

Influenza (Flu)

Weekly U.S. Influenza Surveillance Report

FLUVIEW



A Weekly Influenza Surveillance Report Prepared by the Influenza Division

Key Updates for Week 1, ending January 4, 2020

Key indicators that track flu activity remain high, but indicators that track severity (hospitalizations and deaths) are not high at this point in the season.

Viruses

Clinical Labs

The percentage of respiratory specimens testing positive for influenza at clinical laboratories decreased from 26.4% last week to 23.3% this week.

Public Health Labs

Nationally, B/Victoria viruses are most common followed by A(H1N1)pdm09 viruses. The predominant virus varies region and age group. There is low circulation of A(H3N2) and B/Yamagata viruses.

Virus Characterization

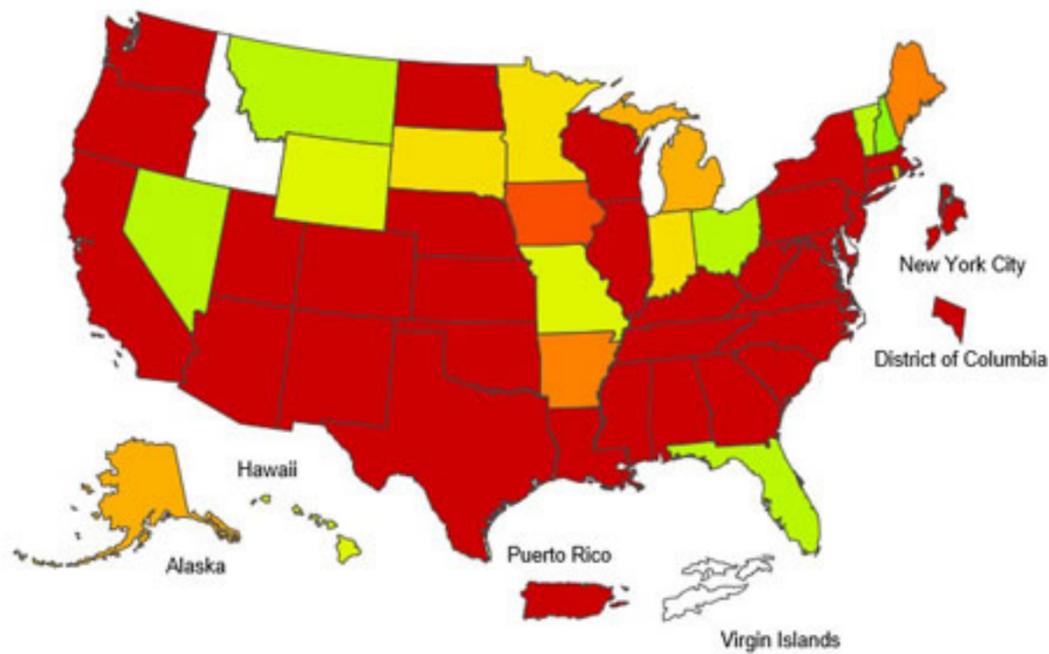
Genetic and antigenic characterization and antiviral susceptibility of influenza viruses collected in the U.S. this season is summarized in this report.

Illness

Outpatient Illness: ILINet

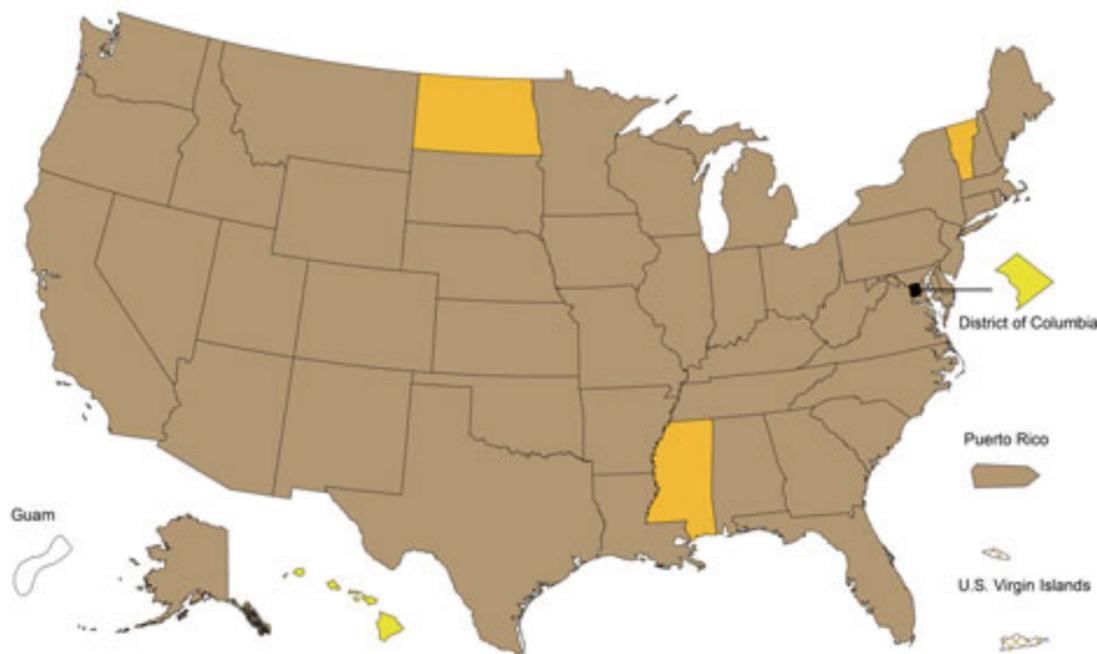
Visits to health care providers for influenza-like illness (ILI) decreased from 7.0% last week to 5.8% this week. All regions remain above their baselines.

Outpatient Illness: ILI Activity Map



The number of jurisdictions experiencing high ILI activity decreased from 37 last week to 36 this week.

Geographic Spread



The number of jurisdictions reporting regional or widespread influenza activity increased to 50 this week compared to 48 last week.

Severe Disease

Hospitalizations

The overall hospitalization rate for the season increased to 14.6 per 100,000. This is similar to what has been seen this time during recent seasons.

P&I Mortality

The percentage of deaths attributed to pneumonia and influenza is 5.8% which is below the epidemic threshold.

Pediatric Deaths

Five new influenza-associated pediatric deaths occurring during the 2019-2020 season were reported this week. The total for the season is 32.

All data are preliminary and may change as more reports are received.

A description of the CDC influenza surveillance system, including methodology and detailed descriptions of each data component is available on the [surveillance methods](#) page.

Additional information on the current and previous influenza seasons for each surveillance component are available [FluView Interactive](#).

