FLUVIEW

A Weekly Influenza Surveillance Report Prepared by the Influenza Division

2011-2012 Influenza Season
Week 11 ending March 17, 2012

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

Synopsis: During week 11 (March 11-17, 2012), influenza activity was elevated in some areas of the United States, but remained relatively low nationally.

- **U.S. Virologic Surveillance**: Of the 5,088 specimens tested by U.S. World Health Organization (WHO) and National Respiratory and Enteric Virus Surveillance System (NREVSS) collaborating laboratories and reported to CDC/Influenza Division, 1,353 (26.6%) were positive for influenza.
- **Pneumonia and Influenza (P&I) Mortality Surveillance**: The proportion of deaths attributed to P&I was below the epidemic threshold.
- **Influenza-associated Pediatric Mortality**: Three influenza-associated pediatric deaths were reported and were associated with 2009 H1N1 (2) and influenza B (1) viruses.
- **Outpatient Illness Surveillance**: The proportion of outpatient visits for influenza-like illness (ILI) was 2.4%, which is at the national baseline of 2.4%. Regions 5, 6, 7, 8, and 10 reported ILI at or above region-specific baseline levels. Four states experienced high ILI activity; 5 state experienced moderate ILI activity; 10 states experienced low ILI activity; New York City and 31 states experienced minimal ILI activity, and the District of Columbia had insufficient data to calculate ILI activity.
- **Geographic Spread of Influenza**: Twenty states reported widespread geographic activity; 20 states reported regional influenza activity; 2 states reported local activity; the District of Columbia, Guam, and 8 states reported sporadic activity, and Puerto Rico and the U.S. Virgin Islands did not report.

National and Regional Summary of Select Surveillance Components

	Data for current week			Data cumulative since October 2, 2011 (Week 40)				
HHS Surveillance Regions*	**Out-patient ILI†**	**% of respiratory specimens positive for flu‡**	**Number of jurisdictions reporting regional or widespread activity§**	**A (H3)**	**2009 H1N1**	**A (Subtyping not perfor-med)**	**B**	**Pediatric Deaths**
Nation	Elevated	26.6%	40 of 54	5,507	1,643	2,907	755	8
Region 1	Normal	11.3%	2 of 6	74	33	22	42	0
Region 2	Normal	17.5%	2 of 4	94	88	76	43	0
Region 3	Normal	17.8%	4 of 6	326	51	65	65	0
Region 4	Normal	15.9%	6 of 8	321	108	744	186	1
Region 5	Elevated	60.7%	6 of 6	1,732	137	64	112	1
Region 6	Elevated	18.8%	5 of 5	119	244	533	86	2
Region 7	Elevated	39.2%	4 of 4	901	92	263	15	0
Region 8	Elevated	26.6%	6 of 6	904	226	912	38	0
Region 9	Normal	33.0%	3 of 5	784	549	215	85	4
Region 10	Elevated	20.2%	2 of 4	252	115	13	83	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.

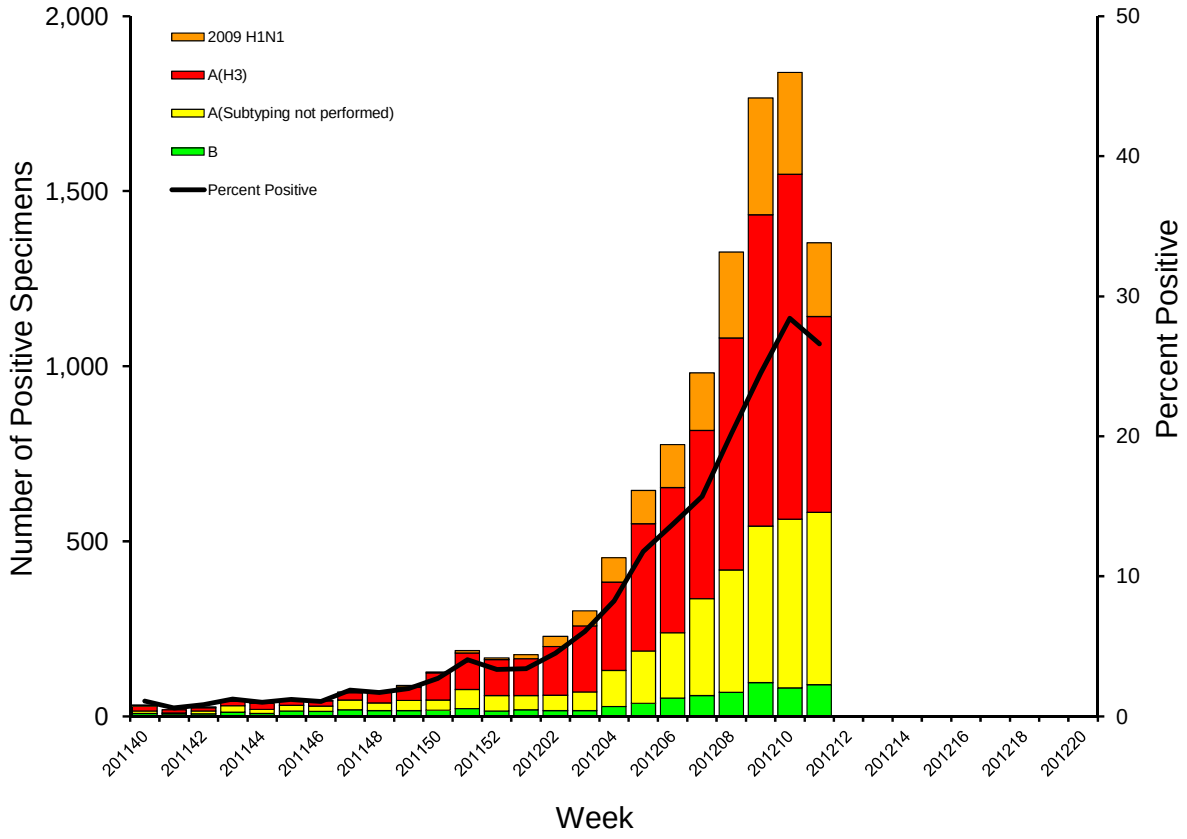
§ Includes all 50 states, the District of Columbia, Guam, Puerto Rico, and the U.S. Virgin Islands.

