

Influenza (Flu)

Weekly U.S. Influenza Surveillance Report

FLUVIEW



A Weekly Influenza Surveillance Report Prepared by the Influenza Division

Key Updates for Week 8, ending February 22, 2020

Key indicators that track flu activity remain high but decreased for the second week in a row. Severity indicators (hospitalizations and deaths) remain moderate to low overall, but hospitalization rates differ by age group, with high rates among children and young adults.

Viruses

Clinical Labs

The percentage of respiratory specimens testing positive for influenza at clinical laboratories decreased from 29.7% last week to 26.4% this week.

Public Health Labs

Numbers of influenza B/Victoria and A(H1N1)pdm09 viruses are approximately equal for the season overall, with continued increases in influenza A(H1N1)pdm09 viruses in recent weeks.

Virus Characterization

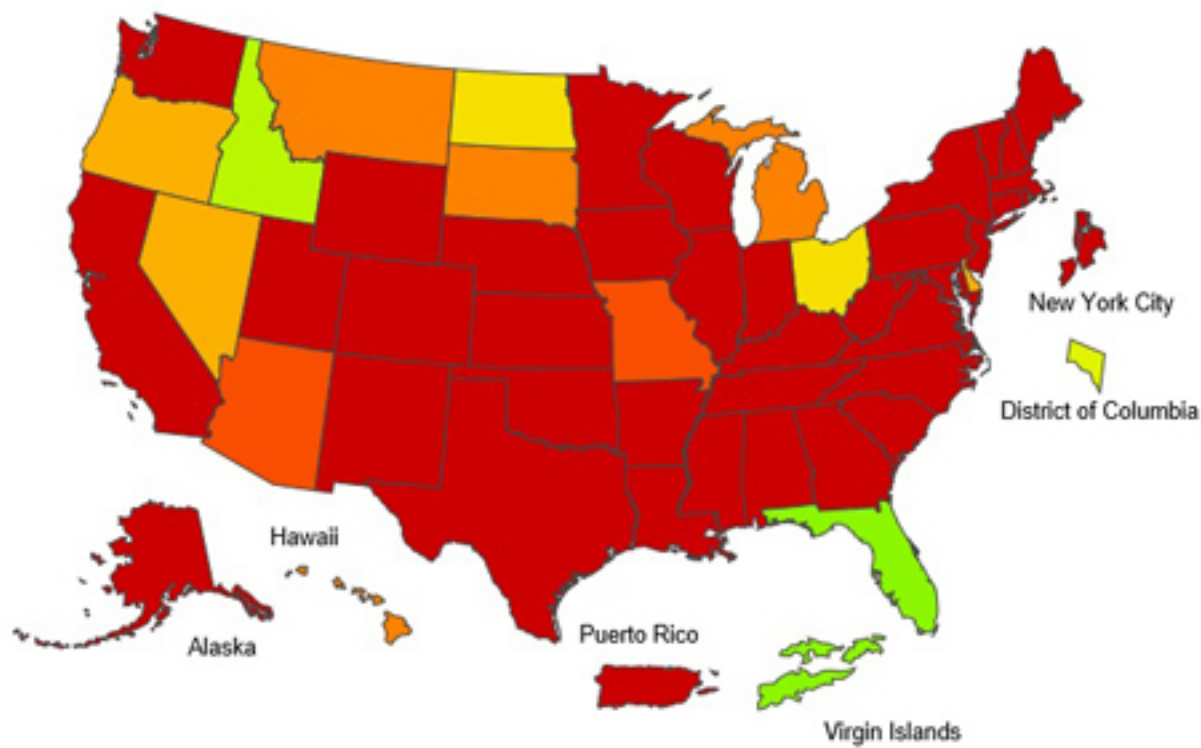
Genetic and antigenic characterization and antiviral susceptibility of influenza viruses collected in the U.S. are summarized in this report.

Illness

Outpatient Illness: ILINet

Visits to health care providers for influenza-like illness (ILI) decreased from 6.1% last week to 5.5% this week. All regions remain above their baselines.

Outpatient Illness: ILINet Activity Map



The number of jurisdictions experiencing high ILI activity decreased slightly from 46 last week to 45 this week.

Geographic Spread



The number of jurisdictions reporting regional or widespread influenza activity decreased from 51 last week to 50 this week.

Severe Disease

Hospitalizations

The overall cumulative hospitalization rate for the season increased to 52.7 per 100,000.

P&I Mortality

The percentage of deaths attributed to pneumonia and influenza is 6.9%, below the epidemic threshold of 7.3%.

Pediatric Deaths

20 influenza-associated pediatric deaths occurring during the 2019-2020 season were reported this week. The total for the season is 125.

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](#).

