

Influenza (Flu)

Weekly U.S. Influenza Surveillance Report

FLUVIEW



A Weekly Influenza Surveillance Report Prepared by the Influenza Division

Key Updates for Week 3, ending January 18, 2020

Key indicators that track flu activity remain high and, after falling during the first two weeks of the year, increased slightly this week. 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 increased from 23.4% last week to 25.6% this week.

Public Health Labs

Nationally, B/Victoria viruses are the predominant viruses this season; however, during recent weeks, approximately equal numbers of B/Victoria and A(H1N1)pdm09 viruses have been reported.

Virus Characterization

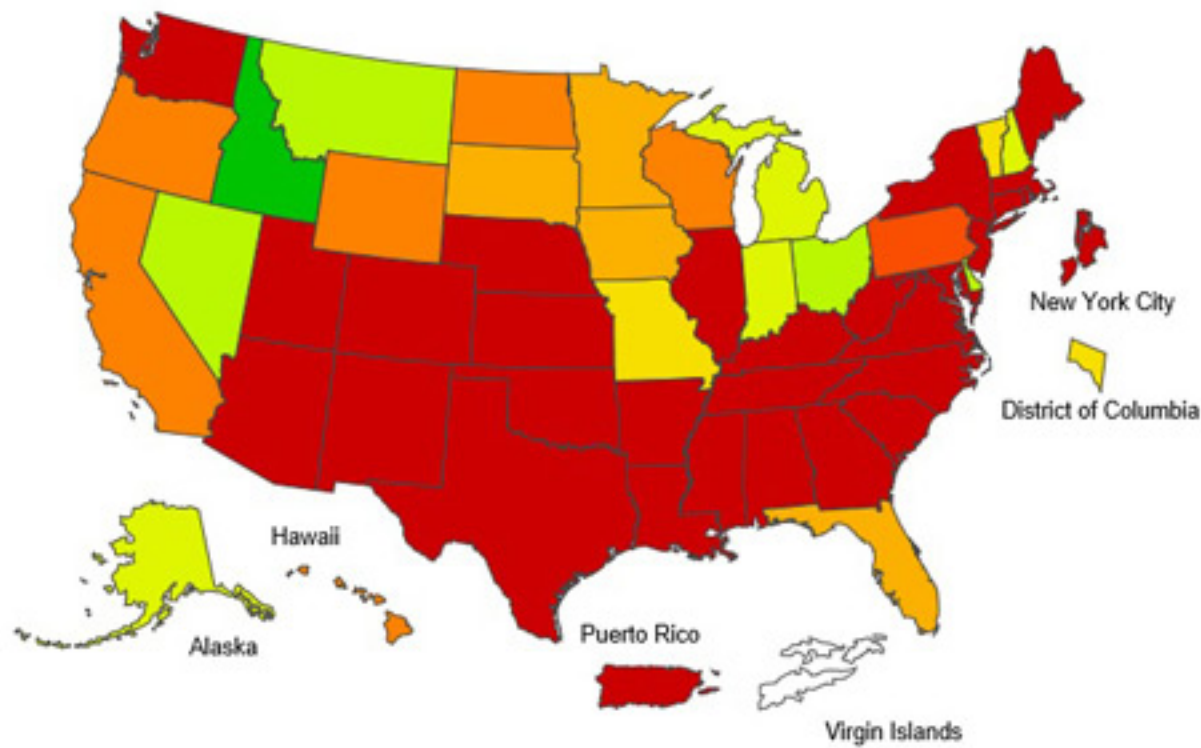
Genetic and antigenic characterization and antiviral susceptibility of influenza viruses collected in the U.S. are summarized in this report.

Illness

Outpatient Illness: ILINet

Visits to health care providers for influenza-like illness (ILI) increased from 4.7% last week to 5.0% this week. All regions remain above their baselines.

Outpatient Illness: ILI Activity Map



The number of jurisdictions experiencing high ILI activity increased from 34 last week to 37 this week.

Geographic Spread



The number of jurisdictions reporting regional or widespread influenza activity remained at 50 this week.

Severe Disease

Hospitalizations

The overall hospitalization rate for the season increased to 24.1 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 decreased from 7.1% to 6.7% and is below the epidemic threshold.

Pediatric Deaths

Fifteen new influenza-associated pediatric deaths occurring during the 2019-2020 season were reported this week. The total for the season is 54.

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

- Outpatient ILI and laboratory data remain elevated and increased slightly this week. Some regions are seeing increases in the proportion of influenza A(H1N1)pdm09 viruses compared to influenza B viruses.
- Levels of outpatient ILI remain elevated; however, hospitalization rates remain similar to what has been seen at this time during recent seasons and mortality, while low overall, has exceeded the epidemic threshold for one week this season.
- Over 50% of influenza positive test results from public health laboratories this season are in children and young adults (<25 years), while only 12% are in adults aged 65 and older. This has resulted in high levels of outpatient illness, but lower levels of hospitalization and death due to influenza. However, influenza can still cause severe disease in children.
- 15 additional pediatric deaths were reported this week, bringing the total for the season to 54. Influenza B viruses account for 37 of the 54 reported flu-related pediatric deaths this season.
- CDC estimates that so far this season there have been at least 15 million flu illnesses, 140,000 hospitalizations and 8,200 deaths from flu.
- Flu vaccine effectiveness estimates are not available yet this season, but 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.

