

2011-2012 Influenza Season Week 12 ending March 24, 2012

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

Synopsis: During week 12 (March 18-24, 2012), influenza activity was elevated in some areas of the United States, but remained relatively low nationally.

- **U.S. Virologic Surveillance:** Of the 4,624 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, 908 (19.6%) 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:** Four influenza-associated pediatric deaths were reported and were associated with 1 2009 H1N1 and 3 influenza A viruses for which the subtype was not determined.
- **Outpatient Illness Surveillance:** The proportion of outpatient visits for influenza-like illness (ILI) was 2.0%, which is below the national baseline of 2.4%. Regions 5 and 10 reported ILI above region-specific baseline levels. Three states experienced moderate ILI activity; 6 states experienced low ILI activity; New York City and 41 states experienced minimal ILI activity, and the District of Columbia had insufficient data to calculate ILI activity.
- **Geographic Spread of Influenza:** Sixteen states reported widespread geographic activity; 21 states reported regional influenza activity; 9 states reported local activity; the District of Columbia, Guam, Puerto Rico, and 4 states reported sporadic activity, and the U.S. Virgin Islands reported no influenza activity.

National and Regional Summary of Select Surveillance Components

HHS Surveillance Regions*	Data for current week			Data cumulative since October 2, 2011 (Week 40)				
	Out-patient ILI†	% of respiratory specimens positive for flu‡	Number of jurisdictions reporting regional or widespread activity§	A (H3)	2009 H1N1	A (Subtyping not performed)	B	Pediatric Deaths
Nation	Normal	19.6%	37 of 54	6,491	1,981	3,436	939	12
Region 1	Normal	13.7%	5 of 6	100	41	30	46	0
Region 2	Normal	23.9%	2 of 4	140	116	99	65	0
Region 3	Normal	22.0%	1 of 6	393	68	101	87	0
Region 4	Normal	16.0%	3 of 8	418	128	850	210	3
Region 5	Elevated	56.8%	6 of 6	1,925	158	89	155	1
Region 6	Normal	22.0%	3 of 5	187	293	618	97	4
Region 7	Normal	42.1%	4 of 4	1,155	124	327	21	0
Region 8	Normal	26.2%	6 of 6	990	287	1,004	45	0
Region 9	Normal	31.7%	3 of 5	881	613	295	109	4
Region 10	Elevated	20.3%	4 of 4	302	153	23	104	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.

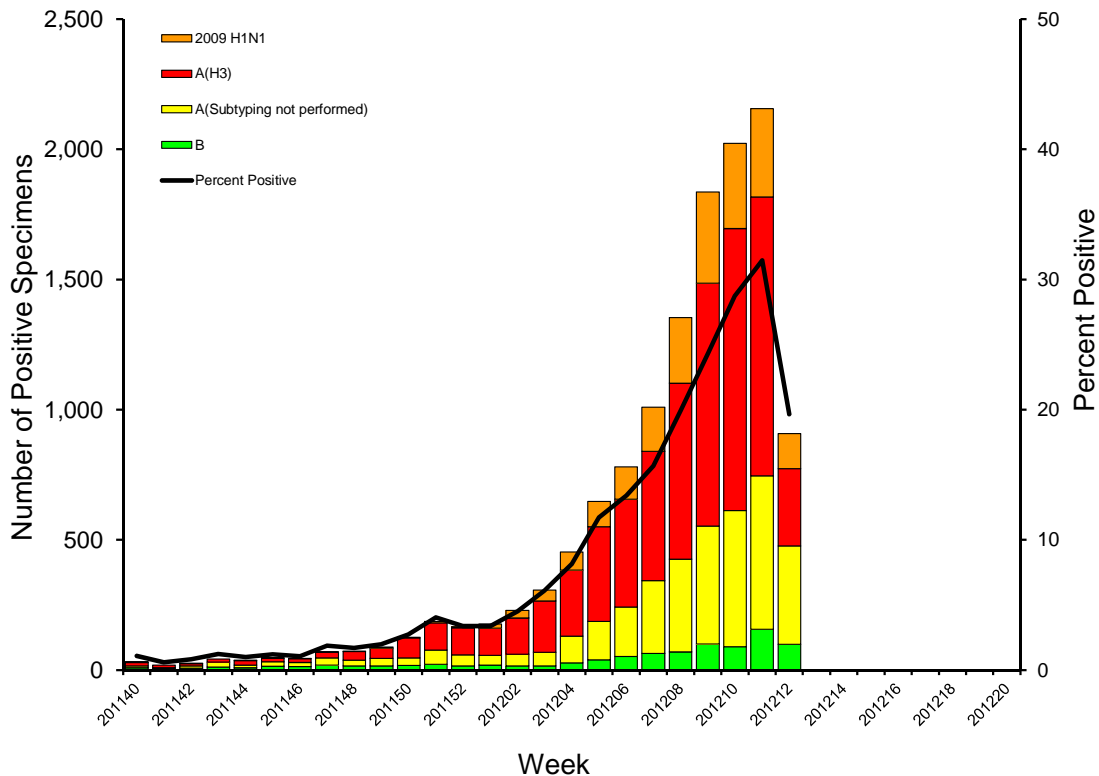
§ Includes all 50 states, the District of Columbia, Guam, Puerto Rico, and the U.S. Virgin Islands.

