

2023-2024 Influenza Hospitalization Report

Background

Since 2003, the Oregon Emerging Infections Program (EIP) has conducted surveillance for pediatric influenza hospitalizations in collaboration with the Centers for Disease Control and Prevention (CDC) Influenza-Associated Hospitalization Surveillance Network (FluSurv-NET). Surveillance for adult influenza-associated hospitalizations was added in 2005.

The objectives of EIP FluSurv-NET surveillance are:

- To estimate age-, race-, and ethnicity-specific hospitalization rates
- To describe temporal trends of laboratory-confirmed influenza hospitalization
- To describe characteristics of persons hospitalized with influenza
- To describe clinical features and the course of influenza disease among persons hospitalized with influenza

In Oregon, the EIP surveillance area for influenza hospitalizations comprises the Portland tri-county area (Clackamas, Multnomah, and Washington counties) with its 2021 population of 1,811,736¹, which is approximately 43% of the population of Oregon.

This report summarizes FluSurv-NET surveillance in Oregon during the 2023–2024 season (October 1, 2023–September 30, 2024)².

Methods

Cases are defined as laboratory-confirmed influenza hospitalizations among residents of the EIP surveillance area who test positive for influenza within 14 days before admission or 3 days after admission. Cases are reported by hospitals in the tri-county area. Medical records are reviewed by trained personnel, who use the EIP case-report form to collect standardized data regarding demographic characteristics, clinical manifestations, underlying conditions, and outcomes.

Surveillance Results

During October 1, 2023–September 30, 2024, 734 influenza-related hospitalizations were reported in Oregon’s EIP surveillance area—684 adult (≥ 18 years) cases and 50 pediatric (< 18 years) cases. This represents a crude rate of 40.5 cases per 100,000 residents.

Table 1 shows the sex, age, ethnicity, and race of Oregon EIP FluSurv-NET cases in the 2023-2024 season. The median age of hospitalized cases was 64 years (range, 1 months–101 years). 49.2% of hospitalizations occurred in persons aged 65 years and older, 52.0% of cases were female, and 70.2% of cases identified as Non-Hispanic White.

Table 1. Characteristics of Oregon EIP FluSurv-NET hospitalization cases, 2023–2024

Case Characteristics		n = 734 (%)
Sex	Male	352 (48.0%)
	Female	382 (52.0%)
Age	<6 months	4 (0.5%)
	6-23 months	9 (1.2%)
	24-59 months	7 (1.0%)
	5-10 years	19 (2.6%)
	11-17 years	11 (1.5%)
	18-49 years	137 (18.7%)
	50-64 years	186 (25.3%)
	65+ years	361 (49.2%)
Race	Hispanic	57 (7.8%)
	White, Non-Hispanic	515 (70.2%)
	Black, Non-Hispanic	51 (6.9%)
	Asian	31 (4.2%)
	American Indian/Alaska Native	11 (1.5%)
	Native Hawaiian or other Pacific Islander	8 (1.1%)
	Multiple Races	0 (0.0%)
	Unknown	61 (8.3%)

Table 2 shows the number and rates¹ of Oregon EIP FluSurv-NET hospitalizations by age group during the 2023–2024 season.

