Centers for Disease Control and Prevention

Influenza (Flu)

Weekly U.S. Influenza Surveillance Report

Note: The COVID-19 outbreak unfolding in the United States may affect healthcare seeking behavior which in turn would impact data from ILINet.

Key Updates for Week 11, ending March 14, 2020

Laboratory confirmed flu activity as reported by clinical laboratories continued to decrease; however, influenza-like illness activity increased. Influenza severity indicators 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 21.1% last week to 15.3% this week.

Public Health Labs

Nationally, influenza A(H1N1)pdm09 viruses are now the most commonly reported influenza viruses this season.

Virus Characterization

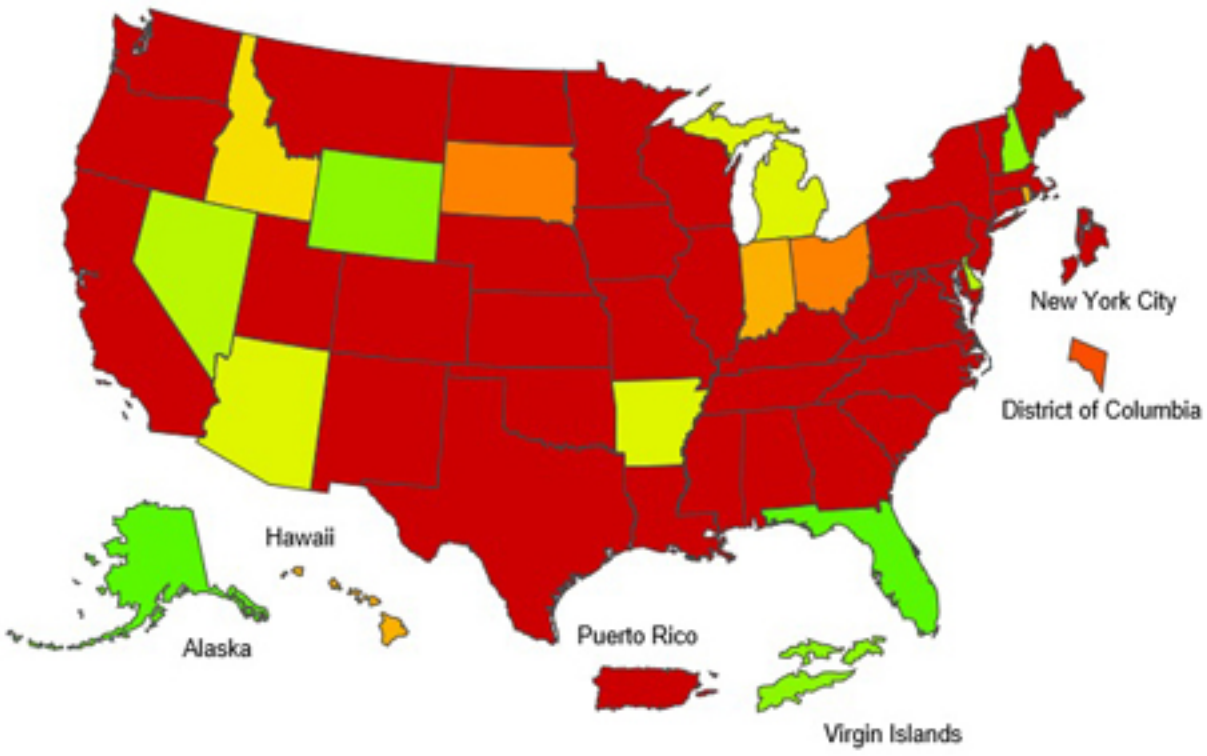
Genetic and antigenic characterization and antiviral susceptibility of influenza viruses collected in the U.S. are summarized in this report.

Illness

Outpatient Illness: ILINet

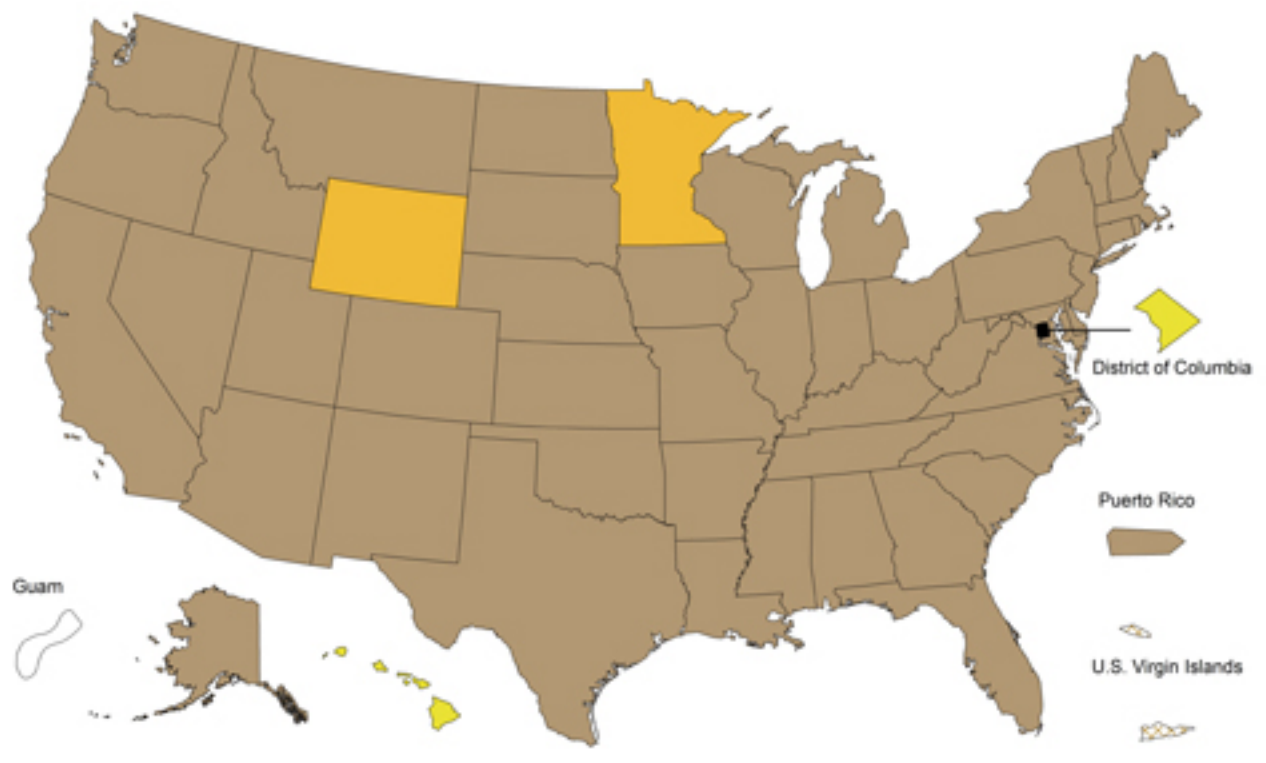
Visits to health care providers for influenza-like illness (ILI) increased from 5.2% last week to 5.8% this week. All regions are above their baselines.

