COVID-19–Associated Hospitalizations — COVID-NET, April 2025 Update

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Advisory Committee on Immunization Practices (ACIP) Meeting

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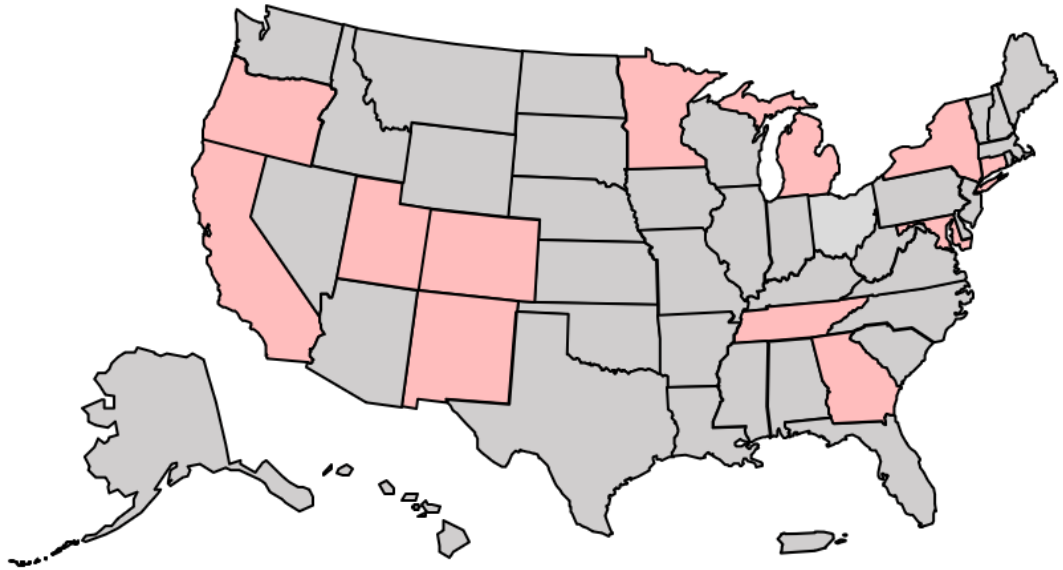
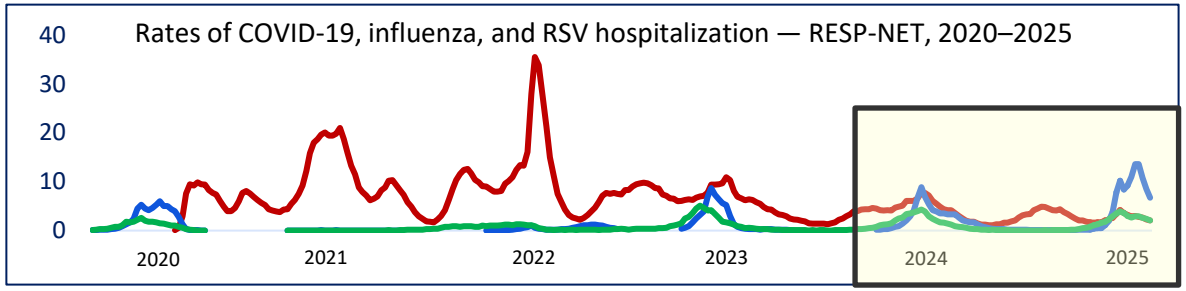
COVID-NET is a population-based hospitalization surveillance platform.

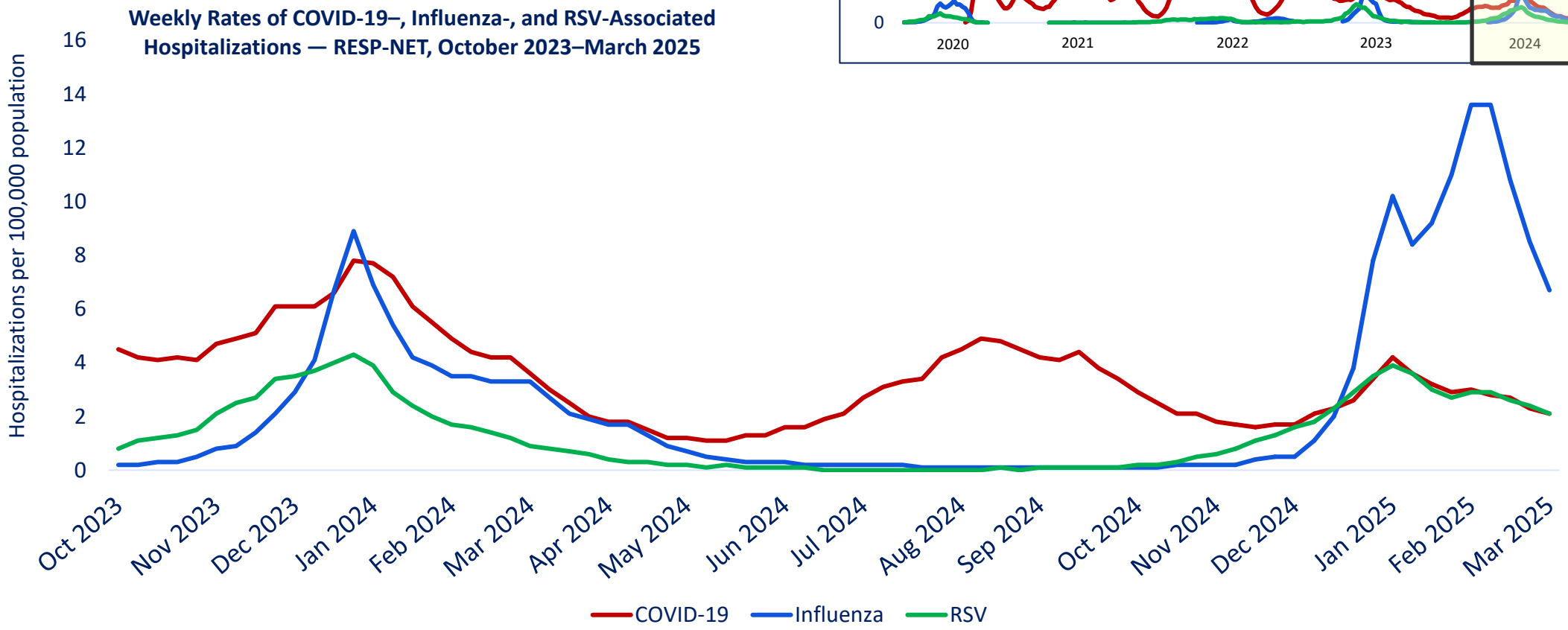
- RESP-NET: COVID-NET, RSV-NET, FluSurv-NET
- >300 acute-care hospitals
- 98 counties in 13 states
- ~10% of the U.S. population
- Positive SARS-CoV-2 test ≤14 days before admission or during hospitalization
- Screening or clinician-driven testing
- Clinical data: age- and site-stratified random sample



COVID-NET: https://www.cdc.gov/covid/php/covid-net/index.html Some slides display data from 90 counties in 12 states due to incomplete data.

COVID-19 hospitalization rates have had both winter and summer peaks.

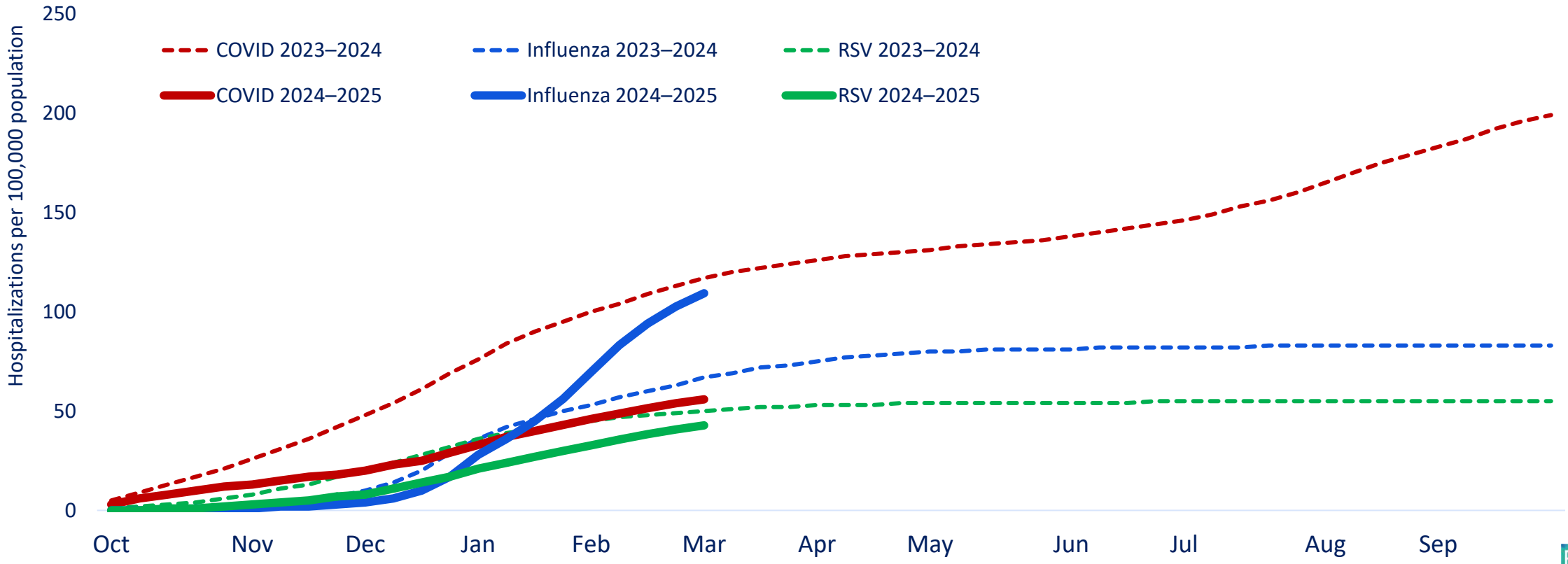




Rates for all three pathogens (COVID-19, influenza, and respiratory syncytial virus [RSV]) are laboratory-confirmed. Data source: https://www.cdc.gov/resp-net/dashboard/
Note that rates are not adjusted for testing or limited to admissions where the respiratory infection is the likely primary reason for admission.

Rates of COVID-19 hospitalizations for the 2024–2025 season are lower compared to last season.