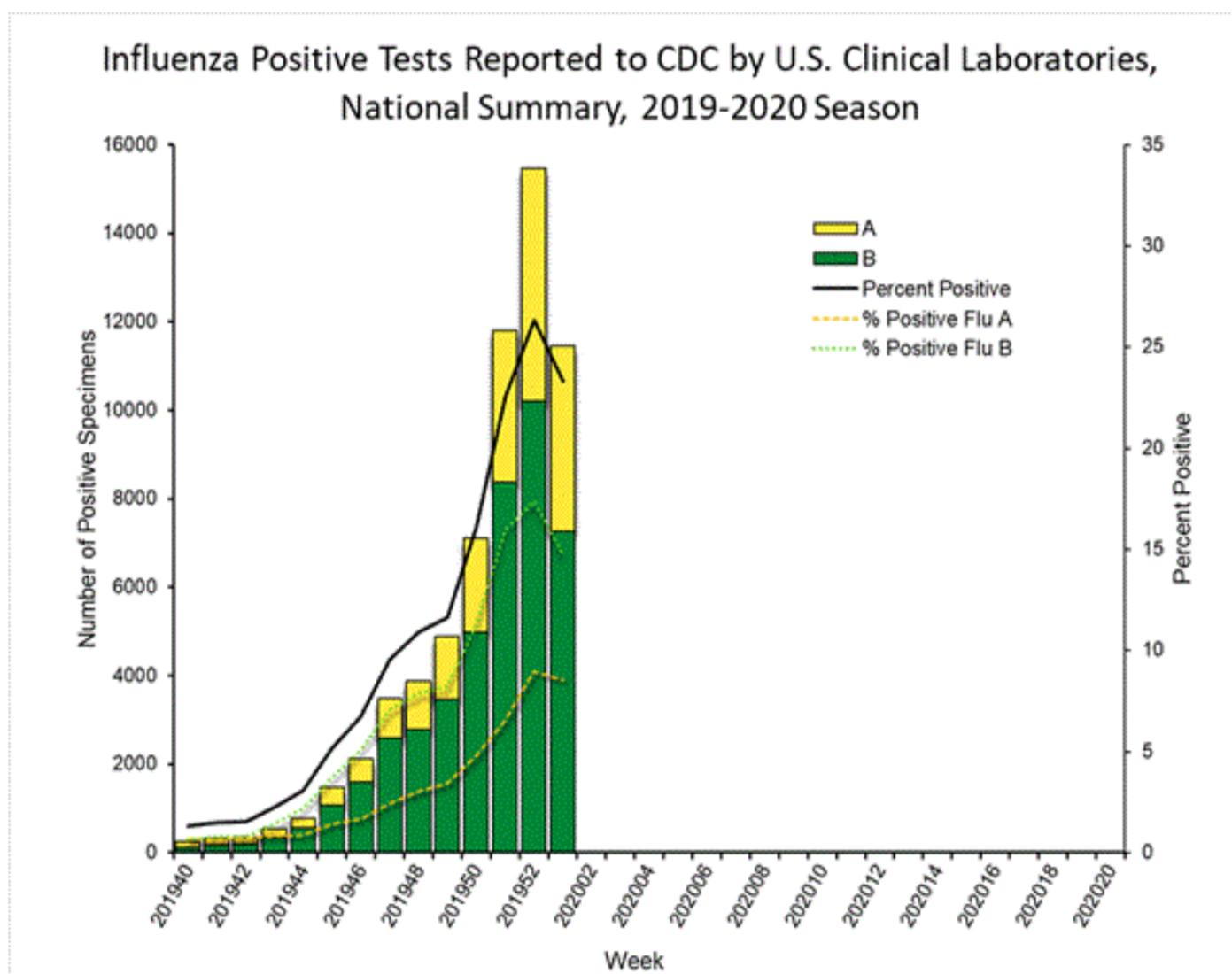
Key Points

- Levels of outpatient ILI remain elevated; however hospitalization rates and percent of deaths due to pneumonia and influenza remain low. This is likely due to the predominance of influenza B/Victoria and influenza A(H1N1)pdm09 viruses which are more likely to affect children and younger adults than the elderly. Because the majority of hospitalizations and deaths occur among people age 65 and older, with fewer illnesses among that group, we expect, on a population level, to see less impact in flu-related hospitalizations and deaths.
- The decline in outpatient ILI and laboratory data this week may in part be influenced by changes in healthcare seeking behavior and influenza virus transmission that can occur during the holidays. It is too early to know whether the season has peaked or if flu activity will increase into January.
- CDC estimates that so far this season there have been at least 9.7 million flu illnesses, 87,000 hospitalizations and 4,800 deaths from flu.
- It's not too late to get vaccinated. Flu vaccination is always the best way to prevent flu and its potentially serious complications.
- Antiviral medications are an important adjunct to flu vaccine in the control of influenza. Almost all (>99%) of the influenza viruses tested this season are susceptible to the four FDA-approved influenza antiviral medications recommended for use in the U.S. this season.

Clinical Laboratories

The results of tests performed by clinical laboratories nationwide are summarized below. Data from clinical laboratories (the percentage of specimens tested that are positive for influenza) are used to monitor whether influenza activity is increasing or decreasing.

	Week 1	Data Cumulative since September 29, 2019 (week 40)
No. of specimens tested	49,194	493,875
No. of positive specimens (%)	11,459 (23.3%)	63,975 (13.0%)
<i>Positive specimens by type</i>		
Influenza A	4,202 (36.7%)	20,240 (31.6%)
Influenza B	7,257 (63.3%)	43,735 (68.4%)



[View Chart Data](#) | [View Full Screen](#)