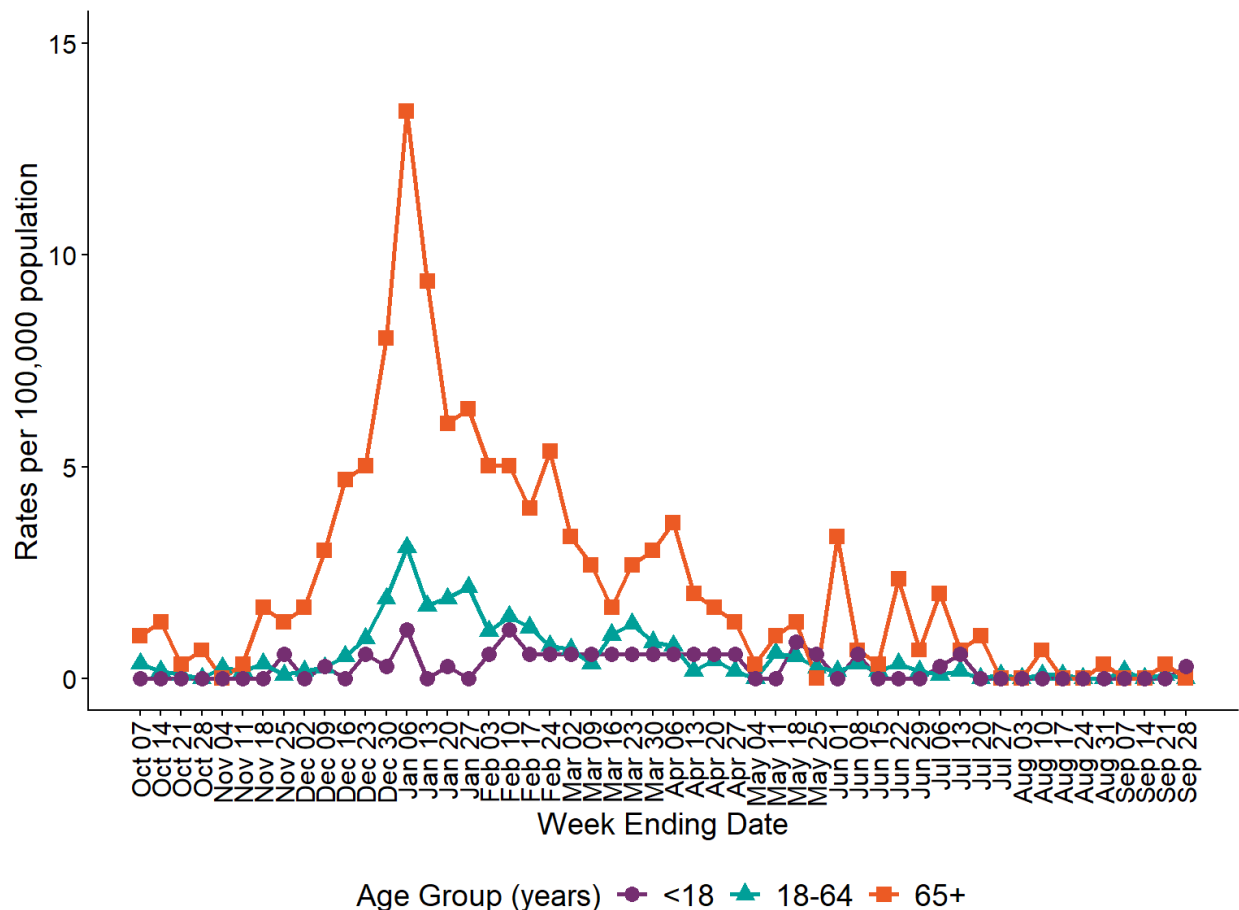
Table 2. 2023–2024 Oregon EIP FluSurv-NET hospitalization rates by age group

Age Group (years)	n = 734	Rates per 100,000 people
0-4	20	23.3
5-17	30	11.4
18-49	137	16.4
50-64	186	57.0
65+	361	120.9

Figure 1 shows the distribution of Oregon EIP FluSurv-NET hospitalization rates¹ by age group during the influenza season. The peak of influenza-associated hospitalizations occurred during MMWR week 1 of 2023 (December 31, 2023–January 06, 2024). The first case was reported during MMWR week 40 (October 01, 2023–October 07, 2023), and the last case was reported during MMWR week 39 (September 22, 2024–September 28, 2024).

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Figure 1. Rates of Oregon EIP FluSurv-NET hospitalizations, by age, 2023–2024



38 pediatric cases and 684 adult cases were admitted between October 1, 2023–September 30, 2024. All pediatric cases and 119 out of 684 adults admitted between October 1, 2023–April 30, 2024 were sampled for medical chart review. Medical-record review was not conducted for cases admitted between May 1, 2023 - September 30, 2024.

Table 3 shows selected outcomes and underlying medical conditions for pediatric cases. 50.0% of pediatric cases had an underlying medical condition. The most frequently reported underlying medical conditions among pediatric cases were asthma (28.9%) and neurologic disease (15.8%).