Cumulative Rates of COVID-19–, Influenza-, and RSV-Associated Hospitalizations, by Surveillance Season* — RESP-NET, October 2023–March 2025

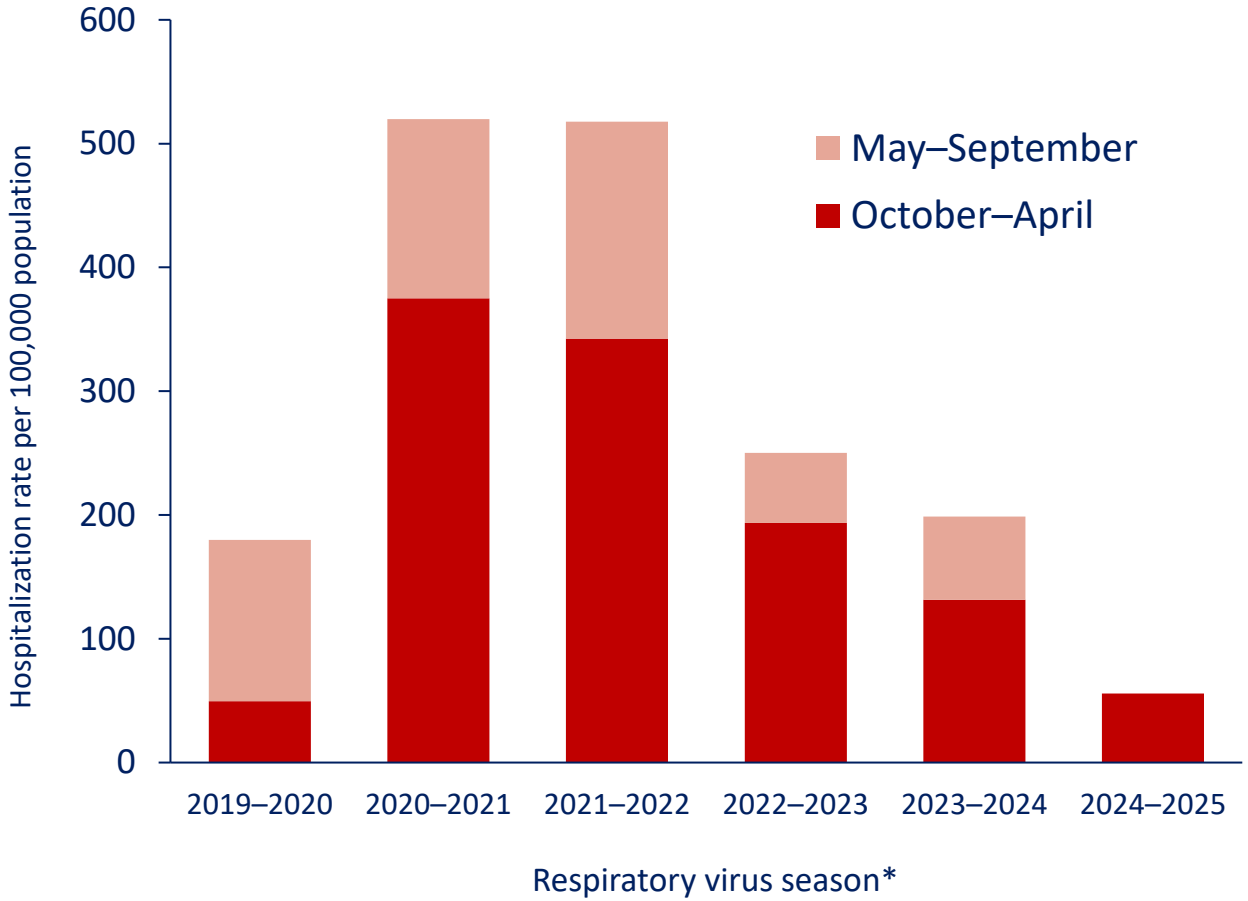


* Seasons are defined as October through September. The 2024–2025 season shows data from October 2024–March 2025 and is ongoing.

Rates for all three pathogens (COVID-19, influenza, and respiratory syncytial virus [RSV]) are laboratory-confirmed. Data source: https://www.cdc.gov/resp-net/dashboard/

Note that rates are not adjusted for testing or limited to admissions where the respiratory infection is the likely primary reason for admission.

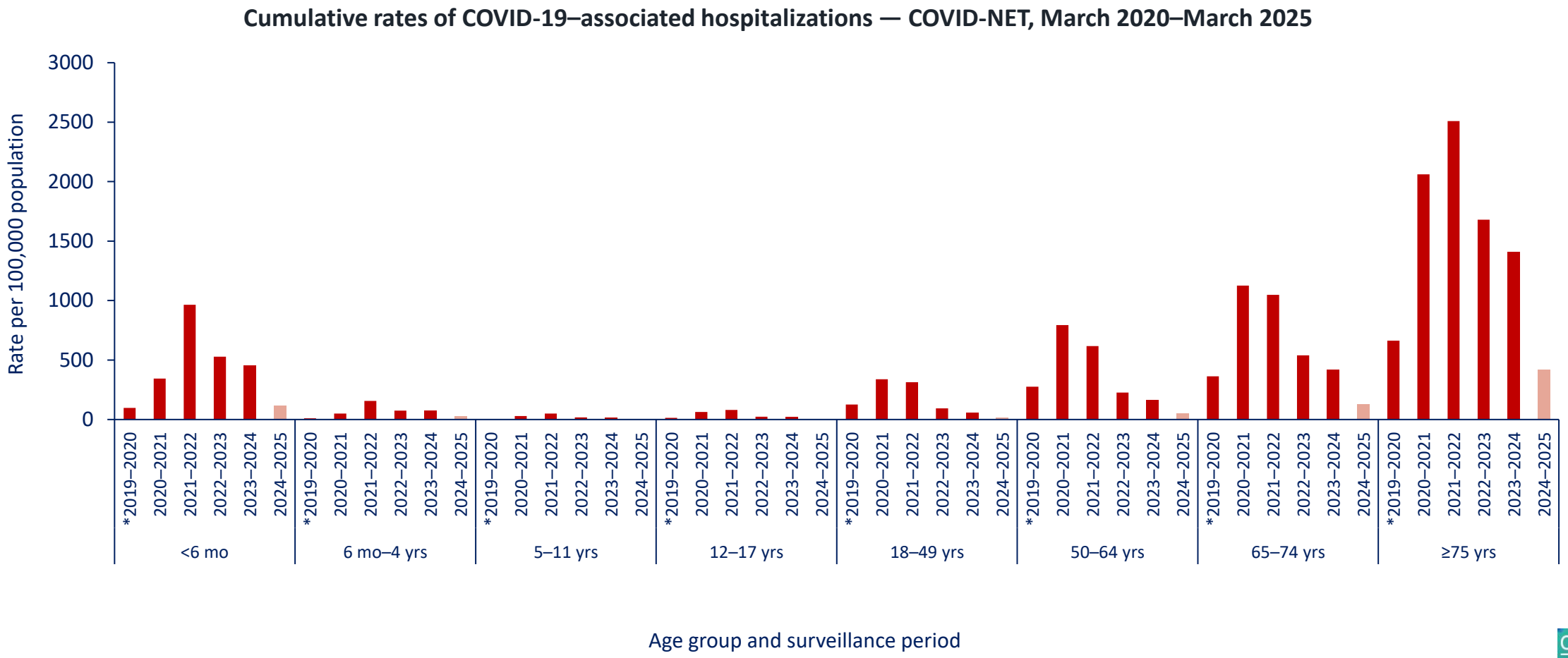
Cumulative COVID-19–associated hospitalization rates by surveillance season — COVID-NET, March 2020–March 2025



Many COVID-19-associated hospitalizations occur outside of the typical respiratory virus season.

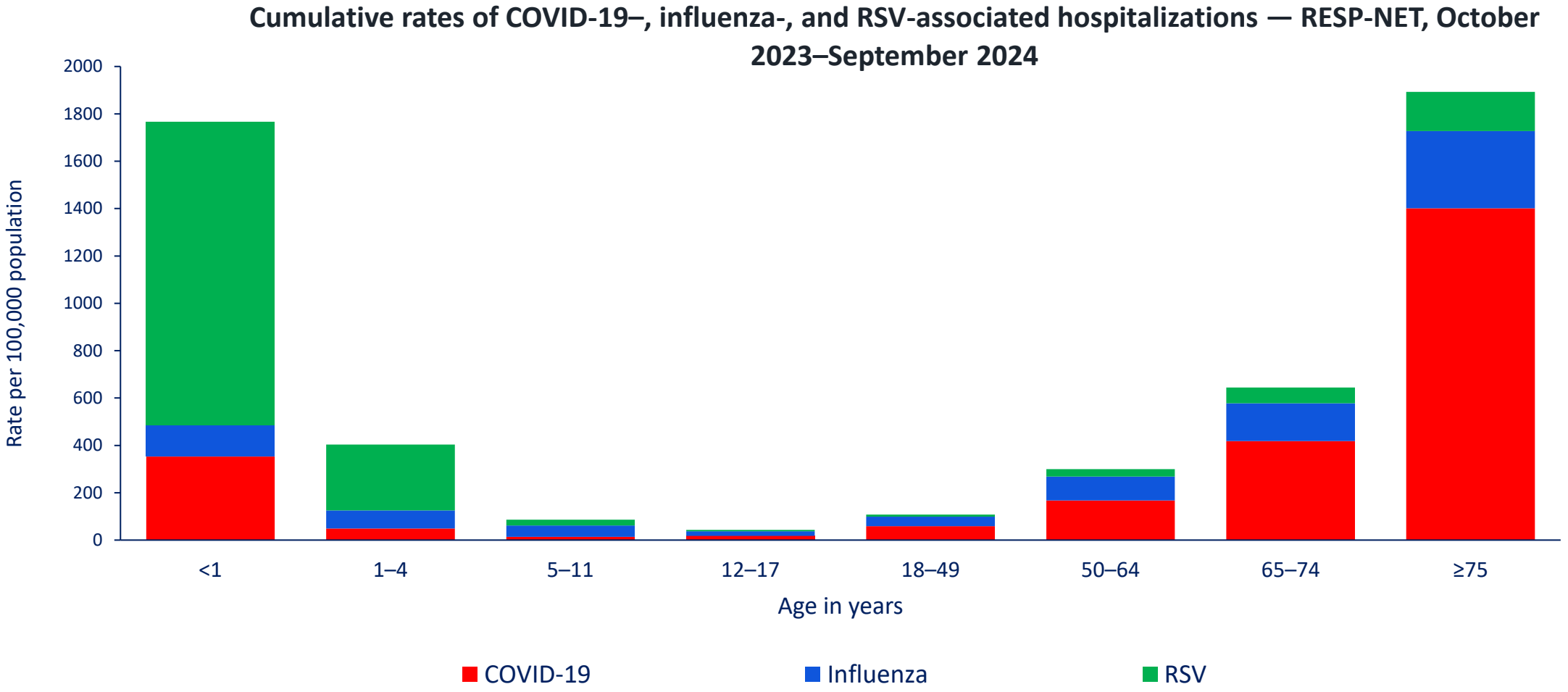
* The 2019–2020 surveillance period includes March–September 2020; other seasons are defined as October through September. The 2024–2025 season shows data from October 2024–March 2025 and is ongoing.

