CDC Centers for Disease Control and Prevention
CDC 24/7: Saving Lives, Protecting People™

Influenza (Flu)

Weekly U.S. Influenza Surveillance Report

FLUVIEW

A Weekly Influenza Surveillance Report Prepared by the Influenza Division

Note: The COVID-19 pandemic is affecting healthcare seeking behavior. The number of persons and their reasons for seeking care in the outpatient and ED settings is changing. These changes impact data from ILINet in ways that are difficult to differentiate from changes in illness levels, therefore ILINet data should be interpreted with caution.

Key Updates for Week 14, ending April 4, 2020

Laboratory confirmed flu activity as reported by clinical laboratories continues to decrease sharply and is now low. Influenza-like illness activity, while lower than last week, is still elevated. 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 2.1% last week to 0.8% 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.
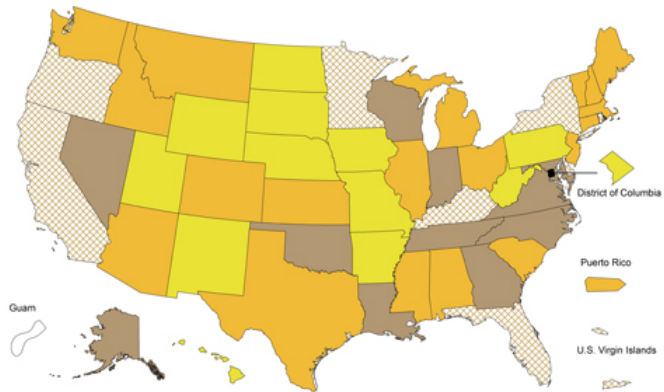
Illness

Outpatient Illness: ILINet

Visits to health care providers for influenza-like illness (ILI) decreased from 5.2% last week to 3.9% this week. All regions are above their baselines.

Outpatient Illness: ILINet Activity Map
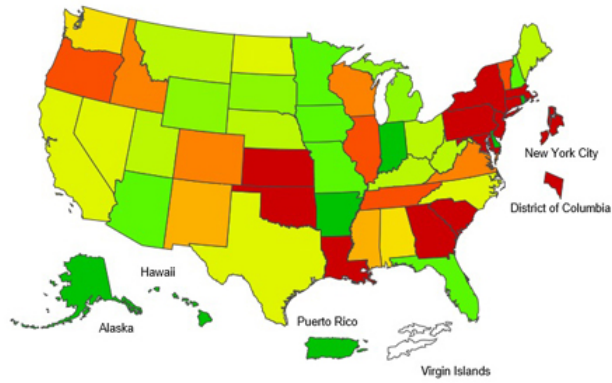
Geographic Spread

Severe Disease

Hospitalizations

The overall cumulative hospitalization rate for the season increased to 68.2 per 100,000.

P&I Mortality

The percentage of deaths attributed to pneumonia and influenza is 10.0%, above the epidemic threshold of 7.1%.

Pediatric Deaths

4 influenza-associated pediatric deaths occurring during the 2019-2020 season were reported this week. The total for the season is 166.

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 on FluView Interactive.