Table 3. Selected outcomes and underlying medical conditions for pediatric Oregon EIP FluSurv-NET cases, 2023–2024

Outcomes and underlying medical conditions		n = 38 (Weighted %)*
Treatment and intervention	ICU admission	8 (21.1%)
	Mechanical ventilation	0 (0%)
	Treated with antivirals [†]	22 (57.9%)
Condition [‡]	Asthma	11 (28.9%)
	Autoimmune disease	0 (0%)
	Blood disorders	0 (0%)
	Cardiovascular disease	1 (2.6%)
	Chronic lung disease	3 (7.9%)
	Chronic metabolic disease	2 (5.3%)
	Gastrointestinal/liver disease	0 (0%)
	Hypertension	0 (0%)
	Immunosuppression	0 (0%)
	Neurologic disease	6 (15.8%)
	Obese [§]	4 (10.5%)
	Pregnancy	0 (0%)
	Renal disease	0 (0%)
Vaccine status	Yes	6 (15.8%)
	No	32 (84.2%)
	Unknown	0 (0%)

*Data are reported as raw counts among sampled cases with weighted percents calculated based on sampling scheme.

[†] Treated with antivirals defined as antiviral treatment during the course of illness.

[‡]Cases may have more than one underlying condition; categories are not mutually exclusive.

[§] Children 2 to 17 y old were classified as having obesity if they had BMI (kg/m²) ≥95th percentile for age and sex on the basis of CDC growth charts, International Classification of Diseases-10 codes for obesity in the electronic medical record, or obesity selected on the case report form.

|| Unweighted percentage. Total number of females ≥ 15 -17 years of age (n=3)

Table 4 shows selected outcomes and underlying medical conditions for adult cases. 96.6% of adult cases had at least one underlying medical condition prior to admission. The most frequently reported underlying medical conditions among adults were hypertension (57.1%) and cardiovascular disease (53%).

Table 4. Selected outcomes and underlying medical conditions for adult Oregon EIP FluSurv-NET cases, 2023–2024

Outcomes and underlying medical conditions		n = 119 (Weighted %)*
Treatment and intervention	ICU admission	27 (13.2%)
	Mechanical ventilation	8 (1.4%)
	Treated with antivirals [†]	103 (89.5%)
Condition ^{†1}	Asthma	15 (11.3%)
	Autoimmune disease	4 (3.6%)
	Blood disorders	7 (5.8%)
	Cardiovascular disease	68 (53%)
	Chronic lung disease	39 (32.2%)
	Chronic metabolic disease	54 (45.2%)
	Gastrointestinal/liver disease	12 (11%)
	Hypertension	75 (57.1%)
	Immunosuppression	21 (20.1%)
	Neurologic disease	21 (14.9%)
	Obese [§]	42 (40.9%)
	Pregnancy	1 (1.1%)
Vaccine status	Renal disease	17 (11.3%)
	Yes	39 (32.1%)
	No	80 (67.3%)
	Unknown	1 (1.7%)

*Data are reported as raw counts among sampled cases with weighted percents calculated based on sampling scheme.

† Treated with antivirals defined as antiviral treatment during the course of illness.

†1 Cases may have more than one underlying condition; categories are not mutually exclusive.