U.S. Virologic Surveillance: WHO and NREVSS collaborating laboratories located in all 50 states report to CDC the number of respiratory specimens tested for influenza and the number positive by influenza type and subtype. The results of tests performed during the current week are summarized in the table below.

	Week 11
No. of specimens tested	5,088
No. of positive specimens (%)	1,353 (26.6%)
Positive specimens by type/subtype	
Influenza A	1,262 (93.3%)
2009 H1N1	211 (16.7%)
Subtyping not performed	492 (39.0%)
(H3)	559 (44.3%)
Influenza B	91 (6.7%)

The timing of influenza activity and what influenza viruses predominate can vary by region and even between states within the same region. Nationally, seasonal influenza A (H3) viruses have predominated since the start of the 2011-2012 season and continue to remain overwhelmingly predominant in Regions 3, 5 and 7, however, the overall proportion of 2009 H1N1 viruses is increasing in several regions.

Influenza Positive Tests Reported to CDC by U.S. WHO/NREVSS Collaborating Laboratories, National Summary, 2011-2012 Season



Antigenic Characterization: CDC has antigenically characterized 747 influenza viruses [158 2009 H1N1 viruses, 472 influenza A (H3N2) viruses, and 117 influenza B viruses] collected by U.S. laboratories since October 1, 2011.

2009 H1N1 [158]

- One hundred fifty-six (98.7%) of the 158 viruses were characterized as A/California/7/2009-like, the influenza A (H1N1) component of the 2011-2012 influenza vaccine for the Northern Hemisphere.
- Two viruses (1.3%) tested showed reduced titers with antiserum produced against A/California/7/2009.

Influenza A (H3N2) [472]

- Three hundred seventy-nine (80.3%) of the 472 viruses were characterized as A/Perth/16/2009-like, the influenza A (H3N2) component of the 2011-2012 influenza vaccine for the Northern Hemisphere.
- Ninety-three viruses (19.7%) tested showed reduced titers with antiserum produced against A/Perth/16/2009.

Influenza B (B/Victoria/02/87 and B/Yamagata/16/88 lineages) [117]:

- **Victoria Lineage [49]**: Forty-nine (41.9%) of the 117 influenza B viruses tested belong to the B/Victoria lineage of viruses.
    - Forty-five (91.8%) of these 49 viruses were characterized as B/Brisbane/60/2008-like, the influenza B component of the 2011-2012 Northern Hemisphere influenza vaccine.
    - Four (8.2%) of these 49 viruses showed reduced titers with antisera produced against B/Brisbane/60/2008.

- **Yamagata Lineage [68]**: Sixty-eight (55.1%) of the 117 influenza B viruses tested belong to the B/Yamagata lineage of viruses.

Only a small number of influenza B viruses from the United States have been available for testing so far this season. While less than 50% of these viruses are similar to the influenza B component in the 2011-2012 influenza vaccine, the majority of influenza B viruses circulating worldwide have been similar to the influenza vaccine strain.

Composition of the 2012-2013 Influenza Vaccine: The World Health Organization (WHO) has recommended vaccine viruses for the 2012-2013 Northern Hemisphere trivalent influenza vaccine, and FDA's Vaccines and Related Biological Products Advisory Committee (VRBPAC) has made recommendations for the composition of the 2012-2013 U.S. influenza vaccine. Both agencies recommend that the vaccine contain A/California/7/2009-like (2009 H1N1), A/Victoria/361/2011-like (H3N2), and B/Wisconsin/1/2010-like (B/Yamagata lineage) viruses. This recommendation changes the influenza A (H3N2) and influenza B virus components of the 2011-2012 Northern Hemisphere vaccine formulation. This recommendation was based on surveillance data related to epidemiology and antigenic characteristics, serological responses to 2011-2012 trivalent seasonal vaccines, and the availability of candidate strains and reagents.

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 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 an antiviral resistant virus.