Among all age groups, rates of COVID-19–associated hospitalizations have declined since the 2021–2022 season.



* The 2019–2020 surveillance period includes March–September 2020; other seasons are defined as October through September. The 2024–2025 season shows data from October 2024–March 2025 and is ongoing.

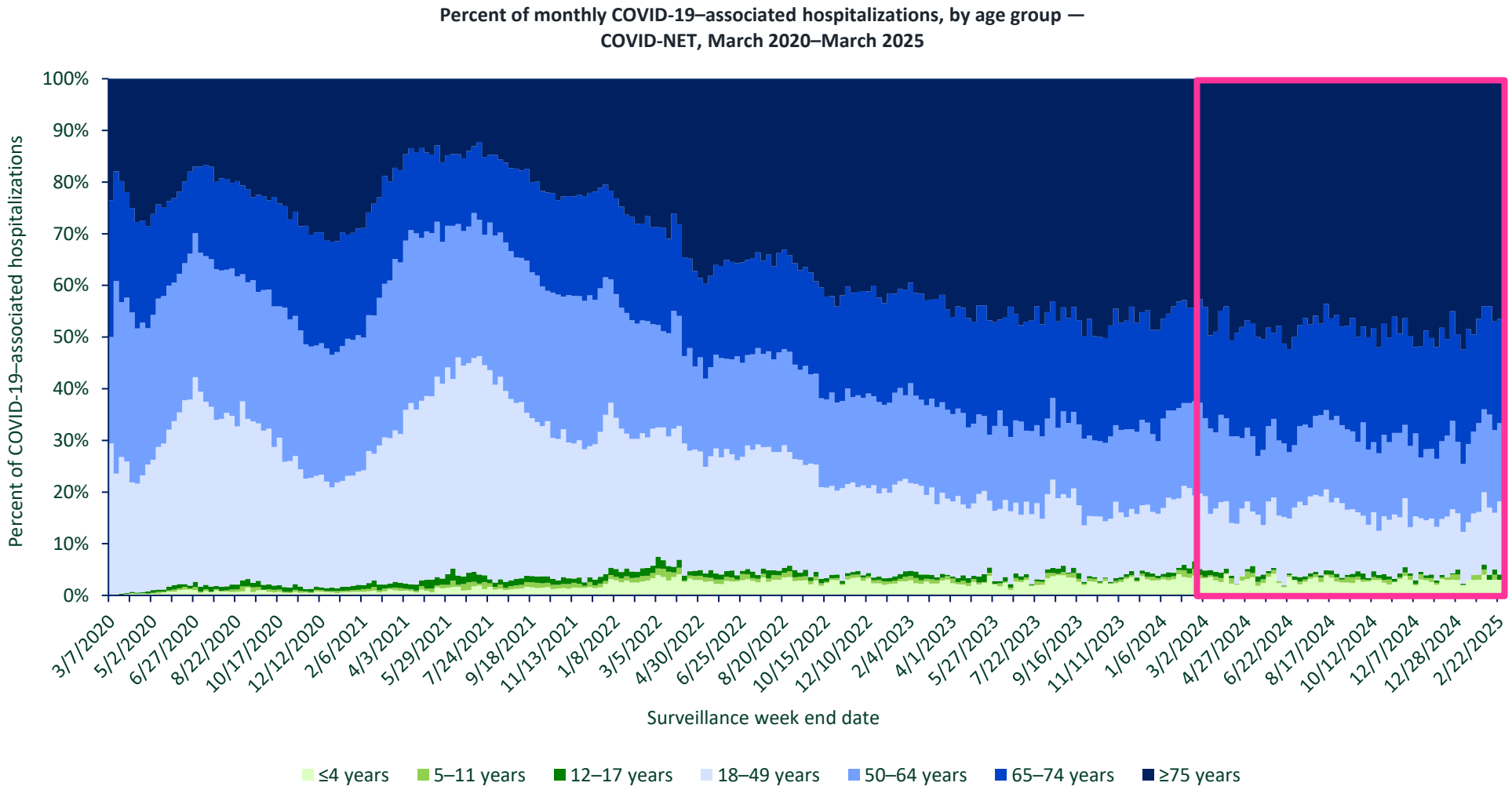
Rates of respiratory virus-associated hospitalizations vary by age group and pathogen.



Rates for all three pathogens (COVID-19, influenza, and respiratory syncytial virus [RSV]) are laboratory-confirmed. Data source: https://www.cdc.gov/resp-net/dashboard/
Note that rates are not adjusted for testing or limited to admissions where the respiratory infection is the likely primary reason for admission.

Pediatric COVID-19–Associated Hospitalizations

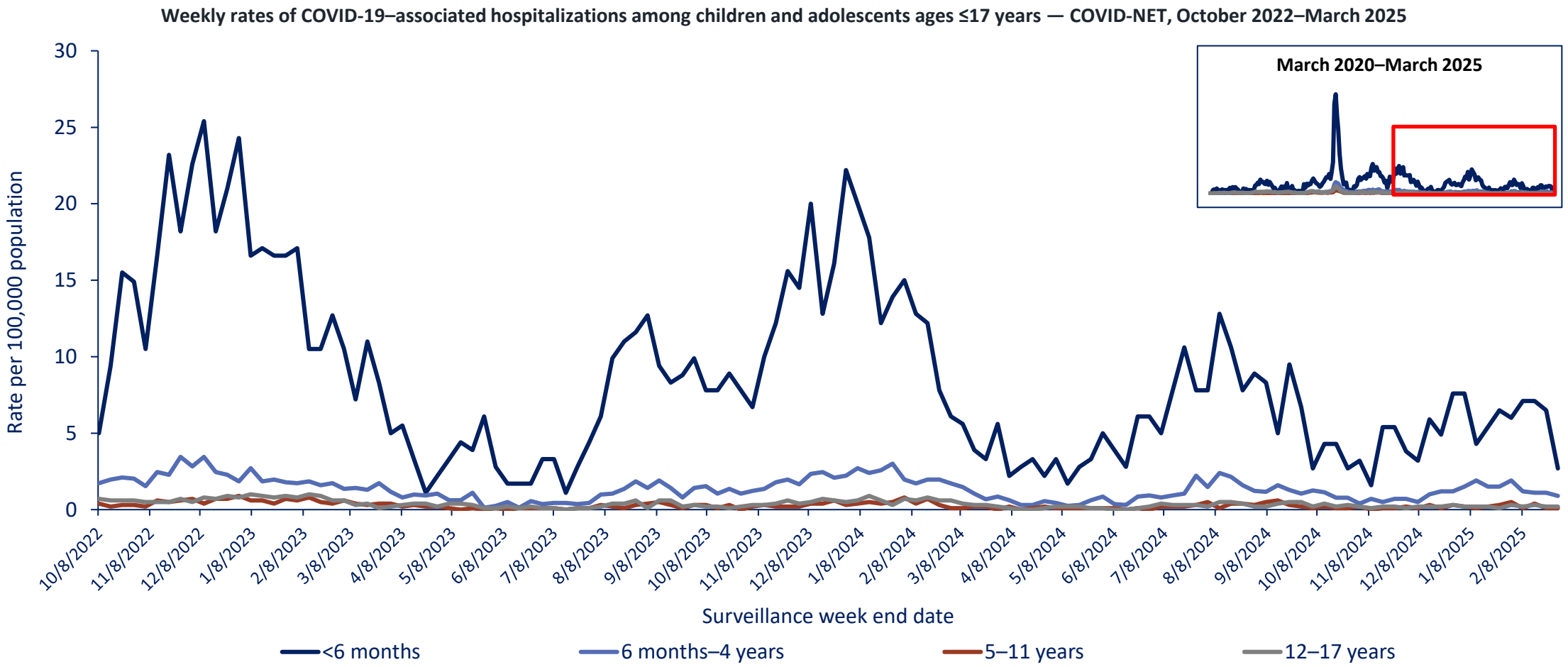
During 2024–2025, children and adolescents comprised about 4% of COVID-19–associated hospitalizations.



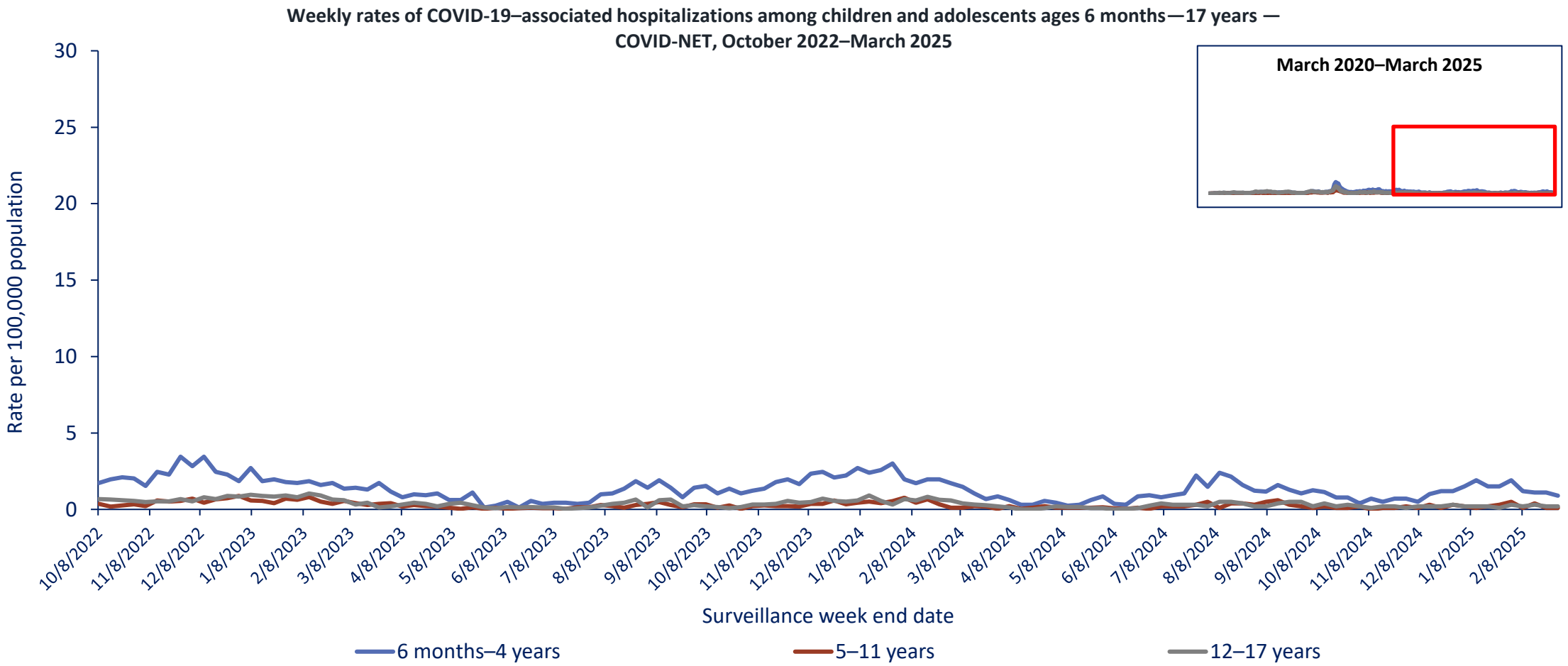
- ≤17 years = 4.3% of COVID-19–associated hospitalizations during October 2024–March 2025

