FLUVIEW

A Weekly Influenza Surveillance Report Prepared by the Influenza Division

2012-2013 Influenza Season
Week 49 ending December 8, 2012

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

Synopsis: During week 49 (December 2-8), influenza activity increased in the U.S.

- **Viral Surveillance**: Of 7,663 specimens tested and reported by U.S. World Health Organization (WHO) and National Respiratory and Enteric Virus Surveillance System (NREVSS) collaborating laboratories during week 49, 2,172 (28.3%) were positive for influenza.
- **Novel Influenza A Virus**: One human infection with a novel influenza A virus was reported.
- **Pneumonia and Influenza Mortality**: The proportion of deaths attributed to pneumonia and influenza (P&I) was below the epidemic threshold.
- **Influenza-Associated Pediatric Deaths**: One influenza-associated pediatric death was reported and was associated with an influenza B virus.
- **Outpatient Illness Surveillance**: The proportion of outpatient visits for influenza-like illness (ILI) was 2.8%, which is above the national baseline of 2.2%. Seven of ten regions reported ILI above region-specific baseline levels. Eight states experienced high ILI activity, 2 states experienced moderate ILI activity; New York City and 9 states experienced low ILI activity; 31 states experienced minimal ILI activity, and the District of Columbia had insufficient data.
- **Geographic Spread of Influenza**: The geographic spread of influenza in 18 states was reported as widespread; 17 states reported regional activity; the District of Columbia and 11 states reported local activity; Guam and 4 states reported sporadic 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	28.3%	35 of 54	66	3,284	2,299	2,372	6
Region 1	Elevated	17.6%	4 of 6	0	121	22	18	0
Region 2	Elevated	16.6%	2 of 4	7	196	133	112	0
Region 3	Elevated	24.0%	3 of 6	13	336	48	46	0
Region 4	Elevated	28.5%	8 of 8	13	627	1,692	700	3
Region 5	Elevated	47.3%	6 of 6	19	489	52	182	1
Region 6	Elevated	17.1%	3 of 5	3	195	200	443	2
Region 7	Elevated	24.3%	3 of 4	0	389	62	255	0
Region 8	Normal	19.1%	4 of 6	6	249	53	515	0
Region 9	Normal	7.9%	0 of 5	4	194	34	50	0
Region 10	Normal	22.9%	2 of 4	1	488	3	51	0

*HHS regions (Region 1 CT, ME, MA, NH, RI, VT; Region 2: NJ, NY, Puerto Rico, U.S. Virgin Islands; 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, Guam, HI, NV; and Region 10: AK, ID, OR, WA).

† Elevated means the % of visits for ILI is at or above the national or region-specific baseline.

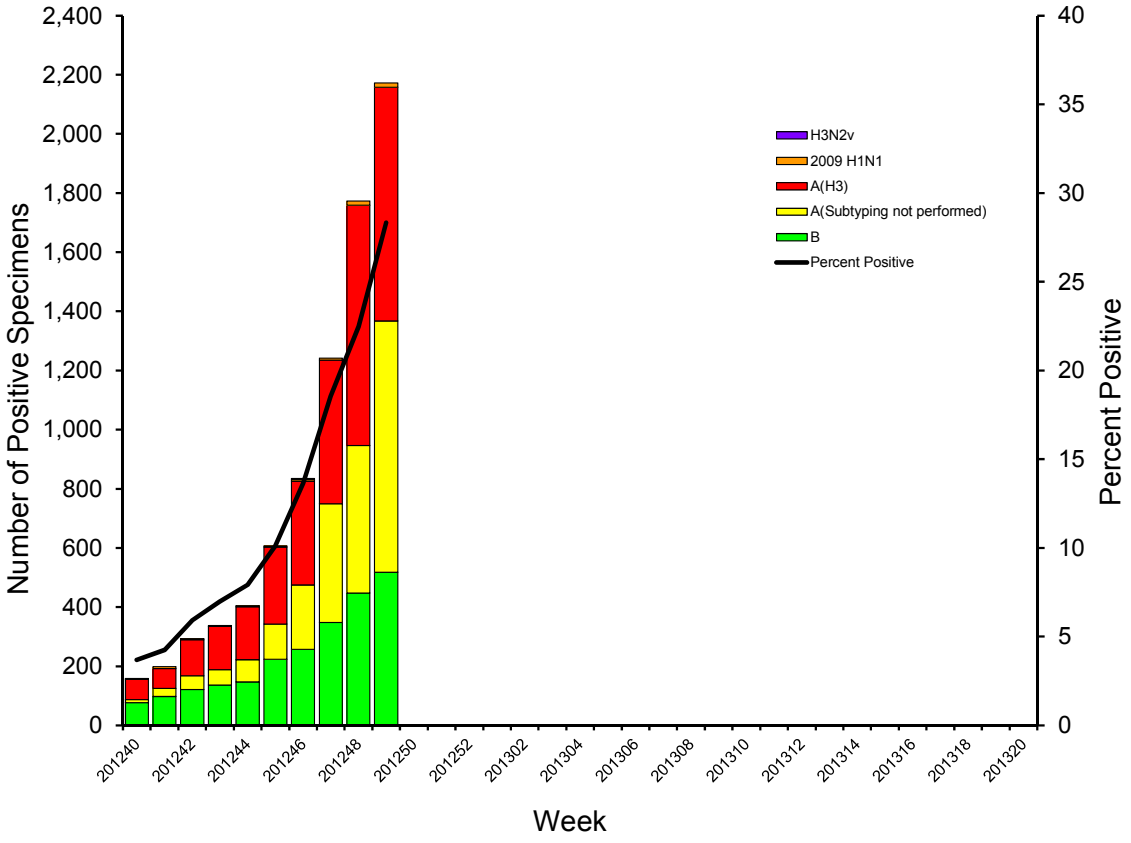
‡ National data are for current week; regional data are for the most recent three weeks.

§ 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 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.