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 12
No. of specimens tested	4,624
No. of positive specimens (%)	908 (19.6%)
Positive specimens by type/subtype	
Influenza A	809 (89.1%)
2009 H1N1	135 (16.7%)
Subtyping not performed	296 (36.6%)
(H3)	378 (46.7%)
Influenza B	99 (10.9%)

Predominant influenza viruses 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, 2009 H1N1 viruses continue to circulate in several regions. The timing of influenza activity also can vary by region. While influenza activity may have peaked and be declining in some states or regions, other areas may not yet have reached their peak activity level. Influenza viruses circulate year-round and substantial activity may occur as late as May.

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



Antigenic Characterization: CDC has antigenically characterized 918 influenza viruses [240 2009 H1N1 viruses, 561 influenza A (H3N2) viruses, and 117 influenza B viruses] collected by U.S. laboratories since October 1, 2011.

2009 H1N1 [240]

- Two hundred thirty-eight (99.2%) of the 240 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 (0.8%) tested showed reduced titers with antiserum produced against A/California/7/2009.

Influenza A (H3N2) [561]

- Four hundred thirty-one (76.8%) of the 561 viruses were characterized as A/Perth/16/2009-like, the influenza A (H3N2) component of the 2011-2012 influenza vaccine for the Northern Hemisphere.
- One hundred thirty viruses (23.2%) 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 influenza vaccines, and FDA's Vaccines and Related Biological Products Advisory Committee (VRBPAC) has made recommendations for the composition of the 2012-2013 U.S. influenza vaccines. 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.

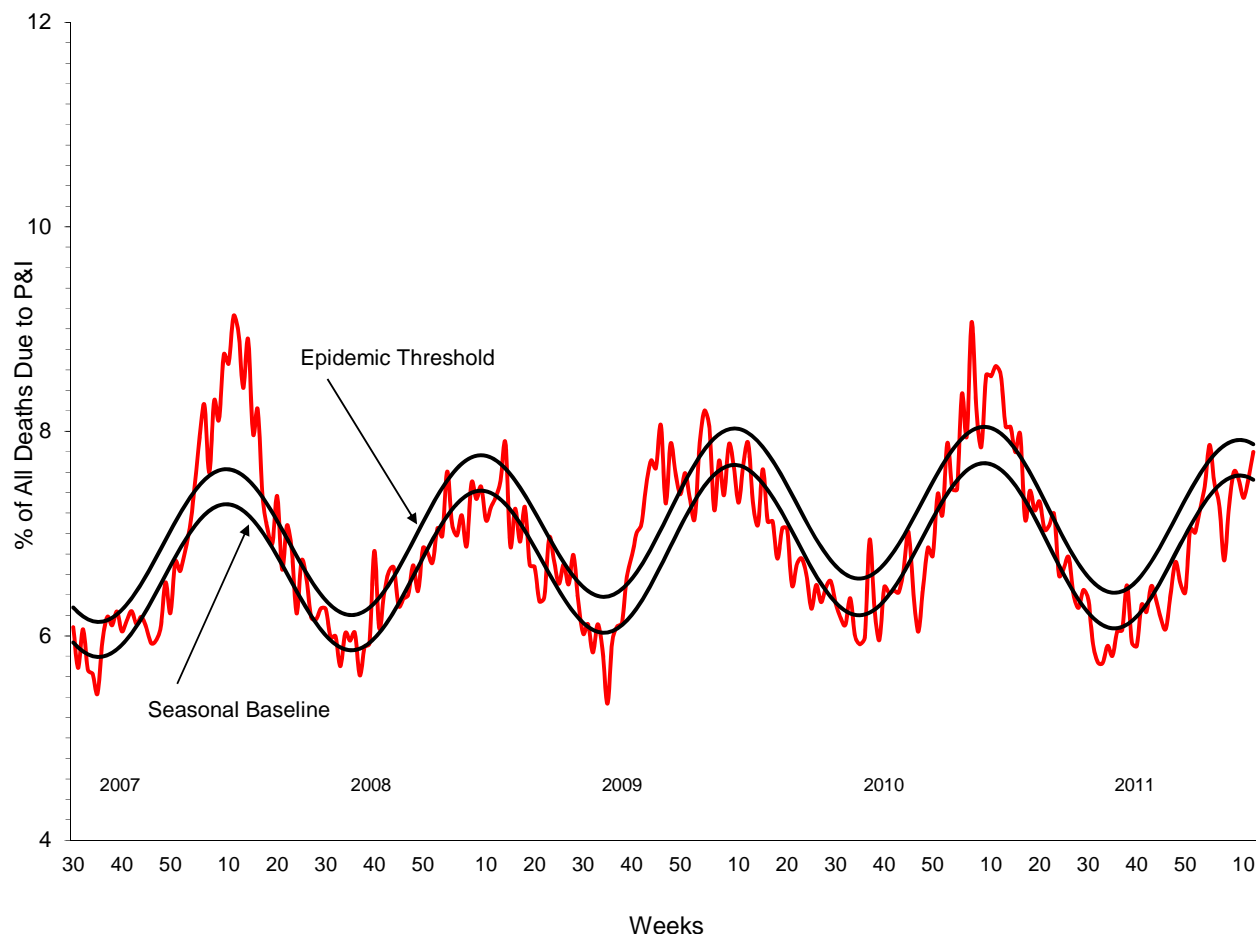
**Neuraminidase Inhibitor Resistance Testing Results
on Samples Collected Since October 1, 2011.**

	Oseltamivir		Zanamivir	
	Virus Samples Tested (n)	Resistant Viruses, Number (%)	Virus Samples Tested (n)	Resistant Viruses, Number (%)
Influenza A (H3N2)	638	0 (0.0)	637	0 (0.0)
Influenza B	135	0 (0.0)	135	0 (0.0)
2009 H1N1	299	4 (1.3)	202	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>.

