FLUVIEW

A Weekly Influenza Surveillance Report Prepared by the Influenza Division

2013-2014 Influenza Season
Week 8 ending February 22, 2014

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

Synopsis: During week 8 (February 16-22, 2014), influenza activity decreased, but remained elevated in the United States.

- **Viral Surveillance**: Of 6,813 specimens tested and reported during week 8 by U.S. World Health Organization (WHO) and National Respiratory and Enteric Virus Surveillance System (NREVSS) collaborating laboratories, 738 (10.8%) 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**: Nine influenza-associated pediatric deaths were reported.
- **Influenza-associated Hospitalizations:** A season-cumulative rate of 27.4 laboratory-confirmed influenza-associated hospitalizations per 100,000 population was reported.
- **Outpatient Illness Surveillance**: The proportion of outpatient visits for influenza-like illness (ILI) was 2.3%, above the national baseline of 2.0%. Eight of 10 regions reported ILI above region-specific baseline levels. Two states experienced high ILI activity; two states experienced moderate ILI activity; 10 states experienced low ILI activity; 36 states and New York City experienced minimal ILI activity, and the District of Columbia had insufficient data.
- **Geographic Spread of Influenza**: The geographic spread of influenza in 10 states was reported as widespread; 22 states reported regional influenza activity; the District of Columbia, Guam and 14 states reported local influenza activity; Puerto Rico and four states reported sporadic influenza activity, and the U.S. Virgin Islands reported no influenza activity.

National and Regional Summary of Select Surveillance Components

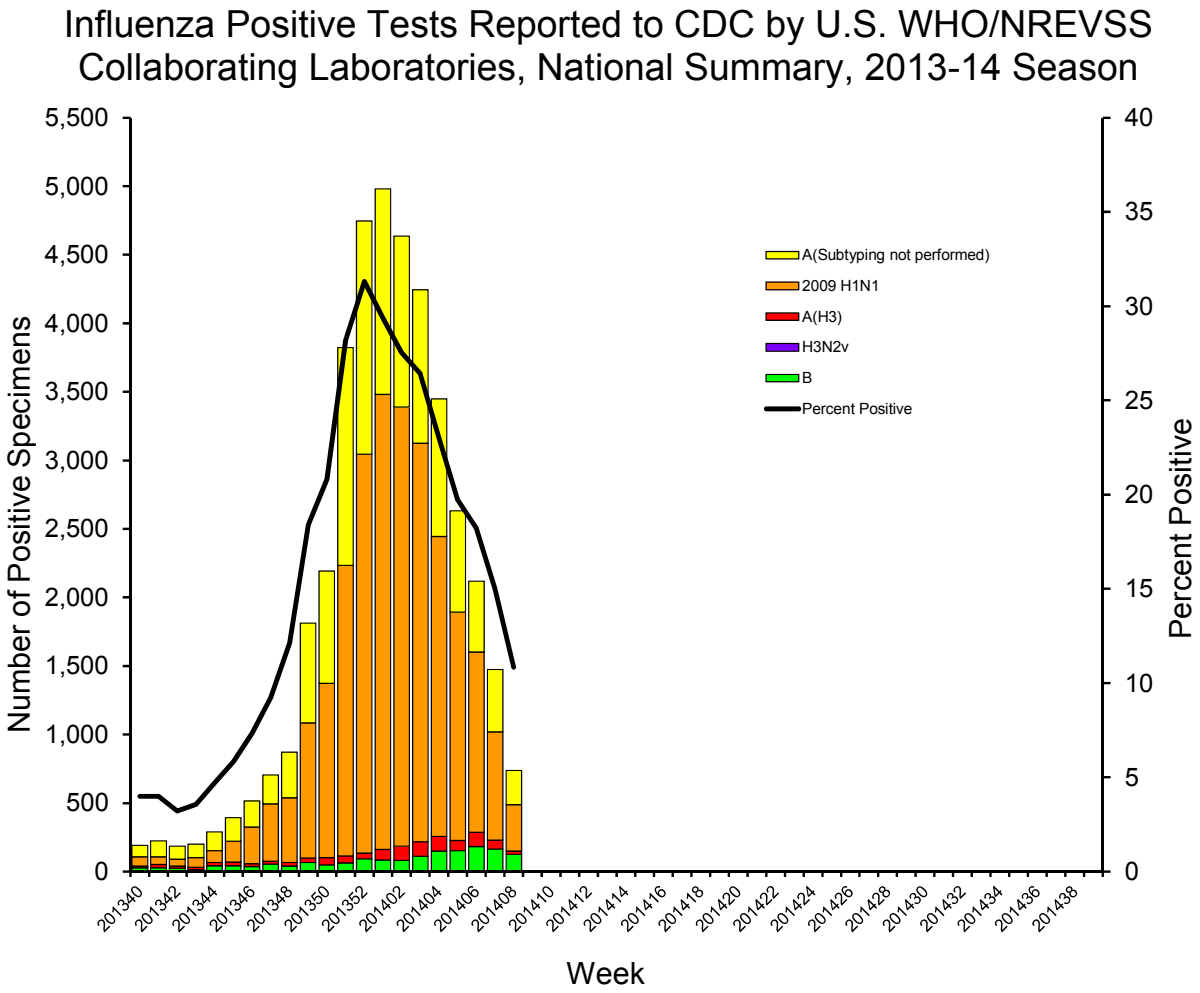
	Data for current week			Data cumulative since September 29, 2013 (Week 40)				
HHS Surveillance Regions*	**Out-patient ILI†**	**% positive for flu‡**	**Number of jurisdictions reporting regional or widespread activity§**	**2009 H1N1**	**A (H3)**	**A (Subtyping not performed)**	**B**	**Pediatric Deaths**
Nation	Elevated	10.8%	32 of 54	24,644	1,034	13,102	1,638	61
Region 1	Elevated	24.2%	6 of 6	1,435	158	267	35	2
Region 2	Elevated	18.5%	2 of 4	1,577	90	906	121	1
Region 3	Elevated	27.1%	4 of 6	3,743	101	318	56	4
Region 4	Normal	13.3%	5 of 8	1,911	21	4,523	788	17
Region 5	Elevated	19.3%	5 of 6	2,719	83	568	38	3
Region 6	Elevated	11.3%	3 of 5	3,059	139	4,079	351	19
Region 7	Normal	8.2%	2 of 4	1,255	31	44	18	4
Region 8	Elevated	8.2%	1 of 6	4,492	81	1,182	60	2
Region 9	Elevated	14.0%	2 of 5	2,242	217	1,085	139	8
Region 10	Elevated	12.1%	2 of 4	2,211	113	130	32	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: WHO and NREVSS collaborating laboratories located in all 50 states, Puerto Rico, and Washington D.C. report to CDC the number of respiratory specimens tested for influenza and the number positive by influenza virus type and influenza A virus subtype. The results of tests performed during the current week are summarized in the table below.