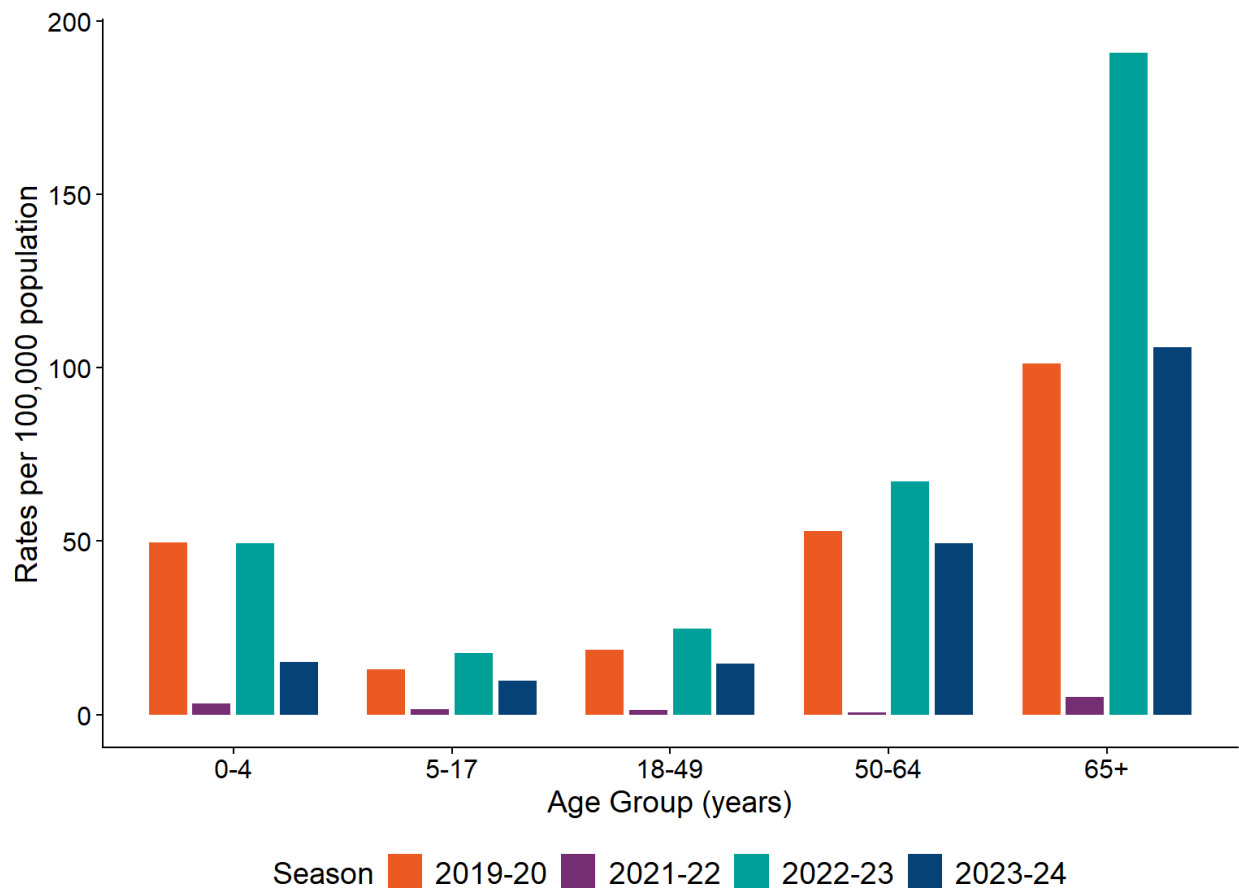
§ Obesity among children aged 2 years and older defined as body mass index (BMI) ≥ 30 , calculated using height and weight if known; otherwise, as indicated in medical record.

|| Unweighted percentage. Total number of females ≥ 18 -49 years of age (n=89)

Among all individuals hospitalized for influenza during the 2023-2024 season, 26 (3.5%) died during their hospitalization. All deaths were among adults (3.8% of all influenza-associated adult hospitalizations).

Figure 2 displays rates³ of influenza-associated hospitalizations by age group and season, 2019–2024. During the 2023–2024 season, the highest rate of hospitalization occurred among persons 65 years and older, at 120.9 cases per 100,000 population, followed by persons 50–64 years of age, at 57 cases per 100,000 population. The overall influenza hospitalization rate for the 2022–2023 season was 40.5 cases per 100,000 population.

Figure 2. Rates of Oregon EIP influenza-associated hospitalizations by age group and year, 2019–2024



2020-2021 season data not included due to minimal detections

Figure 3 shows cumulative rates of influenza-associated hospitalizations by race and ethnicity⁴ for pediatric cases during the 2023–2024 season; the highest rate occurred among the Black, Non-Hispanic population, at 27 cases per 100,000 people followed by Hispanics at 20.7 cases per 100,000 people.

Figure 3. Cumulative rates of Oregon EIP influenza-associated hospitalizations by race and ethnicity among children, 2023–2024