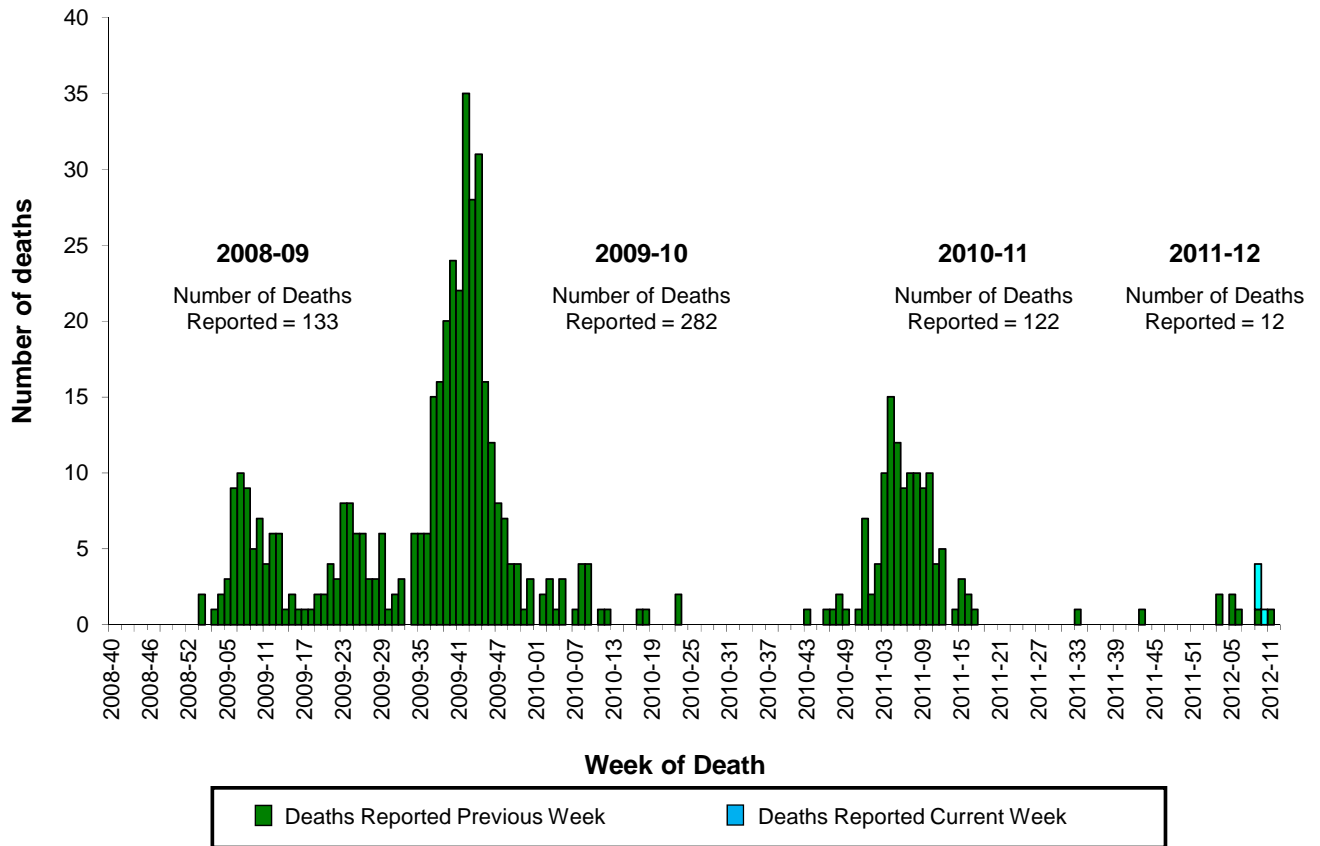
Pneumonia and Influenza (P&I) Mortality Surveillance: During week 12, 7.8% of all deaths reported through the 122-Cities Mortality Reporting System were due to P&I. This percentage was below the epidemic threshold of 7.9% for week 12.

Pneumonia and Influenza Mortality for 122 U.S. Cities Week ending 3/24/2012



Influenza-Associated Pediatric Mortality: Four influenza-associated pediatric deaths were reported to CDC during week 12 and were associated with one 2009 H1N1 and three influenza A viruses for which the subtype was not determined. The deaths reported during week 12 occurred during the weeks ending March 3, 2012 (week 9) and March 10, 2012 (week 10). This brings the total number of influenza-associated pediatric deaths reported during the 2011-2012 season to 12.