Outpatient Illness: ILINet Activity Map



The number of jurisdictions experiencing high ILI activity decreased from 43 last week to 40 this week.

Geographic Spread



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

Severe Disease

Hospitalizations

The overall cumulative hospitalization rate for the season increased to 65.1 per 100,000.

P&I Mortality

The percentage of deaths attributed to pneumonia and influenza is 7.1%, below the epidemic threshold of 7.3%.

Pediatric Deaths

5 influenza-associated pediatric deaths occurring during the 2019-2020 season were reported this week. The total f
the season is 149.

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

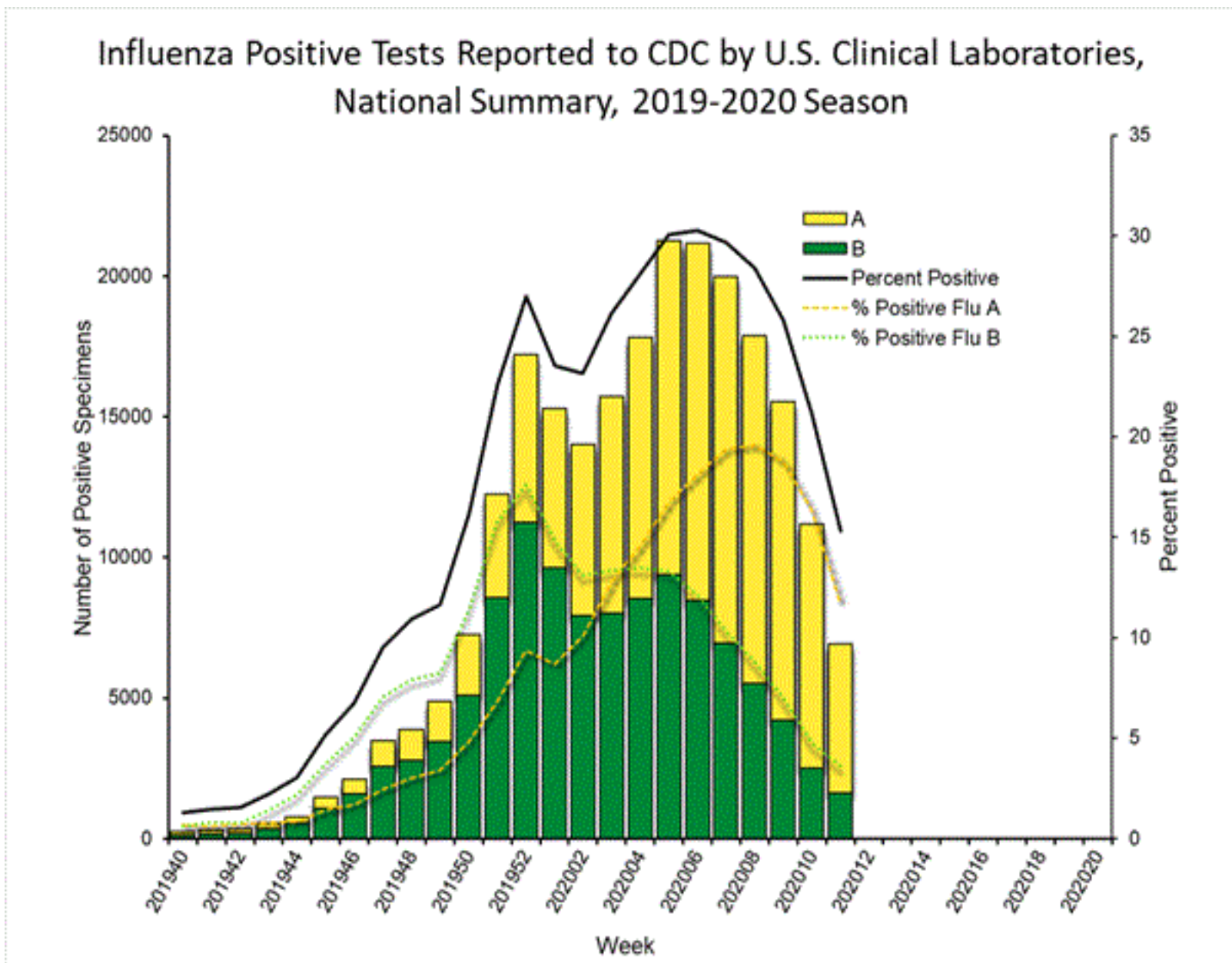
- Nationally, the percent of specimens testing positive for influenza at clinical laboratories continued to decrease while ILI activity increased for the second week in a row after declining for three weeks. Due to the ongoing COVID-19 pandemic, more people may be seeking care for respiratory illness than usual at this time.
- Nationally, influenza A(H1N1)pdm09 viruses are now the most commonly reported influenza viruses this season Previously, influenza B/Victoria viruses predominated nationally.
- Laboratory confirmed influenza-associated hospitalization rates for the U.S. population overall remain moderat compared to recent seasons, but rates for children 0-4 years and adults 18-49 years are now the highest CDC ha on record for these age groups, surpassing rates reported during the 2009 H1N1 pandemic. Hospitalization rat for school-aged children (5-17 years) are higher than any recent regular season but remain lower than rates experienced by this age group during the pandemic.
- Pneumonia and influenza mortality levels have been low, but 149 influenza-associated deaths in children have been reported so far this season. This number is higher than recorded at the same time 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 38 million flu illnesses, 390,000 hospitalizations and 23,000 deaths from flu.
- 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 laborator
(the percentage of specimens tested that are positive for influenza) are used to monitor whether influenza activity is
increasing or decreasing.

	Week 11	Data Cumulative since September 29, 2019 (week 40)
No. of specimens tested	45,167	1,130,489
No. of positive specimens (%)	6,927 (15.3%)	231,654 (20.5%)
Positive specimens by type		
Influenza A	5,297 (76.5%)	121,002 (52.2%)
Influenza B	1,630 (23.5%)	110,652 (47.8%)



