

2012-2013 Influenza Season Week 51 ending December 22, 2012

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

Synopsis: During week 51 (December 16-22), influenza activity increased in the U.S.

- **Viral Surveillance:** Of 6,234 specimens tested and reported by U.S. World Health Organization (WHO) and National Respiratory and Enteric Virus Surveillance System (NREVSS) collaborating laboratories in week 51, 1,846 (29.6%) were positive for influenza.
- **Pneumonia and Influenza Mortality:** The proportion of deaths attributed to pneumonia and influenza (P&I) was below the epidemic threshold.
- **Influenza-Associated Pediatric Deaths:** Eight influenza-associated pediatric deaths were reported. Three were associated with influenza B viruses, 3 were associated with influenza A (H3) viruses, and 2 were associated with influenza A viruses for which the subtype was not determined.
- **Outpatient Illness Surveillance:** The proportion of outpatient visits for influenza-like illness (ILI) was 4.2%; above the national baseline of 2.2%. Nine of 10 regions reported ILI above region-specific baseline levels. New York City and 16 states experienced high ILI activity; 8 states experienced moderate ILI activity; 10 states experienced low ILI activity; 14 states experienced minimal ILI activity, and the District of Columbia and 2 states had insufficient data.
- **Geographic Spread of Influenza:** Thirty-one states reported widespread geographic influenza activity; 14 states reported regional activity; the District of Columbia and 3 states reported local activity; 2 states reported sporadic activity; Guam reported no 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

HHS Surveillance Regions*	Data for current week			Data cumulative since September 30, 2012 (Week 40)				
	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	29.6%	45 of 54	142	7,350	4,089	3,525	16
Region 1	Elevated	35.1%	5 of 6	6	366	106	34	1
Region 2	Elevated	24.4%	2 of 4	18	390	280	133	2
Region 3	Elevated	37.7%	4 of 6	29	1,282	100	133	0
Region 4	Elevated	30.1%	8 of 8	16	1,166	2,786	897	4
Region 5	Elevated	58.4%	6 of 6	26	1,329	90	330	4
Region 6	Elevated	21.7%	5 of 5	6	341	449	689	4
Region 7	Elevated	32.8%	4 of 4	2	742	82	358	0
Region 8	Elevated	26.2%	6 of 6	16	573	130	761	0
Region 9	Normal	13.4%	2 of 5	22	351	49	88	0
Region 10	Elevated	26.0%	3 of 4	1	810	17	102	1

*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.

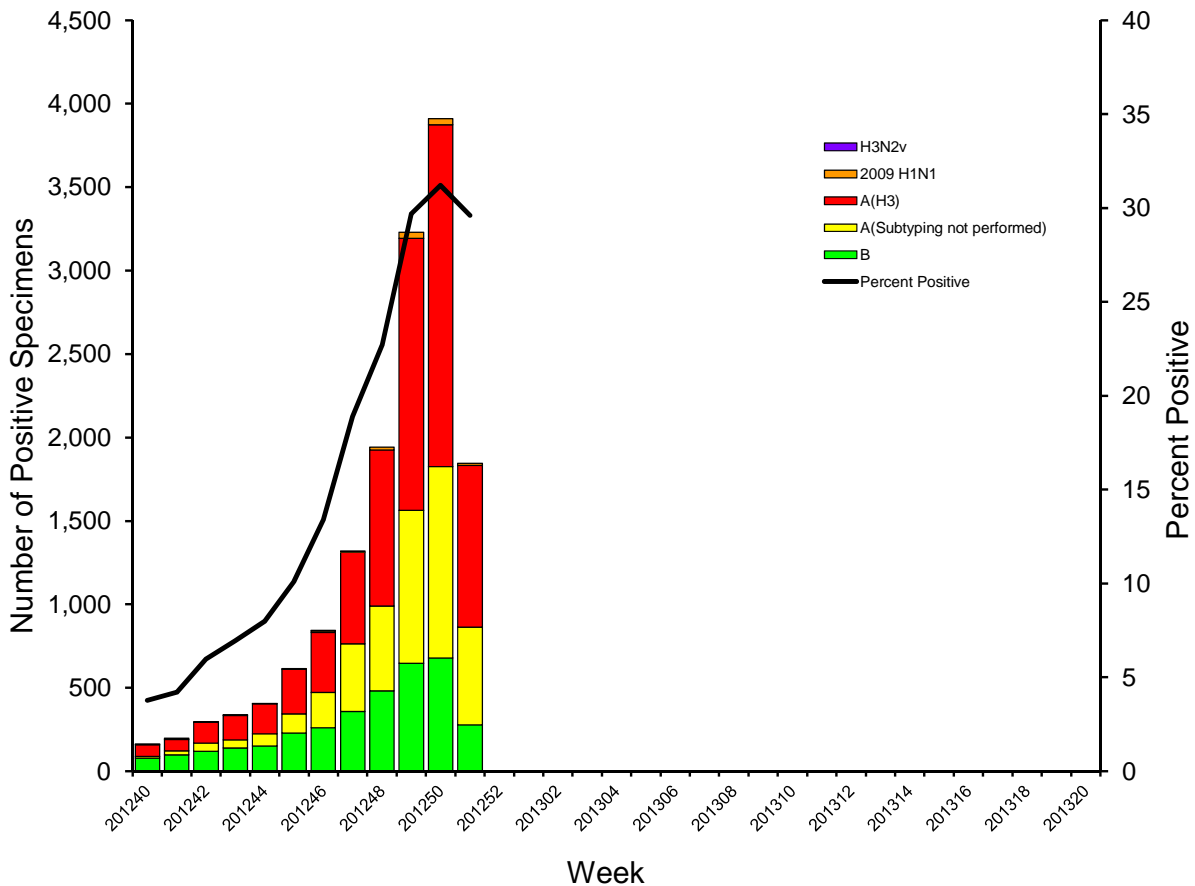
‡ National data are for current week; regional data are for the most recent three weeks.