Region specific data is available at http://gis.cdc.gov/grasp/fluview/fluportaldashboard.html.

	Week 8
No. of specimens tested	6,813
No. of positive specimens (%)	738 (10.8%)
Positive specimens by type/subtype	
Influenza A	612 (82.9%)
2009 H1N1	337 (55.1%)
H3	25 (4.1%)
Subtyping not performed	250 (40.8%)
Influenza B	126 (17.1%)



Antigenic Characterization*: CDC has antigenically characterized 1,281 influenza viruses [1,113 2009 H1N1 viruses, 118 influenza A (H3N2) viruses, and 50 influenza B viruses] collected by U.S. laboratories since October 1, 2013 by hemagglutination inhibition (HI).

- **2009 H1N1 [1,113]:** 1,112 (99.9%) of 1,113 2009 H1N1 viruses tested were characterized as A/California/7/2009-like, the influenza A (H1N1) component of the 2013-2014 Northern Hemisphere influenza vaccine. One (0.1%) virus showed reduced titers with antiserum produced against A/California/7/2009.

- **Influenza A (H3N2) [118]:** All 118 influenza A (H3N2) viruses tested have been characterized as A/Texas/50/2012-like, the influenza A (H3N2) component of the 2013-2014 Northern Hemisphere influenza vaccine.

- **Influenza B [50]:** 31 (62%) of the 50 influenza B viruses tested belong to B/Yamagata/16/88-lineage and the remaining 19 (38%) influenza B viruses tested belong to B/Victoria/02/87 lineage.

    - **Yamagata Lineage [31]:** 31 influenza B/Yamagata-lineage viruses were characterized as B/ Massachusetts/2/2012-like, which is included as an influenza B component of the 2013-2014 Northern Hemisphere trivalent and quadrivalent influenza vaccines.

    - **Victoria Lineage [19]**: 19 influenza B/Victoria-lineage viruses were characterized as B/Brisbane/60/2008-like, which is included as an influenza B component of the 2013-2014 Northern Hemisphere quadrivalent influenza vaccine.

*For more information see the section on antigenic characterization in the MMWR "Update: Influenza Activity — United States and Worldwide, May 19–September 28, 2013".

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 H1N1 and influenza A (H3N2) clinical samples are tested for mutations of the virus known to confer oseltamivir resistance. 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). Therefore, data from adamantane resistance testing are not presented below.

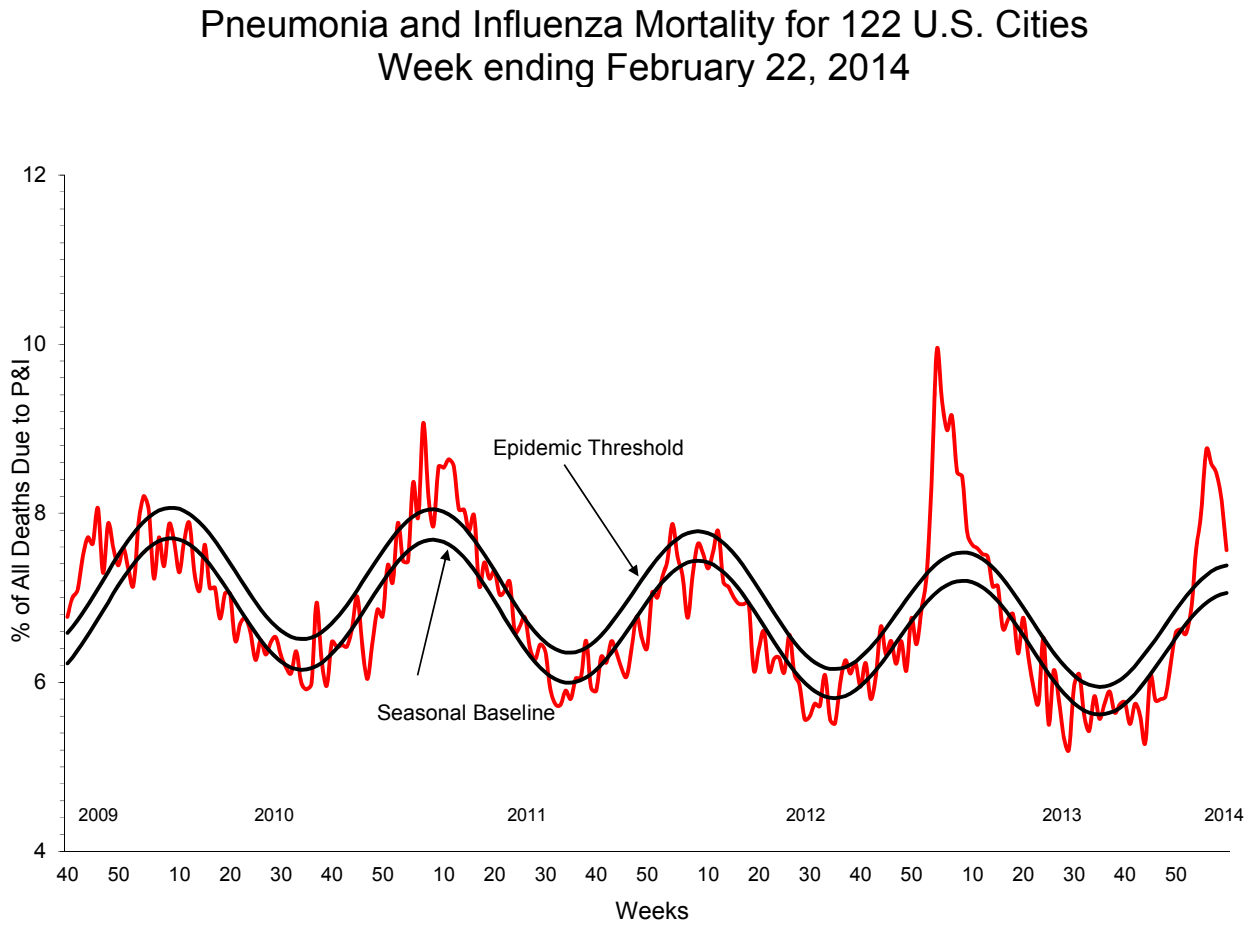
Neuraminidase Inhibitor Resistance Testing Results on Samples Collected Since October 1, 2013