Key Points

- Nationally, the percent of laboratory specimens testing positive for influenza at clinical laboratories continued to decrease and is now low.
- ILI activity continued to decrease nationally but remains elevated.
- Recent changes in healthcare seeking behavior, including increasing use of telemedicine and recommendations to limit emergency department (ED) visits to severe illness, as well as increasing levels of social distancing, are affecting the number of persons with ILI and their reasons for seeking care in outpatient and ED settings.
- Laboratory confirmed influenza-associated hospitalization rates for the U.S. population overall are higher than most recent seasons and rates for children 0-4 years and adults 18-49 years are the highest CDC has on record for these age groups, surpassing rates reported during the 2009 H1N1 pandemic. Hospitalization rates 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.
- The percent of deaths associated with pneumonia and influenza is above the epidemic threshold. The increase is due to an increase in pneumonia deaths rather than influenza deaths and likely reflects COVID-19 activity.
- 166 influenza-associated deaths in children have been reported so far this season. This number is high compared to recent seasons, but remains lower than the 2017-2018 season during which 188 pediatric deaths were reported.
- CDC estimates that so far this season there have been at least 39 million flu illnesses, 410,000 hospitalizations and 24,000 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.
- With ongoing declines in influenza activity and the continued effects of the COVID-19 pandemic on outpatient ILI and P&I mortality data, this will be the final week of a full FluView report. More detailed interpretation of data from these systems can be found in COVIDView starting next week (week 15).
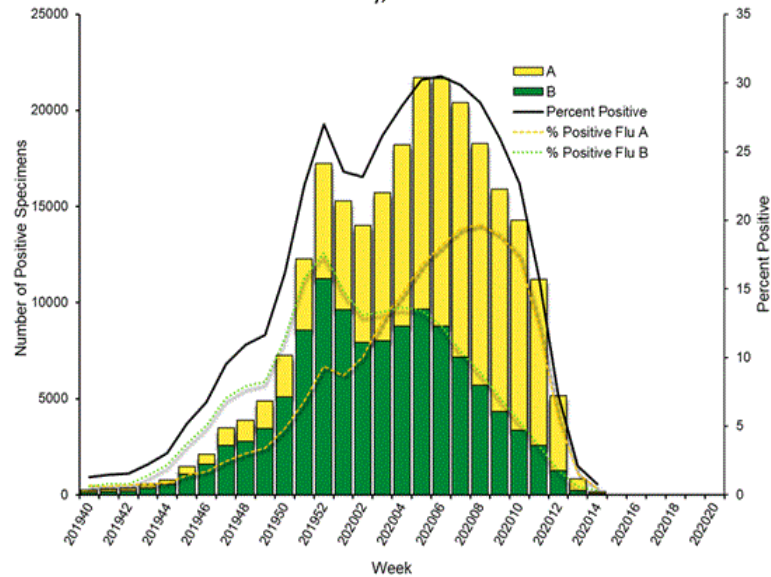
U.S. Virologic Surveillance

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 14	Data Cumulative since September 29, 2019 (week 40)
No. of specimens tested	22,324	1,303,970

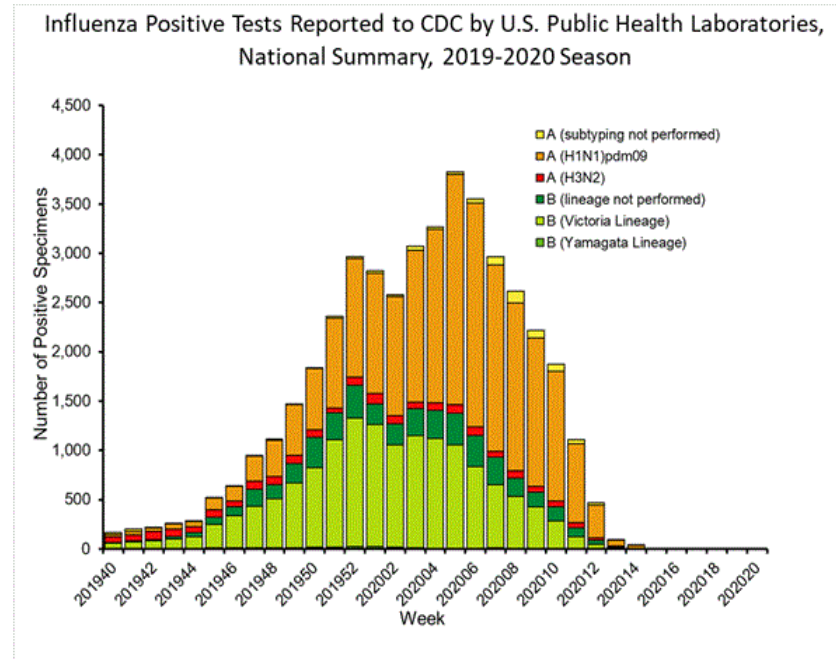|	Week 14	Data Cumulative since September 29, 2019 (week 40)
No. of positive specimens (%)	180 (0.8%)	247,785 (19.0%)
Positive specimens by type		
Influenza A	105 (58.3%)	132,461 (53.5%)
Influenza B	75 (41.7%)	115,324 (46.5%)

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.