§ 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 51
No. of specimens tested	6,234
No. of positive specimens (%)	1,846 (29.6%)
Positive specimens by type/subtype	
Influenza A	1,568 (84.9%)
2009 H1N1	12 (0.8%)
Subtyping not performed	586 (37.4%)
H3	970 (61.9%)
Influenza B	278 (15.1%)

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



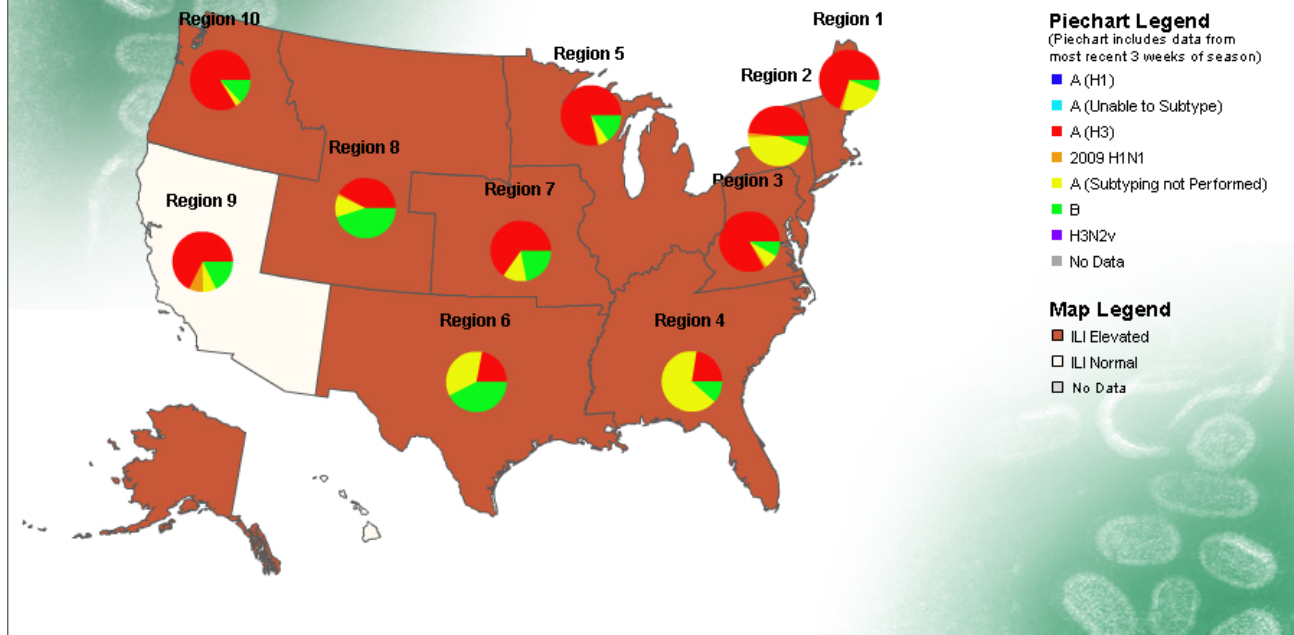
Since the start of the season, influenza A (H3N2) viruses have predominated nationally, followed by influenza B viruses; 2009 H1N1 viruses have been identified rarely. The predominant circulating virus has varied by state and by region.

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.

FLUVIEW



Influenza Positive Tests Reported to CDC and ILI Activity, by HHS Region, 2012-13 Season, week ending Dec 22, 2012
 Reported by: U.S. WHO/NREVSS Collaborating Laboratories and ILINet



Antigenic Characterization: CDC has antigenically characterized 406 influenza viruses [ten 2009 H1N1 viruses, 281 influenza A (H3N2) viruses, and 115 influenza B viruses] collected by U.S. laboratories since October 1, 2012.

2009 H1N1 [10]

- All ten 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) [281]:

- 279 (99.3%) of the 281 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 (0.7%) of the 281 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) [115]:

- Yamagata Lineage [79]:** 79 (68.7%) of the 115 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 [36]:** 36 (31.3%) of 115 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)	400	0 (0.0)	400	0 (0.0)
Influenza B	157	0 (0.0)	157	0 (0.0)
2009 H1N1	22	0 (0.0)	17	0 (0.0)

