

2010-2011 Influenza Season Week 16 ending April 23, 2011

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

Synopsis: During week 16 (April 17-23, 2011), influenza activity in the United States continued to decrease.

- Of the 2,072 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, 88 (4.3%) were positive for influenza.
- The proportion of deaths attributed to pneumonia and influenza (P&I) has been at or above the epidemic threshold for 13 consecutive weeks.
- Two influenza-associated pediatric deaths were reported, bringing the season total to 97. Both of these deaths were associated with an influenza B virus.
- The proportion of outpatient visits for influenza-like illness (ILI) was 1.3%, which is below the national baseline of 2.5%. Region 2 reported ILI above its region-specific baseline. All 50 states and New York City experienced minimal ILI activity, and the District of Columbia had insufficient data to calculate an ILI activity level.
- The geographic spread of influenza in four states was reported as regional; the District of Columbia and 10 states reported local influenza activity; Puerto Rico and 32 states reported sporadic influenza activity, and the U.S. Virgin Islands, Guam, and four states reported no influenza activity.

National and Regional Summary of Select Surveillance Components

HHS Surveillance Regions*	Data for current week			Data cumulative since October 3, 2010 (Week 40)				
	Out-patient ILI†	% positive for flu‡	Number of jurisdictions reporting regional or widespread activity§	A (H3)	2009 A (H1N1)	A (Subtyping not performed)	B	Pediatric Deaths
Nation	Normal	4.3%	4 of 54	16,728	10,867	11,296	13,609	97
Region 1	Normal	17.3%	3 of 6	1,709	912	96	448	3
Region 2	Elevated	10.7%	1 of 4	755	365	1,111	453	11
Region 3	Normal	9.9%	0 of 6	2,970	2,568	858	1,013	10
Region 4	Normal	3.1%	0 of 8	1,467	1,430	3,150	3,953	16
Region 5	Normal	21.6%	0 of 6	2,092	1,531	447	1,303	18
Region 6	Normal	1.4%	0 of 5	2,186	562	2,306	2,565	17
Region 7	Normal	4.4%	0 of 4	712	539	286	675	1
Region 8	Normal	6.8%	0 of 6	1,731	687	2,118	1,876	7
Region 9	Normal	4.8%	0 of 5	1,994	1,464	745	1,191	12
Region 10	Normal	13.5%	0 of 4	1,112	809	179	132	2

*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.

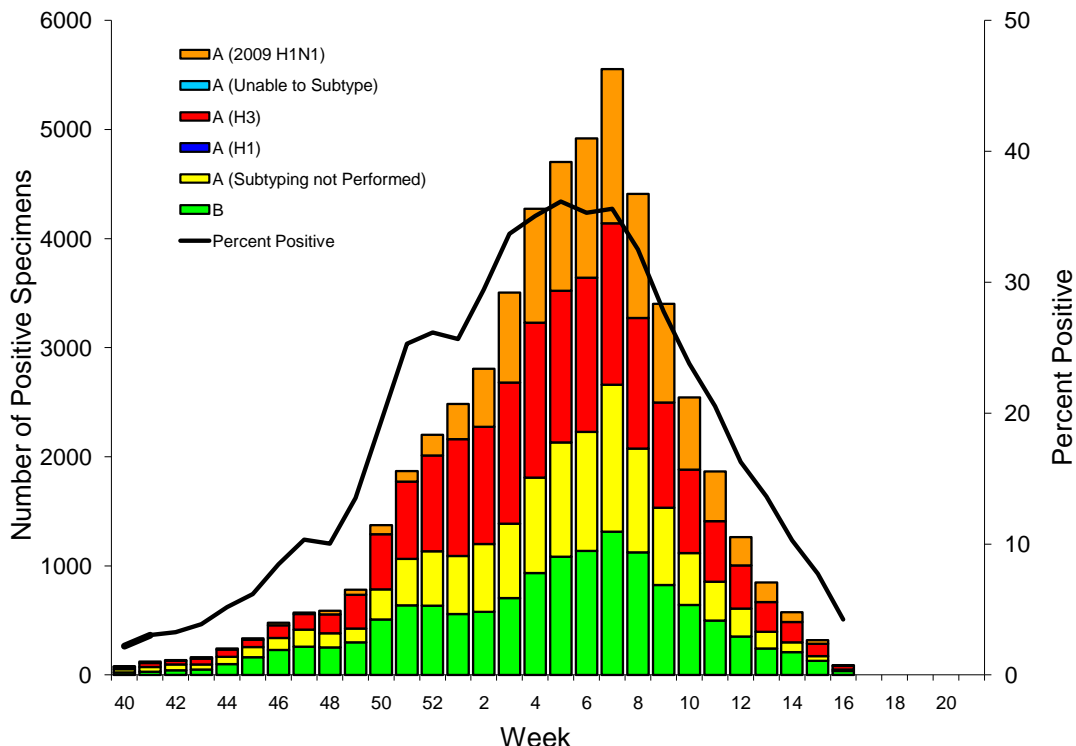
§ Includes all 50 states, the District of Columbia, Guam, Puerto Rico, and the U.S. Virgin Islands.

U.S. Virologic Surveillance: WHO and NREVSS collaborating laboratories located in all 50 states and Washington, D.C., 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 16
No. of specimens tested	2,072
No. of positive specimens (%)	88 (4.3%)
Positive specimens by type/subtype	
Influenza A	50 (56.8%)
A (2009 H1N1)	5 (10.0%)
A (subtyping not performed)	13 (26.0%)
A (H3)	32 (64.0%)
Influenza B	38 (43.2%)