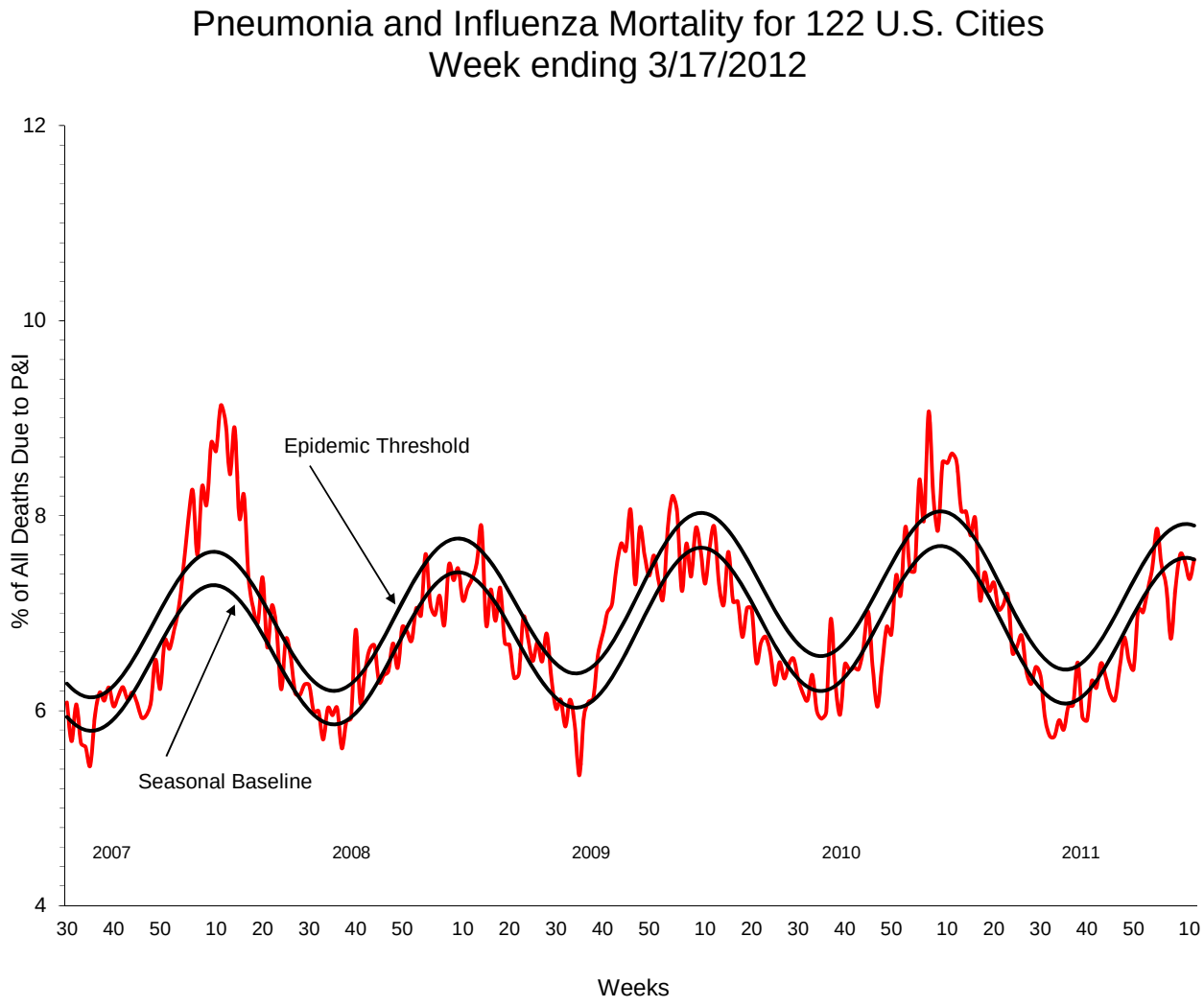
High levels of resistance to the adamantanes (amantadine and rimantadine) persist among 2009 H1N1 and A (H3N2) viruses (the adamantanes are not effective against influenza B viruses). As a result of the sustained high levels of resistance, data from adamantane resistance testing are not presented in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

Neuraminidase Inhibitor Resistance Testing Results on Samples Collected Since October 1, 2011.

	Oseltamivir		Zanamivir	
	Virus Samples Tested (n)	Resistant Viruses, Number (%)	Virus Samples tested (n)	Resistant Viruses, Number (%)
Influenza A (H3N2)	581	0 (0.0)	581	0 (0.0)
Influenza B	115	0 (0.0)	115	0 (0.0)
2009 H1N1	257	2 (0.8)	173	0 (0.0)

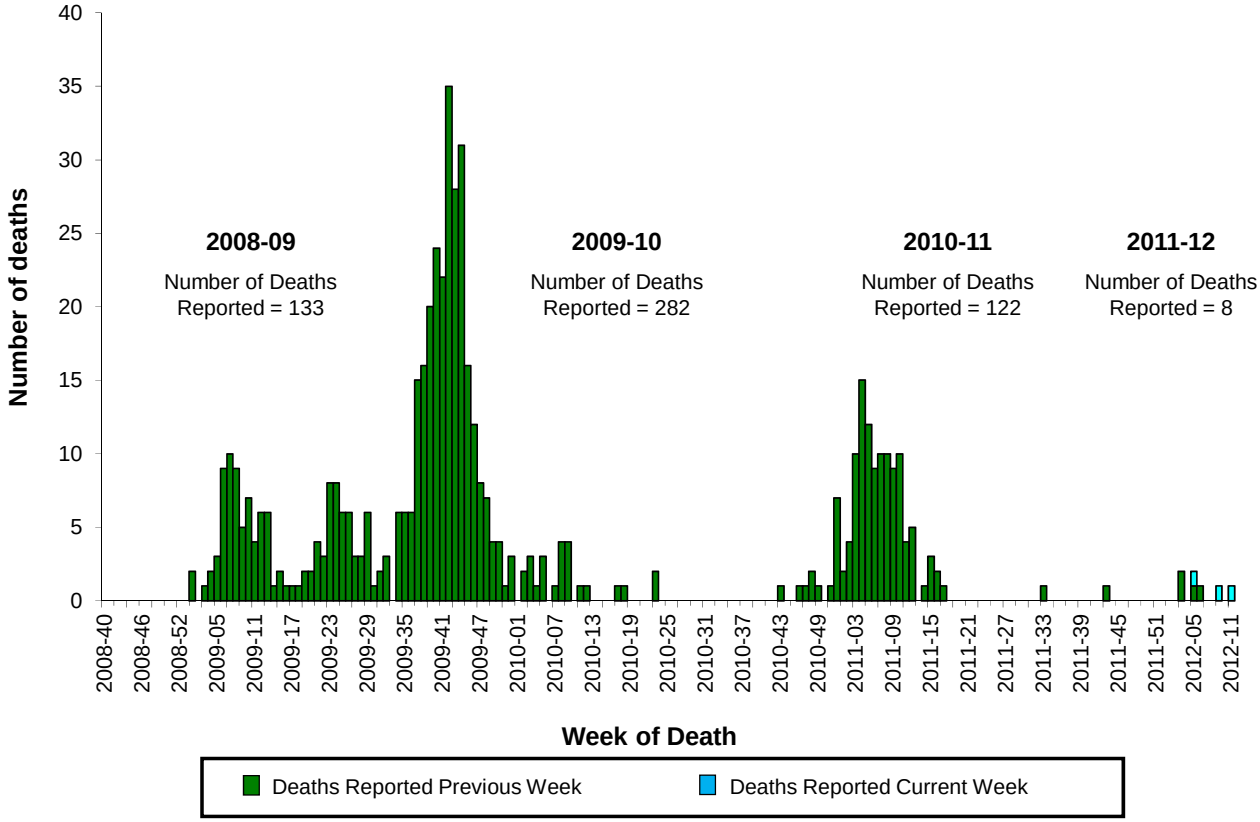
Rare sporadic cases of oseltamivir resistant 2009 H1N1 and influenza A (H3N2) viruses have been detected worldwide. Antiviral treatment with oseltamivir or zanamivir is recommended as early as possible for patients with confirmed or suspected influenza who have severe, complicated, or progressive illness; who require hospitalization; or who are at greater risk for 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 11, 7.6% of all deaths reported through the 122-Cities Mortality Reporting System were due to P&I. This percentage was below the epidemic threshold of 7.9% for week 11.