- ≤4 years = 2.9%
- 5–11 years = 0.6%
- 12–17 years = 0.6%

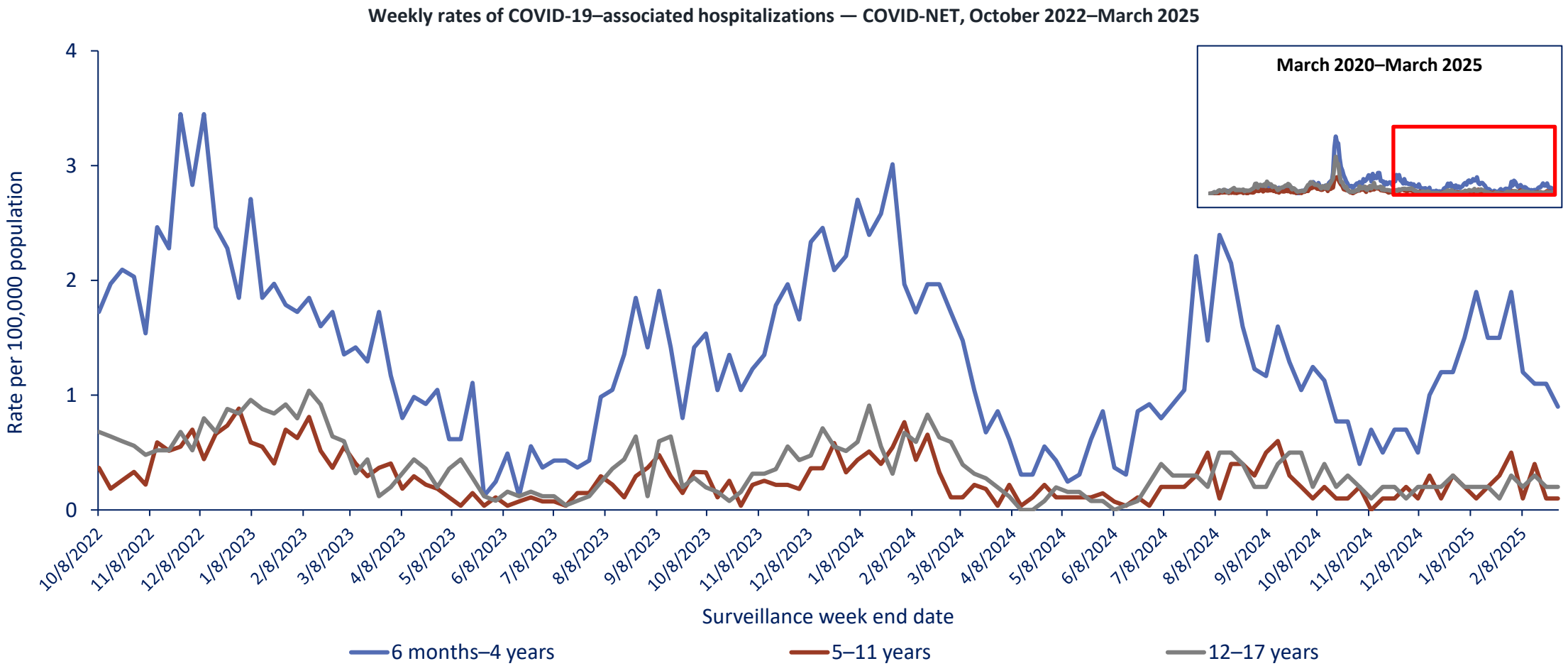
Among all children and adolescents, rates of COVID-19–associated hospitalizations are highest among infants ages <6 months.



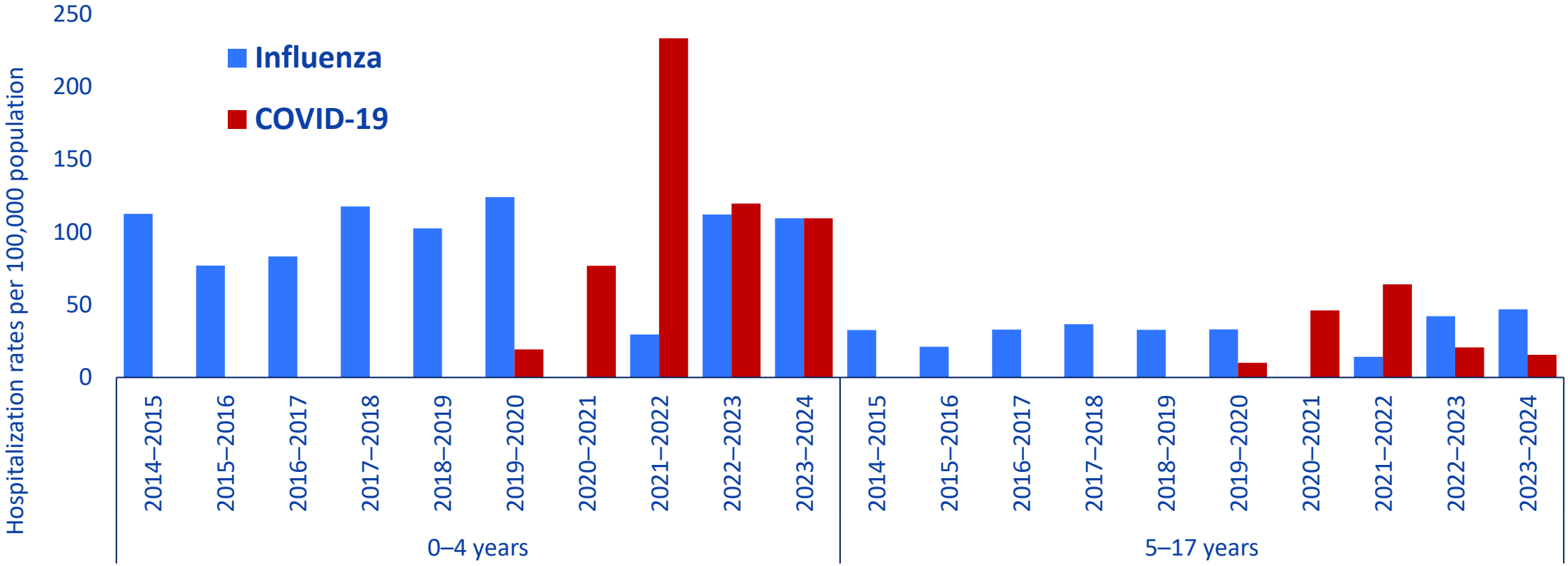
Among all children and adolescents, rates of COVID-19 hospitalizations are highest among infants ages <6 months.



Among children and adolescents eligible for COVID-19 vaccines, cumulative rates of COVID-19–associated hospitalizations remain the highest among children ages 6 months–4 years.



Rates* of influenza and COVID-19–associated hospitalizations among children ages ≤17 years** — RESP-NET, 2014–2024



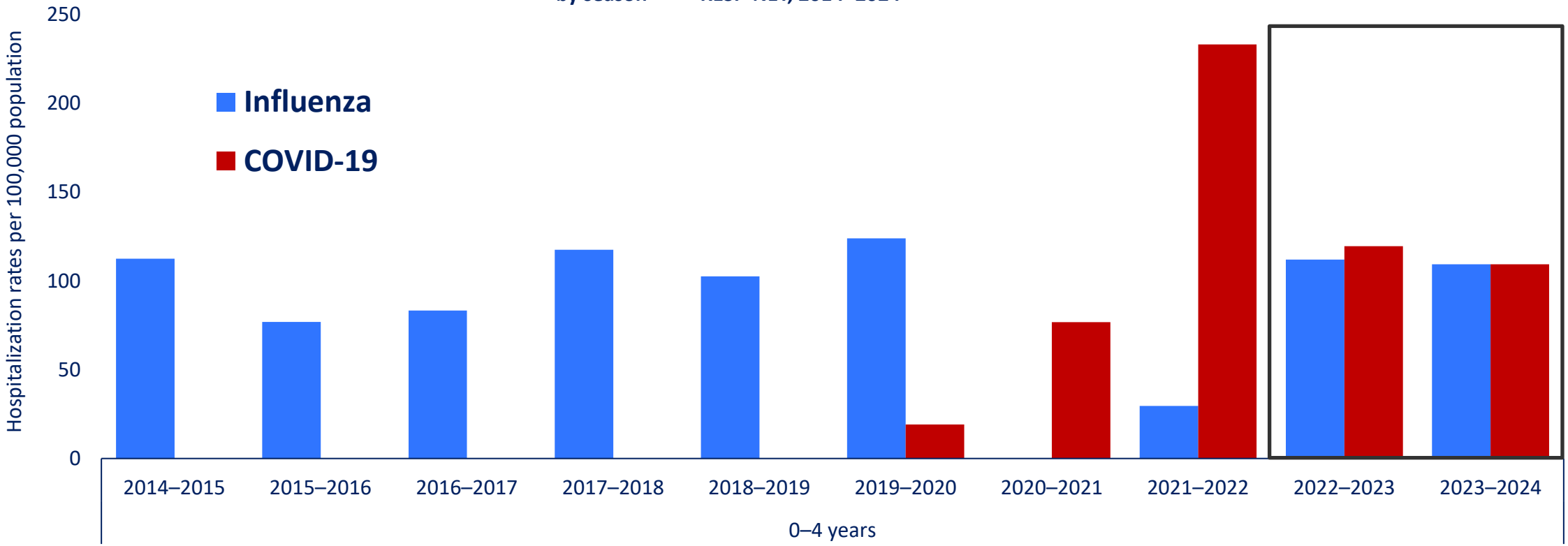
** Note that rates of influenza hospitalizations are adjusted for undertesting and under-detection. Rates of COVID-19 hospitalizations are not adjusted for undertesting or under-detection. Rates of COVID-19 hospitalization might be higher when adjusted for these factors.*

*** Monitoring for influenza hospitalizations typically occurs during October through April; for COVID-19 hospitalizations, monitoring for a given respiratory season begins in October and continues through the following September. For the 2019–2020 period, monitoring for COVID-19 hospitalizations began in March 2020. Historical flu data from https://www.cdc.gov/flu-burden/php/data-vis/past-seasons.html. Historical flu data are not available for the 2020–2021 period.*

RESP-NET

Among children ages ≤4 years, COVID-19–associated hospitalization rates during the 22–23 and 23–24 seasons were similar to those due to influenza.