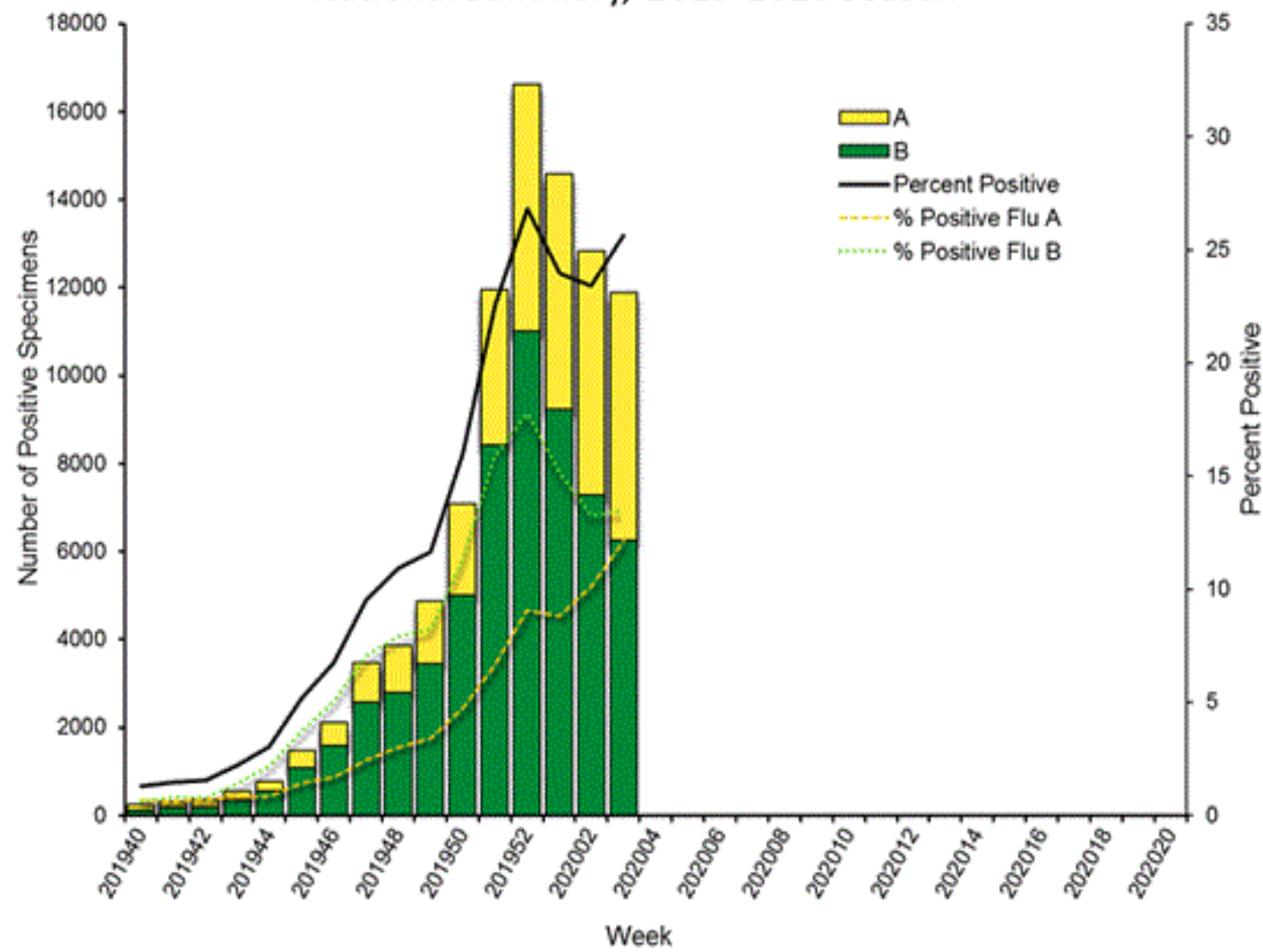
U.S. Virologic Surveillance

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 3	Data Cumulative since September 29, 2019 (week 40)
No. of specimens tested	46,427	610,685
No. of positive specimens (%)	11,890 (25.6%)	93,120 (15.2%)
<i>Positive specimens by type</i>		
Influenza A	5,629 (47.3%)	32,997 (35.4%)
Influenza B	6,261 (52.7%)	60,123 (64.6%)

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



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

Public Health Laboratories

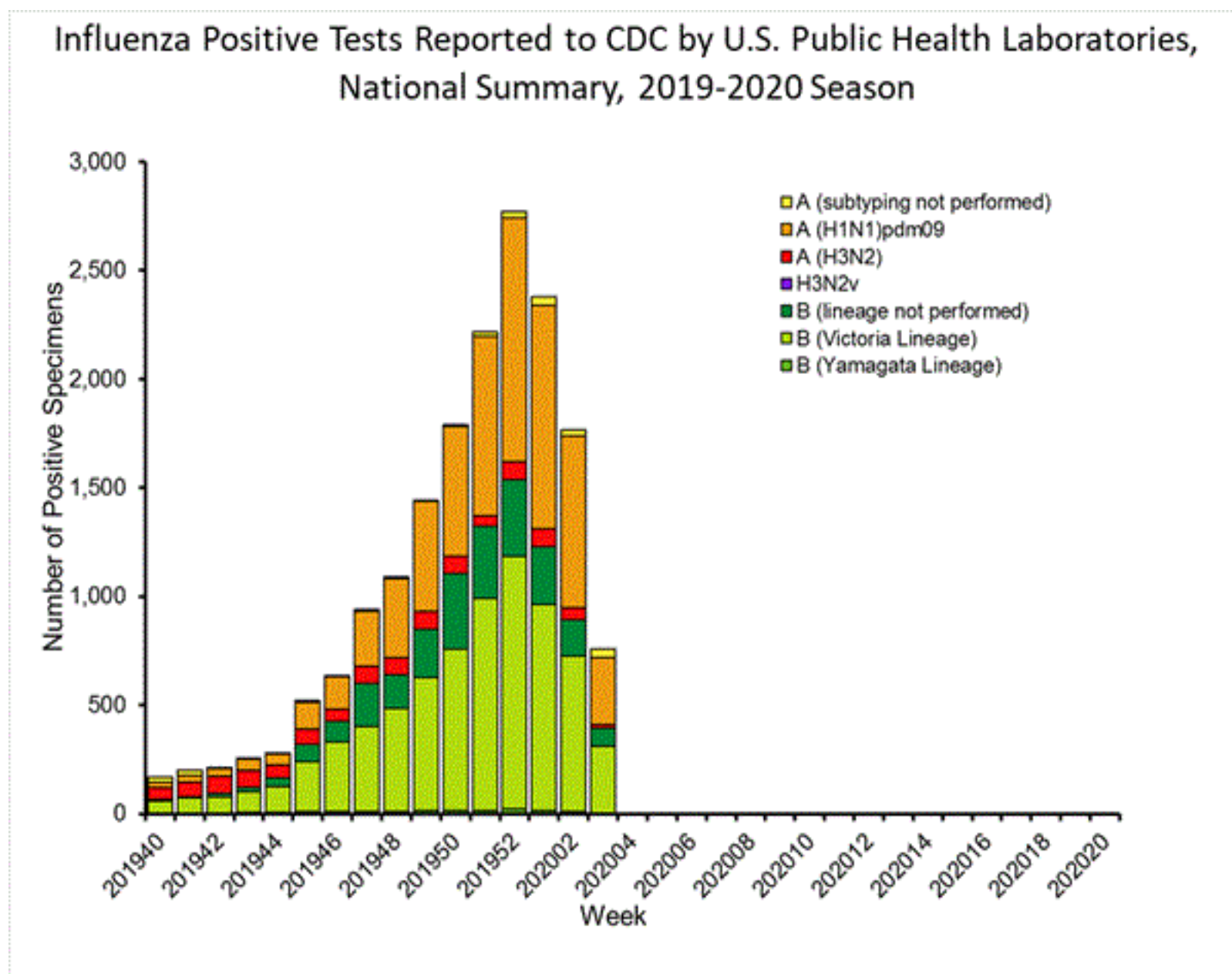
The results of tests performed by public health laboratories nationwide are summarized below. Data from public health laboratories are used to monitor the proportion of circulating viruses that belong to each influenza subtype/lineage.

