

2022-2023 Influenza Surveillance Seasonal Summary Report

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Key Summary Statistics for the 2022-2023 Season*

Measure	High (MMWR week)	Low (MMWR week)	Average per Week
ILI activity	4.5% (47)	0.6% (14)	1.7%
Hospitalizations	55 (48)	0 (7 weeks)	11
Deaths	6 (50)	0 (24 weeks)	0.76
PIC	12% (01)	0.9% (19)	5.5%
ILI ED/UC Visits	12.3% (48)	1.2% (19)	4.3%
RSV	263 (48)	0 (20)	62
NSPHL Subtyping	28 (47)	0 (16 weeks)	4

*For definition and specifics on metrics summarized, please refer to corresponding sections.

2022-2023 Influenza Surveillance Season Summary

Influenza-like-illness (ILI) activity increased progressively from the first official week of the influenza season, week 40 (Oct. 2- Oct. 8), through week 47 (Nov. 20-Nov. 26). Week 47 was the peak for ILI activity for the United States (7.5%), Region 9 (7.9%), Nevada (3.8%), and Washoe County (4.5%). From week 48 (Nov. 27-Dec. 3) to week 52 (Dec. 25- Dec. 31), ILI activity remained elevated nationally, statewide, and locally [Figure 1]. The 0-4-year-old age group represented the highest proportion of patients presenting with ILI in Washoe County throughout the 2022-2023 influenza season [Figure 4].

The Nevada State Public Health Laboratory (NSPHL) performs influenza sequencing and subtyping of specimens submitted for surveillance purposes. Specimens are primarily submitted by sentinel provider sites, however all typed specimens regardless of submitting site are included in the weekly and end of season reports. Among the 126 Washoe County specimens sequenced by NSPHL during the 2022-2023 season, most were influenza A (97.6%, n=123) and among those subtyped, 33.3% were influenza A (H3N2) (n=42) [Table 1, Figure 5].

There were 348 influenza related hospitalizations reported during the 2022-2023 influenza season among Washoe County residents [Table 2]. The majority (98.9%) of

hospitalized cases were identified as having influenza type A and 1.1% were identified as having influenza type B [Figure 9]. Of hospitalized cases, the highest rate of hospitalization per 100,000 persons was among the >65-year age group at 206.8 and the lowest rate was among the 5-24-year age group at 32.7 [Figure 8]. Hospitalization increases during the 2022-2023 season occurred earlier compared to the previous six seasons, with a sharp increase between weeks 46-52 (Nov. 13- Dec. 31) followed by a steady plateau thereafter [Figure 7 & Figure 9]. During the peak, there were 291 hospitalizations among Washoe County residents [Figure 7]. The 2022-2023 season had the highest cumulative hospitalization rate compared to the four most recent seasons (2018-2019, 2019-2020, 2020-2021, 2021-2022) [Figure 7]. Of hospitalized cases, 18.1% were admitted to the ICU and 5.5% died. Only 25.3% were vaccinated with a seasonal flu vaccine [Table 2]. Of the unvaccinated hospitalized cases, 2.7% were under the age of six months and too young to receive the vaccine and 41.9% were over 65-years of age and were considered high risk for developing serious flu-related complications. Additionally, of the unvaccinated hospitalized cases, 79.6% had at least one documented underlying medical condition that contributed to an increased risk for flu-related complications.

By the end of the 2022-2023 influenza season in Washoe County, there were a total of 221 pneumonia, influenza, and COVID-19 (PIC) deaths reported, representing 5.5% of all deaths occurring during this time period. PIC deaths peaked in week 1 (Jan. 1-Jan. 7), representing 12.0% of total reported deaths for that week [Figure 10]. Of note, 37.1% of the total PIC deaths reported listed COVID-19 as a contributing factor. There were 25 influenza related deaths reported this season, six of which were not hospitalized. Of the influenza deaths in the 2022-2023 season, only 40.0% were vaccinated with a seasonal flu vaccine and 96.0% had at least one documented underlying medical condition that contributes to an increased risk for flu-related complications. Ninety-six percent of influenza deaths were among persons diagnosed with influenza A. There were no pediatric deaths; ages of those who died ranged from 33 to 91-years of age, with an average of 73-years of age.

The total number of respiratory syncytial virus (RSV) cases reported during the 2022-2023 influenza season was 2,045, the most cases reported in the last 22 influenza seasons on record [Figure 11].

Discussion

The 2022-2023 influenza season was a continuation of atypical seasonal trends since the start of the COVID-19 pandemic. The 2022-2023 season saw distinctly more cases of respiratory illness (influenza and RSV) and earlier spikes in case numbers compared to past seasons. This increase was not unexpected as the season was driven by the dominant subtype being influenza A (H3N2), a trend shared with the 2017-2018 season, which had experienced high activity and an earlier spike in cases.

In the prior two seasons, the United States experienced extremely low incidence of influenza and RSV, which may have contributed to reduced population immunity.¹ Reduced immunity may be attributed to two major impacts of the COVID-19 pandemic: (1) lack of exposure and infection among young children during the pandemic of seasonal respiratory viruses in part due to reduced circulation of the viruses and (2) the drop in influenza vaccine coverage nationally among high-risk groups during the pandemic.^{1,2} Further, reduced nonpharmaceutical interventions starting in 2022 and less viral interference from COVID-19 infections may have also led to the increase in influenza infections.³

With changes in population infection trends, particularly for children who may not have had normal exposures to respiratory viruses in early age, it is possible to continue to see uncharacteristic circulation trends (e.g., RSV in older children) and atypical epidemic peaks (e.g., infections in summer months) in future years as it relates to respiratory illnesses.³ Future efforts in increasing vaccination coverage where there is a vaccine available and continued surveillance year-round will be necessary to track and detect these changes as they happen.