Public Health Laboratories

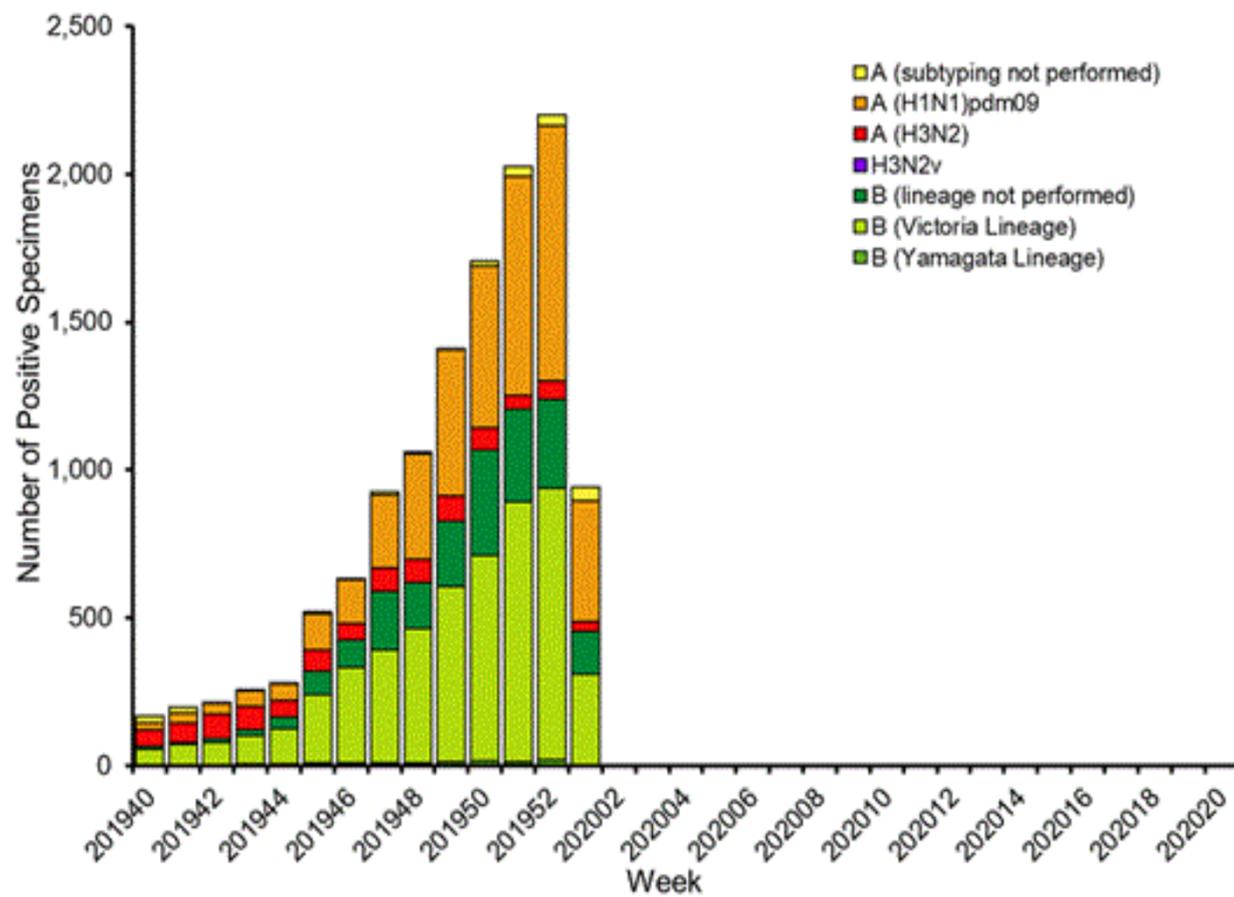
The results of tests performed by public health laboratories nationwide are summarized below. Data from public health laboratories are used to monitor the proportion of circulating viruses that belong to each influenza subtype/lineage.

		Data Cumulative since
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	Week 1	September 29, 2019 (week 40)
No. of specimens tested	1,459	28,292
No. of positive specimens	941	12,530
<i>Positive specimens by type/subtype</i>		
Influenza A	487 (51.8%)	5,267 (42.0%)
(H1N1)pdm09	411 (92.8%)	4,127 (81.7%)
H3N2	32 (7.2%)	927 (18.3%)
Subtyping not performed	44	213
Influenza B	454 (48.2%)	7,263 (58.0%)
Yamagata lineage	3 (1.0%)	116 (2.2%)
Victoria lineage	306 (99.0%)	5,204 (97.8%)
Lineage not performed	145	1,943

Nationally influenza B/Victoria viruses have been reported more frequently than other influenza viruses this season followed by A(H1N1)pdm09. The predominant virus varies by region. Regional and state level data about circulating influenza viruses can be found on [FluView Interactive](#). The predominant virus also varies by age group. Nationally, influenza B/Victoria viruses are the most commonly reported influenza viruses among children age 0-4 years (46% of reported viruses) and 5-24 years (58% of reported viruses), while A(H1N1)pdm09 viruses are the most commonly reported influenza viruses among persons 25-64 years (45% of reported viruses) and 65 years of age and older (48% reported viruses). Additional age data can be found on [FluView Interactive](#).

Influenza Positive Tests Reported to CDC by U.S. Public Health Laboratories, National Summary, 2019-2020 Season



[View Chart Data](#) | [View Full Screen](#)

Additional virologic surveillance information for current and past seasons:

[Surveillance Methods](#) | [FluView Interactive: National, Regional, and State Data or Age Data](#)

Influenza Virus Characterization

CDC performs [genetic](#) and [antigenic](#) characterization of U.S. viruses submitted from state and local health laboratories using Right Size Roadmap submission guidance. These data are used to compare how similar the currently circulating influenza viruses are to the reference viruses used for developing new influenza vaccines and to monitor evolutionary changes that continually occur in circulating influenza. CDC also tests susceptibility of influenza viruses to antiviral medications including the neuraminidase inhibitors (oseltamivir, zanamivir, and peramivir) and the PA endonuclease inhibitor baloxavir.

CDC **genetically characterized** 877 influenza viruses collected in the U.S. from September 29, 2019, to January 4, 2020.

Virus Subtype or Lineage	Genetic Characterization				
	Total No. of Subtype/Lineage Tested	Clade	Number (% of subtype/lineage tested)	Subclade	Number (% of subtype/lineage tested)
A/H1	260	6B.1A	260 (100%)		

A/H3	231				
		3C.2a	228 (98.7%)	2a1	228 (98.7%)
				2a2	0
				2a3	0
				2a4	0
		3C.3a	3 (1.3%)	3a	3 (1.3%)
B/Victoria	353				
		V1A	353 (100%)	V1A	0
				V1A.1	33 (9.3%)
				V1A.3	320 (90.7%)
B/Yamagata	33				
		Y3	33 (100%)		

CDC **antigenically characterizes** a subset of influenza viruses by [hemagglutination inhibition \(HI\)](#) or neutralization based Focus Reduction assays (FRA). Antigenic drift is evaluated by comparing antigenic properties of cell-propagated reference viruses representing currently recommended vaccine components with those of cell-propagated circulating viruses. CDC antigenically characterized 167 influenza viruses collected in the United States from September 29, 2019 to January 4, 2020.

Influenza A Viruses

- **A (H1N1)pdm09:** 66 A(H1N1)pdm09 viruses were antigenically characterized by HI with ferret antisera, and all were antigenically similar (reacting at titers that were within 4-fold of the homologous virus titer) to cell-propagated A/Brisbane/02/2018-like reference viruses representing the A(H1N1)pdm09 component for the 2019-20 Northern Hemisphere influenza vaccines.
- **A (H3N2):** 41 A(H3N2) viruses were antigenically characterized by FRA with ferret antisera, and 14 (34.1%) were antigenically similar to cell-propagated A/Kansas/14/2017-like reference viruses representing the A(H3N2) component for the 2019-20 Northern Hemisphere influenza vaccines.