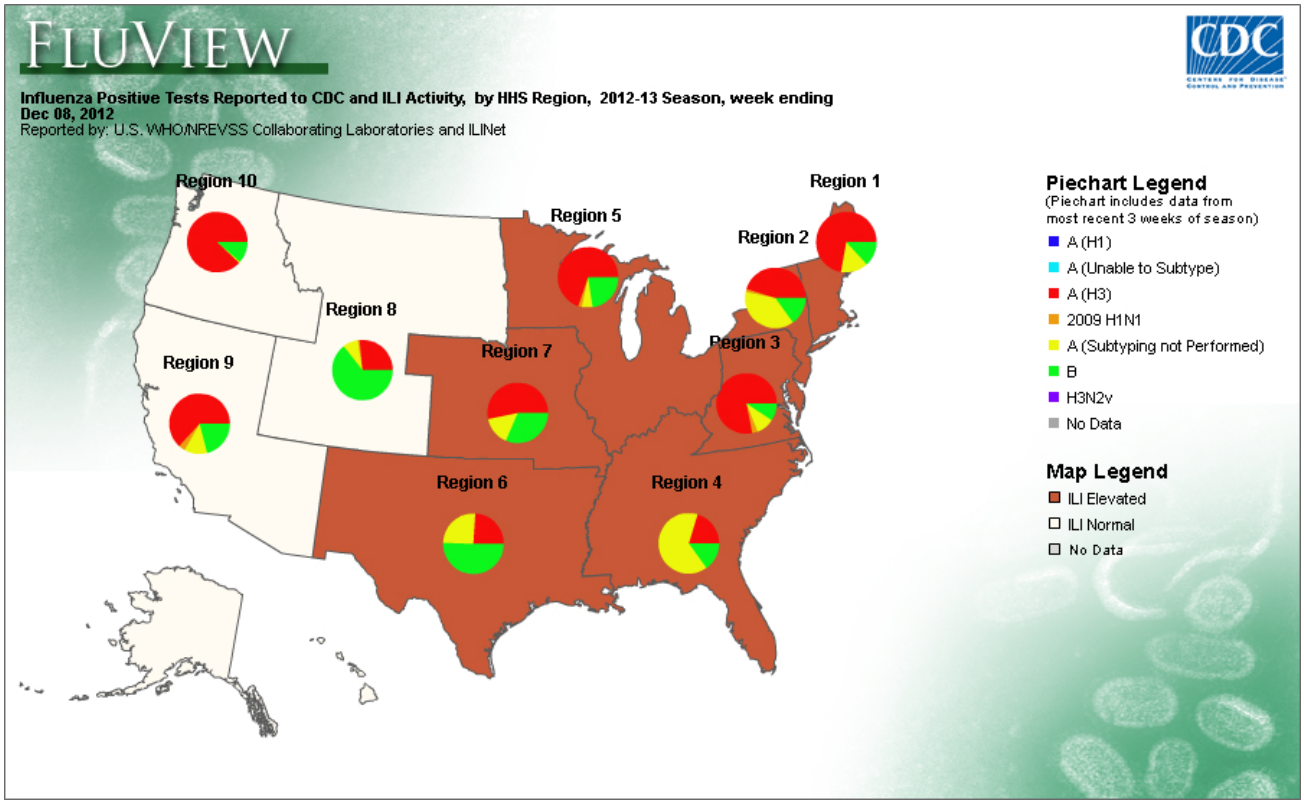
	Week 49
No. of specimens tested	7,663
No. of positive specimens (%)	2,172 (28.3%)
Positive specimens by type/subtype	
Influenza A	1,655 (76.2%)
2009 H1N1	14 (0.8%)
Subtyping not performed	850 (51.4%)
H3	791 (47.8%)
Influenza B	517 (23.8%)

Influenza Positive Tests Reported to CDC by U.S. WHO/NREVSS Collaborating Laboratories, National Summary, 2012-13 Season



Since the start of the season, the predominant circulating influenza virus nationally has been influenza A (H3N2), followed by influenza B viruses. 2009 H1N1 viruses have been identified rarely so far this season. The predominant type and subtype has varied by region and even between states within the same 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.



Antigenic Characterization: CDC has antigenically characterized 287 influenza viruses [10 2009 H1N1 viruses, 182 influenza A (H3N2) viruses, and 95 influenza B viruses] collected by U.S. laboratories since October 1, 2012.

2009 H1N1 [10]

- All 10 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) [182]:

- 180 (98.9%) of the 182 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 (1.1%) of the 182 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) [95]:

- **Yamagata Lineage [63]**: 63 (66.3%) of the 95 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 [32]**: 32 (33.7%) of 95 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.