Rates* of influenza and COVID-19–associated hospitalizations among children ages 0–4 years, by season — RESP-NET, 2014–2024**



** Note that rates of influenza hospitalizations are adjusted for undertesting and under-detection. Rates of COVID-19 hospitalizations are not adjusted for undertesting or under-detection. Rates of COVID-19 hospitalization might be higher when adjusted for these factors.*

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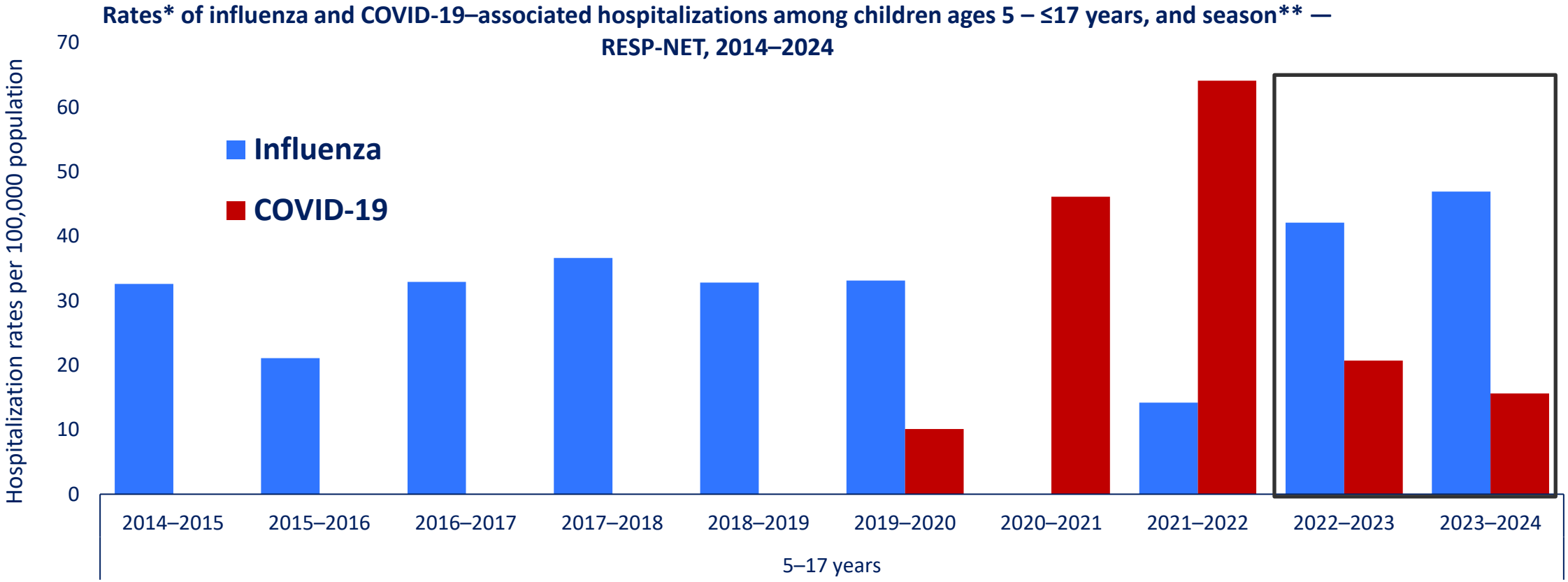
Historical flu data from https://www.cdc.gov/flu-burden/php/data-vis/past-seasons.html. Historical flu data are not available for the 2020–2021 period.

RESP-NET

Among children aged 5–17 years, COVID-19–associated hospitalization rates during the 22–23 and 23–24 seasons were lower than those due to influenza.



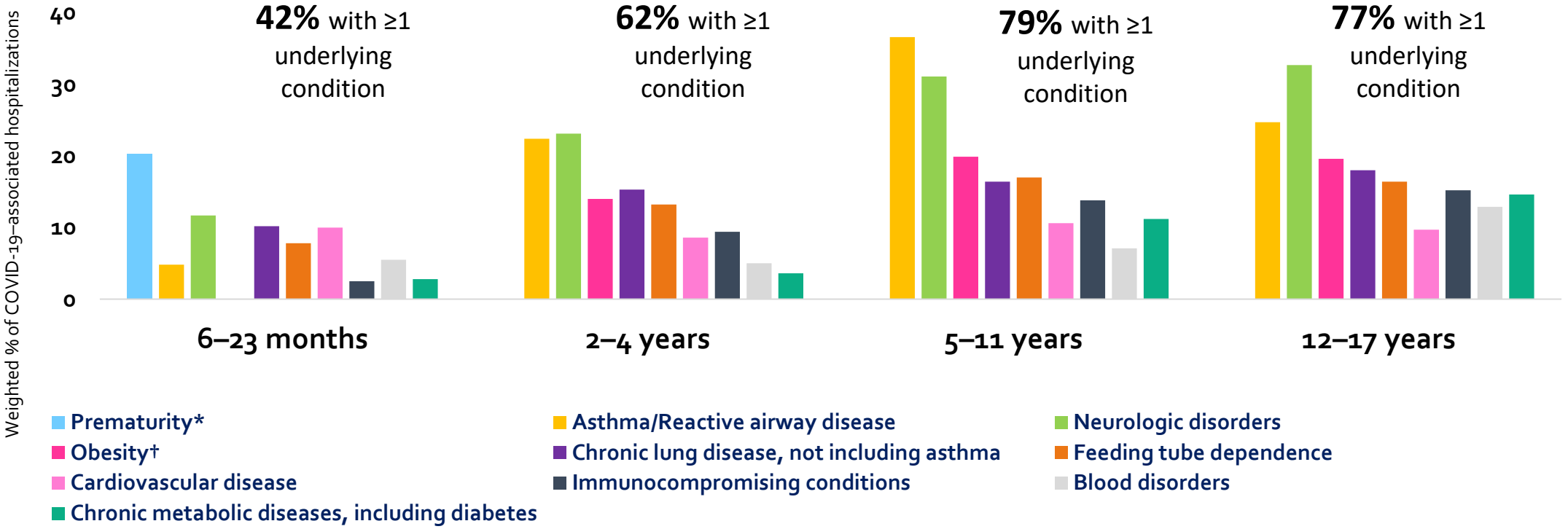
** Note that rates of influenza hospitalizations are adjusted for undertesting and under-detection. Rates of COVID-19 hospitalizations are not adjusted for undertesting or under-detection. Rates of COVID-19 hospitalization might be higher when adjusted for these factors.*

*** Monitoring for influenza hospitalizations typically occurs during October through April; for COVID-19 hospitalizations, monitoring begins in October and is conducted year-round. For the 2019–2020 period, monitoring for COVID-19 hospitalizations began in March 2020.*

Historical flu data from https://www.cdc.gov/flu-burden/php/data-vis/past-seasons.html. Historical flu data are not available for the 2020–2021 period.

RESP-NET

During October 2022–April 2024, more older children hospitalized with COVID-19 had underlying medical conditions compared with younger age groups.

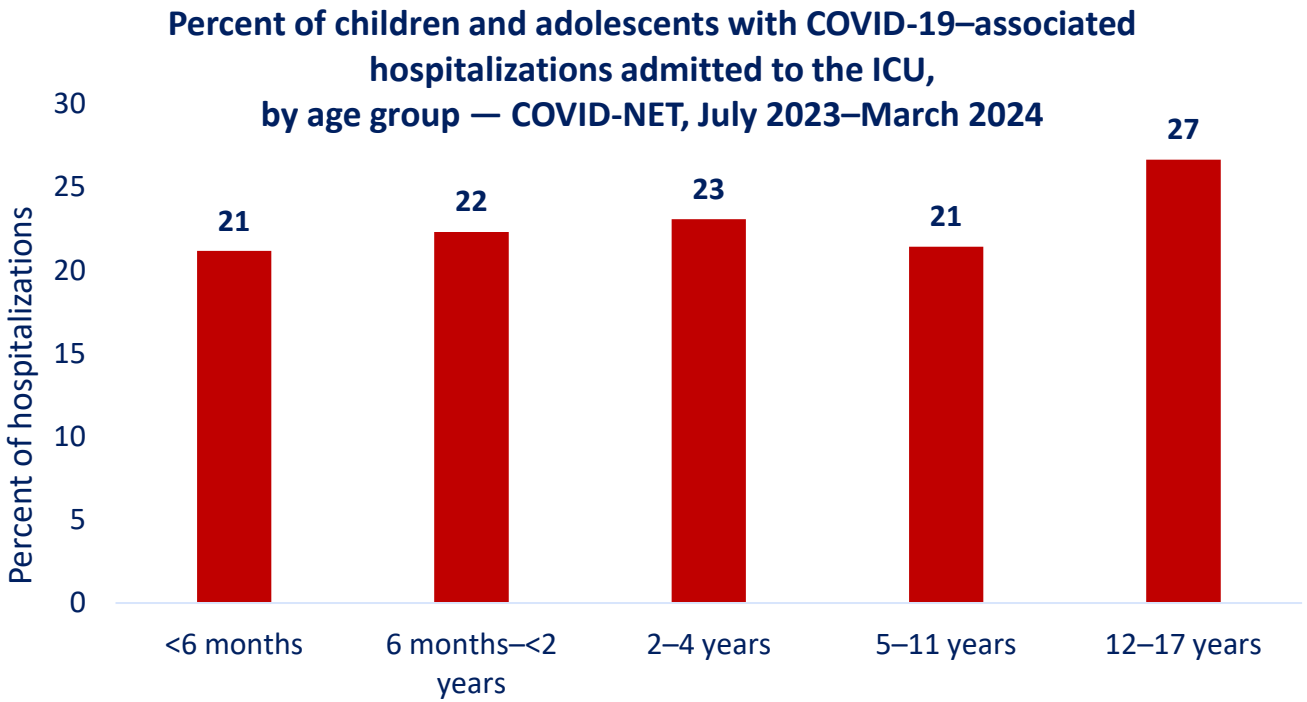


Among children and adolescents ages 6 months–17 years hospitalized with COVID-19, 59% had ≥1 underlying condition.

* Prematurity is only assessed for children aged <2 years. †Obesity is not calculated for children aged <2 years. Data are limited to hospitalizations with COVID-19 as the likely reason for admission. Source: Pre-publication analysis from Rebecca Free and presented at IDWeek 2024. Data reflect the period of October 1, 2022–April 30, 2024.