	Week 14	Data Cumulative since September 29, 2019 (week 40)
No. of specimens tested	356	81,392
No. of positive specimens	35	43,456
Positive specimens by type/subtype		
Influenza A	31 (88.6%)	24,822 (57.1%)
(H1N1)pdm09	28 (96.6%)	22,324 (92.6%)
H3N2	1 (3.4%)	1,780 (7.4%)
Subtyping not performed	2	718
Influenza B	4 (11.4%)	18,634 (42.9%)
Yamagata lineage	0 (0.0%)	238 (1.6%)
Victoria lineage	0 (0.0%)	14,198 (98.4%)
Lineage not performed	4	4,198

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, influenza A viruses are the most commonly reported influenza viruses in all age groups.

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 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. Interim estimates of 2019-2020 flu vaccine effectiveness have been released.

CDC genetically characterized 2,463 influenza viruses collected in the U.S. from September 29, 2019, to April 4, 2020.

Virus Subtype or	Genetic Characterization

Lineage	Total No. of Subtype/Lineage Tested	Clade	Number (% of subtype/lineage tested)	Subclade	Number (% of subtype/lineage tested)
A/H1	896				
		6B.1A	896 (100%)		
A/H3	510				
		3C.2a	480 (94.1%)	2a1	480 (94.1%)
				2a2	0
				2a3	0
				2a4	0
		3C.3a	30 (5.9%)	3a	30 (5.9%)
B/Victoria	965				
		V1A	965 (100%)	V1A	0
				V1A.1	60 (6.2%)
				V1A.3	905 (93.8%)
B/Yamagata	92				
		Y3	92 (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 547 influenza viruses collected in the United States from September 29, 2019, to April 4, 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: 212 A(H1N1)pdm09 viruses were antigenically characterized by HI with ferret antisera, and 175 (82.5%) 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. 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 that is antigenically distinguishable in antigenic assays using ferret sera. Similar viruses were observed last season as well and these represented a small proportion of virus circulating. We have observed an increase in the proportion of H1N1pdm09 viruses with this change late in the US season.
- A (H3N2): 86 A(H3N2) viruses were antigenically characterized by FRA with ferret antisera, and 40 (46.5%) 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: 201 B/Victoria lineage viruses, including viruses from both co-circulating sub-clades, were antigenically characterized by HI with ferret antisera, and 120 (59.7%) 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: 48 B/Yamagata lineage viruses were antigenically characterized by HI with ferret antisera, and all 48 (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, 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	2,433	885	502	954	92
		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	2,433	885	502	954	92
		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	2,433	885	502	954	92
		Reduced Inhibition	2 (0.1%)	(0.0%)	(0.0%)	2 (0.2%)	(0.0%)

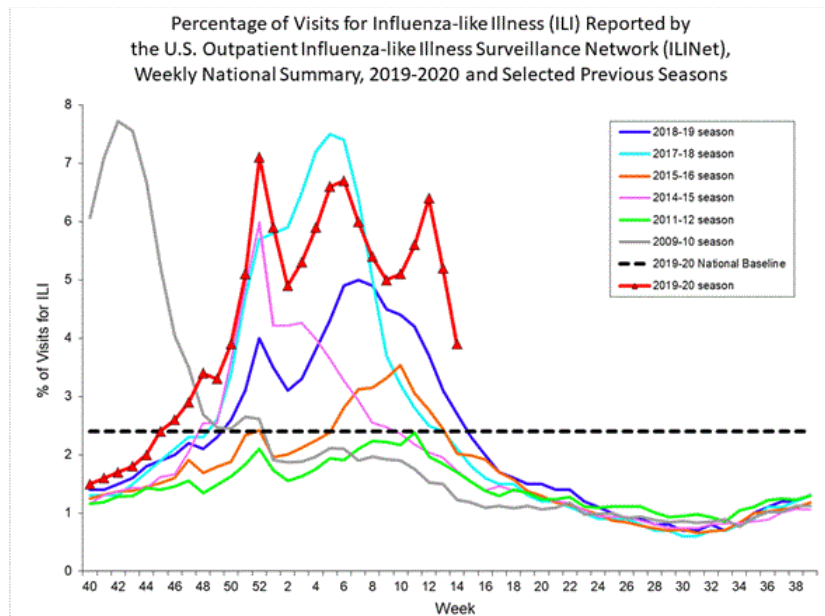|							
		Highly Reduced Inhibition	(0.0%)	(0.0%)	(0.0%)	(0.0%)	(0.0%)
PA Endonuclease Inhibitor	Baloxavir	Viruses Tested	2,541	884	584	978	95
		Reduced Susceptibility	(0.0%)	(0.0%)	(0.0%)	(0.0%)	(0.0%)