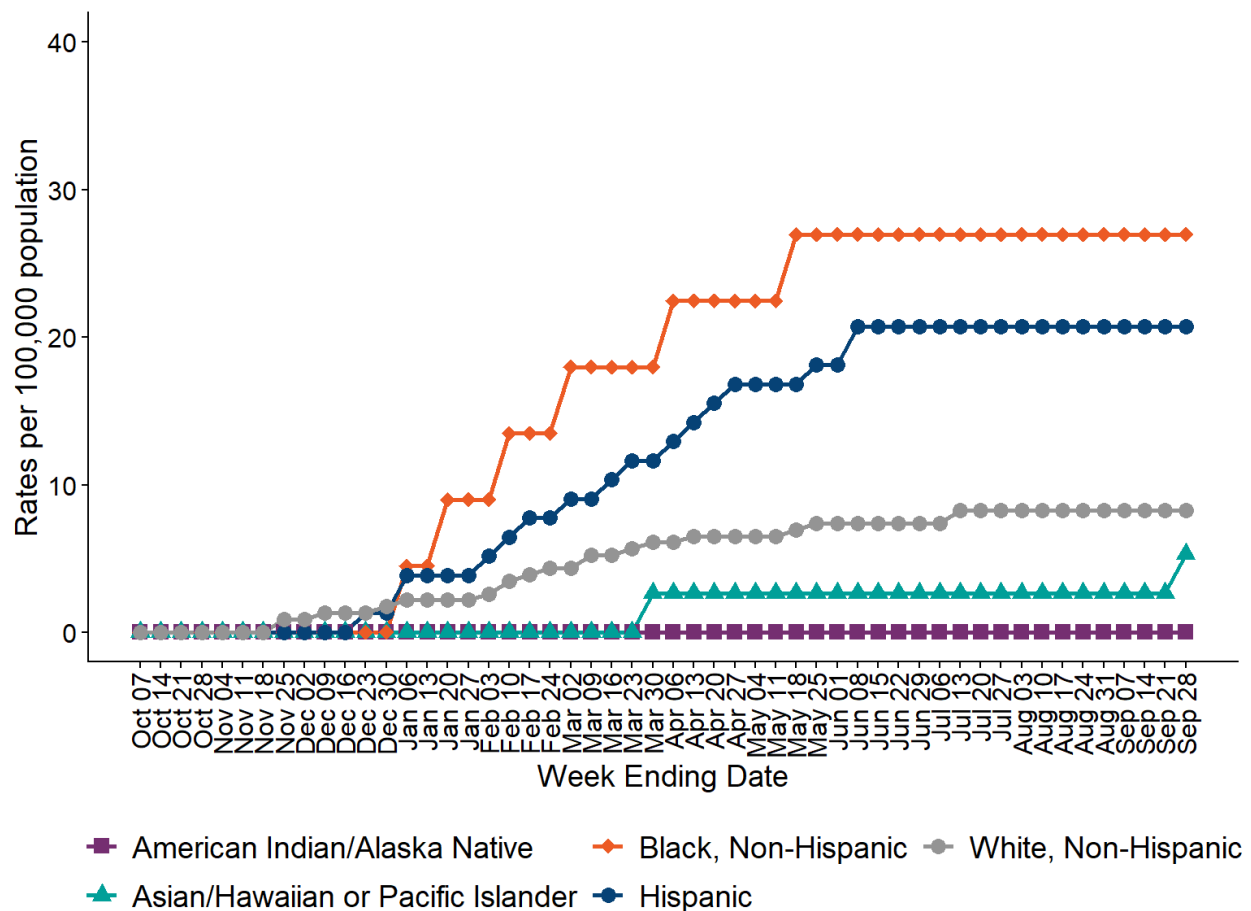


Figure 4 displays age-adjusted cumulative rates of influenza-associated hospitalization by race and ethnicity⁴ among adults during the 2023–2024 season. The highest rate occurred among the American Indian/Alaska Native population, at 112.9 cases per 100,000 people followed by Black, Non-Hispanics at 98.9 cases per 100,000 people.

Figure 4. Age-adjusted cumulative rates of Oregon EIP influenza-associated hospitalizations by race and ethnicity among adults, 2023–2024