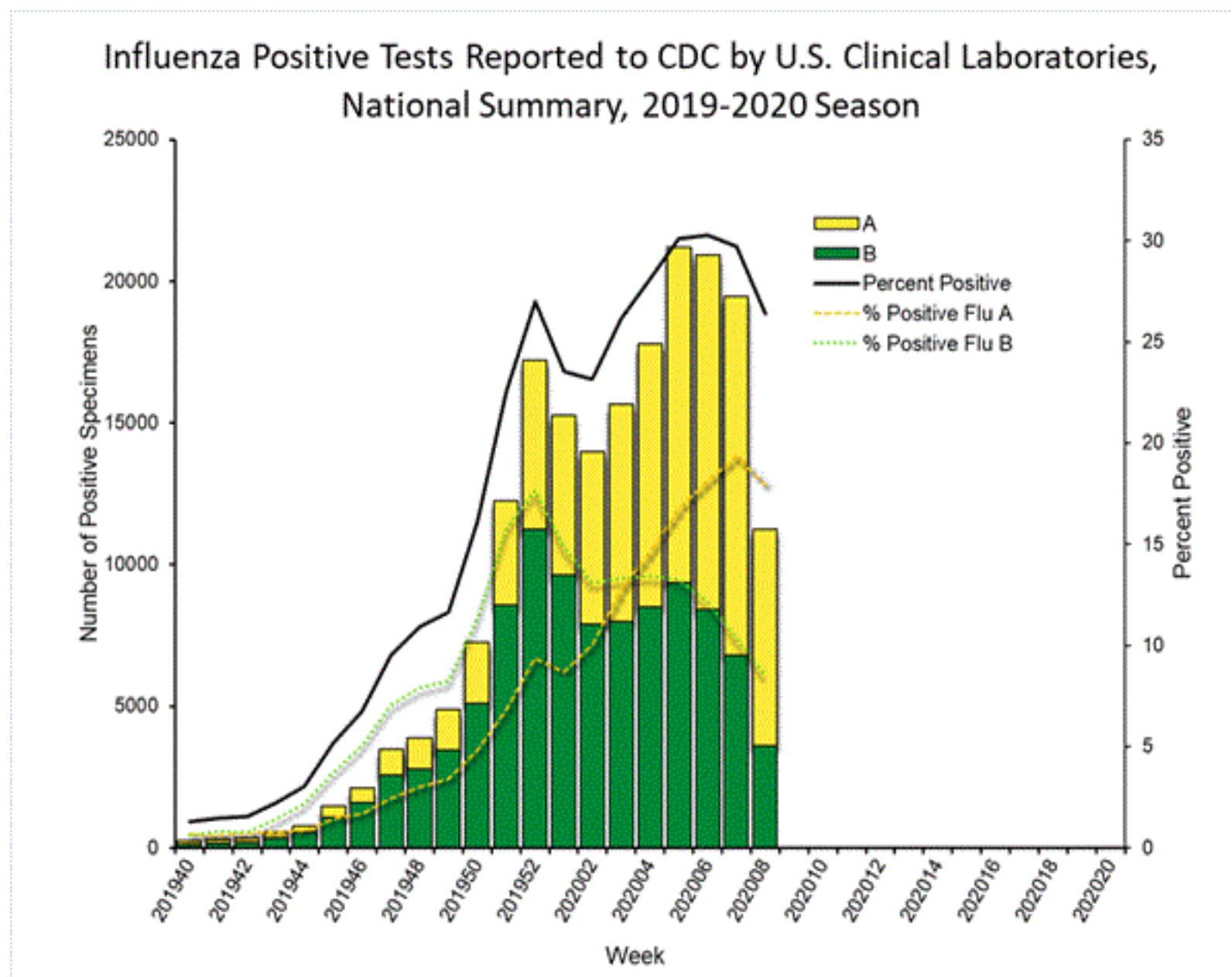
Key Points:

- Outpatient ILI and clinical laboratory data remain elevated but decreased for the second week in a row. The percentage of specimens testing positive for both influenza A and influenza B viruses decreased.
- Overall, hospitalization rates remain similar to this time during recent seasons, but rates among school aged children and young adults are higher at this time than in recent seasons and rates among children 0-4 years old are now the highest CDC has on record at this point in the season, surpassing rates reported during the second wave of the 2009 H1N1 pandemic.
- Pneumonia and influenza mortality has been low, but 125 influenza-associated deaths in children have been reported so far this season. This number is higher for the same time period than in every season since reporting began in 2004-05, except for the 2009 pandemic.
- CDC estimates that so far this season there have been at least 32 million flu illnesses, 310,000 hospitalizations and 18,000 deaths from flu.
- Interim estimates of 2019-2020 flu vaccine effectiveness were released last week. So far this season, flu vaccine are reducing doctor's visits for flu illness by 45% overall and 55% in children.
- 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 8	Data Cumulative since September 29, 2019 (week 40)
No. of specimens tested	42,587	948,064
No. of positive specimens (%)	11,249 (26.4%)	190,362 (20.1%)
<i>Positive specimens by type</i>		
Influenza A	7,633 (67.9%)	90,382 (47.5%)
Influenza B	3,616 (32.1%)	99,980 (52.5%)



[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.