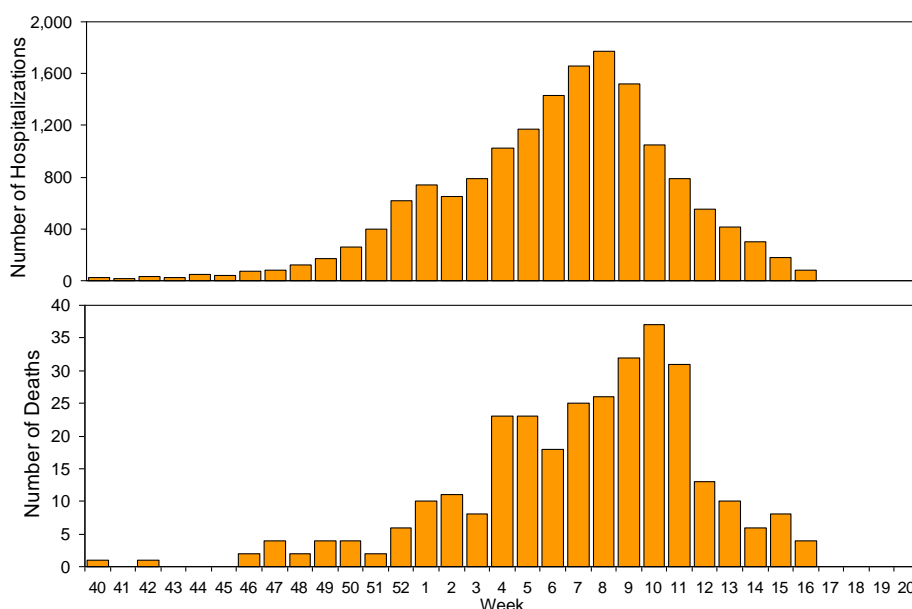
All influenza types and subtypes were identified at high levels this season, but in recent weeks have circulated at much lower levels. The predominant virus has varied by week, region, and even between states within the same region. In recent weeks the proportion of influenza B viruses identified nationally and in some regions has been increasing and in week 16 five of the 10 regions (Regions 1, 2, 6, 7, and 8) identified at least half of all influenza-positive specimens as influenza B viruses.

Influenza Positive Tests Reported to CDC by U.S. WHO/NREVSS Collaborating Laboratories, National Summary, 2010-11 Season



Aggregate Hospitalization and Death Reporting Activity (AHDRA): This system tracks weekly counts of laboratory-confirmed influenza-associated hospitalizations and deaths and was implemented on August 30, 2009, during the 2009 H1N1 pandemic, and ended on April 4, 2010. AHDRA surveillance during the 2010-11 season has continued on a voluntary basis, and 19 jurisdictions reported during week 16. From October 3, 2010 – April 23, 2011, 16,033 laboratory-confirmed influenza-associated hospitalizations and 311 laboratory-confirmed influenza-associated deaths were reported to CDC.

Weekly Laboratory-Confirmed Influenza-Associated Hospitalizations and Deaths, National Summary, 2010-11 Season



Antigenic Characterization: CDC has antigenically characterized 2,088 influenza viruses [490 2009 influenza A (H1N1) viruses, 952 influenza A (H3N2) viruses, and 646 influenza B viruses] collected by U.S. laboratories since October 1, 2010.

2009 Influenza A (H1N1) [490]

- Four hundred eighty-nine (99.8%) of the 490 tested were characterized as A/California/7/2009-like, the influenza A (H1N1) component of the 2010-11 influenza vaccine for the Northern Hemisphere. One virus (0.2%) of the 490 tested showed reduced titers with antiserum produced against A/California/7/2009.

Influenza A (H3N2) [952]

- Nine hundred nineteen (96.5%) of the 952 tested were characterized as A/Perth/16/2009-like, the influenza A (H3N2) component of the 2010-11 influenza vaccine for the Northern Hemisphere. Thirty-three viruses (3.5%) of the 952 tested showed reduced titers with antiserum produced against A/Perth/16/2009.

Influenza B (B/Victoria/02/87 and B/Yamagata/16/88 lineages) [646]

Victoria Lineage [608]

- Six hundred eight (94.1%) of the 646 influenza B viruses tested belong to the B/Victoria lineage of viruses.
 - Six hundred seven (99.8%) of these 608 viruses were characterized as B/Brisbane/60/2008-like, the recommended influenza B component for the 2010-11 Northern Hemisphere influenza vaccine.
 - One (0.2%) of these 608 viruses showed somewhat reduced titers with antisera produced against B/Brisbane/60/2008.

Yamagata Lineage [38]

- Thirty-eight (5.9%) of the 646 viruses were identified as belonging to the B/Yamagata lineage of viruses.

Antiviral Resistance: Testing of 2009 influenza A (H1N1), influenza A (H3N2), and influenza B virus isolates for resistance to the 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 known mutation in the neuraminidase protein of the virus that confers oseltamivir resistance (H275Y). The data summarized in the table below combine the results of both test methods and include samples that were tested as part of routine surveillance purposes; it does not include diagnostic testing specifically done because of clinical suspicion of antiviral resistance.

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) circulating globally. As a result of the sustained high levels of resistance, data from adamantane resistance testing are not presented weekly in the table below.

Neuraminidase Inhibitor Resistance Testing Results on Samples Collected Since October 1, 2010.

	Virus Samples tested (n)	Resistant Viruses, Number (%)	Virus Samples tested (n)	Resistant Viruses, Number (%)
		Oseltamivir		Zanamivir
Seasonal Influenza A (H1N1)	0	0 (0.0)	0	0 (0.0)
Influenza A (H3N2)	683	2 (0.3)	681	0 (0.0)
Influenza B	607	0 (0.0)	607	0 (0.0)
2009 Influenza A (H1N1)	2,999*	29 (1.0)	441	0 (0.0)