*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 inhibition 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, 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. Three (1.4%) of the 211 A(H1N1)pdm09 viruses tested had the H275Y amino acid substitution in the neuraminidase and showed highly reduced inhibition by oseltamivir and peramivir. No molecular markers associated with reduced or highly reduced inhibition by neuraminidase inhibitors were detected in A(H3N2) and type B viruses tested.

Outpatient Illness Surveillance

ILINet

Nationwide during week 14, 3.9% 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%.

Percentage of Visits for Influenza-like Illness (ILI) Reported by the U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet), Weekly National Summary, 2019-2020 and Selected Previous Seasons

View Chart Data (current season only) | View Full Screen

On a regional level, the percentage of outpatient visits for ILI ranged from 2.4% to 10.0% during week 14. All regions decreased in percentage of outpatient visits for ILI compared to last week, but 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 14, the following ILI activity levels were experienced:
- High – the District of Columbia, New York City, and 19 states (Colorado, Connecticut, Georgia, Idaho, Illinois, Kansas, Louisiana, Maryland, Massachusetts, New Jersey, New York, Oklahoma, Oregon, Pennsylvania, South Carolina, Tennessee, Vermont, Virginia, and Wisconsin)
- Moderate – four states (Alabama, Mississippi, New Mexico, and Washington)
- Low - 12 states (California, Kentucky, Maine, Montana, Nebraska, Nevada, North Carolina, North Dakota, Ohio, Texas, Utah, and West Virginia)
- Minimal - Puerto Rico and 15 states (Alaska, Arizona, Arkansas, Delaware, Florida, Hawaii, Indiana, Iowa, Michigan, Minnesota, Missouri, New Hampshire, Rhode Island, South Dakota, and Wyoming)
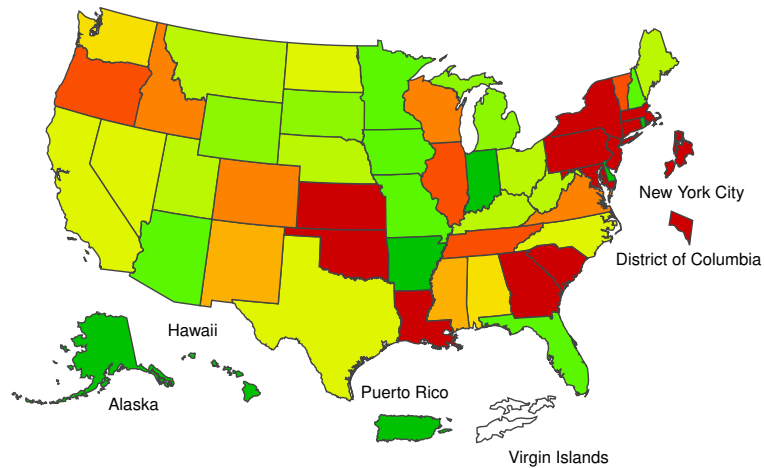- Data were insufficient to calculate an ILI activity level from the U.S. Virgin Islands.

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 |

40   50   1   10   14

weeks

2019-20 Influenza Season Week 14 ending Apr 04, 2020

ILI Activity Level

High

Moderate

Low

Minimal

Insufficient Data

New York City

District of Columbia

Hawaii

Puerto Rico

Alaska

Virgin Islands

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

Among the 21 jurisdictions with high ILI activity, ILI increased relative to the previous week in two, remained stable in two and declined in 17. Sixteen 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 all but one.

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

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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 viruses but does not measure the severity of influenza activity.

