North Carolina Respiratory Diseases Annual Report 2024-2025

NC DEPARTMENT OF HEALTH AND HUMAN SERVICES
Division of Public Health

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BACKGROUND AND KEY FINDINGS

This annual respiratory surveillance summary report covers the period of June 1, 2024, through May 31, 2025. The selected timeframe differs from prior annual reports. It was chosen so that data from the prior season is available at the start of the upcoming, 2025-2026, respiratory season.

Statewide Updates

The 2024-2025 viral respiratory season in North Carolina was driven primarily by a strong influenza season while RSV and COVID-19 activity were lower than the previous season. Influenza activity followed a seasonal pattern peaking on the second week of February. This season was characterized by the highest number of flu-associated deaths reported in one season since the 2009 H1N1 pandemic. There were 542 influenza-associated deaths reported, including 5 pediatric deaths. The predominant influenza virus subtype in circulation was influenza A. Both H3N2 and (H1N1) pdm09 were circulating widely.

National and International Updates

Nationally, the 2024-25 respiratory season was marked by the first high-severity influenza season since 2017-2018 with the highest cumulative influenza-associated hospitalization rate since 2010-2011, and the highest number of pediatric deaths reported in any non-pandemic influenza season since pediatric flu deaths became reportable in 2004. Testing performed by public health laboratories nationwide showed that Influenza A was the predominant virus circulating during the 2024-25 season with subtype A(H1N1) pdm09 detected slightly more than H3N2. Internationally, global virological surveillance data from FluNet showed seasonal influenza subtype A(H1N1) pdm09 viruses accounted for most influenza viruses followed by influenza B(Victoria). This is the fourth season in a row without influenza B/Yamagata viruses in circulation.

Protecting Individuals and Communities

While we may not know what future respiratory seasons will look like, respiratory viruses contribute to significant morbidity and mortality, putting strain on the healthcare system and resources. Vaccination remains the most effective tool against these viruses, reducing severity of illness and hospitalization. Encouraging people to take everyday preventive actions such as practicing good respiratory hygiene including frequent handwashing and covering coughs and sneezes, limiting contact with others when sick, masking, and other basic protective measures can also help reduce the spread of infection.

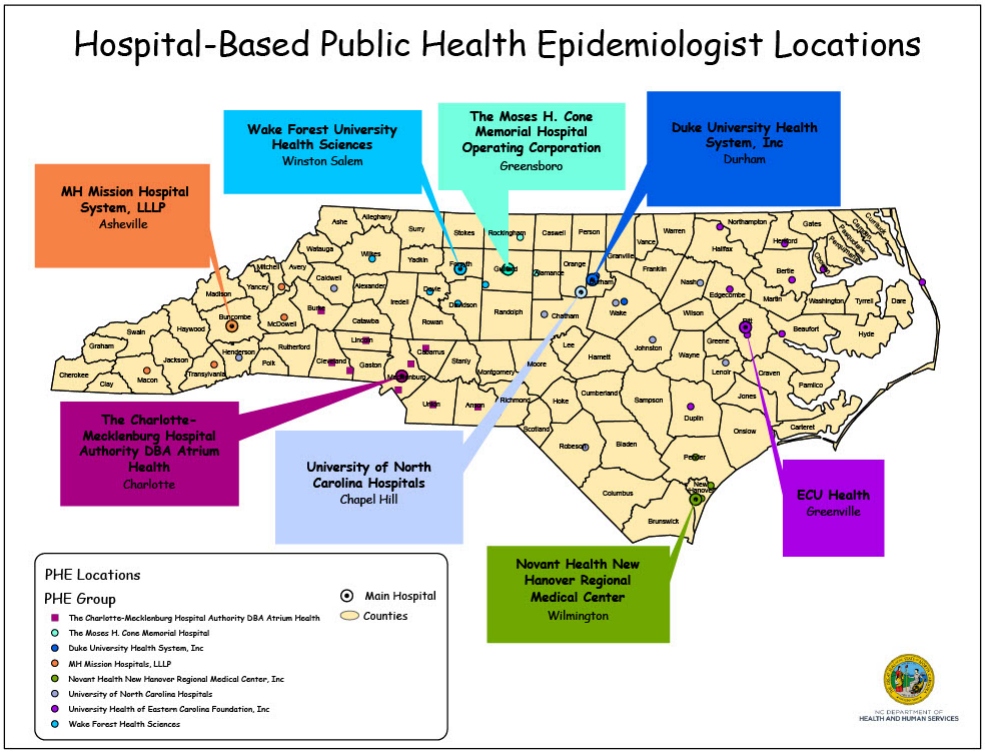
OVERVIEW OF NC SURVEILLANCE SYSTEMS

NC DETECT

The North Carolina Disease Event Tracking and Epidemiologic Collection Tool (NC DETECT) is North Carolina's statewide, electronic, real-time syndromic surveillance system. NC DETECT was created by the NC Division of Public Health (NCDPH) in collaboration with the Carolina Center for Health Informatics (CCHI) at the UNC Department of Emergency Medicine to provide early event detection and timely public health surveillance using a variety of secondary data sources. NC DETECT collects data from NC Emergency Departments (EDs) where each ED visit is grouped into syndromes based on keywords in several fields and/or diagnosis codes.

Public Health Epidemiologists Program (PHE)

In 2003, NCDPH created a hospital-based Public Health Epidemiologist (PHE) Program to strengthen coordination and communication between hospitals, local health departments, and the state. The PHE network covers approximately 30 percent of general/acute care beds and 35 percent of ED visits in the state. PHEs play a critical role in routine and urgent communicable disease prevention and response/control, hospital-based reporting and surveillance of communicable diseases, outbreak detection and monitoring as well as case finding during community outbreaks.



Influenza-like Illness Network (ILINet)

The U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet) is a collaboration with providers, state health departments, and CDC to conduct surveillance for ILI. ILINet providers in primary care clinics, emergency department visits, and urgent care facilities across the state send samples collected from patients with ILI to the North Carolina State Laboratory of Public Health (SLPH) for testing. As a result of the COVID-19 pandemic, ILINet has been expanded to include testing for SARS-CoV-2. Providers are asked to submit up to 10 samples from symptomatic patients each week. For surveillance purposes, symptomatic is defined as fever (>100°F) and a cough or sore throat. Detailed information about ILINet and CDC Influenza surveillance methods are found here.

Respiratory Virus Hospitalization Surveillance Network (RESP-NET)

The Respiratory Virus Hospitalization Surveillance Network (RESP-NET) is a collaboration between NCDPH, the PHE program, and CDC that conducts active, population-based surveillance by monitoring laboratory-confirmed hospitalizations due to influenza, COVID-19, and RSV across pre-defined catchment areas in eastern and western NC. COVID-19, RSV, and influenza-associated hospitalization rates are used to understand trends in virus circulation, estimate disease burden, and respond to outbreaks.