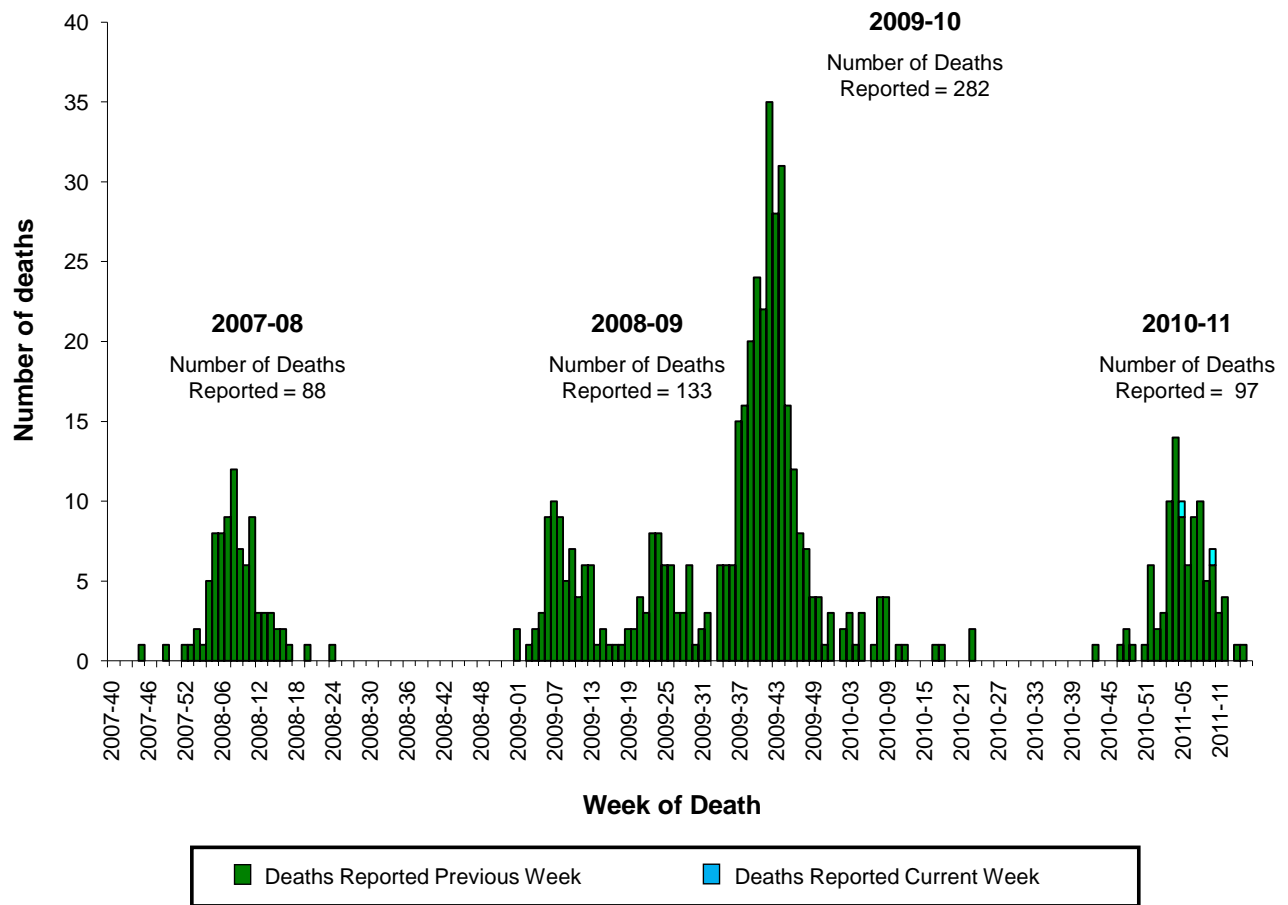
*Includes specimens tested in national surveillance and additional specimens tested at public health laboratories in six states (CA, ME, MD, MN, TX, and WA) who share testing results with CDC.

To prevent the spread of antiviral resistant virus strains, CDC reminds clinicians and the public of the need to continue hand and cough hygiene measures for the duration of any symptoms of influenza, even while taking antiviral medications. Additional information on antiviral recommendations for treatment and chemoprophylaxis of influenza virus infection is available at <http://www.cdc.gov/flu/antivirals/index.htm>.

Influenza-Associated Pediatric Mortality: Two influenza-associated pediatric deaths were reported to CDC during week 16. Both of these deaths were associated with an influenza B virus.

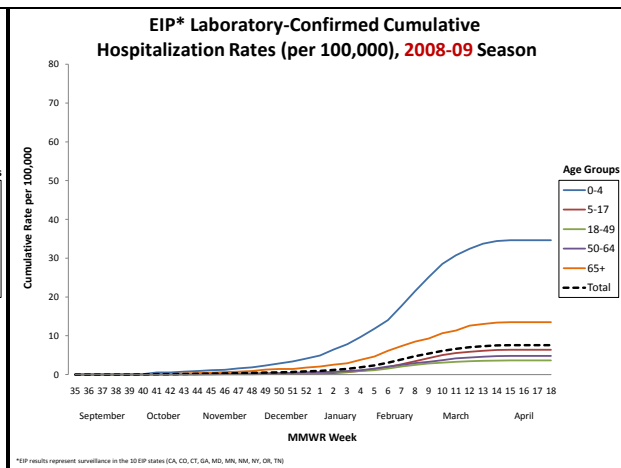
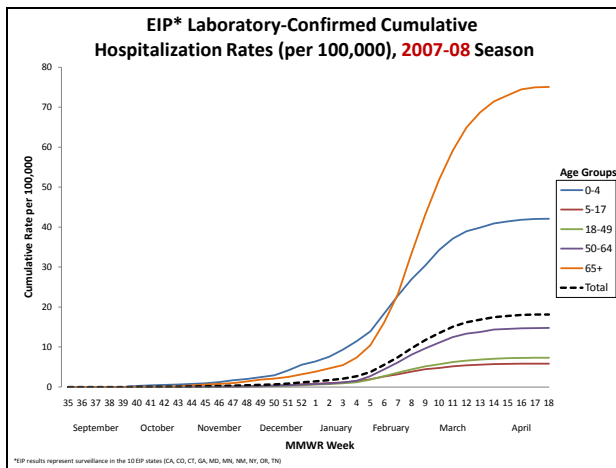
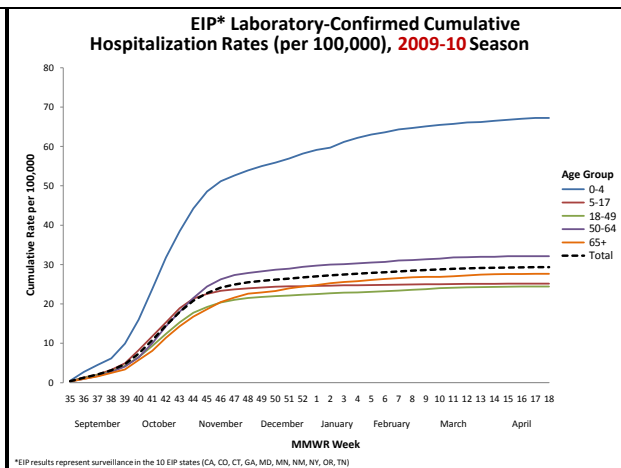
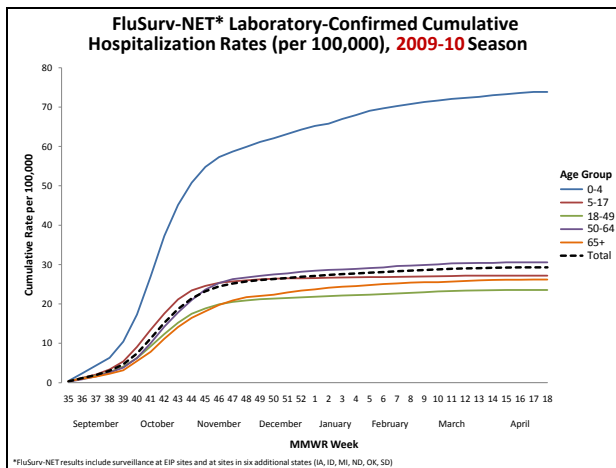
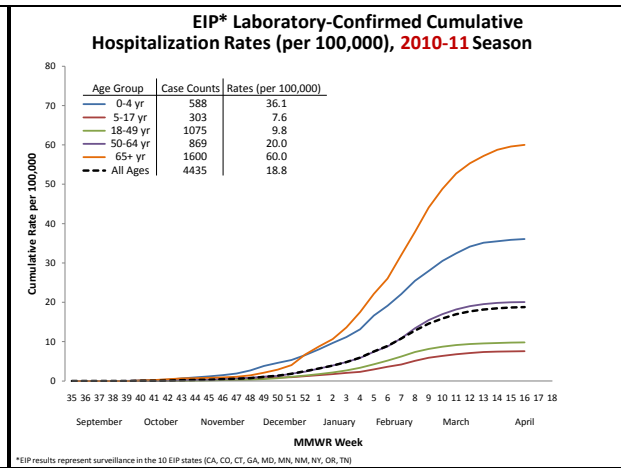
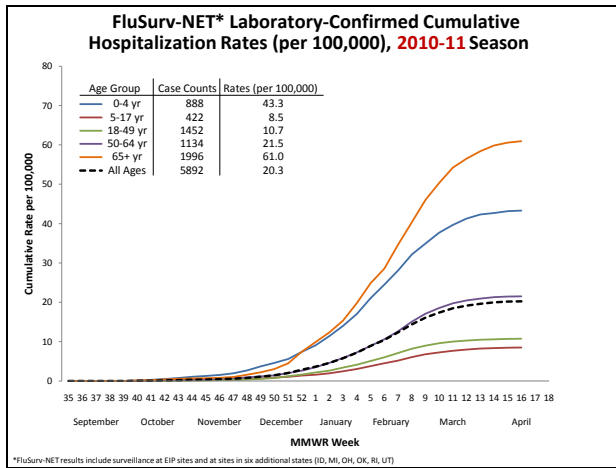
Ninety-seven influenza-associated pediatric deaths from 33 states, Chicago, and New York City have been reported during this influenza season. Thirty-nine of the 97 deaths reported were associated with influenza B viruses; 24 were associated with 2009 influenza A (H1N1) viruses; 17 deaths reported were associated with influenza A (H3N2) viruses, and 17 were associated with an influenza A virus for which the subtype was not determined.

