FLUVIEW

A Weekly Influenza Surveillance Report Prepared by the Influenza Division

2012-2013 Influenza Season
Week 4 ending January 26, 2013

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

Synopsis: During week 4 (January 20-26), influenza activity remained elevated in the United States, but decreased in some areas.

- **Viral Surveillance**: Of 10,581 specimens tested and reported by collaborating laboratories, 2,701 (25.5%) were positive for influenza.
- **Pneumonia and Influenza Mortality**: The proportion of deaths attributed to pneumonia and influenza (P&I) was above the epidemic threshold.
- **Influenza-Associated Pediatric Deaths**: Eight pediatric deaths were reported.
- **Influenza-Associated Hospitalizations:** A cumulative rate for the season of 25.9 laboratory-confirmed influenza-associated hospitalizations per 100,000 population was reported. Of all hospitalizations, more than 50% were among adults 65 years and older.
- **Outpatient Illness Surveillance**: The proportion of outpatient visits for influenza-like illness (ILI) was 4.2%; this is above the national baseline of 2.2%. All 10 regions reported ILI above region-specific baseline levels. Twenty-four states and New York City experienced high ILI activity; the District of Columbia and 13 states experienced moderate activity; 4 states experienced low activity; and 9 states experienced minimal activity.
- **Geographic Spread of Influenza**: Forty-two states reported widespread geographic influenza activity; 7 states reported regional activity; the District of Columbia and one state reported local activity; Guam reported sporadic influenza activity, and Puerto Rico and the U.S. Virgin Islands did not report.

A description of surveillance methods is available at: http://www.cdc.gov/flu/weekly/overview.htm.

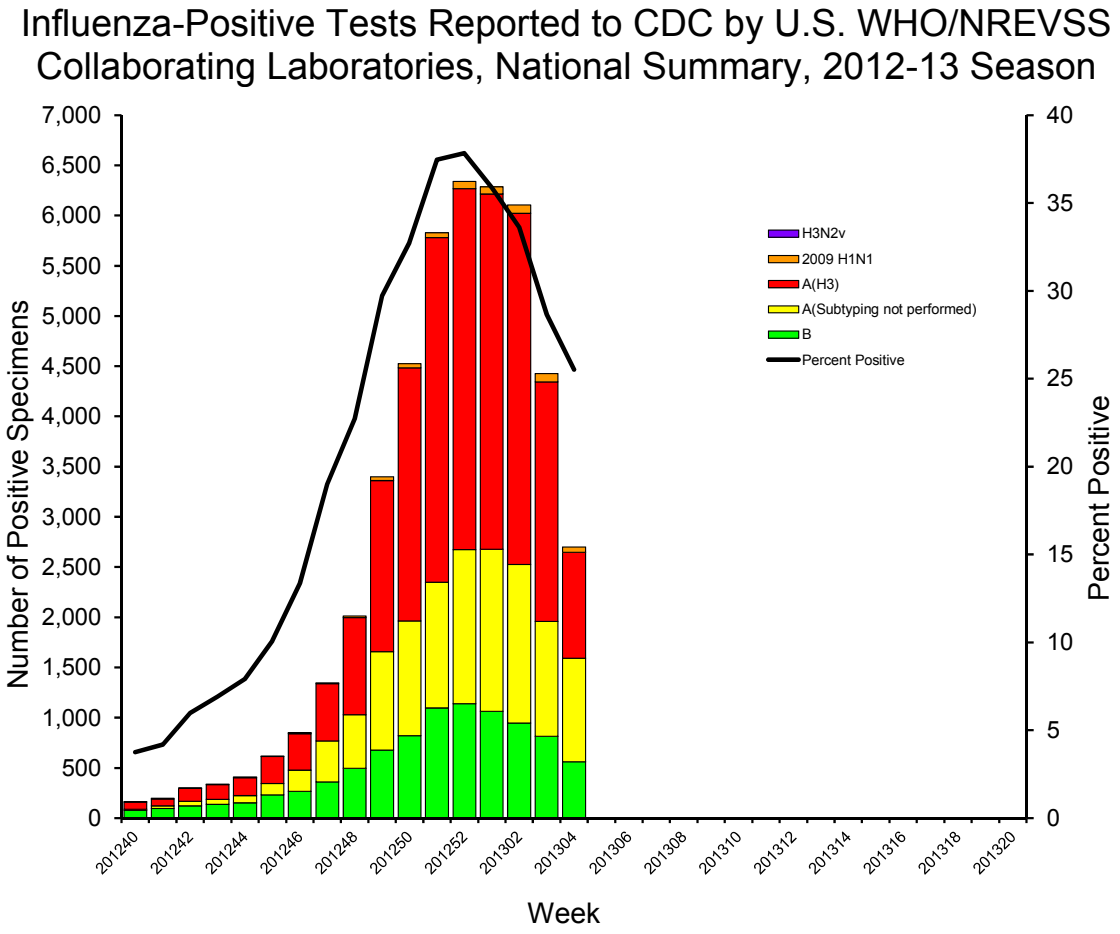
National and Regional Summary of Select Surveillance Components

	Data for current week			Data cumulative since September 30, 2012 (Week 40)				
HHS Surveillance Regions*	Out-patient ILI†	% positive for flu‡	Number of jurisdictions reporting regional or widespread activity§	2009 H1N1	A (H3)	A (Subtyping not perfor-med)	B	Pediatric Deaths
Nation	Elevated	25.5%	49 of 54	551	24,490	11,748	9,061	45
Region 1	Elevated	36.5%	6 of 6	45	2,118	482	145	2
Region 2	Elevated	28.6%	2 of 4	74	1,784	1,593	347	8
Region 3	Elevated	35.4%	5 of 6	125	5,376	443	593	0
Region 4	Elevated	24.7%	8 of 8	39	2,205	5,021	1,540	7
Region 5	Elevated	42.5%	6 of 6	49	4,085	404	680	8
Region 6	Elevated	29.5%	5 of 5	31	1,577	1,883	2,472	10
Region 7	Elevated	27.9%	4 of 4	15	1,687	167	667	2
Region 8	Elevated	27.6%	6 of 6	79	2,242	1,301	2,051	5
Region 9	Elevated	25.2%	3 of 5	72	1,523	290	312	2
Region 10	Elevated	28.5%	4 of 4	22	1,893	164	254	1

***** http://www.hhs.gov/about/regionmap.html.
† Elevated means the % of visits for ILI is at or above the national or region-specific baseline.
‡ National data are for current week; regional data are for the most recent three weeks.
§ Includes all 50 states, the District of Columbia, Guam, Puerto Rico, and the U.S. Virgin Islands.