North Carolina State Laboratory of Public Health (SLPH)

The North Carolina State Laboratory of Public Health (SLPH) plays a crucial role in respiratory surveillance and testing across the state. SLPH performs routine diagnostic and enhanced surveillance testing for seasonal influenza A/B viruses with capacity for subtyping of influenza A positive specimens. SLPH forwards a sample of influenza specimens to CDC for further characterization, antiviral resistance studies, and selection of seasonal vaccine. SLPH also handles testing for novel influenza viruses, including those suspected of avian influenza (H5N1) infection or other variants, and viral respiratory pathogens like COVID-19.

Wastewater Monitoring

To better understand the community level burden of the respiratory viruses that cause COVID-19, Flu A/B, and RSV in NC, NCDPH tests wastewater samples from select wastewater treatment plants. This project is a collaboration between NCDPH, researchers from University of North Carolina system, wastewater utilities, and local health departments. For more information, please visit the NCDHHS Wastewater Monitoring Dashboard.

BY DISEASE: INFLUENZA TRENDS

Influenza Deaths

In North Carolina, influenza-associated deaths and human novel influenza cases are reportable conditions. An influenza-associated death is defined for surveillance purposes 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 to baseline health between the illness and death. During the 2024-2025 respiratory season, from June 1, 2024, to May 31, 2025, there were 542 influenza-associated deaths. This is the highest number of statewide influenza deaths recorded since broad reporting began in 2009.

Figure 1: Influenza-Associated Deaths Reported in North Carolina by week, 2024-25

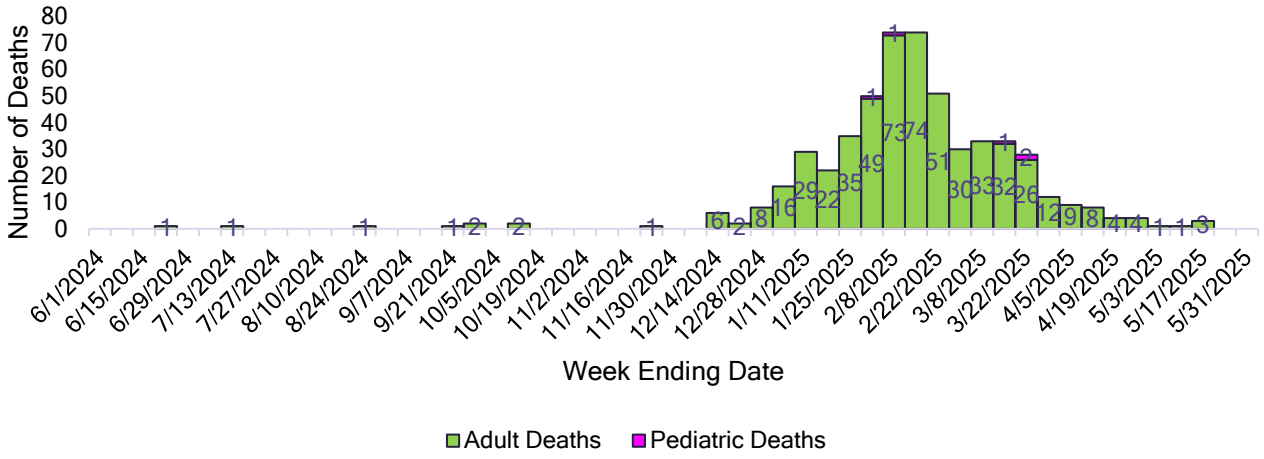


Figure 2: Influenza-Associated Deaths Reported in North Carolina by Age Group, 2024-25

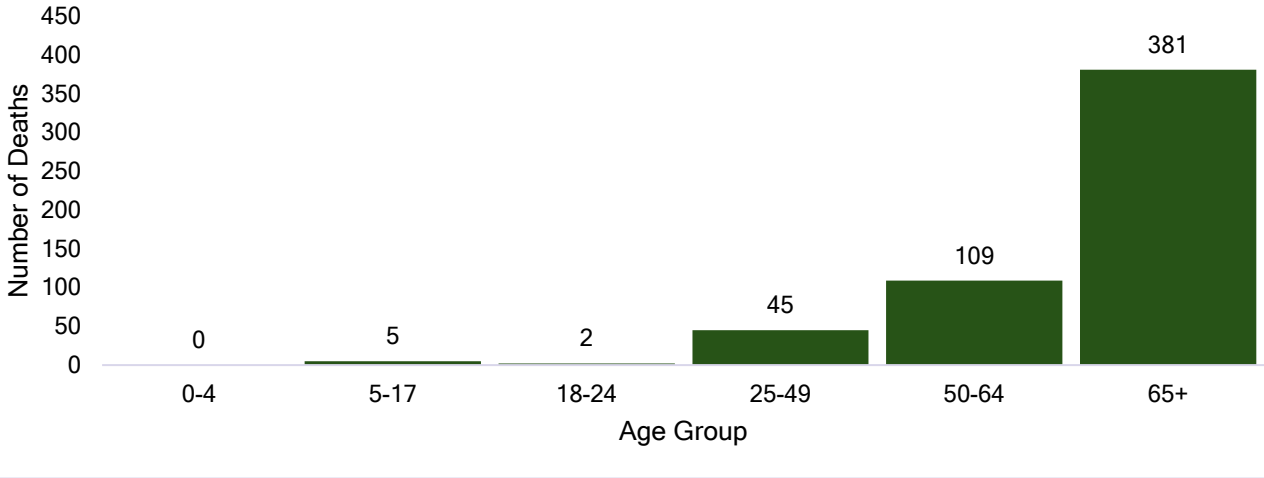
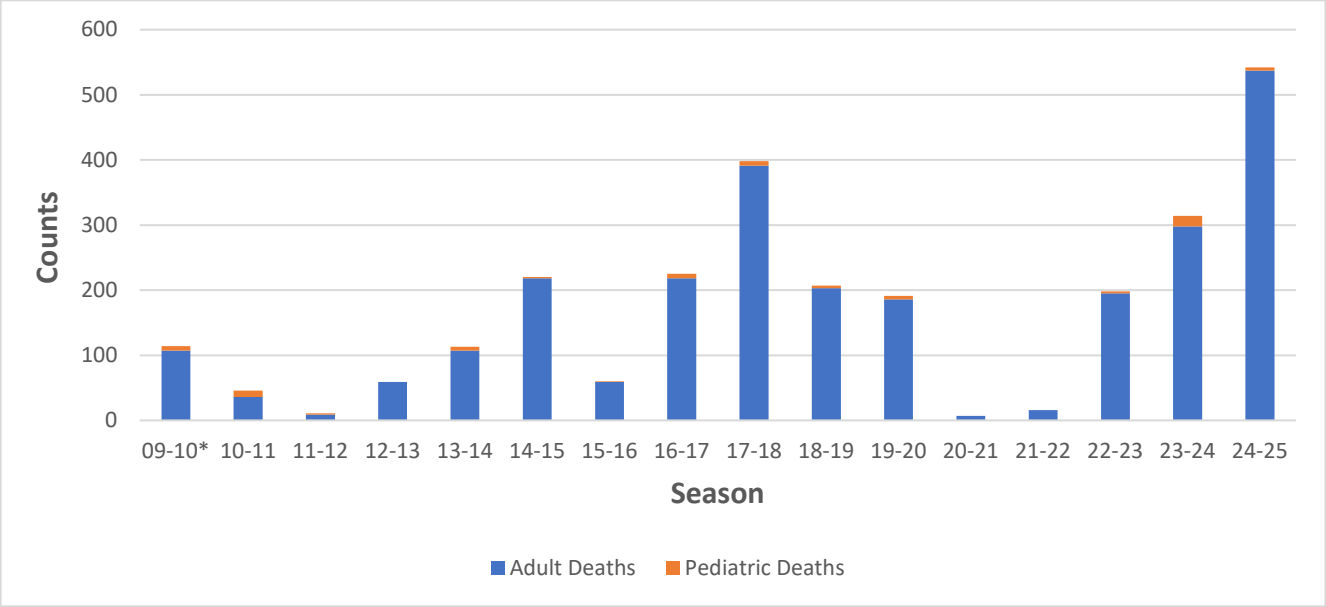


