infectious person at a particular time), calculated from nowcasted ED visit data from NSSP[¶] (*1*,*2*). Nowcasting is a mathematical approach that addresses delays in surveillance data and associated uncertainty and can be used to estimate the final number of ED visits based on currently available, partially reported data and historic patterns of reporting delays (*3*–*5*). To adjust

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[§] The Center for Forecasting and Outbreak Analytics, in collaboration with the National Center for Immunization and Respiratory Diseases, began publishing weekly epidemic trend estimates using hospitalization data in November 2023. In spring 2024, because of changes in reporting requirements for hospitalizations, the data source for epidemic trend estimates transitioned to ED visit data from NSSP. In April 2024, epidemic trend estimates were produced internally and were published publicly beginning in May 2024.

[¶] ED visits are reported to NSSP from approximately 80% of EDs in the United States and represent a stable metric from week to week. The proportion of persons with COVID-19 seeking treatment at an ED was assumed to be relatively constant during this evaluation.

for reporting delays, a statistical nowcasting correction was applied to daily ED visit counts from the previous 30 days.**

Classification of Transmission Direction Using R_t

R_t indicates whether disease transmission is increasing or decreasing. If $R_t > 1$, the number of new infections is increasing; if $R_t = 1$, the number is not changing; and if $R_t < 1$, the number of new infections is declining. R_t was estimated from the nowcast of COVID-19 ED visits†† using the statistical package EpiNow2 (version 1.4.0; EpiForecasts) in R (version 4.3.1; R Foundation) with parameters as previously described (*6*,*7*). EpiNow2 estimates R_t and the probability that $R_t > 1$, $R_t = 1$, or $R_t < 1$. The epidemic trend category was determined based on the probability that $R_t > 1$ (i.e., the probability that each infectious person spreads the virus to more than one other person). The epidemic trend category was classified as growing (probability >90%), likely growing (>75% to ≤90%), not changing (>25% to ≤75%), likely declining (≥10% to ≤25%), or declining (<10%).§§ Epidemic trend categories were published online each Friday based on daily COVID-19 ED visit counts through the preceding Tuesday, for the United States overall and for all 50 states and the District of Columbia¶¶ (*2*).

Comparison of Weekly Epidemic Trends with ED Visits

Weekly epidemic trend categories were compared with reported weekly percentages of COVID-19–related ED visits in the United States*** and with reported number of daily COVID-19–related ED visits in New Mexico††† at four points during summer 2024: 1) before an increase in ED visits for COVID-19 (May 10), 2) during the increase (July 5), 3) near the peak (September 6), and 4) after the peak (October 18). This activity was reviewed by CDC, deemed not research, and was conducted consistent with applicable federal law and CDC policy.§§§

Results

U.S. COVID-19 ED Visits and Epidemic Trends

In summer 2024, the United States experienced an increase in COVID-19 diagnoses. For the week of May 10, 2024, epidemic trend categories for the United States and for 11 states on the West Coast and in the Northeast began to indicate a growing or likely growing trend, although the percentage of reported COVID-19–related ED visits in the United States at this time was low (0.3%), ranging from 0.3% to 1% in these 11 states (Figure 1) (Supplementary Figure, https://stacks.cdc.gov/view/cdc/169819) (Table). For the week of July 5, 2024, epidemic trend categories were growing for the United States overall and growing or likely growing in 39 states. During the same week, the reported percentage of COVID-19–related ED visits was 1.0% and ranged from 0.4% to 2.4% in these 39 states.

After the summer wave peaked in late August (i.e., COVID-19 accounted for 2.6% of ED visits, reported on August 30), epidemic trend categories indicated that COVID-19 community transmission was decreasing across the country. For the week of September 6, 2024, trends in the United States overall and in 16 states were declining or likely declining. The nationally reported percentage of COVID-19–related ED visits was 2.3%, ranging from 1.4% to 3.4% in these 16 states.

New Mexico COVID-19 ED Visits and Epidemic Trends

In collaboration with the New Mexico Department of Health, state-level epidemic trend categories were assessed. The New Mexico epidemic trend categories provided an early signal of the summer wave. On May 10, 2024, the epidemic trend was growing; however, data on number of COVID-19–related ED visits available at that time did not yet demonstrate this increase. As of May 10, 99 COVID-19–related ED visits had been reported for the preceding 7 days, substantially fewer than the 130 such visits reported during the 7 days preceding May 3. However, the reports available on May 10 for the preceding 7 days included only 70% of the total 141 ED visits (as of October 18, 2024) (Figure 2).

In New Mexico, epidemic trend categories also confirmed that the summer wave had peaked and helped to distinguish actual decreases in transmission from apparent decreases resulting from incomplete reporting. From the week of May 3 to the

** The statistical nowcasting correction is based on a jurisdiction-specific distribution, estimated from the average of observed reporting delays in the recent past, to adjust for incomplete reporting on recent dates.

†† COVID-19–related ED visits are based on the following *International Classification of Diseases, Tenth Revision, Clinical Modification* discharge diagnosis codes: J12.82 (pneumonia due to coronavirus disease 2019) and U07.1 (COVID-19 identified in an asymptomatic person) and the following Systematized Nomenclature of Medical Clinical Terms codes: 840539006 (disease caused by SARS-CoV-2), 840544004 (suspected disease caused by SARS-CoV-2), and 840533007 (SARS-CoV-2 [organism]).

§§ R_t was categorized as "not estimated" if fewer than 10 COVID-19–related ED visits were reported in each of the previous 2 weeks, if anomalies were detected in reported values, or if the model did not pass checks for reliability.