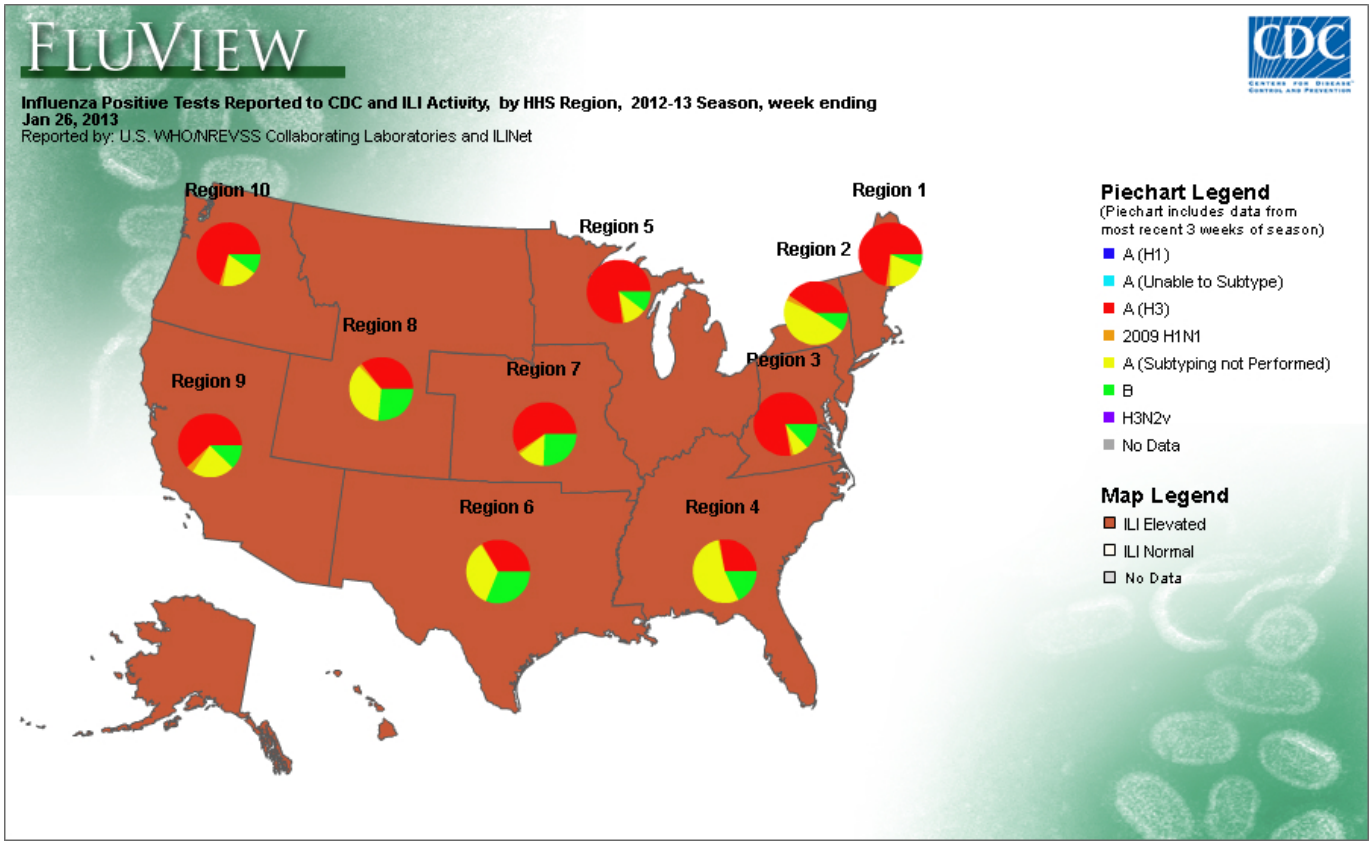
U.S. Virologic Surveillance: U.S. World Health Organization (WHO) and National Respiratory and Enteric Virus Surveillance System (NREVSS) collaborating laboratories located in all 50 states and Puerto Rico report to CDC the number of respiratory specimens tested for influenza and the number positive by influenza virus type and influenza A virus subtype.

	Week 4
No. of specimens tested	10,581
No. of positive specimens (%)	2,701 (25.5%)
Positive specimens by type/subtype	
Influenza A	2,141 (79.3%)
2009 H1N1	54 (2.5%)
Subtyping not performed	1,034 (48.3%)
H3	1,053 (49.2%)
Influenza B	560 (20.7%)



Since the start of the season, influenza A (H3N2) viruses have predominated nationally, followed by influenza B viruses, while 2009 H1N1 viruses have been identified less frequently. Over the course of the season the predominant circulating virus has varied by state and by region.

The image below shows the proportion of influenza-positive respiratory samples by type and subtype for the most recent three weeks in each region. Regions with ILI above region-specific baseline levels are highlighted. Region-specific data can be found at http://gis.cdc.gov/grasp/fluview/fluportaldashboard.html.



Antigenic Characterization: CDC has antigenically characterized 920 influenza viruses [Sixty-six 2009 H1N1 viruses, 556 influenza A (H3N2) viruses, and 298 influenza B viruses] collected by U.S. laboratories since October 1, 2012.

2009 H1N1 [66]

- All sixty-six 2009 H1N1 viruses tested were characterized as A/California/7/2009-like, the influenza A (H1N1) component of the 2012-2013 influenza vaccine for the Northern Hemisphere.

Influenza A (H3N2) [556]:

- 554 (99.6%) of the 556 H3N2 influenza viruses tested have been characterized as A/Victoria/361/2011-like, the influenza A (H3N2) component of the 2012-2013 Northern Hemisphere influenza vaccine.
- 2 (0.4%) of the 556 H3N2 viruses tested showed reduced titers with antiserum produced against A/Victoria/361/2011.

Influenza B (B/Yamagata/16/88 and B/Victoria/02/87 lineages) [298]:

- **Yamagata Lineage [211]**: 211 (70.8%) of the 298 influenza B viruses tested so far this season have been characterized as B/Wisconsin/1/2010-like, the influenza B component of the 2012-2013 Northern Hemisphere influenza vaccine.
- **Victoria Lineage [87]**: 87 (29.2%) of 298 influenza B viruses tested have been from the B/Victoria lineage of viruses.

Antiviral Resistance: Testing of 2009 H1N1, influenza A (H3N2), and influenza B virus isolates for resistance to neuraminidase inhibitors (oseltamivir and zanamivir) is performed at CDC using a functional assay. Additional 2009 influenza A (H1N1) clinical samples are tested for a single mutation in the neuraminidase of the virus known to confer oseltamivir resistance (H275Y). The data summarized below combine the results of both testing methods. These samples are routinely obtained for surveillance purposes rather than for diagnostic testing of patients suspected to be infected with antiviral-resistant virus.

High levels of resistance to the adamantanes (amantadine and rimantadine) persist among 2009 influenza A (H1N1) and A (H3N2) viruses (the adamantanes are not effective against influenza B viruses). As a result, data from adamantane resistance testing are not presented below.