Figure 3: Influenza-Associated Deaths Reported in North Carolina per Season, 2009-2025



*Broad reporting of flu-associated deaths started after 2009 H1N1 pandemic.

Table 1: Influenza-Associated Deaths Reported in NC by Demographics 2024-25

Demographic	*Adult*	*Pediatric*	*Total %*	*Rates**
Sex				
Female	267	2	269 (49.63%)	4.76
Male	257	3	260 (47.97%)	4.82
Missing	13	0	13 (2.4%)	--
Race				
American Indian/Alaska Native	9	0	9 (1.66%)	4.98
Asian	6	0	6 (1.1%)	1.36
Black or African American	92	2	94 (17.35%)	3.88
Native Hawaiian or Pacific Islander	2	0	2 (0.37%)	11.61
Other	12	0	12 (2.22%)	--
Unknown	35	0	35 (6.45%)	--
White	375	3	378 (69.75%)	4.92
Missing	6	0	6 (1.1%)	--
Hispanic Ethnicity				
No	455	3	458 (84.51%)	4.71
Yes	19	2	21 (3.87%)	1.58
Missing/Unknown	63	0	63 (11.62%)	--

*Incidence rate, calculated per 100,000 North Carolina residents

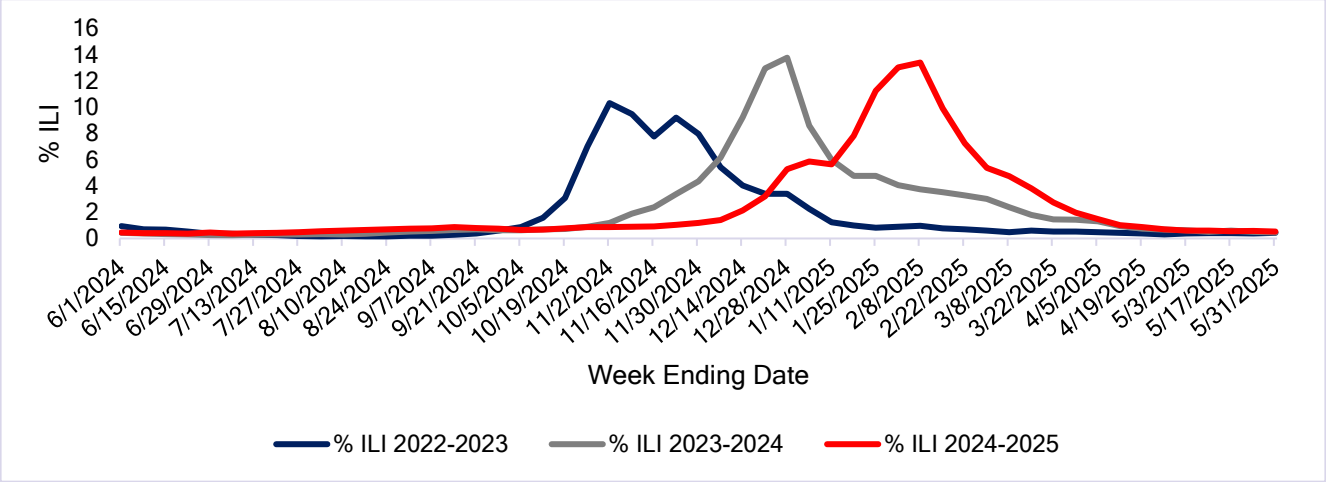
Key Points

- More than half of influenza-associated deaths occurred among older adults aged 65+ (70.3%).
- 2024-2025 observed the highest number of statewide flu deaths recorded since broad reporting began in 2009.

Emergency Department (ED) Visits (NC DETECT)

ILI trends described in this report, including the number and percentage of ED visits, are based on ILI syndrome. The syndrome used to track ILI shows the percent of emergency department visits that are for a diagnosis of flu using Influenza – ICD-9/ICD-10 codes.

Figure 4: Percentage of ED visits for ILI 3-Year Summary, 2022-25

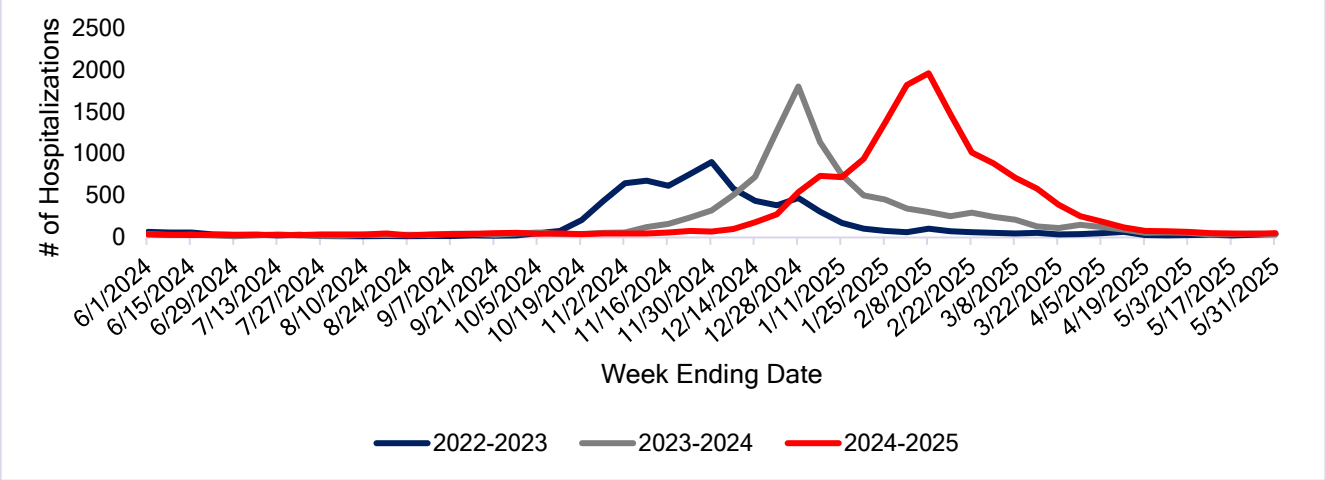


The graph above shows how the percentage of ED visits for ILI compares to previous seasons. Compared to prior seasons, 2024-25 observed a later peak in mid-February.