Number of Influenza-Associated Pediatric Deaths by Week of Death:
2007-08 season to present



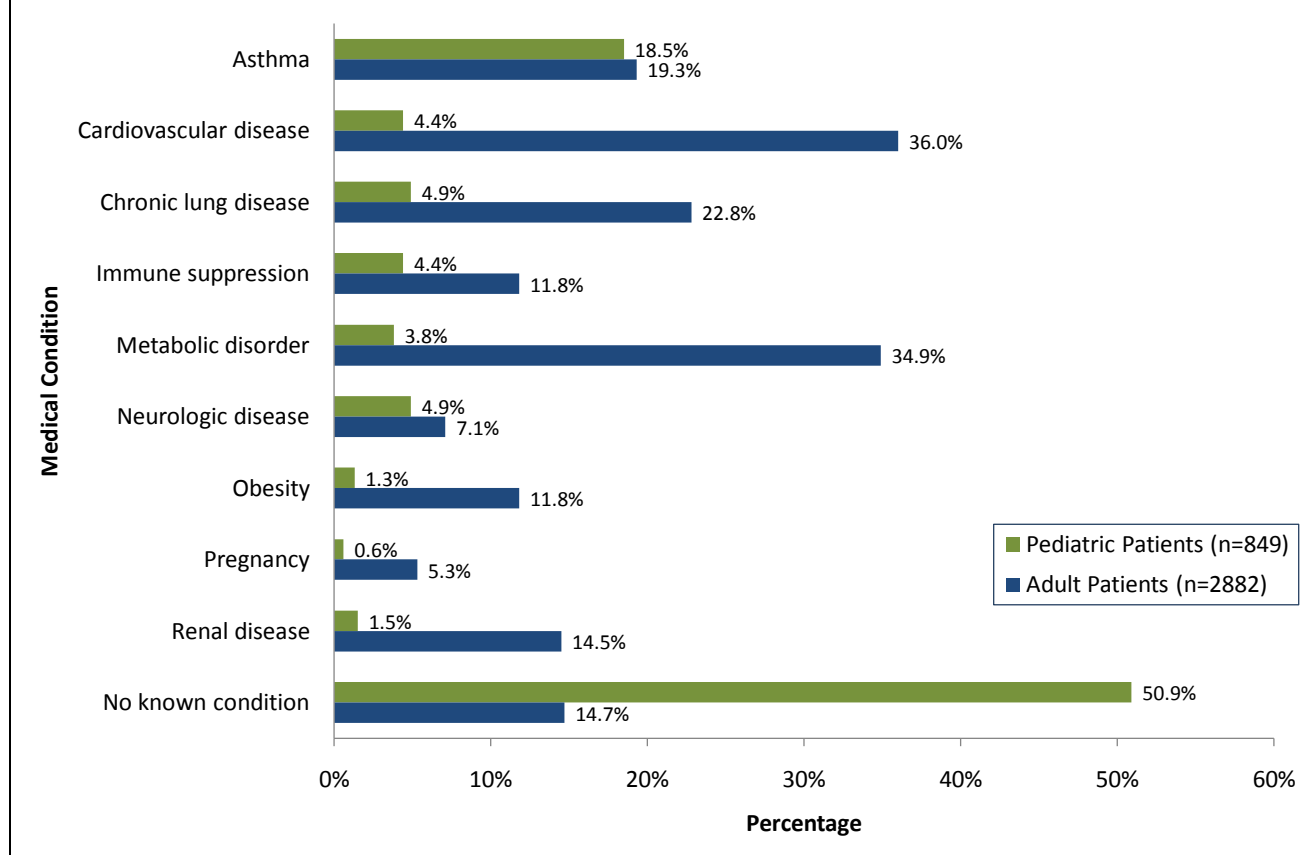
Influenza-Associated Hospitalizations: FluSurv-NET conducts population-based surveillance for laboratory-confirmed influenza-associated hospitalizations in children (persons younger than 18 years) and adults. The current network covers more than 80 counties in the 10 Emerging Infections Program (EIP) states (CA, CO, CT, GA, MD, MN, NM, NY, OR, and TN) and six additional states (ID, MI, OH, OK, RI, and UT).