Influenza B Viruses

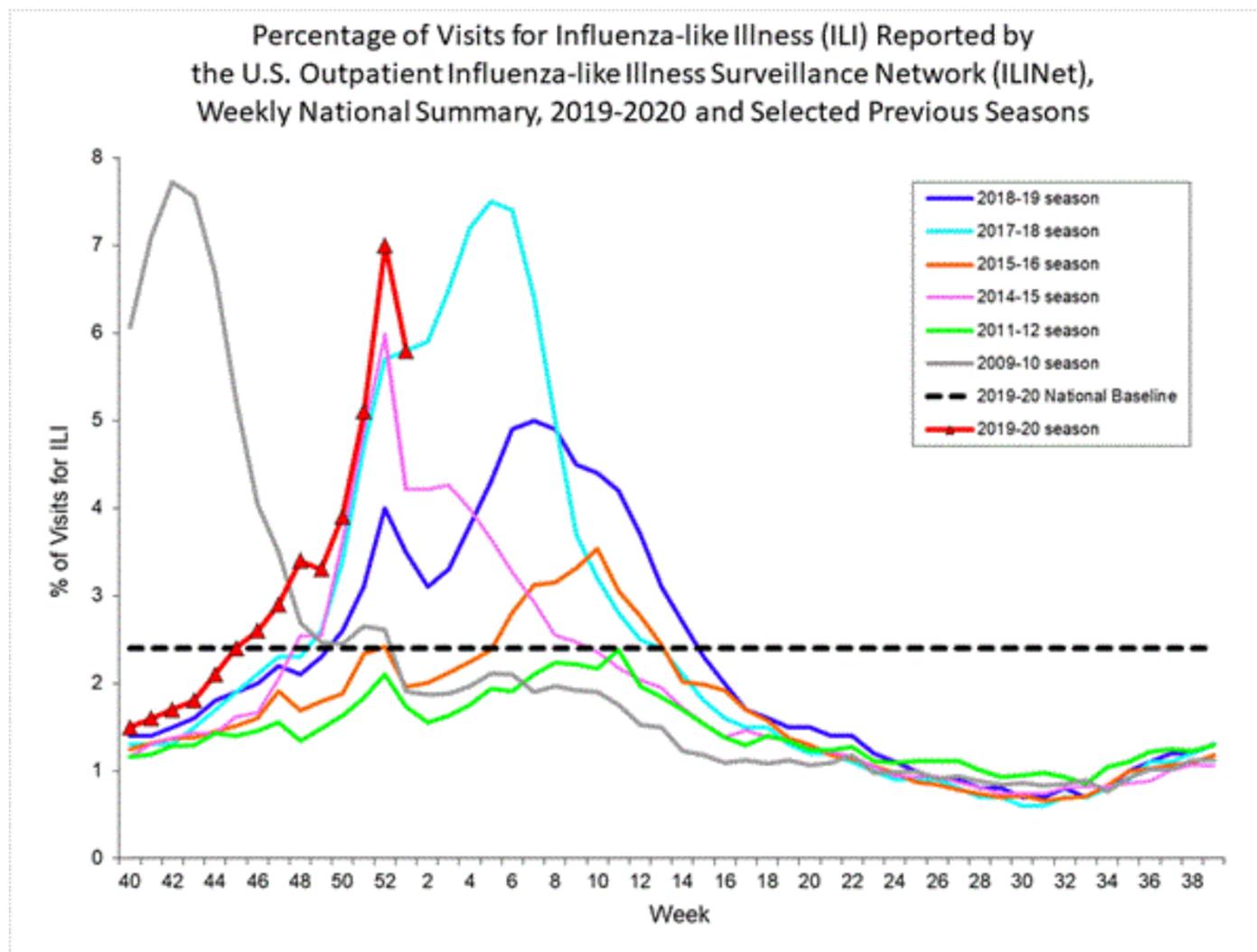
- **B/Victoria:** 50 B/Victoria lineage viruses, including viruses from both co-circulating sub-clades, were antigenically characterized by HI with ferret antisera, and 29 (58%) were antigenically similar to cell-propagated B/Colorado/06/2017-like reference viruses representing the B/Victoria component for the 2019-20 Northern Hemisphere influenza vaccines.
- **B/Yamagata:** 10 B/Yamagata lineage viruses were antigenically characterized by HI with ferret antisera, and all (100%) were antigenically similar to cell-propagated B/Phuket/3073/2013-like reference viruses representing the B/Yamagata component for the 2019-20 Northern Hemisphere influenza vaccines.

CDC assesses **susceptibility of influenza viruses to the antiviral medications** oseltamivir, zanamivir, peramivir, baloxavir using next generation sequence analysis supplemented by laboratory assays. Viruses collected in the United States since September 29, 2019, were tested for antiviral susceptibility as follows:

Antiviral Medication		Total Viruses	A/H1	A/H3	B/Victoria	B/Yamaguchi	
Neuraminidase Inhibitors	Oseltamivir	Viruses Tested	821	239	218	335	29
		Reduced Inhibition	(0.0%)	(0.0%)	(0.0%)	(0.0%)	(0.0%)
		Highly Reduced Inhibition	1 (0.1%)	1 (0.4%)	(0.0%)	(0.0%)	(0.0%)
	Peramivir	Viruses Tested	821	239	218	335	29
		Reduced Inhibition	(0.0%)	(0.0%)	(0.0%)	(0.0%)	(0.0%)
		Highly Reduced Inhibition	1 (0.1%)	1 (0.4%)	(0.0%)	(0.0%)	(0.0%)
	Zanamivir	Viruses Tested	821	239	218	335	29
		Reduced Inhibition	1 (0.1%)	(0.0%)	(0.0%)	1 (0.3%)	(0.0%)
		Highly Reduced Inhibition	(0.0%)	(0.0%)	(0.0%)	(0.0%)	(0.0%)
PA Endonuclease Inhibitor	Baloxavir	Viruses Tested	827	238	217	335	37
		Reduced Susceptibility	(0.0%)	(0.0%)	(0.0%)	(0.0%)	(0.0%)

ILINet

Nationwide during week 1, 5.8% of patient visits reported through the U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet) were due to influenza-like illness (ILI). This percentage is above the national baseline of 2.4%. The decrease in the percentage of patient visits for ILI may be influenced in part by changes in healthcare seeking behavior and influenza virus transmission that can occur during the holidays.



[View Chart Data \(current season only\)](#) | [View Full Screen](#)

On a regional level, the percentage of outpatient visits for ILI ranged from 3.6% to 8.6% during week 1. All regions reported a percentage of outpatient visits for ILI which is equal to or above their region-specific baselines.

ILI Activity Map

Data collected in ILINet are used to produce a measure of [ILI activity*](#) by state.