	Oseltamivir		Zanamivir	
	Virus Samples tested (n)	**Resistant Viruses, Number (%)**	**Virus Samples tested (n)**	**Resistant Viruses, Number (%)**
Influenza A (H3N2)	217	0 (0.0)	217	0 (0.0)
Influenza B	90	0 (0.0)	90	0 (0.0)
2009 H1N1	3,733*	28 (0.8)	1,368	0 (0.0)

*Includes specimens tested in national surveillance and additional specimens tested at public health laboratories in 18 states (AZ, CA, CO, DE, FL, GA, HI, ID, MA, ME, MD, MI, NY, PA, TX, UT, WA, and WI) 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 is recommended as early as possible 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.

Pneumonia and Influenza (P&I) Mortality Surveillance: During week 8, 7.6% 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 8.

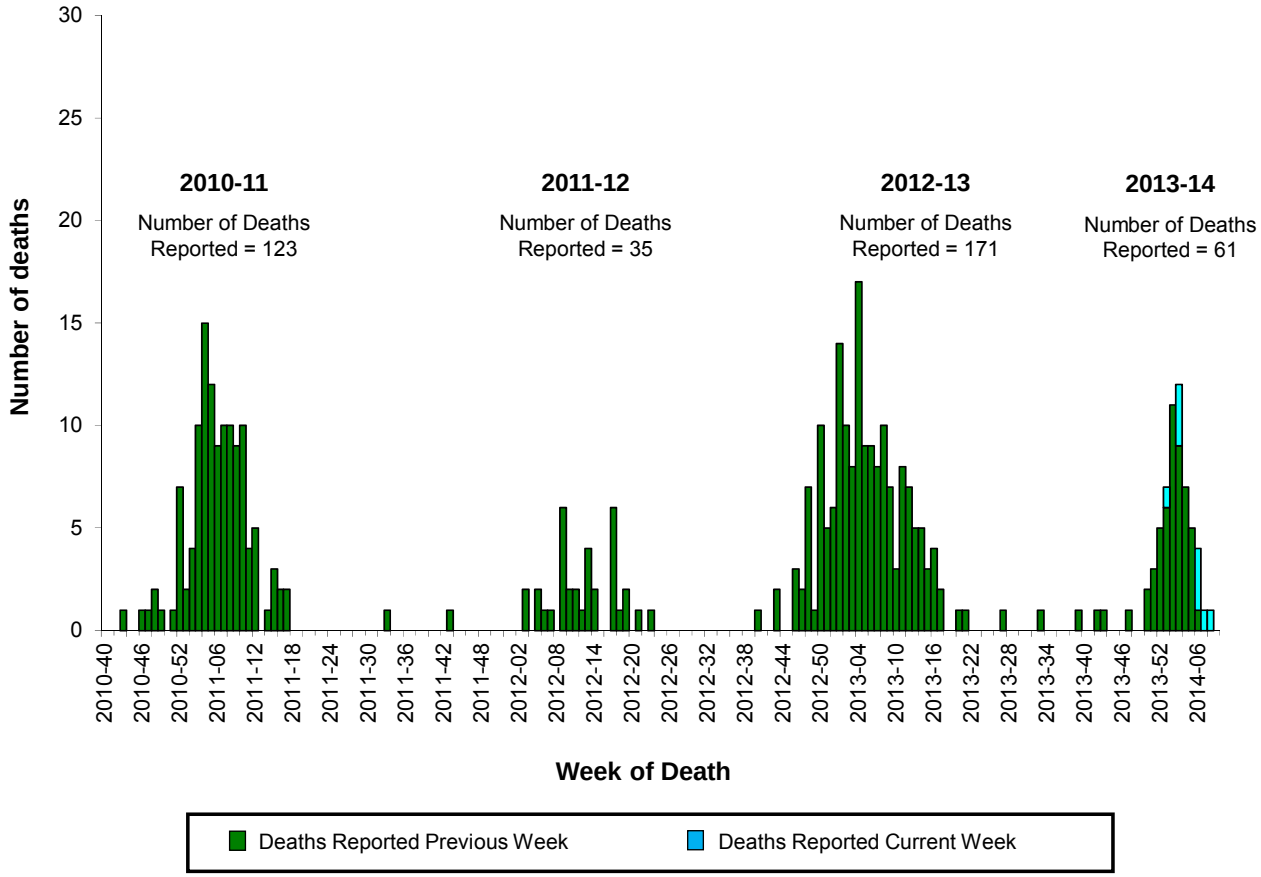


Influenza-Associated Pediatric Mortality: Nine influenza-associated pediatric deaths were reported to CDC during week 8. Five deaths were associated with a 2009 H1N1 virus and occurred during weeks 1, 3, 6, and 7 (weeks ending January 4, January 18, February 8, and February 15, 2014) and three deaths were associated with an influenza A virus for which no subtyping was performed and occurred during weeks 3 and 6 (weeks ending January 18 and February 8, 2014). One death was associated with an influenza B virus and occurred during week 8 (week ending February 22, 2014).