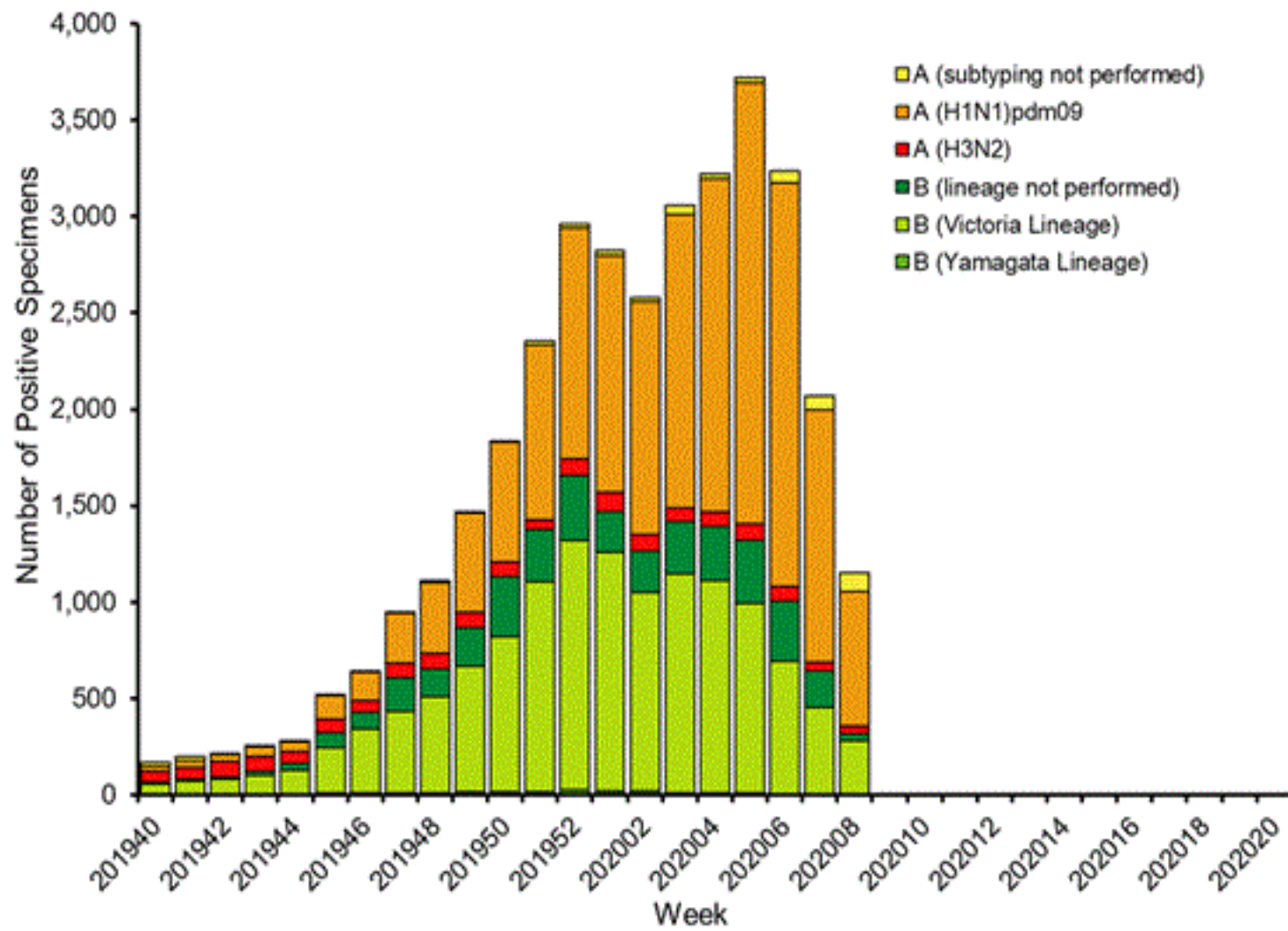
		Data Cumulative since
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	Week 8	September 29, 2019 (week 40)
No. of specimens tested	1,783	62,234
No. of positive specimens	1,153	34,807
<i>Positive specimens by type/subtype</i>		
Influenza A	835 (72.4%)	18,421 (52.9%)
(H1N1)pdm09	697 (94.8%)	16,409 (91.6%)
H3N2	38 (5.2%)	1,511 (8.4%)
Subtyping not performed	100	501
Influenza B	318 (27.6%)	16,386 (47.1%)
Yamagata lineage	2 (0.7%)	205 (1.6%)
Victoria lineage	277 (99.3%)	12,657 (98.4%)
Lineage not performed	39	3,524

While influenza B/Victoria viruses predominated earlier in the season, during recent weeks, influenza A(H1N1)pdm09 viruses have been reported more frequently than B/Victoria viruses. For the season, the number of B/Victoria and A(H1N1)pdm09 viruses are approximately equal. 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, for the season overall, influenza B viruses are the most commonly reported influenza viruses among children and young adults less than 25 years, while A viruses are the most commonly reported influenza viruses among persons 25 years and older. In the most recent weeks, influenza A viruses are the most commonly reported influenza viruses in all but the school aged children and young adults (5-24 years of age).

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 viruses. 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 vaccinations. Additional antigenic characterization studies involving people vaccinated with current influenza vaccine 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. [Interim estimates of 2019-2020 flu vaccine effectiveness](#) have been released.

CDC **genetically characterized** 1,787 influenza viruses collected in the U.S. from September 29, 2019, to February 2, 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	606				
		6B.1A	606 (100%)		
A/H3	406				
		3C.2a	386 (95.1%)	2a1	386 (95.1%)
				2a2	0
				2a3	0
				2a4	0
		3C.3a	20 (4.9%)	3a	20 (4.9%)
B/Victoria	699				
		V1A	699 (100%)	V1A	0
				V1A.1	51 (7.3%)
				V1A.3	648 (92.7%)
B/Yamagata	76				
		Y3	76 (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 287 influenza viruses collected in the United States from September 29, 2019 to February 22, 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 (100%) 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):** 72 A(H3N2) viruses were antigenically characterized by FRA with ferret antisera, and 31 (43.1%) 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:** 131 B/Victoria lineage viruses, including viruses from both co-circulating sub-clades, were antigenically characterized by HI with ferret antisera, and 83 (63.4%) 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:

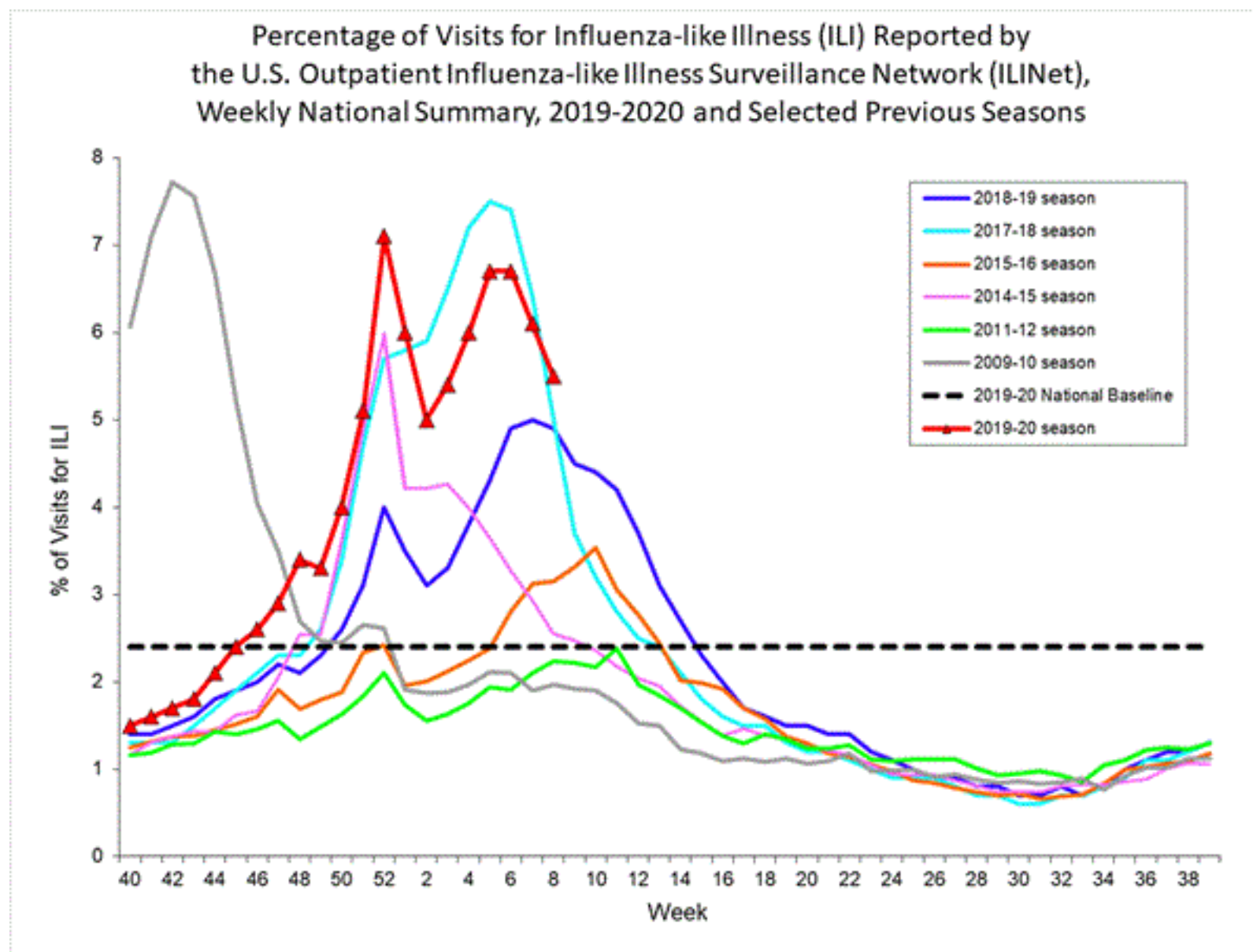
Antiviral Medication			Total Viruses	A/H1	A/H3	B/Victoria	B/Yamagata
Neuraminidase Inhibitors	Oseltamivir	Viruses Tested	1,776	606	399	695	76
		Reduced Inhibition	1 (0.1%)	(0.0%)	(0.0%)	1 (0.1%)	(0.0%)
		Highly Reduced Inhibition	3 (0.2%)	3 (0.5%)	(0.0%)	(0.0%)	(0.0%)
	Peramivir	Viruses Tested	1,776	606	399	695	76
		Reduced Inhibition	(0.0%)	(0.0%)	(0.0%)	(0.0%)	(0.0%)
		Highly Reduced Inhibition	4 (0.2%)	3 (0.5%)	(0.0%)	1 (0.1%)	(0.0%)
	Zanamivir	Viruses Tested	1,776	606	399	695	76
		Reduced Inhibition	2 (0.1%)	(0.0%)	(0.0%)	2 (0.3%)	(0.0%)
		Highly Reduced Inhibition	(0.0%)	(0.0%)	(0.0%)	(0.0%)	(0.0%)
PA Endonuclease Inhibitor	Baloxavir	Viruses Tested	1,926	626	484	737	79
		Reduced Susceptibility	(0.0%)	(0.0%)	(0.0%)	(0.0%)	(0.0%)

A total of 416 additional viruses (199 A(H1N1)pdm09, 30 A(H3N2), and 187 B) collected in Alabama, Alaska, Florida, Illinois, Iowa, Louisiana, Massachusetts, Michigan, Nevada, New York, North Carolina, Pennsylvania, South Dakota, Virginia and Wisconsin were analyzed for resistance to neuraminidase inhibitors by pyrosequencing assay. Two (1.0%) of the 199 A(H1N1)pdm09 viruses tested had the H275Y amino acid substitution in the neuraminidase that confers resistance to oseltamivir and potential resistance to peramivir. No markers of resistance to neuraminidase inhibitors were detected in A(H3N2) and type B viruses tested.