Hospitalizations (NC DETECT)

The following graph shows the number of hospital admissions from the emergency department for people who were diagnosed with influenza. 2024-25 observed an increase in hospitalizations compared to the previous two seasons with a later peak in mid-February.

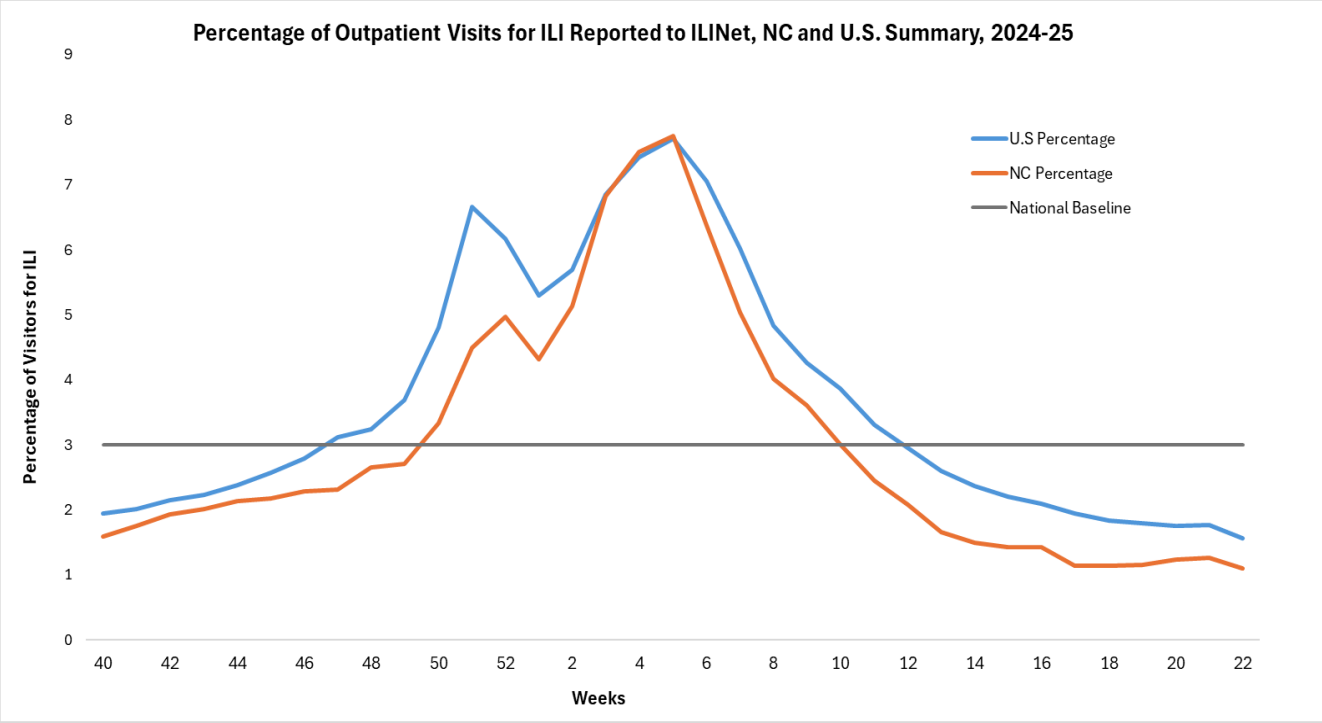
Figure 5: Number of Influenza Hospitalizations 3-Year Summary 2022-25



Outpatient ILI visits (ILINet)

During the 2024-25 respiratory season, 21 providers across the state voluntarily submitted weekly outpatient visits' ILI data by enrolling in the CDC's U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet). The number of providers reporting this season was less than the average of providers enrolled each season due to Hurricane Helene's impact on the western part of the state. The following graph shows the percentage of ILI visits reported by these providers each week as well as a national summary of outpatient visits.

Figure 6: Percentage of outpatient visits for ILI reported to ILINet, NC and U.S. Summary, 2024-25



Virology Surveillance

Influenza A(H1N1) pdm09 and H3N2 were co-circulating widely during the 2024-25 season.