Neuraminidase Inhibitor Resistance Testing Results on Samples Collected Since October 1, 2012

	Oseltamivir		Zanamivir	
	Virus Samples tested (n)	Resistant Viruses, Number (%)	Virus Samples tested (n)	Resistant Viruses, Number (%)
Influenza A (H3N2)	901*	0 (0.0)	901*	0 (0.0)
Influenza B	322	0 (0.0)	322	0 (0.0)
2009 H1N1	135*	1 (0.7)	70	0 (0.0)

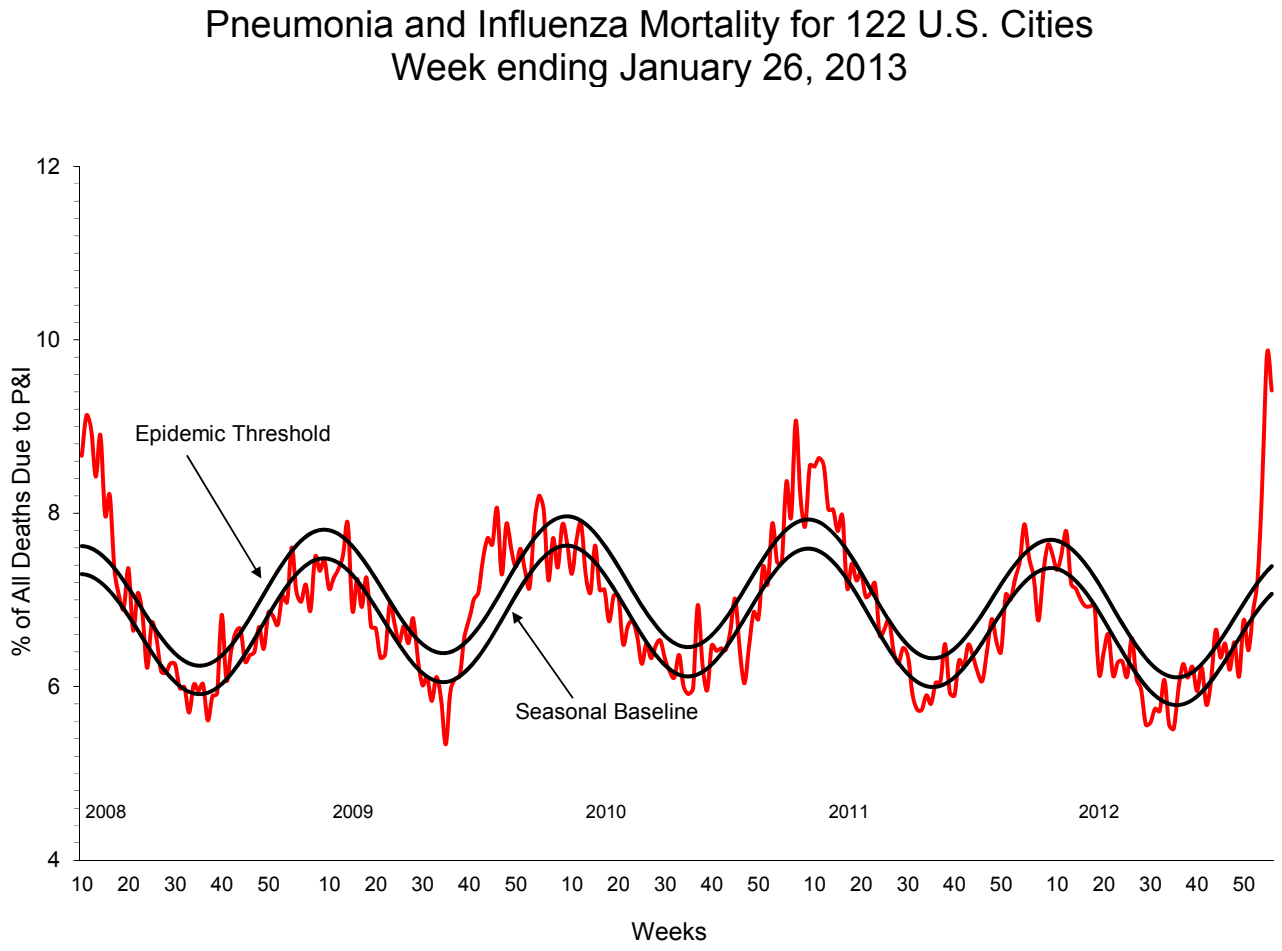
*Includes specimens tested in national surveillance and additional specimens tested at public health laboratories in six states (AZ, ME, MD, MI, NY, and PA) who share testing results with CDC.

The majority of currently circulating influenza viruses are susceptible to the neuraminidase inhibitor antiviral medications oseltamivir and zanamivir; however, rare sporadic cases of oseltamivir-resistant 2009 H1N1 and A (H3N2) viruses have been detected worldwide. Antiviral treatment with oseltamivir or zanamivir as early as possible is recommended for patients with confirmed or suspected influenza who have severe, complicated, or progressive illness; who require hospitalization; or who are at greater risk for serious influenza-related complications. Additional information on recommendations for treatment and chemoprophylaxis of influenza virus infection with antiviral agents is available at http://www.cdc.gov/flu/antivirals/index.htm.

Novel Influenza A Virus: No new human infections with novel influenza A viruses were reported to CDC during week 4.

A total of 312 infections with variant influenza viruses (308 H3N2v viruses, 3 H1N2v viruses, and 1 H1N1v virus) have been reported from 11 states since July 2012. More information about H3N2v infections can be found at http://www.cdc.gov/flu/swineflu/h3n2v-cases.htm.