During week 14, the following influenza activity was reported:

- Widespread – 11 states (Alaska, Georgia, Indiana, Louisiana, Maryland, Nevada, North Carolina, Oklahoma, Tennessee, Virginia and Wisconsin)

- Regional – Puerto Rico and 19 states (Alabama, Arizona, Colorado, Connecticut, Idaho, Illinois, Kansas, Maine, Massachusetts, Michigan, Mississippi, Montana, New Hampshire, New Jersey, Ohio, South Carolina, Texas, Vermont and Washington)

- Local – the District of Columbia and 12 states (Arkansas, Hawaii, Iowa, Missouri, Nebraska, New Mexico, North Dakota, Pennsylvania, South Dakota, Utah, West Virginia and Wyoming)

- Sporadic – the U.S. Virgin Islands and seven states (California, Delaware, Florida, Kentucky, Minnesota, New York and Oregon)

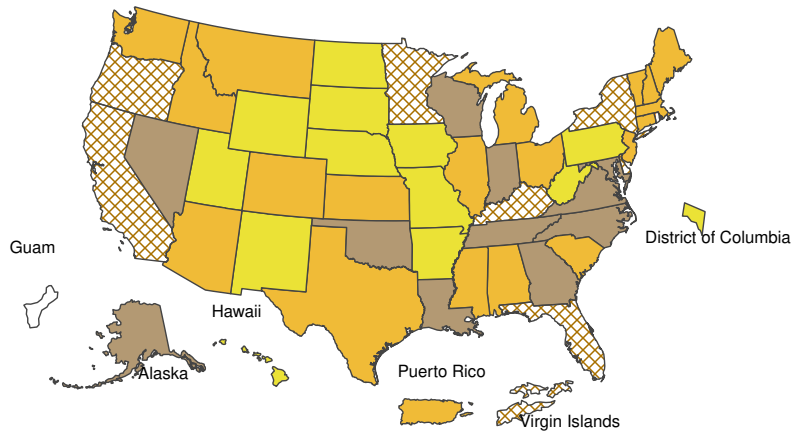- No Activity – one state (Rhode Island)

- Guam did not report.

A Weekly Influenza Surveillance Report Prepared by the Influenza Division

Weekly Influenza Activity Estimates Reported by State and Territorial Epidemiologists*

<< 40 | Play | Pause | >>   50   1   10   14

Weeks

Week Ending Apr 04, 2020 - Week 14

Influenza Activity Estimates

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

Guam

District of Columbia

Hawaii

Alaska

Puerto Rico

Virgin Islands

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:
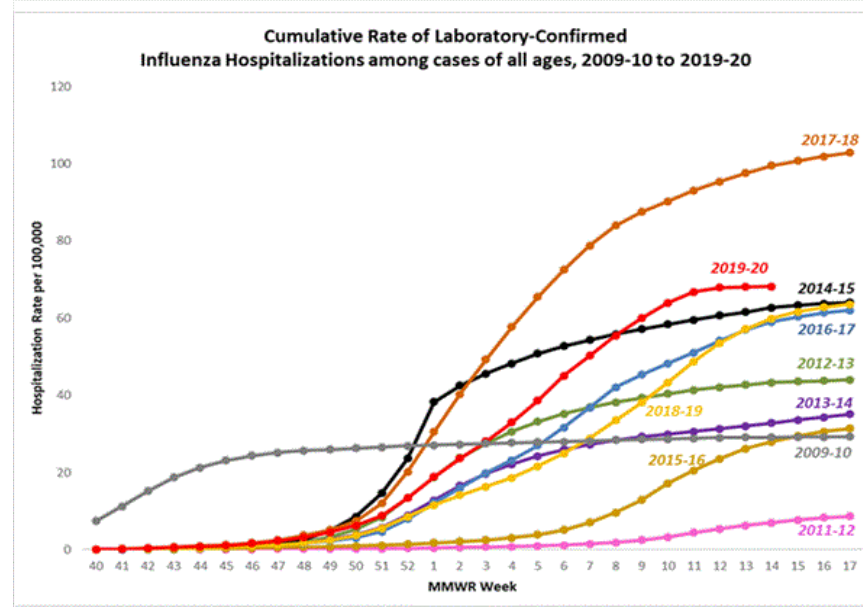
Surveillance Methods | FluView Interactive

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 19,802 laboratory-confirmed influenza-associated hospitalizations were reported by FluSurv-NET sites between October 1, 2019 and April 4, 2020; 14,309 (72.3%) were associated with influenza A virus, 5,379 (27.2%) with influenza B virus, 59 (0.3%) with influenza A virus and influenza B virus co-infection, and 55 (0.3%) with influenza virus for which the type was not determined. Among those with influenza A subtype information, 3,806 (94.5%) were A(H1N1)pdm09 virus and 223 (5.5%) were A(H3N2).