Figure 7: Number of positive influenza tests reported by SLPH, 2024-25

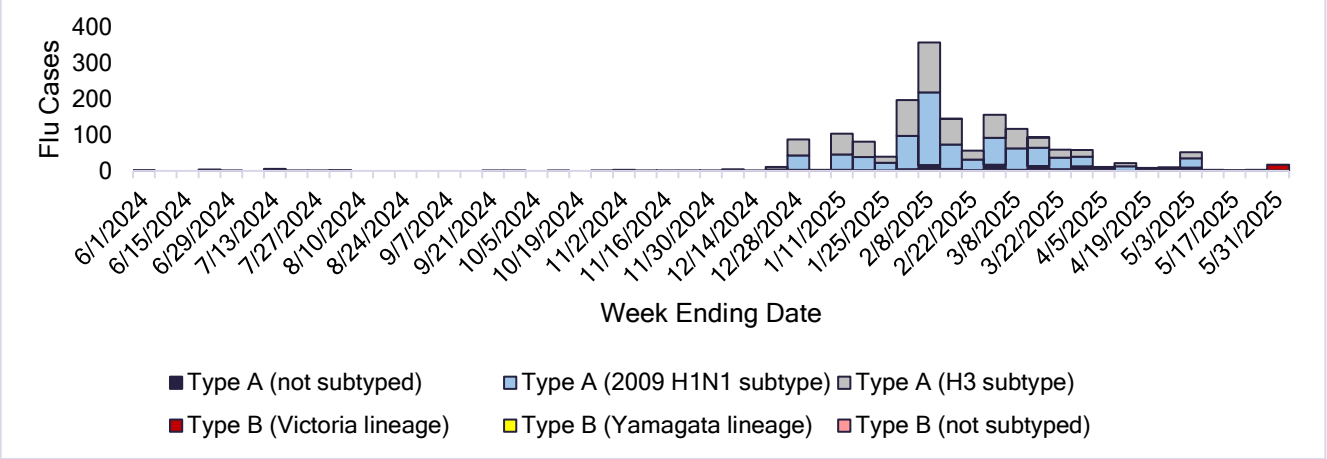


Figure 8: Number of positive influenza tests reported by PHE facilities, 2024-25

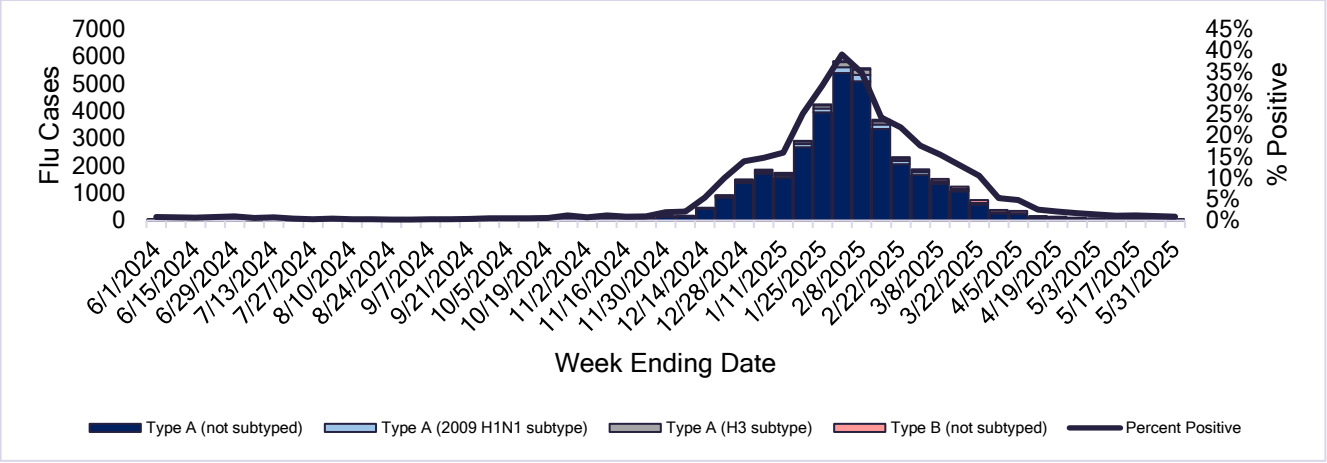


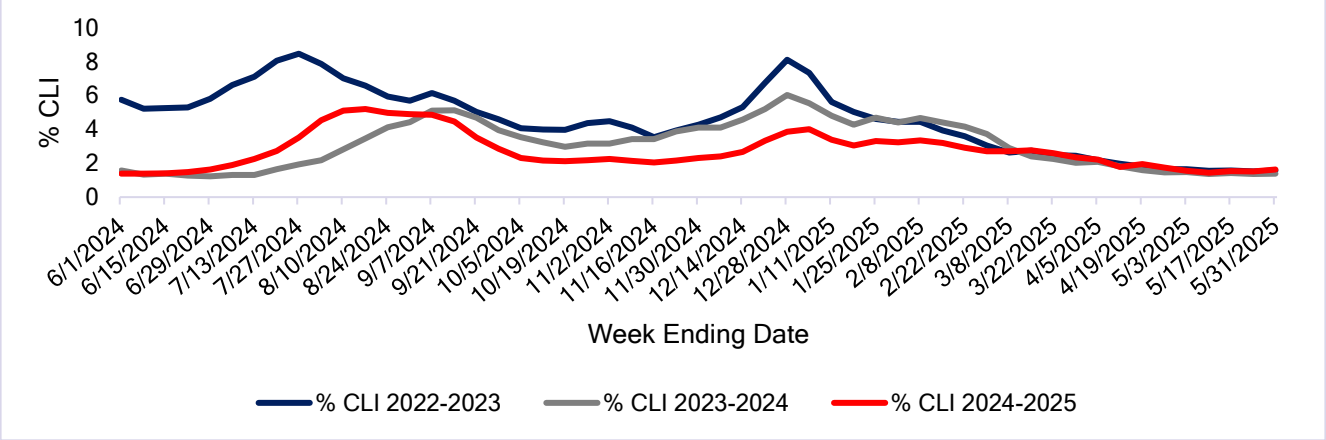
Table 2: Number of influenza positive tests reported by SLPH and PHE facilities, 2024-25		
Virus Type	Total Positive for SLPH (6/1/24-5/31/25)	Total Positive for PHE (6/1/24-5/31/25)
A (unknown)	106 (6%)	34,901 (90%)
2009 A(H1N1)	854 (49%)	1,613 (4%)
A(H3)	749 (44%)	1,344 (3%)
B (Victoria)	25 (1%)	N/A (0%)
B (Yamagata)	0 (0%)	N/A (0%)
B (unknown)	0 (0%)	1,287 (3%)
Total	1734	39,145

BY DISEASE: COVID-19 TRENDS

Emergency Department (ED) Visits (NC DETECT)

COVID-19 trends, including the number and percentage of ED visits, are based on COVID-like illness (CLI) syndrome. CLI syndrome looks for ED visits with ICD-10-CM codes or keywords in the chief complaint or triage notes. CLI syndrome does not indicate confirmed cases of COVID. ED visits for CLI gradually rose throughout summer months of 2024 to peak by mid-August. Overall, CLI visits for this season were lower than the previous two years.

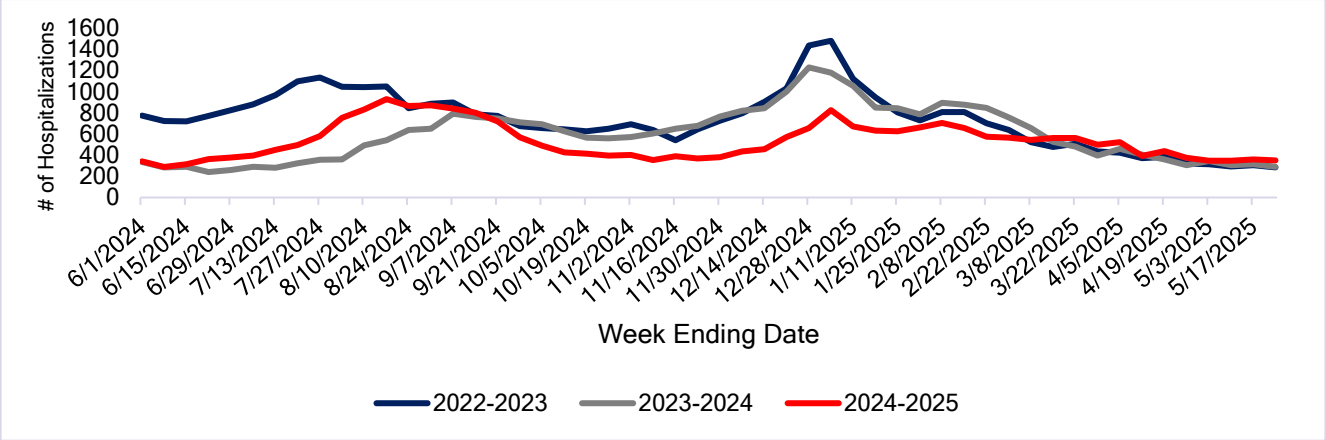
Figure 9: Percentage of ED visits for CLI 3-Year Summary, 2022-25



Hospitalizations (NC DETECT)

Looking at hospitalizations from the ED for people who were diagnosed or had symptoms of COVID, 2024-25 observed a decrease in hospitalizations compared to the previous two seasons, rising throughout summer months and peaking much earlier by mid-August.