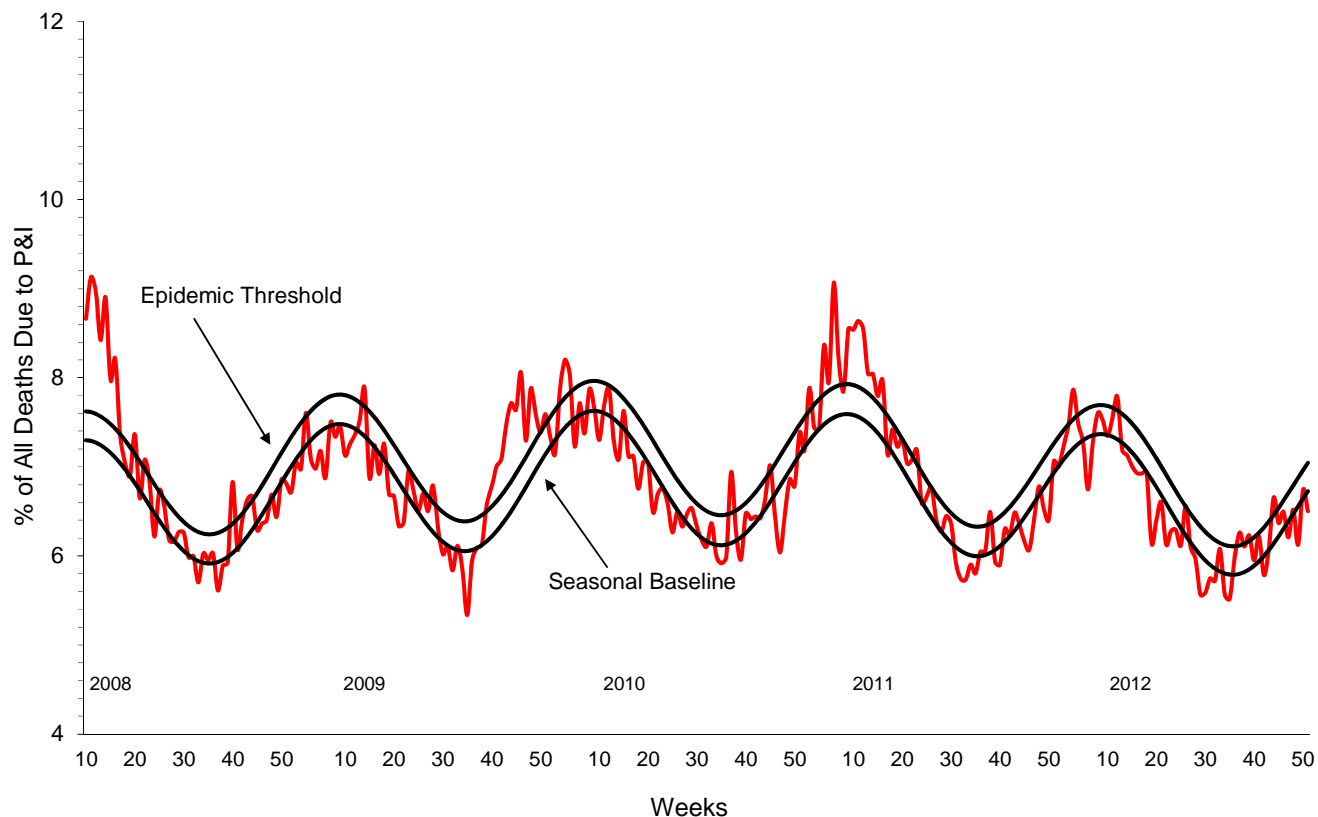
The majority of currently circulating influenza viruses are susceptible to the neuraminidase inhibitor antiviral medications oseltamivir and zanamivir; however, rare sporadic cases of oseltamivir-resistant 2009 H1N1 and A (H3N2) viruses have been detected worldwide. Antiviral treatment with oseltamivir 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: No new human infections with novel influenza A viruses were reported to CDC during week 51.

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>.

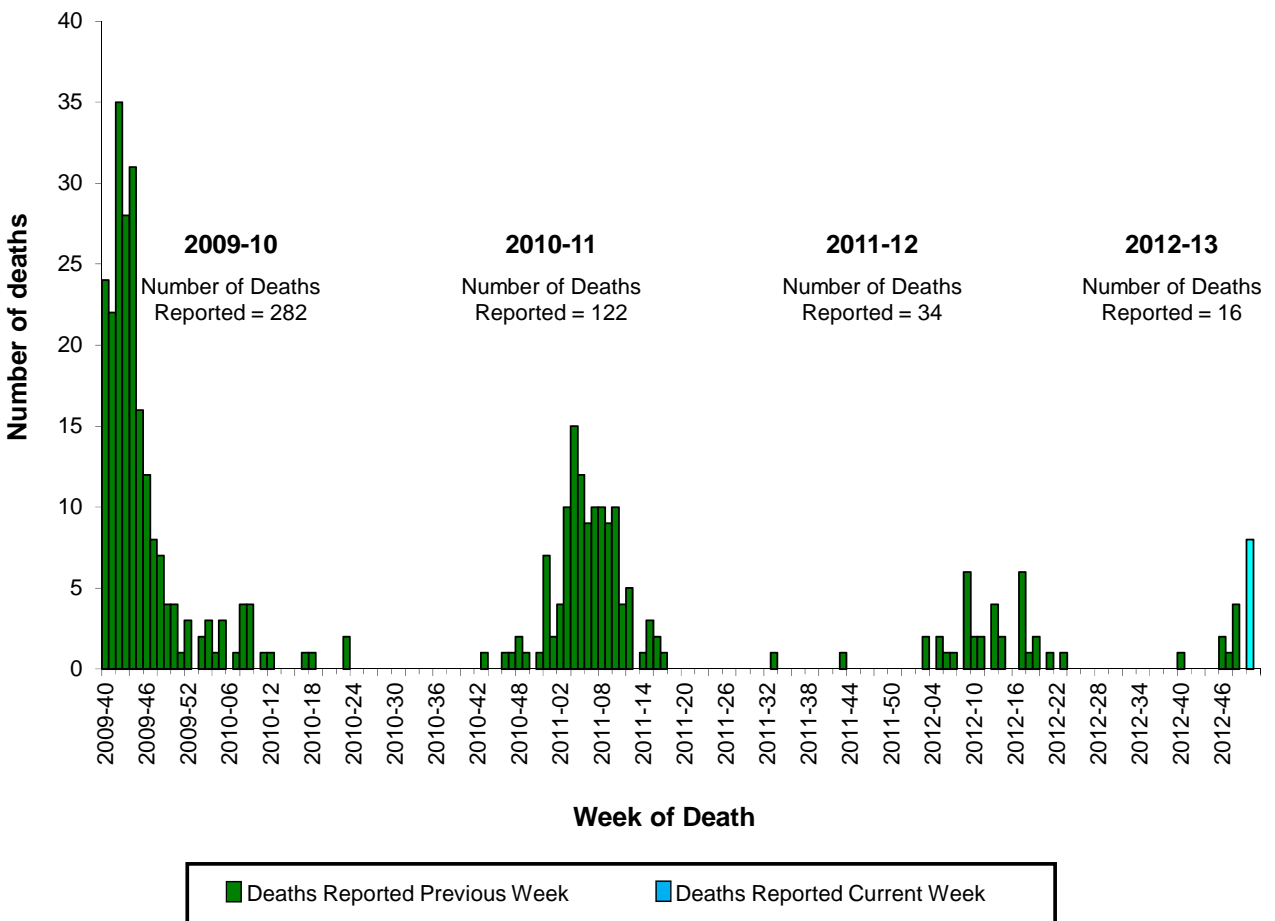
Pneumonia and Influenza (P&I) Mortality Surveillance: During week 51, 6.5% of all deaths reported through the 122 Cities Mortality Reporting System were due to P&I. This percentage was below the epidemic threshold of 7.1% for week 51.