	Week 3	Data Cumulative since September 29, 2019 (week 40)
No. of specimens tested	1,262	35,731
No. of positive specimens	756	17,407
<i>Positive specimens by type/subtype</i>		
Influenza A	364 (48.1%)	7,581 (43.6%)
(H1N1)pdm09	306 (94.4%)	6,259 (85.2%)
H3N2	18 (5.6%)	1,083 (14.8%)
Subtyping not performed	40	239
Influenza B	392 (51.9%)	9,826 (56.4%)
Yamagata lineage	2 (0.6%)	142 (1.9%)

Victoria lineage	308 (99.4%)	7,307 (98.1%)
Lineage not performed	82	2,377

Nationally influenza B/Victoria viruses have been reported more frequently than other influenza viruses this season. However, during recent weeks, approximately equal numbers of B/Victoria and influenza A(H1N1)pdm09 viruses have been reported nationally. 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 viruses are the most commonly reported influenza viruses among children age 0-4 years (60% of reported viruses) and 5-24 years (75% of reported viruses), while A(H1N1)pdm09 viruses are the most commonly reported influenza viruses among persons 25-64 years (47% of reported viruses) and 65 years of age and older (53% of reported viruses). For this season, 53% of influenza positive specimens reported by public health laboratories were among persons less than 25 years of age and only 12% were from persons age 65 and older.



[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. Antigenic characterization data are based on an animal model (influenza-naive ferrets), and do not reflect pre-existing protection provided by past influenza infections and vaccination. Additional antigenic characterization studies involving people vaccinated with current influenza vaccines are conducted later in the season; these data account for pre-existing protection in different populations against circulating influenza viruses. Genetic and antigenic characterization data are not used to make calculations about [vaccine effectiveness \(VE\)](#). CDC conducts [VE studies](#) each year to measure the benefits of flu vaccines in people.

CDC **genetically characterized** 1,087 influenza viruses collected in the U.S. from September 29, 2019, to January 18, 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	340				
		6B.1A	340 (100%)		
A/H3	268				
		3C.2a	260 (97.0%)	2a1	260 (97.0%)
				2a2	0
				2a3	0
				2a4	0
		3C.3a	8 (3.0%)	3a	8 (3.0%)
B/Victoria	433				
		V1A	433 (100%)	V1A	0
				V1A.1	38 (8.8%)
				V1A.3	395 (91.2%)
B/Yamagata	46				
		Y3	46 (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 225 influenza viruses collected in the United States from September 29, 2019 to January 18, 2020. These data are not used to make calculations about [vaccine effectiveness \(VE\)](#). CDC conducts [VE studies](#) each year to measure the benefits of flu vaccines in people.

Influenza A Viruses

- **A (H1N1)pdm09:** 74 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):** 53 A(H3N2) viruses were antigenically characterized by FRA with ferret antisera, and 22 (41.5%) 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:** 88 B/Victoria lineage viruses, including viruses from both co-circulating sub-clades, were antigenically characterized by HI with ferret antisera, and 53 (60.2%) 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** including the neuraminidase inhibitors (oseltamivir, zanamivir, and peramivir) and the PA endonuclease inhibitor 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:

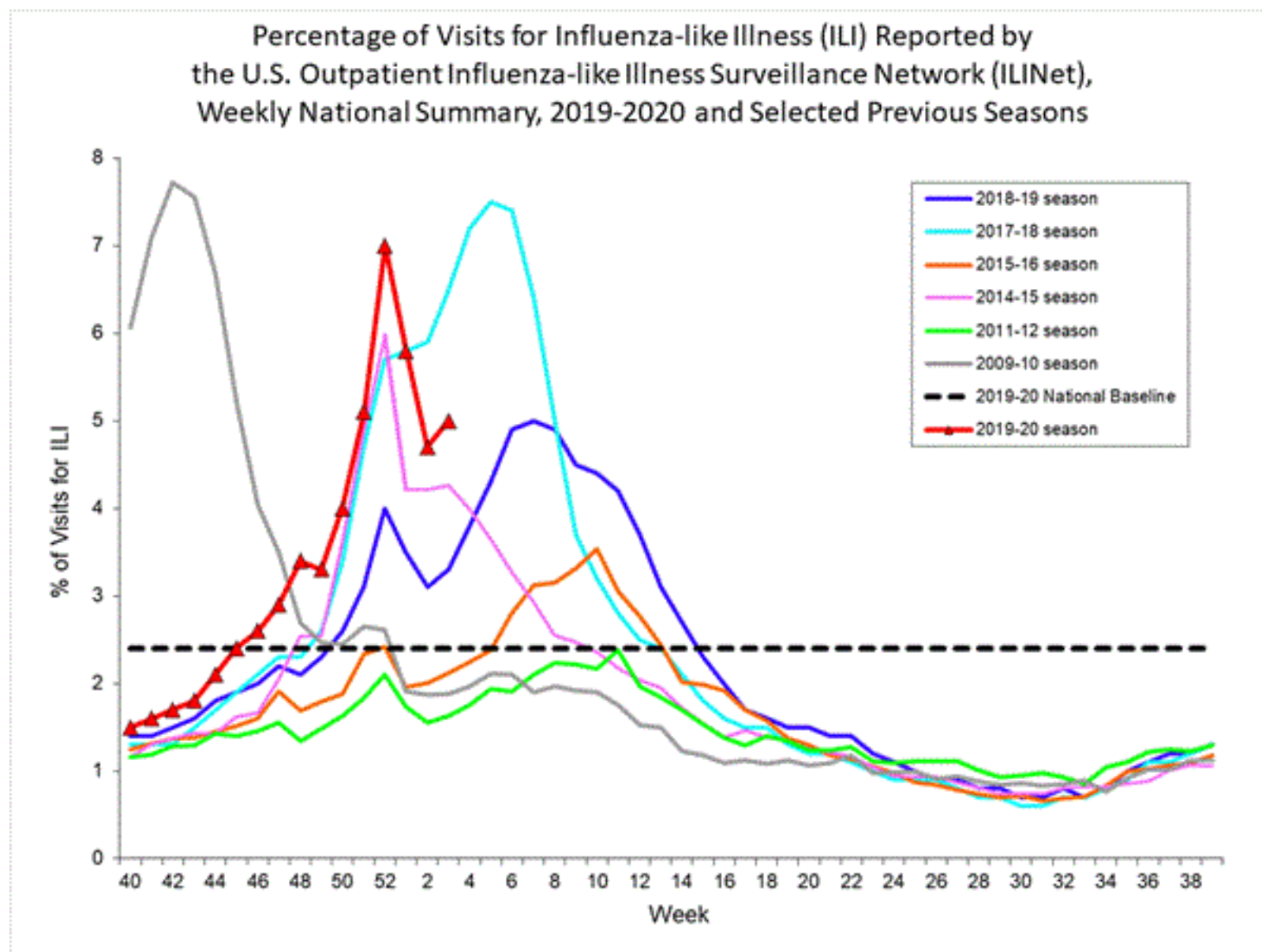
Antiviral Medication		Total Viruses	A/H1	A/H3	B/Victoria	B/Yamagata	
Neuraminidase Inhibitors	Oseltamivir	Viruses Tested	1,076	339	262	429	46
		Reduced Inhibition	(0.0%)	(0.0%)	(0.0%)	(0.0%)	(0.0%)
		Highly Reduced Inhibition	1 (0.1%)	1 (0.3%)	(0.0%)	(0.0%)	(0.0%)
	Peramivir	Viruses Tested	1,076	339	262	429	46
		Reduced Inhibition	(0.0%)	(0.0%)	(0.0%)	(0.0%)	(0.0%)
		Highly Reduced	1 (0.1%)	1 (0.3%)	(0.0%)	(0.0%)	(0.0%)

		Inhibition					
	Zanamivir	Viruses Tested	1,076	339	262	429	46
		Reduced Inhibition	1 (0.1%)	(0.0%)	(0.0%)	1 (0.2%)	(0.0%)
		Highly Reduced Inhibition	(0.0%)	(0.0%)	(0.0%)	(0.0%)	(0.0%)
PA Endonuclease Inhibitor	Baloxavir	Viruses Tested	1,074	338	261	429	43
		Reduced Susceptibility	(0.0%)	(0.0%)	(0.0%)	(0.0%)	(0.0%)

Outpatient Illness Surveillance

ILINet

Nationwide during week 3, 5.0% 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%.



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

On a regional level, the percentage of outpatient visits for ILI ranged from 3.2% to 7.3% during week 3. All regions reported a percentage of outpatient visits for ILI which is 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 3, the following ILI activity levels were experienced:

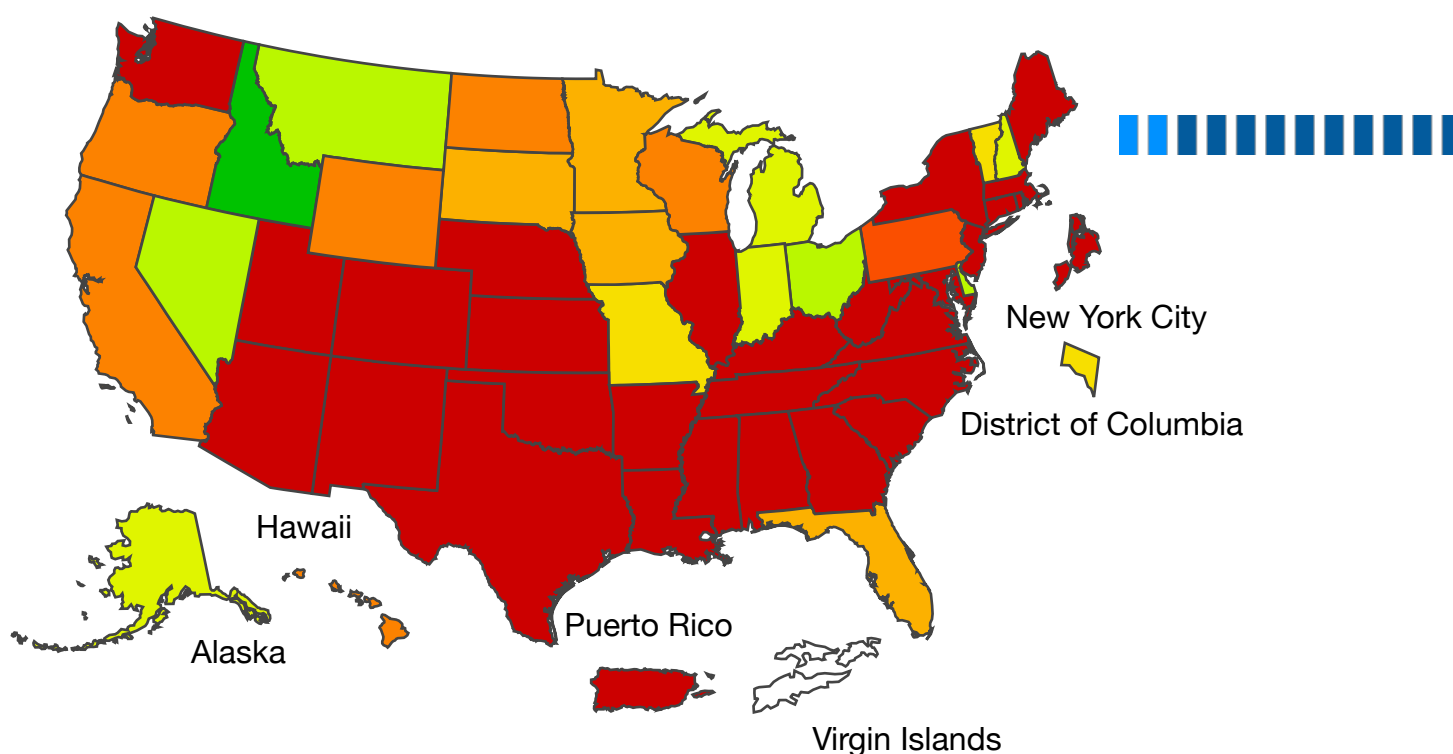
- High – New York City, Puerto Rico, and 35 states (Alabama, Arizona, Arkansas, California, Colorado, Connecticut, Georgia, Hawaii, Illinois, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Mississippi, Nebraska, New Jersey, New Mexico, New York, North Carolina, North Dakota, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, Tennessee, Texas, Utah, Virginia, Washington, West Virginia, Wisconsin, and Wyoming)
- Moderate – the District of Columbia and six states (Florida, Iowa, Minnesota, Missouri, South Dakota, and Vermont)
- Low – eight states (Alaska, Delaware, Indiana, Michigan, Montana, Nevada, New Hampshire, and Ohio)
- Minimal – one state (Idaho)
- Data were insufficient to calculate an ILI activity level from the U.S. Virgin Islands.