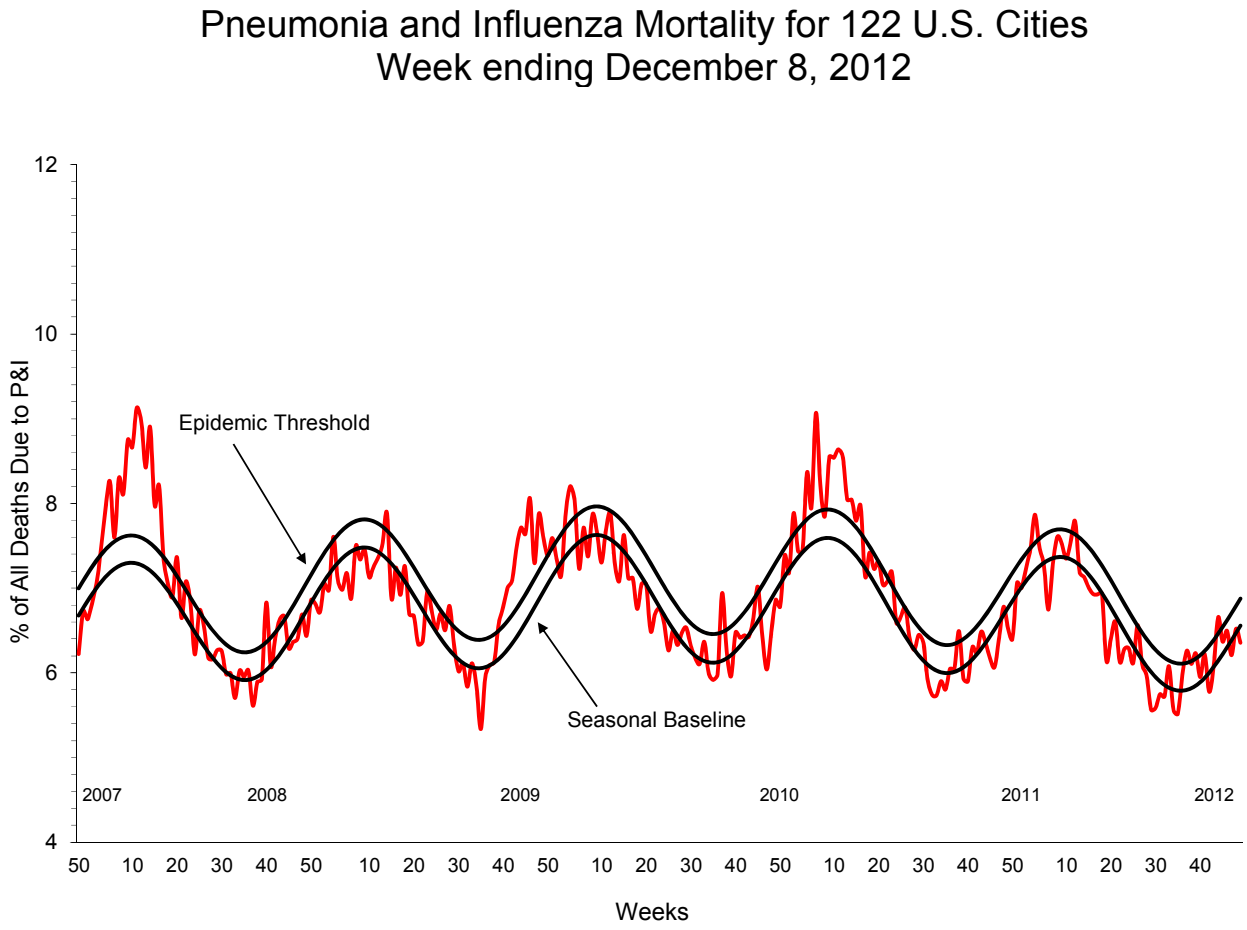
	Oseltamivir		Zanamivir	
	Virus Samples tested (n)	**Resistant Viruses, Number (%)**	**Virus Samples tested (n)**	**Resistant Viruses, Number (%)**
Influenza A (H3N2)	257	0 (0.0)	257	0 (0.0)
Influenza B	118	0 (0.0)	118	0 (0.0)
2009 H1N1	17	0 (0.0)	14	0 (0.0)

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 influenza A (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.

Novel Influenza A Virus: One infection with an influenza A (H3N2) variant virus (H3N2v) was reported to CDC during week 49 by Minnesota. Close contact between the case patient and swine in the week preceding illness was reported. The patient has fully recovered and no further cases have been identified in contacts of the case patient. This is the second H3N2v infection reported for the 2012-13 influenza season, which began on September 30, 2012.

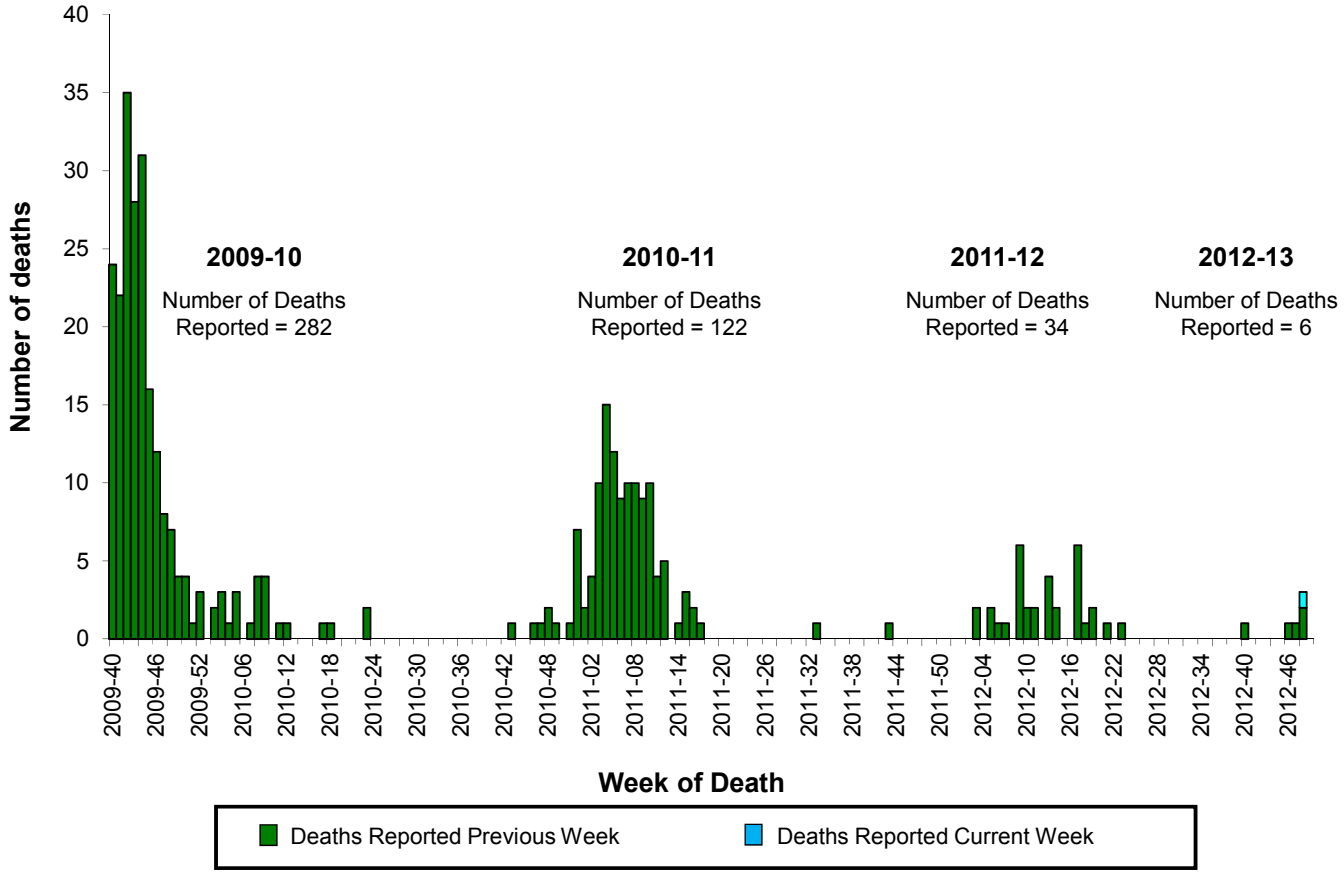
A total of 312 infections with variant influenza viruses (308 H3N2v viruses, 3 H1N2v viruses, and 1 H1N1v virus) have been reported from 11 states since July 2012. More information about H3N2v infections can be found at http://www.cdc.gov/flu/swineflu/h3n2v-outbreak.htm.