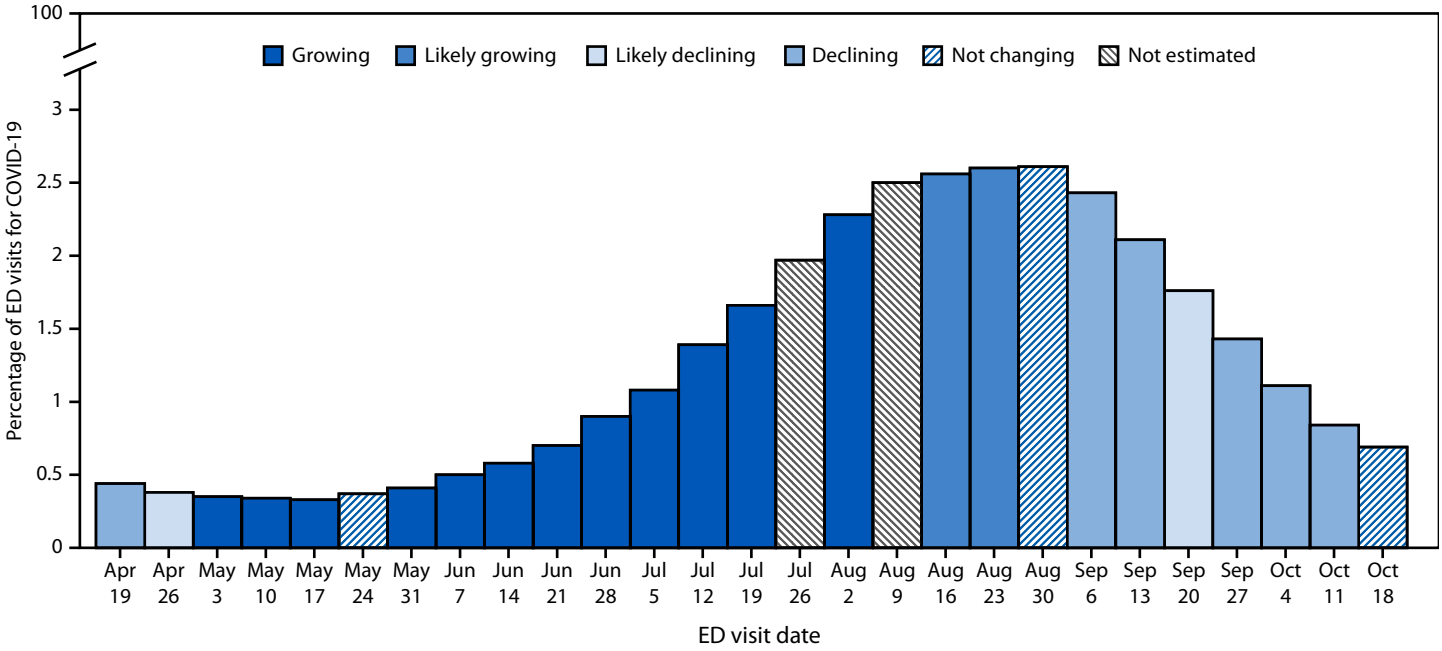
¶¶ Epidemic trend categories for many jurisdictions, including New Mexico, and for the United States, were not released for some or all weeks during July 26–August 9 because of a nationwide technological outage that temporarily interrupted data reporting in some jurisdictions.

*** Weekly percentage of COVID-19–related ED visits are publicly available data published weekly on Fridays. ED visit count data are not publicly available; however, count data are accessible to public health authorities in their respective jurisdiction. R_t estimates are based on nowcasts of ED visit count data. National weekly percentages of ED visits are used as a comparison because these data are publicly available.

††† New Mexico has granted permission to publish its state-level ED visit count data for this assessment.

§§§ 45 C.F.R. part 46, 21 C.F.R. part 56; 42 U.S.C. Sect. 241(d); 5 U.S.C. Sect. 552a; 44 U.S.C. Sect. 3501 et seq.

FIGURE 1. Percentage of emergency department visits for COVID-19, by date and weekly epidemic trend category* — United States, April–October 2024



Abbreviation: ED = emergency department.

* The percentage of ED visits for COVID-19 are publicly available data, displayed by the date the data become available (Friday), using data from the previous surveillance week (ending the previous Saturday). Publicly available data for the national percentage of COVID-19–related ED visits might differ from data used to estimate R_t, because of differing inclusion and exclusion criteria (e.g., a static subset of all facilities reporting to NSSP is used for R_t estimation). The R_t–based epidemic trend categories are presented by date of R_t-estimate publication (Friday), which is calculated from a nowcast of ED visit data reported through the previous Tuesday. Therefore, although both percentage of ED visits and R_t estimates are published weekly on Friday, the R_t-estimate calculation reflects 3 additional days of recent ED visit data.

week of August 30, the epidemic trend category was estimated to be either not changing or growing. The epidemic trend category was estimated to be declining for the first time since May 2024 during the week of September 6, 2024. ED visit data reported 304 COVID-19–related ED visits during the week of September 6 (7 days), compared with 489 such visits during the previous week.

Discussion

During summer 2024, epidemic trend categories using nowcasted ED visit data served as early indicators of increasing COVID-19 ED visits and confirmatory indicators that COVID-19–related ED visits were either not changing or decreasing. In May, at the national level, epidemic trend categories accurately foreshadowed that infections and subsequent COVID-19–related ED visits would grow, before increases in ED COVID-19 visits were evident from surveillance data. In New Mexico, epidemic trend categories indicated increased community transmission in advance of complete reporting. Epidemic trend categories did not indicate early that COVID-19 ED visits would decrease or were decreasing in New Mexico. This finding might be related to when R_t was calculated, from which the trend categories were derived, relative to when the decreases in COVID-19–related ED visits began that week. However, epidemic trend categories did confirm that decreases in reported ED visits reflected actual reductions in COVID-19 ED visits and did not represent delayed reporting.