¹ CDC Reports Early Increases in Seasonal Flu Activity. Atlanta, GA: National Center for Immunization and Respiratory Diseases, CDC, Oct. 2022. Accessed April 2023 <https://www.cdc.gov/flu/spotlights/2022-2023/early-flu-activity.htm>

² Flu Vaccination Coverage Update. Atlanta, GA: National Center for Immunization and Respiratory Diseases, CDC, Jan. 2023. Accessed April 2023 <https://www.cdc.gov/flu/spotlights/2022-2023/flu-vaccine-update.htm>

³ Stein, R. T., & Zar, H. J. (2023). RSV through the Covid-19 pandemic: Burden, shifting epidemiology, and implications for the future. *Pediatric Pulmonology*, 1–9. <https://doi.org/10.1002/ppul.26370>

Weekly Summary & Changes from Previous Week

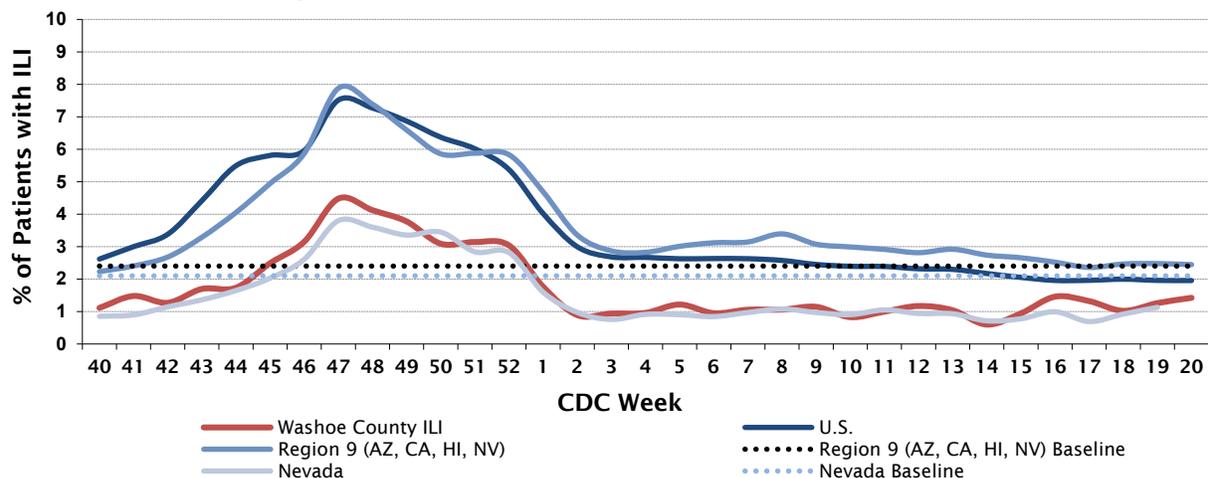
- Influenza-like-illness (ILI) activity: 1.4% (**increase from 1.3%**). Washoe County ILI remained below the Nevada and Region 9 baselines.
- Hospitalizations: 70.1 per 100,000 population (**no change**)
- Deaths: 25 reported, to date (**no change**)
- Pneumonia, Influenza, and COVID-19 (PIC) Mortality: 3.3% (**increase from 0.9%**)
- Syndromic surveillance: No aberrations detected.
- Respiratory Syncytial Virus: 0 cases (**decrease from 1**)

Influenza-like-illness

Influenza-like-illness (ILI) is defined as fever ($\geq 100^{\circ}\text{F}$ [37.8°C]) and cough and/or sore throat. ILI data is submitted weekly by inpatient and outpatient health services who have completed the onboarding process to be a sentinel surveillance provider.

- Out of 12 sentinel providers, 12 reported ILI activity.
- U.S. percentage of patients presenting with ILI was 2.0% (**no change**).
- Region 9 percentage of patients presenting with ILI was 2.4% (**decrease from 2.5%**), which is **AT** the regional baseline of 2.4%.
- Nevada percentage of patients presenting with ILI was 1.4% (**increase from 1.1%**), which is **BELOW** the state baseline of 2.1%.
- Washoe County percentage of patients presenting with ILI reported by sentinel providers for the current week was 1.4% (**increase from 1.3%**).
- The highest proportion of patients presenting with ILI was among the 0-4-year age group at 7.3% (**no change in age group, increase from 4.5%**).
- The lowest proportion of patients presenting with ILI was among the 25-49 and 50-64-year age group at 0.8% (**addition of 25-49-year age group**).