A Weekly Influenza Surveillance Report Prepared by the Influenza Division Influenza-Like Illness (ILI) Activity Level Indicator Determined by Data Reported to ILINet

prev Play Pause next

2019-20 Influenza Season Week 3 ending Jan 18, 2020

ILI Activity Level



Season: 2019-20 ▲

Download Image

Download Data

(<https://www.cdc.gov/flu/weekly/flureport.xml>)View Full Screen (<http://gis.cdc.gov/grasp/fluview/main.html>)

*Data collected in ILINet may disproportionately represent certain populations within a state, and therefore, may not accurately depict the full picture of influenza activity for the whole state. Differences in the data presented here by CDC and independently by some state health departments likely represent differing levels of data completeness with data presented by the state likely being the more complete.

Additional information about medically attended visits for ILI for current and past seasons:

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

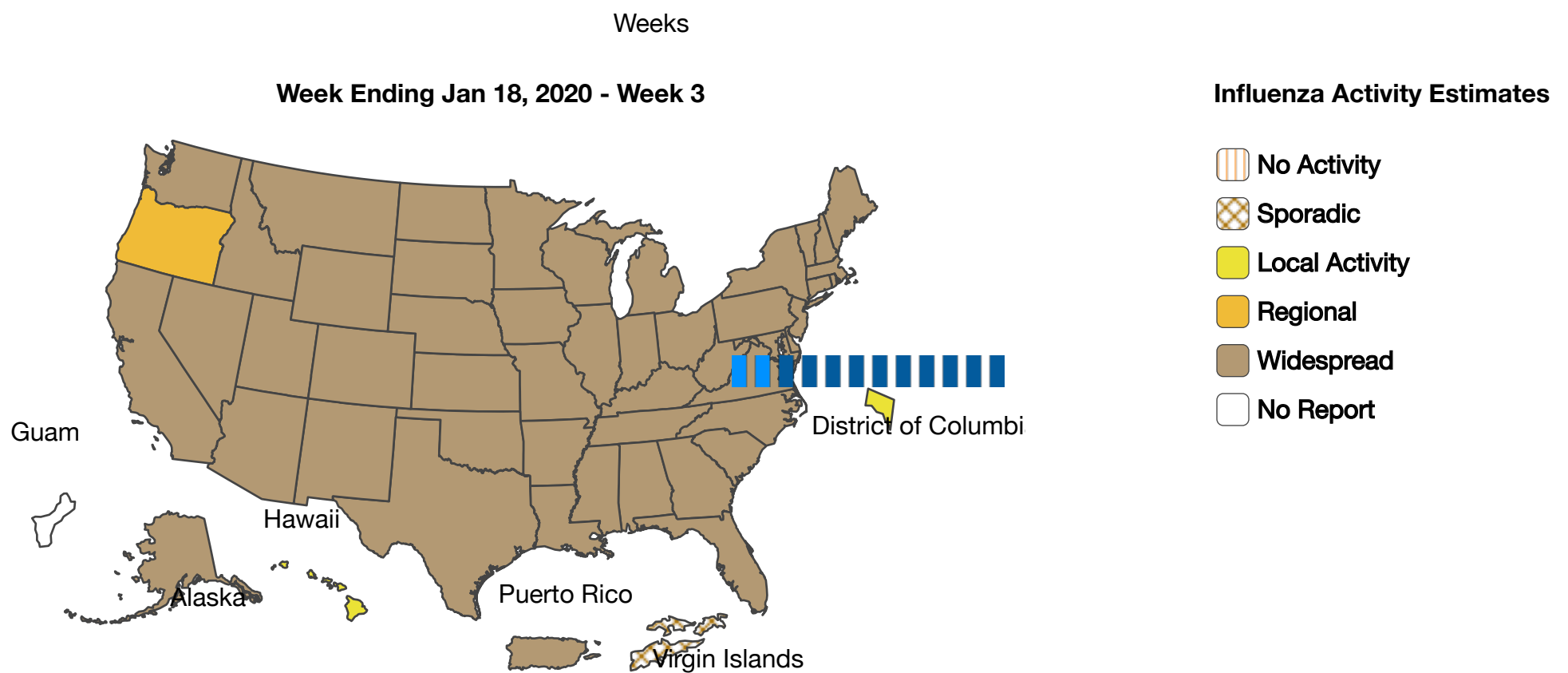
Geographic Spread of Influenza as Assessed by State and Territorial Epidemiologists

The influenza activity reported by state and territorial epidemiologists indicates geographic spread of influenza virus but does not measure the severity of influenza activity.