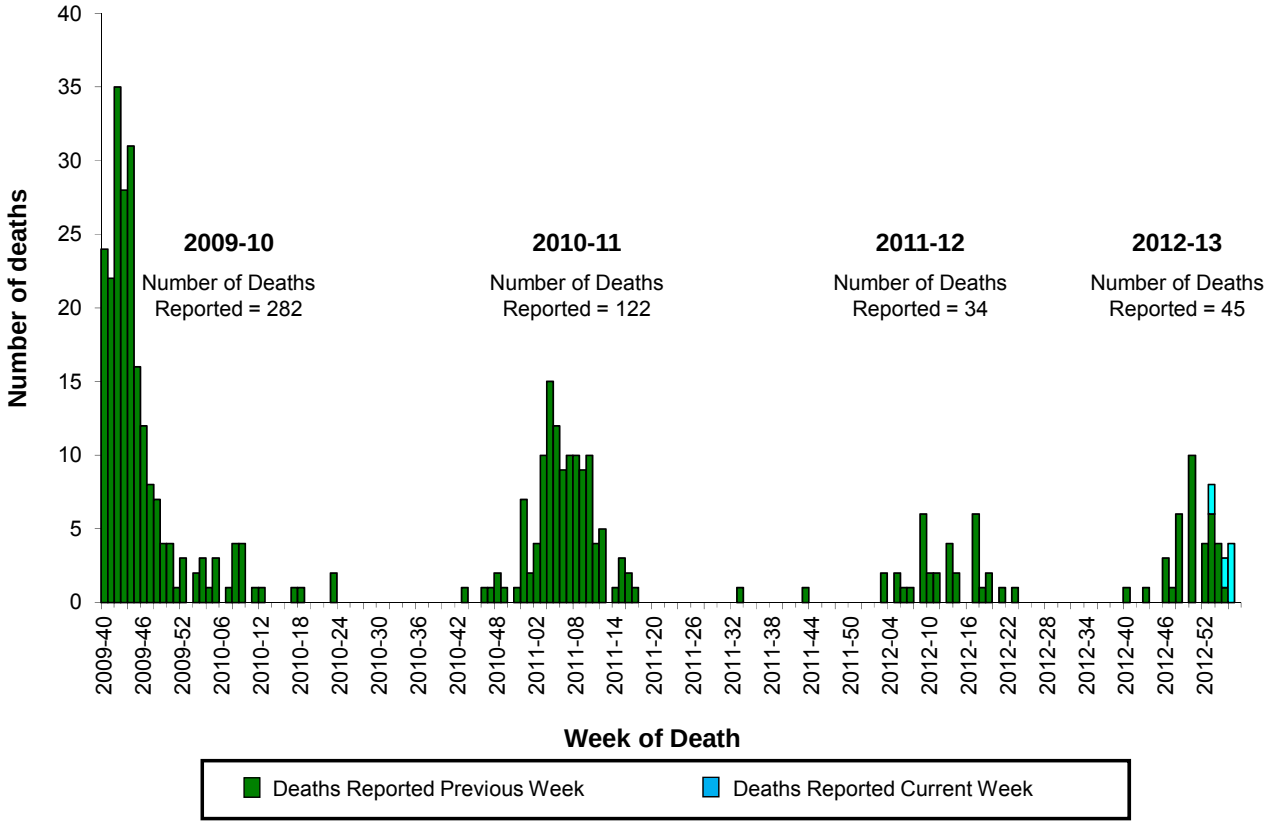
Pneumonia and Influenza (P&I) Mortality Surveillance: During week 4, 9.4% of all deaths reported through the 122 Cities Mortality Reporting System were due to P&I. This percentage was above the epidemic threshold of 7.4% for week 4.



Influenza-Associated Pediatric Mortality: Eight influenza-associated pediatric deaths were reported to CDC during week 4. Five were associated with influenza A (H3) viruses and occurred during weeks 3 and 4 (weeks ending January 19 and 26, 2013), one was associated with an influenza A virus for which the subtype was not determined and occurred during week 4 (week ending January 26, 2013), and two were associated with influenza B viruses and occurred during week 1 (week ending January 5, 2013).

A total of 45 influenza-associated pediatric deaths have been reported during the 2012-2013 season from New York City [1] and 20 states (Arkansas [1], Arizona [1], Colorado [5], Florida [5], Hawaii [1], Indiana [1], Kansas [1], Maine [1], Massachusetts [1], Michigan [4], Minnesota [1], Nebraska [1], New Jersey [4], New York [3], Ohio [1], South Carolina [1], Tennessee [1], Texas [9], Washington [1], and Wisconsin [1]). Additional data can be found at http://gis.cdc.gov/GRASP/Fluview/PedFluDeath.html.

Number of Influenza-Associated Pediatric Deaths by Week of Death: 2009-10 season to present



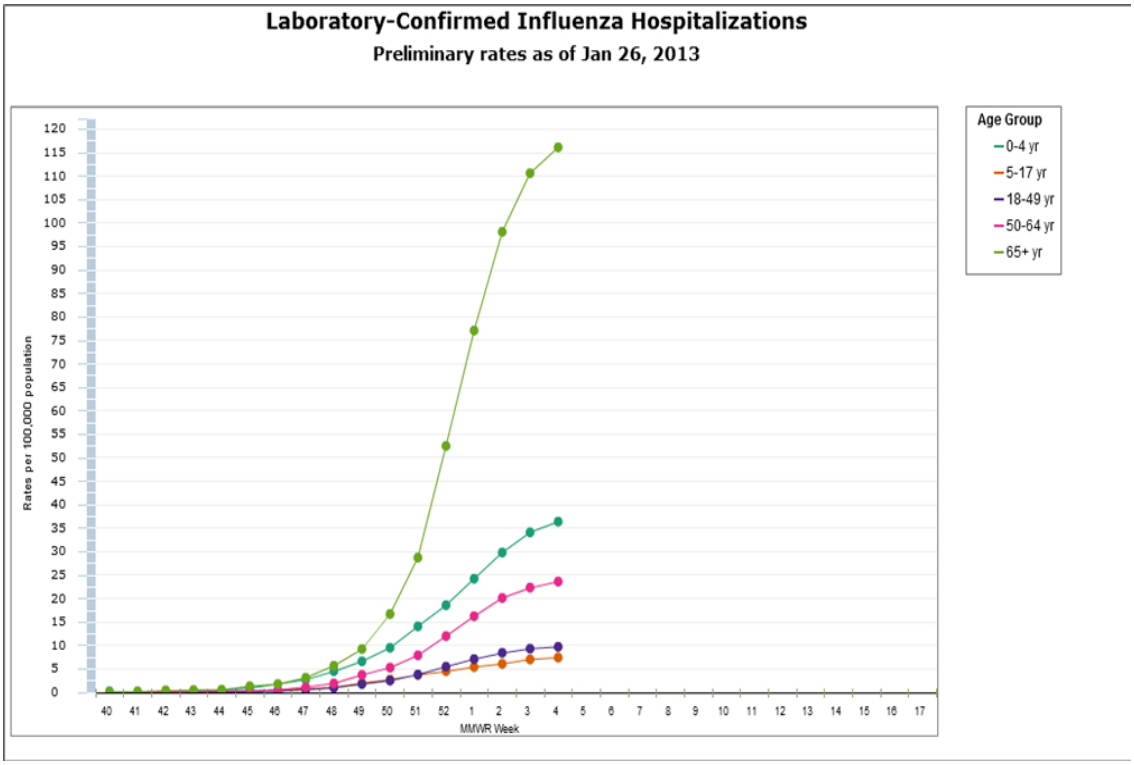
Influenza-Associated Hospitalizations: The Influenza Hospitalization Surveillance Network (FluSurv-NET) conducts population-based surveillance for laboratory-confirmed influenza-related hospitalizations in children younger than 18 years of age (since the 2003-2004 influenza season) and adults (since the 2005-2006 influenza season).