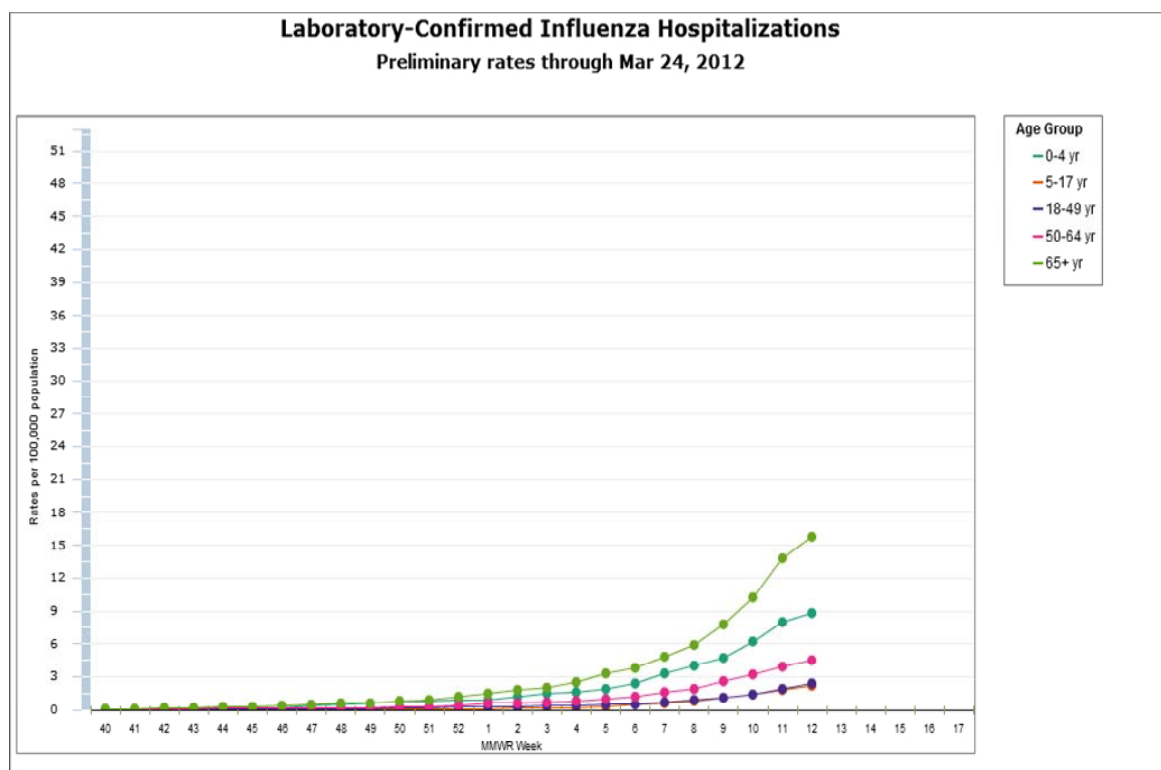
Number of Influenza-Associated Pediatric Deaths by Week of Death:
2008-09 season to present



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).

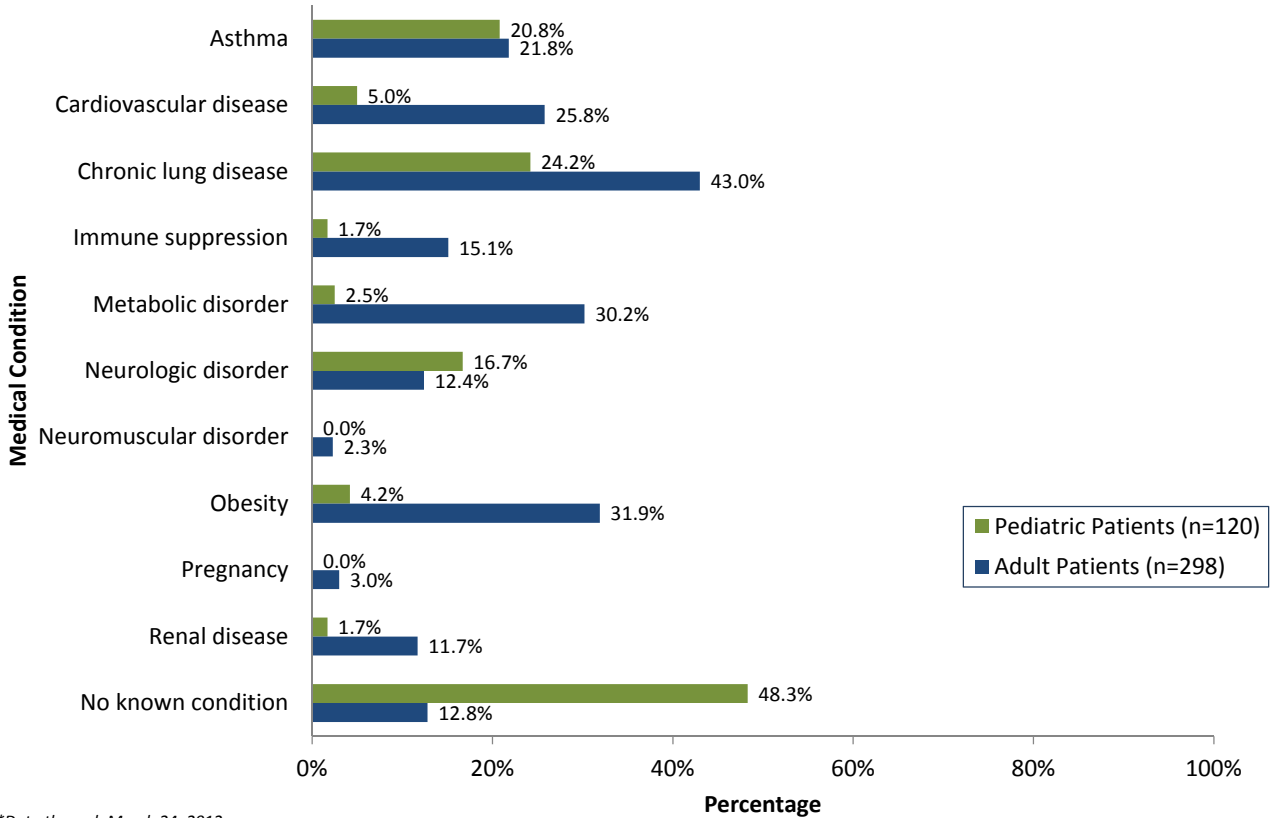
The FluSurv-NET covers more than 80 counties in the 10 Emerging Infections Program (EIP) states (CA, CO, CT, GA, MD, MN, NM, NY, OR, TN) and additional Influenza Hospitalization Surveillance Project (IHSP) states. The IHSP began during the 2009-2010 season to enhance surveillance during the 2009 H1N1 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 24, 2012, 1,293 laboratory-confirmed influenza-associated hospitalizations were reported at a rate of 4.7 per 100,000 population. Among cases, 1,166 (90.2%) were influenza A, 110 (8.5%) were influenza B, and 3 (0.2%) were influenza A and B co-infections; 14 (1.1%) had no virus type information. Among those with influenza A subtype information, 396 (72.7%) were H3N2 and 144 (26.4%) were 2009 H1N1. The most commonly reported underlying medical conditions among adults were chronic lung diseases, obesity and metabolic disorders. 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 conditions¹ among laboratory-confirmed influenza-associated hospitalizations, FluSurv-NET, 2011-2012²