Influenza-Associated Pediatric Mortality: Three influenza-associated pediatric deaths were reported to CDC during week 11 were associated with 2009 H1N1 (2) and influenza B (1) viruses. The deaths reported during week 11 occurred during the weeks ending February 4, 2012 (week 5), March 3, 2012 (week 9), and March 17, 2012 (week 11). This brings the total number of influenza-associated pediatric deaths reported during the 2011-2012 season to eight.

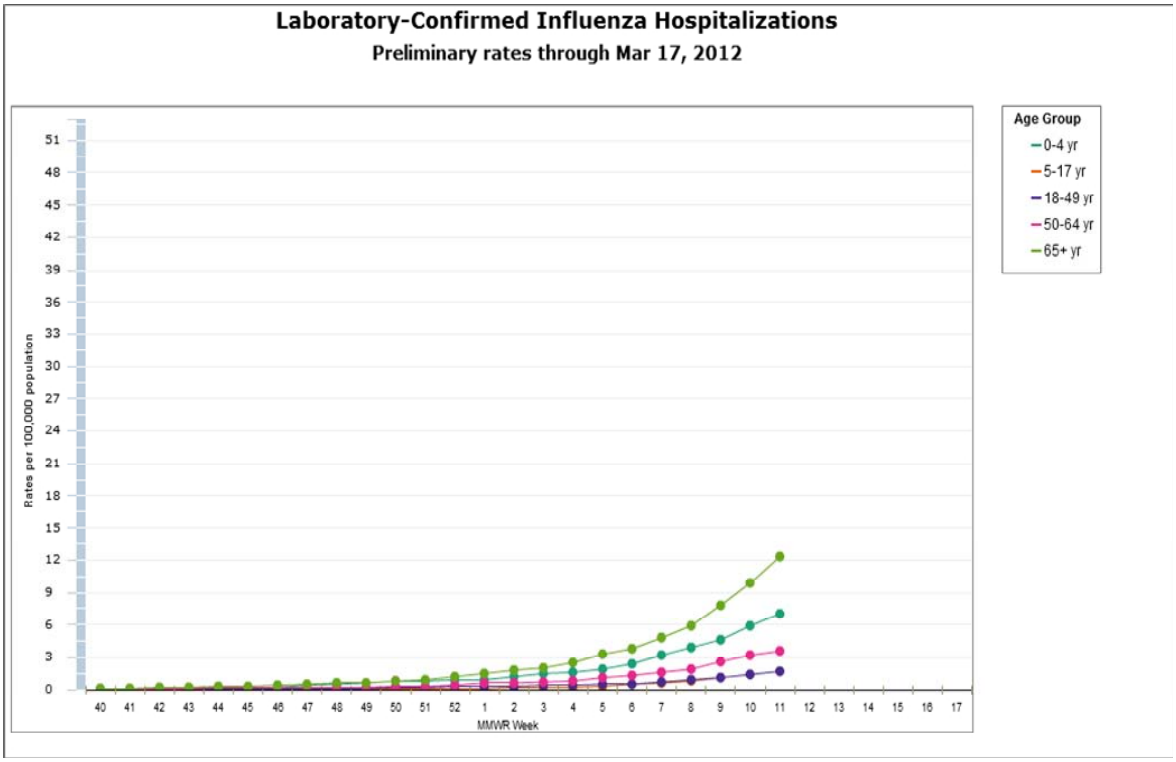
Number of Influenza-Associated Pediatric Deaths by Week of Death: 2008-09 season to present



Influenza-Associated Hospitalizations: The Influenza 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).