Pneumonia and Influenza (P&I) Mortality Surveillance: During week 49, 6.4% of all deaths reported through the 122 Cities Mortality Reporting System were due to P&I. This percentage was below the epidemic threshold of 6.9% for week 49.



Influenza-Associated Pediatric Mortality: One influenza-associated pediatric death was reported to CDC during week 49 and was associated with an influenza B virus. This death occurred during the week ending December 1 (week 48). This brings the total number of influenza-associated pediatric deaths reported during the 2012-2013 season to 6. 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

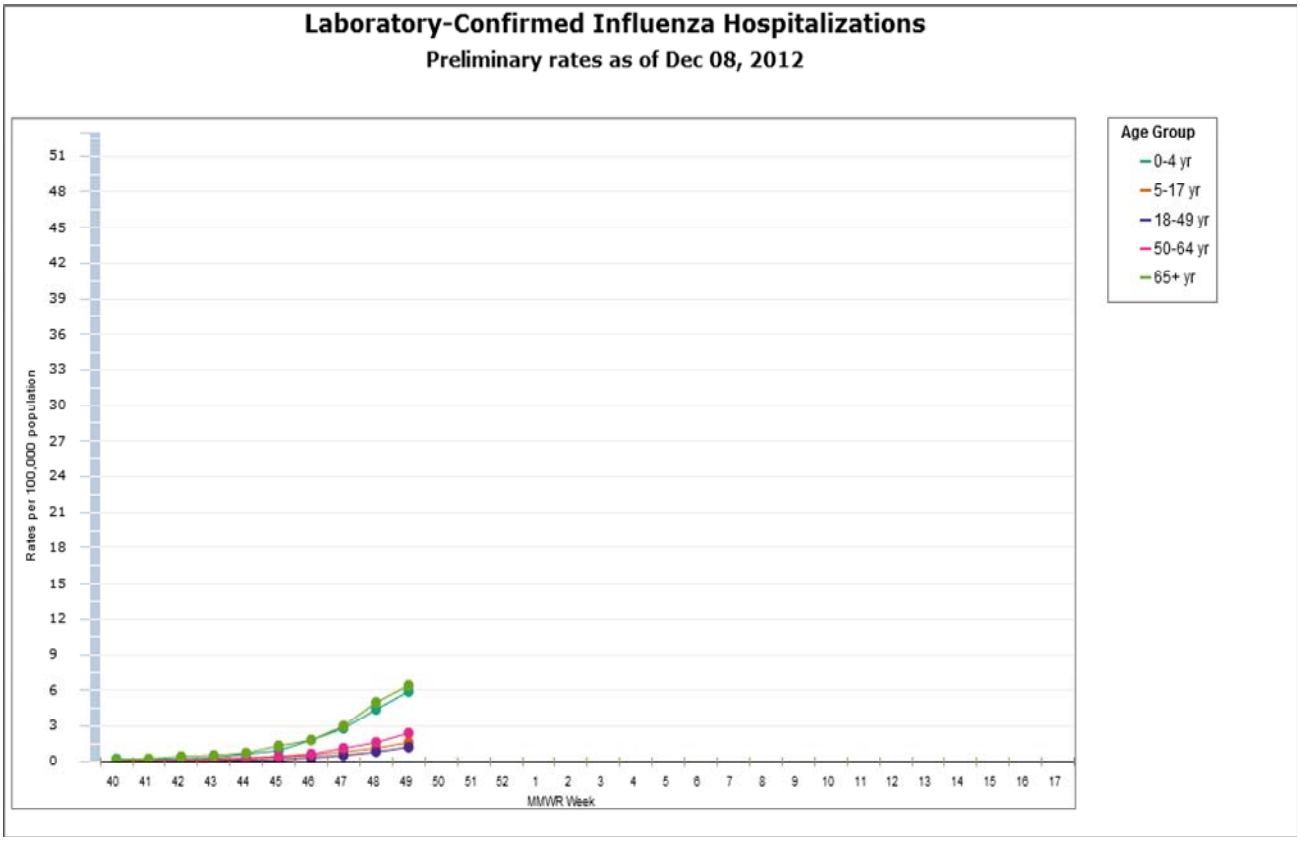


Influenza-Associated Hospitalizations: The Influenza Hospitalization Surveillance Network (FluSurv-NET) conducts population-based surveillance for laboratory-confirmed influenza-related hospitalizations in children younger than 18 years of age (since the 2003-2004 influenza season) and adults (since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