Using a statistical nowcasting approach that provided an R_t estimate and allowed for categorization of epidemic trends from incomplete data mitigated reporting delays inherent in surveillance data. When combined with other surveillance metrics, particularly those reflecting disease incidence, epidemic trend categories can provide useful information for public health preparedness and response. State-level trends provide local situational awareness and can be used by neighboring states to monitor regional trends. Trend categories can also help prepare health care providers for potential surges and enable public health practitioners to adjust prevention messaging to the public.

Limitations

The findings in this report are subject to at least three limitations. First, although epidemic trend categories can indicate whether transmission is increasing or decreasing, they do not provide information about the total number of infections. Epidemic trend categories should, therefore, only

TABLE. Percentage of COVID-19–related emergency department visits* and epidemic trend categories†,§ at four points during the summer 2024 COVID-19 wave, by U.S. jurisdiction — National Syndromic Surveillance Program, United States, May 10, July 5, September 6, and October 18, 2024

Jurisdiction	May 10, 2024		Jul 5, 2024		Sep 6, 2024		Oct 18, 2024	
	COVID-19 ED visits, %	Epidemic trend	COVID-19 ED visits, %	Epidemic trend	COVID-19 ED visits, %	Epidemic trend	COVID-19 ED visits, %	Epidemic trend
United States	**0.3**	**Growing**	**1.0**	**Growing**	**2.3**	**Declining**	**0.7**	**Not changing**
Alabama	0.3	Not changing	0.8	Growing	3.3	Declining	0.6	Not changing
Alaska	0.3	Not changing	1.5	Not changing	1.8	Not changing	0.5	Declining
Arizona	0.5	Likely growing	1.7	Not changing	1.7	Not changing	1.0	Likely declining
Arkansas	0.3	Not changing	0.5	Growing	3.0	Not changing	0.5	Declining
California	0.3	Likely growing	1.5	Growing	2.1	Likely declining	0.5	Declining
Colorado	0.4	Likely growing	1.0	Growing	1.8	Not changing	1.0	Declining
Connecticut	0.3	Not changing	0.5	Likely growing	1.4	Declining	0.6	Not changing
Delaware	0.5	Not changing	0.8	Likely growing	2.4	Not changing	0.6	Declining
District of Columbia	0.4	Not changing	0.9	Growing	1.9	Not changing	0.3	Declining
Florida	0.4	Not changing	2.4	Growing	2.4	Declining	0.5	Likely declining
Georgia	0.2	Not changing	0.6	Growing	2.1	Declining	0.3	Likely declining
Hawaii	1.0	Growing	4.3	Not changing	2.0	Not changing	0.6	Declining
Idaho	0.3	Not changing	0.9	Growing	2.4	Growing	0.9	Declining
Illinois	0.3	Not changing	0.8	Growing	2.5	Declining	0.6	Declining
Indiana	0.2	Likely declining	0.6	Growing	2.8	Declining	0.6	Not changing
Iowa	0.3	Not changing	0.4	Likely growing	2.3	Not changing	0.8	Likely declining
Kansas	0.2	Declining	0.4	Growing	1.9	Not changing	0.7	Not changing
Kentucky	NA	Not estimated	0.6	Growing	3.6	Not changing	0.8	Not changing
Louisiana	0.2	Not changing	1.2	Growing	2.6	Declining	0.5	Likely declining
Maine	0.5	Likely growing	0.6	Likely growing	1.9	Likely declining	1.4	Declining
Maryland	0.4	Not changing	0.9	Growing	2.5	Not changing	0.6	Not changing
Massachusetts	0.4	Not changing	0.9	Growing	1.9	Not changing	0.8	Declining
Michigan	0.4	Declining	0.5	Likely growing	2.2	Growing	0.9	Likely declining
Minnesota	0.3	Not changing	0.9	Growing	2.0	Not changing	1.1	Declining
Mississippi	0.3	Declining	0.7	Growing	2.5	Likely declining	0.5	Declining
Missouri	NA	Not estimated	NA	Not estimated	NA	Not estimated	NA	Not estimated
Montana	0.4	Not changing	0.9	Growing	1.7	Likely growing	1.4	Declining
Nebraska	0.1	Likely declining	0.5	Growing	1.5	Not changing	0.5	Declining
Nevada	0.3	Likely growing	1.1	Likely growing	1.7	Not changing	0.7	Declining
New Hampshire	0.3	Not changing	0.6	Growing	2.1	Not changing	1.5	Likely declining
New Jersey	0.3	Likely growing	0.8	Not changing	1.5	Not changing	0.6	Declining
New Mexico	0.5	Growing	1.5	Not changing	2.5	Declining	1.2	Not changing
New York	0.3	Growing	0.9	Not changing	1.4	Likely declining	0.6	Not changing
North Carolina	0.3	Declining	0.8	Growing	3.4	Not changing	0.7	Likely declining
North Dakota	0.3	Not changing	0.6	Likely growing	1.4	Not changing	0.8	Likely declining
Ohio	0.3	Likely declining	0.5	Growing	2.6	Not changing	0.7	Not changing
Oklahoma	0.3	Not changing	0.5	Likely growing	2.5	Not changing	0.7	Declining
Oregon	0.4	Growing	1.6	Not changing	2.3	Not changing	1.3	Declining
Pennsylvania	0.2	Not changing	0.5	Not changing	1.9	Not changing	0.7	Not changing
Rhode Island	0.2	Not changing	0.4	Likely growing	1.3	Not changing	0.5	Declining
South Carolina	0.2	Not changing	0.8	Growing	3.4	Likely declining	0.5	Declining
South Dakota	NA	Not estimated	0.8	Growing	1.7	Growing	0.8	Likely declining
Tennessee	0.3	Not changing	0.6	Growing	2.6	Declining	0.5	Likely declining
Texas	0.3	Not changing	1.3	Growing	2.7	Declining	0.4	Declining
Utah	0.3	Not changing	0.9	Likely growing	2.1	Likely growing	0.9	Declining
Vermont	0.4	Not changing	0.7	Likely growing	2.3	Not changing	1.4	Declining
Virginia	0.3	Likely declining	0.9	Growing	3.3	Likely declining	0.7	Likely declining
Washington	0.5	Not changing	1.7	Not changing	2.2	Growing	1.2	Declining
West Virginia	0.4	Not changing	0.5	Not changing	3.9	Growing	1.2	Not changing
Wisconsin	0.4	Likely growing	0.7	Growing	NA	Not estimated	NA	Not estimated
Wyoming	NA	Not estimated	NA	Not estimated	NA	Not estimated	NA	Not estimated