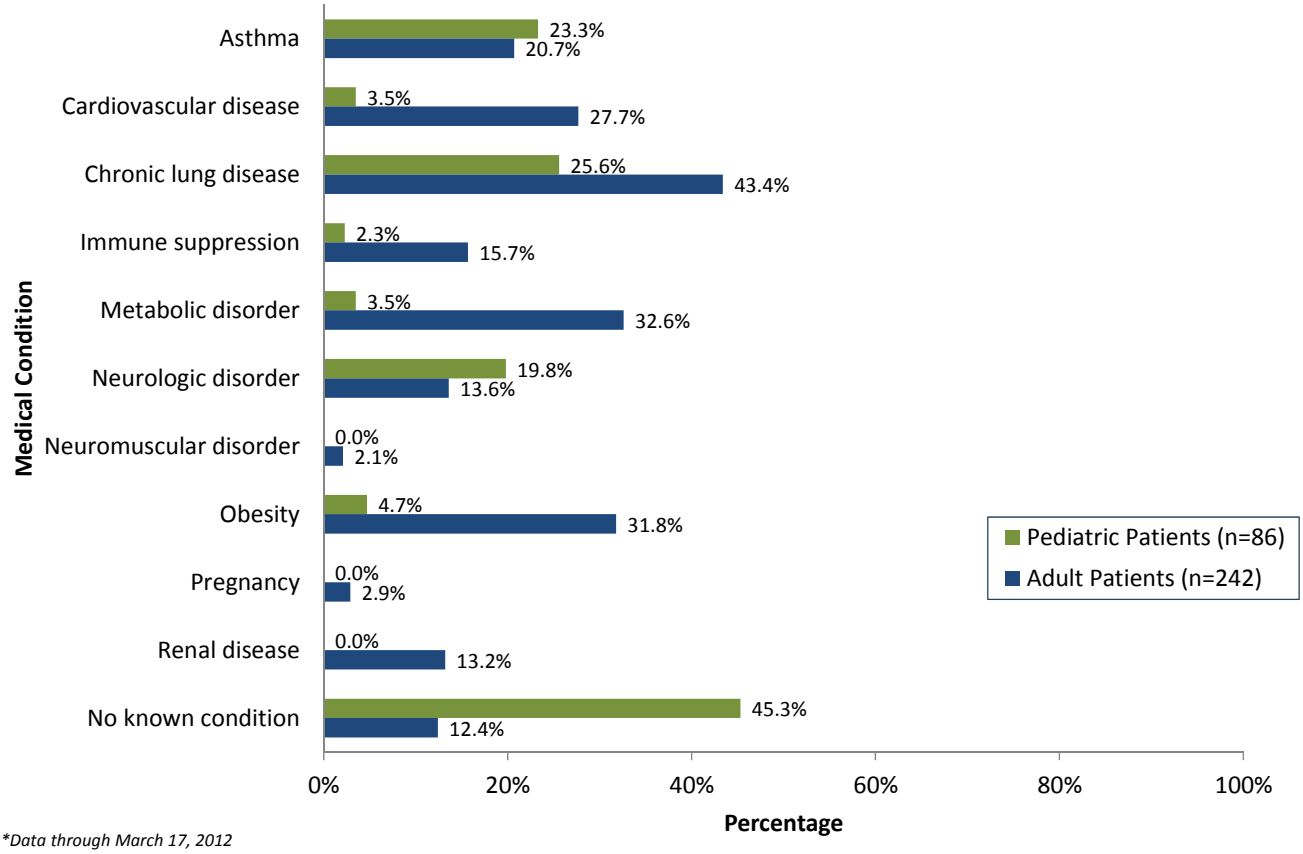
The FluSurv-NET covers more than 80 counties in the 10 Emerging Infections Program (EIP) states (CA, CO, CT, GA, MD, MN, NM, NY, OR, TN) and additional Influenza Hospitalization Surveillance Project (IHSP) states. The IHSP began during the 2009-2010 season to enhance surveillance during the 2009 H1N1 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; and MI, OH, RI, and UT during the 2011-2012 season. The rates provided are likely to be a vast underestimate of the actual number of influenza-related hospitalizations. First, the FluSurv-NET is not nationally representative, and second, 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, 2011 and March 17, 2012, 992 laboratory-confirmed influenza-associated hospitalizations were reported at a rate of 3.6 per 100,000 population, an increase of 35% from last week. Among cases, 891 (89.8%) were influenza A, 89 (9.0%) were influenza B, and 1 (0.1%) was an influenza A and B co-infection; 11 (1.1%) had no virus type information. Among those with influenza A subtype information, 270 were H3N2 and 105 were 2009 H1N1. The most commonly reported underlying medical conditions among adults were chronic lung diseases, metabolic disorders and obesity. The most commonly reported underlying medical conditions in children were chronic lung diseases, asthma and neurologic disorders. However, almost half of hospitalized children had no identified underlying medical conditions.



Data from the Influenza Surveillance Network (FluSurv-NET), a population-based surveillance for influenza related hospitalizations in children and adults in 14 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.

Selected underlying medical conditions[1] among laboratory-confirmed influenza-associated hospitalizations, FluSurv-NET, 2011-2012[2]