The current season's rates include cases from October 1, 2010 to April 23, 2011.



Please note the following: (i) The scale of the vertical axis on the Cumulative Hospitalization Rate figures will be adjusted during the season to make the graphs easier to read; (ii) FluSurv-NET was created during the 2009-2010 season when surveillance in six states was added to ongoing surveillance for influenza-associated hospitalizations in 10 EIP states. During the 2009-2010 season, FluSurv-NET included sites in the 10 EIP sites and sites in IA, ID, MI, ND, OK, and SD; (iii) the 2008-2009 EIP season ended April 14, 2009, due to the onset of the 2009 H1N1 pandemic.

Selected underlying medical conditions¹ in patients hospitalized with influenza, FluSurv-NET 2010-2011²



¹Asthma may include a diagnosis of asthma and reactive airway disease; Cardiovascular diseases may include conditions such as coronary heart disease, cardiac valve disorders, congestive heart failure, pulmonary hypertension, and aortic stenosis; Chronic lung diseases may include conditions such as bronchiolitis obliterans, chronic aspiration pneumonia, and interstitial lung disease; Immune suppression may include conditions such as immunoglobulin deficiency, leukemia, lymphoma, HIV/AIDS, and individuals taking immunosuppressive medications; Metabolic disorders may include conditions such as diabetes mellitus, thyroid dysfunction, adrenal insufficiency, and liver disease; Neurologic diseases may include conditions such as seizure disorders, neuromuscular disorders, and cognitive dysfunction; Obesity was defined as a body mass index (BMI) greater than 30 kg/m² in patients 20 years of age or older, or equal to or greater than the 95th percentile of a patient's age and sex category in patients under 20 years of age; Renal diseases may include conditions such as acute or chronic renal failure, nephrotic syndrome, glomerulonephritis, and impaired creatinine clearance.

²Data as of April 26, 2011. Includes 3,731 (of a total 5,917 reported) cases for which data collection has been completed through the medical chart review stage.

Demographic and clinical characteristics of laboratory-confirmed, influenza-associated hospitalizations identified in EIP¹ and FluSurv-NET² sites, 2006-2011

	2010-2011 FluSurv-NET ³ N (%)	2009-2010 FluSurv-NET N (%)	2008-2009 EIP N (%)	2007-2008 EIP N (%)	2006-2007 EIP N (%)
Total Cases	5,917	7,517	1,698	3,930	1,279
Age in Years					
0-4	889 (15.0)	1,326 (17.6)	549 (32.3)	639 (16.3)	393 (30.7)
5-17	423 (7.1)	1,204 (16.0)	244 (14.4)	221 (5.6)	130 (10.2)
18-49	1,457 (24.6)	2,779 (37.0)	374 (22.0)	736 (18.7)	246 (19.2)
50-64	1,137 (19.2)	1,458 (19.4)	201 (11.8)	585 (14.9)	155 (12.1)
65+	2,007 (33.9)	750 (10.0)	330 (19.4)	1,749 (44.5)	355 (27.8)
Sex					
Male	2,747 (46.4)	3,517 (46.8)	832 (49.0)	1,825 (46.4)	631 (49.3)
Female	3,164 (53.5)	4,000 (53.2)	866 (51.0)	2,104 (53.5)	648 (50.7)
Flu Type and Subtype					
Influenza A	4,851 (82.0)	7,355 (97.8)	1,236 (72.8)	2,562 (65.2)	1,082 (84.6)
Specimens subtyped ⁴	1,674	5,325	--	--	--
A (H1)	0 (0.0)	0 (0.0)	--	--	--
A (H3)	1,112 (66.4)	3 (0.1)	--	--	--
A (2009 H1N1)	562 (33.6)	5,322 (99.9)	--	--	--
Influenza B	955 (16.1)	52 (0.7)	382 (22.5)	1,199 (30.5)	149 (11.6)
Intensive Care Unit	622 (16.7)	1,560 (20.8)	298 (17.6)	495 (12.6)	198 (15.5)
Mechanical Ventilation	285 (7.6)	758 (10.1)	157 (9.2)	252 (6.4)	111 (8.7)
Diagnosis of Pneumonia	1,056 (28.3)	2,804 (37.3)	407 (24.0)	1,220 (31.0)	404 (31.6)
Died	89 (2.4)	222 (3.0)	49 (2.9)	104 (2.6)	24 (1.9)

Columns may not sum to 100% due to missing or unknown values.

¹Surveillance in EIP states (CA, CO, CT, GA, MD, MN, NM, NY, OR, TN) was conducted from 2006-2011.