A total of 61 influenza-associated pediatric deaths have been reported during the 2013-2014 season from New York City [1] and 25 states (AR [3], AZ [1], CA [6]; FL [3], GA [1]; IA [1]; KS [2], KY [1]; LA [4]; MA [2]; MI [2], MS [1], NC [5]; NE [1], NV [1], OK [2]; OR [1], PA [1], SC [2], TN [4]; TX [10]; UT [2]; VA [1]; WI [1]; and WV [2]).

Additional data can be found at http://gis.cdc.gov/GRASP/Fluview/PedFluDeath.html.

Number of Influenza-Associated Pediatric Deaths by Week of Death: 2010-11 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).

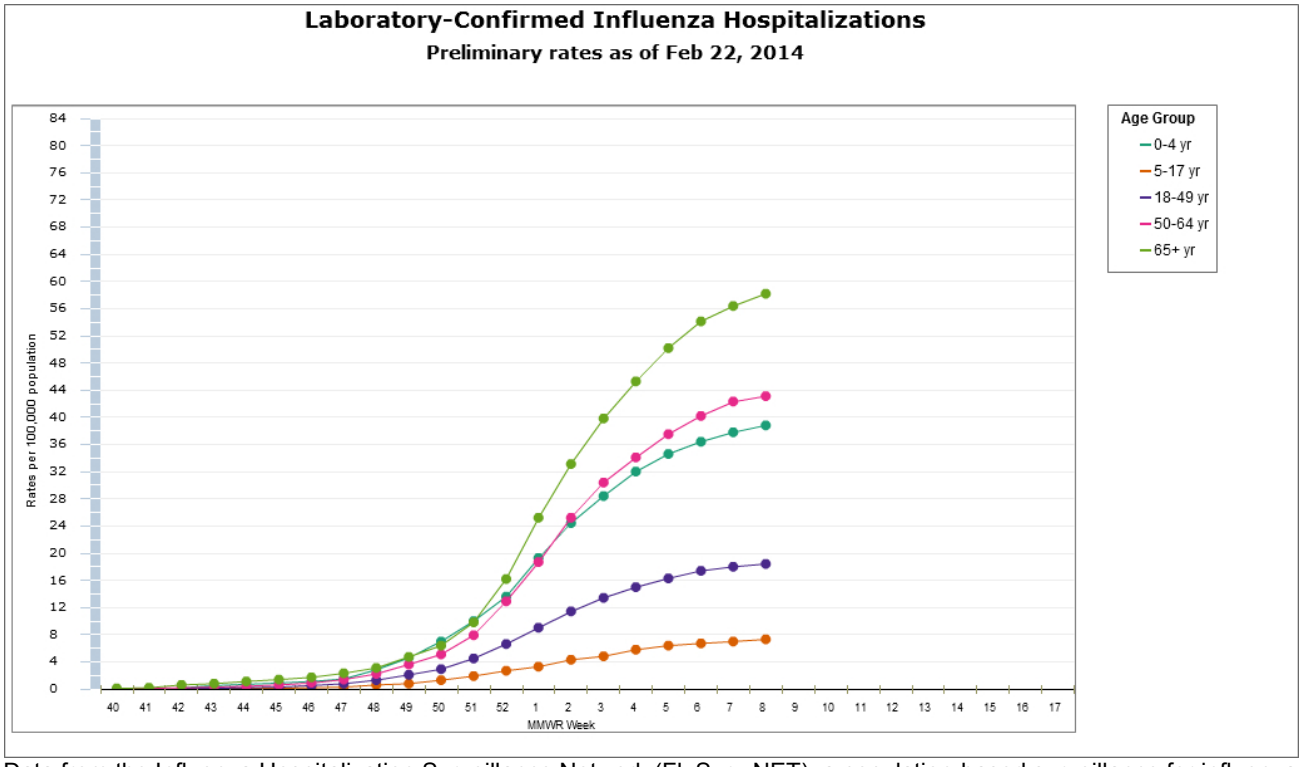
The FluSurv-NET covers more than 70 counties in the 10 Emerging Infections Program (EIP) states (CA, CO, CT, GA, MD, MN, NM, NY, OR, TN) and additional Influenza Hospitalization Surveillance Project (IHSP) states. The IHSP began during the 2009-2010 season to enhance surveillance during the 2009 H1N1 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; IA, MI, OH, RI, and UT during the 2012-2013 season; and MI, OH, and UT during the 2013-2014 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.