Pneumonia and Influenza Mortality for 122 U.S. Cities Week ending December 22, 2012



Influenza-Associated Pediatric Mortality: Eight influenza-associated pediatric deaths were reported to CDC during week 51. Three were associated with influenza B viruses, 3 were associated with influenza A (H3) viruses, and 2 were associated with influenza A viruses for which the subtype was not determined. All 8 deaths occurred during week 50 (week ending December 15, 2012). This brings the total number of influenza-associated pediatric deaths reported during the 2012-2013 season to 16. 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

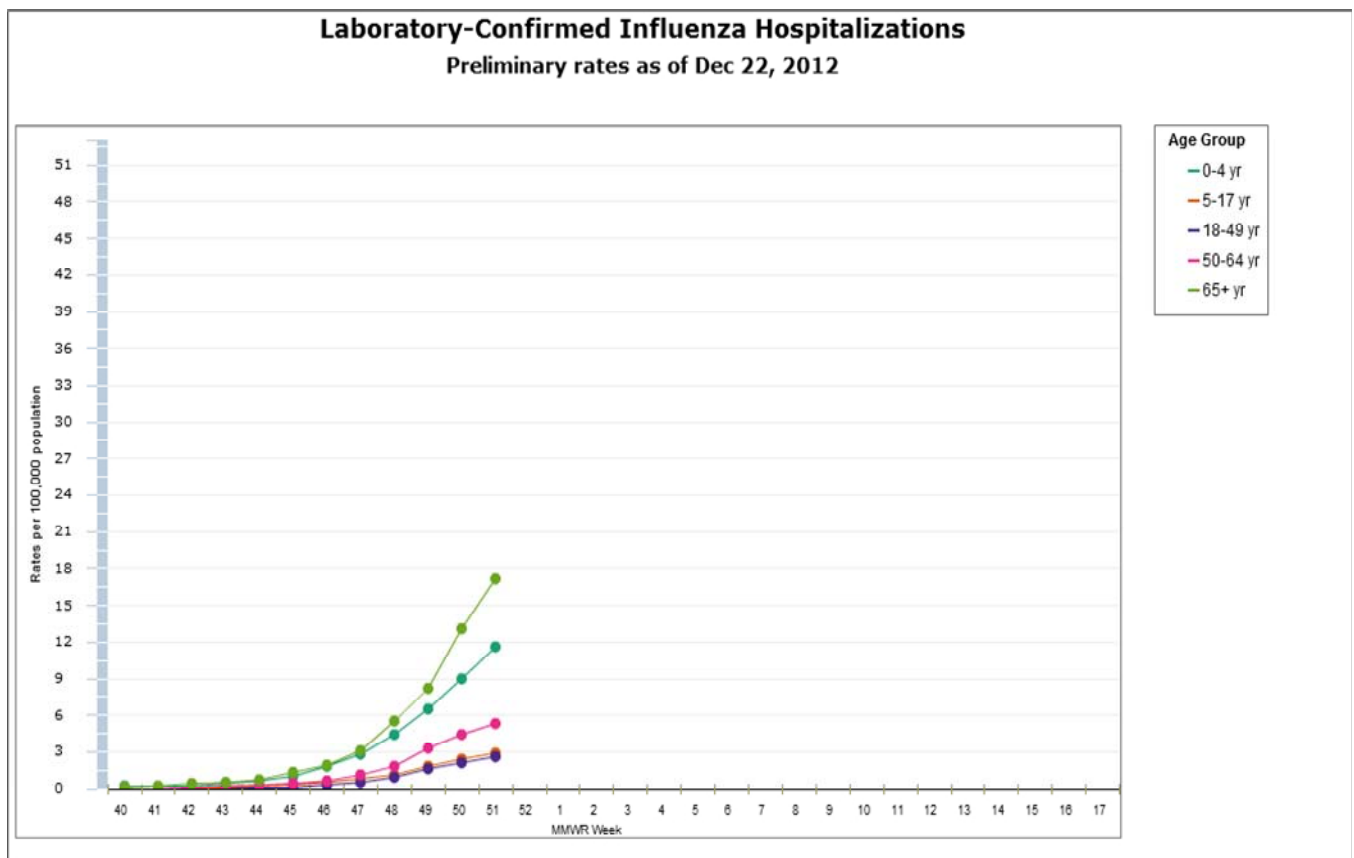


Influenza-Associated Hospitalizations: The Influenza Hospitalization Surveillance Network (FluSurv-NET) conducts population-based surveillance for laboratory-confirmed influenza-related hospitalizations in children younger than 18 years of age (since the 2003-2004 influenza season) and adults (since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