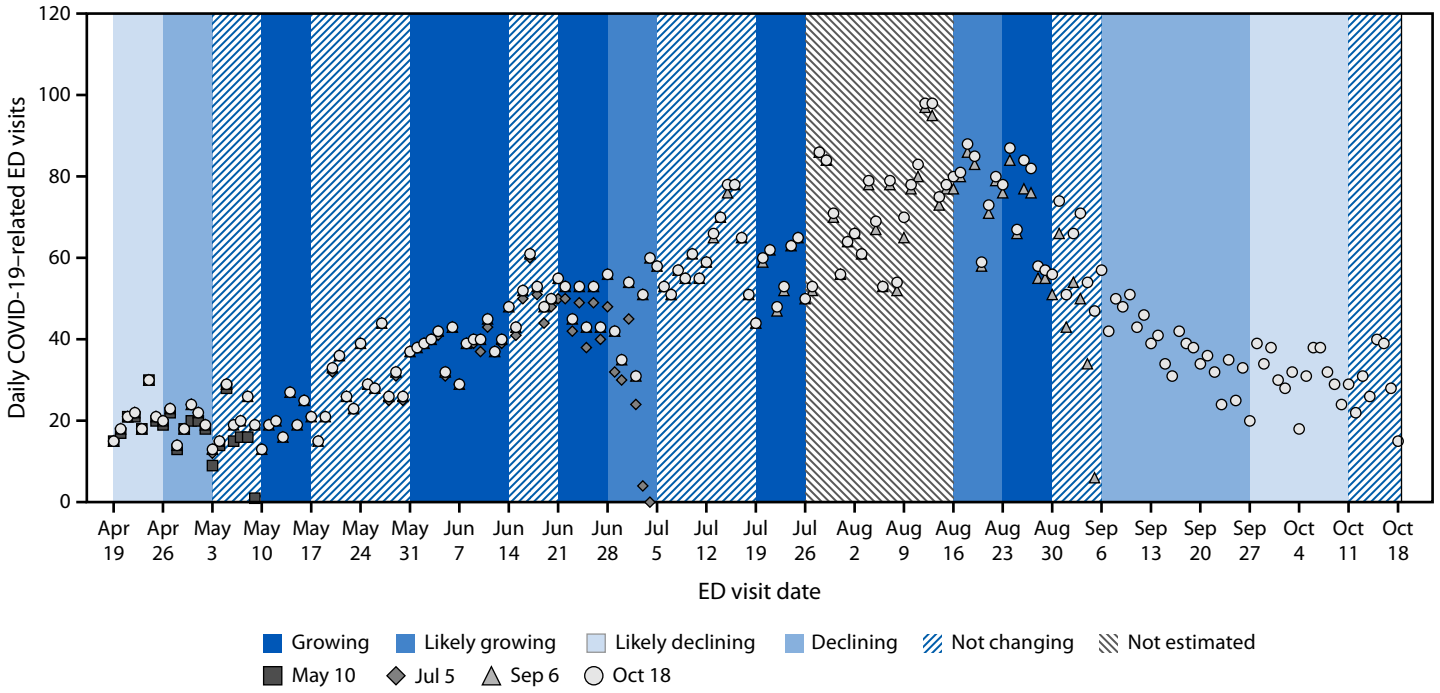
Abbreviations: ED = emergency department; NA = not available; NSSP = National Syndromic Surveillance Program; R_t = time-varying effective reproductive number.

* The percentage of all ED visits that were related to COVID-19 illness available at the time and used to estimate R_t. Data for the percentage of COVID-19–related ED visits might differ from publicly available data, because of differing inclusion and exclusion criteria (e.g., a static subset of all facilities reporting to NSSP is used for R_t estimation).

† The R_t-based epidemic trend categories are displayed by date of R_t estimate publication (Friday). The percentage of COVID-19–related ED visits in a given week are displayed by R_t report date (Friday), using data from the previous surveillance week (ending the previous Saturday).

§ The epidemic trend category was determined based on the probability that $R_t > 1$ (i.e., the probability that each infectious person spreads the virus to one or more other persons). The epidemic trend category was classified as growing (R_t >90%), likely growing (R_t >75% to ≤90%), not changing (R_t >25% to ≤75%), likely declining (R_t ≥10% to ≤25%), or declining (R_t <10%).