During week 1, the following ILI activity levels were experienced:

- High – the District of Columbia, New York City, Puerto Rico, and 33 states (Alabama, Arizona, Arkansas, California, Colorado, Connecticut, Georgia, Illinois, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Mississippi, Nebraska, New Jersey, New Mexico, New York, North Carolina, North Dakota, Oklahoma, Oregon, Pennsylvania, South Carolina, Tennessee, Texas, Utah, Virginia, Washington, West Virginia, and Wisconsin)
- Moderate – six states (Alaska, Indiana, Michigan, Minnesota, Rhode Island, and South Dakota)
- Low – eight states (Florida, Hawaii, Missouri, Montana, Nevada, Ohio, Vermont, and Wyoming)
- Minimal – one state (New Hampshire)
- Data were insufficient to calculate an ILI activity level from the U.S. Virgin Islands and two states (Delaware and Idaho).

During week 1 the following influenza activity was reported:

- Widespread – Puerto Rico and 46 states (Alabama, Alaska, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Georgia, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Virginia, Washington, West Virginia, Wisconsin and Wyoming)
- Regional – three states (Mississippi, North Dakota, and Vermont)
- Local – the District of Columbia and one state (Hawaii)
- Sporadic – the U.S. Virgin Islands
- Guam did not report.

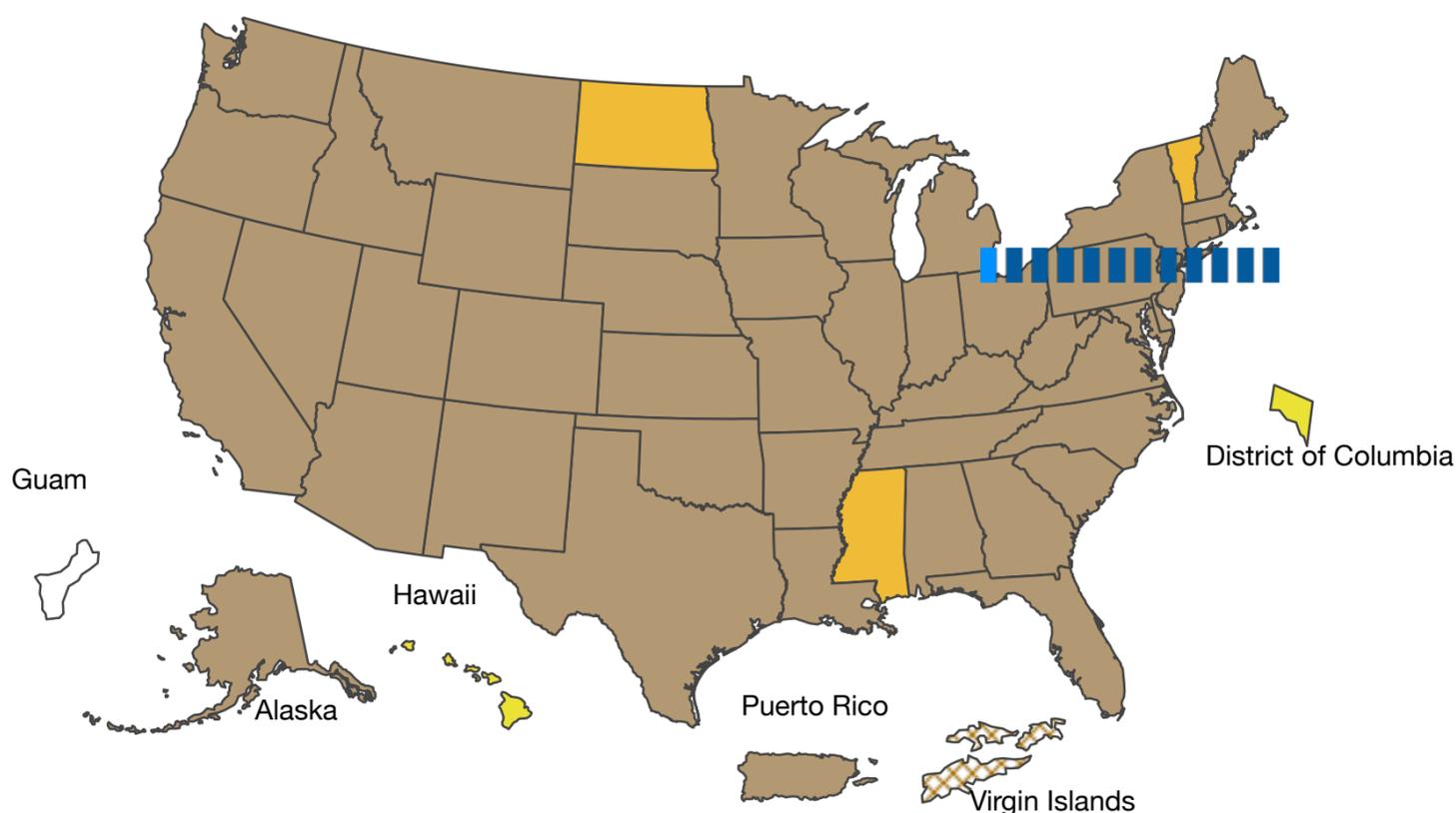
A Weekly Influenza Surveillance Report Prepared by the Influenza Division
Weekly Influenza Activity Estimates Reported by State and Territorial Epidemiologists*



Weeks

Week Ending Jan 04, 2020 - Week 1

Influenza Activity Estimates



- No Activity
- Sporadic
- Local Activity
- Regional
- Widespread
- No Report

Season: 2019-20

Download Image

Download Data

Additional geographic spread surveillance information for current and past seasons:

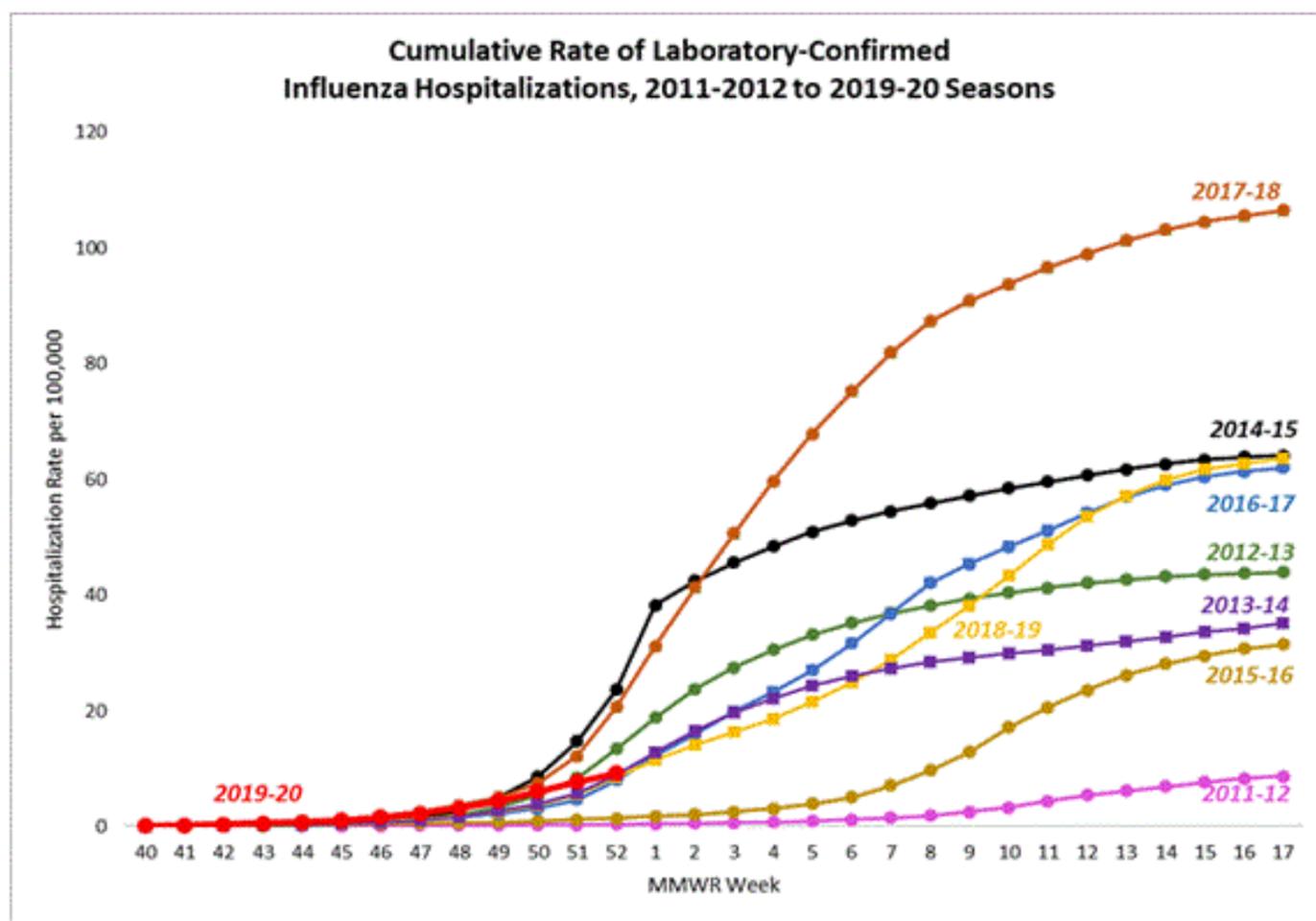
[Surveillance Methods](#) | [FluView Interactive](#)

Influenza-Associated Hospitalizations

The Influenza Hospitalization Surveillance Network (FluSurv-NET) conducts population-based surveillance for laboratory-confirmed influenza-related hospitalizations in select counties in the Emerging Infections Program (EIP) states and Influenza Hospitalization Surveillance Project (IHSP) states.

A total of 4,228 laboratory-confirmed influenza-associated hospitalizations were reported by FluSurv-NET sites between October 1, 2019 and January 4, 2020; 2,299 (54.4%) were associated with influenza A virus, 1,906 (45.1%) with influenza B virus, 13 (0.3%) with influenza A virus and influenza B virus co-infection, and 10 (0.2%) with influenza virus for which type was not determined. Among those with influenza A subtype information, 461 (86.0%) were A(H1N1)pdm09 virus and 75 (14.0%) were A(H3N2).

The overall cumulative hospitalization rate was 14.6 per 100,000 population which is similar to what has been seen during recent previous influenza seasons at this time of year.



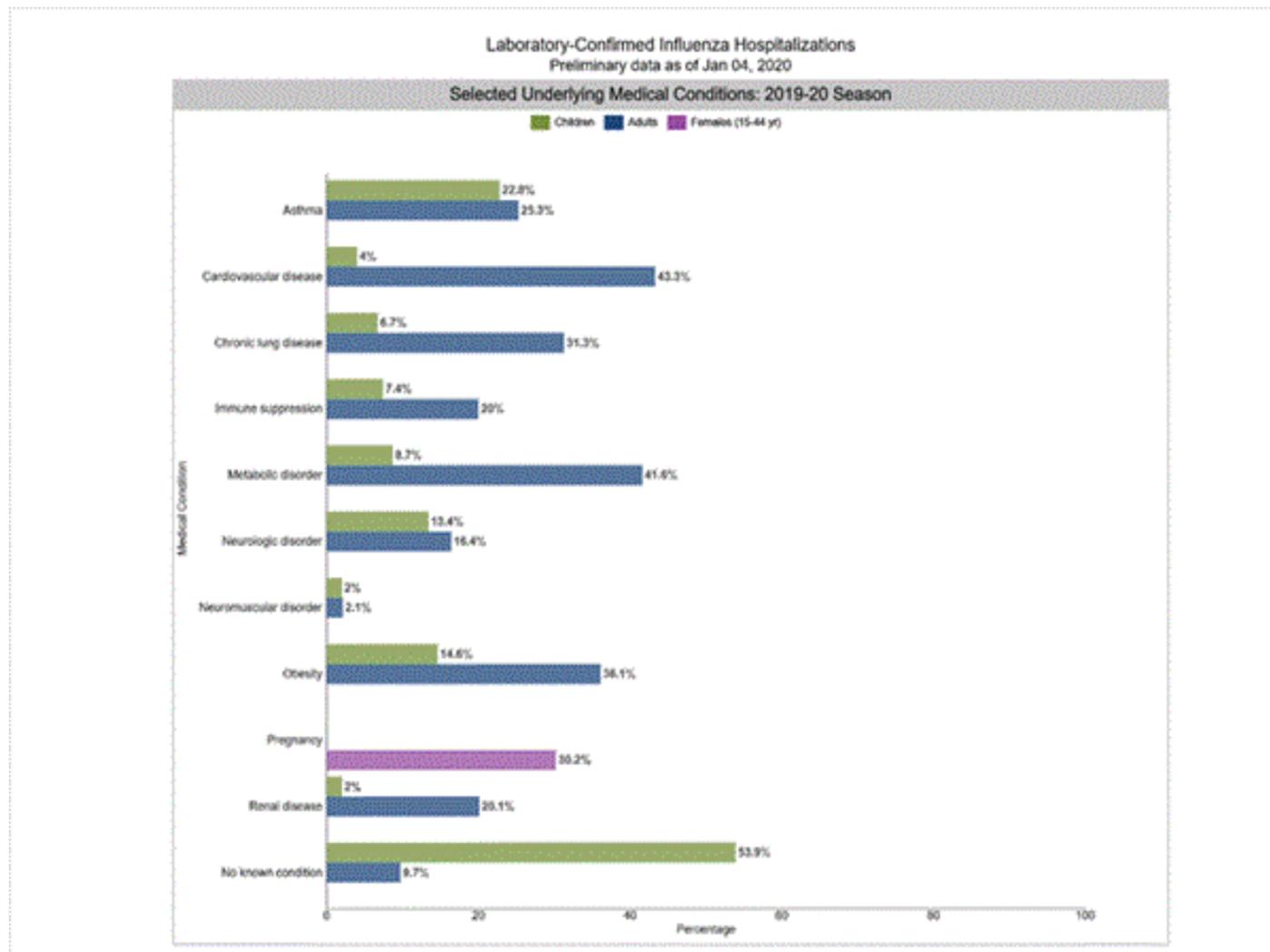
[View Full Screen](#)