View Chart Data | View Full Screen

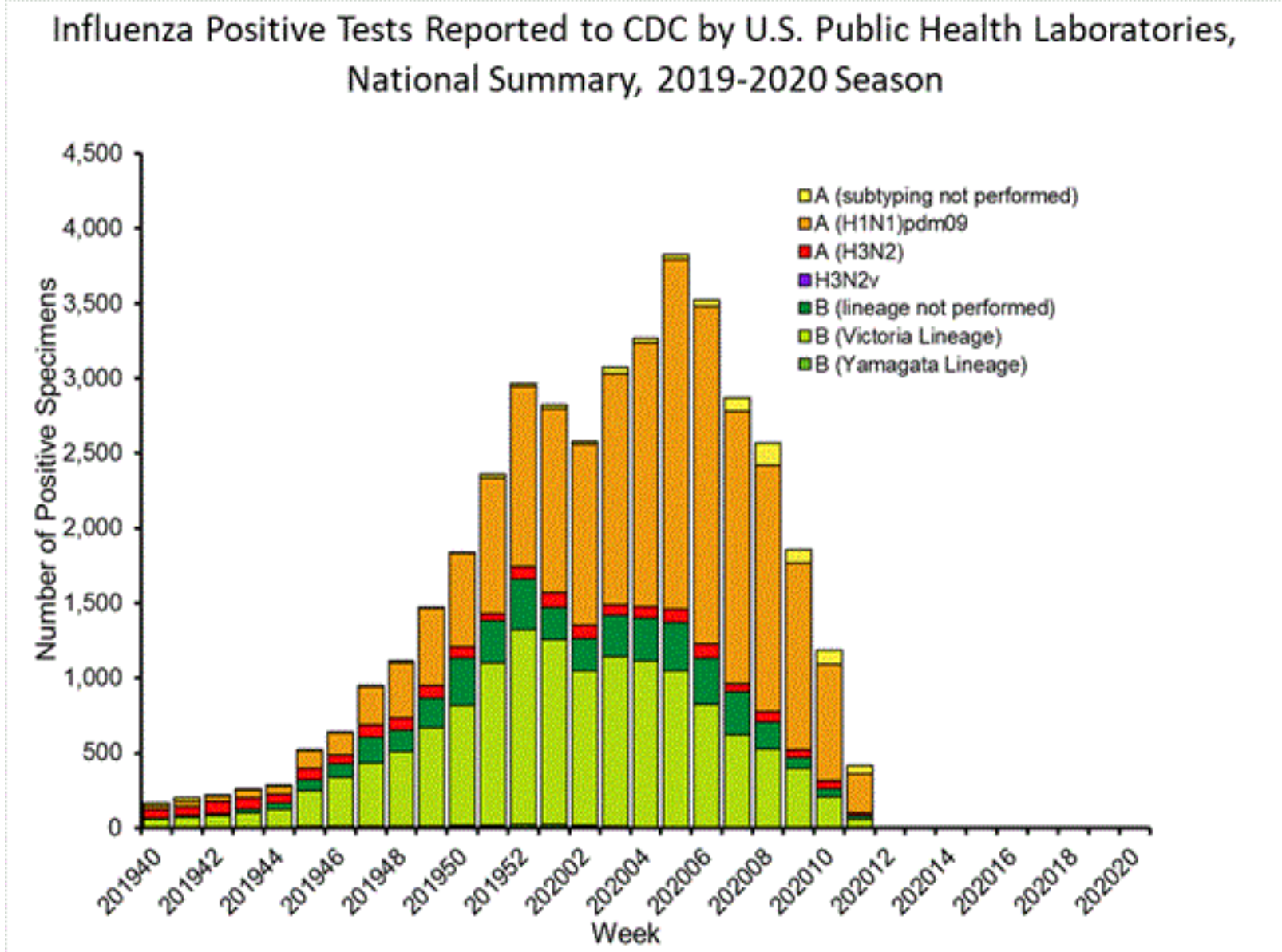
Public Health Laboratories

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

	Week 11	Data Cumulative since September 29, 2019 (week 40)
No. of specimens tested	1,374	72,958
No. of positive specimens	413	40,939
Positive specimens by type/subtype		
Influenza A	333 (80.6%)	22,899 (55.9%)
(H1N1)pdm09	264 (93.0%)	20,427 (92.4%)
H3N2	20 (7.0%)	1,691 (7.6%)
Subtyping not performed	49	781
Influenza B	80 (19.4%)	18,040 (44.1%)
Yamagata lineage	0 (0.0%)	220 (1.6%)
Victoria lineage	59 (100%)	13,916 (98.4%)
Lineage not performed	21	3,904

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 nationally and in all surveillance regions. For the
season, A(H1N1)pdm09 viruses are the predominant virus nationally. 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 persons 5-24 years, while influenza A viruses are the most commonly
reported influenza viruses among persons 0-4 years and 25 years and older. In the most recent three weeks, influenz
viruses are the most commonly reported influenza viruses in all age groups.



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 laboratorie 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 evolutionar changes that continually occur in circulating influenza viruses. Antigenic characterization data are based on an anima 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 circulat 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 estim of 2019-2020 flu vaccine effectiveness have been released.

CDC **genetically characterized** 2,224 influenza viruses collected in the U.S. from September 29, 2019, to March 14, 2020.

Virus Subtype or Lineage	Genetic Characterization				
	Total No. of Subtype/Lineage Tested	Clade	Number (% of subtype/lineage tested)	Subclade	Number (% of subtype/lineag tested)

A/H1	786				
		6B.1A	786 (100%)		
A/H3	483				
		3C.2a	454 (94.0%)	2a1	454 (94.0%)
				2a2	0
				2a3	0
				2a4	0
		3C.3a	29 (6.0%)	3a	29 (6.0%)
B/Victoria	869				
		V1A	869 (100%)	V1A	0
				V1A.1	57 (6.6%)
				V1A.3	812 (93.4%)
B/Yamagata	86				
		Y3	86 (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 446 influenza viruses collected in the United States from September 29, 2019 March 14, 2020. These data are not used to make calculations about vaccine effectiveness (VE). CDC conducts VE stud each year to measure the benefits of flu vaccines in people.

Influenza A Viruses

- **A (H1N1)pdm09:** 177 A(H1N1)pdm09 viruses were antigenically characterized by HI with ferret antisera, and 14 (80.8%) 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 Northern Hemisphere influenza vaccines. The decrease in the percent of A(H1N1)pdm09 viruses similar to A/Brisbane/02/2018 is due to some of the recent viruses selected for testing having a single amino acid change t is antigenically distinguishable in antigenic assays using ferret sera. Similar viruses were observed last season as and these represented a small proportion of virus circulating. We have observed an increase in the proportion o H1N1pdm09 viruses with this change late in the US season.
- **A (H3N2):** 76 A(H3N2) viruses were antigenically characterized by FRA with ferret antisera, and 31 (40.8%) 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:** 165 B/Victoria lineage viruses, including viruses from both co-circulating sub-clades, were antigenica characterized by HI with ferret antisera, and 106 (64.2%) 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:** 28 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 also 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, 20 were tested for antiviral susceptibility as follows:

Antiviral Medication			Total Viruses*	A/H1	A/H3	B/Victoria	B/Yamag
Neuraminidase Inhibitors	Oseltamivir	Viruses Tested	2,201	780	474	861	86
		Reduced Inhibition	1 (0.04%)	(0.0%)	(0.0%)	1 (0.1%)	(0.0%)
		Highly Reduced Inhibition	4 (0.2%)	4 (0.5%)	(0.0%)	(0.0%)	(0.0%)
	Peramivir	Viruses Tested	2,201	780	474	861	86
		Reduced Inhibition	(0.0%)	(0.0%)	(0.0%)	(0.0%)	(0.0%)
		Highly Reduced Inhibition	5 (0.2%)	4 (0.5%)	(0.0%)	1 (0.1%)	(0.0%)
	Zanamivir	Viruses Tested	2,201	780	474	861	86
		Reduced Inhibition	2 (0.1%)	(0.0%)	(0.0%)	2 (0.2%)	(0.0%)
		Highly Reduced Inhibition	(0.0%)	(0.0%)	(0.0%)	(0.0%)	(0.0%)
PA Endonuclease	Baloxavir	Viruses Tested	2,355	801	559	906	89