Outpatient Illness Surveillance

ILINet

Nationwide during week 8, 5.5% 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 3.6% to 8.8% during week 8. All regions reported a percentage of outpatient visits for ILI 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 8, the following ILI activity levels were experienced:

- High – New York City, Puerto Rico, and 43 states (Alabama, Alaska, Arizona, Arkansas, California, Colorado,

Connecticut, Georgia, Hawaii, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, New Hampshire, New Jersey, New Mexico, New York, North Carolina, Oklahoma, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, and Wyoming)

- Moderate – five states (Delaware, Nevada, North Dakota, Ohio, and Oregon)
- Low - the District of Columbia and one state (Idaho)
- Minimal - the U.S. Virgin Islands and one state (Florida)

A Weekly Influenza Surveillance Report Prepared by the Influenza Division

Influenza-Like Illness (ILI) Activity Level Indicator Determined by Data Reported to ILINet

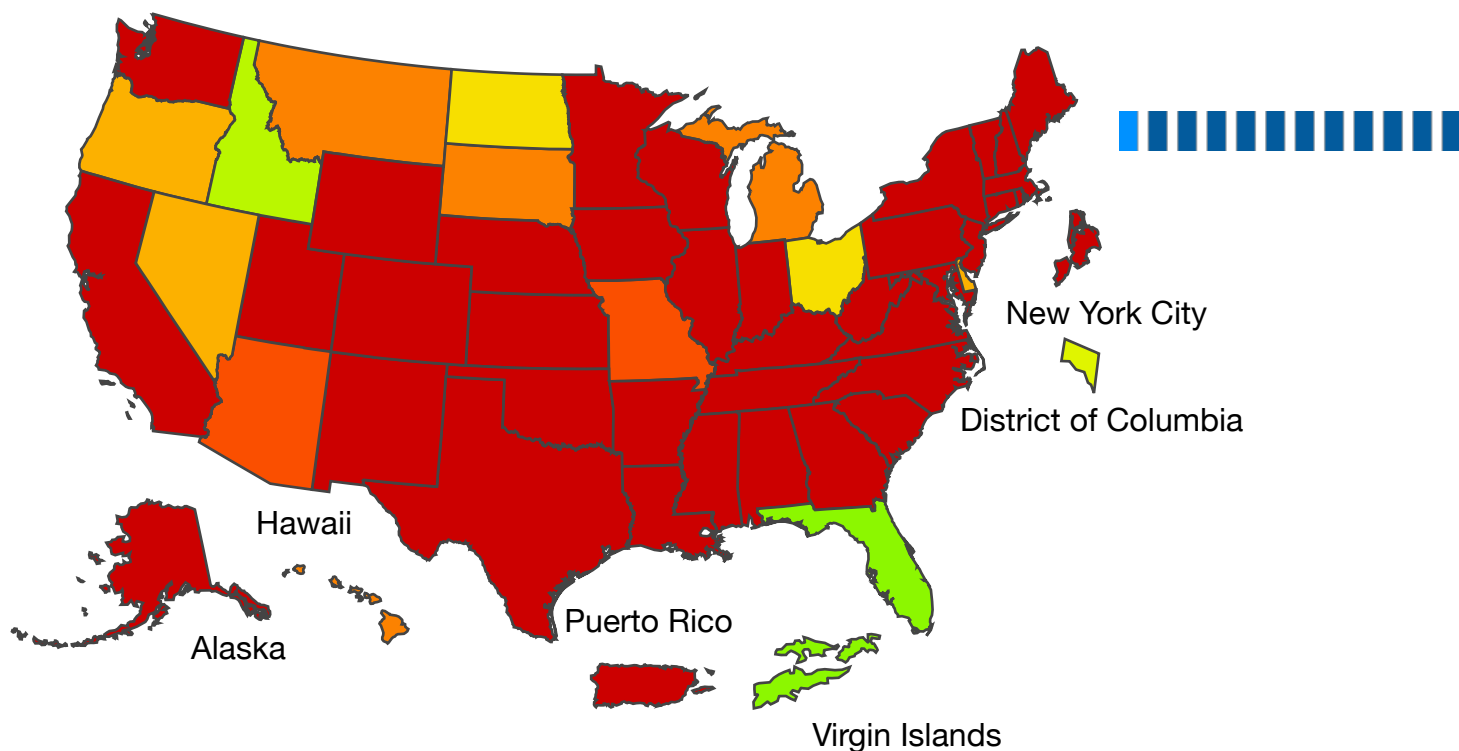
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eks

2019-20 Influenza Season Week 8 ending Feb 22, 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 8, 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*