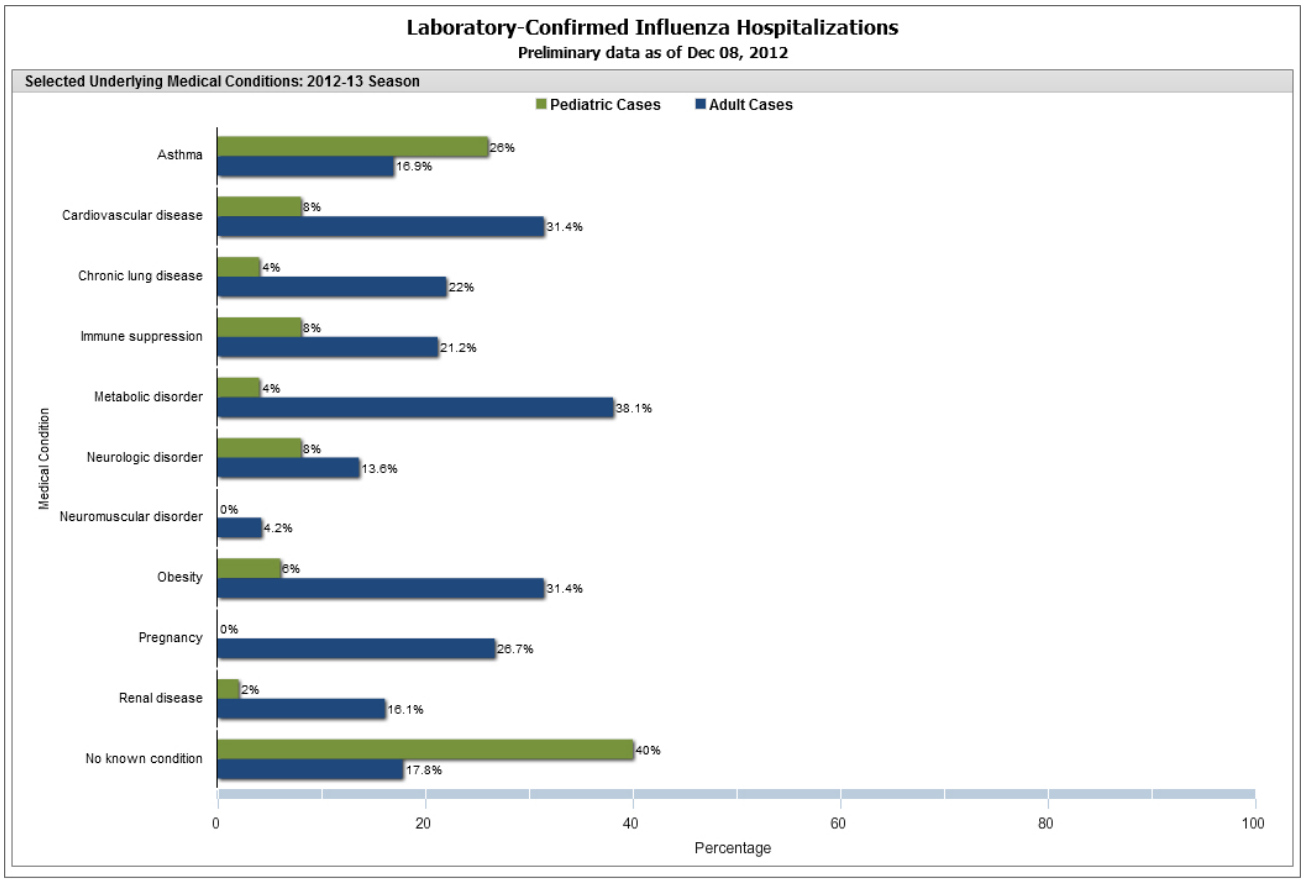
The FluSurv-NET covers more than 80 counties in the 10 Emerging Infections Program (EIP) states (CA, CO, CT, GA, MD, MN, NM, NY, OR, TN) and additional Influenza Hospitalization Surveillance Project (IHSP) states. The IHSP began during the 2009-2010 season to enhance surveillance during the 2009 H1N1 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 December 8, 2012, 677 laboratory-confirmed influenza-associated hospitalizations were reported. This is a rate of 2.4 per 100,000 population. Among all hospitalizations, 524 (77.4%) were associated with influenza A and 145 (21.4%) with influenza B. There was no virus type information for 7 (1.0%) hospitalizations. Among hospitalizations with influenza A subtype information, 123 (96.9%) were attributed to H3 and 4 (3.1%) were attributed to 2009 H1N1. The most commonly reported underlying medical conditions among hospitalized adults were metabolic conditions, cardiovascular disease, obesity, and chronic lung disease (excluding asthma). Among 15 hospitalized women of childbearing age (15-44 years), four were pregnant. The most commonly reported underlying medical conditions in hospitalized children were asthma, cardiovascular disease, immune suppression and neurologic disorders. Forty 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.