FIGURE 2. Number of COVID-19–related emergency department visits and epidemic trend categories — New Mexico, April–October 2024



Abbreviation: ED = emergency department.

be considered alongside other surveillance metrics that record disease incidence, such as ED visits, hospitalizations, and deaths. Second, CDC epidemic trend categories are currently published at the national and state levels and do not account for differences in community transmission at lower jurisdictional levels. Finally, ED visit data used for this analysis were subject to sporadic temporary data submission disruptions; these pauses increase reporting delays until the issues are resolved. CDC is exploring novel analytic approaches, such as combining multiple data sources, to reduce disruption in modeling when a single data source is temporarily interrupted.

Implications for Public Health Practice

During summer 2024, epidemic trend categories, based on R_t calculated from nowcasted ED visit data available through NSSP, identified growing trends in COVID-19 ED visits before increases were observable in raw surveillance data. Epidemic trend categories might reveal whether the number of infections is growing, not changing, or declining; however, they do not reflect the total number of infections and should be interpreted alongside other surveillance metrics. Epidemic trend categories provided early indication of changing trends in community transmission and are useful to prepare for public health action.

Summary

What is already known about this topic?

Surveillance data are often subject to delays, which can affect the ability of public health decision-makers to conduct accurate real-time assessments.

What is added by this report?

During summer 2024, trend categories that incorporated nowcasting provided an early indication that COVID-19 community transmission was increasing and later, provided confirmation that community transmission was decreasing.

What are the implications for public health practice?

Epidemic trend categories that incorporate nowcasting can provide early indication of changing trends in community transmission and can help public health decision-makers quickly determine whether transmission of infection is growing or declining at a given time and prepare for public health action.

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References

1. CDC. National Syndromic Surveillance Program (NSSP): about NSSP. Atlanta, GA: US Department of Health and Human Services, CDC; 2024. https://www.cdc.gov/nssp/php/about/index.html
2. CDC. CFA: modeling and forecasting. Current epidemic trends (based on R_t) for states. Atlanta, GA: US Department of Health and Human Services, CDC; 2024. https://www.cdc.gov/cfa-modeling-and-forecasting/rt-estimates/index.html
3. Gostic KM, McGough L, Baskerville EB, et al. Practical considerations for measuring the effective reproductive number, R_t. PLOS Comput Biol 2020;16:e1008409. PMID:33301457 https://doi.org/10.1371/journal.pcbi.1008409
4. Stoner O, Economou T. Multivariate hierarchical frameworks for modeling delayed reporting in count data. Biometrics 2020;76:789–98. PMID:31737902 https://doi.org/10.1111/biom.13188
5. Wolffram D, Abbott S, An der Heiden M, et al. Collaborative nowcasting of COVID-19 hospitalization incidences in Germany. PLOS Comput Biol 2023;19:e1011394. PMID:37566642 https://doi.org/10.1371/journal.pcbi.1011394
6. CDC. Behind the model: CDC's tools to assess epidemic growth. Atlanta, GA: US Department of Health and Human Services, CDC; 2024. https://www.cdc.gov/cfa-behind-the-model/php/data-research/rt-estimates/index.html
7. Abbott S, Hellewell J, Sherratt K, et al., EpiForecasts. EpiNow2: estimate real-time case counts and time-varying epidemiological parameters. London, England: London School of Hygiene & Tropical Medicine; 2024. https://epiforecasts.io/EpiNow2/dev/

Notes from the Field

Trends in Emergency Department Visits for Firearm Injuries — United States, January 2018–December 2023

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Research has highlighted recent increases in fatal and nonfatal firearm injuries (*1*–*3*). For example, from 2019 to 2020, firearm homicides and nonfatal firearm injury–related emergency department (ED) visits increased approximately 35% and 37%, respectively (*1*,*2*). These increases coincided in part with the COVID-19 pandemic and other sociocultural factors, such as strained law enforcement–community relationships, increases in firearm purchases and some types of crime, and increased discussion about systemic inequities (e.g., in economic, educational, and employment opportunities) that were potentially exacerbated by pandemic conditions (*1*–*5*). A year-over-year comparison of firearm injury–related ED visits could provide important insight into the direction of trends, which can help guide ongoing firearm injury prevention efforts.

Investigation and Outcomes

CDC's National Syndromic Surveillance Program (NSSP) data from consistently reporting EDs* were used to assess mean monthly counts of firearm injury–related ED visits by year during 2018–2023. Year-over-year comparisons (i.e., comparison of a metric from 1 year to the same period in the previous year) of visit ratios (VRs) of firearm injury–related ED visit rates with 95% CIs were examined overall and by sex and age group; 95% CIs that exclude 1 were considered statistically significant.† Injury intents identified by the firearm injury–related ED visit syndrome definition include unintentional, intentional self-directed, assault, undetermined intent, legal intervention, and terrorism. This activity was reviewed by CDC, deemed not research, and was conducted consistent with applicable federal law and CDC policy.§