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Weeks

Week Ending Feb 22, 2020 - Week 8



Influenza Activity Estimates

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

Season: 2019-20

Download Image

Download Data

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.**

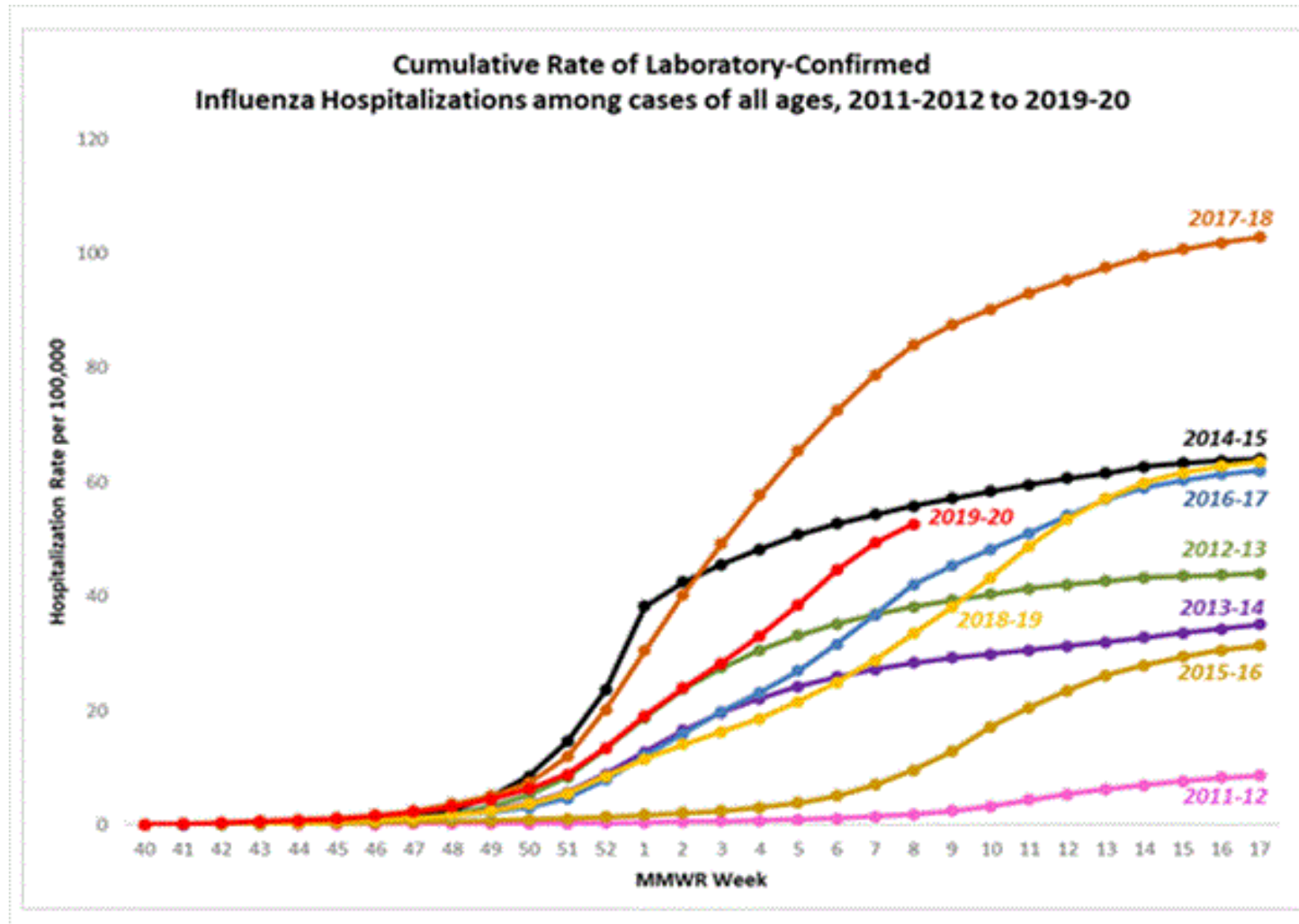
Additional geographic spread surveillance information for current and past seasons:
[Surveillance Methods](#) | [FluView Interactive](#)

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 15,319 laboratory-confirmed influenza-associated hospitalizations were reported by FluSurv-NET sites between October 1, 2019 and February 22, 2020; 10,439 (68.1%) were associated with influenza A virus, 4,797 (31.3%) with influenza B virus, 47 (0.3%) with influenza A virus and influenza B virus co-infection, and 36 (0.2%) with influenza virus which the type was not determined. Among those with influenza A subtype information, 2,834 (94.1%) were A(H1N1)pdm09 virus and 179 (5.9%) were A(H3N2).

The overall cumulative hospitalization rate was 52.7 per 100,000 population which is similar to what has been seen during recent previous influenza seasons at this time of year. Rates in school aged children and young adults are higher than at this time in recent seasons, and rates among children 0-4 years old are now the highest CDC has on record at this point in the season, surpassing rates reported during the second wave of the 2009 H1N1 pandemic.



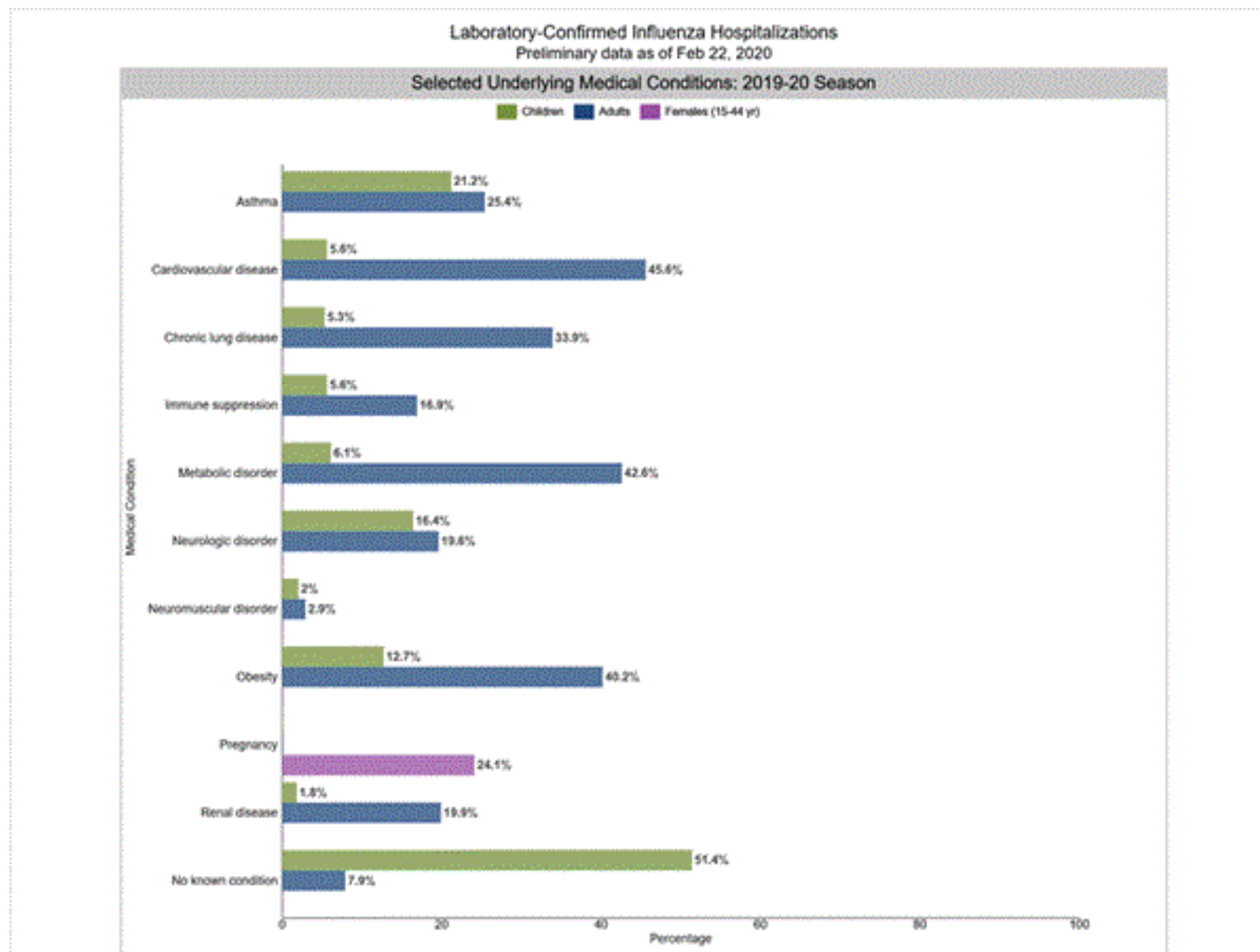
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The highest rate of hospitalization is among adults aged ≥ 65 , followed by children aged 0-4 years and adults aged 50-64 years.