During week 3 the following influenza activity was reported:

- Widespread – Puerto Rico and 48 states (Alabama, Alaska, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Georgia, 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, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, and Wyoming)
- Regional – one state (Oregon)
- 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*



Season: 2019-20



Most Recent Flu Activity data in XML Format (<https://www.cdc.gov/flu/weekly/flureport.xml>) | View Full Screen (<http://gis.cdc.gov/grasp/fluview/FluView8.html>)

***This map indicates geographic spread and does not measure the severity of influenza activity.**

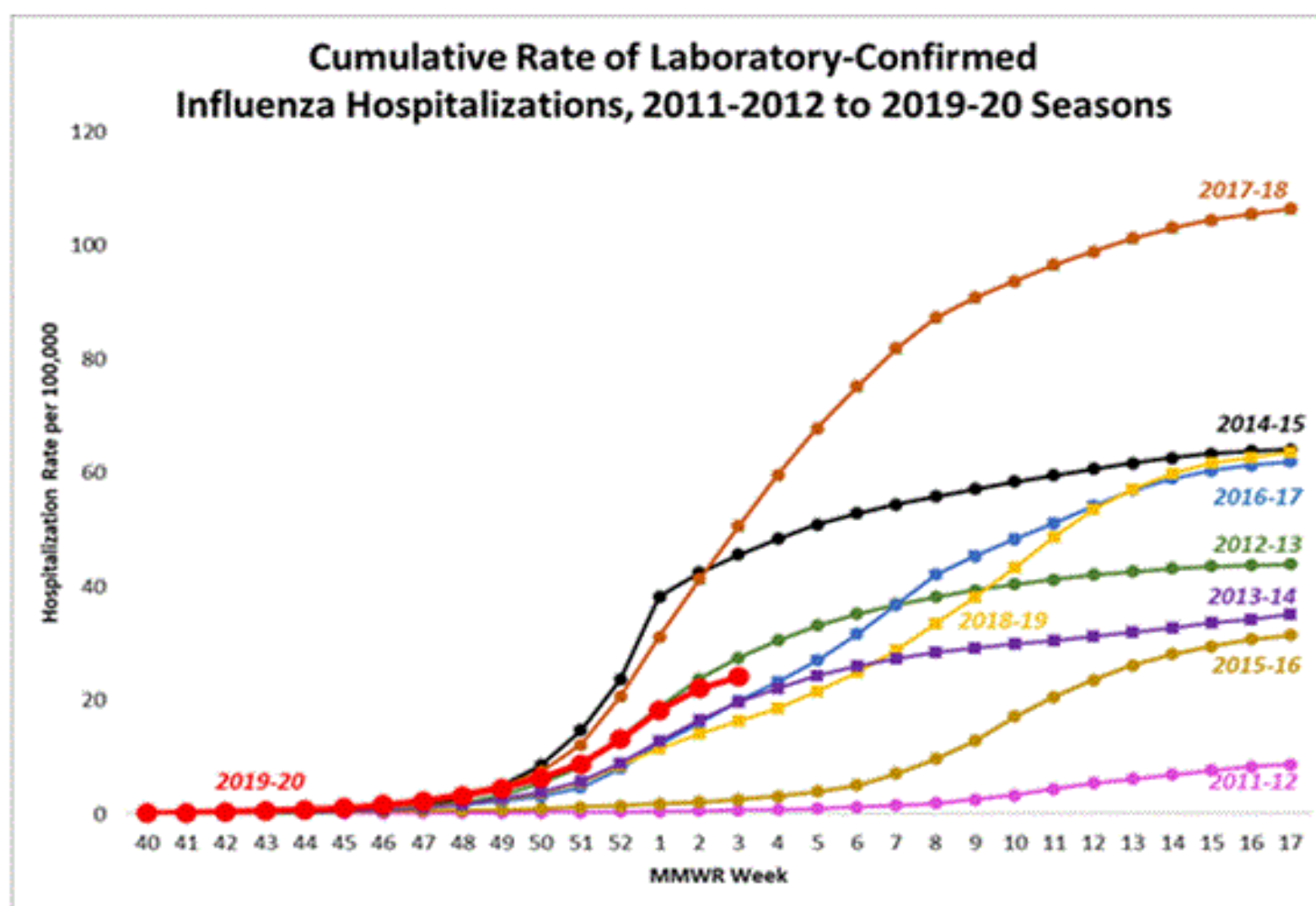
Additional geographic spread surveillance information for current and past seasons:
[Surveillance Methods](#) | [FluView Interactive](#)

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 7,013 laboratory-confirmed influenza-associated hospitalizations were reported by FluSurv-NET sites between October 1, 2019 and January 18, 2020; 4,056 (57.8%) were associated with influenza A virus, 2,914 (41.6%) with influenza B virus, 22 (0.3%) with influenza A virus and influenza B virus co-infection, and 21 (0.3%) with influenza virus for which the type was not determined. Among those with influenza A subtype information, 850 (89.9%) were A(H1N1)pdm09 virus and 96 (10.1%) were A(H3N2).

The overall cumulative hospitalization rate was 24.1 per 100,000 population which is similar to what has been seen during recent previous influenza seasons at this time of year.