The overall cumulative hospitalization rate was 68.2 per 100,000 population, which is higher than all recent seasons at 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 the 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 the pandemic.
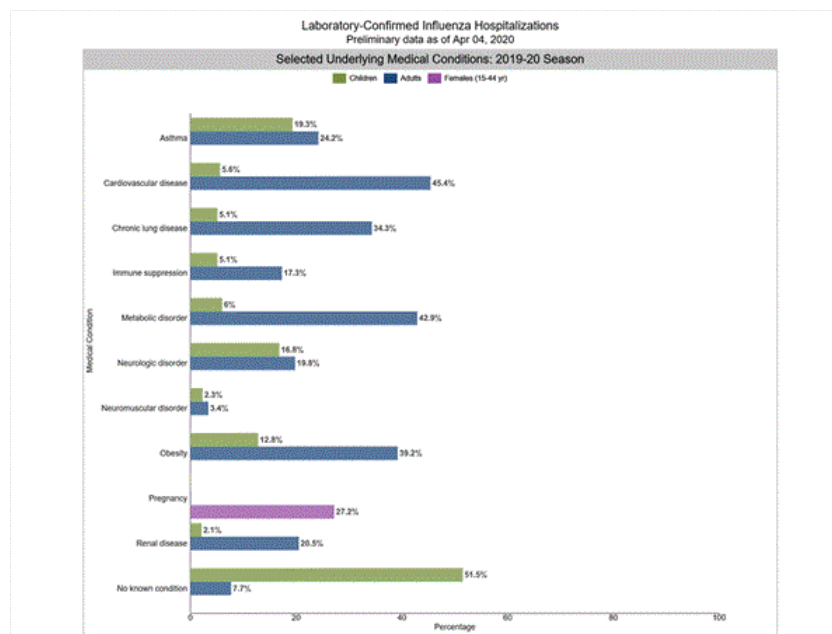

Cumulative Rate of Laboratory-Confirmed Influenza Hospitalizations among cases of all ages, 2009-10 to 2019-20

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	68.2
0-4 years	94.1

| Age Group	2019-2020 Season Cumulative Rate per 100,000 Population
5-17 years	24.6
18-49 years	35.6
50-64 years	90.2
65+ years	179.7

Among 3,433 hospitalized adults with information on underlying medical conditions, 92.3% had at least one reported underlying medical condition, the most commonly reported were cardiovascular disease, metabolic disorder, obesity, and chronic lung disease. Among 569 hospitalized children with information on underlying medical conditions, 48.5% had at least one underlying medical condition; the most commonly reported was asthma. Among 600 hospitalized women of childbearing age (15-44 years) with information on pregnancy status, 27.2% were pregnant.

Laboratory-Confirmed Influenza Hospitalizations
Preliminary data as of Apr 04, 2020
Selected Underlying Medical Conditions: 2019-20 Season

[View Full Screen](#)

Additional hospitalization surveillance information for current and past seasons and additional age groups:

Pneumonia and Influenza (P&I) Mortality Surveillance

Based on National Center for Health Statistics (NCHS) mortality surveillance data available on March 26, 2020, 10.0% of the deaths occurring during the week ending March 28, 2020 (week 13) were due to P&I. This percentage is above the epidemic threshold of 7.1% for week 13.