Inhibitor		**Reduced Susceptibility**	(0.0%)	(0.0%)	(0.0%)	(0.0%)	(0.0%)

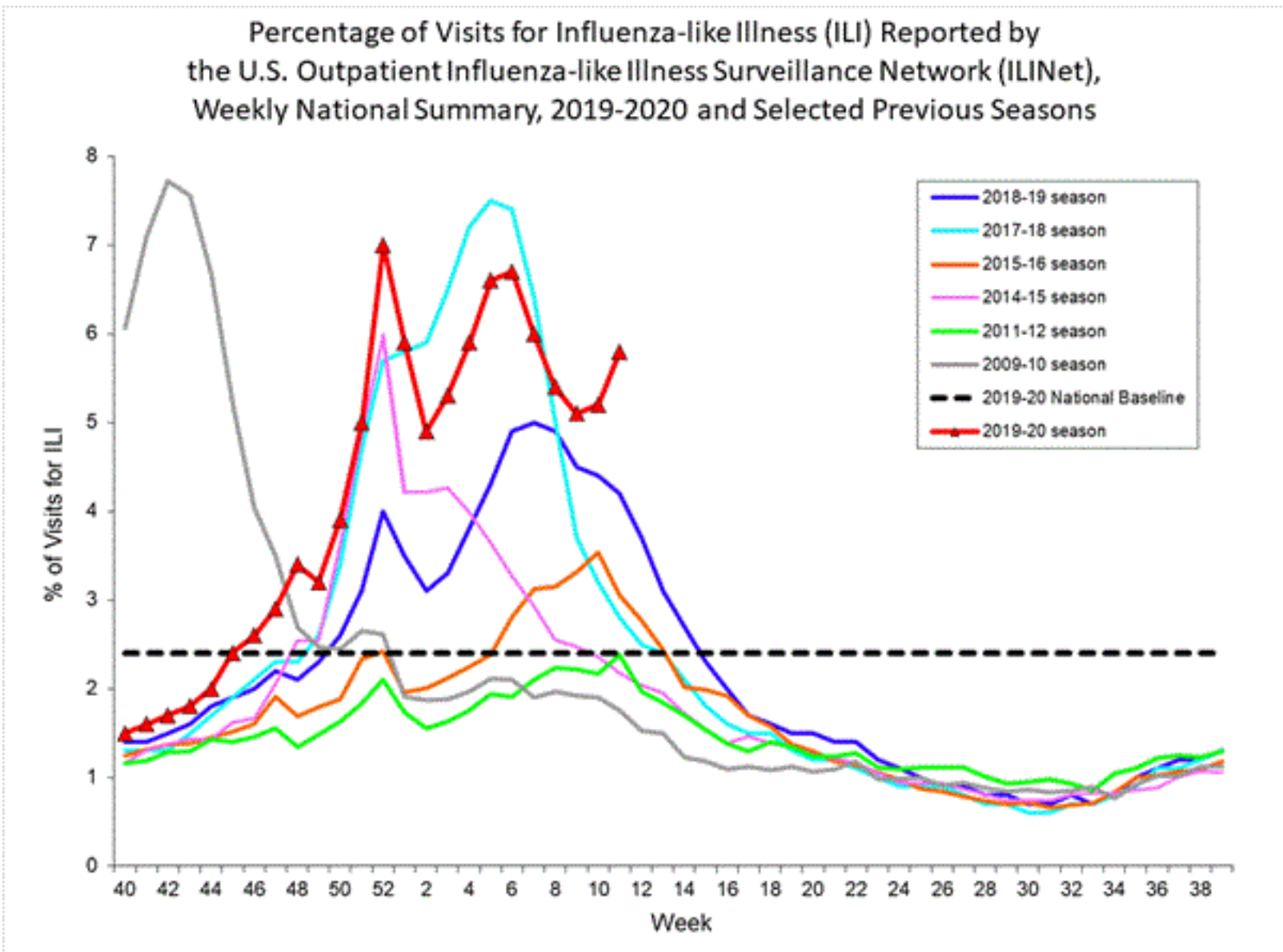
*Six influenza viruses showed reduced or highly reduced inhibition by at least one neuraminidase inhibitor. Four A(H1N1)pdm09 viruses showed highly reduced inhibition to oseltamivir and peramivir while showing normal inhibition to zanamivir. In addition, one B/Victoria virus showed highly reduced inh to peramivir and reduced inhibition to oseltamivir and zanamivir, while another influenza B/Victoria virus showed reduced inhibition to zanamivir.

A total of 556 additional viruses (211 A(H1N1)pdm09, 32 A(H3N2), and 313 B) collected in Alabama, Alaska, Florida, Illi Iowa, Louisiana, Massachusetts, Michigan, Nevada, New York, North Carolina, Pennsylvania, South Dakota, Virginia ar Wisconsin were analyzed for resistance to neuraminidase inhibitors by pyrosequencing assay. Three (1.4%) of the 21 A(H1N1)pdm09 viruses tested had the H275Y amino acid substitution in the neuraminidase and showed highly reduc inhibition by oseltamivir and peramivir. No molecular markers associated with reduced or highly reduced inhibition b neuraminidase inhibitors were detected in A(H3N2) and type B viruses tested.

Outpatient Illness Surveillance

ILINet

Nationwide during week 11, 5.8% of patient visits reported through the U.S. Outpatient Influenza-like Illness Surveilla 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 4.6% to 7.9% during week 11. Nine of the 1 surveillance regions reported an increase in percentage of outpatient visits for ILI and all regions reported a percenta 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 11, the following ILI activity levels were experienced:

- High – the District of Columbia, New York City, Puerto Rico, and 37 states (Alabama, California, Colorado, Connecticut, Georgia, Illinois, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Minnesota, Mississippi, Missouri, Montana, Nebraska, New Jersey, New Mexico, New York, North Carolina, North Dakota, Oh Oklahoma, Oregon, Pennsylvania, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, West Virginia, and Wisconsin)
- Moderate – four states (Hawaii, Idaho, Indiana, and Rhode Island)
- Low - five states (Arizona, Arkansas, Delaware, Michigan, and Nevada)
- Minimal - the U.S. Virgin Islands and four states (Arizona, Florida, New Hampshire, and Wyoming)