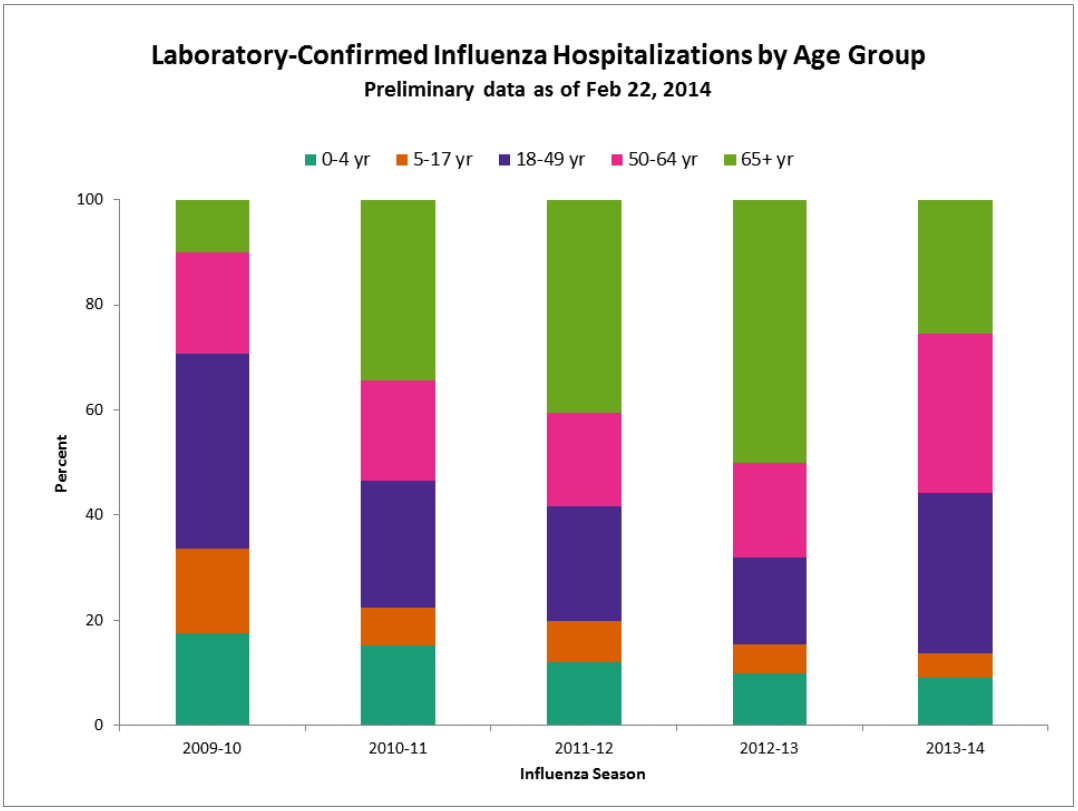
Between October 1, 2013 and February 22, 2014, 7,406 laboratory-confirmed influenza-associated hospitalizations were reported. This is a rate of 27.4 per 100,000 population. The highest rate of hospitalization remains among adults aged ≥65 years, followed by the 50-64 years and 0-4 years age groups. People 18-64 years accounted for more than 60% of reported hospitalized cases. Among all hospitalizations, 7,009 (94.6%) were associated with influenza A, 318 (4.3%) with influenza B, 26 (0.4%) with influenza A and B co-infection, and 53 (0.7%) had no virus type information. Among those with influenza A subtype information, 58 (1.9%) were H3 and 3,050 (98.1%) were 2009 H1N1.

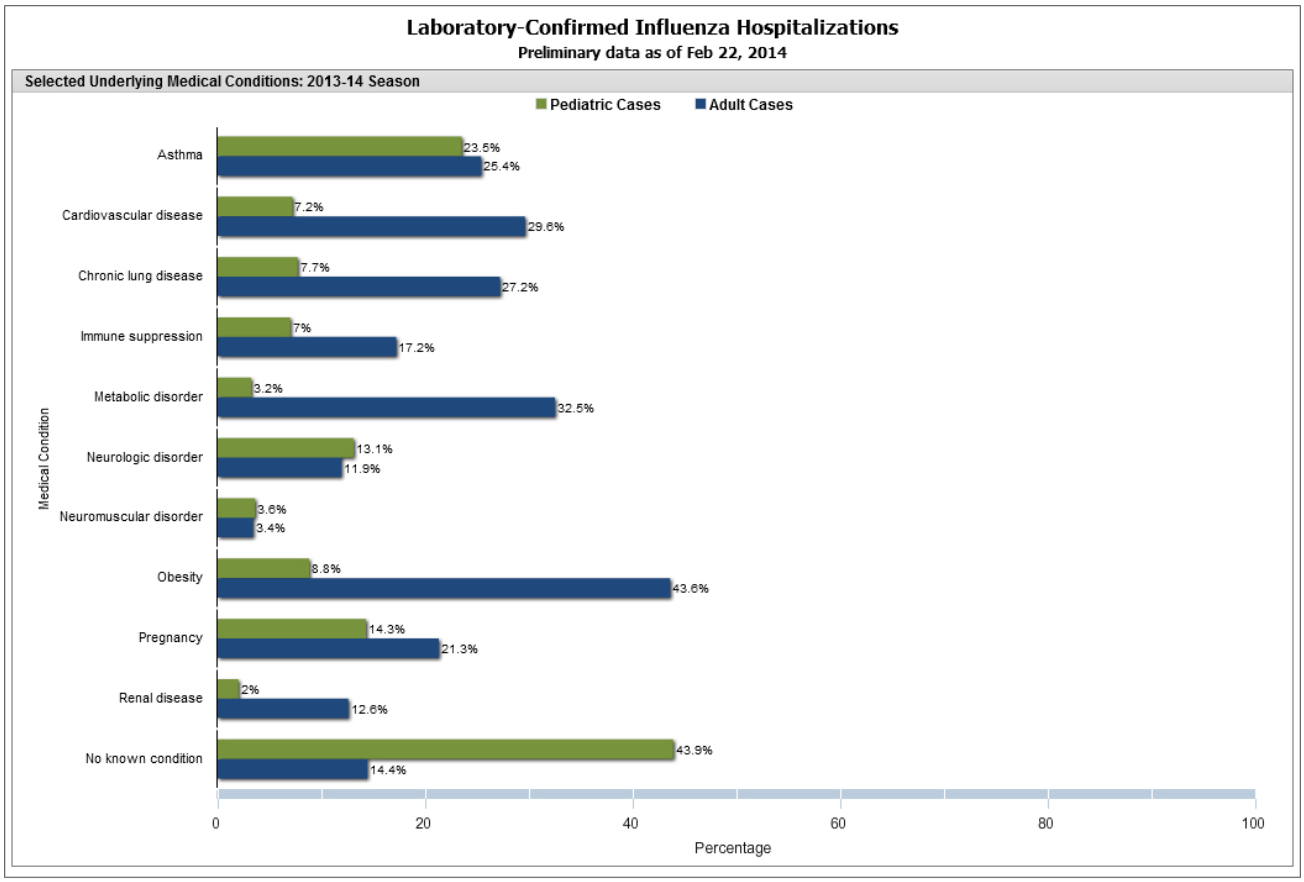
Clinical findings are preliminary and based on a subset of cases (~36%) with complete medical chart abstraction. The most commonly reported underlying medical conditions among adults were obesity, metabolic disorders, cardiovascular disease, and chronic lung disease (excluding asthma). Approximately 14% of hospitalized adults had no identified underlying medical conditions. The most commonly reported underlying medical conditions in children were asthma, neurologic disorders, obesity, and chronic lung disease (excluding asthma). Approximately 44% of hospitalized children had no identified underlying medical conditions. Among 374 hospitalized women of childbearing age (15-44 years), 79 (21.1%) were pregnant.