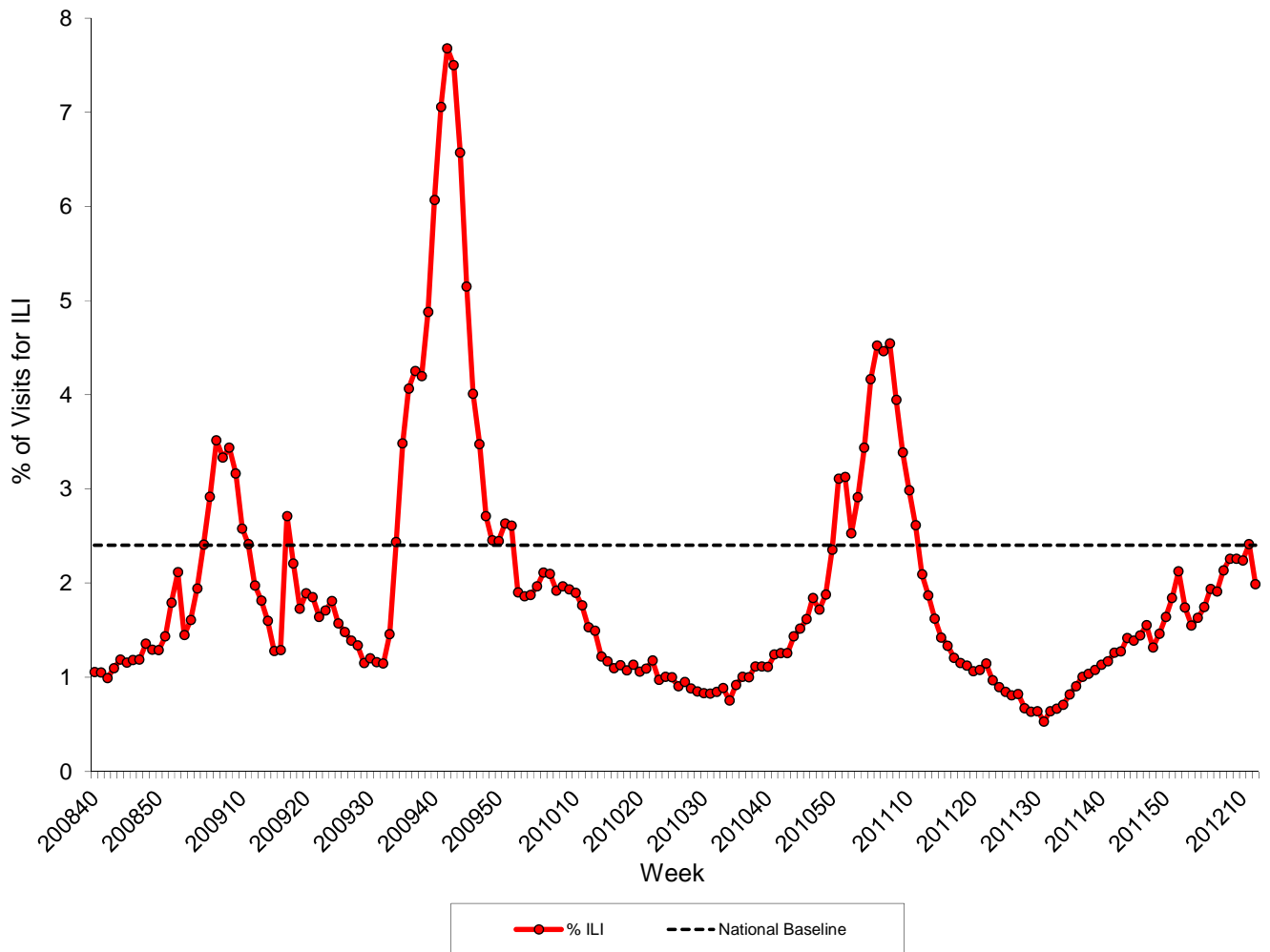


¹Asthma includes a diagnosis of asthma or reactive airway disease; Cardiovascular diseases include conditions such as coronary heart disease, cardiac valve disorders, congestive heart failure, pulmonary hypertension, and aortic stenosis; Chronic lung diseases include conditions such as bronchiolitis 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/m²; Renal diseases include conditions such as acute or chronic renal failure, nephrotic syndrome, glomerulonephritis, and impaired creatinine clearance.