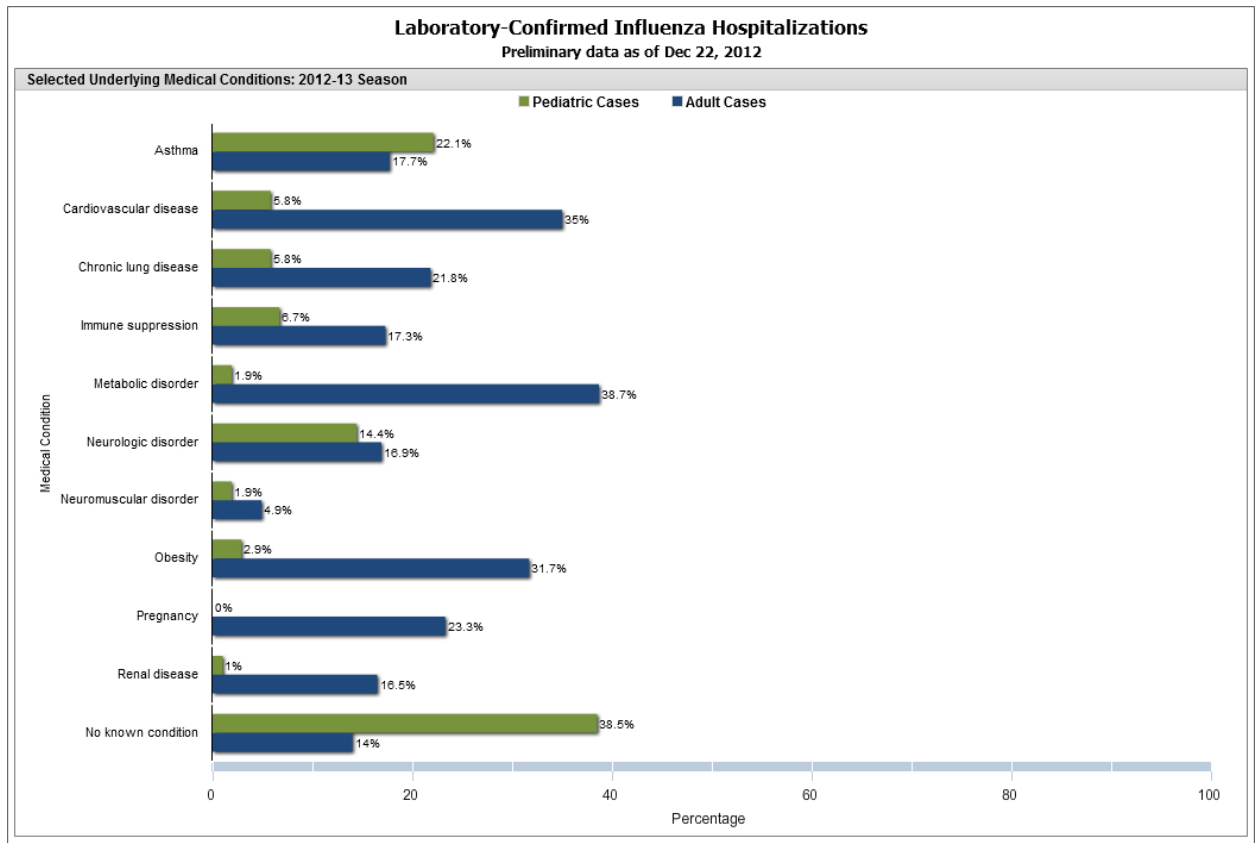
The FluSurv-NET covers more than 80 counties in the 10 Emerging Infections Program (EIP) states (CA, CO, CT, GA, MD, MN, NM, NY, OR, TN) and additional Influenza Hospitalization Surveillance Project (IHSP) states. The IHSP began during the 2009-2010 season to enhance surveillance during the 2009 H1N1 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 22, 2012, 1,522 laboratory-confirmed influenza-associated hospitalizations were reported. This is a rate of 5.5 per 100,000 population. Among all hospitalizations, 1,247 (81.9%) were associated with influenza A and 262 (17.2%) with influenza B. There was no virus type information for 11 (0.7%) hospitalizations. Among hospitalizations with influenza A subtype information, 312 (98.1%) were attributed to H3 and 6 (1.9%) 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 30 hospitalized women of childbearing age (15-44 years), seven were pregnant. The most commonly reported underlying medical conditions in hospitalized children were asthma, neurologic disorders, and immune suppression. Approximately 40% 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.