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 13 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.

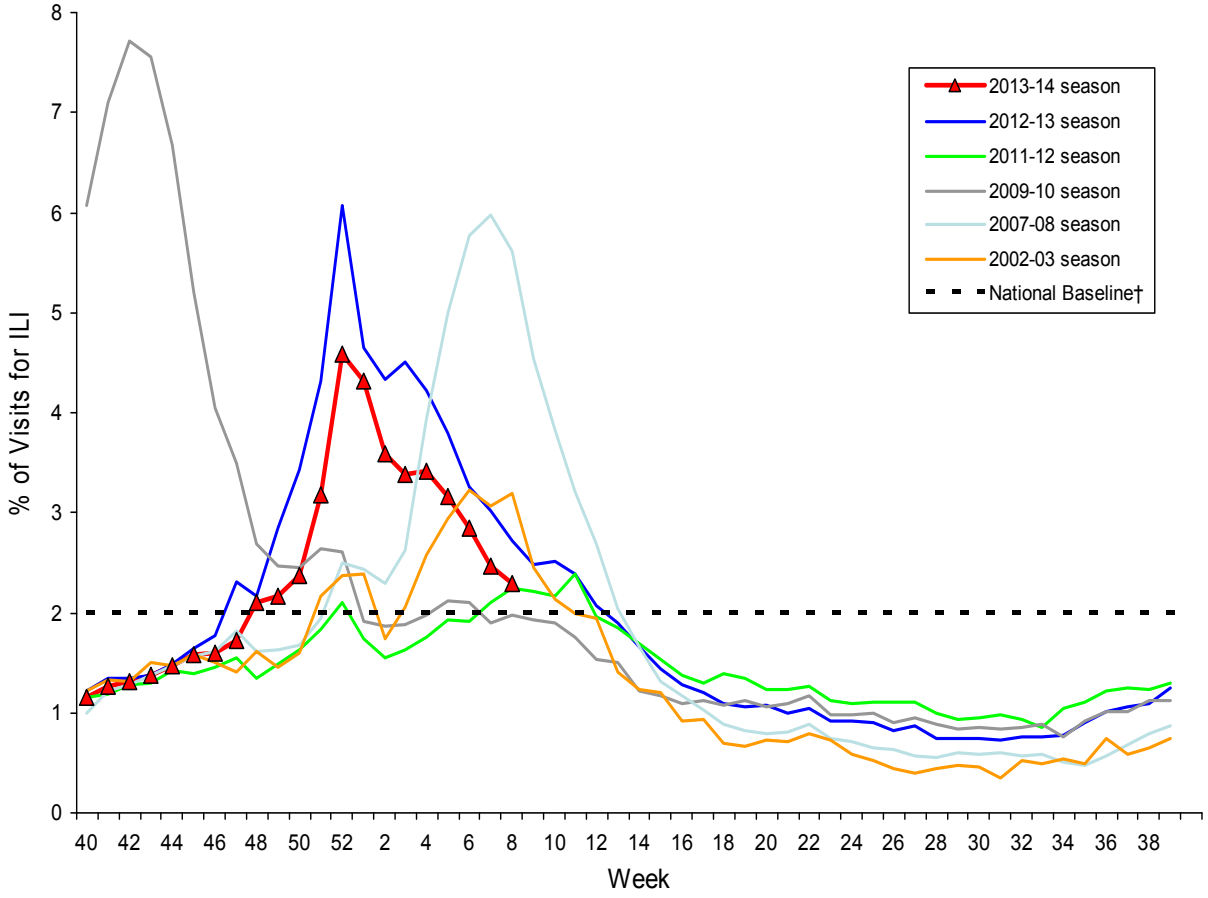




Asthma includes a medical diagnosis of asthma or reactive airway disease; Cardiovascular diseases include conditions such as coronary heart disease, cardiac valve disorders, congestive heart failure, and pulmonary hypertension, does not include isolated hypertension; Chronic lung diseases include conditions such as chronic obstructive pulmonary disease, 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 disorders include conditions such as seizure disorders, cerebral palsy, and cognitive dysfunction; Neuromuscular disorders 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.
Includes only cases for which data collection has been completed through the medical chart review stage.