NSSP data included approximately 425 million ED visits during 2018–2023, including 338,390 that involved a firearm injury, for an average annual rate of 81.2 per 100,000 ED visits (CDC, NSSP, unpublished data, 2024). Mean monthly counts of firearm injury–related ED visits ranged from 3,754.4 in 2018 to 5,559.0 in 2020 (Table). Firearm injury–related ED visit rates increased significantly from 2018 to 2019 (VR = 1.04) and again from 2019 to 2020 (VR = 1.75). Since their peak in 2020 (mean monthly rate = 114.7 per 100,000 ED visits; CDC, NSSP, unpublished data, 2024), firearm injury–related ED visit rates decreased significantly year over year (VR from 2020 to 2021, from 2021 to 2022, and from 2022 to 2023 were 0.82, 0.87, and 0.92, respectively) but have not returned to the level of the 2019 mean monthly rate (64.3 per 100,000 ED visits; CDC, NSSP, unpublished data, 2024). Patterns of firearm injury–related ED visit rates by sex mirrored those for firearm injury ED visits overall and were also reflected in monthly visit counts. Specifically, visit rates among both females and males increased during 2018–2020 and decreased yearly thereafter, with the most pronounced decreases observed during 2021–2022 among males aged ≥65 and 25–34 years (34.3% and 14.6% decreases, respectively) and among females aged ≥65 and 0–14 years (24.0% and 14.1% decreases, respectively). Overall firearm injury–related ED visit counts in 2023 were 13.5% higher than in 2019, and VRs were significantly higher for females and males of all ages, except those aged ≥65 years.

Preliminary Conclusions and Actions

Approximately 50,000 firearm-related deaths and twice as many firearm injuries than deaths occur in the United States every year.¶ Although firearm injury–related ED visit rates decreased during 2021–2023, they remain high. The prevalences of firearm injury and associated death suggest the need for continued monitoring and a comprehensive prevention approach. National, state, and local data available through CDC's NSSP and the Firearm Injury Surveillance Through

* Electronic health record data from EDs participating in CDC's NSSP (https://www.cdc.gov/nssp/index.html), which covers approximately 80% of U.S. EDs, are included in this report. To reduce impact of reporting pattern changes, which vary across jurisdictions, analyses were restricted to facilities with a coefficient of variation of <40% for total visit volume and with >75% complete information on discharge diagnoses during 2018–2023; the final sample represents 1,794 facilities (43% of total facilities that contribute data to NSSP).

† ED visit counts for initial firearm injury encounters were identified using the CDC Firearm Injury v2 syndrome definition (https://knowledgerepository.syndromicsurveillance.org/cdc-firearm-injury-v2). VRs of firearm injury rates were calculated as (ED visits for firearm injury during surveillance period / all ED visits during surveillance period) / (ED visits for firearm injury during comparison period / all ED visits during comparison period). Ratios >1 indicate a higher proportion of ED visits for firearm injury during surveillance period than during the comparison period.

§ 45 C.F.R. part 46, 21 C.F.R. part 56; 42 U.S.C. Sect. 241(d); 5 U.S.C. Sect. 552a; 44 U.S.C. Sect. 3501 et seq.

¶ https://wisqars.cdc.gov/index.html

TABLE. Mean monthly number of emergency department visits, percent change* in emergency department visits, and visit ratios† of emergency department visits for firearm injury,§ overall and by sex and age group — National Syndromic Surveillance Program,¶ United States, January 2018–December 2023