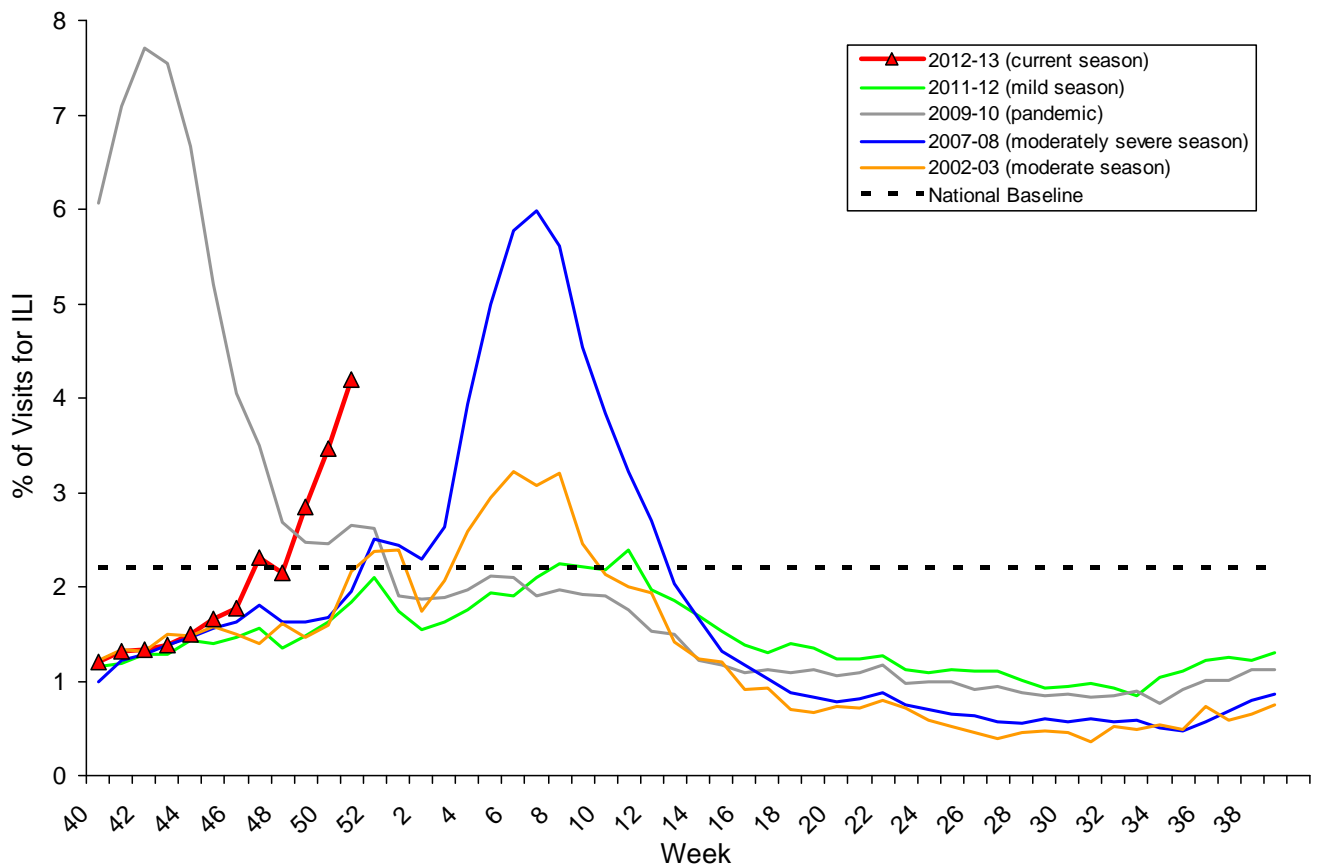
Asthma includes a medical diagnosis of asthma or reactive airway disease; Cardiovascular diseases include conditions such as coronary heart disease, cardiac valve disorders, congestive heart failure, and pulmonary hypertension (does not include isolated hypertension); Chronic lung diseases include conditions 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/m²; 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 51, 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%.

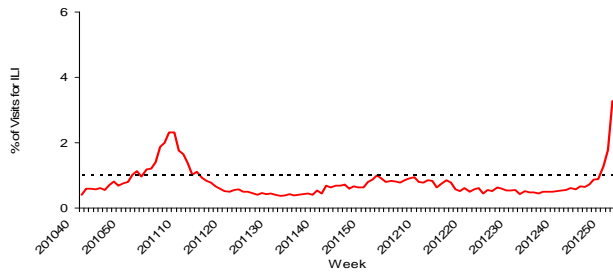
(ILI is defined as fever (temperature of 100°F [37.8°C] or greater) and cough and/or sore throat.)

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

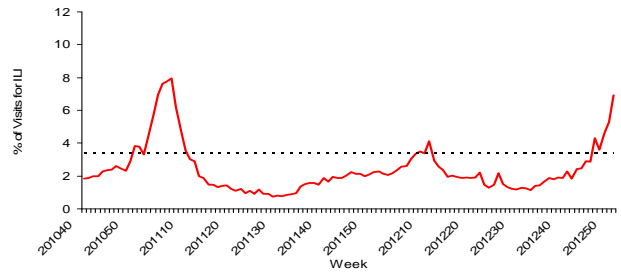


On a regional level, the percentage of outpatient visits for ILI ranged from 1.4% to 6.9% during week 51. Nine regions (Regions 1-8 and 10) reported a proportion of outpatient visits for ILI above their region-specific baseline levels.