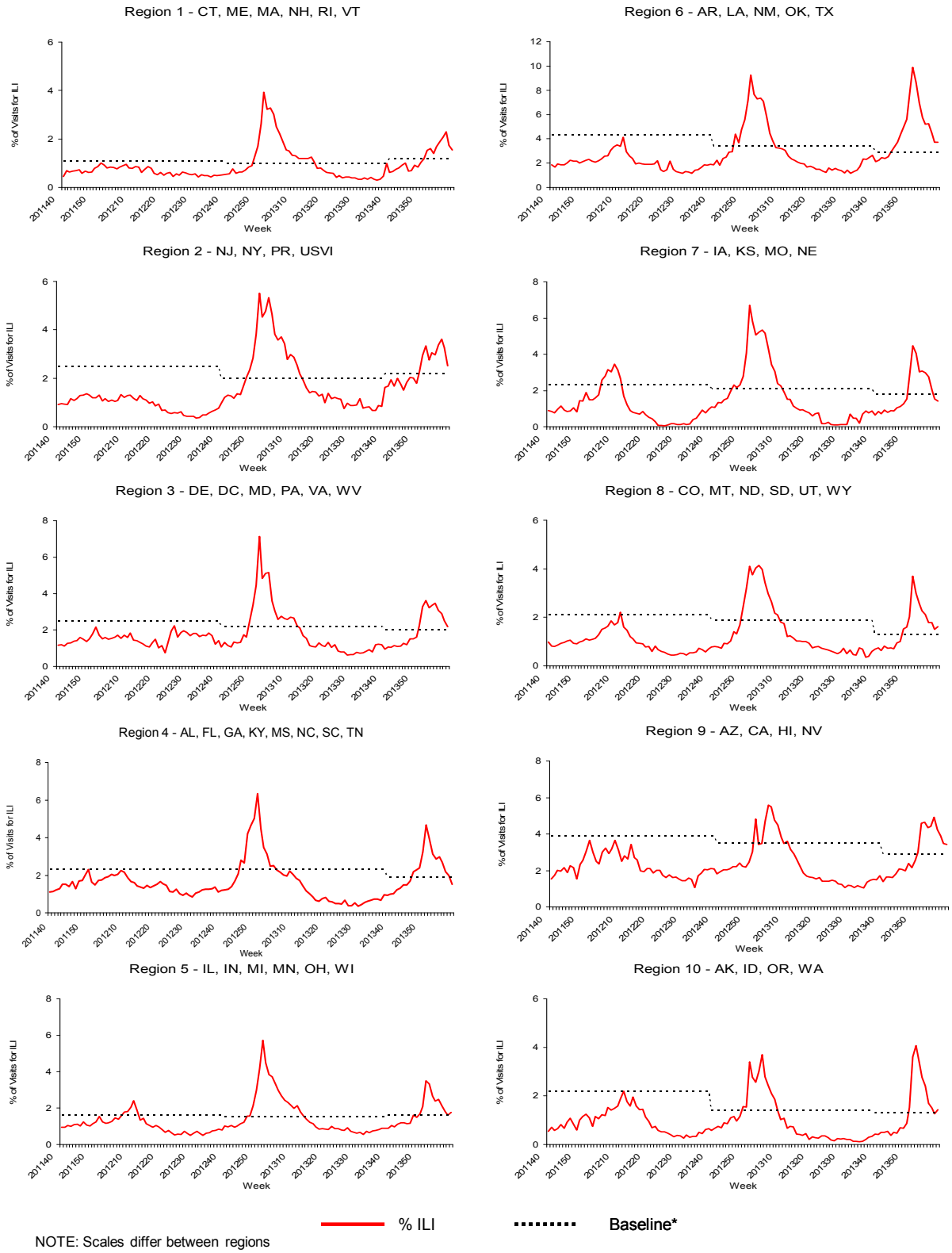
Outpatient Illness Surveillance: Nationwide during week 8, 2.3% of patient visits reported through the U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet) were due to influenza-like illness (ILI). This percentage is above the national baseline of 2.0%. *(ILI is defined as fever (temperature 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, 2013-14 and Selected Previous Seasons



On a regional level, the percentage of outpatient visits for ILI ranged from 1.4% to 3.7% during week 8. Eight of 10 regions reported a proportion of outpatient visits for ILI above their region-specific baseline level.

Region specific data is available at http://gis.cdc.gov/grasp/fluview/fluportaldashboard.html.



NOTE: Scales differ between regions

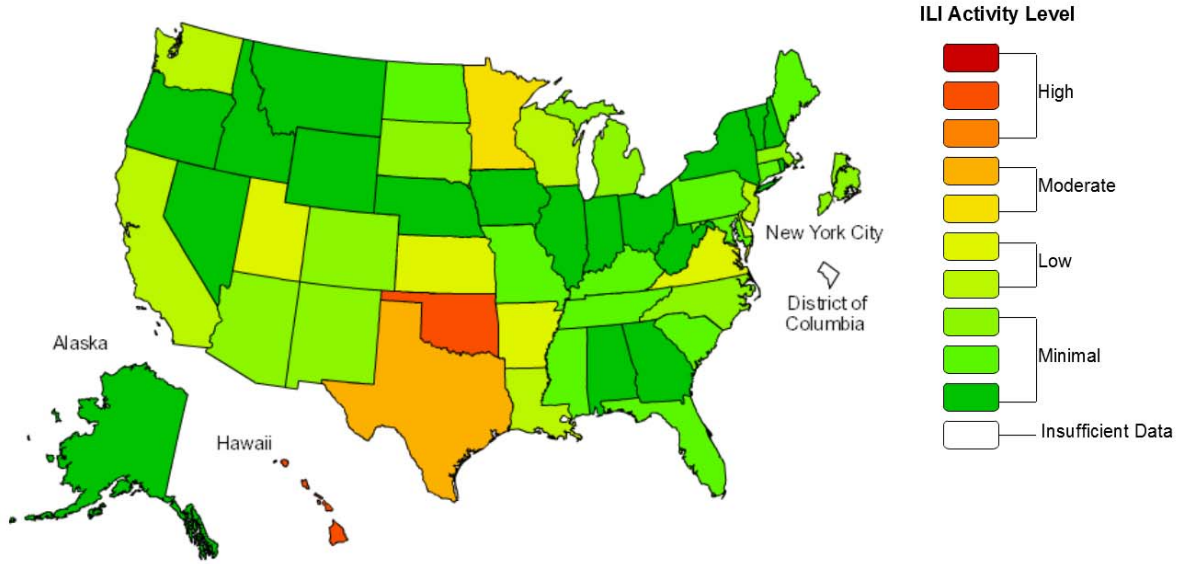
*Use of the regional baselines for state data is not appropriate.