Sex/Age group, yrs	2018	2019		2020		2021		2022		2023		
	Mean firearm injury ED visits per mo	Mean firearm injury ED visits per mo	% Change 2018–2019	Mean firearm injury ED visits per mo	% Change 2019–2020	Mean firearm injury ED visits per mo	% Change 2020–2021	Mean firearm injury ED visits per mo	% Change 2021–2022	Mean firearm injury ED visits per mo	% Change 2022–2023	% Change 2019–2023
All	**3,754.40**	**4,050.20**	**7.9**	**5,559.00**	**37.3**	**5,357.70**	**−3.6**	**4,881.40**	**−8.9**	**4,596.40**	**−5.8**	**13.5**
VR (95% CI)	—	—	**1.04 (1.03–1.05)****	—	**1.75 (1.73–1.77)††**	—	**0.82 (0.81–0.83)§§**	—	**0.87 (0.86–0.88)¶¶**	—	**0.92 (0.90–0.93)*****	**1.14 (1.13–1.15)††**
Female												
Overall	498.2	566.1	13.6	784.7	38.6	787.2	0.3	725.4	−7.9	685.1	−5.6	21.0
VR (95% CI)	—	—	1.11 (1.07–1.15)**	—	1.81 (1.76–1.87)††	—	0.85 (0.82–0.87)§§	—	0.87 (0.84–0.89)¶¶	—	0.91 (0.88–0.94)***	1.21 (1.18–1.25)††
0–14	26.4	26.9	1.9	45.0	67.2	42.7	−5.1	36.7	−14.1	36.3	−1.1	34.9
VR (95% CI)	—	—	0.97 (0.83–1.13)**	—	3.21 (2.80–3.69)††	—	0.64 (0.56–0.72)§§	—	0.70 (0.61–0.79)¶¶	—	1.02 (0.89–1.16)***	1.45 (1.25–1.67)††
15–24	151.2	183.4	21.3	258.1	40.7	254.3	−1.5	236.1	−7.2	211.8	−10.3	15.5
VR (95% CI)	—	—	1.20 (1.13–1.27)**	—	1.86 (1.76–1.96)††	—	0.84 (0.79–0.88)§§	—	0.91 (0.87–0.96)¶¶	—	0.89 (0.85–0.94)***	1.26 (1.19–1.34)††
25–34	132.1	147.8	11.9	219.4	48.4	211.5	−3.6	193.6	−8.5	177.0	−8.6	19.8
VR (95% CI)	—	—	1.10 (1.03–1.18)**	—	1.87 (1.76–1.99)††	—	0.85 (0.80–0.89)§§	—	0.91 (0.86–0.96)¶¶	—	0.89 (0.84–0.94)***	1.28 (1.20–1.36)††
35–64	142.7	164.0	14.9	201.2	22.7	215.1	6.9	194.1	−9.8	198.9	2.5	21.3
VR (95% CI)	—	—	1.13 (1.06–1.20)**	—	1.51 (1.42–1.60)††	—	0.94 (0.89–0.99)§§	—	0.88 (0.83–0.93)¶¶	—	0.98 (0.92–1.04)***	1.22 (1.15–1.29)††
≥65	30.8	29.8	−3.2	39.4	32.5	40.4	2.5	30.7	−24.0	26.8	−12.7	−10.1
VR (95% CI)	—	—	0.92 (0.79–1.06)**	—	1.62 (1.41–1.86)††	—	0.88 (0.77–1.00)§§	—	0.69 (0.60–0.78)¶¶	—	0.82 (0.70–0.95)***	0.80 (0.68–0.92)††
Male												
Overall	3,201.1	3,436.1	7.3	4,701.5	36.8	4,493.2	−4.4	4,065.8	−9.5	3,827.2	−5.9	11.4
VR (95% CI)	—	—	1.04 (1.02–1.05)**	—	1.70 (1.67–1.72)††	—	0.82 (0.81–0.83)§§	—	0.86 (0.85–0.87)¶¶	—	0.92 (0.90–0.93)***	1.09 (1.08–1.11)††
0–14	73.7	87.3	18.5	116.3	33.2	120.2	3.4	118.5	−1.4	119.3	0.7	36.7
VR (95% CI)	—	—	1.13 (1.03–1.23)**	—	2.60 (2.40–2.82)††	—	0.68 (0.63–0.73)§§	—	0.79 (0.73–0.85)¶¶	—	1.03 (0.96–1.11)***	1.45 (1.34–1.57)††
15–24	1,094.2	1,170.8	7.0	1,601.8	36.8	1,469.8	−8.2	1,330.8	−9.5	1,256.4	−5.6	7.3
VR (95% CI)	—	—	1.04 (1.02–1.07)**	—	1.73 (1.70–1.77)††	—	0.79 (0.77–0.81)§§	—	0.88 (0.86–0.90)¶¶	—	0.94 (0.91–0.96)***	1.13 (1.10–1.16)††
25–34	928.6	996.5	7.3	1,398.7	40.4	1,303.5	−6.8	1,112.6	−14.6	1,007.9	−9.4	1.1
VR (95% CI)	—	—	1.05 (1.02–1.07)**	—	1.61 (1.57–1.64)††	—	0.85 (0.83–0.87)§§	—	0.88 (0.86–0.90)¶¶	—	0.89 (0.87–0.91)***	1.07 (1.04–1.10)††
35–64	814.7	884.8	8.6	1,190.2	34.5	1,209.2	1.6	1,122.5	−7.2	1,077.8	−4.0	21.8
VR (95% CI)	—	—	1.06 (1.03–1.09)**	—	1.52 (1.48–1.56)††	—	0.92 (0.90–0.94)§§	—	0.93 (0.91–0.95)¶¶	—	0.93 (0.91–0.95)***	1.20 (1.17–1.24)††
≥65	192.2	207.8	8.1	272.3	31.0	251.5	−7.6	165.3	−34.3	169.8	2.7	−18.3
VR (95% CI)	—	—	1.02 (0.96–1.08)**	—	1.47 (1.40–1.55)††	—	0.82 (0.78–0.86)§§	—	0.60 (0.57–0.64)¶¶	—	0.96 (0.90–1.02)***	0.70 (0.66–0.74)††

Abbreviations: ED = emergency department; NSSP = National Syndromic Surveillance Program; VR = visit ratio.

* Percent change in visits per week during each surveillance period was calculated as ([mean monthly ED visits for firearm injury during surveillance period − mean monthly ED visits for firearm injury during comparison period] / mean monthly ED visits for firearm injury during comparison period) × 100.

† VR = (ED visits for firearm injury during surveillance period / all ED visits during surveillance period) / (ED visits for firearm injury during comparison period / all ED visits during comparison period). Ratios >1 indicate a higher proportion of ED visits for firearm injury during the surveillance period than the comparison period; ratios <1 indicate a lower proportion during the comparison period than during the surveillance period; 95% CIs that do not include 1 were considered statistically significant.

§ ED visits for an initial firearm injury encounter were identified by querying a categorization developed and validated by CDC in partnership with state, tribal, local, and territorial health departments. The following intent types were included in the definition: unintentional, intentional self-directed, assault, undetermined intent, legal intervention, and terrorism.

¶ NSSP is a collaboration among CDC, local and state health departments, and federal, academic, and private sector partners. NSSP receives medical record data from approximately 80% of EDs nationwide, although fewer than 50% of facilities from California, Hawaii, Minnesota, and Oklahoma currently participate in NSSP. To reduce impact of reporting pattern changes, which can vary across jurisdictions, analyses were restricted to facilities with a coefficient of variation of <40% for total visit volume and with >75% complete information on discharge diagnoses during 2018–2023: the final sample represents 1,794 facilities (43% of total facilities that contribute data to NSSP). https://www.cdc.gov/nssp/index.html

** Comparison period is calendar year 2018 (January–December 2018).

†† Comparison period is calendar year 2019 (January–December 2019).

§§ Comparison period is calendar year 2020 (January–December 2020).

¶¶ Comparison period is calendar year 2021 (January–December 2021).

*** Comparison period is calendar year 2022 (January–December 2022).

Summary

What is already known about this topic?

Fatal and nonfatal firearm injuries increased in 2020, coinciding with the COVID-19 pandemic and other sociocultural factors, and remained significantly higher during 2021–2022 than before the onset of the pandemic.

What is added by this report?