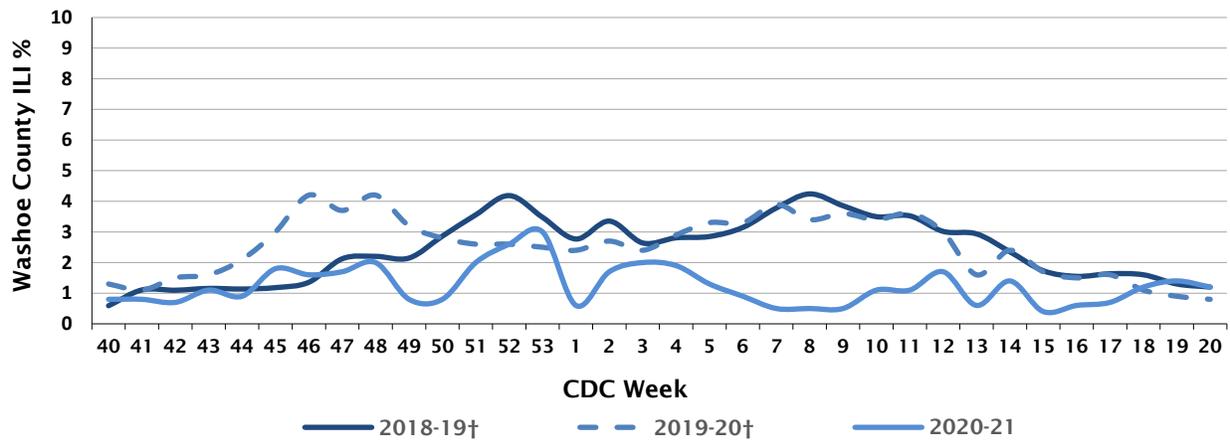
Figure 1. Comparison of ILI Activity at the Local, State, Regional, and National Level, Washoe County, 2022-2023



Data source for U.S., Region 9, and Nevada ILI activity and baselines: CDC Flu View Interactive, <https://www.cdc.gov/flu/weekly/fluviewinteractive.htm>.

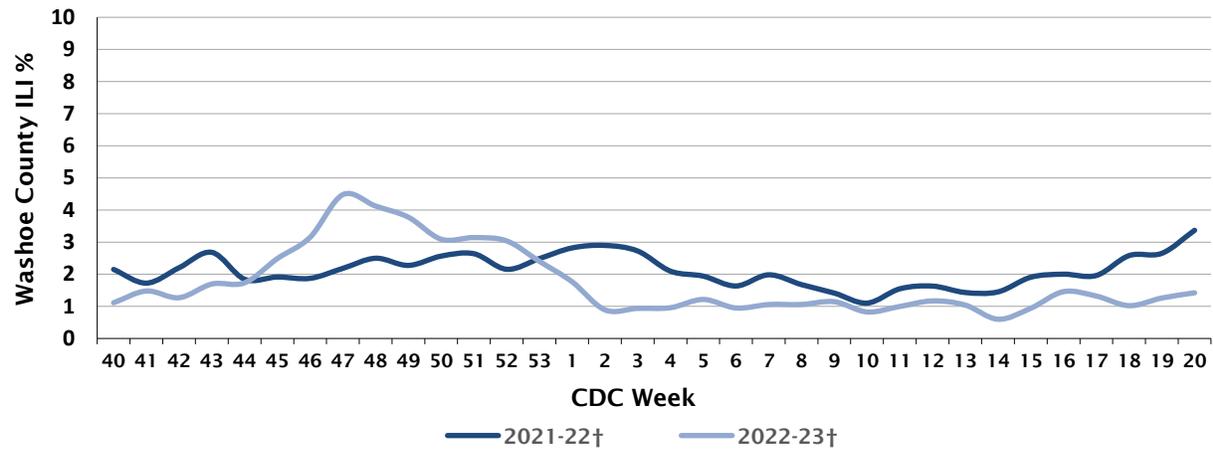
Data presented in this report is preliminary and may be updated in future reports as additional information is received throughout the influenza season.

Figure 2. ILI Activity Reported by Sentinel Providers Under Previous Case Definition, Washoe County, 2018-2021 Seasons†



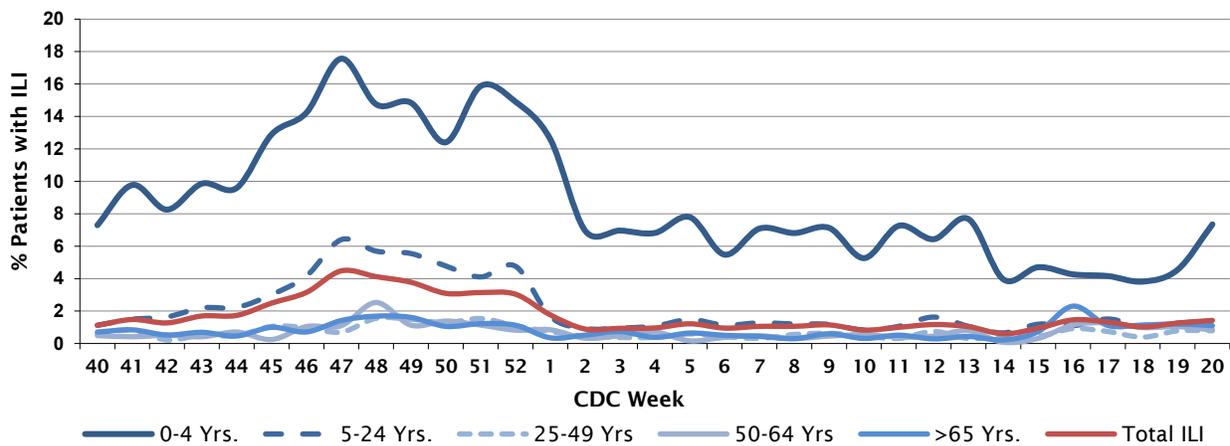
† Does not have a week 53, so the week 53 value is an average of week 52 and week 1.

Figure 3. ILI Activity Reported by Sentinel Providers, Washoe County, 2021-2023 Seasons†



† Does not have a week 53, so the week 53 value is an average of week 52 and week 1.