COVID-NET

~1 in 5 children and adolescents with COVID-19–associated hospitalization are admitted to the intensive care unit (ICU)



Age category	Among those admitted to ICU, % with no underlying conditions
<6 months	56%
6–23 months	52%
2–4 years	30%
5–11 years	6%
12–17 years	24%

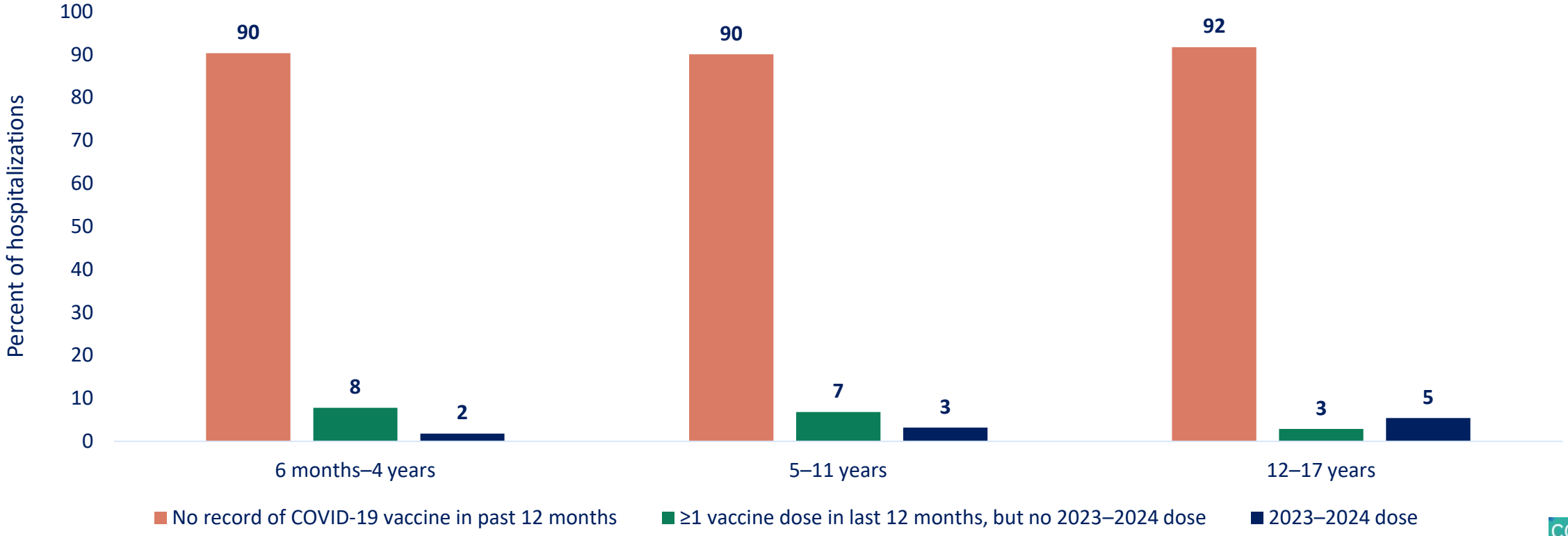
During this period, 7 children with COVID-19–associated hospitalization died in-hospital in the COVID-NET catchment area.

41% of children admitted to the ICU had no underlying conditions, but this varied by age group

Hospitalizations are limited to those with COVID-19 as the presenting complaint upon admission.

Fewer than 5% of children and adolescents eligible to received COVID-19 vaccinations and hospitalized with COVID-19 received the most recently recommended COVID-19 vaccination.

Vaccination status among children and adolescents with COVID-19–associated hospitalizations, by age group — COVID-NET, October 2023–September 2024



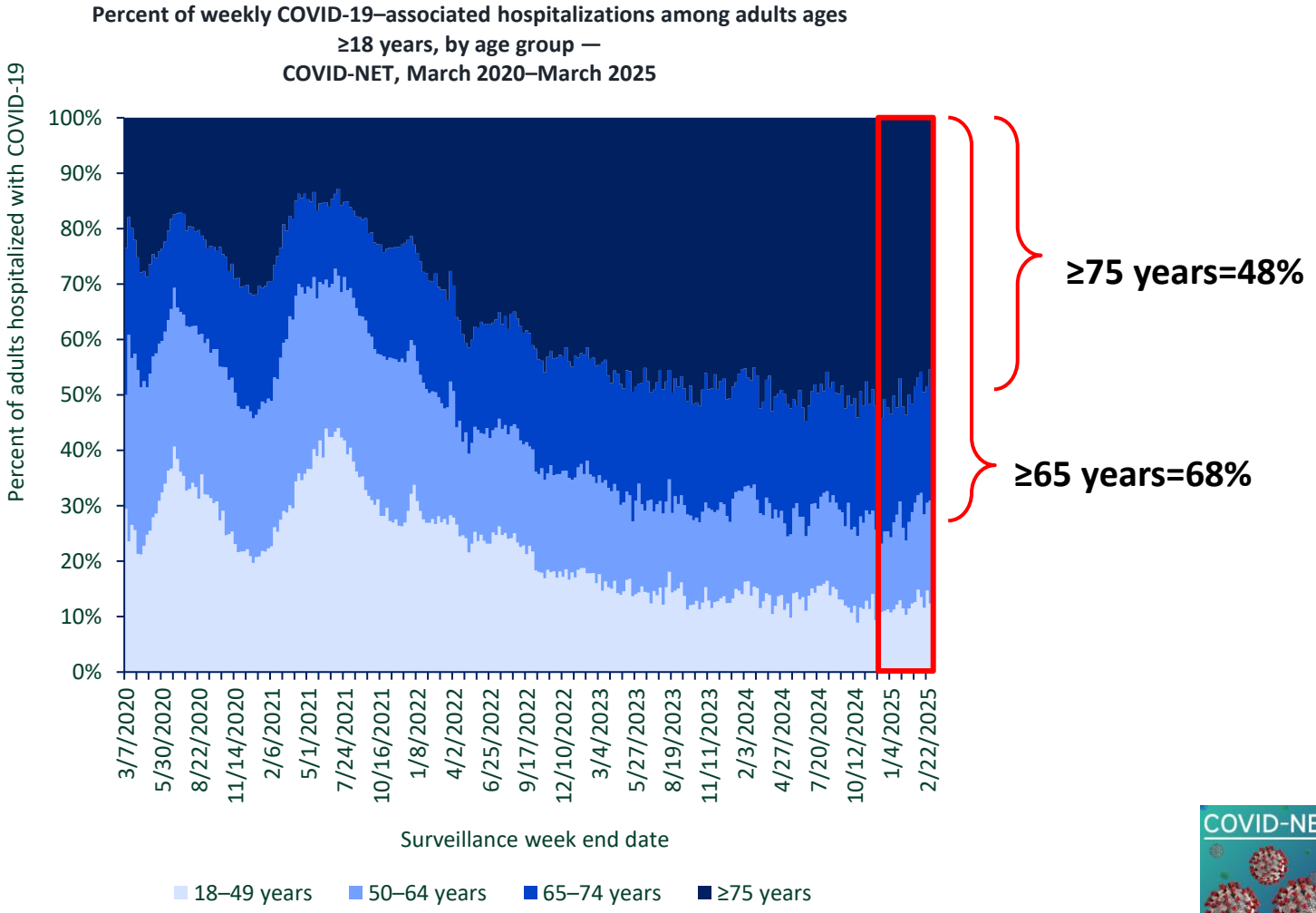
No record of COVID-19 dose in past 12 months*: No recorded doses of any COVID-19 vaccine dose in the 12 months preceding hospitalization****. ≥1 vaccine dose in last 12 months, but no 2023–2024 dose:*** *Received at least one COVID-19 bivalent booster vaccination in the 12 months preceding hospitalizations, but no record of receiving 2023-2024 vaccine dose.* ***2023–2024 vaccine dose:*** *Received 2023-2024 vaccine dose. Persons with unknown vaccination status are excluded. Hospitalizations are limited to those with COVID-19 as the presenting complaint upon admission.*

Summary (Children and Adolescents)

- Rates of COVID-19–associated hospitalizations are highest among youngest age groups.
- Among children and adolescents ages 5–17 years, rates of hospitalization are higher for influenza than COVID-19.
- More than half (59%) of children and adolescents hospitalized with COVID-19 had ≥1 underlying medical condition.
  - Proportion of children with ≥1 underlying condition increased with age.
- Most common underlying conditions among children and adolescents hospitalized with COVID-19 varied by age group.
- Fewer than 5% of children and adolescents hospitalized with COVID-19 had received the most recently recommended COVID-19 vaccination during the 23-24 season.

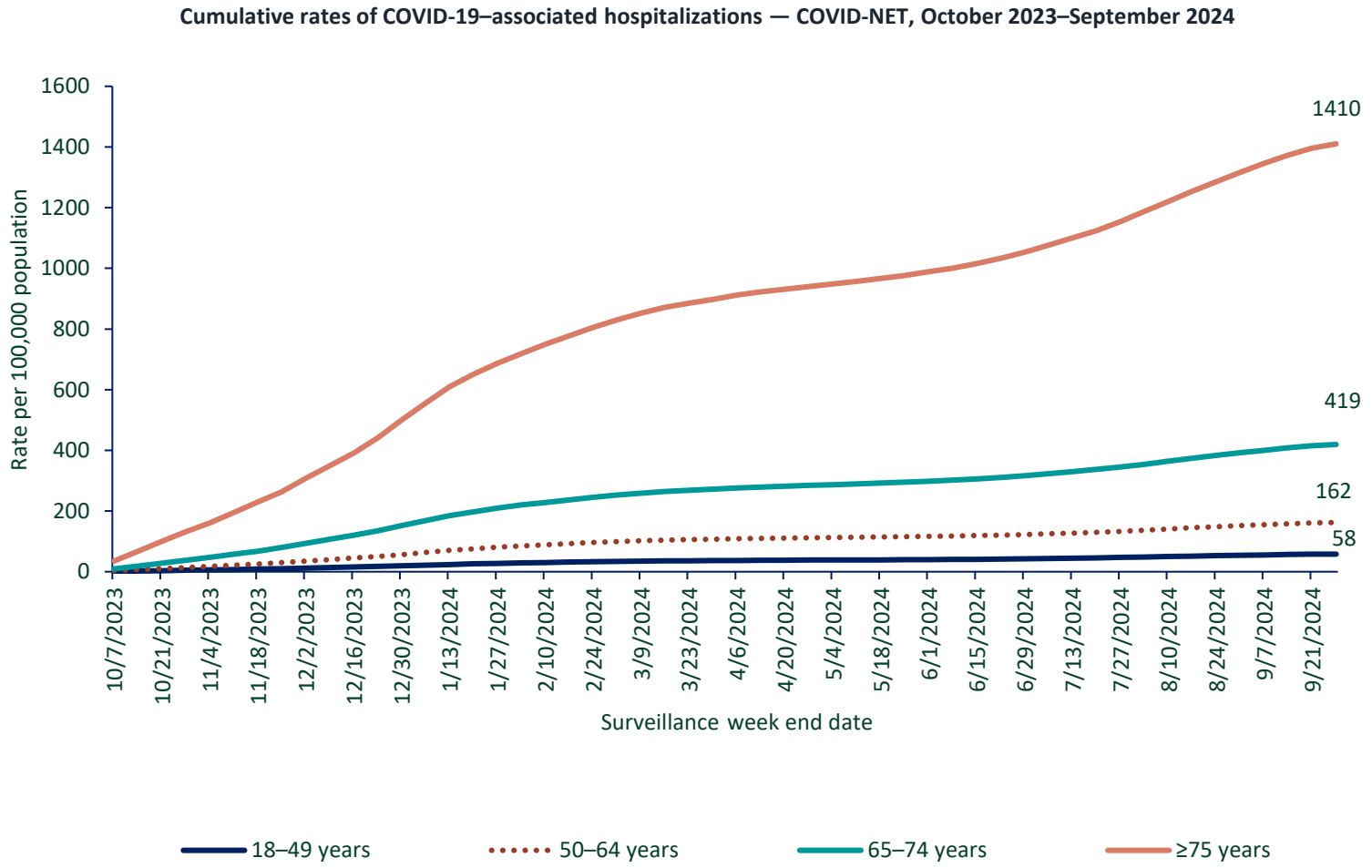
COVID-19–Associated Hospitalizations Among Adults Ages ≥18 Years

Adults ages ≥65 years comprise more than 2/3 of all COVID-19–associated hospitalizations among adults.