The highest rate of hospitalization is among adults aged ≥ 65 , followed by children aged 0-4 years and adults aged 50-64 years.

Age Group	2019-2020 Season Cumulative Rate per 100,000 Population
Overall	14.6
0-4 years	26.8
5-17 years	8.3

18-49 years	8.2
50-64 years	17.0
65+ years	33.3

Among 549 hospitalized adults with information on underlying medical conditions, 90.3% had at least one reported underlying medical condition, the most commonly reported were cardiovascular disease, metabolic disorder, and obesity. Among 154 hospitalized children with information on underlying medical conditions, 46.1% had at least one underlying medical condition; the most commonly reported was asthma. Among 116 hospitalized women of childbearing age (15-44 years) with information on pregnancy status, 30.2% were pregnant.



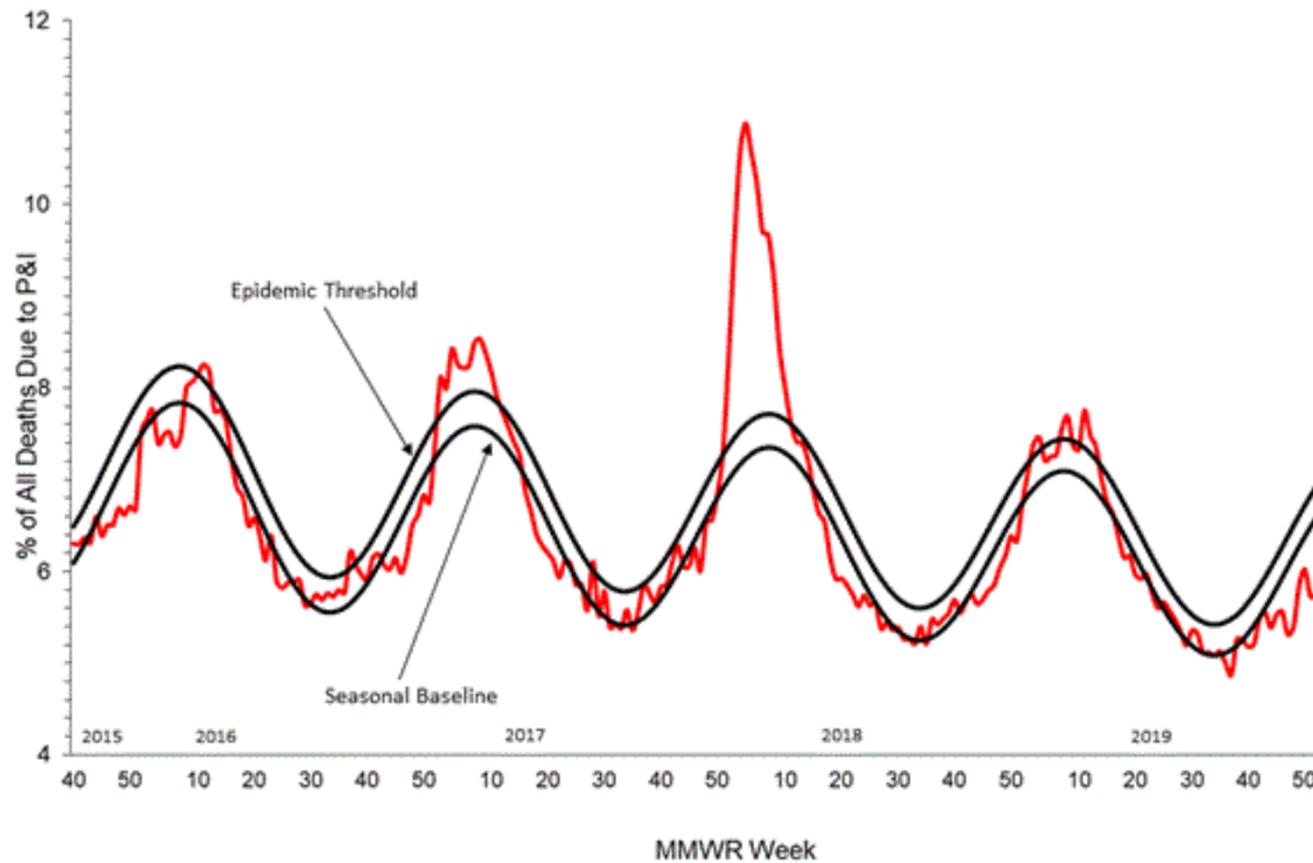
[View Full Screen](#)

Additional hospitalization surveillance information for current and past seasons and additional age groups
[Surveillance Methods](#) | [FluView Interactive](#)

Pneumonia and Influenza (P&I) Mortality Surveillance

Based on National Center for Health Statistics (NCHS) mortality surveillance data available on January 9, 2020, 5.8% of deaths occurring during the week ending December 28, 2019 (week 52) were due to P&I. This percentage is below the epidemic threshold of 6.9% for week 52.