Figure 4. ILI Activity Reported by Sentinel Providers by Age Group, Washoe County, 2022-2023



Nevada State Public Health Laboratory (NSPHL) Test Results

The NSPHL performs influenza subtyping of specimens submitted for surveillance purposes. Specimens are primarily submitted to the NSPHL by sentinel provider sites, however all typed specimens are included even those not submitted by sentinel providers.

- No NSPHL specimen results were reported.
- The highest proportion of NSPHL specimens to date have been unsubtype A at 52.4% of specimens, followed by A (H3N2) at 33.3% and A (2009 H1N1) at 11.9% of specimens.

Table 1 & Figure 5. Specimens Submitted to NSPHL for Subtyping to Date, Washoe County, 2022-2023

Influenza Subtype	# of Specimens	% of Total Specimens
A (H3N2)	42	33.3%
A (2009 H1N1)	15	11.9%
A Unsubtyped	66	52.4%
B (Yamagata)	0	0.0%
B (Victoria)	0	0.0%
B Unknown	3	2.4%
Total	126	100%

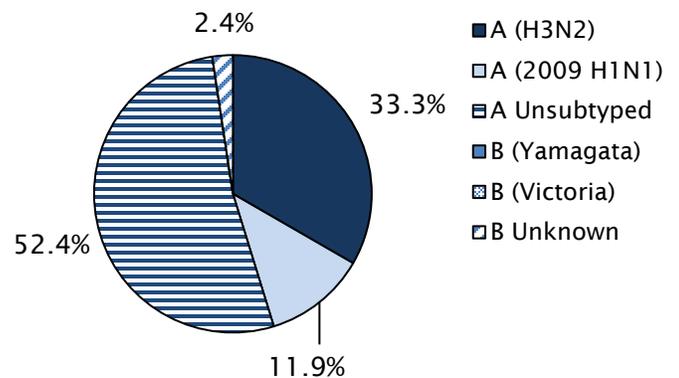
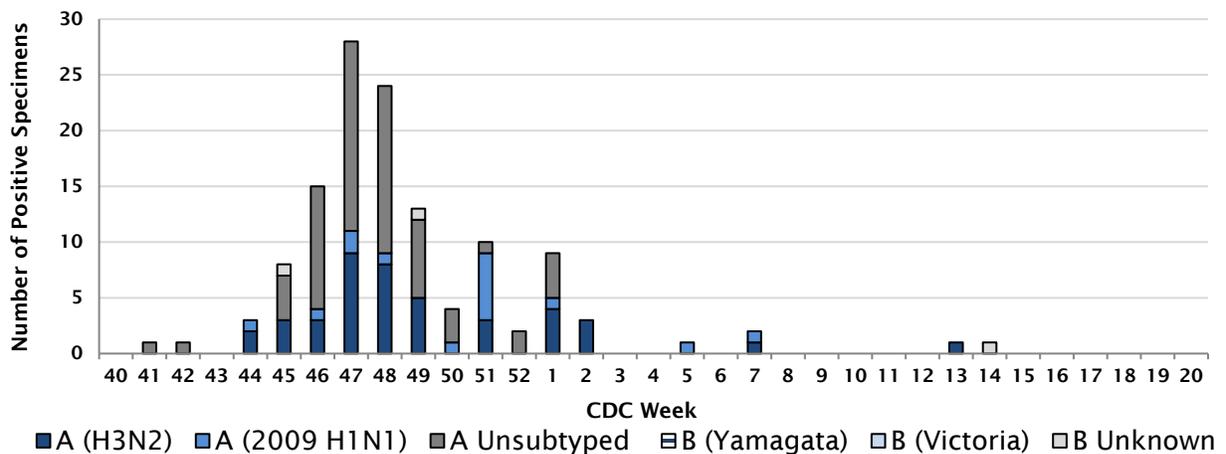


Figure 6. Positive Specimens Submitted to NSPHL, Subtyping to Date by Week, Washoe County, 2022-2023