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 weeks with little or no influenza virus circulation. Activity levels range from minimal, which would correspond to ILI activity from outpatient clinics being below, or only slightly above, the average, to high, which would correspond to ILI activity from outpatient clinics being much higher than average.

During week 8, the following ILI activity levels were experienced:

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

Influenza-Like Illness (ILI) Activity Level Indicator Determined by Data Reported to ILINet
2013-14 Influenza Season Week 8 ending Feb 22, 2014

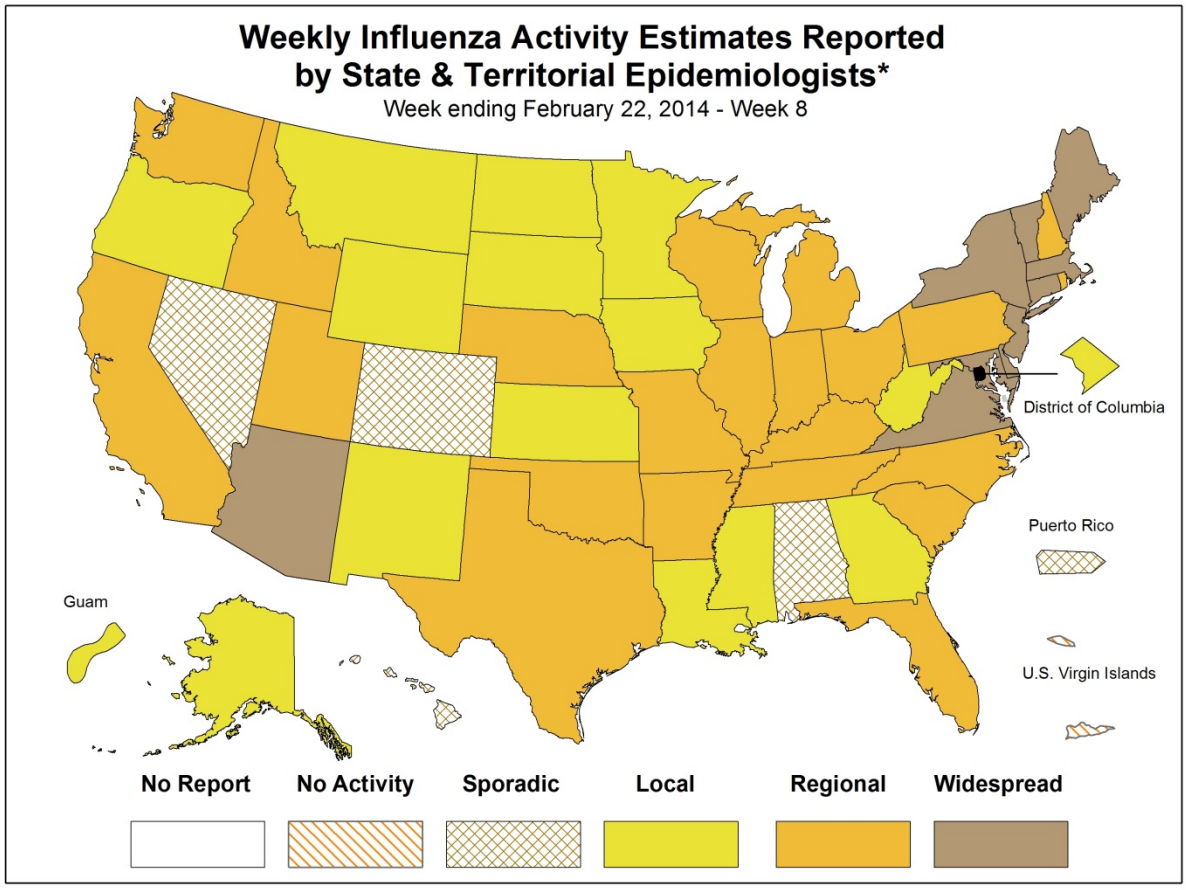


*This map uses the proportion of outpatient visits to health care providers for influenza-like illness to measure the ILI activity level within a state. It does not, however, measure the extent of geographic spread of flu within a state. Therefore, outbreaks occurring in a single city could cause the 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 8, the following influenza activity was reported:

- Widespread influenza activity was reported by 10 states (Arizona, Connecticut, Delaware, Maine, Maryland, Massachusetts, New Jersey, New York, Vermont, and Virginia).
- Regional influenza activity was reported by 22 states (Arkansas, California, Florida, Idaho, Illinois, Indiana, Kentucky, Michigan, Missouri, Nebraska, New Hampshire, North Carolina, Ohio, Oklahoma, Pennsylvania, Rhode Island, South Carolina, Tennessee, Texas, Utah, Washington, and Wisconsin).
- Local influenza activity was reported by the District of Columbia, Guam, and 14 states (Alaska, Georgia, Iowa, Kansas, Louisiana, Minnesota, Mississippi, Montana, New Mexico, North Dakota, Oregon, South Dakota, West Virginia, and Wyoming).
- Sporadic influenza activity was reported by Puerto Rico and four states (Alabama, Colorado, Hawaii, and Nevada).
- The U.S. Virgin Islands reported no influenza activity.



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

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

Report prepared: February 28, 2014.

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 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/.