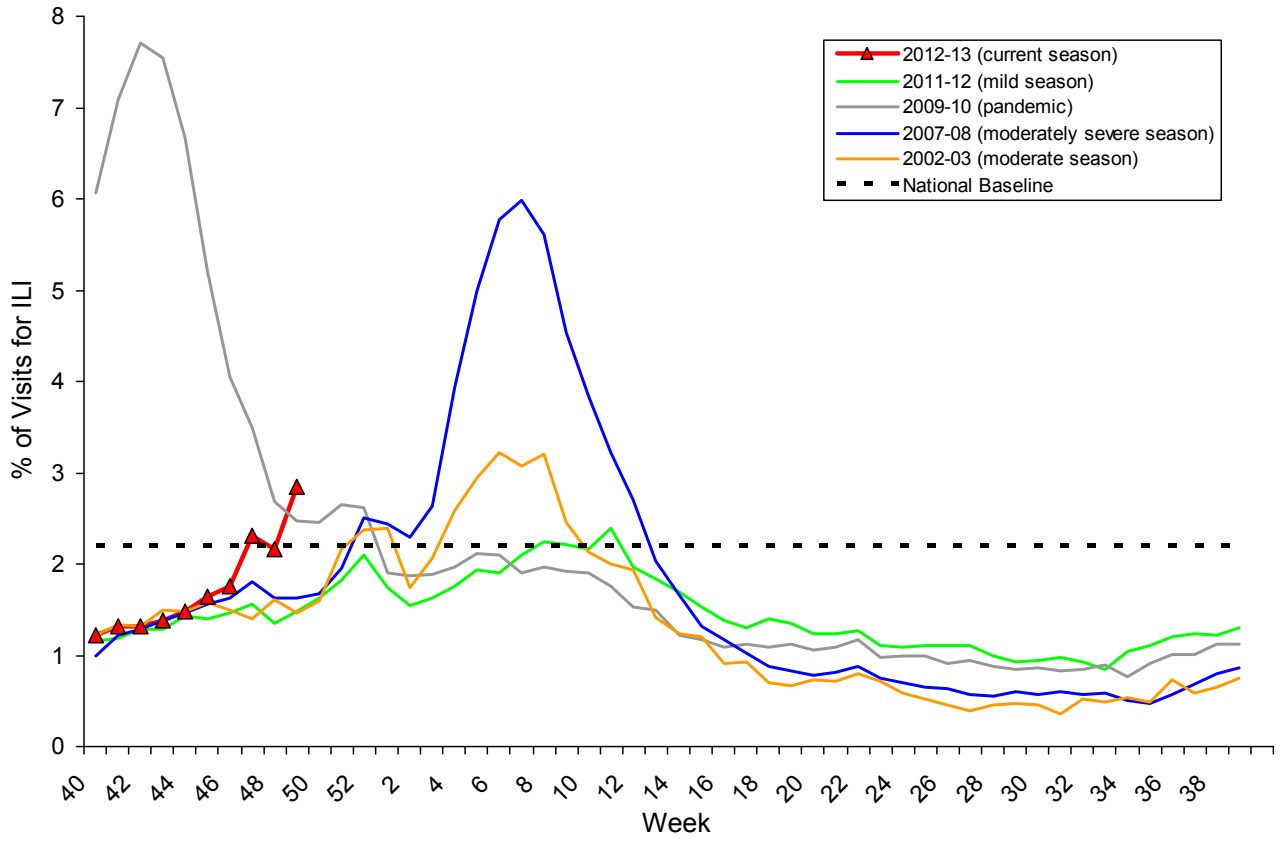


Asthma includes a medical diagnosis of asthma or reactive airway disease; Cardiovascular diseases include conditions such as coronary heart disease, cardiac valve disorders, congestive heart failure, and pulmonary hypertension (does not include isolated hypertension); Chronic lung diseases include conditions 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 49, 2.8% 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%.

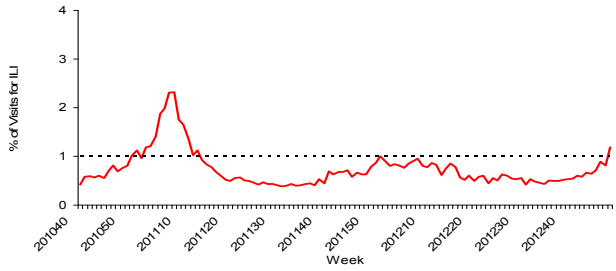
(ILI is defined as fever (temperature of 100°F [37.8°C] or greater) and cough and/or sore throat.)

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

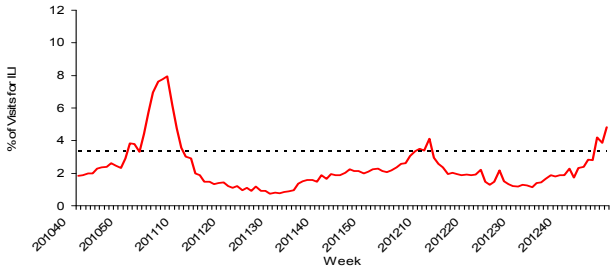


On a regional level, the percentage of outpatient visits for ILI ranged from 1.2% to 4.8% during week 49. Seven regions (Regions 1, 2, 3, 4, 5, 6, and 7) reported a proportion of outpatient visits for ILI above their region-specific baseline levels.