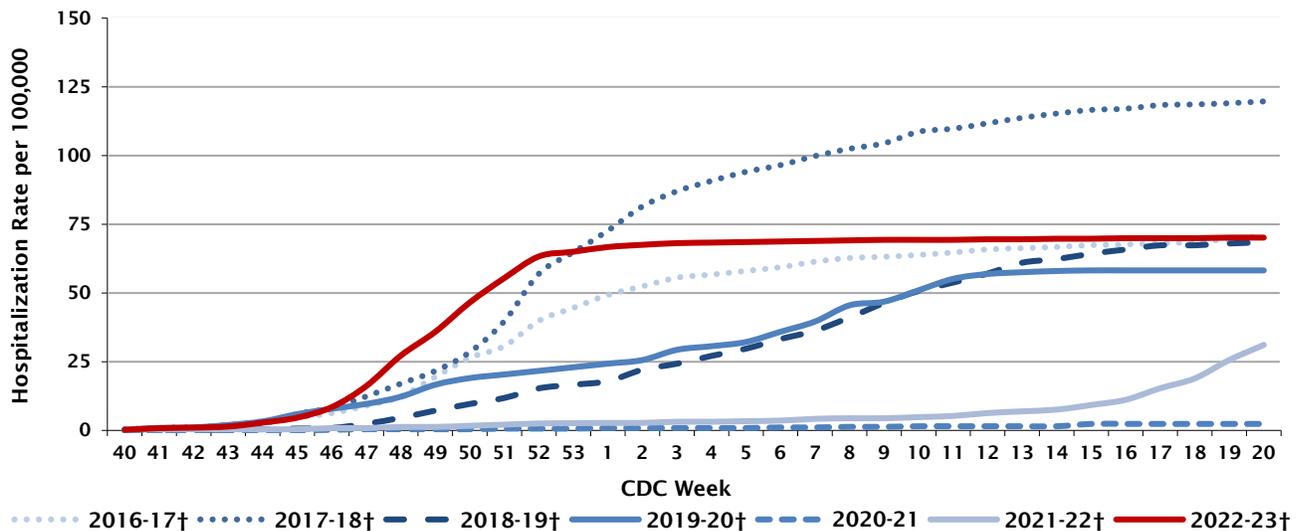


Hospitalizations

Medical records are reviewed for cases hospitalized for greater than or equal to 24 hours. Information on the number of hospitalized cases, the number of hospitalized cases vaccinated at least 2 weeks prior to symptom onset, number of intensive care unit (ICU) admissions, and number of deaths among hospitalized cases are reported in Table 2. The seasonal cumulative hospitalization rate per 100,000 population is presented in Figure 7, and by age group in Figure 8.

- No hospitalized cases were reported.
- Influenza hospitalization rate per 100,000 population in Washoe County was 70.1 (**no change**).
- The age group with the highest influenza hospitalization rate per 100,000 population in Washoe County was >65-year age group at 206.8 (**no change**).
- The highest proportion of specimens among hospitalized cases to date has been unsubtype A at 84.8% of specimens (**no change**).

Figure 7. Influenza Hospitalization Rate per 100,000 Population, Washoe County, 2016-2023 Seasons†



† Does not have a week 53, so the week 53 value is an average of week 52 and week 1.

Figure 8. Influenza Hospitalization Rate per 100,000 Population by Age Group, Washoe County, 2022-2023

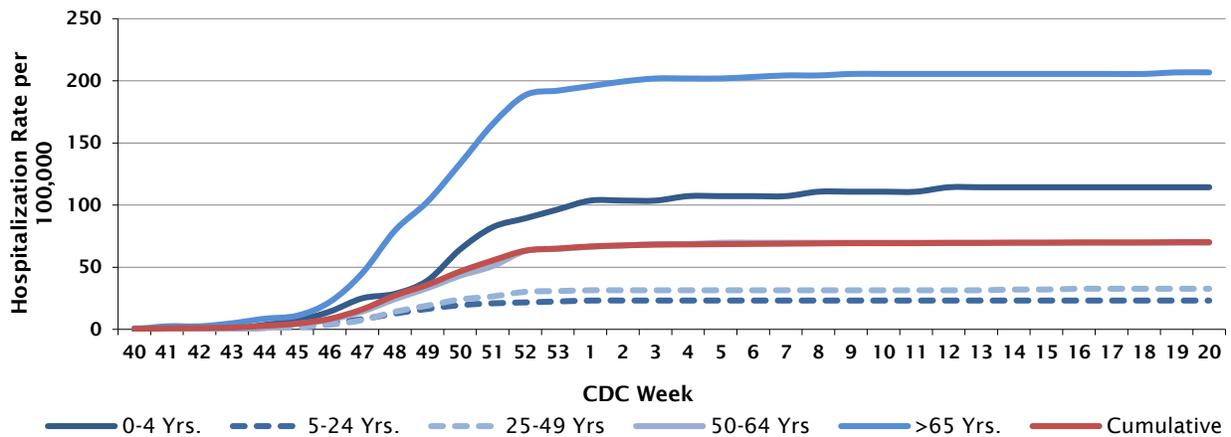


Figure 9. Influenza Positive Tests Among Hospitalized Cases by Week Reported, Washoe County, 2022-2023

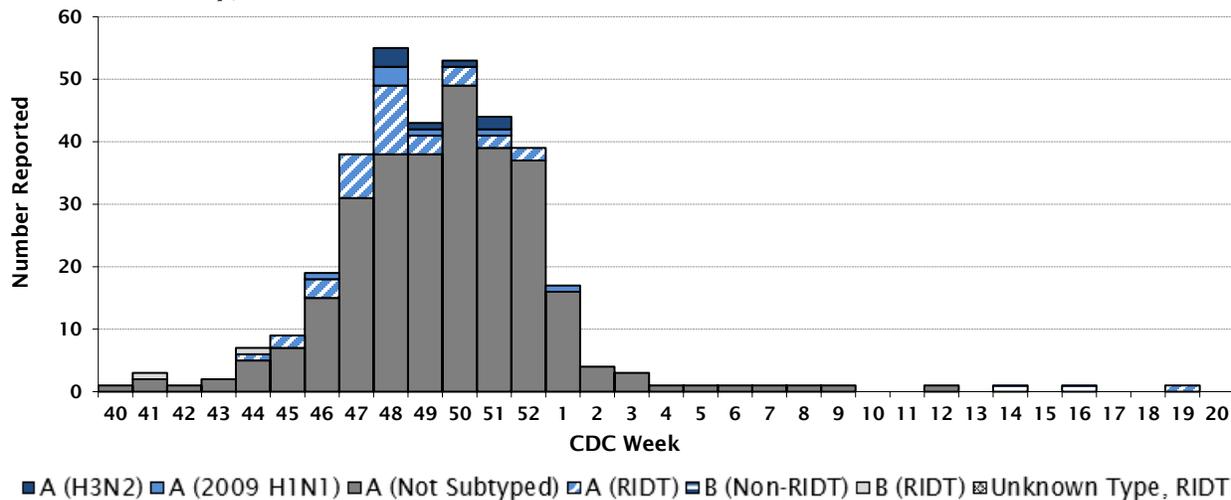


Table 2. Number of Hospitalized Cases with Lab-Confirmed Influenza by Vaccination, ICU, and Death Status, Washoe County, 2022-2023