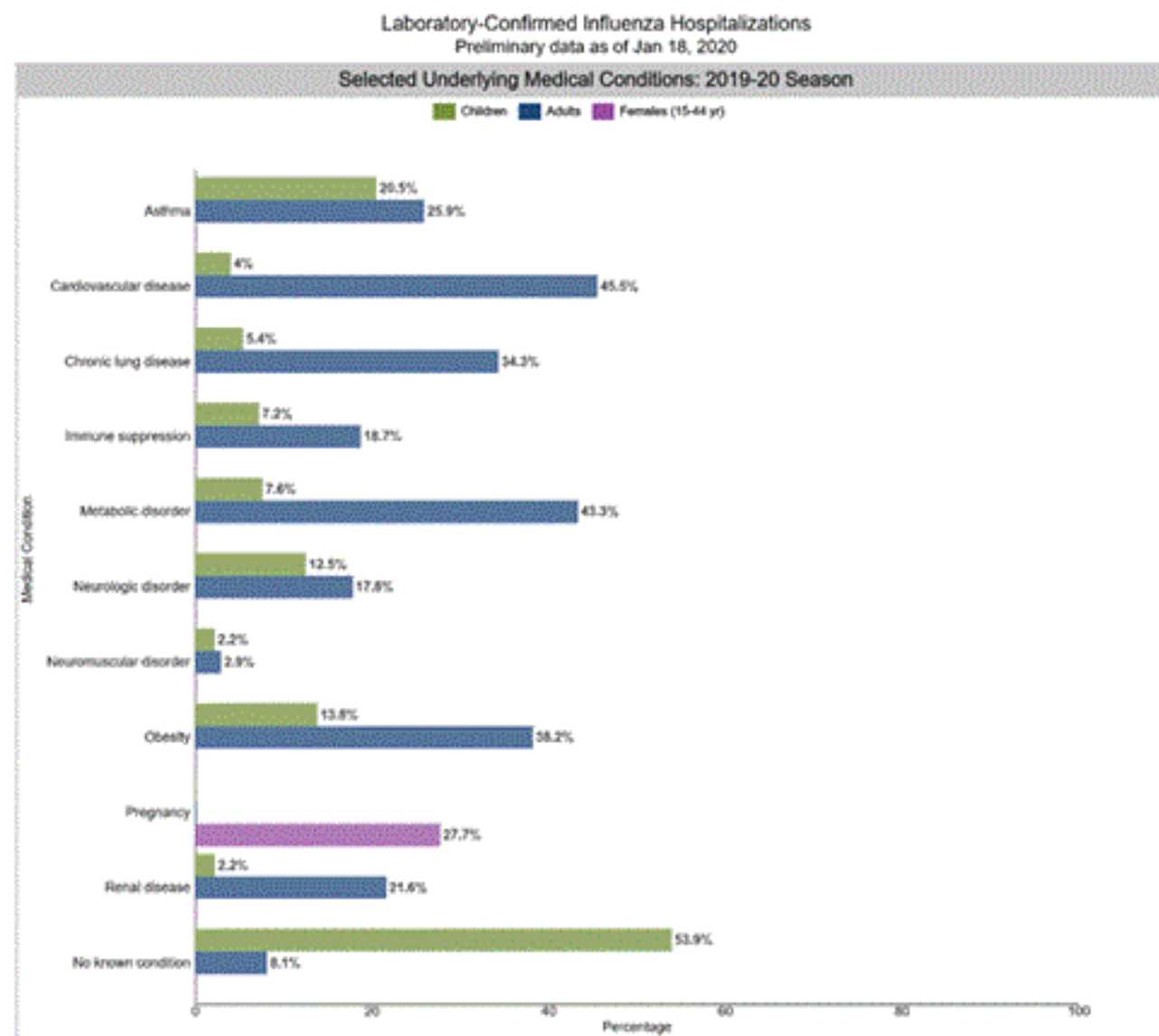


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The highest rate of hospitalization is among adults aged ≥ 65 , followed by children aged 0-4 years and adults aged 50-64 years.

Age Group	2019-2020 Season Cumulative Rate per 100,000 Population
Overall	24.1
0-4 years	40.6
5-17 years	10.8
18-49 years	13.9
50-64 years	28.9
65+ years	58.1

Among 903 hospitalized adults with information on underlying medical conditions, 91.9% had at least one reported underlying medical condition, the most commonly reported were cardiovascular disease, metabolic disorder, and obesity. Among 228 hospitalized children with information on underlying medical conditions, 46.1% had at least one underlying medical condition; the most commonly reported was asthma. Among 177 hospitalized women of childbearing age (15-44 years) with information on pregnancy status, 27.7% were pregnant.



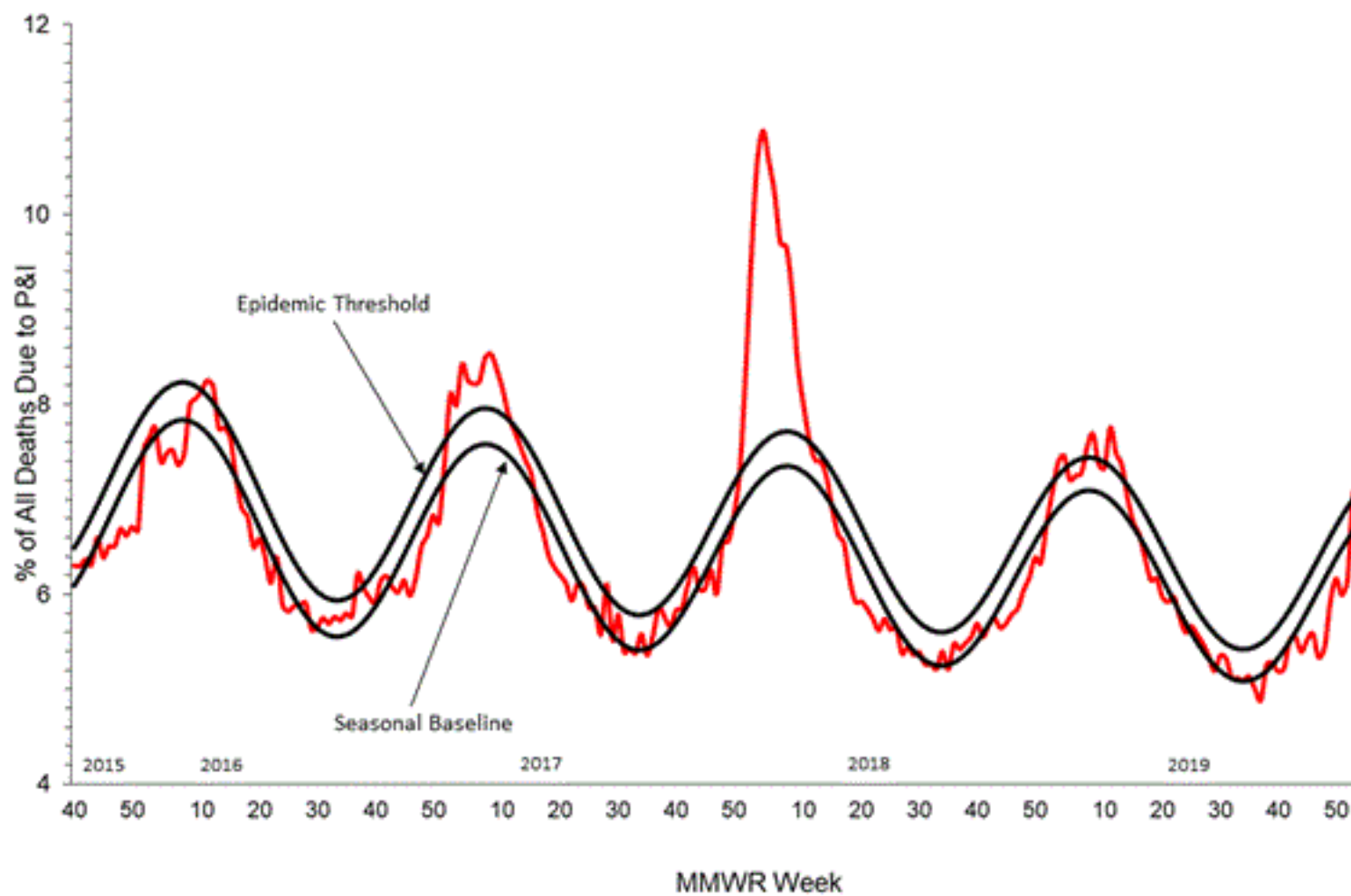
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Additional hospitalization surveillance information for current and past seasons and additional age group
[Surveillance Methods](#) | [FluView Interactive](#)