A Weekly Influenza Surveillance Report Prepared by the Influenza Division

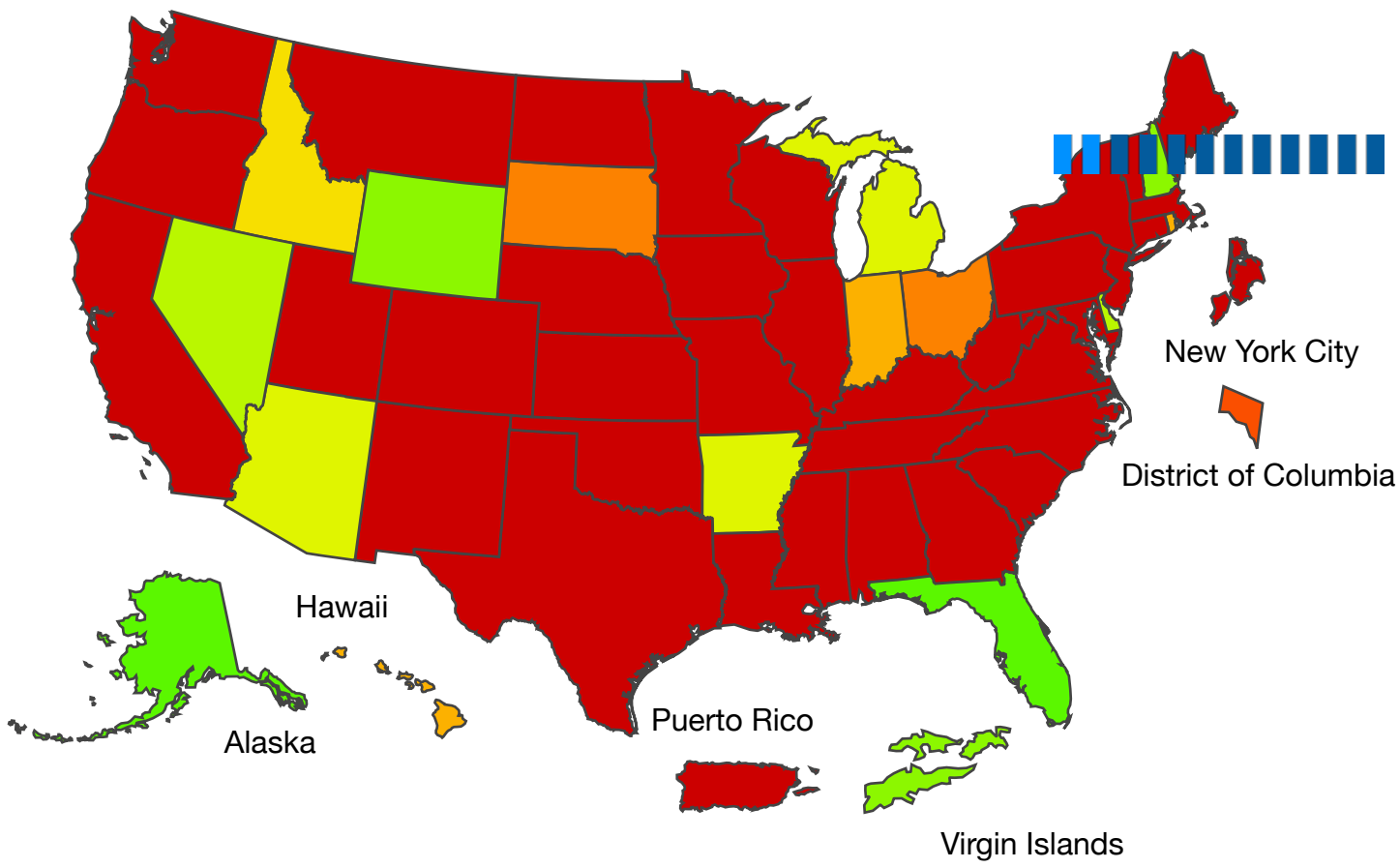
Influenza-Like Illness (ILI) Activity Level Indicator Determined by Data Reported to ILINet

prev Play Pause next

40 50 1 10 11

weeks

2019-20 Influenza Season Week 11 ending Mar 14, 2020



ILI Activity Level

- High
- Moderate
- Low
- Minimal
- Insufficient Data

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 disproportionally 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 represe differing levels of data completeness with data presented by the state likely being the more complete.

Among the 40 jurisdictions with high ILI activity, ILI increased relative to the previous week in 26, remained stable in 1 and declined in 4. Thirty-five of the jurisdictions with high ILI activity also had clinical laboratory data available and in those, the percent of specimens testing positive for influenza decreased in 30, remained stable in 4 and increased in 1.

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 11, the following influenza activity was reported:

- Widespread – Puerto Rico and 47 states (Alabama, Alaska, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Georgia, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, 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 and Wisconsin)
- Regional – two states (Minnesota and Wyoming)
- 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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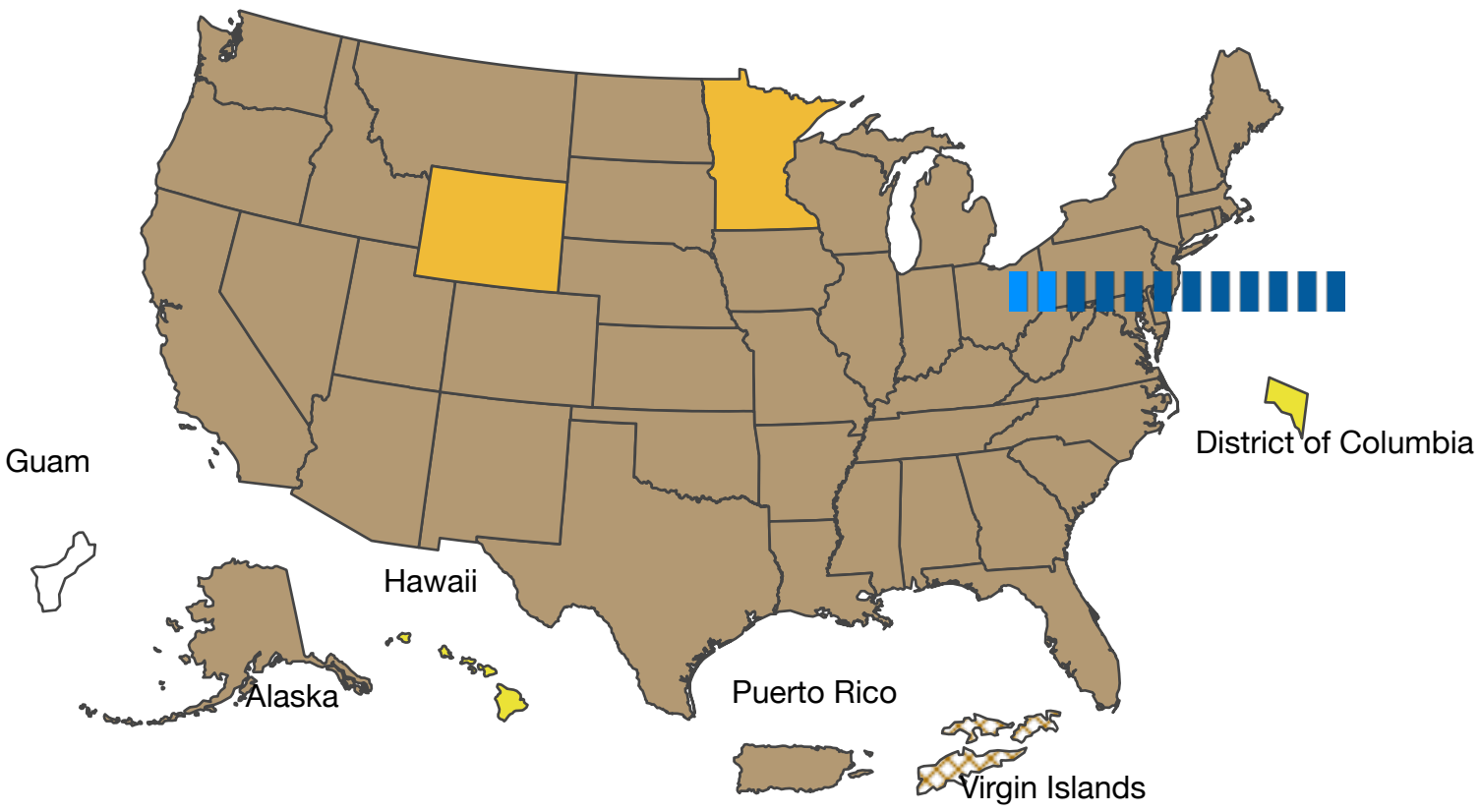
Weeks