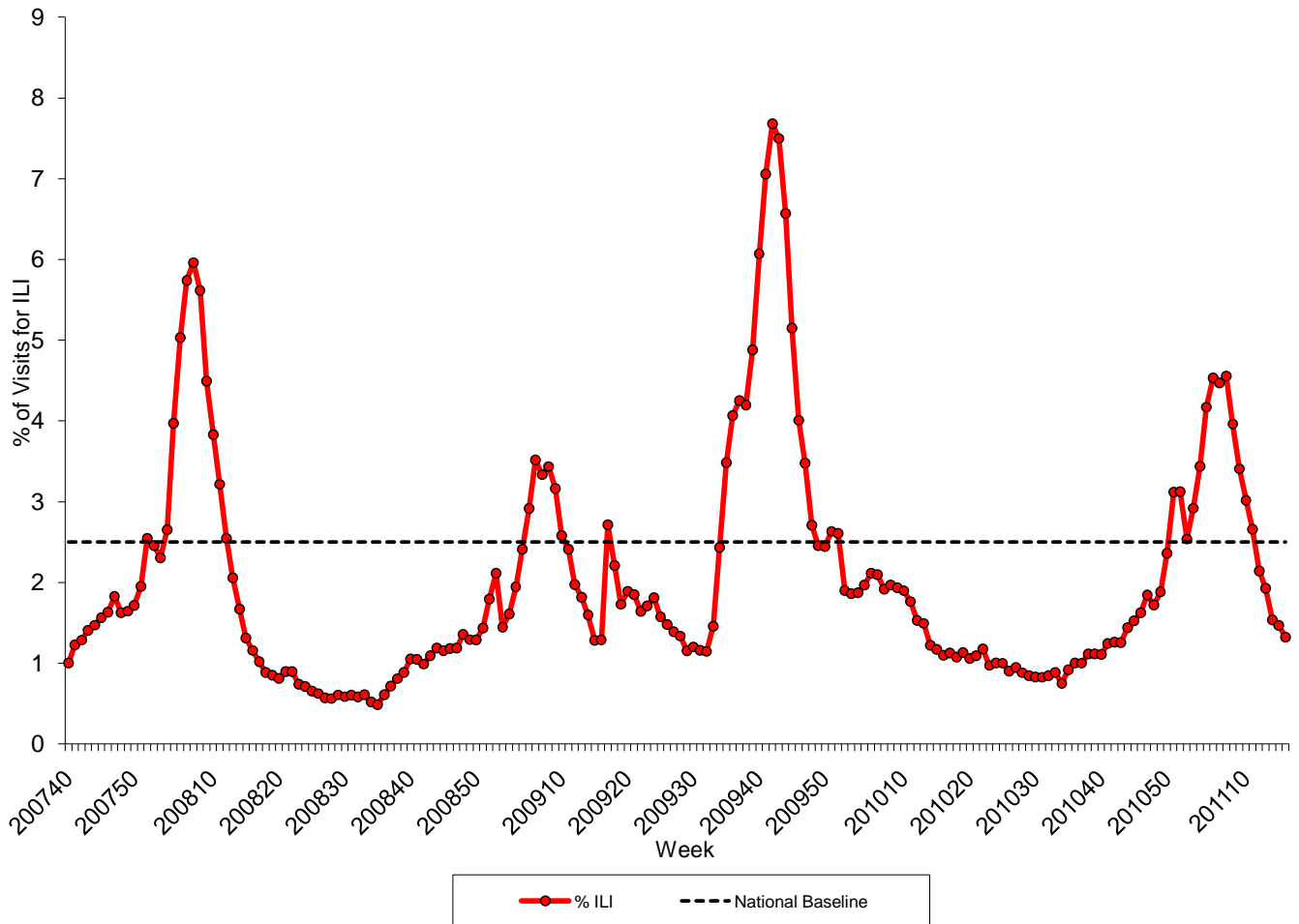
²FluSurv-Net includes surveillance at EIP sites and at sites in additional states (IA, ID, MI, ND, OK, SD in 2009-2010; ID, MI, OH, OK, RI, UT in 2010-2011).

³Data as of April 26, 2011. Results describing influenza A subtype, intensive care unit admission, mechanical ventilation, diagnosis of pneumonia, and death are from 3,731 (of a total 5,917 reported) cases for which data collection has been completed through the medical chart review stage.

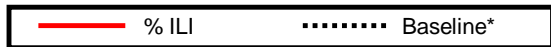
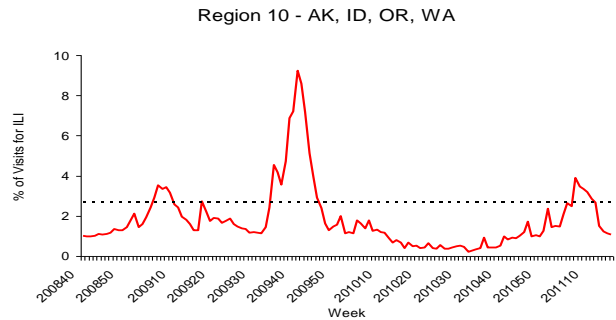
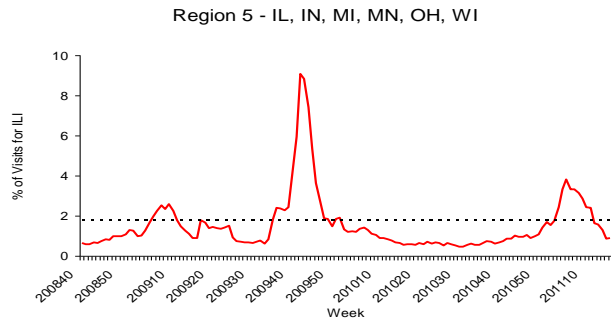
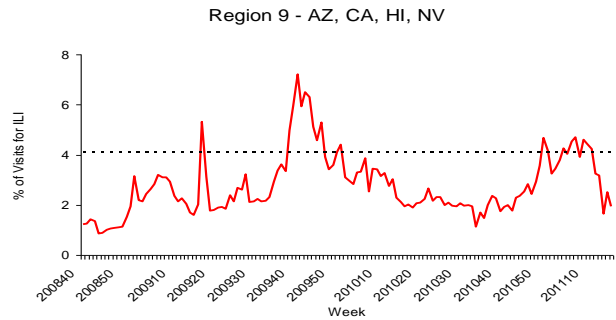
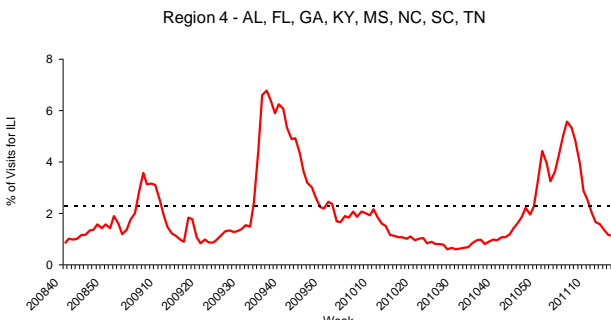
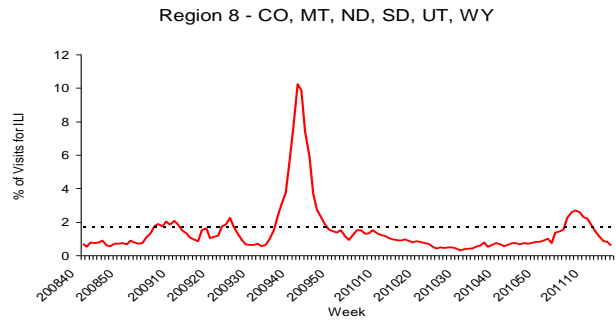
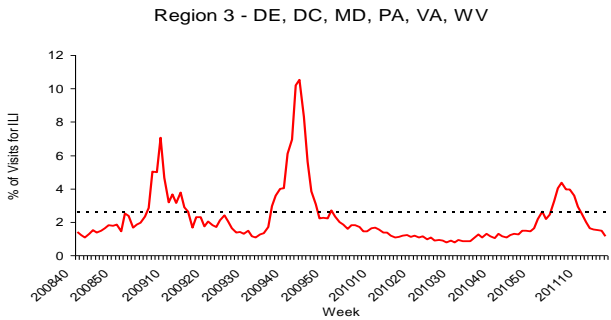
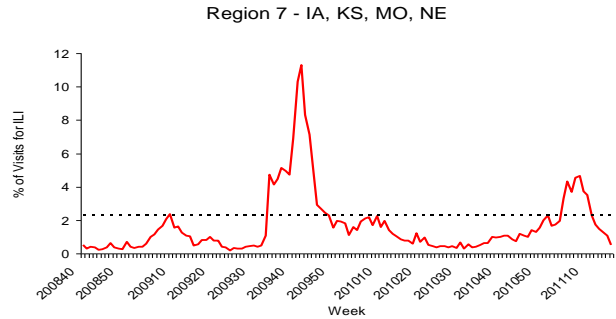
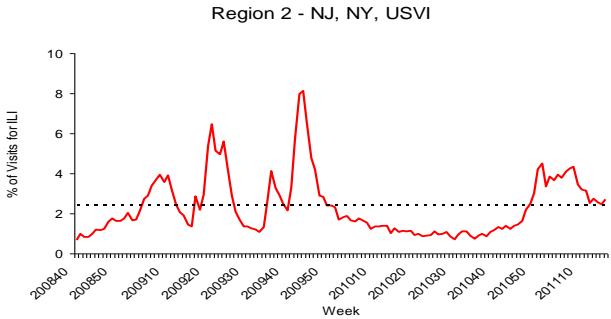
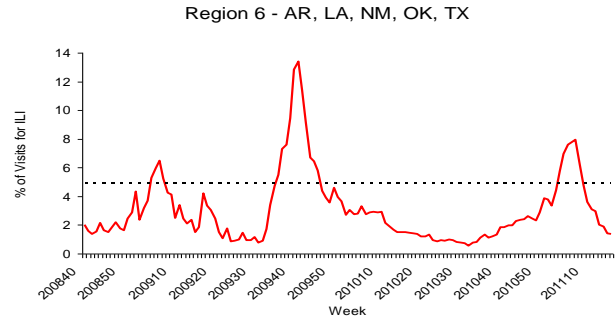
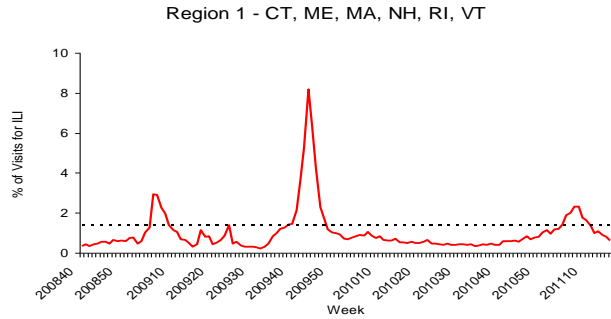
⁴Influenza A subtype results are available beginning with the 2007-2008 season. Percentages for influenza A subtypes are calculated using the number of influenza A specimens that were subtyped as a denominator.