The FluSurv-NET covers more than 80 counties in the 10 Emerging Infections Program (EIP) states (CA, CO, CT, GA, MD, MN, NM, NY, OR, TN) and additional Influenza Hospitalization Surveillance

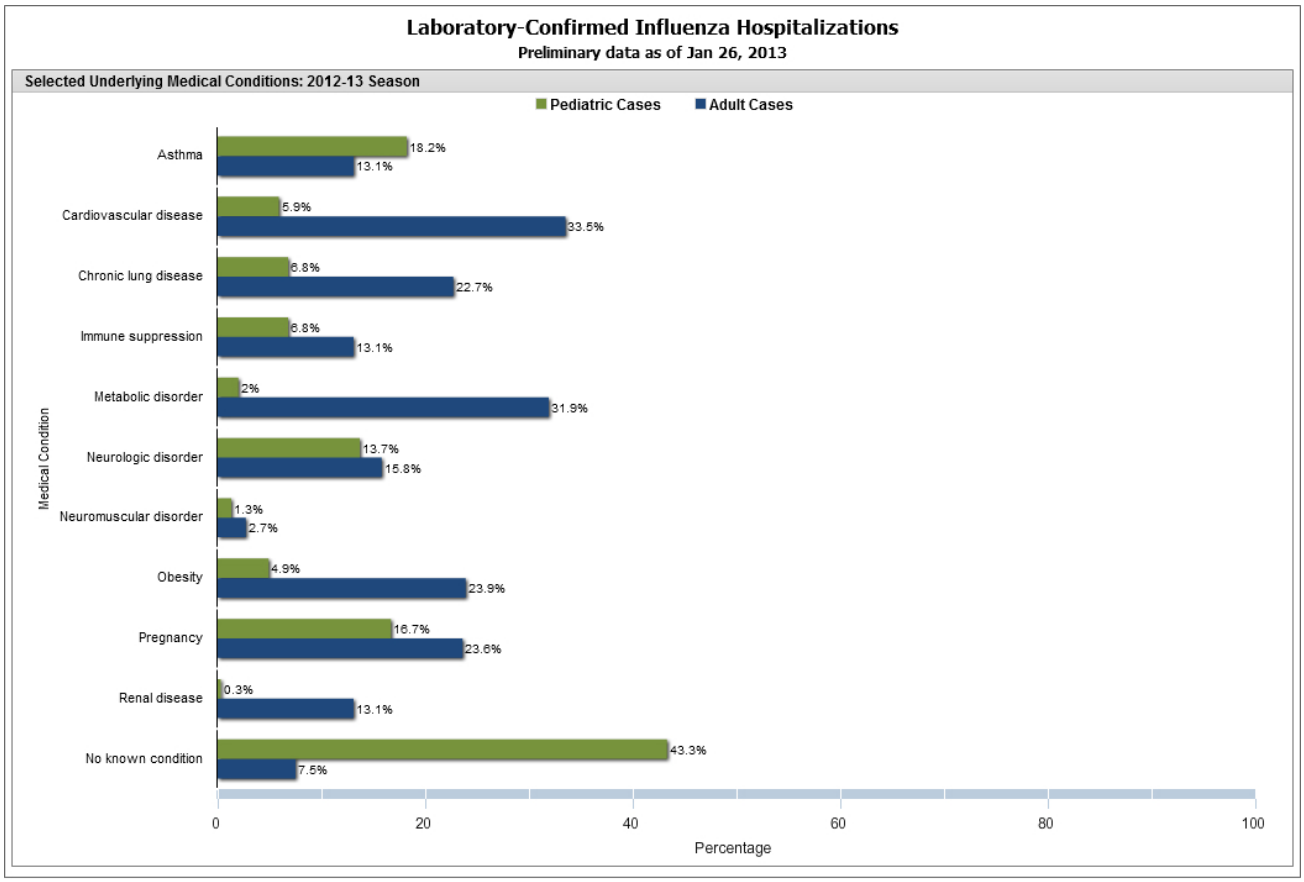
Project (IHSP) states. The IHSP began during the 2009-2010 season to enhance surveillance during the 2009 H1N1 pandemic. IHSP sites included IA, ID, MI, OK and SD during the 2009-2010 season; ID, MI, OH, OK, RI, and UT during the 2010-2011 season; MI, OH, RI, and UT during the 2011-2012 season; and IA, MI, OH, RI, and UT during the 2012-2013 season.

Data gathered are used to estimate age-specific hospitalization rates on a weekly basis, and describe characteristics of persons hospitalized with severe influenza illness. The rates provided are likely to be an underestimate as influenza-related hospitalizations can be missed, either because testing is not performed, or because cases may be attributed to other causes of pneumonia or other common influenza-related complications.

Between October 1, 2012 and January 26, 2013, 7,224 laboratory-confirmed influenza-associated hospitalizations were reported. This is a rate of 25.9 per 100,000 population. The most affected group is those ≥65 years, accounting for more than 50% of reported cases. Among all hospitalizations, 6,295 (87.1%) were associated with influenza A viruses and 874 (12.1%) with influenza B viruses. There was no virus type information for 37 (0.5%) hospitalizations. Among hospitalizations with influenza A subtype information, 1,622 (98.0%) were attributed to H3 and 33 (2.0%) were attributed to 2009 H1N1. The most commonly reported underlying medical conditions among hospitalized adults were cardiovascular disease, metabolic disorders, obesity, and chronic lung disease (excluding asthma). Among 139 hospitalized women of childbearing age (15-44 years), 32 were pregnant. The most commonly reported underlying medical conditions in hospitalized children were asthma, neurologic disorders, chronic lung disease and immune suppression. Forty-three percent of hospitalized children had no identified underlying medical conditions. Additional FluSurv-NET data can be found at: http://gis.cdc.gov/GRASP/Fluview/FluHospRates.html and http://gis.cdc.gov/grasp/fluview/FluHospChars.html.



Data from the Influenza Hospitalization Surveillance Network (FluSurv-NET), a population-based surveillance for influenza related hospitalizations in children and adults in 15 US states. Incidence rates are calculated using the National Center for Health Statistics' (NCHS) population estimates for the counties included in the surveillance catchment area.