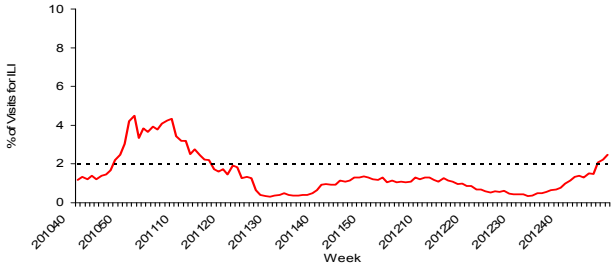
Region 1 - CT, ME, MA, NH, RI, VT



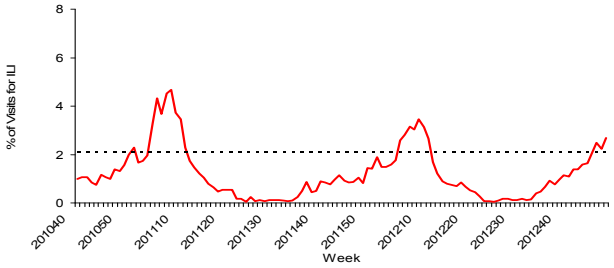
Region 6 - AR, LA, NM, OK, TX



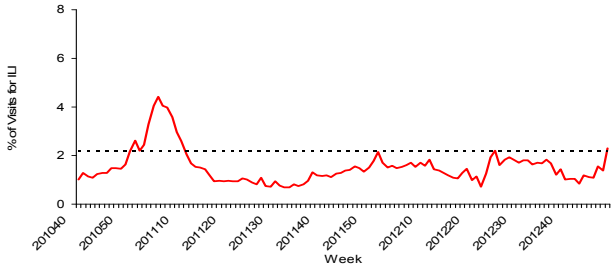
Region 2 - NJ, NY, USVI



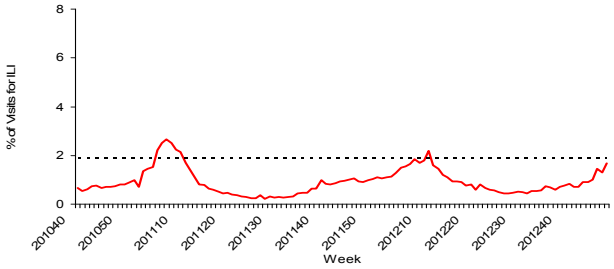
Region 7 - IA, KS, MO, NE



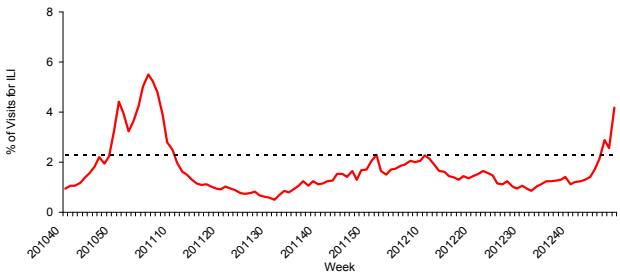
Region 3 - DE, DC, MD, PA, VA, WV



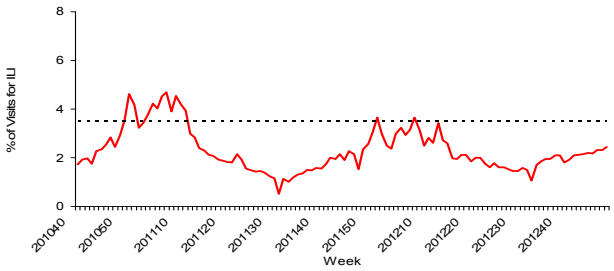
Region 8 - CO, MT, ND, SD, UT, WY



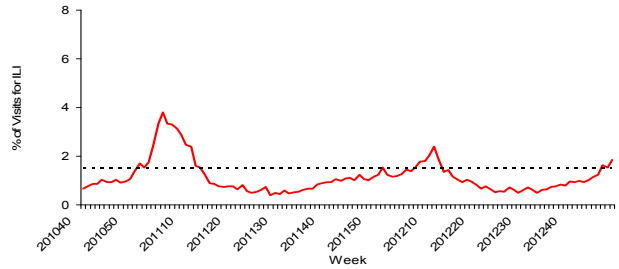
Region 4 - AL, FL, GA, KY, MS, NC, SC, TN



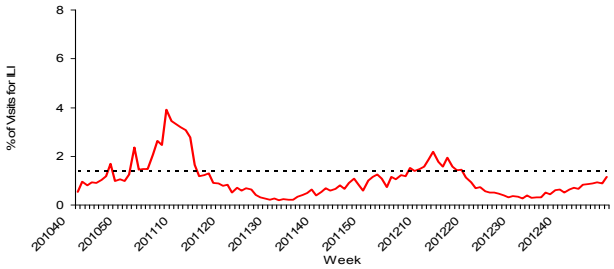
Region 9 - AZ, CA, HI, NV



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



Region 10 - AK, ID, OR, WA



NOTE: Scales differ between regions

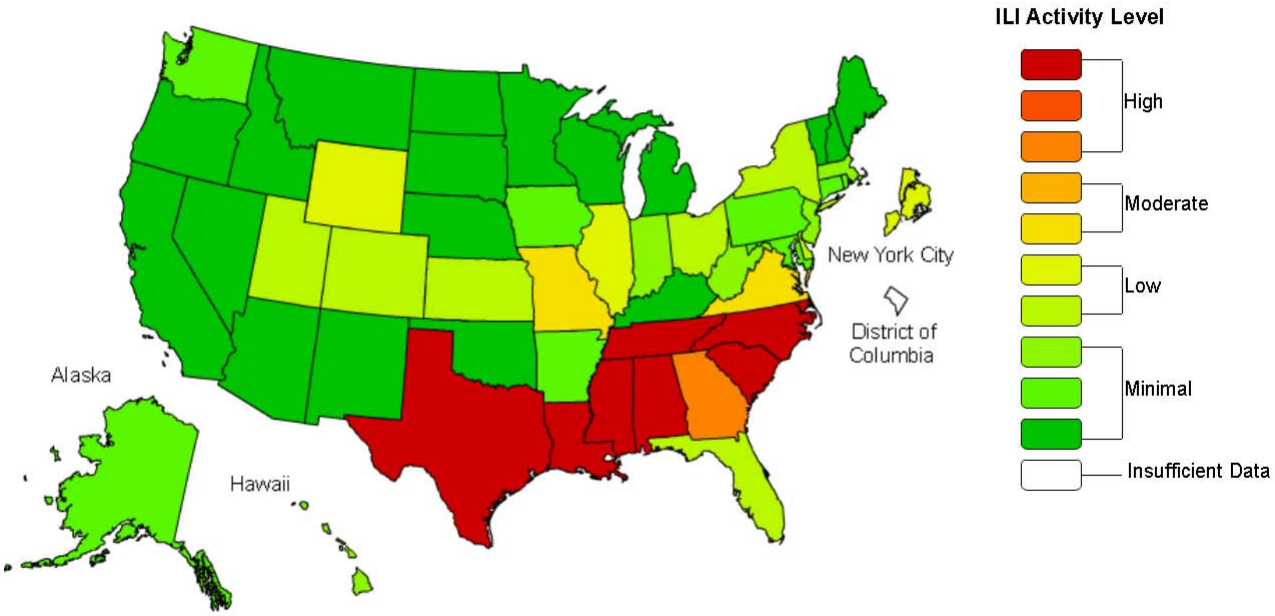
*Use of the regional baselines for state data is not appropriate.