Outpatient Illness Surveillance: Nationwide during week 16, 1.3% of patient visits reported through the U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet) were due to influenza-like illness (ILI). This percentage is below the national baseline of 2.5%.

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, 2007 – April 23, 2011



On a regional level, the percentage of outpatient visits for ILI ranged from 0.5% to 2.7% during week 16. Region 2 reported ILI above its region-specific baseline.



NOTE: Scales differ between regions

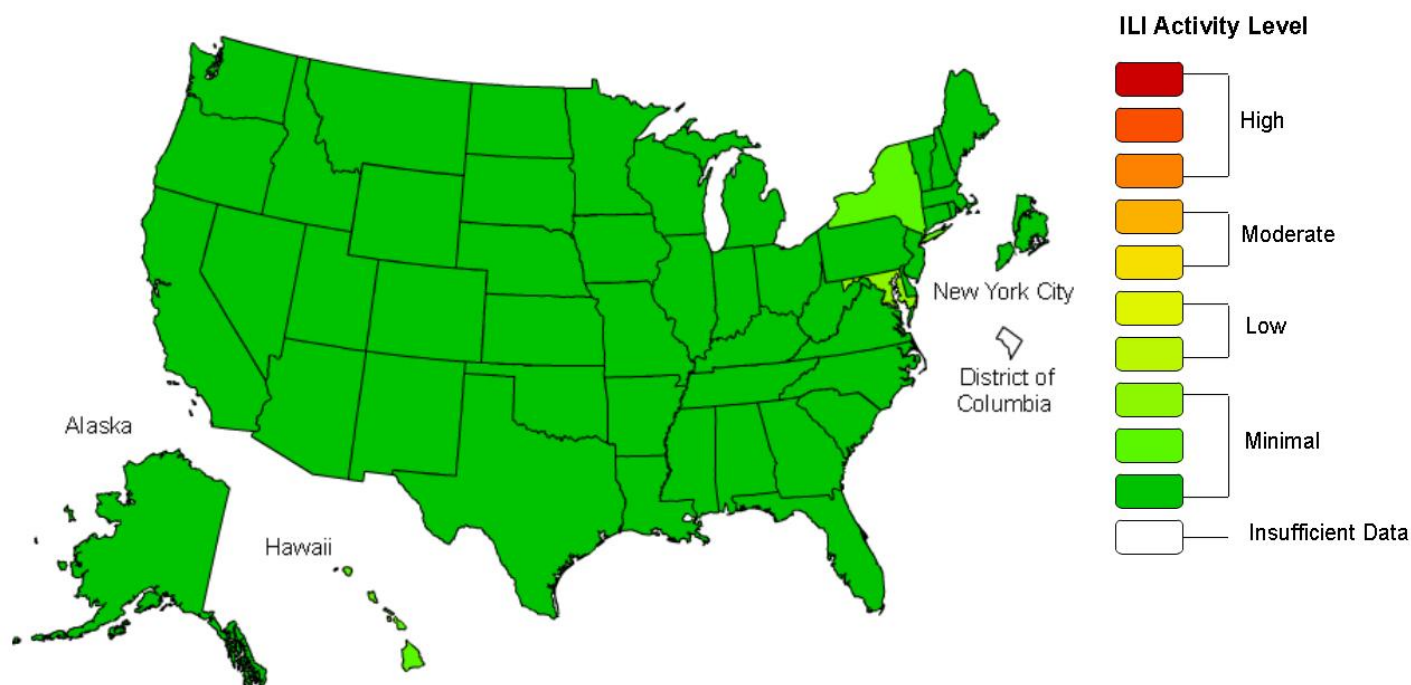
*Use of the regional baselines for state data is not appropriate.