Week Ending Mar 14, 2020 - Week 11



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)

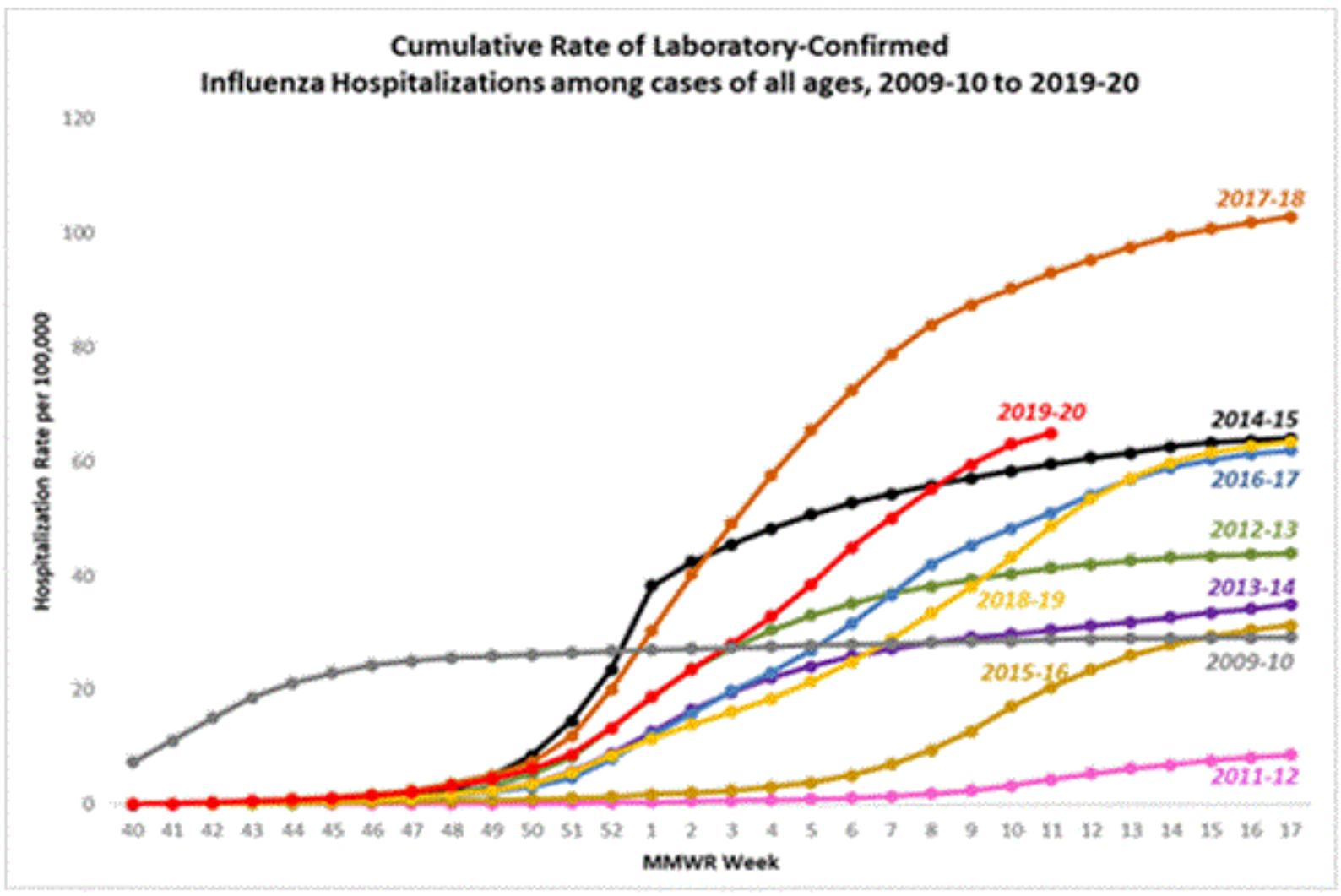
Additional geographic spread surveillance information for current and past seasons:
Surveillance Methods | FluView Interactive

Influenza-Associated Hospitalizations

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

A total of 18,904 laboratory-confirmed influenza-associated hospitalizations were reported by FluSurv-NET sites betw October 1, 2019 and March 14, 2020; 13,528 (71.6%) were associated with influenza A virus, 5,249 (27.8%) with influen virus, 53 (0.3%) with influenza A virus and influenza B virus co-infection, and 74 (0.4%) with influenza virus for which t type was not determined. Among those with influenza A subtype information, 3,607 (94.4%) were A(H1N1)pdm09 viru and 214 (5.6%) were A(H3N2).

The overall cumulative hospitalization rate was 65.1 per 100,000 population, which is higher than all recent seasons a this time of year except for the 2017-18 season. Rates in children 0-4 years old and adults 18-49 years old are now th highest CDC has on record for these age groups, surpassing the rate reported during the 2009 H1N1 pandemic. Hospitalization rates for school-aged children are higher than any recent regular season but lower than rates during pandemic.