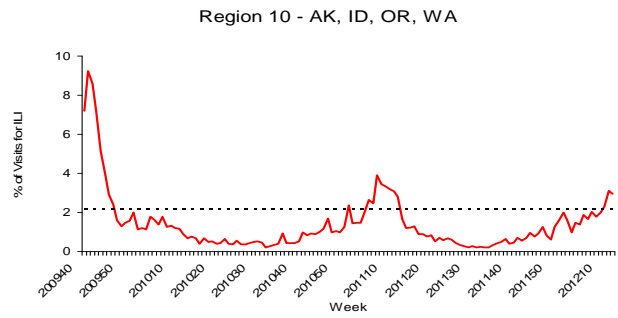
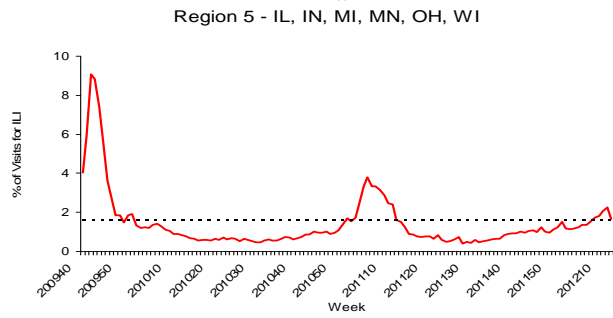
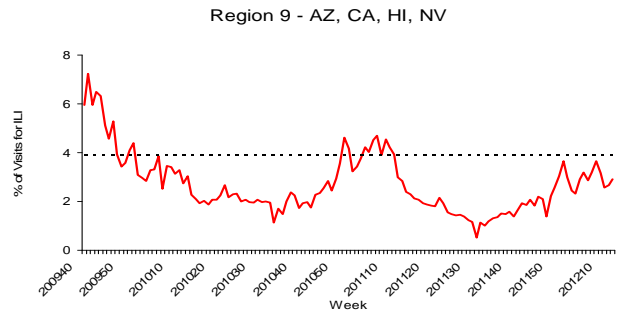
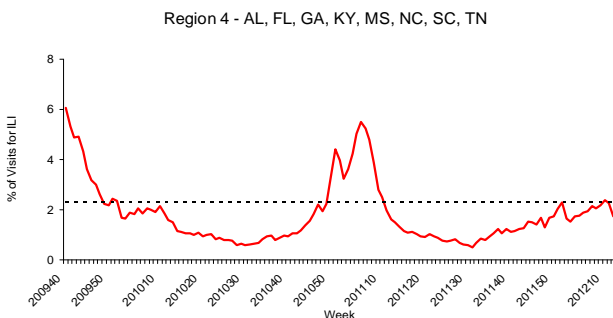
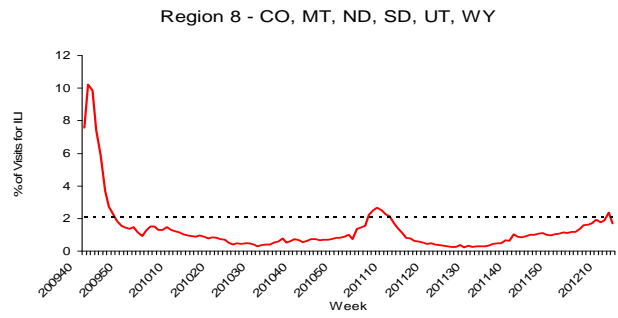
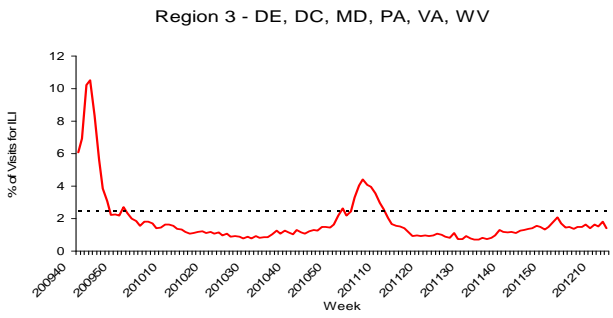
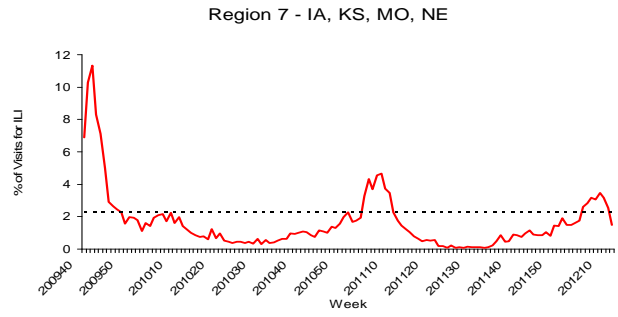
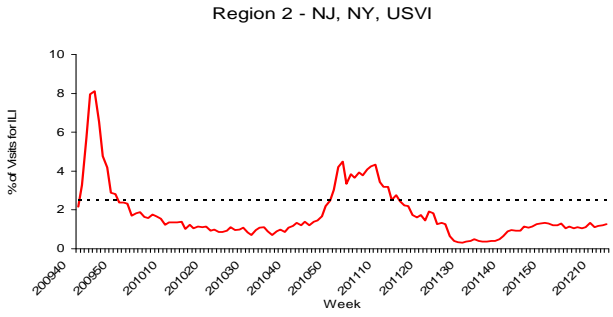
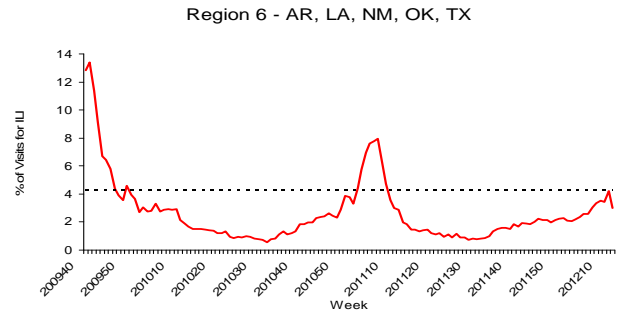
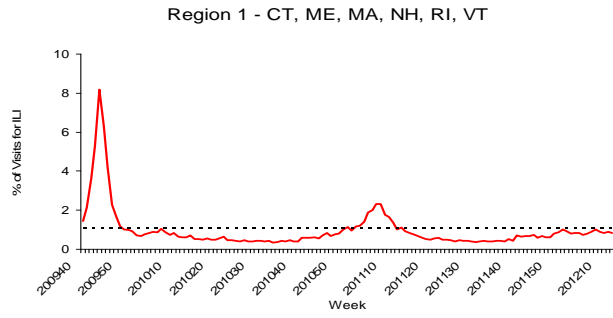
²Only includes cases for which data collection has been completed through the medical chart review stage.