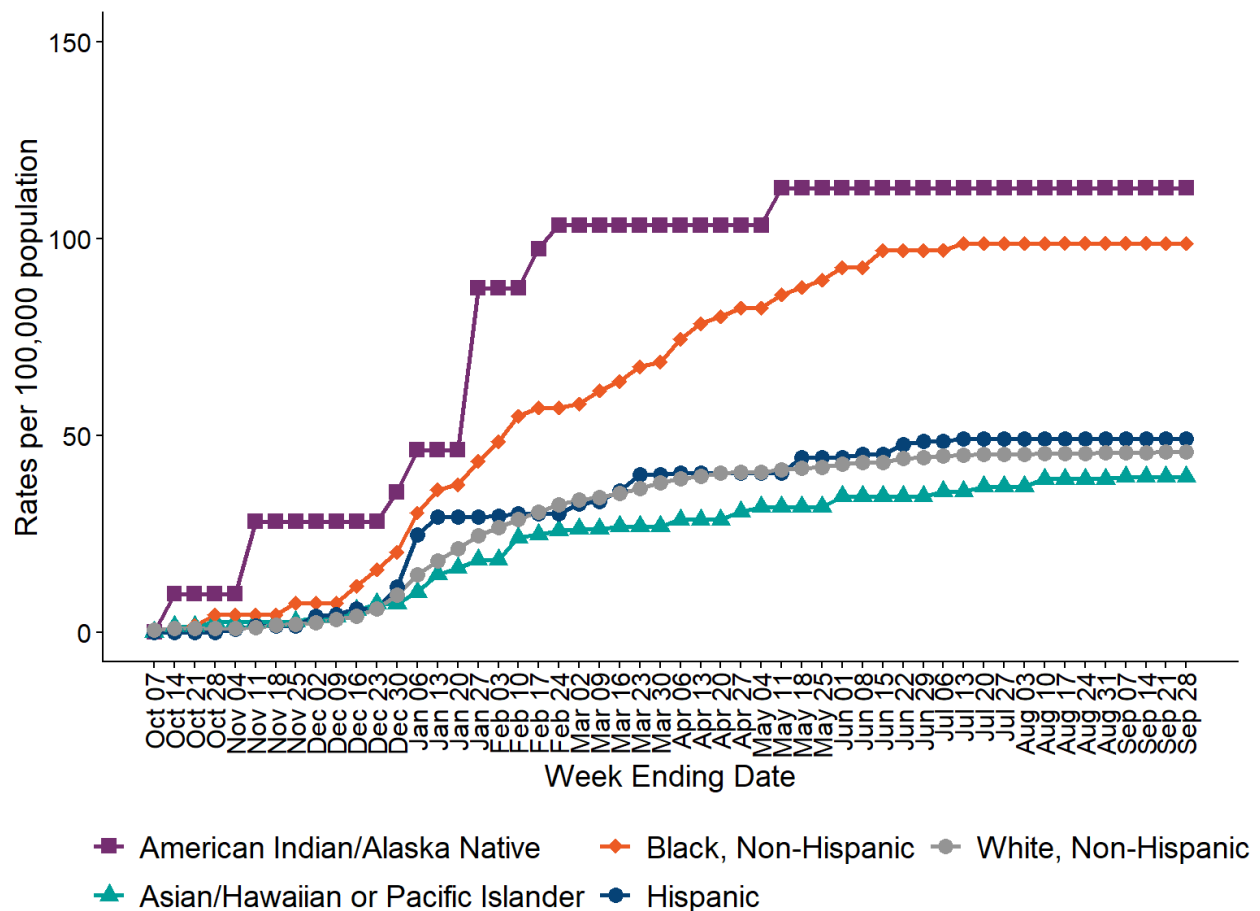


Table 5 shows the frequency of virus types and subtypes detected among Oregon EIP FluSurv-NET cases. The primary subtype during the 2023–2024 season was influenza A 2009 H1N1, Influenza B, No Subtype.

Table 5. Influenza virus types and subtypes among Oregon EIP FluSurv-NET cases, 2023–2024.

Virus		n = 734 (%)
Influenza A	2009 H1N1	68 (9.3%)
	H3N2	54 (7.4%)
	Influenza A, No Subtype	571 (77.8%)
Influenza B	Influenza B, No Subtype	37 (5.0%)
	Victoria Lineage	4 (0.5%)

Influenza-Associated Pediatric Mortality

During the 2023–2024 influenza season there were 0 reported cases of influenza-associated pediatric mortality in Oregon. More information on influenza-associated pediatric mortality is available from the [CDC](https://www.cdc.gov).

Footnotes

1. U.S. Census Bureau. 2023 Annual Oregon County Resident Population Estimates by Selected Age Groups and Sex. Data available from <https://www.census.gov/data/tables/time-series/demo/popest/2020s-counties-detail.html>.
2. The influenza season traditionally runs from October 1 to April 30 of each season but was extended to September 30, 2025 for the 2024–2025 season.
3. Prepared under a collaborative arrangement with the U.S. Census Bureau and the Centers for Disease Control and Prevention (CDC). Data available from <https://gis.cdc.gov/GRASP/fluview/FluHospRates.html>.
4. National Center for Health Statistics. Vintage 2020 postcensal estimates of the resident population of the United States (April 1,

2010, July 1, 2010–July 1, 2020), by year, county, single-year of age [0, 1, 2, ..., 85 years and over], bridged race, Hispanic origin, and sex. Prepared under a collaborative arrangement with the U.S. Census Bureau. Available from: [/nchs/nvss/bridged_race.htm](https://nchs.nvss/bridged_race.htm) as of September 22, 2021, following release by the U.S. Census Bureau of the unbridged Vintage 2020 postcensal estimates by 5-year age group on June 17, 2021.