Age Group	2019-2020 Season Cumulative Rate per 100,000 Population
Overall	52.7
0-4 years	80.1
5-17 years	20.6
18-49 years	28.6
50-64 years	69.1
65+ years	132.0

Among 2,172 hospitalized adults with information on underlying medical conditions, 92.1% had at least one reported underlying medical condition, the most commonly reported were cardiovascular disease, metabolic disorder, obesity and chronic lung disease. Among 397 hospitalized children with information on underlying medical conditions, 48.6% had

least one underlying medical condition; the most commonly reported was asthma. Among 381 hospitalized women of childbearing age (15-44 years) with information on pregnancy status, 24.1% were pregnant.



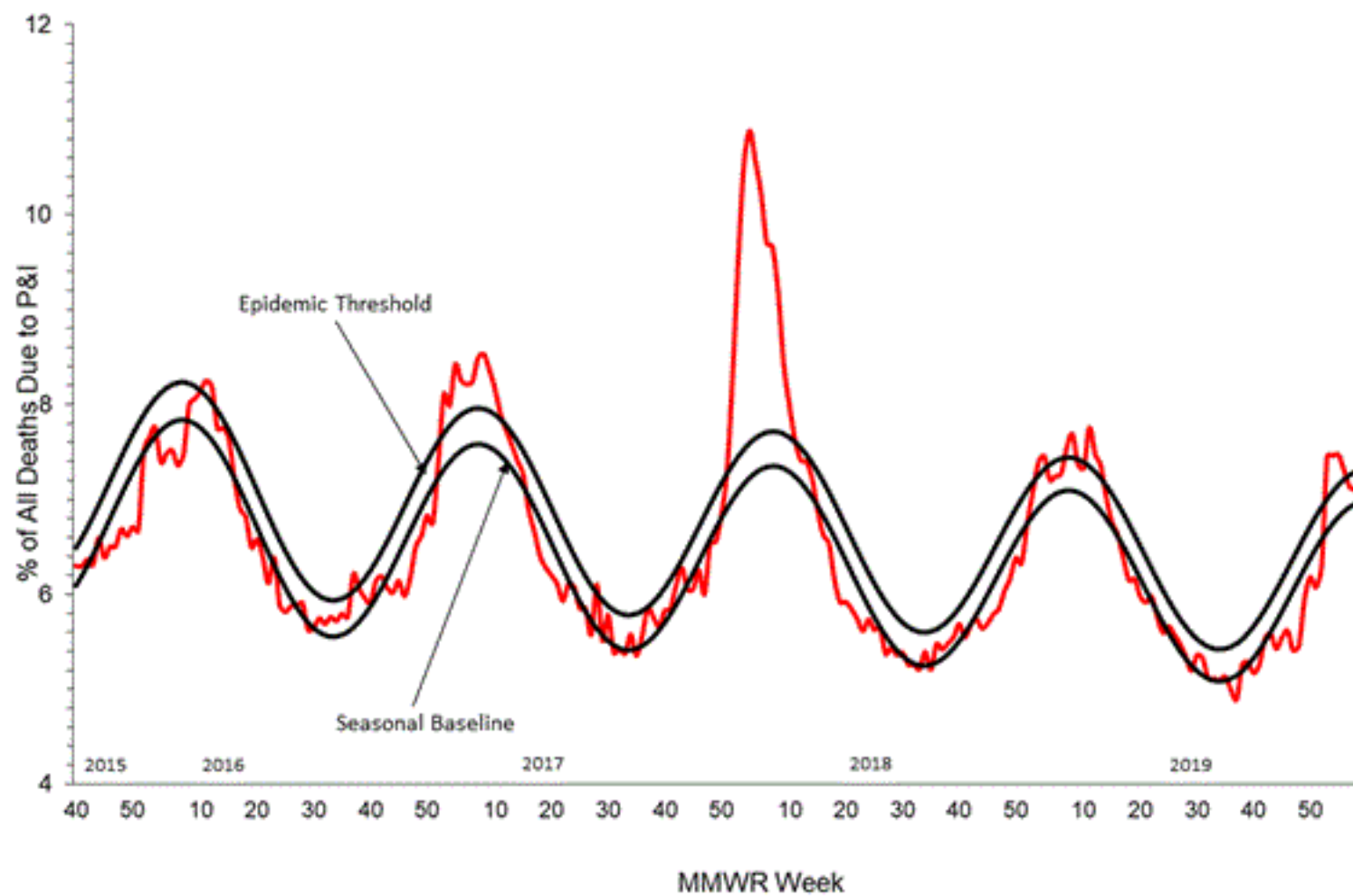
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Additional hospitalization surveillance information for current and past seasons and additional age groups
[Surveillance Methods](#) | [FluView Interactive: Rates by Age or Patient Characteristics](#)

Pneumonia and Influenza (P&I) Mortality Surveillance

Based on National Center for Health Statistics (NCHS) mortality surveillance data available on February 27, 2020, 6.9% of the deaths occurring during the week ending February 15, 2020 (week 7) were due to P&I. This percentage is below the epidemic threshold of 7.3% for week 7.