Outpatient Illness Surveillance: Nationwide during week 12, 2.0% 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 below 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 24, 2012



On a regional level, the percentage of outpatient visits for ILI ranged from 0.8% to 3.0% during week 12. Regions 5 and 10 reported a proportion of outpatient visits for ILI above region-specific baseline levels.



NOTE: Scales differ between regions

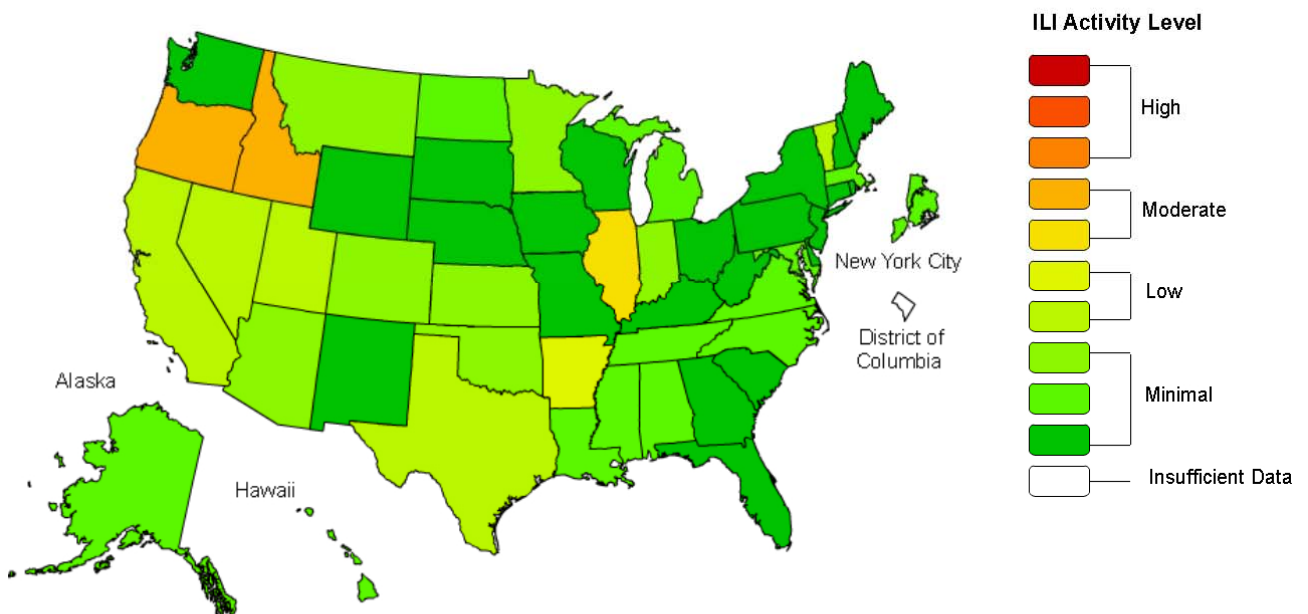
*Use of the regional baselines for state data is not appropriate.