Pneumonia and Influenza (P&I) Mortality Surveillance

Based on National Center for Health Statistics (NCHS) mortality surveillance data available on January 23, 2020, 6.7% of the deaths occurring during the week ending January 11, 2020 (week 2) were due to P&I. This percentage is below the epidemic threshold of 7.1% for week 2.

Pneumonia and Influenza Mortality from
the National Center for Health Statistics Mortality Surveillance System
Data through the week ending January 11, 2020, as of January 23, 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

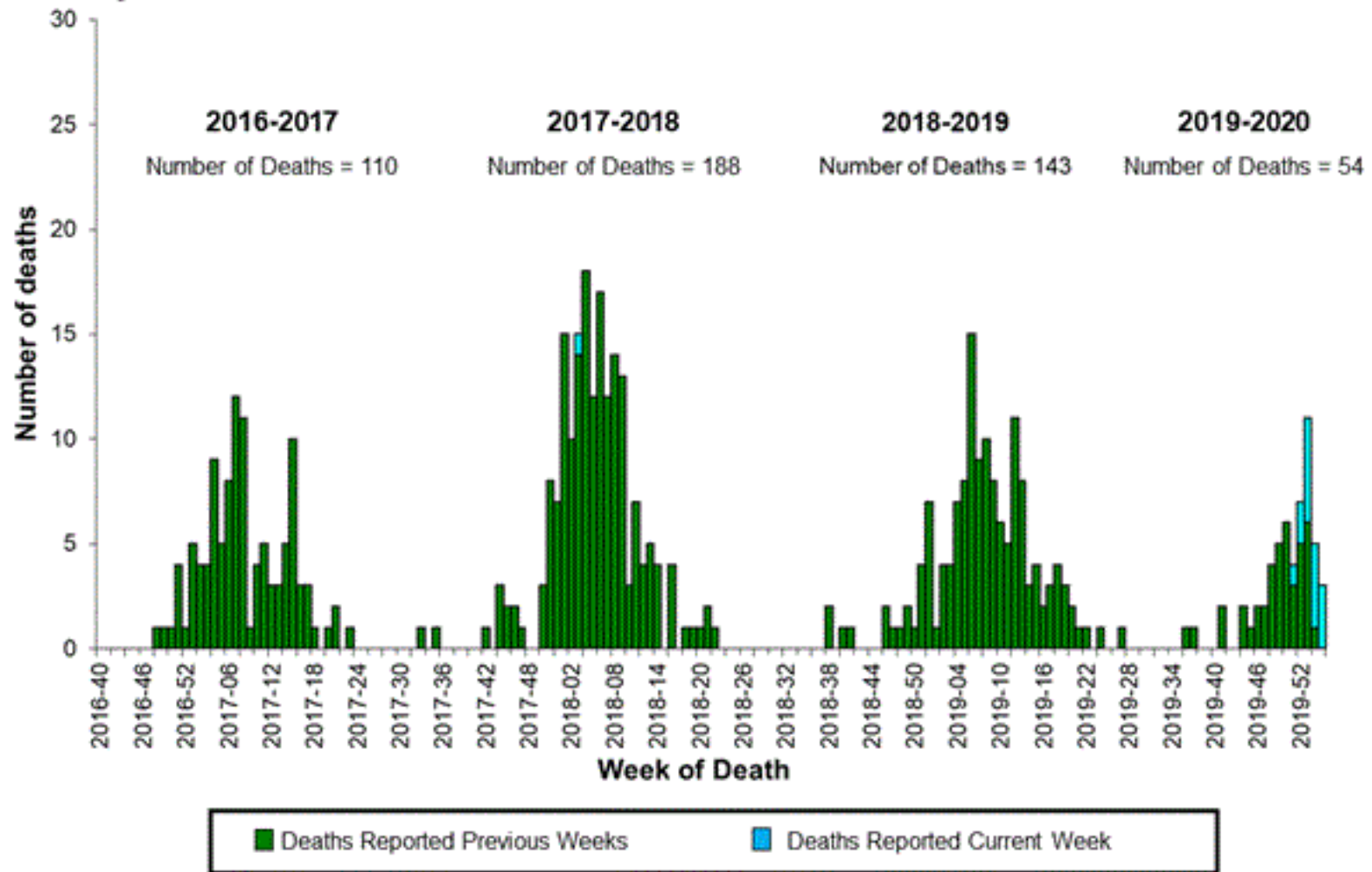
Fifteen influenza-associated pediatric deaths occurring during the 2019-2020 season between weeks 51 and 3 (the week ending December 21, 2019 and January 18, 2020) were reported to CDC during week 3. Nine were associated with influenza B viruses; two had a lineage determined and were both B/Victoria viruses. Six were associated with influenza A viruses, and four were subtyped; all A(H1N1)pdm09 viruses.

One influenza-associated pediatric death occurring during the 2017-2018 season in week 3 (the week ending January 18, 2018) was reported to CDC during week 3, bringing the total during that season to 188. This was associated with an influenza B virus.

Of the 54 influenza-associated pediatric deaths occurring during the 2019-2020 season and reported to CDC:

- 37 deaths were associated with influenza B viruses. Seven of these had the lineage determined and all were B/Victoria viruses.
- 17 deaths were associated with influenza A viruses. Ten 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>.