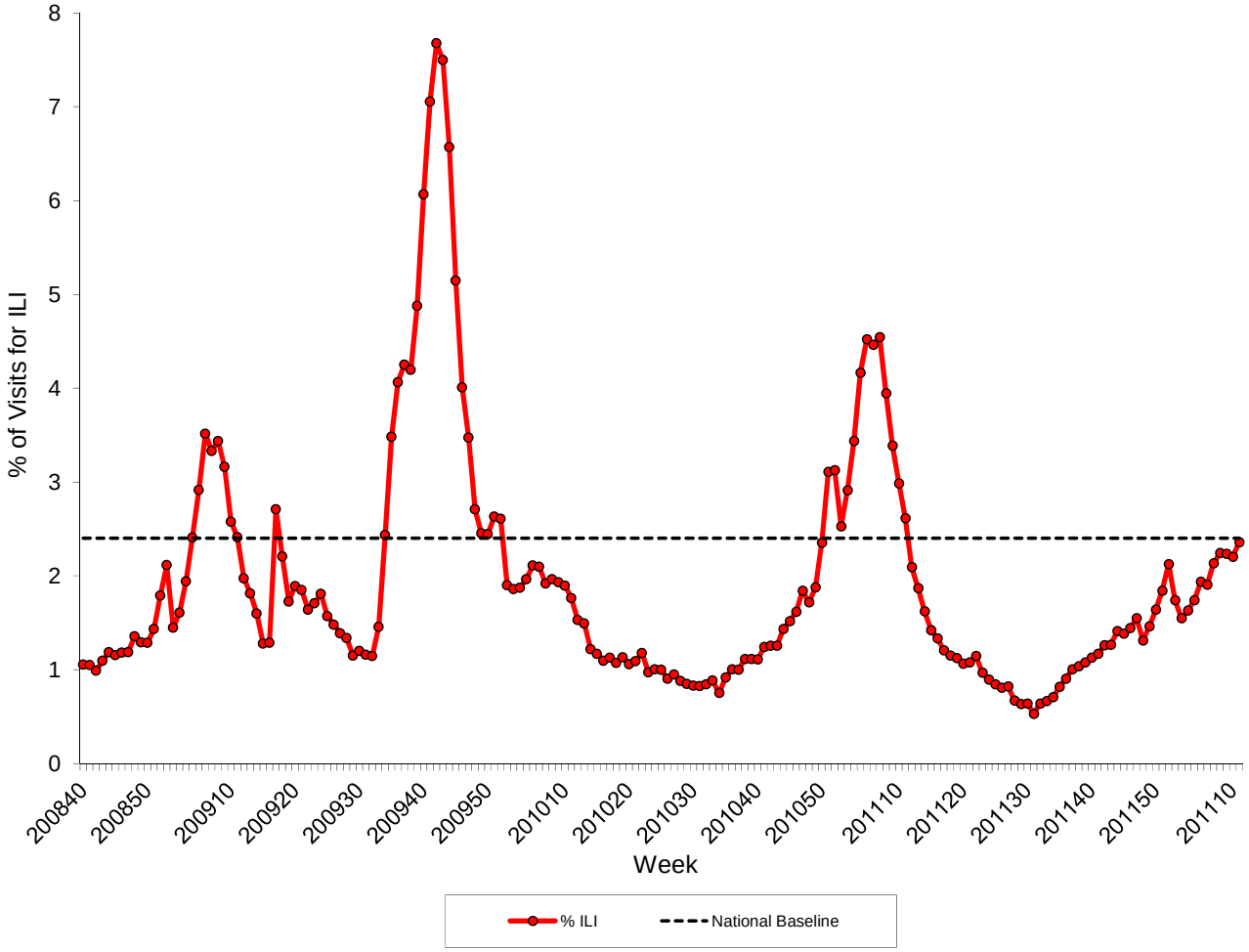
**Data through March 17, 2012*

[1]Asthma includes a diagnosis of asthma or reactive airway disease; Cardiovascular diseases include conditions such as coronary heart disease, cardiac valve disorders, congestive heart failure, pulmonary hypertension, and aortic stenosis; Chronic lung diseases include conditions such as bronchiolitis obliterans, chronic aspiration pneumonia, and interstitial lung disease; Immune suppression include 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; Renal diseases include conditions such as acute or chronic renal failure, nephrotic syndrome, glomerulonephritis, and impaired creatinine clearance.

[2]Only includes cases for which data collection has been completed through the medical chart review stage.

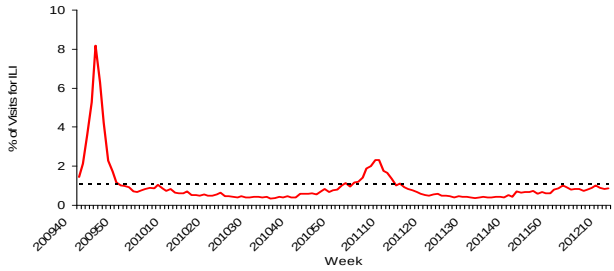
Outpatient Illness Surveillance: Nationwide during week 11, 2.4% of patient visits reported through the U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet) were due to influenza-like illness (ILI). This percentage is at the national baseline of 2.4%. *(ILI is defined as fever (temperature 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, September 30, 2008 – March 17, 2012

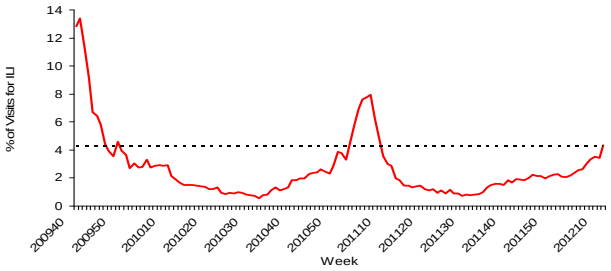


On a regional level, the percentage of outpatient visits for ILI ranged from 0.9% to 4.3% during week 11. Regions 5, 6, 7, 8, and 10 reported a proportion of outpatient visits for ILI at or above region-specific baseline levels.