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 12, the following ILI activity levels were experienced:

- Three states experienced moderate ILI activity (Idaho, Illinois, and Oregon).
- Six states experienced low ILI activity (Arkansas, California, Nevada, Texas, Utah, and Vermont).
- New York City and 41 states experienced minimal ILI activity (Alabama, Alaska, Arizona, Colorado, Connecticut, Delaware, Florida, Georgia, Hawaii, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Virginia, Washington, 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 12 ending Mar 24, 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.

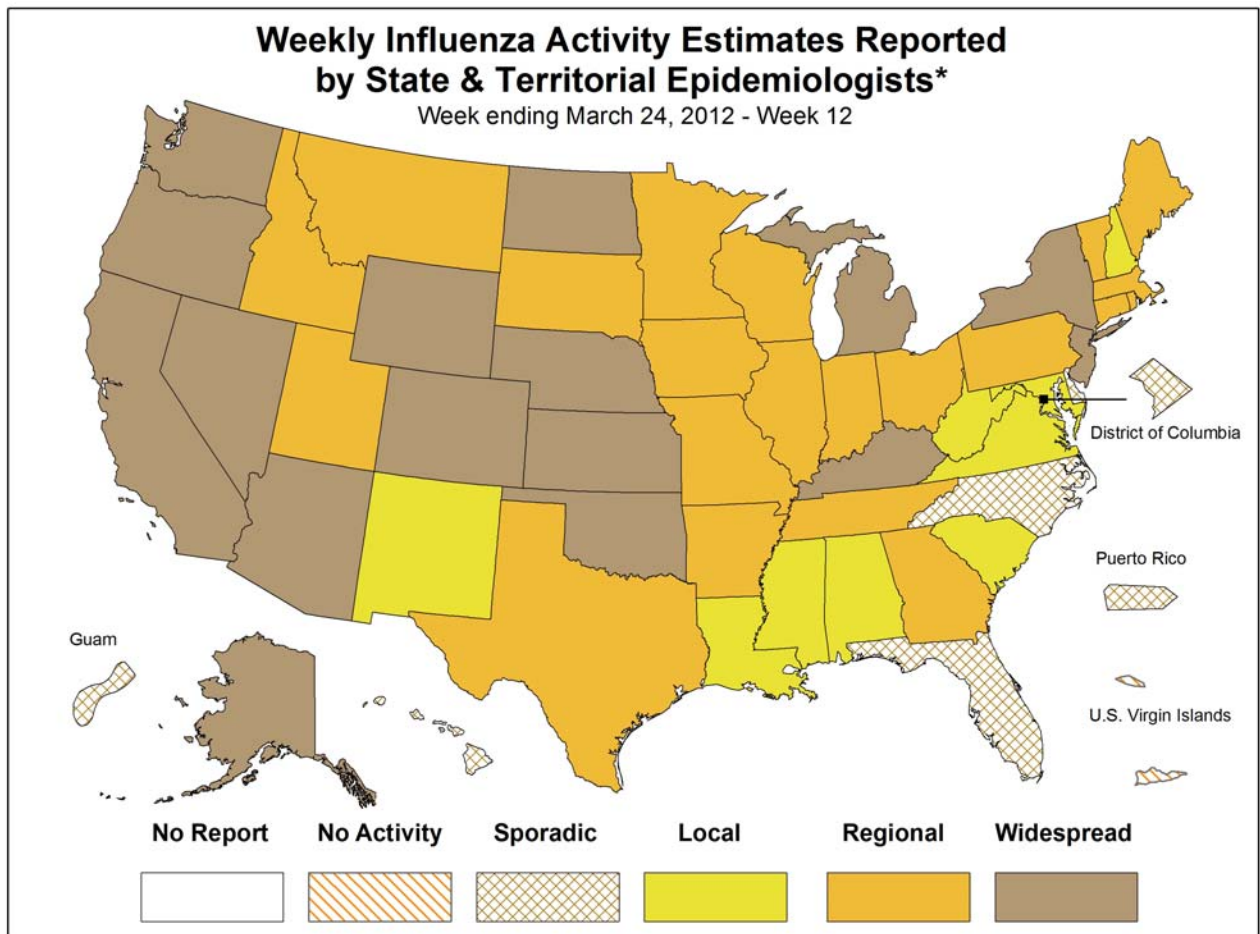
Data displayed in this map are based on data collected in ILINet, whereas the State and Territorial flu activity map is based on reports from state and territorial epidemiologists. The data presented in this map is preliminary and may change as more data is received.

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 intensity of influenza activity.

During week 12, the following influenza activity was reported:

- Widespread influenza activity was reported by 16 states (Alaska, Arizona, California, Colorado, Kansas, Kentucky, Michigan, Nebraska, Nevada, New Jersey, New York, North Dakota, Oklahoma, Oregon, Washington, and Wyoming).
- Regional influenza activity was reported by 21 states (Arkansas, Connecticut, Georgia, Idaho, Illinois, Indiana, Iowa, Maine, Massachusetts, Minnesota, Missouri, Montana, Ohio, Pennsylvania, Rhode Island, South Dakota, Tennessee, Texas, Utah, Vermont, and Wisconsin).
- Local influenza activity was reported by 9 states (Alabama, Louisiana, Maryland, Mississippi, New Hampshire, New Mexico, South Carolina, Virginia, and West Virginia).
- Sporadic influenza activity was reported by the District of Columbia, Guam, Puerto Rico, and 4 states (Delaware, Florida, Hawaii, and North Carolina).
- 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: March 30, 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://isdistribute.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](#).