CDC's National Syndromic Surveillance Program data show that although firearm injury–related emergency department visit rates increased significantly during 2018–2020 and then decreased during 2021–2023, rates remain higher than those in 2019.

What are the implications for public health practice?

Firearm injury prevention warrants a comprehensive public health approach. CDC's suite of Prevention Resources for Action outlines the best available evidence for preventing injuries, including firearm injuries, related to suicide and community, intimate partner, and other forms of violence.

Emergency Rooms (FASTER) program** can be used as a tool for planning and evaluating prevention efforts. In addition, CDC's suite of Prevention Resources for Action†† describes the best available evidence for preventing suicide and community, intimate partner, and other forms of violence, including firearm-related injuries. Highlighted prevention programs, practices, and policies include teaching coping, problem-solving, and healthy relationship skills; street outreach and hospital-based violence prevention programs; place-based prevention, including cleaning vacant lots and secure firearm storage; and strengthening household financial security through economic supports. States and communities can use these resources to guide local firearm violence and suicide prevention efforts.

** CDC's FASTER program encompasses two initiatives funded in 2020 and 2023 to collect, analyze, and disseminate data on violence-related ED visits, including firearm injuries, in near real time. https://www.cdc.gov/firearm-violence/php/funded-surveillance/index.html

†† https://www.cdc.gov/violence-prevention/php/resources-for-action/index.html

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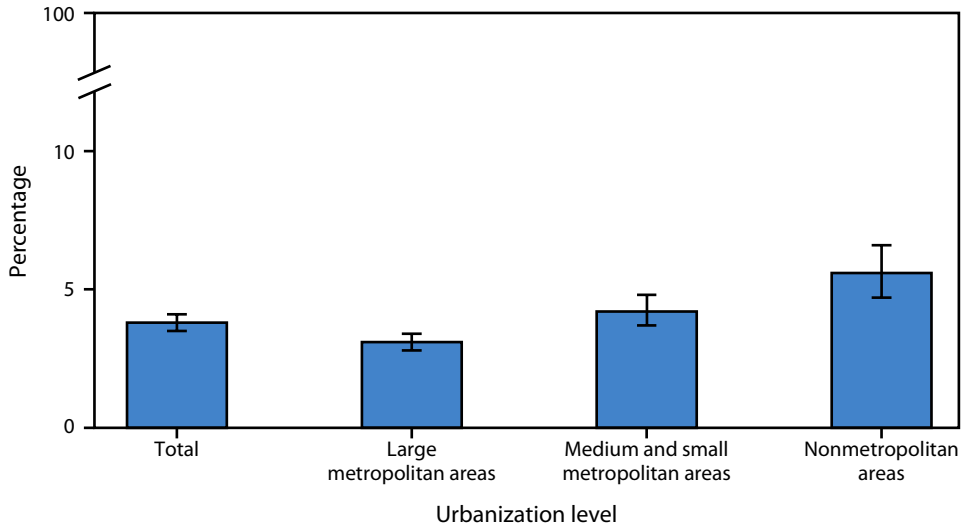
References

1. Kegler SR, Simon TR, Zwald ML, et al. Vital signs: changes in firearm homicide and suicide rates—United States, 2019–2020. MMWR Morb Mortal Wkly Rep 2022;71:656–63. PMID:35550497 https://doi.org/10.15585/mmwr.mm7119e1
2. Zwald ML, Van Dyke ME, Chen MS, et al. Emergency department visits for firearm injuries before and during the COVID-19 pandemic—United States, January 2019–December 2022. MMWR Morb Mortal Wkly Rep 2023;72:333–7. PMID:36995967 https://doi.org/10.15585/mmwr.mm7213a2
3. Simon TR, Kegler SR, Zwald ML, et al. Notes from the field: increases in firearm homicide and suicide rates—United States, 2020–2021. MMWR Morb Mortal Wkly Rep 2022;71:1286–7. PMID:36201375 https://doi.org/10.15585/mmwr.mm7140a4
4. Rosenfeld R, Abt T, Lopez E. Pandemic, social unrest, and crime in US cities: 2020 year-end update. Washington, DC: Council on Criminal Justice; 2021. https://build.neoninspire.com/councilоncj/wp-content/uploads/sites/96/2021/07/Year-End-Crime-Update_Designed.pdf
5. Ssentongo P, Fronterre C, Ssentongo AE, et al. Gun violence incidence during the COVID-19 pandemic is higher than before the pandemic in the United States. Sci Rep 2021;11:20654. PMID:34675321 https://doi.org/10.1038/s41598-021-98813-z

QuickStats

FROM THE NATIONAL CENTER FOR HEALTH STATISTICS

Age-Adjusted Percentage* of Adults Aged ≥18 Years with Diagnosed Chronic Obstructive Pulmonary Disease,† by Urbanization Level — United States, 2023



* Age-adjusted percentages are based on the 2000 U.S. Census Bureau standard population, using age groups 18–44, 45–64, 65–74, and ≥75 years, with 95% CIs indicated by error bars.

† Based on "yes" response to the survey question, "Have you ever been told by a doctor or other health professional that you had chronic obstructive pulmonary disease, COPD, emphysema, or chronic bronchitis?"

In 2023, the age-adjusted percentage of adults aged ≥18 years with diagnosed chronic obstructive pulmonary disease (COPD) was 3.8%. The prevalence of COPD among adults increased as urbanization level decreased.

Supplementary Table: https://stacks.cdc.gov/view/cdc/168877

Source: National Center for Health Statistics, National Health Interview Survey, 2023. https://www.cdc.gov/nchs/nhis.htm

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For more information on this topic, CDC recommends the following link: https://www.cdc.gov/copd/index.html.

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