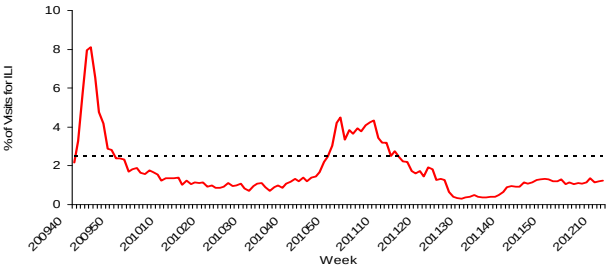
Region 1 - CT, ME, MA, NH, RI, VT



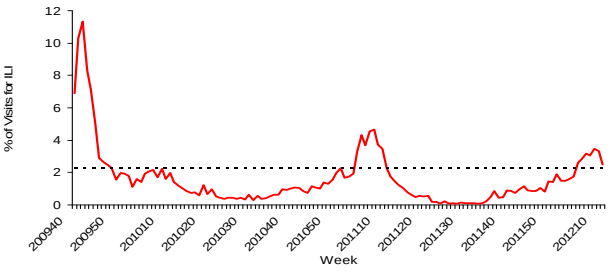
Region 6 - AR, LA, NM, OK, TX



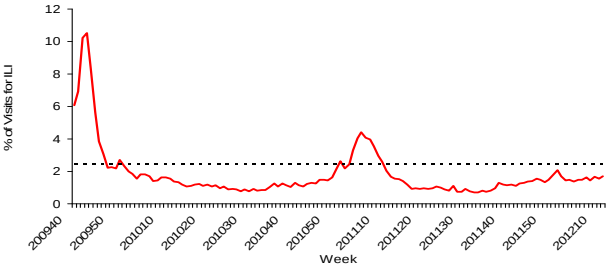
Region 2 - NJ, NY, USVI



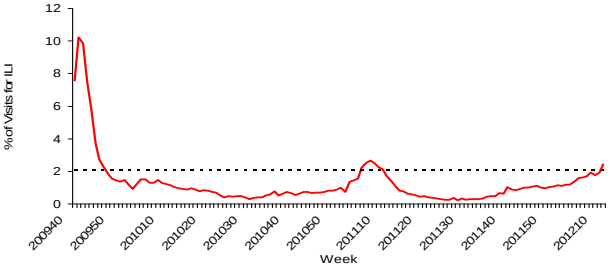
Region 7 - IA, KS, MO, NE



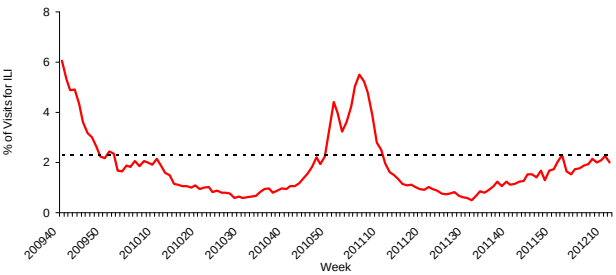
Region 3 - DE, DC, MD, PA, VA, WV



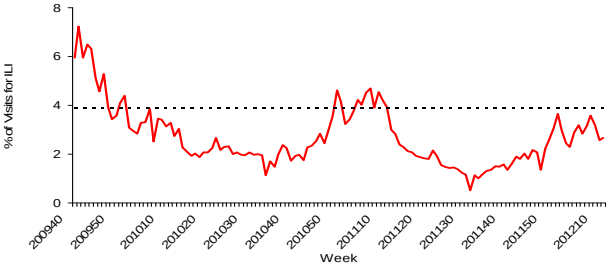
Region 8 - CO, MT, ND, SD, UT, WY



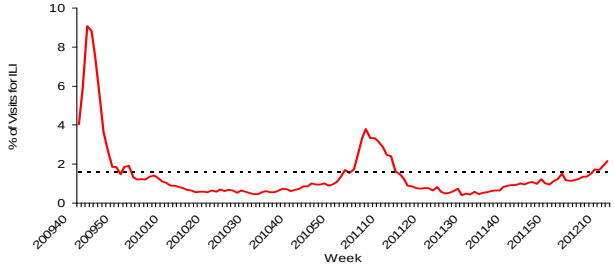
Region 4 - AL, FL, GA, KY, MS, NC, SC, TN



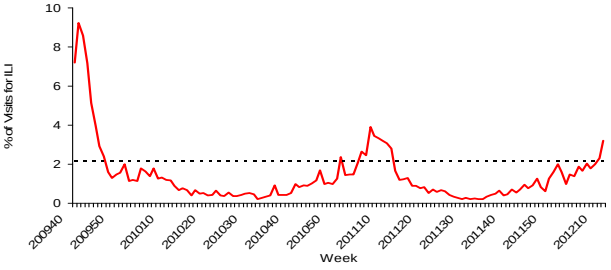
Region 9 - AZ, CA, HI, NV



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



Region 10 - AK, ID, OR, WA



NOTE: Scales differ between regions

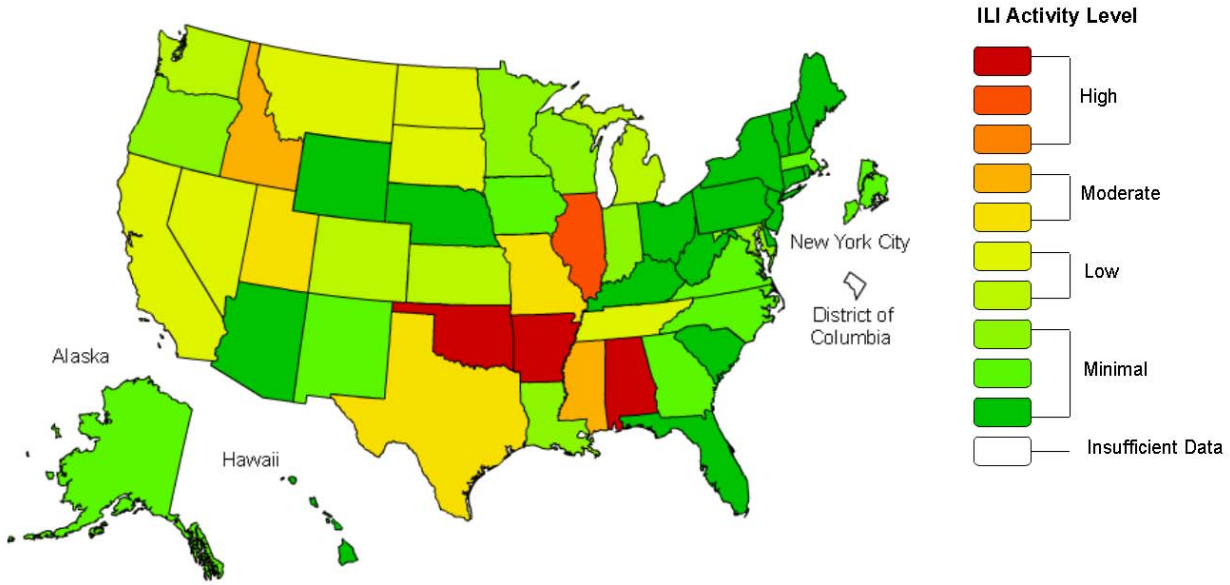
*Use of the regional baselines for state data is not appropriate.

ILINet State 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 corresponds to ILI activity being below average, to intense, which corresponds to ILI activity being much higher than average. Because the clinical definition of ILI is very general, not all ILI is caused by influenza; however, when combined with laboratory data, the information on ILI activity provides a clearer picture of influenza activity in the United States.

During week 11, the following ILI activity levels were experienced:

- Four states experienced high ILI activity (Alabama, Arkansas, Illinois, and Oklahoma).
- Five states experienced moderate ILI activity (Idaho, Mississippi, Missouri, Texas, and Utah).
- Ten states experienced low ILI activity (California, Colorado, Kansas, Michigan, Montana, Nevada, North Dakota, South Dakota, Tennessee, and Washington).
- New York City and 31 states experienced minimal ILI activity (Alaska, Arizona, Connecticut Delaware, Florida, Georgia, Hawaii, Indiana, Iowa, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Minnesota, Nebraska, New Hampshire, New Jersey, New Mexico, New York, North Carolina, Ohio, Oregon, Pennsylvania, Rhode Island, South Carolina, Vermont, Virginia, West Virginia, Wisconsin, and Wyoming).
- Data were insufficient to calculate an ILI activity level from the District of Columbia.