Pneumonia and Influenza Mortality from the National Center for Health Statistics Mortality Surveillance System
Data through the week ending March 28, 2020, as of April 9, 2020
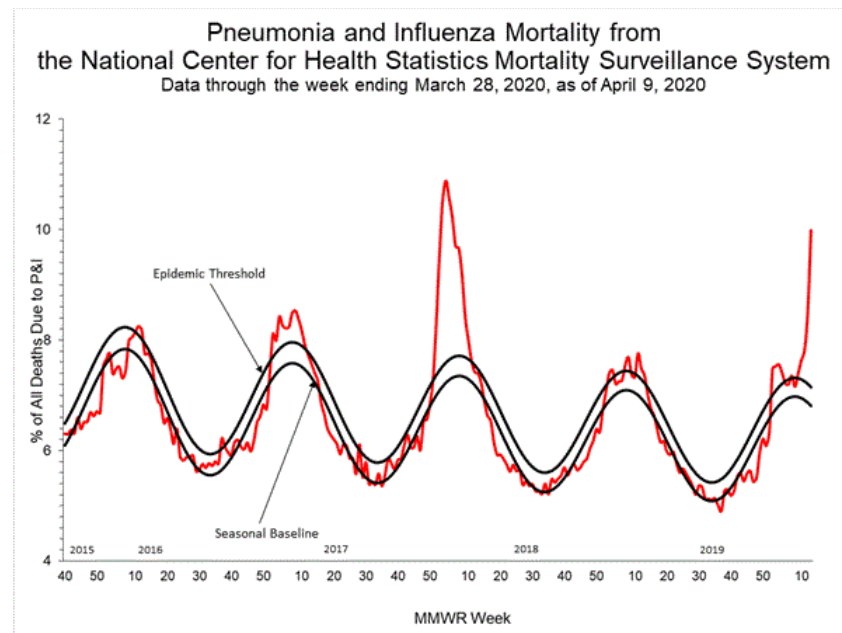
View Chart Data | View Full Screen

While the percent of all deaths due to P&I has increased during weeks 9-13 (7.4-10.0%), the percent of all deaths with Influenza listed as a cause have decreased (from 1.0% to 0.7%) over this same time period. The increase in pneumonia deaths during this time period are likely associated with COVID-19 rather than influenza.

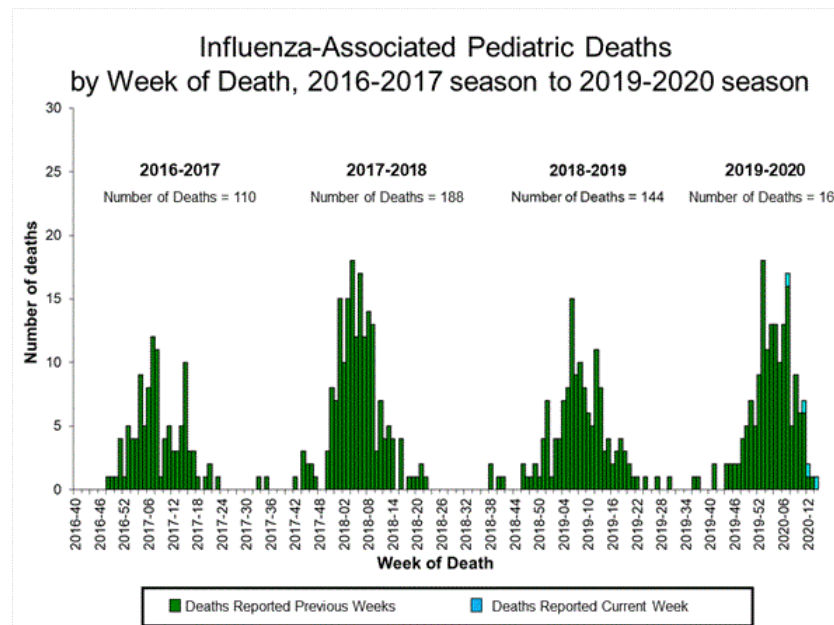Additional pneumonia and influenza mortality surveillance information for current and past seasons:
Surveillance Methods | FluView Interactive

Influenza–Associated Pediatric Mortality

Four influenza-associated pediatric deaths occurring during the 2019-2020 season between weeks 7 and 14 (the weeks ending February 15, 2020 and April 4, 2020) were reported to CDC during week 14. Two were associated with influenza A viruses, and one was subtyped as an A(H1N1)pdm09 virus. Two were associated with influenza B viruses, and neither had a lineage determined.

Of the 166 influenza-associated pediatric deaths occurring during the 2019-2020 season and reported to CDC:

- 104 deaths were associated with influenza B viruses, and 25 had a lineage determined; all were B/Victoria viruses.

- 62 deaths were associated with influenza A viruses, and 36 were subtyped; 35 were A(H1N1)pdm09 viruses, and one 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 visuals 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 nations is 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

Any links provided to non-Federal organizations are provided solely as a service to our users. These links do not constitute an endorsement of these organizations or their programs by CDC or the Federal Government, 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.

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