Figure 10: Number of CLI Hospitalizations 3-Year Summary, 2022-25

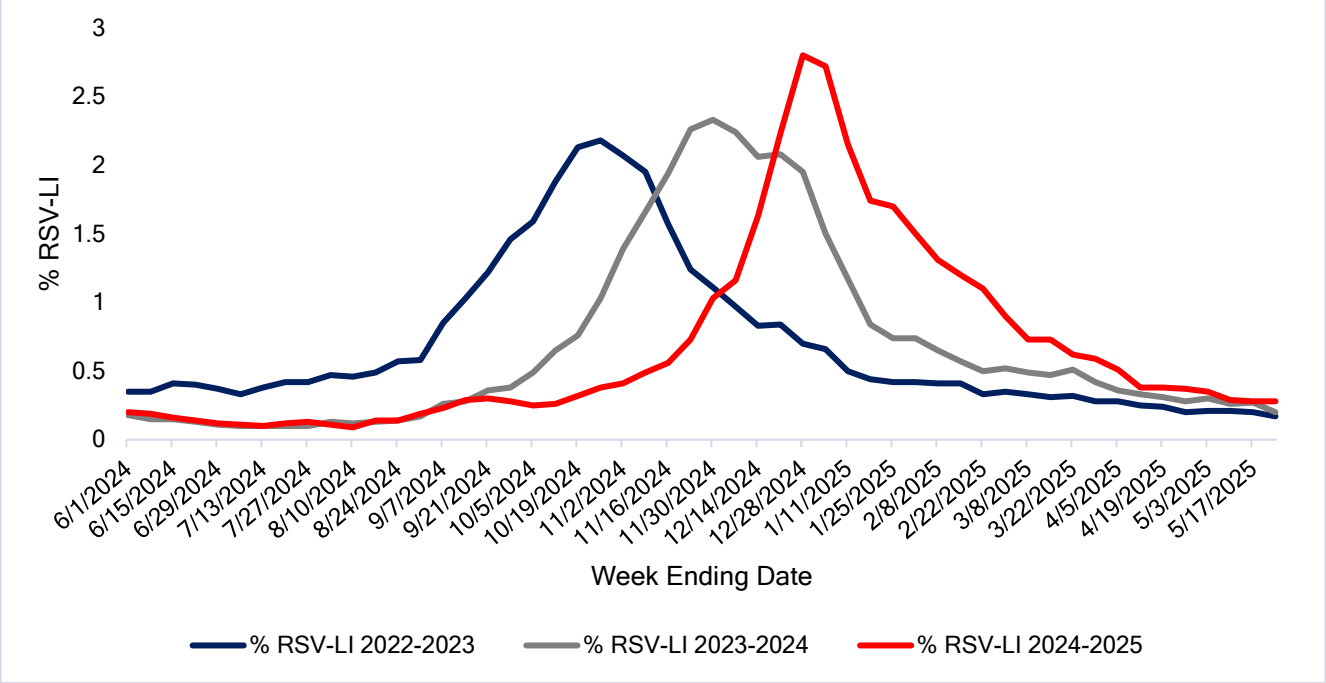


BY DISEASE: RESPIRATORY SYNCTIAL VIRUS (RSV) TRENDS

Emergency Department (ED) Visits (NC DETECT)

The syndrome used to track respiratory syncytial virus-like illness is designed to identify ED visits related to RSV and includes keywords as well as diagnosis codes to increase sensitivity. ED visits for RSV have followed a pre-COVID-19 seasonal pattern. ED visits for RSV remained low during the summer months before starting to rise at the end of November with the peak of RSV activity occurring at the end of December. Compared to the two previous seasons, this season's activity was slightly higher with a later peak.

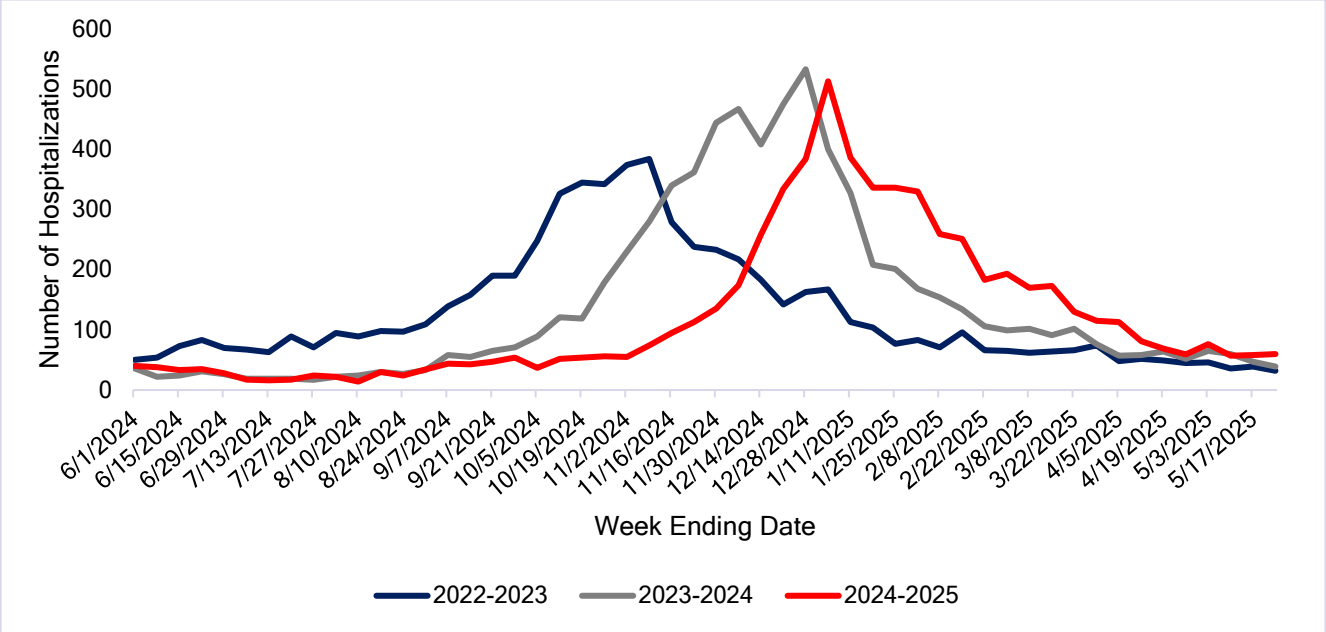
Figure 11: Percentage of ED visits for RSV-LI 3-Year Summary 2022-25



Hospitalizations (NC DETECT)