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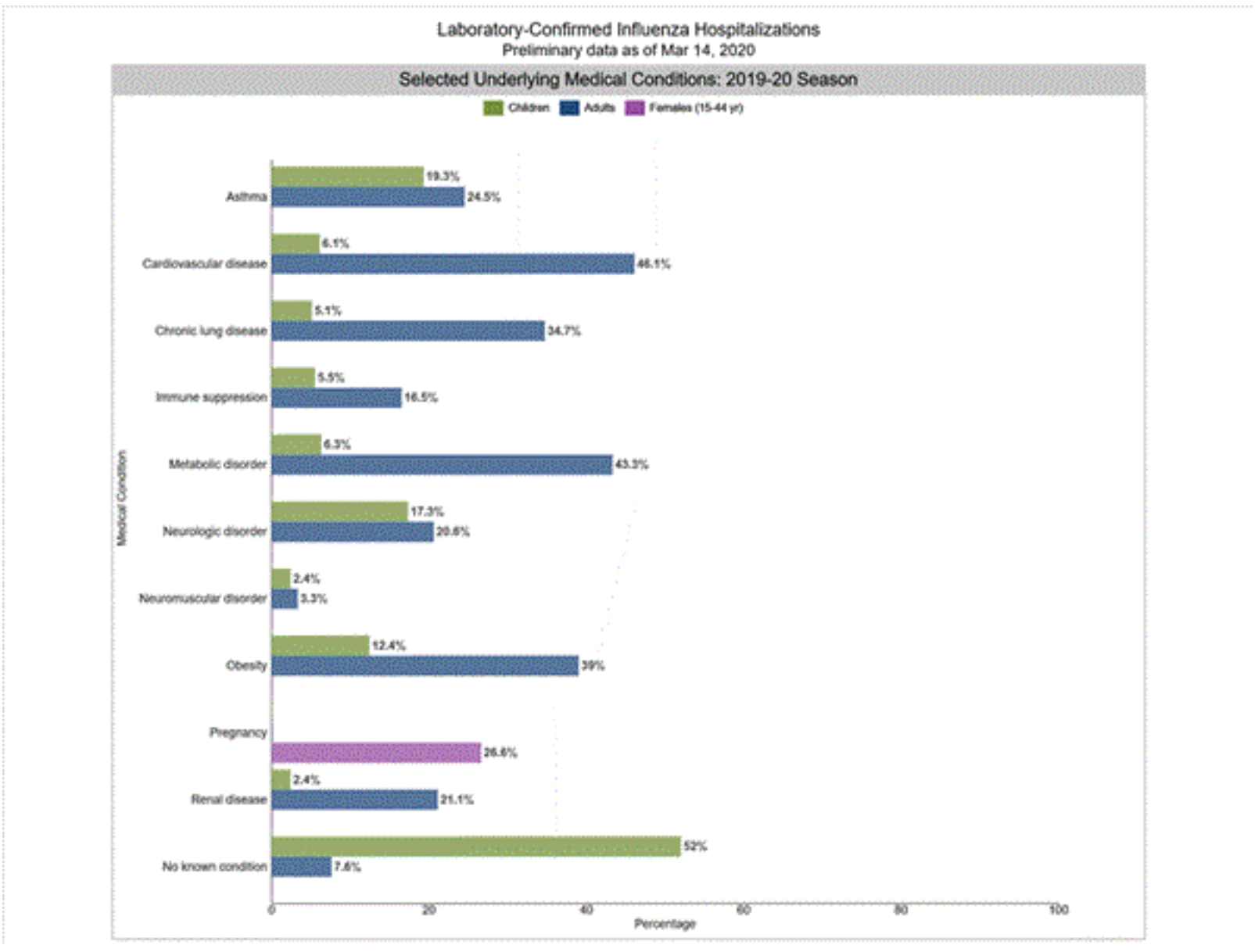
The highest rate of hospitalization is among adults aged ≥ 65, followed by children aged 0-4 years and adults aged 50 years.

Age Group	2019-2020 Season Cumulative Rate per 100,000 Population
Overall	65.1
0-4 years	92.5
5-17 years	23.7
18-49 years	34.1
50-64 years	85.7
65+ years	170.3

Among 2,982 hospitalized adults with information on underlying medical conditions, 92.4% had at least one reported underlying medical condition, the most commonly reported were cardiovascular disease, metabolic disorder, obesity chronic lung disease. Among 510 hospitalized children with information on underlying medical conditions, 48% had a least one underlying medical condition; the most commonly reported was asthma. Among 533 hospitalized women c childbearing age (15-44 years) with information on pregnancy status, 26.6% were pregnant.



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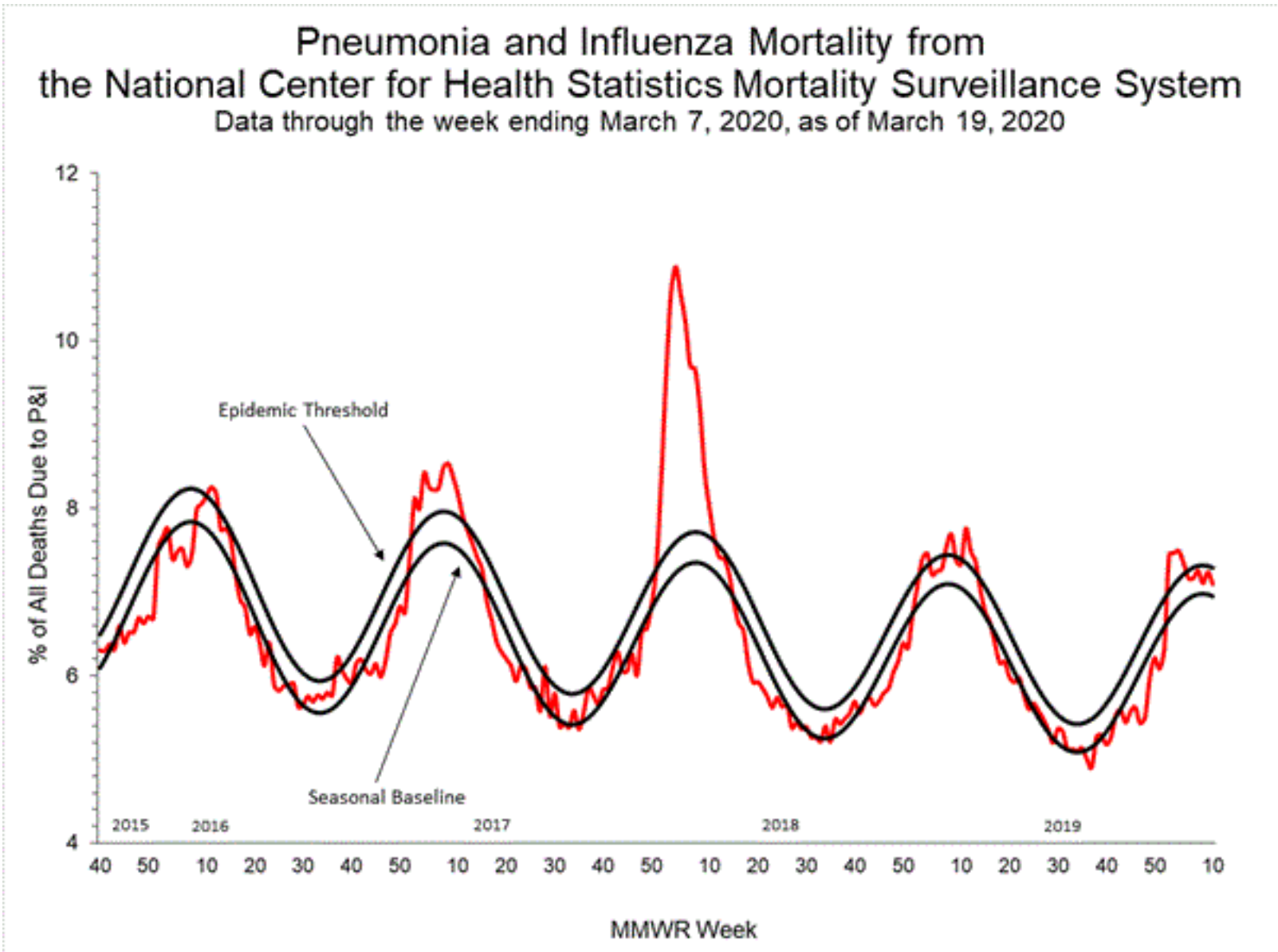
Additional hospitalization surveillance information for current and past seasons and additional age grou