Influenza-Like Illness (ILI) Activity Level Indicator Determined by Data Reported to ILINet
2011-12 Influenza Season Week 11 ending Mar 17, 2012

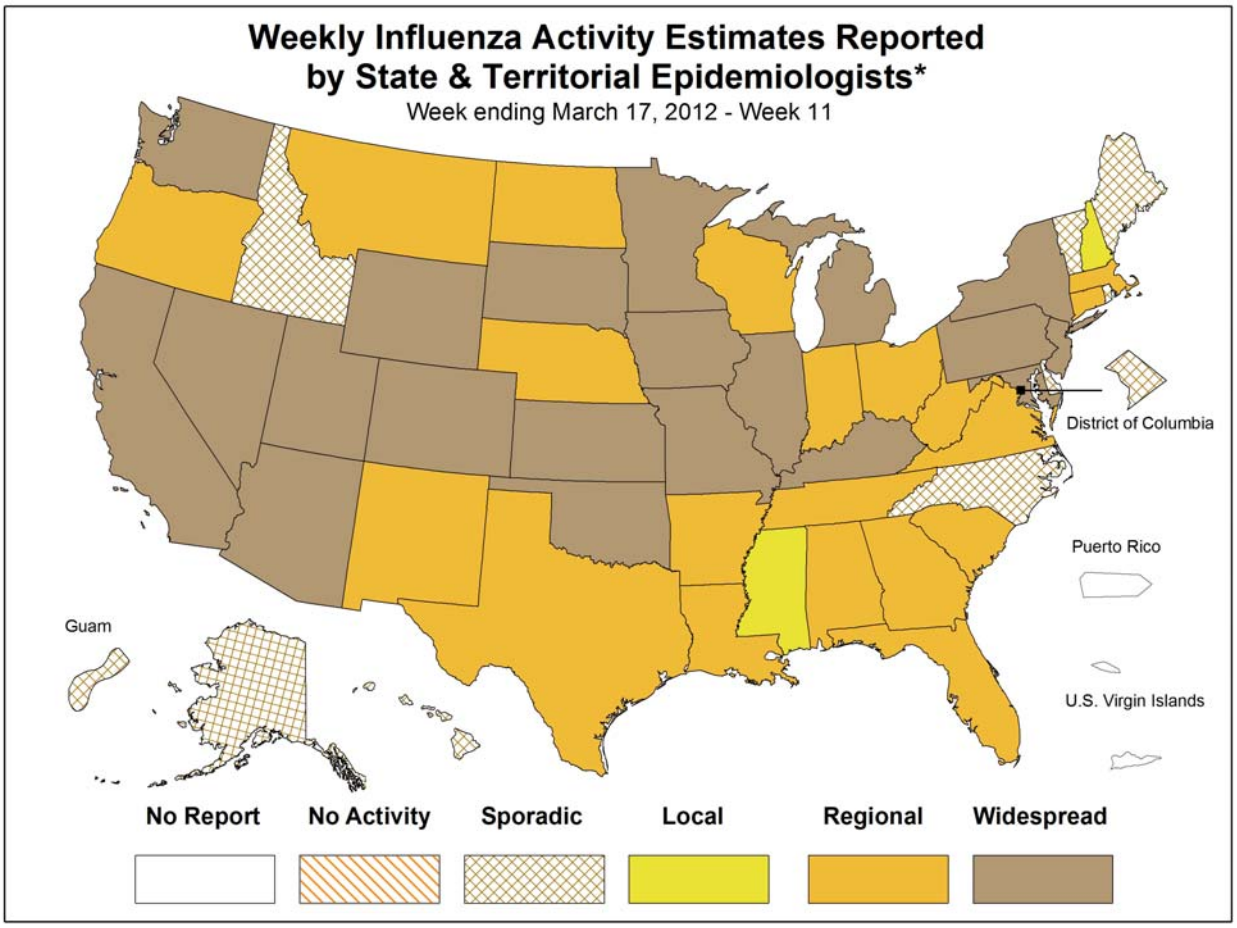


*This map uses the proportion of outpatient visits to health care providers for influenza-like illness to measure the ILI activity level within a state. It does not, however, measure the extent of geographic spread of flu within a state. Therefore, outbreaks occurring in a single city could cause the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

During week 11, the following influenza activity was reported:

- Widespread influenza activity was reported by 20 states (Arizona, California, Colorado, Illinois, Iowa, Kansas, Kentucky, Maryland, Michigan, Minnesota, Missouri, Nevada, New Jersey, New York, Oklahoma, Pennsylvania, South Dakota, Utah, Washington, and Wyoming).
- Regional influenza activity was reported by 20 states (Alabama, Arkansas, Connecticut, Florida, Georgia, Indiana, Louisiana, Massachusetts, Montana, Nebraska, New Mexico, North Dakota, Ohio, Oregon, South Carolina, Tennessee, Texas, Virginia, West Virginia, and Wisconsin).
- Local influenza activity was reported by 2 states (Mississippi and New Hampshire).
- Sporadic influenza activity was reported by the District of Columbia, Guam, and 8 states (Alaska, Delaware, Hawaii, Idaho, Maine, North Carolina, Rhode Island, 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

A description of surveillance methods is available at: http://www.cdc.gov/flu/weekly/overview.htm
Report prepared: March 23, 2012.

Additional National and International Influenza Surveillance Information

Distribute Project: Additional information on the Distribute syndromic surveillance project, developed and piloted by the International Society for Disease Surveillance (ISDS), now working in collaboration with CDC to enhance and support Emergency Department (ED) surveillance, is available at http://isdsdistribute.org/.

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/.

Europe: For the most recent influenza surveillance information from Europe, please see WHO/Europe at http://www.euroflu.org/index.php and visit 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/.

World Health Organization FluNet: Additional influenza surveillance information from participating WHO member nations is available through FluNet and the Global Epidemiology Reports.