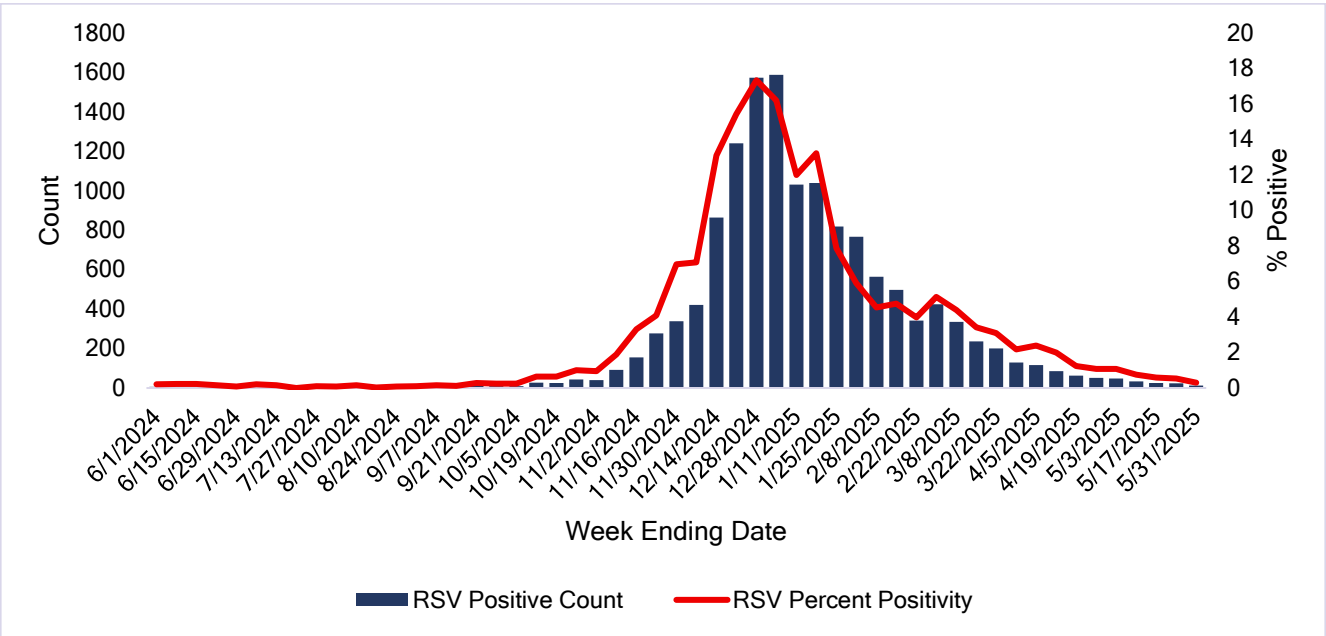
Looking at hospitalizations from the emergency department for people who were diagnosed with or had symptoms of RSV, 2024-25 saw a rise in hospitalizations with a later peak compared to the previous two seasons with admissions peaking during January.

Figure 12: Number of RSV-LI Hospitalizations 3-Year Summary, 2022-25



Laboratory Surveillance

Figure 13: Number of RSV positive tests reported by PHE, 2024-25

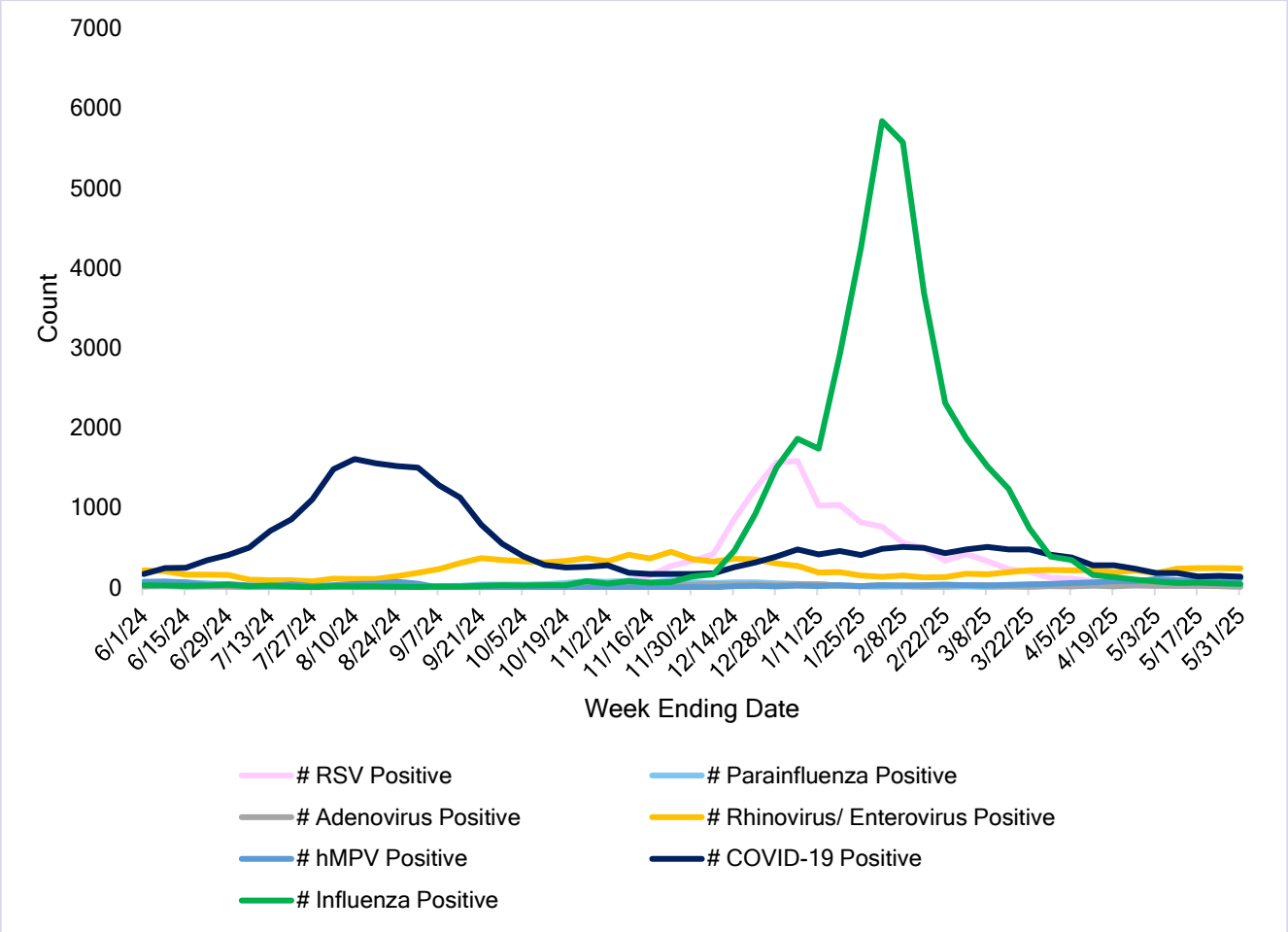


OTHER CIRCULATING RESPIRATORY VIRUSES

Adenovirus, Human metapneumovirus (hMPV), Parainfluenza, Rhinovirus

The graph below shows all positive tests for the listed respiratory viruses performed at hospital laboratories in the PHE network. Note that the number of positive tests depends on how many tests are performed and changes based on access to testing and testing priorities.