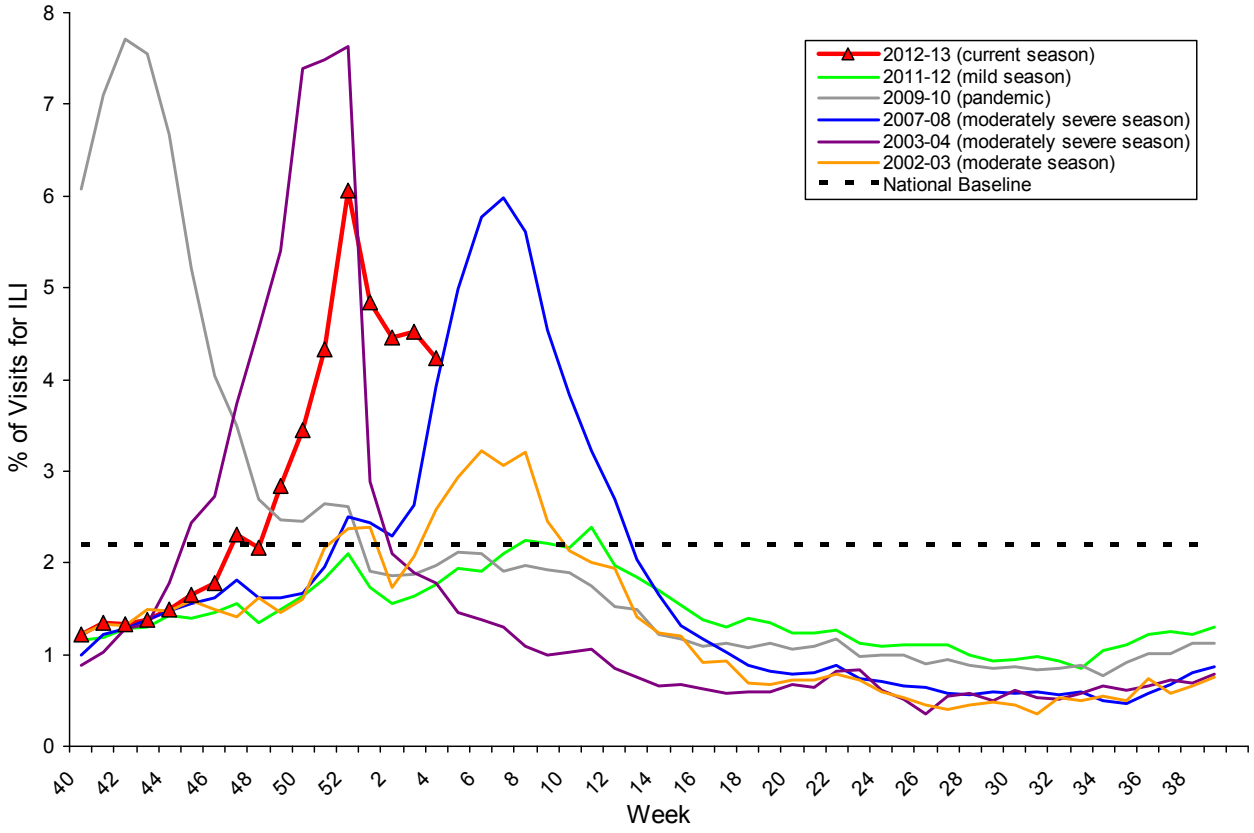


Asthma includes a medical diagnosis of asthma or reactive airway disease; Cardiovascular diseases include conditions such as coronary heart disease, cardiac valve disorders, congestive heart failure, and pulmonary hypertension (does not include isolated hypertension); Chronic lung diseases include conditions such as bronchiolitis obliterans, chronic aspiration pneumonia, and interstitial lung disease; Immune suppression includes conditions such as immunoglobulin deficiency, leukemia, lymphoma, HIV/AIDS, and individuals taking immunosuppressive medications; Metabolic disorders include conditions such as diabetes mellitus, thyroid dysfunction, adrenal insufficiency, and liver disease; Neurologic diseases include conditions such as seizure disorders, cerebral palsy, and cognitive dysfunction; Neuromuscular diseases include conditions such as multiple sclerosis and muscular dystrophy; Obesity was assigned if indicated in patient's medical chart or if body mass index (BMI) >30 kg/m^2; Pregnancy percentage calculated using number of female cases aged between 15 and 44 years of age as the denominator; Renal diseases include conditions such as acute or chronic renal failure, nephrotic syndrome, glomerulonephritis, and impaired creatinine clearance; No known condition indicates that the case did not have any known underlying medical condition indicated in medical chart at the time of hospitalization.
Only includes cases for which data collection has been completed through the medical chart review stage.

Outpatient Illness Surveillance: Nationwide during week 4, 4.2% 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 2.2%. Similar to what has been observed in previous seasons, the increase observed in week 52 may be attributed in part to a reduced number of routine health care visits during the end of year holidays.

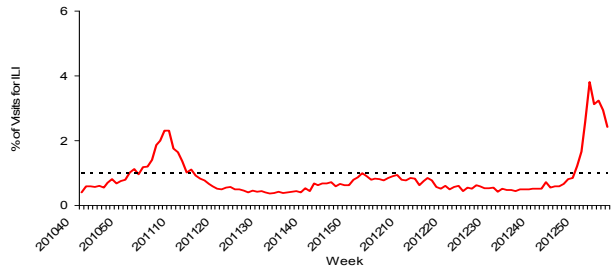
(ILI is defined as fever (temperature of 100°F [37.8°C] or greater) and cough and/or sore throat.)

Percentage of Visits for Influenza-like Illness (ILI) Reported by the U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet), Weekly National Summary, 2012-13 and Selected Previous Seasons

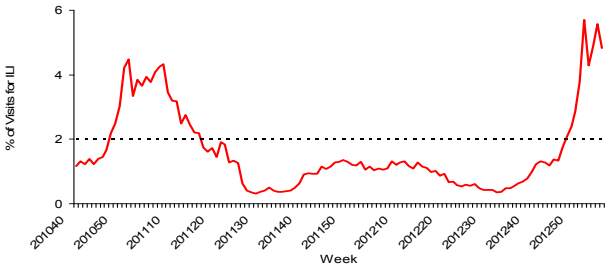


On a regional level, the percentage of outpatient visits for ILI ranged from 2.4% to 6.7% during week 4. All 10 regions reported a proportion of outpatient visits for ILI above their region-specific baseline levels.