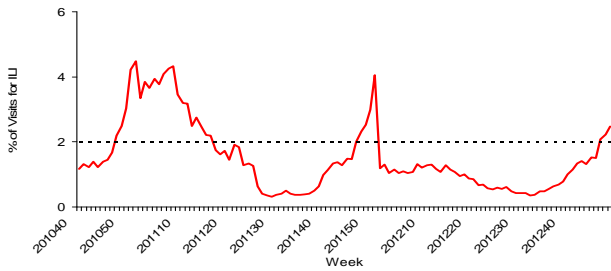
Region 1 - CT, ME, MA, NH, RI, VT



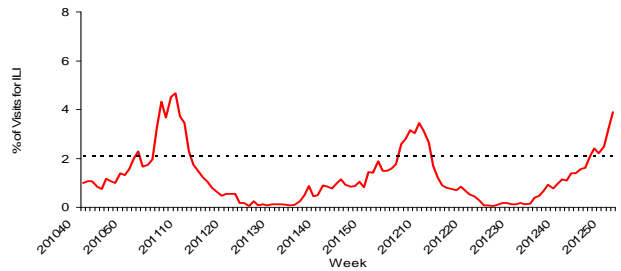
Region 6 - AR, LA, NM, OK, TX



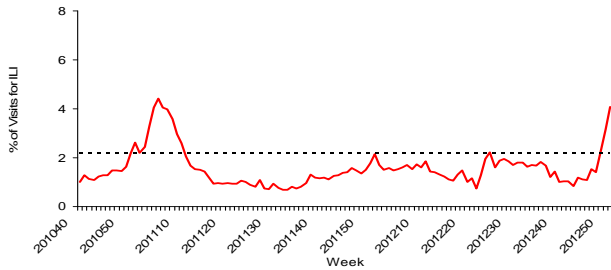
Region 2 - NJ, NY, USVI



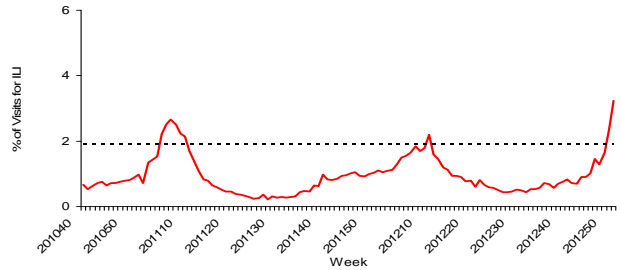
Region 7 - IA, KS, MO, NE



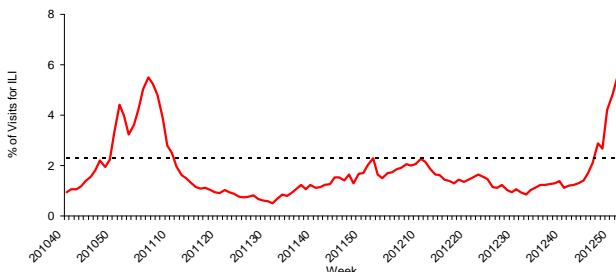
Region 3 - DE, DC, MD, PA, VA, WV



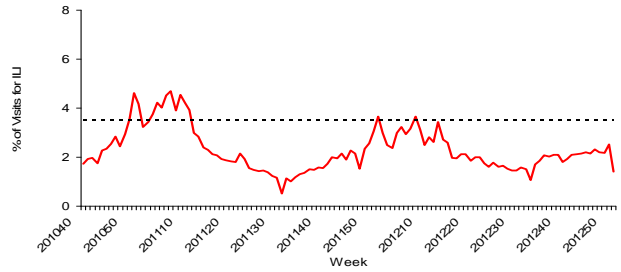
Region 8 - CO, MT, ND, SD, UT, WY



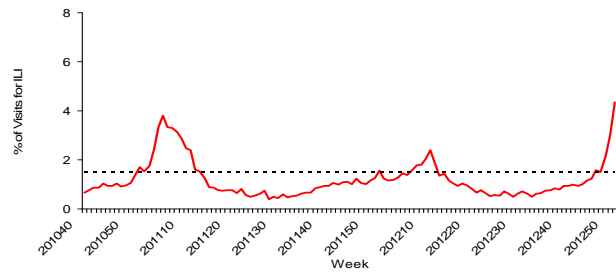
Region 4 - AL, FL, GA, KY, MS, NC, SC, TN



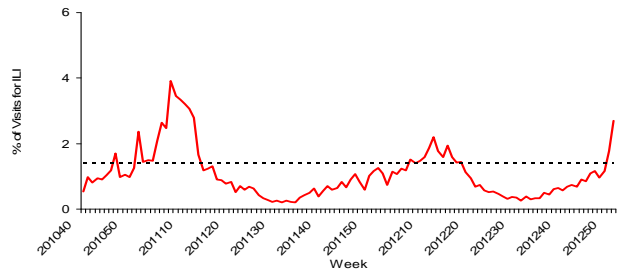
Region 9 - AZ, CA, HI, NV



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



Region 10 - AK, ID, OR, WA



NOTE: Scales differ between regions

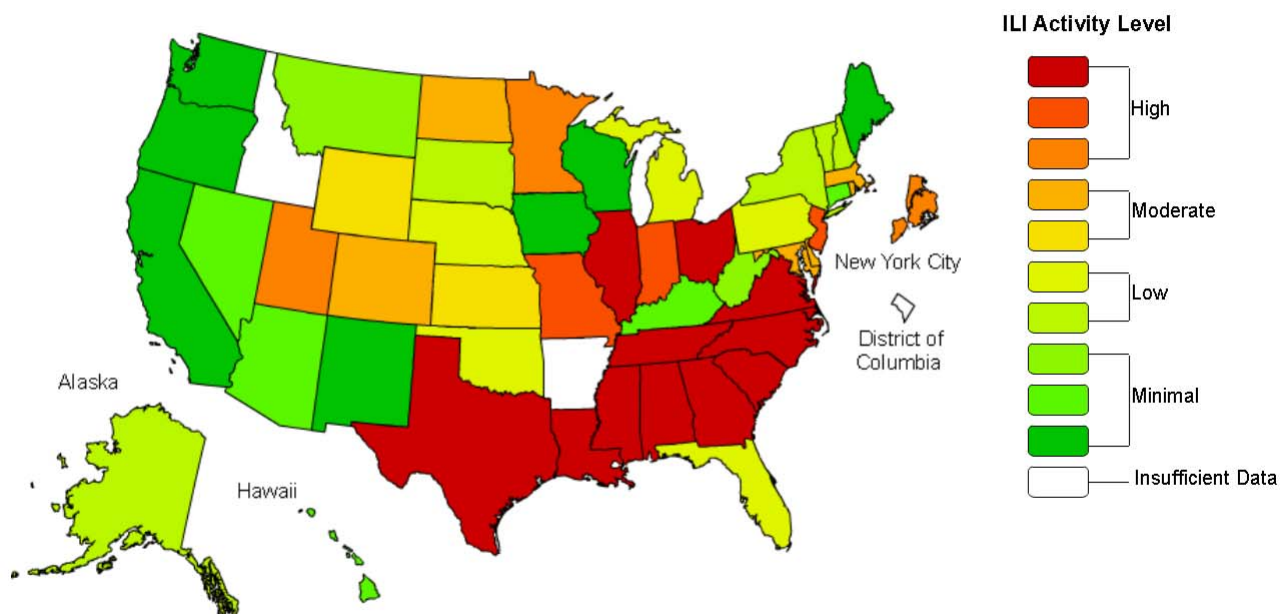
*Use of the regional baselines for state data is not appropriate.