	Current Week (Week 20)								Cumulative for 2022-2023 Influenza Season							
	May 14, 2023 - May 20, 2023								October 2, 2022 - May 20, 2023							
	Hosp.		Vax ^s		ICU		Death		Hosp.		Vax ^s		ICU		Death	
Total # of cases reported	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
Total # of cases reported	0	N/A	0	0	0	0	0	0	348	N/A	88	25	63	18	19	5
Influenza A (2009 H1N1)	0	0	0	0	0	0	0	0	7	2	2	2	4	6	1	5
Influenza A (seasonal H3)	0	0	0	0	0	0	0	0	7	2	2	2	2	3	0	0
Influenza A (not subtyped)	0	0	0	0	0	0	0	0	295	85	74	84	55	87	18	95
Influenza A (RIDT*)	0	0	0	0	0	0	0	0	35	10	10	11	1	2	0	0
Influenza B (RIDT*)	0	0	0	0	0	0	0	0	2	1	0	0	1	2	0	0
Influenza B (non-RIDT**)	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	0
Influenza (unk. type, RIDT*)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

RIDT: *Rapid Influenza Diagnostic Test

**Confirmatory tests other than RIDT may include culture, PCR, immunofluorescence, DFA/IFRA antibody staining, or rapid molecular assay.

§Vaccination status determined among hospitalized cases only. Patient is considered vaccinated if they received a flu vaccine ≥ 2 weeks prior to illness onset.

Deaths

For surveillance purposes, an influenza-associated death is defined as a death resulting from a clinically compatible illness that was confirmed to be influenza by an appropriate laboratory or rapid diagnostic test with no period of complete recovery between the illness and death. Only pediatric deaths are considered reportable. Note that hospitalization is not required to be considered an influenza-associated death; therefore, counts presented here may be higher than those presented among hospitalized cases.

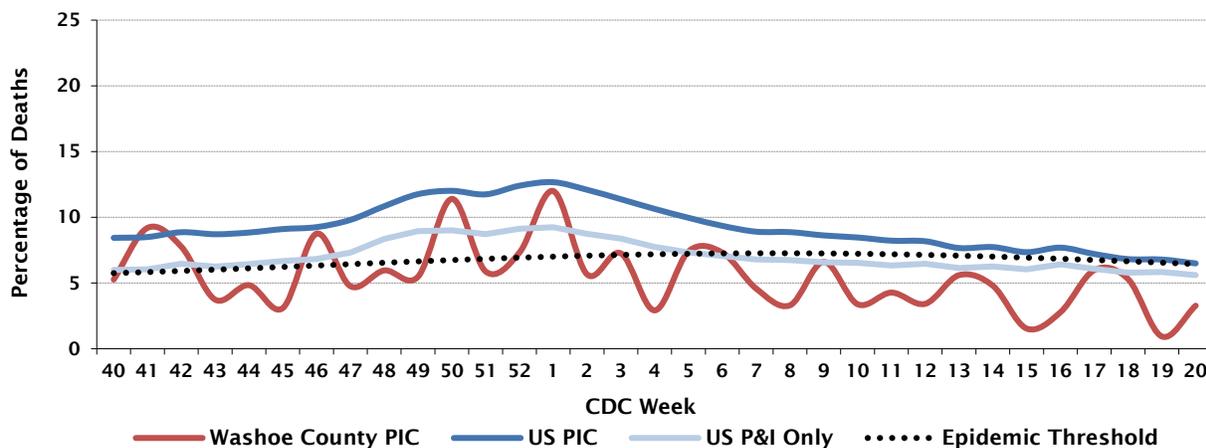
- To date, 25 influenza-associated deaths have been reported (**no change**).

Pneumonia, Influenza, and COVID-19 Mortality

Data from the National Center for Health Statistics Mortality Surveillance are used to determine the percentage of deaths that occurred each week due to pneumonia, influenza, and/or COVID-19 (PIC). Washoe County vital statistic records are reviewed to calculate the percentage of deaths attributed to PIC. Records are pulled based on the CDC week deaths are registered and not date of death. For the current reporting week:

- | | |
|----------------------|--|
| National | <ul style="list-style-type: none"> The percentage of deaths due to PIC was 6.5%, which is ABOVE the epidemic threshold of 6.4% (decrease from 6.8%). The percentage of deaths due to pneumonia and influenza (P&I) was 5.6% (decrease from 5.8%). |
| Washoe County | <ul style="list-style-type: none"> The percentage of deaths due to PIC was 3.3% (4 out of 122 total deaths, increase from 0.9%). The percentage of PIC deaths that had COVID-19 as a contributing cause was 25.0% (1 out of 4, increase from 0.0%). |

Figure 10. Pneumonia, Influenza, and COVID-19 Mortality, Washoe County and the United States, 2022-2023