During this same period of January 2024 through March 2025, children and adolescents ages 17 years and younger comprised 4% of all COVID-19-associated hospitalizations.

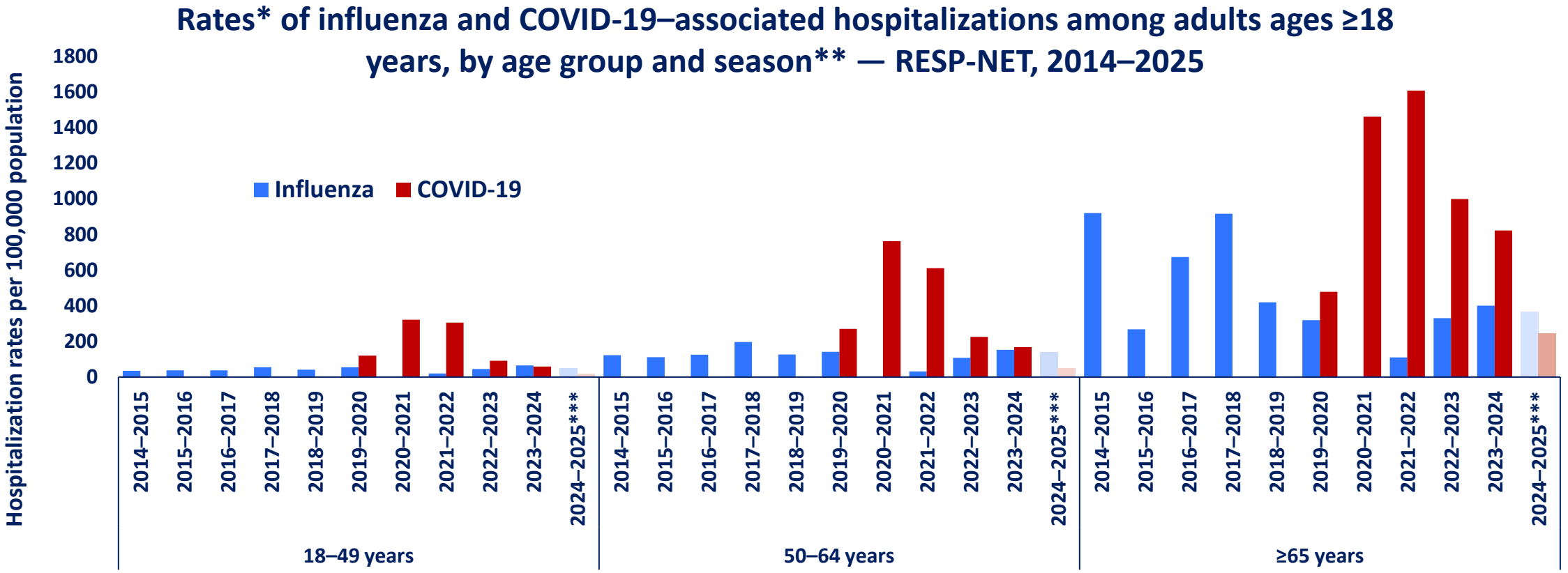
Among adults, rates of COVID-19–associated hospitalizations increase with age.



Age group	Rate ratio of ≥75 years relative to adult age groups
18–49	24.4
50–64	8.7
65–74	3.4

Rates among adults ages ≥75 years are many times higher compared to younger adults.

Among adults ages ≥65 years, rates of COVID-19–associated hospitalization during recent years remained higher than rates of influenza–associated hospitalization.



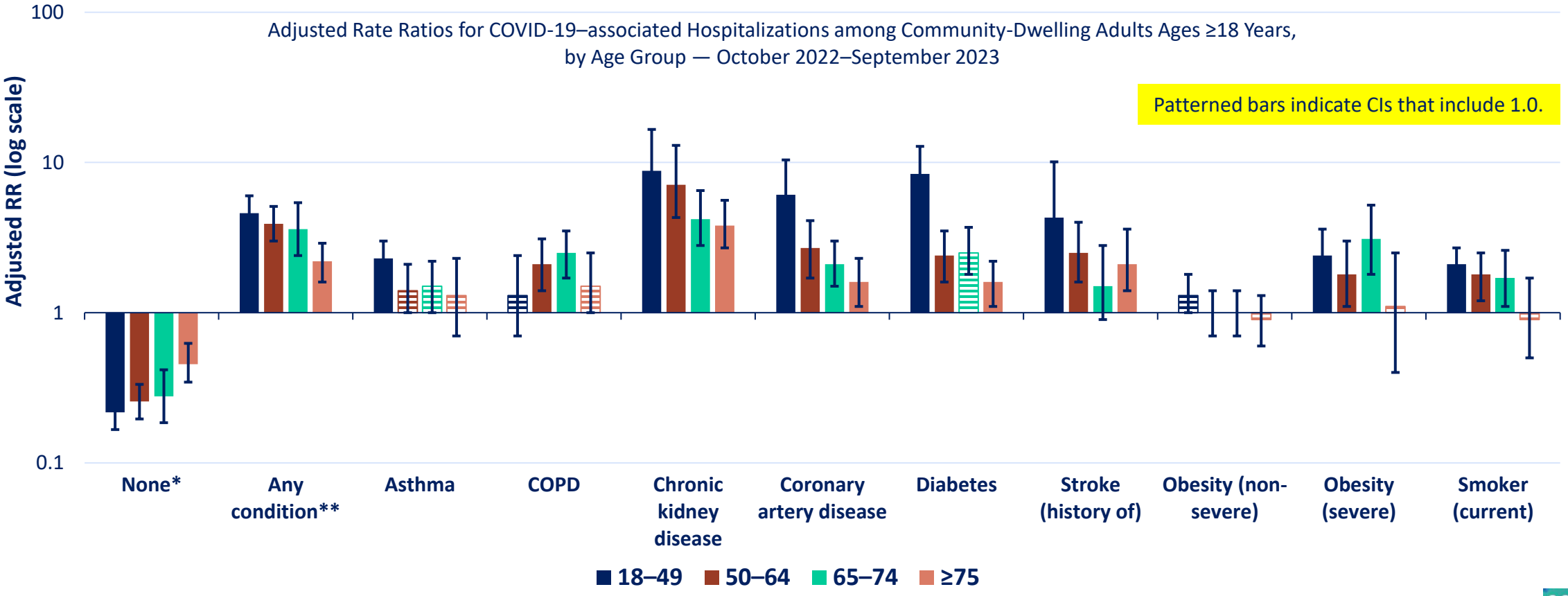
** Note that rates of influenza hospitalization for 2014–2015 through 2023–2024 are adjusted for undertesting and under-detection. Rates of influenza hospitalizations for 2024–2025 (shown in lighter colors) and all COVID-19 hospitalizations are not adjusted for undertesting or under-detection. Rates of hospitalization might be higher when adjusted for these factors.*

*** Monitoring for influenza hospitalizations typically occurs during October through April; for COVID-19 hospitalizations, monitoring begins in October and is conducted year-round. For the 2019–2020 period, monitoring for COVID-19 hospitalizations began in March 2020.*

**** Data for 2024-2025 show data for October 2024 – March 2025 only as the season is ongoing.*

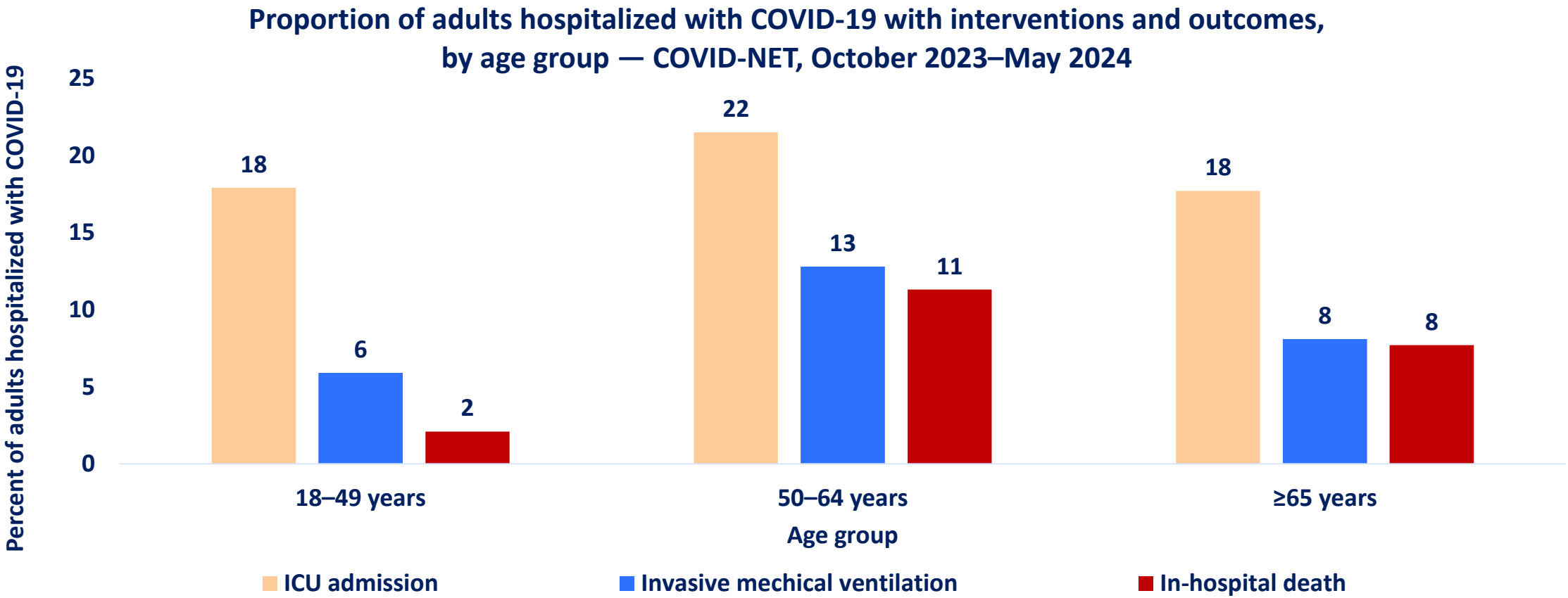
Historical flu data from https://www.cdc.gov/flu-burden/php/data-vis/past-seasons.html. Historical flu data are not available for the 2020–2021 period.