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 51, the following ILI activity levels were experienced:

- New York City and 16 states experienced high ILI activity (Alabama, Georgia, Illinois, Indiana, Louisiana, Minnesota, Mississippi, Missouri, New Jersey, North Carolina, Ohio, South Carolina, Tennessee, Texas, Utah, and Virginia).
- Eight states experienced moderate ILI activity (Colorado, Delaware, Kansas, Maryland, Massachusetts, North Dakota, Rhode Island, and Wyoming).
- Ten states experienced low ILI activity (Alaska, Florida, Michigan, Nebraska, New Hampshire, New York, Oklahoma, Pennsylvania, South Dakota, and Vermont).
- Fourteen states experienced minimal ILI activity (Arizona, California, Connecticut, Hawaii, Iowa, Kentucky, Maine, Montana, Nevada, New Mexico, Oregon, Washington, West Virginia, and Wisconsin).
- Data were insufficient to calculate an ILI activity level for the District of Columbia and 2 states (Arkansas and Idaho).

**Influenza-Like Illness (ILI) Activity Level Indicator Determined by Data Reported to ILINet
2012-13 Influenza Season Week 51 ending Dec 22, 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 disproportionately represent certain populations within a state, and therefore, may not accurately depict the full picture of influenza activity for the whole state.

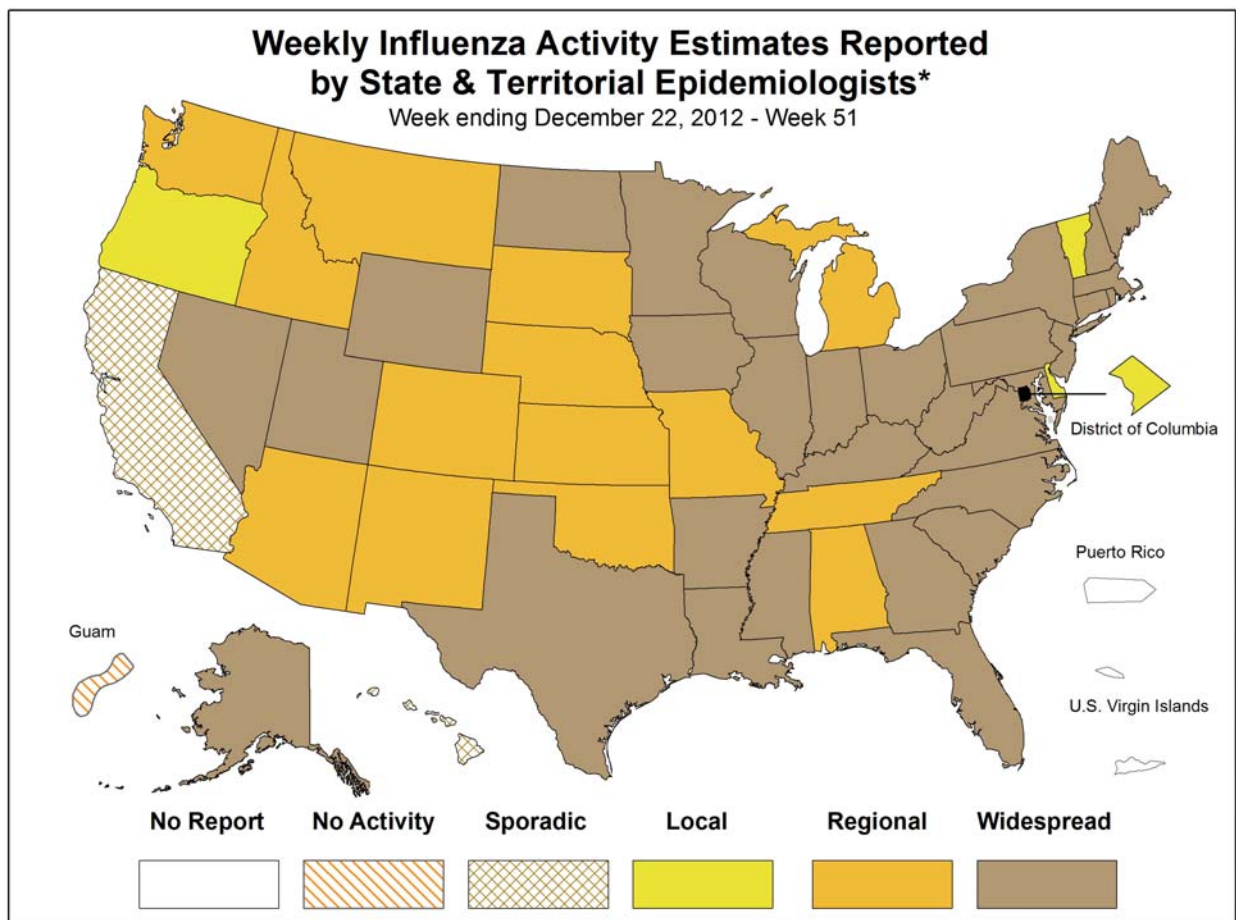
Data displayed in this map are based on data collected in ILINet, whereas the State and Territorial flu activity map is based on reports from state and territorial epidemiologists. The data presented in this map is preliminary and may change as more data is received.

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 51, the following influenza activity was reported:

- Widespread influenza activity was reported by 31 states (Alaska, Arkansas, Connecticut, Florida, Georgia, Kentucky, Illinois, Indiana, Iowa, Louisiana, Maine, Maryland, Massachusetts, Minnesota, Mississippi, Nevada, New Hampshire, New Jersey, New York, North Carolina, North Dakota, Ohio, Pennsylvania, Rhode Island, South Carolina, Texas, Utah, Virginia, West Virginia, Wisconsin, and Wyoming).
- Regional influenza activity was reported by 14 states (Alabama, Arizona, Colorado, Idaho, Kansas, Michigan, Missouri, Montana, Nebraska, New Mexico, Oklahoma, South Dakota, Tennessee, and Washington).
- Local influenza activity was reported by the District of Columbia and 3 states (Delaware, Oregon and Vermont).
- Sporadic influenza activity was reported by 2 states (California and Hawaii).
- Guam reported no 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/>

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