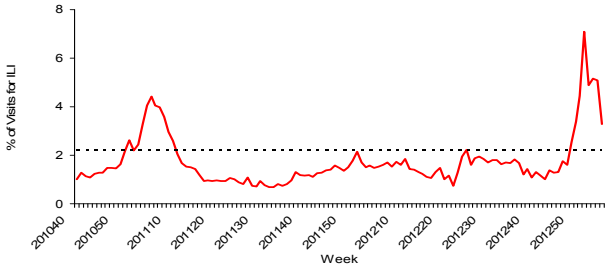
Region 1 - CT, ME, MA, NH, RI, VT



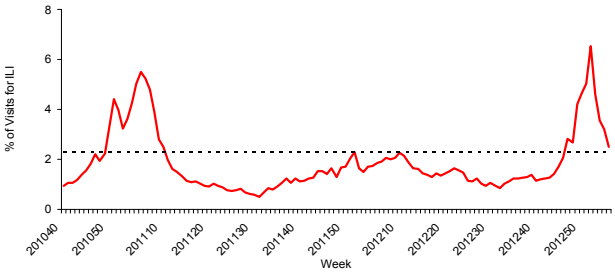
Region 2 - NJ, NY, USVI



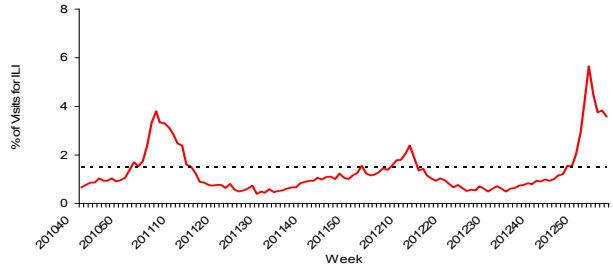
Region 3 - DE, DC, MD, PA, VA, WV



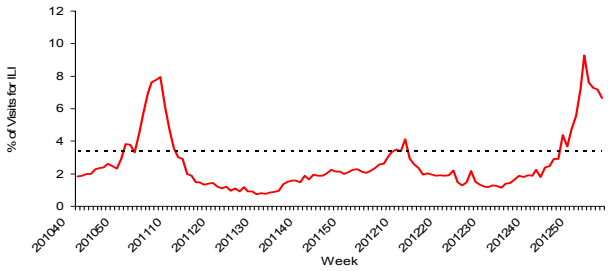
Region 4 - AL, FL, GA, KY, MS, NC, SC, TN



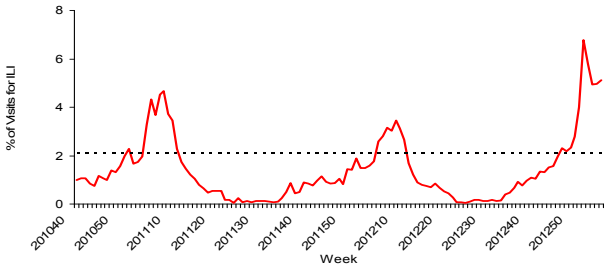
Region 5 - IL, IN, MI, MN, OH, WI



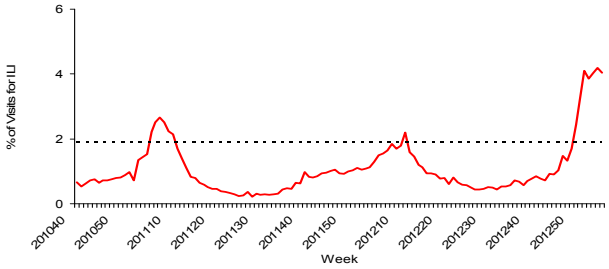
Region 6 - AR, LA, NM, OK, TX



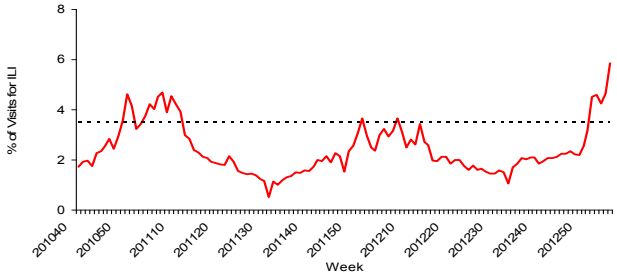
Region 7 - IA, KS, MO, NE



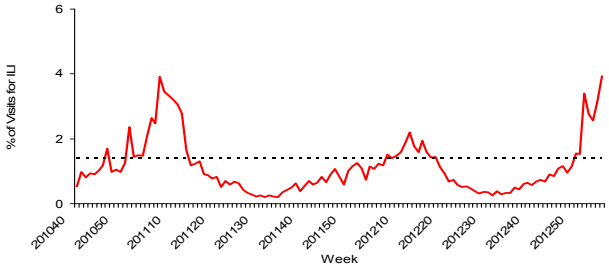
Region 8 - CO, MT, ND, SD, UT, WY



Region 9 - AZ, CA, HI, NV



Region 10 - AK, ID, OR, WA



NOTE: Scales differ between regions

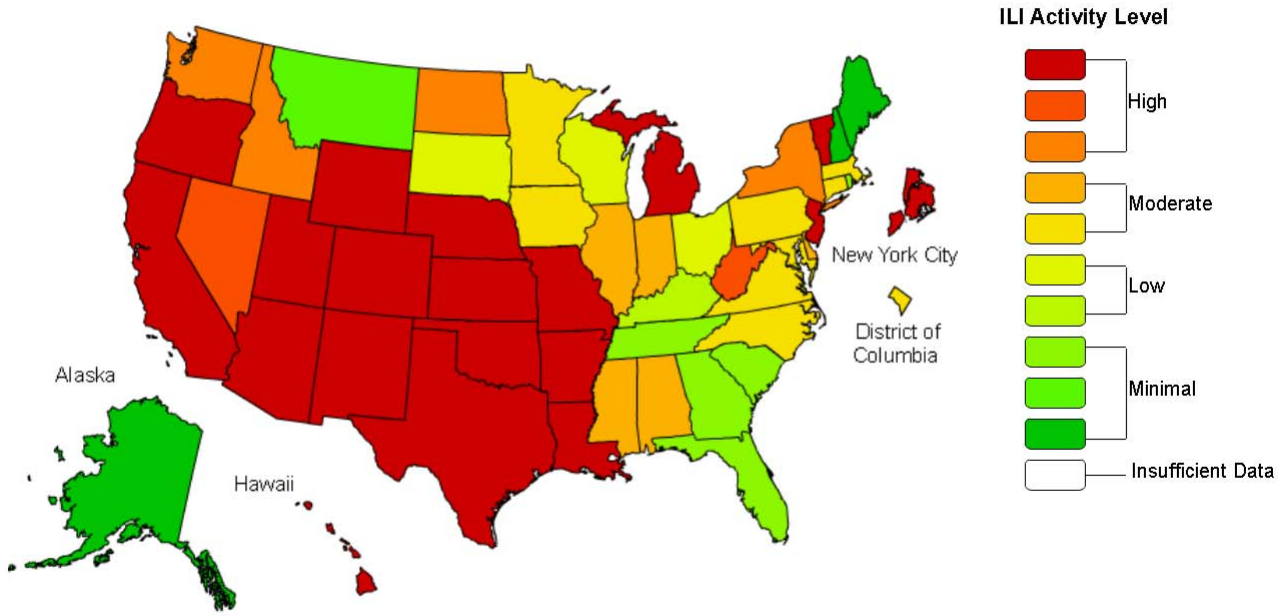
*Use of the regional baselines for state data is not appropriate.

ILINet Activity Indicator Map: Data collected in ILINet are used to produce a measure of ILI activity* by state. Activity levels are based on the percent of outpatient visits in a state due to ILI and are compared to the average percent of ILI visits that occur during spring and fall weeks with little or no influenza virus circulation. Activity levels range from minimal, which would correspond to ILI activity from outpatient clinics being below the average, to high, which would correspond to ILI activity from outpatient clinics being much higher than average.