Pneumonia and Influenza Mortality from
the National Center for Health Statistics Mortality Surveillance System
Data through the week ending December 28, 2019, as of January 9, 2020



[View Chart Data](#) | [View Full Screen](#)

Additional pneumonia and influenza mortality surveillance information for current and past seasons:
[Surveillance Methods](#) | [FluView Interactive](#)

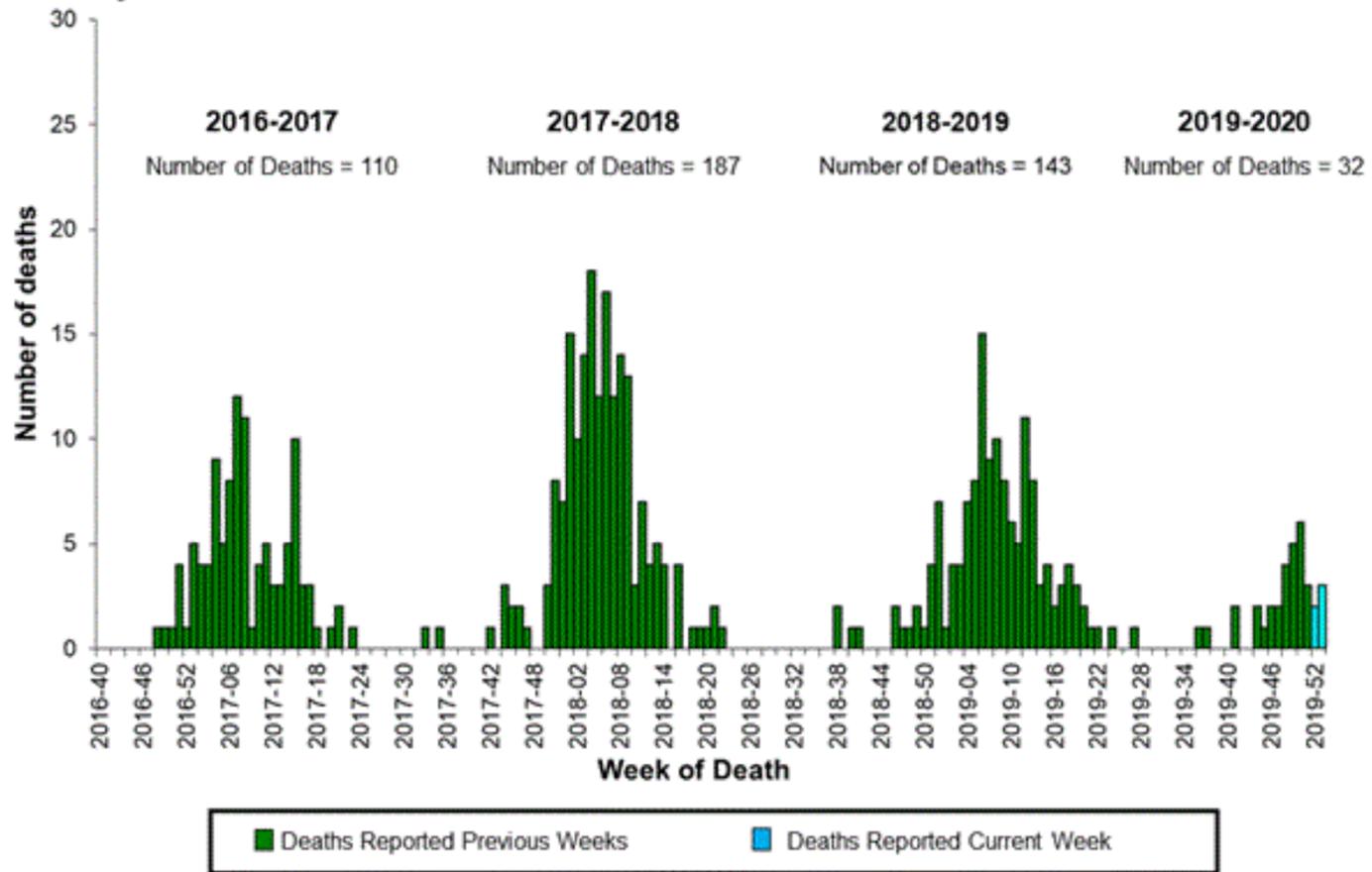
Influenza-Associated Pediatric Mortality

Five influenza-associated pediatric deaths occurring in weeks 52 (the week ending December 28, 2019) and 1 (the week ending January 4, 2020) were reported to CDC during week 1. Three were associated with influenza B viruses that did not have a lineage determined, and two were associated with influenza A(H1N1)pdm09 viruses.

A total of 32 influenza-associated pediatric deaths occurring during the 2019-2020 season have been reported to CDC.

- 21 deaths were associated with influenza B viruses. Five of these had the lineage determined and all were B/Victoria viruses.
- 11 deaths were associated with influenza A viruses. Six of these had subtyping performed and all were A(H1N1)pdm09 viruses.

Influenza-Associated Pediatric Deaths by Week of Death, 2016-2017 season to 2019-2020 season



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Additional pediatric mortality surveillance information for current and past seasons:
[Surveillance Methods](#) | [FluView Interactive](#)

Additional National and International Influenza Surveillance Information

FluView Interactive: FluView includes enhanced web-based interactive applications that can provide dynamic visualizations of the influenza data collected and analyzed by CDC. These FluView Interactive applications allow people to create customized, visual interpretations of influenza data, as well as make comparisons across flu seasons, regions, age groups, and a variety of other demographics. To access these tools, visit <http://www.cdc.gov/flu/weekly/fluviewinteractive.htm>

National Institute for Occupational Safety and Health: Monthly surveillance data on the prevalence of health-related workplace absenteeism among full-time workers in the United States are available from NIOSH at <https://www.cdc.gov/niosh/topics/absences/default.html>

U.S. State and local influenza surveillance: Select a jurisdiction below to access the latest local influenza information.

- | | | | | |
|--------------------------|-----------------------------|--------------------------|--------------------------------------|----------------------------|
| Alabama | Alaska | Arizona | Arkansas | California |
| Colorado | Connecticut | Delaware | District of Columbia | Florida |
| Georgia | Hawaii | Idaho | Illinois | Indiana |
| Iowa | Kansas | Kentucky | Louisiana | Maine |

Maryland	Massachusetts	Michigan	Minnesota	Mississippi
Missouri	Montana	Nebraska	Nevada	New Hampshire
New Jersey	New Mexico	New York	North Carolina	North Dakota
Ohio	Oklahoma	Oregon	Pennsylvania	Rhode Island
South Carolina	South Dakota	Tennessee	Texas	Utah
Vermont	Virginia	Washington	West Virginia	Wisconsin
Wyoming	New York City	Puerto Rico	Virgin Islands	

World Health Organization: Additional influenza surveillance information from participating WHO member nation available through [FluNet](#) and the [Global Epidemiology Reports](#).

WHO Collaborating Centers for Influenza located in [Australia](#), [China](#), [Japan](#), the [United Kingdom](#), and the [United States](#) (CDC in Atlanta, Georgia).

Europe: For the most recent influenza surveillance information from Europe, please see WHO/Europe and the European Centre for Disease Prevention and Control at <http://www.flunewseurope.org/>.

Public Health Agency of Canada: The most up-to-date influenza information from Canada is available at <http://www.phac-aspc.gc.ca/fluwatch/>

Public Health England: The most up-to-date influenza information from the United Kingdom is available at <https://www.gov.uk/government/statistics/weekly-national-flu-reports>

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An overview of the CDC influenza surveillance system, including methodology and detailed descriptions of each data component, is available at: <http://www.cdc.gov/flu/weekly/overview.htm>.