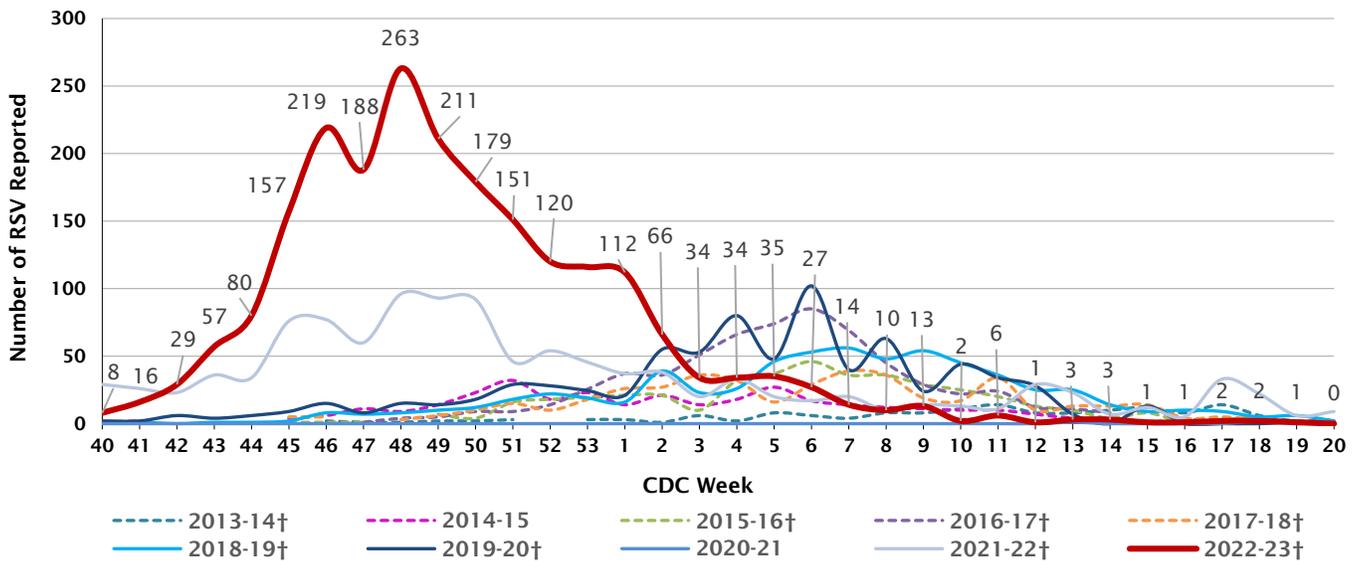
Data sources: National Center for Health Statistics (NCHS) Mortality Surveillance available at <https://www.cdc.gov/flu/weekly/#S2> and Nevada Vital Records.

Respiratory Syncytial Virus

Respiratory Syncytial Virus (RSV) is a common respiratory virus that can present with flu-like signs and symptoms (e.g., fever, coughing, runny nose). RSV, while usually presented with mild symptoms, can be serious, especially for infants and older adults. It is the most common cause of bronchiolitis and pneumonia in children younger than 1 year of age. RSV is a reportable condition in Nevada.

- 0 cases were reported for the current week (decrease from 1).

Figure 11. Number of RSV Cases Reported by Week, Washoe County, 2013-2023 Seasons†



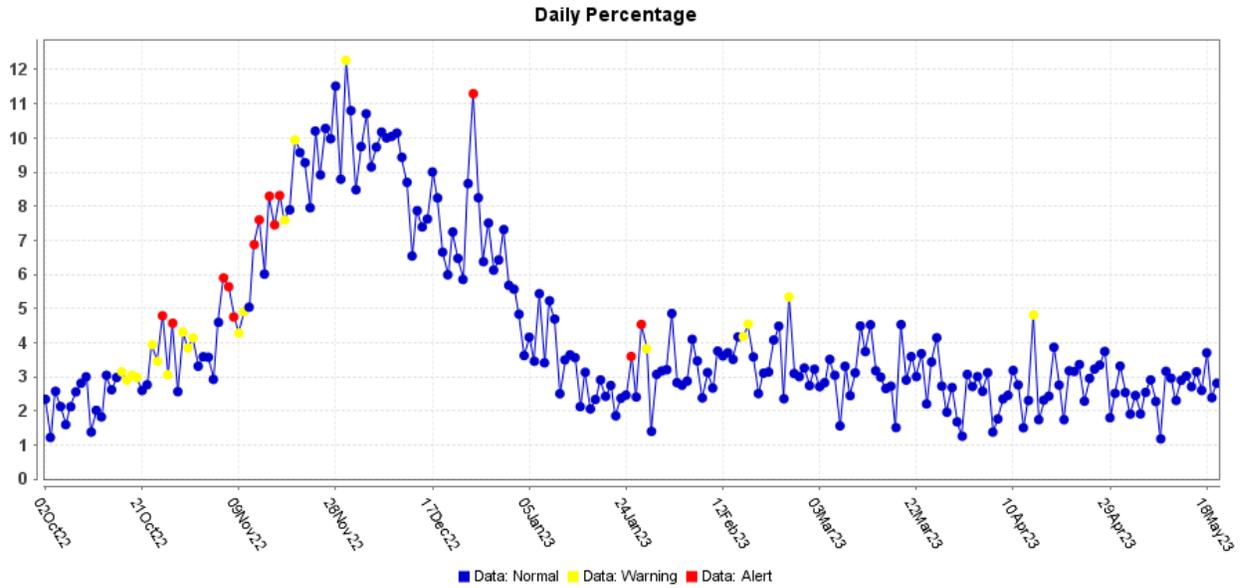
† Does not have a week 53, so the week 53 value is an average of week 52 and week 1.

Syndromic Surveillance

Emergency Department (ED) Visits and Urgent Care (UC) Visits

Percentage of patients seen for ILI in ED and UC is presented in Figure 12. ILI is defined as influenza or fever and a cough and/or a sore throat. The overlay below depicts ILI syndrome in blue. Alerts appear as yellow and/or red dots, indicating an unusually high percentage of ILI visits according to ESSENCE algorithms.