During week 4, the following ILI activity levels were experienced:

- Twenty-four states and New York City experienced high ILI activity (Arizona, Arkansas, California, Colorado, Hawaii, Idaho, Kansas, Louisiana, Michigan, Missouri, Nebraska, Nevada, New Jersey, New Mexico, New York, North Dakota, Oklahoma, Oregon, Texas, Utah, Vermont, Washington, West Virginia, and Wyoming).
- Thirteen states and the District of Columbia experienced moderate ILI activity (Alabama, Connecticut, Delaware, Illinois, Indiana, Iowa, Maryland, Massachusetts, Minnesota, Mississippi, North Carolina, Pennsylvania, and Virginia).
- Four states experienced low ILI activity (Kentucky, Ohio, South Dakota, and Wisconsin).
- Nine states experienced minimal ILI activity (Alaska, Florida, Georgia, Maine, Montana, New Hampshire, Rhode Island, South Carolina, and Tennessee).

Influenza-Like Illness (ILI) Activity Level Indicator Determined by Data Reported to ILINet
2012-13 Influenza Season Week 4 ending Jan 26, 2013

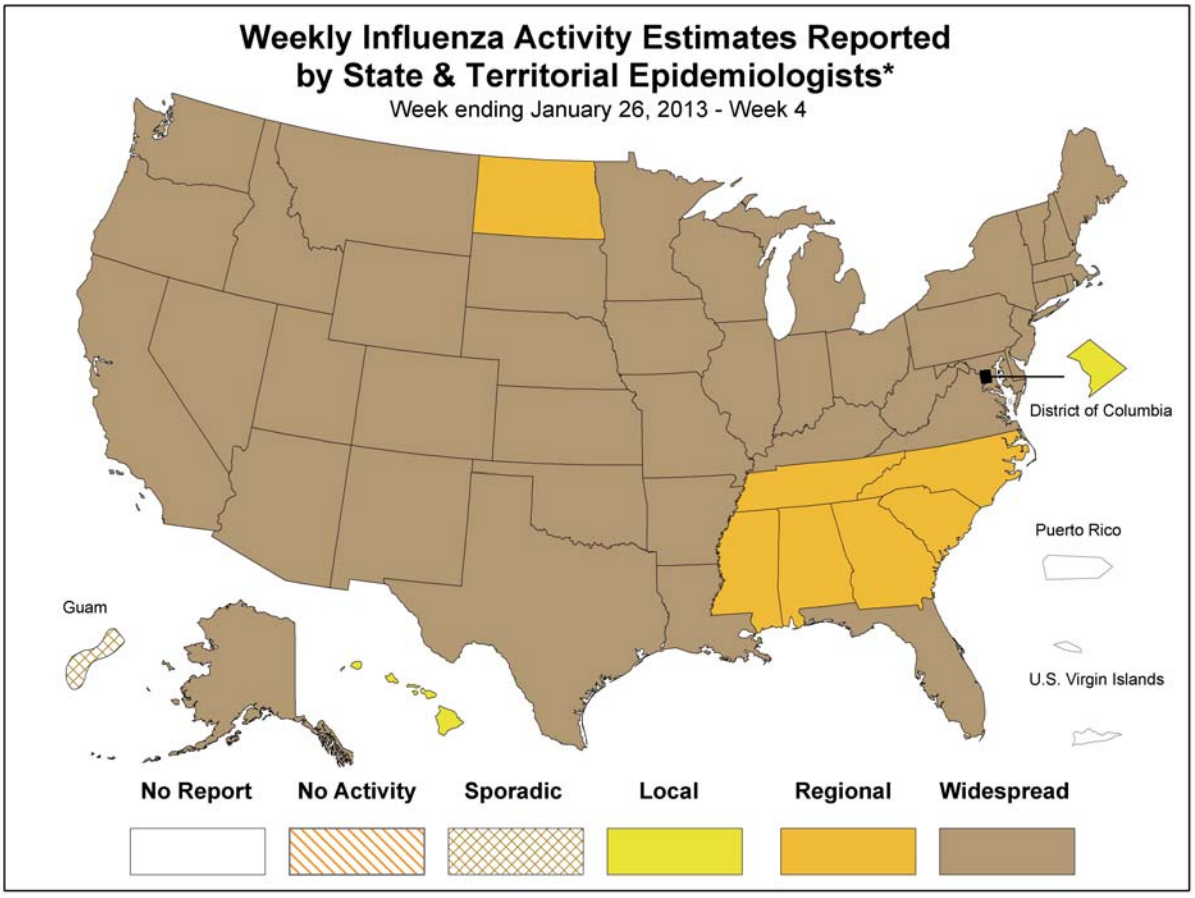


*This map uses the proportion of outpatient visits to health care providers for influenza-like illness to measure the ILI activity level within a state. It does not, however, measure the extent of geographic spread of flu within a state. Therefore, outbreaks occurring in a single city could cause the state to display high activity levels.
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.
Data displayed in this map are based on data collected in ILINet, whereas the State and Territorial flu activity map is based on reports from state and territorial epidemiologists. The data presented in this map is preliminary and may change as more data is received. 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.

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 4, the following influenza activity was reported:

- Widespread influenza activity was reported by 42 states (Alaska, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Kentucky, Idaho, Illinois, Indiana, Iowa, Kansas, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Dakota, Texas, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, and Wyoming).
- Regional influenza activity was reported by 7 states (Alabama, Georgia, Mississippi, North Carolina, North Dakota, South Carolina, and Tennessee).
- The District of Columbia and one state (Hawaii) reported local influenza activity.
- Guam reported sporadic influenza activity.
- Puerto Rico and the U.S. Virgin Islands did not report.



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

Additional National and International Influenza Surveillance Information

FluView Interactive: This season, 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 comparisons across flu seasons, regions, age groups and a variety of other demographics. To access these tools visit www.cdc.gov/flu/weekly/fluviewinteractive.htm.

U.S. State and local influenza surveillance: Click on 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	Virgin Islands		

Google Flu Trends: Google Flu Trends uses aggregated Google search data in a model created in collaboration with CDC to estimate influenza activity in the United States. For more information and activity estimates from the U.S. and worldwide, see http://www.google.org/flutrends/.

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, and the United Kingdom.

Europe: WHO/Europe at http://www.euroflu.org/index.php and the European Centre for Disease Prevention and Control at http://ecdc.europa.eu/en/publications/surveillance_reports/influenza/Pages/weekly_influenza_surveillance_overview.aspx.

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

Health Protection Agency (United Kingdom): The most up-to-date influenza information from the United Kingdom is available at http://www.hpa.org.uk/Topics/InfectiousDiseases/InfectionsAZ/SeasonalInfluenza/