Pneumonia and Influenza Mortality from
the National Center for Health Statistics Mortality Surveillance System
Data through the week ending February 15, 2020, as of February 27, 2020



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

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

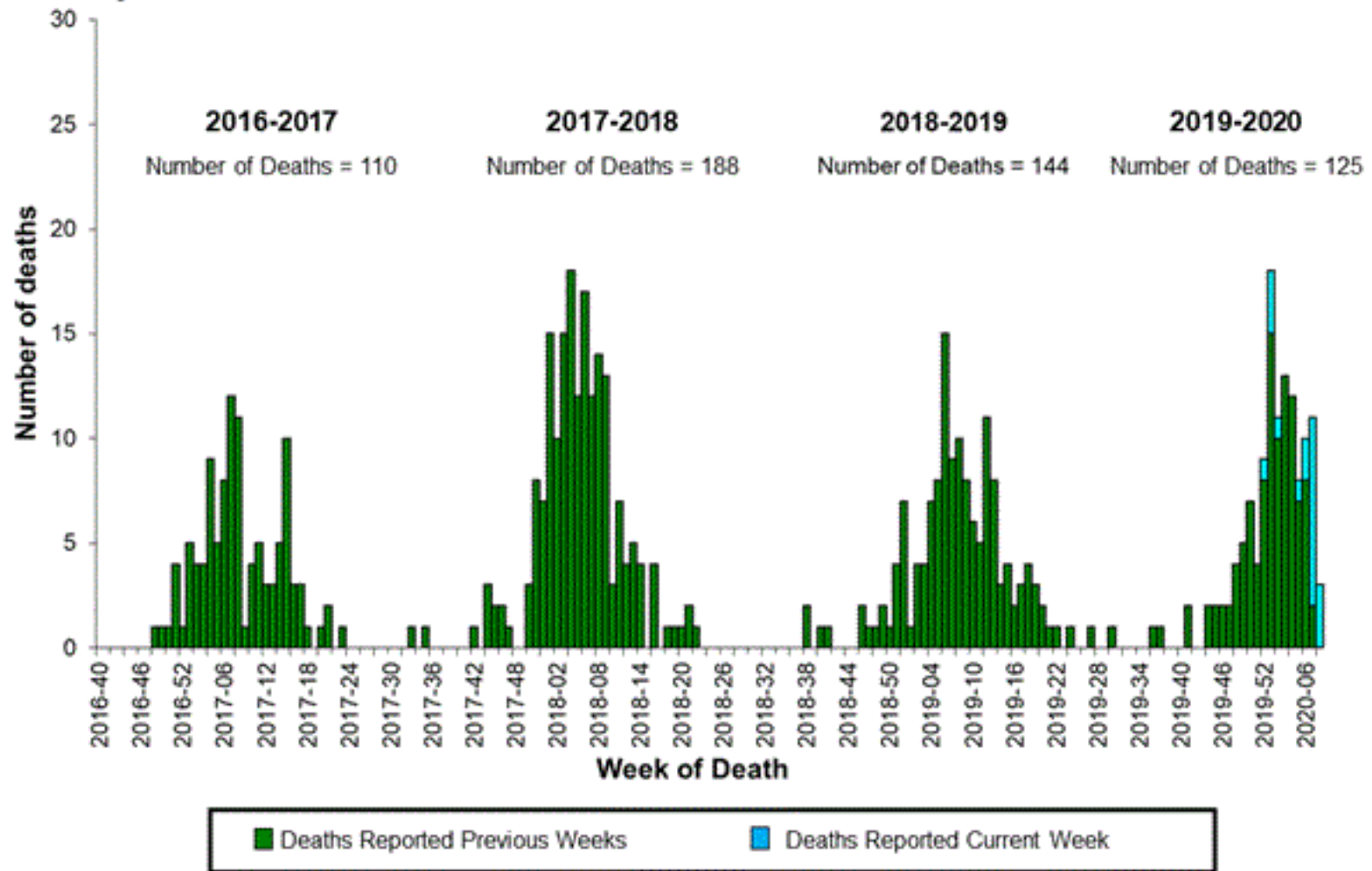
Influenza-Associated Pediatric Mortality

20 influenza-associated pediatric deaths occurring during the 2019-2020 season between weeks 52 and 8 (the weeks ending December 28, 2019 and February 22, 2020) were reported to CDC during week 8. 15 were associated with influenza B viruses, and four had a lineage determined; all B/Victoria viruses. Five were associated with influenza A viruses, and three were subtyped; all A(H1N1)pdm09 viruses.

Of the 125 influenza-associated pediatric deaths occurring during the 2019-2020 season and reported to CDC:

- 87 deaths were associated with influenza B viruses, and 18 had a lineage determined; all were B/Victoria viruses
- 38 deaths were associated with influenza A viruses, and 23 were subtyped; 22 were A(H1N1)pdm09 viruses and was an A(H3) virus.

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



[View Full Screen](#)

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>.