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 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 the average. Because the clinical definition of ILI is very general, not all ILI can be attributed to influenza; however, when combined with laboratory data, the information on ILI activity can provide a better picture of influenza activity in the United States.

During week 16, the following ILI activity levels were experienced:

- Minimal ILI activity was experienced by all 50 states and New York City.
- The District of Columbia had insufficient data to calculate an activity level.

**Influenza-Like Illness (ILI) Activity Level Indicator Determined by Data Reported to ILINet
2010-11 Influenza Season Week 16 ending Apr 23, 2011**



Interactive web tool available at: <http://gis.cdc.gov/grasp/fluview/main.html>

*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.

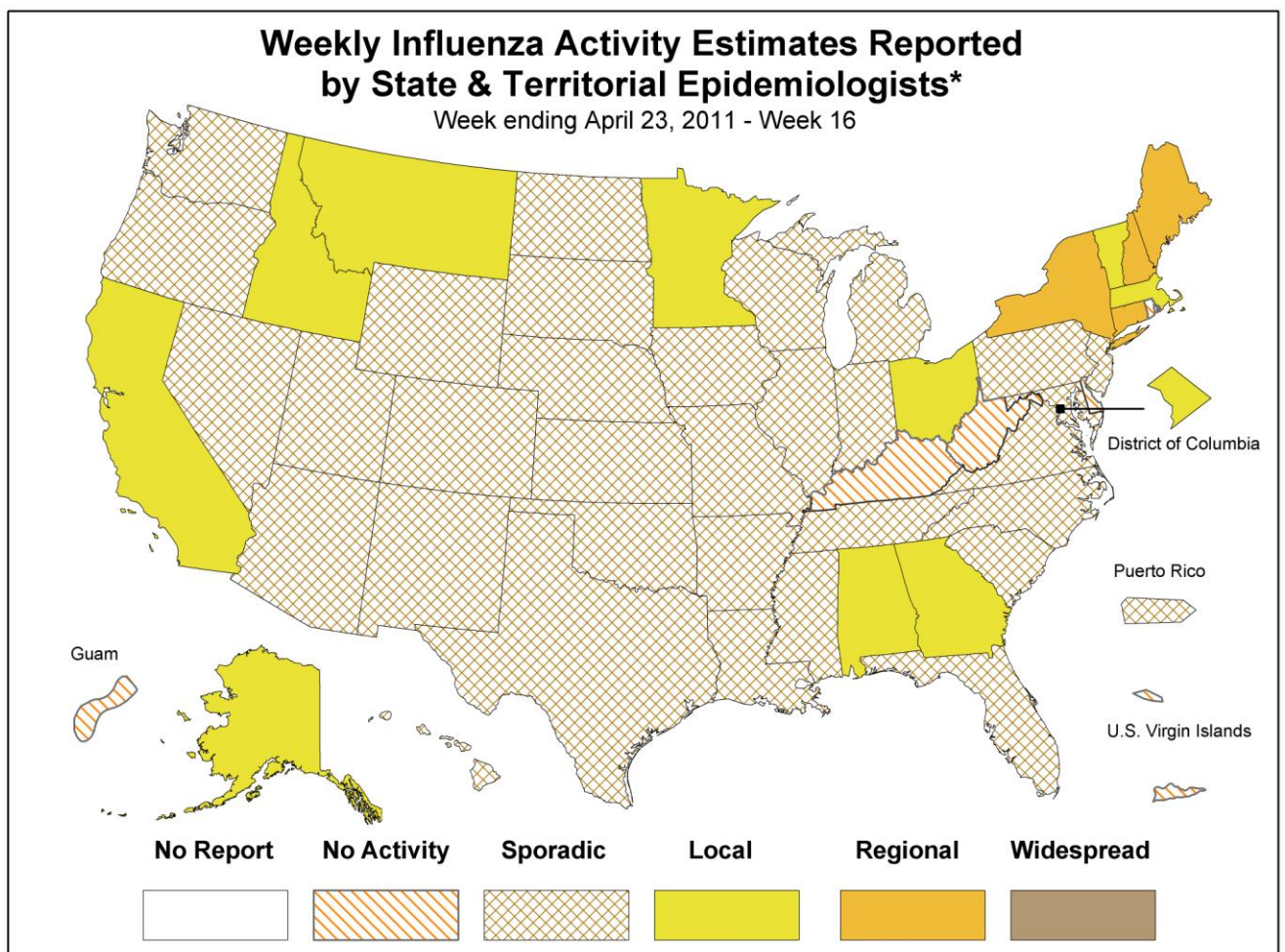
Data displayed in this map are based on data collected in ILINet, whereas the State and Territorial flu activity map are based on reports from state and territorial epidemiologists. The data presented in this map is preliminary and may change as more data is received.

Differences in the data presented by CDC and 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 16, the following influenza activity was reported:

- No states reported widespread influenza activity.
- Regional influenza activity was reported by four states (Connecticut, Maine, New Hampshire, and New York).
- Local influenza activity was reported by the District of Columbia and 10 states (Alabama, Alaska, California, Georgia, Idaho, Massachusetts, Minnesota, Montana, Ohio, and Vermont).
- Sporadic influenza activity was reported by Puerto Rico and 32 states (Arizona, Arkansas, Colorado, Florida, Hawaii, Illinois, Indiana, Iowa, Kansas, Louisiana, Maryland, Michigan, Mississippi, Missouri, Nebraska, Nevada, New Jersey, New Mexico, North Carolina, North Dakota, Oklahoma, Oregon, Pennsylvania, South Carolina, South Dakota, Tennessee, Texas, Utah, Virginia, Washington, Wisconsin, and Wyoming).
- The U.S. Virgin Islands, Guam, and four states (Delaware, Kentucky, Rhode Island, and West Virginia) reported no influenza activity.



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

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 at <http://gamapserver.who.int/GlobalAtlas/home.asp>.

A description of surveillance methods is available at: <http://www.cdc.gov/flu/weekly/overview.htm>
Report prepared: April 29, 2011.