Figure 14: Number of positive respiratory tests reported by PHE by week, 2024-25



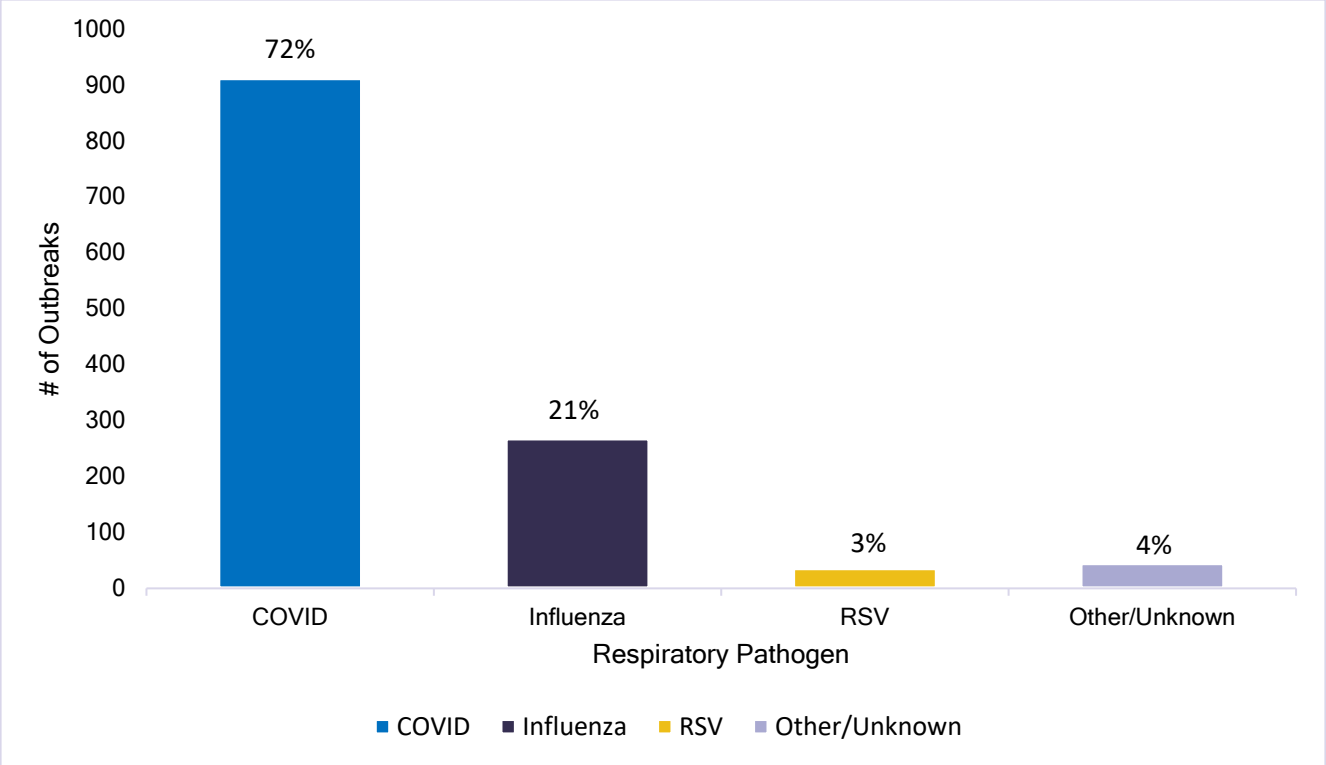
OUTBREAKS

Respiratory Outbreak Reporting

Local health departments report, investigate, and implement control measures for viral respiratory outbreaks while NCDPH provides resources, technical assistance and consultation to prevent transmission of disease. An outbreak is defined as two or more cases occurring in the same facility within a time-period specific to each virus.

From June 1, 2024, to May 31, 2025, there were 1,261 viral respiratory outbreaks reported: 912 COVID outbreaks (72%), 268 Influenza outbreaks (21%), 36 RSV outbreaks (3%) and 45 outbreaks due to unknown or other pathogens (4%).

Figure 15: Number of respiratory outbreaks reported by pathogen, 2024-25



HIGHLY PATHOGENIC AVIAN INFLUENZA (H5N1)

Background

Avian influenza (bird flu) refers to disease in birds caused by infection with influenza Type A viruses. Avian influenza is divided into two categories based on how severe the illness is in birds: low pathogenic avian influenza (LPAI) and highly pathogenic avian influenza (HPAI).

Current Situation as of 2024

The 2024-2025 respiratory season saw increased national concern over H5N1 avian influenza due to outbreaks among various animal populations and a rise in human cases while H5N1 viruses continued to circulate among wild birds. A total of 71 confirmed H5N1 human cases were reported in the U.S. during January 1, 2022–May 31, 2025. No human case was reported in North Carolina. In collaboration with agricultural, local, state, and federal partners, NCDPH has built a robust surveillance system for detection and outbreak response to respond to poultry or cattle outbreaks, which includes monitoring of exposed individuals; necessary follow-up such as clinical evaluation, specimen collection and testing for symptomatic individuals; and pharmaceutical countermeasures including antiviral treatment and post-exposure prophylaxis for confirmed/suspected cases and identified close contacts. Since January 2022, 442 individuals have been monitored for HPAI across the state and over 30 individuals were tested, all negative.

Table 3: H5N1 Outbreak: U.S. Nationally & NC Situation Summary (January 2022-May 2025)

	United States	North Carolina
Wild birds detected	10,387	273
Poultry affected	174,460,821	3,876,114
Poultry outbreaks	1,712	23
Dairy herds affected	1080	1
Human cases	71	**0**
Human case exposures	Poultry = 25 Dairy cows = 41 Other animal exposure = 2 Exposure source unknown = 3	

RESOURCES

North Carolina Respiratory Virus Summary and Surveillance Dashboard

North Carolina Influenza

Wastewater Monitoring Dashboard

North Carolina Immunization Branch

Avian Flu Updates and Resources

North Carolina Disease Event Tracking and Epidemiologic Collection Tool (NCDETECT)

North Carolina State Laboratory of Public Health

CDC Respiratory Illnesses Information and Resources

CDC Weekly Influenza Surveillance Report

CDC Respiratory Virus Activity Levels Dashboard

RESP-NET Hospitalization Surveillance Network Interactive Dashboard

North Carolina Department of Agriculture Avian Influenza Information and Resources

USDA H5N1 Influenza Detections and Outbreaks Reports