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 49, the following ILI activity levels were experienced:

- Eight states experienced high ILI activity (Alabama, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, and Texas).
- Two states experienced moderate ILI activity (Missouri and Virginia).
- New York City and nine states experienced low ILI activity (Colorado, Delaware, Florida, Illinois, Kansas, New York, Ohio, Utah, and Wyoming).
- Thirty-one states experienced minimal ILI activity (Alaska, Arizona, Arkansas, California, Connecticut, Hawaii, Idaho, Indiana, Iowa, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, North Dakota, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Dakota, Vermont, Washington, West Virginia, and Wisconsin).
- 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
2012-13 Influenza Season Week 49 ending Dec 08, 2012

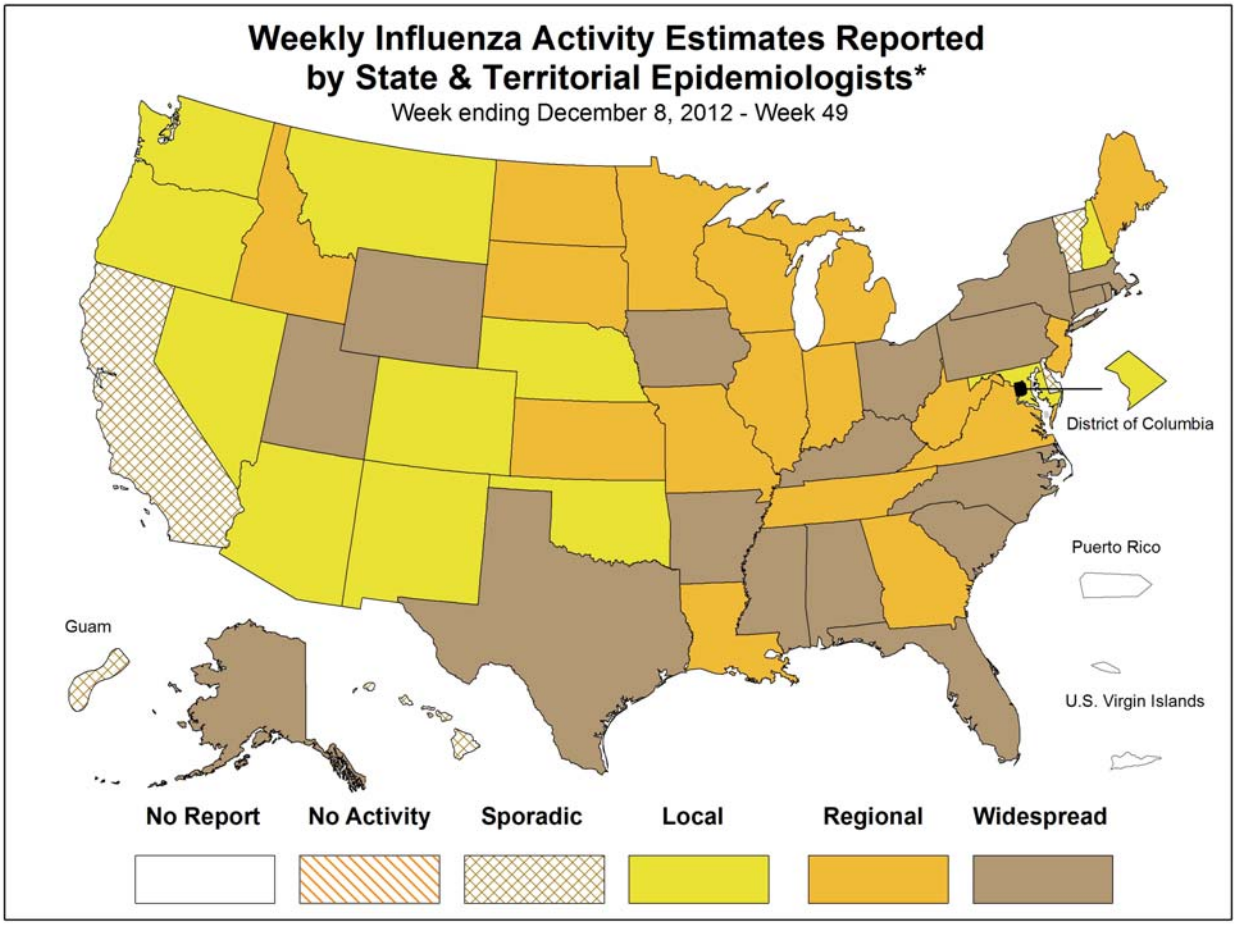


*This map uses the proportion of outpatient visits to health care providers for influenza-like illness to measure the ILI activity level within a state. It does not, however, measure the extent of geographic spread of flu within a state. Therefore, outbreaks occurring in a single city could cause the 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 49, the following influenza activity was reported:

- Widespread influenza activity was reported by 18 states (Alabama, Alaska, Arkansas, Connecticut, Florida, Kentucky, Iowa, Massachusetts, Mississippi, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, South Carolina, Texas, Utah, and Wyoming).
- Regional influenza activity was reported by 17 states (Georgia, Idaho, Illinois, Indiana, Kansas, Louisiana, Maine, Michigan, Minnesota, Missouri, New Jersey, North Dakota, South Dakota, Tennessee, Virginia, West Virginia, and Wisconsin).
- Local influenza activity was reported by the District of Columbia and 11 states (Arizona, Colorado, Maryland, Montana, Nebraska, Nevada, New Hampshire, New Mexico, Oklahoma, Oregon, and Washington).
- Sporadic influenza activity was reported by Guam and 4 states (California, Delaware, Hawaii, and Vermont).
- 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/