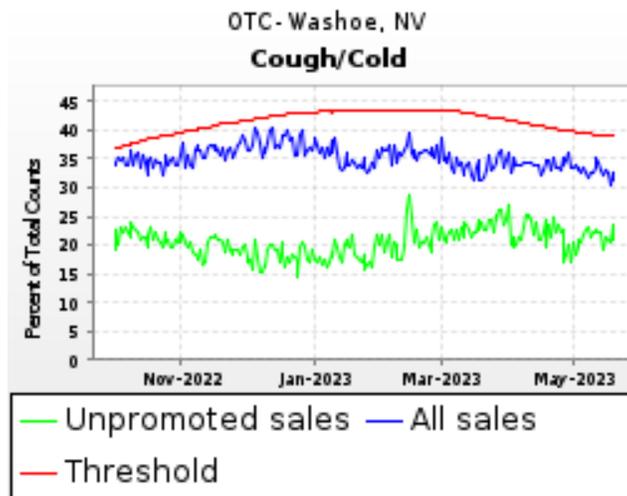
Figure 12. Percentage of ED and UC* Visits for ILI for Weeks 40-20, Washoe County, 2022-2023



Data source: ESSENCE, *14 Emergency Departments/Urgent Cares reporting to ESSENCE.

Over the Counter (OTC) Sales for Cough and/or Cold Remedies

Figure 13. OTC Sales for Cough and/or Cold Remedies for Weeks 40-20, Washoe County, 2022-2023

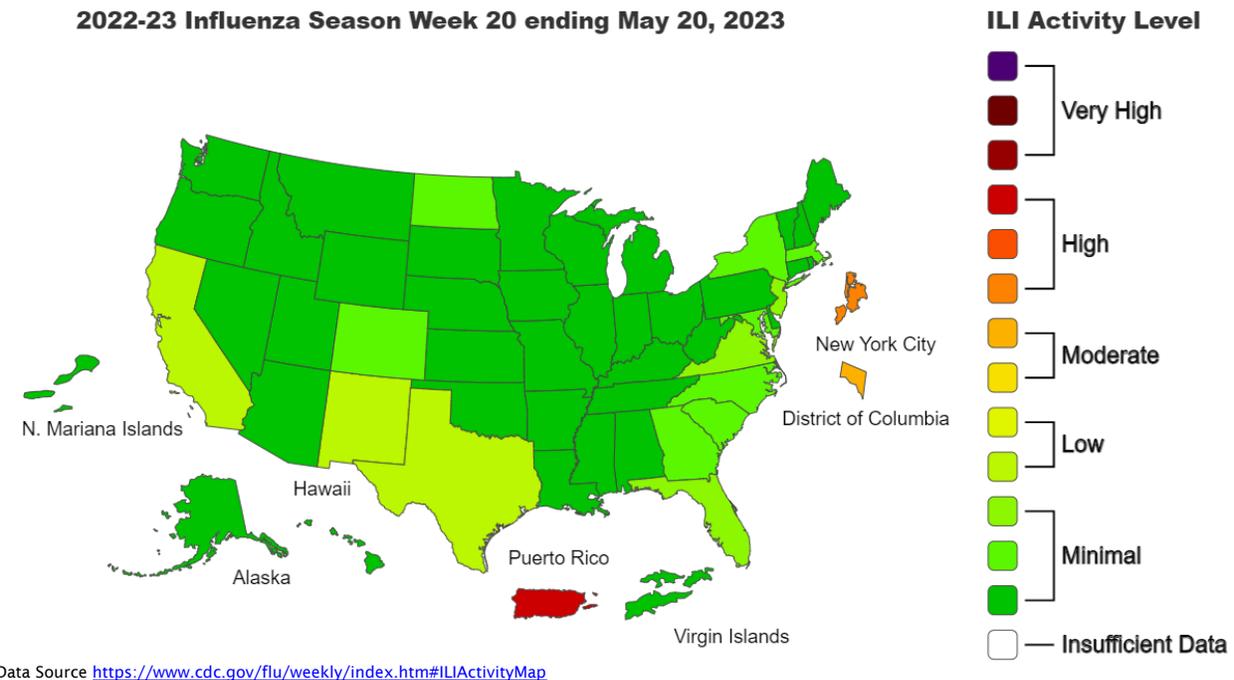


Data source: National Retail Data Monitor Data coverage in Washoe County

ILI Activity Level

It is important to note the map uses the proportion of outpatient visits to healthcare providers to measure the ILI activity level within a state. It does not measure the extent of geographic spread of influenza within a state.

Figure 14. Geographic Spread of ILI Activity Level for Week 20, United States, 2022-2023



Surveillance Changes

2022-2023 Season

- Figures 6 and 8 are newly added to the report.
- Table 1, Figure 5, Figure 9, and Figure 11 were updated to include information not previously included in past seasons, such as unsubtype A and B specimen result counts and previous seasonal RSV cases by week.
- Table 1 and Figure 5 now include unsubtype A and B specimen results.
- Figure 6 was created to allow comparison of only positive specimens subtypes from NSPHL by MMWR week.
- Figure 8 was created to allow comparison of hospitalization rates by ILI age group (as seen in Figure 4) in addition to the cumulative hospitalization rate for the season.
- Figure 11 (previously Figure 9) was revised to include previous seasons for comparison.
- For sentinel providers, one urgent care closed permanently and is no longer a reporter as they were in previous seasons. However, one emergency room was newly onboarded as a new sentinel provider this season.