Risk for COVID-19–associated hospitalization is increased among community-dwelling adults ages ≥18 years with underlying medical conditions.



Abbreviations: RR, rate ratio; CI, confidence interval; COPD, chronic obstructive pulmonary disease.
* "None" refers to having none of the conditions examined in this analysis (asthma, COPD, diabetes, chronic kidney disease, coronary artery disease, stroke, severe obesity, and current smoking).
** "Any condition" refers to having at least 1 of these conditions. Notes: Non-severe obesity is defined as BMI 30–39kg/m². Severe obesity is defined as BMI ≥40kg/m². "Any condition" includes asthma, COPD, diabetes, chronic kidney disease, coronary artery disease, stroke, severe obesity, and current smoking. Rate ratios were estimated using multivariable Poisson models adjusted for sex, and race/ethnicity. "Smoker (current)" Includes people who quit smoking within the past 12 months. Data are limited to hospitalizations where COVID-19 is the likely reason for admission.

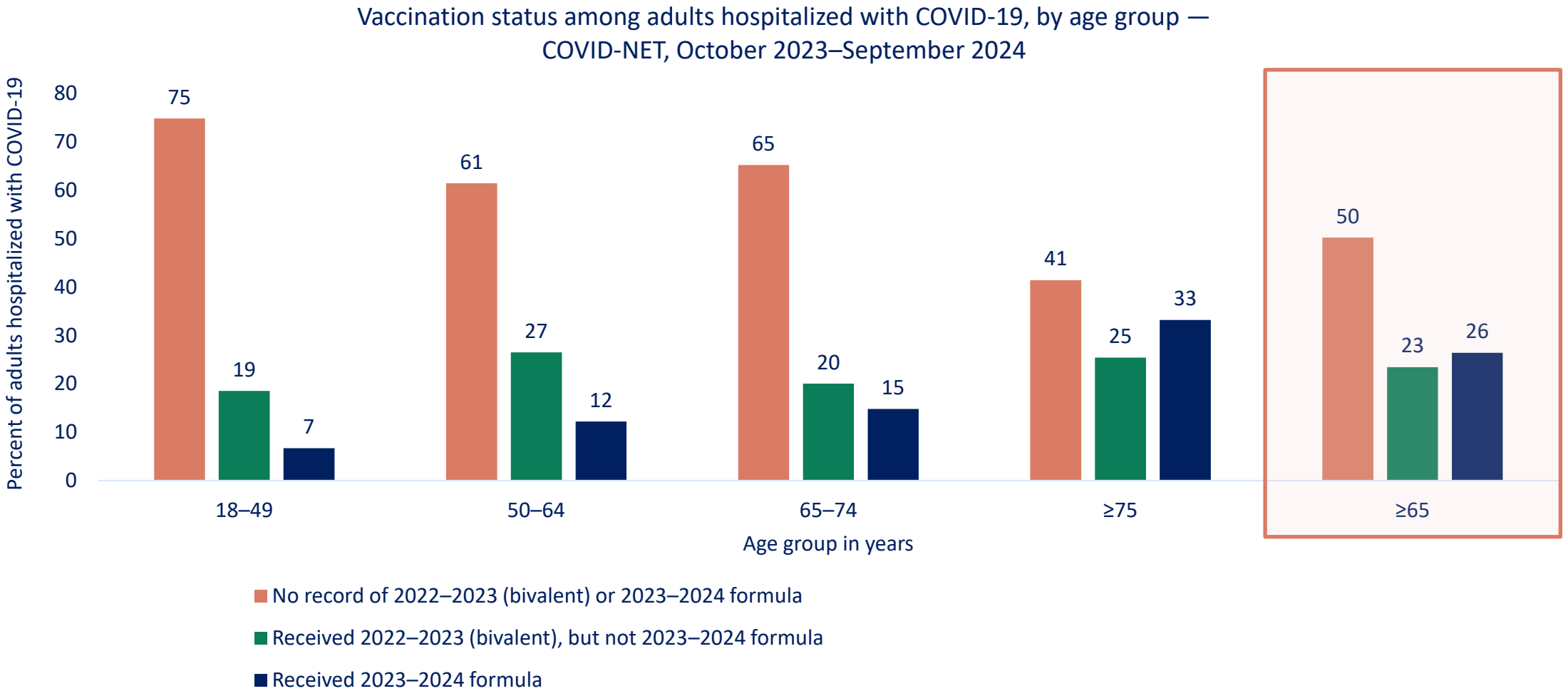
~1 in 5 adults hospitalized due to COVID-19 were admitted to the intensive care unit (ICU)



During this period, 80% of all adults hospitalized with COVID-19 who died in-hospital were ages ≥65 years.

Data are limited to hospitalizations where COVID-19 is a likely primary reason for admission. Deaths do not include other COVID-19-related deaths that might occur after a patient is discharged to hospice or other deaths that occur soon after hospital discharge that could be attributable to COVID-19-related illness.

Most adults hospitalized with COVID-19 had received no COVID-19 vaccine since September 2022.

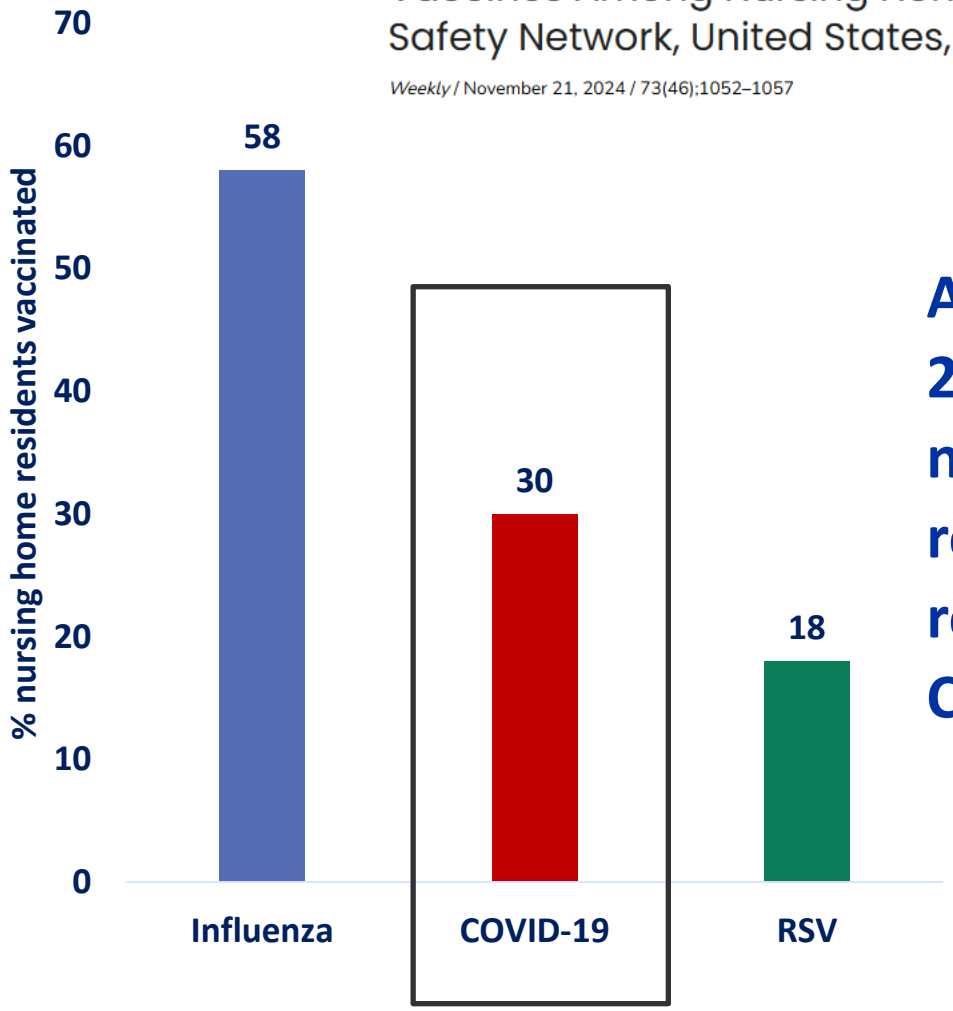


Data are limited to hospitalizations where COVID-19 is a likely primary reason for admission.

Morbidity and Mortality Weekly Report (*MMWR*) Search

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

Weekly / November 21, 2024 / 73(46);1052–1057



As of November 30, 2024, only 30% of nursing home residents had received a 2024–2025 COVID-19 vaccine.

* As of December 10, 2024. Reses et al. "Coverage with Influenza, Respiratory Syncytial Virus, and Updated COVID-19 Vaccines Among Nursing Home Residents - National Healthcare Safety Network, United States, November 2024". *MMWR,* November 21, 2024.

Summary (Adults) (slide 1 of 2)

- Rates of COVID-19–associated hospitalizations are highest among oldest adult age groups.
- Adults aged ≥65 years comprise 68% of adult COVID-19–associated hospitalizations
  - Aged ≥75 years: 48% of adult hospitalizations
- COVID-19-associated hospitalization rates decreased over time, but cumulative rates among adults aged ≥75 years for the 2023-2024 season remained higher than those experienced by any other adult age group for any previous season.
- Risk of hospitalization with COVID-19 remains during summer months (May–Sept).
- 26% of adults ages ≥65 years hospitalized with COVID-19 received the recommended 2023-24 COVID-19 vaccine prior to hospitalization.

Summary (Adults) (slide 2 of 2)

- Some underlying medical conditions increase the risk for COVID-19 hospitalization among adults
  - CKD, diabetes, and CAD increased risk in all adult age groups
- Having none of the underlying medical conditions examined decreased the risk for COVID-19–associated hospitalization across all adult age groups.
- In general, the relative risk of COVID-19 hospitalization among adults with vs. without select conditions declined with age for most, but not all, conditions examined.

Abbreviations: CKD: chronic kidney disease; CAD: coronary artery disease; COPD: chronic obstructive pulmonary disease.