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 March 19, 2020, 7.1% o deaths occurring during the week ending March 7, 2020 (week 10) were due to P&I. This percentage is below the epidemic threshold of 7.3% for week 10.



View Chart Data | View Full Screen

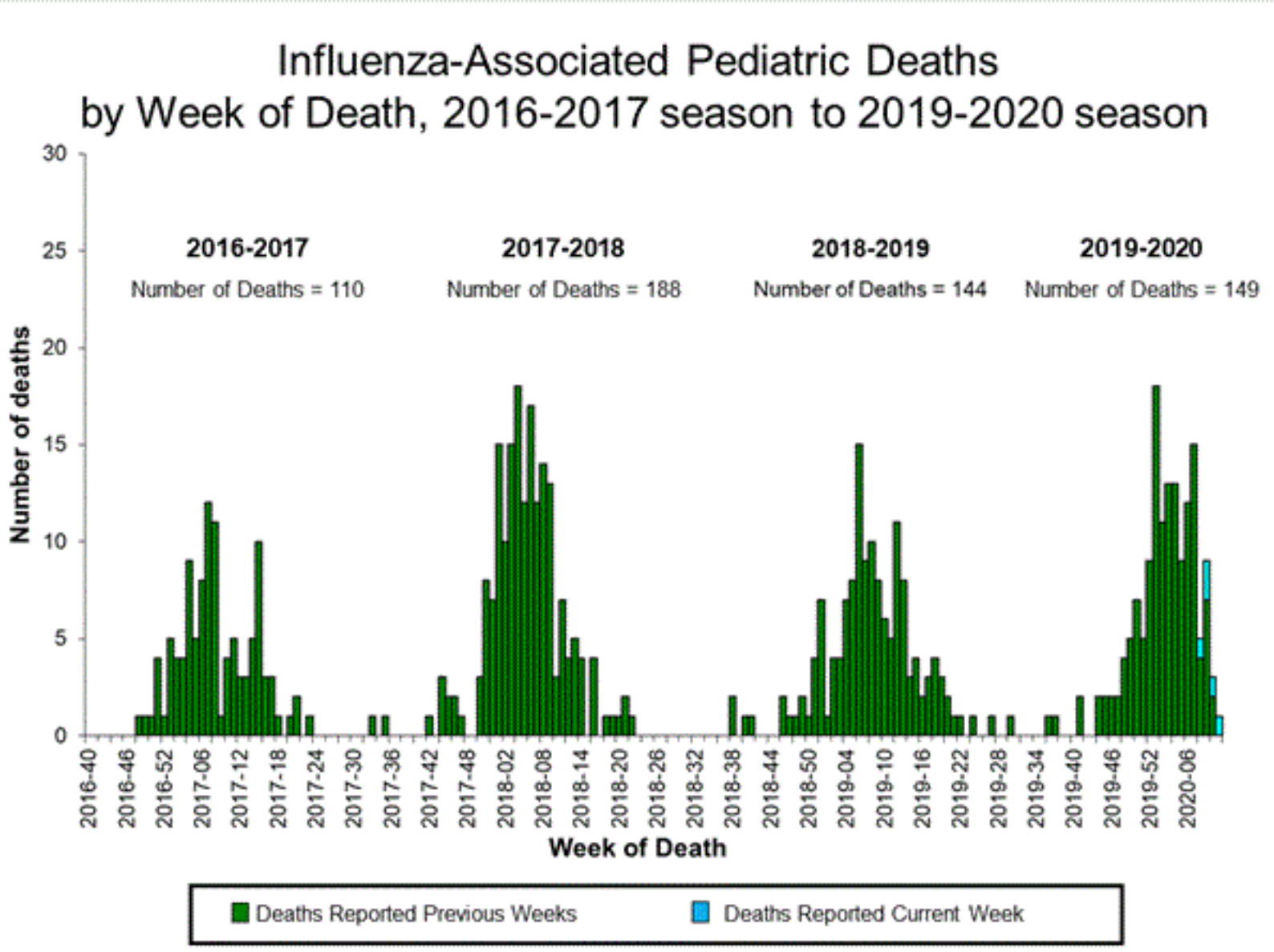
Additional pneumonia and influenza mortality surveillance information for current and past seasons:
Surveillance Methods | FluView Interactive

Influenza-Associated Pediatric Mortality

Five influenza-associated pediatric deaths occurring during the 2019-2020 season between weeks 8 and 11 (the week ending February 22, 2020 and March 14, 2020) were reported to CDC during week 11. All five were associated with influenza A viruses, and three were subtyped; all were A(H1N1)pdm09 viruses.

Of the 149 influenza-associated pediatric deaths occurring during the 2019-2020 season and reported to CDC:

- 96 deaths were associated with influenza B viruses, and 21 had a lineage determined; all were B/Victoria viruses
- 53 deaths were associated with influenza A viruses, and 30 were subtyped; 29 were A(H1N1)pdm09 viruses, and was an A(H3) virus.



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Additional pediatric mortality surveillance information for current and past seasons:
Surveillance Methods | FluView Interactive

Additional National and International Influenza Surveillan Information

FluView Interactive: FluView includes enhanced web-based interactive applications that can provide dynamic visua 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 gr and a variety of other demographics. To access these tools, visit http://www.cdc.gov/flu/weekly/fluviewinteractive.htr

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 informat

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 Europ 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

Any links provided to non-Federal organizations are provided solely as a service to our users. These link not constitute an endorsement of these organizations or their programs by CDC or the Federal Governm and none should be inferred. CDC is not responsible for the content of the individual organization web pages found at these links.

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.

Page last reviewed: March 20, 2020, 11: