

2010-2011 Influenza Season Week 12 ending March 26, 2011

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

Synopsis: During week 12 (March 20-26, 2011), influenza activity in the United States decreased.

- Of the 5,319 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, 737 (13.9%) were positive for influenza.
- The proportion of deaths attributed to pneumonia and influenza (P&I) has been at or above the epidemic threshold for the ninth consecutive week.
- Twelve influenza-associated pediatric deaths were reported, bringing the season total to 89. Four of these deaths were associated with influenza B viruses; four were associated with 2009 influenza A (H1N1) viruses; one was associated with influenza A (H3N2) virus, and three were associated with an influenza A virus for which the subtype was not determined.
- The proportion of outpatient visits for influenza-like illness (ILI) was 2.0%, below the national baseline of 2.5%. Two of the 10 regions (Regions 2 and 10) reported ILI at or above region-specific baseline levels. One state experienced high ILI activity; three states experienced low ILI activity; 46 states and New York City experienced minimal ILI activity, and the District of Columbia had insufficient data.
- The geographic spread of influenza in 10 states was reported as widespread; 21 states reported regional influenza activity; the District of Columbia and 12 states reported local influenza activity, and Guam, Puerto Rico, the U.S. Virgin Islands and six states reported sporadic 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	13.9%	32 of 54	15,565	9,843	10,857	12,595	89
Region 1	Normal	32.3%	5 of 6	1,598	838	86	323	2
Region 2	Elevated	19.7%	2 of 4	675	319	1,055	348	9
Region 3	Normal	20.8%	3 of 6	2,820	2,480	816	836	10
Region 4	Normal	10.6%	2 of 8	1,326	1,357	3,095	3,894	16
Region 5	Normal	36.8%	4 of 6	1,809	1,335	354	1,065	16
Region 6	Normal	9.9%	2 of 5	2,161	528	2,281	2,539	16
Region 7	Normal	20.1%	2 of 4	675	529	275	646	1
Region 8	Normal	18.8%	5 of 6	1,674	632	1,998	1,715	6
Region 9	Normal	18.2%	4 of 5	1,847	1,123	737	1,116	11
Region 10	Elevated	28.0%	3 of 4	980	702	160	113	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.

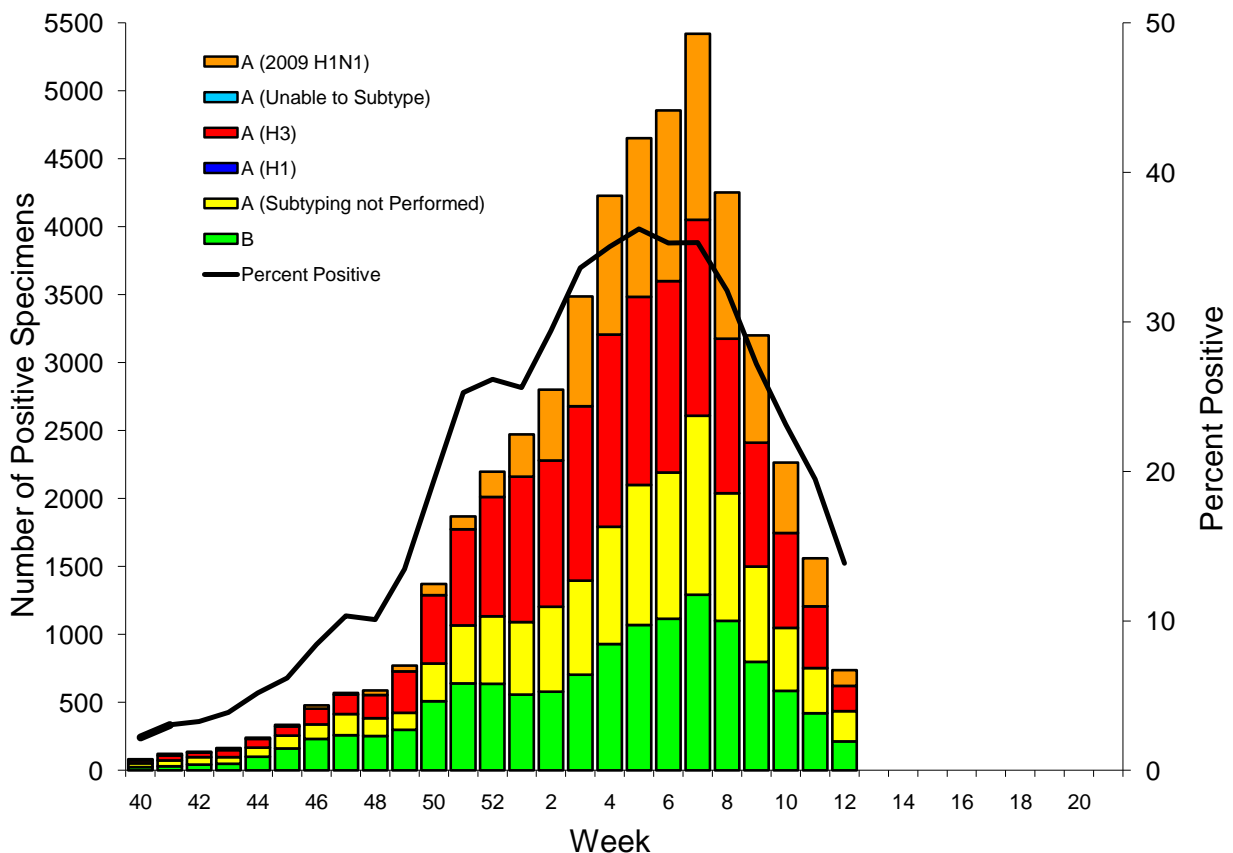
§ Includes all 50 states, the District of Columbia, Guam, Puerto Rico, and the U.S. Virgin Islands.

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 12
No. of specimens tested	5,319
No. of positive specimens (%)	737 (13.9%)
Positive specimens by type/subtype	
Influenza A	525 (71.2%)
A (2009 H1N1)	114 (21.7%)
A (subtyping not performed)	224 (42.7%)
A (H3)	187 (35.6%)
Influenza B	212 (28.8%)

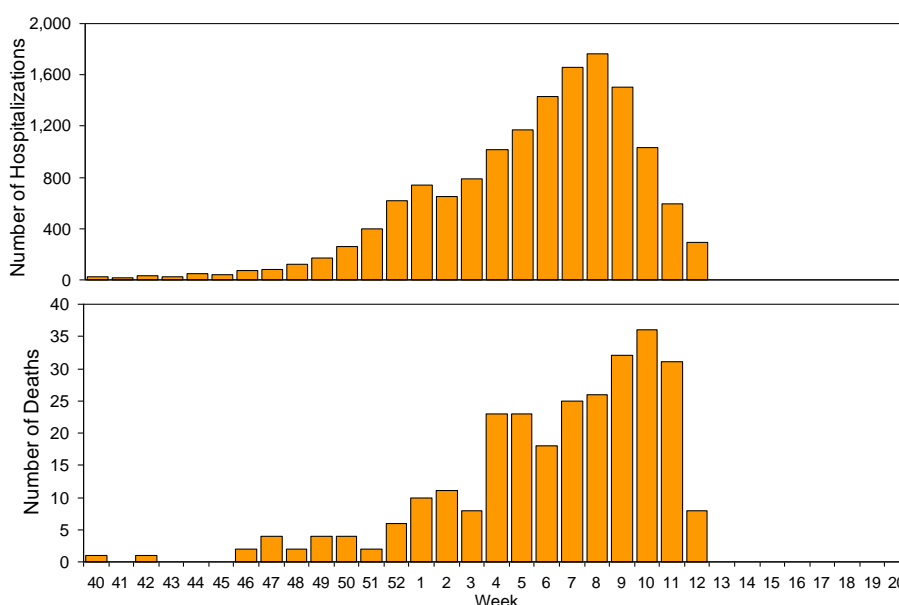
All influenza types and subtypes have been identified at high levels this season and continue to circulate widely. The predominant virus has varied by week, region, and even between states within the same region.

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 pandemic, and ended on April 4, 2010. AHDRA surveillance during the 2010-11 season is being continued on a voluntary basis, and 14 jurisdictions reported during week 12. From October 3, 2010 – March 26, 2011, 14,547 laboratory-confirmed influenza associated hospitalizations and 277 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 1,468 influenza viruses [353 2009 influenza A (H1N1) viruses, 626 influenza A (H3N2) viruses, and 489 influenza B viruses] collected by U.S. laboratories since October 1, 2010.

2009 Influenza A (H1N1) [353]

- Three hundred fifty-two (99.7%) of the 353 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 (0.3%) of the 353 tested showed reduced titers with antiserum produced against A/California/7/2009.

Influenza A (H3N2) [626]

- Six hundred six (96.8%) of the 626 tested were characterized as A/Perth/16/2009-like, the influenza A (H3N2) component of the 2010-11 influenza vaccine for the Northern Hemisphere. Twenty viruses (3.2%) of the 626 tested showed reduced titers with antiserum produced against A/Perth/16/2009.

Influenza B (B/Victoria/02/87 and B/Yamagata/16/88 lineages) [489]

Victoria Lineage [461]

- Four hundred sixty-one (94.3%) of the 489 influenza B viruses tested belong to the B/Victoria lineage of viruses.
 - Four hundred sixty (99.8%) of these 461 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 461 viruses showed somewhat reduced titers with antisera produced against B/Brisbane/60/2008.

Yamagata Lineage [28]

- Twenty-eight (5.7%) of the 489 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 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)	490	0 (0.0)	490	0 (0.0)
Influenza B	474	0 (0.0)	474	0 (0.0)
2009 Influenza A (H1N1)	910	7 (0.8)	305	0 (0.0)

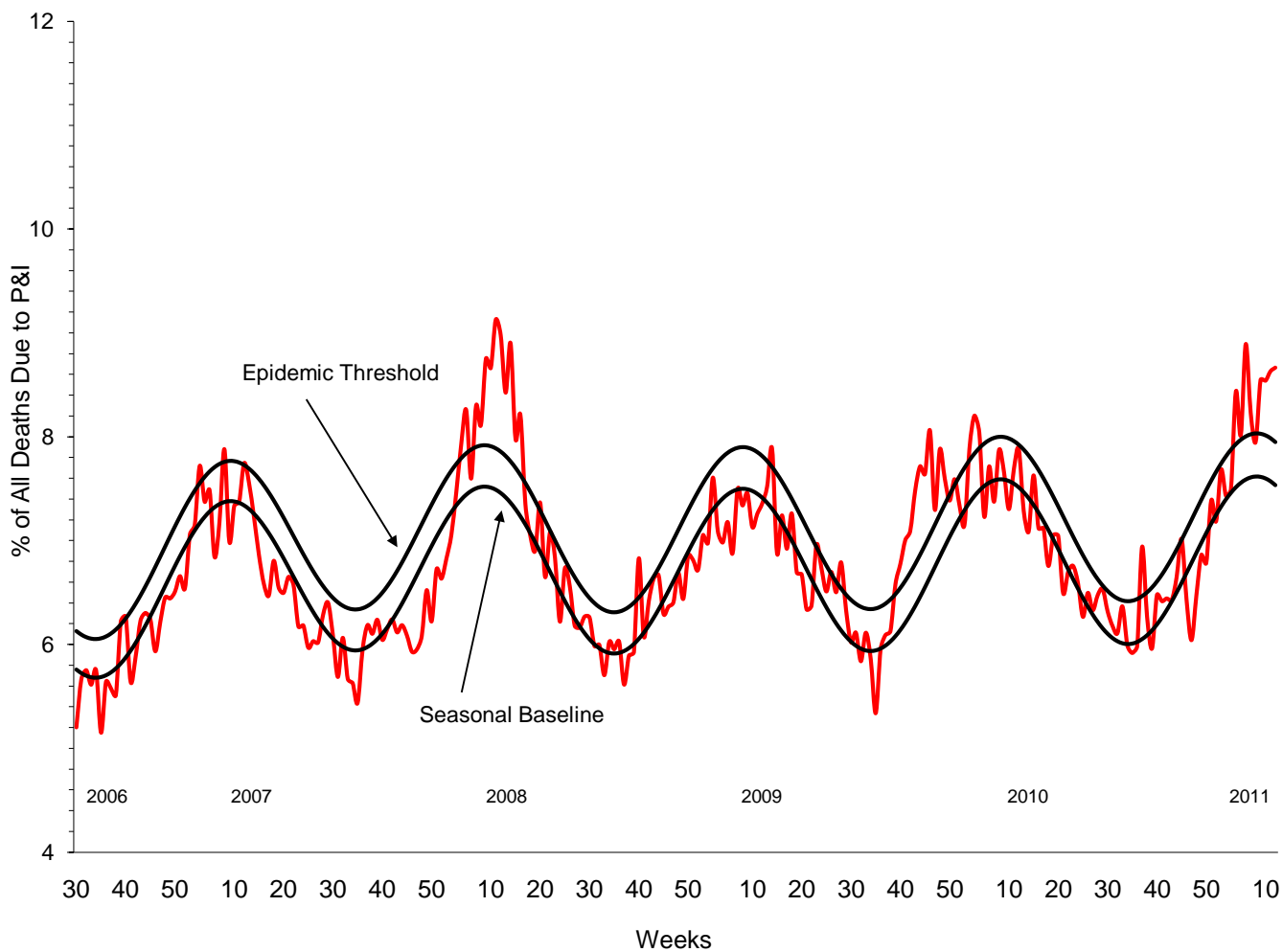
Additional neuraminidase inhibitor resistance testing is performed by a subset of public health laboratories and results of this testing are shared with CDC. Currently, public health laboratories from six states (CA, ME, MD, MN, TX, and WA) have submitted results of testing performed on specimens collected since October 1, 2010, and seven (0.8%) of the 907 2009 influenza A (H1N1) specimens tested indicated resistance to oseltamivir. The specimens tested are from six states and may not be nationally representative.

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>.

Pneumonia and Influenza (P&I) Mortality Surveillance: During week 12, 8.7% of all deaths reported through the 122-Cities Mortality Reporting System were due to P&I. This percentage was above the epidemic threshold of 8.0% for week 12 and is the ninth consecutive week in which P&I has been at or above the epidemic threshold.

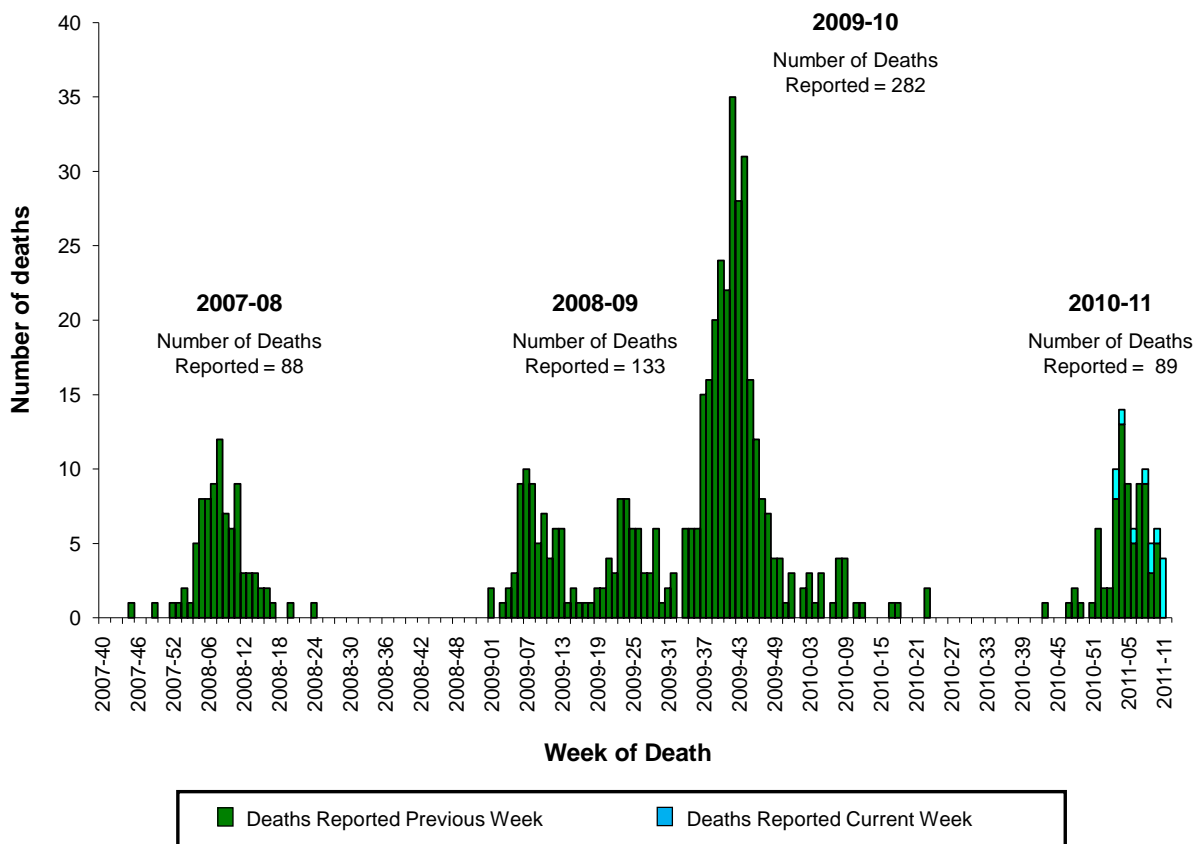
Pneumonia and Influenza Mortality for 122 U.S. Cities Week ending 3/26/2011



Influenza-Associated Pediatric Mortality: Twelve influenza-associated pediatric deaths were reported to CDC during week 12. Four of these deaths were associated with influenza B viruses, four were associated with 2009 influenza A (H1N1) virus, one was associated with influenza A (H3N2) viruses, and three were associated with an influenza A virus for which the subtype was not determined.

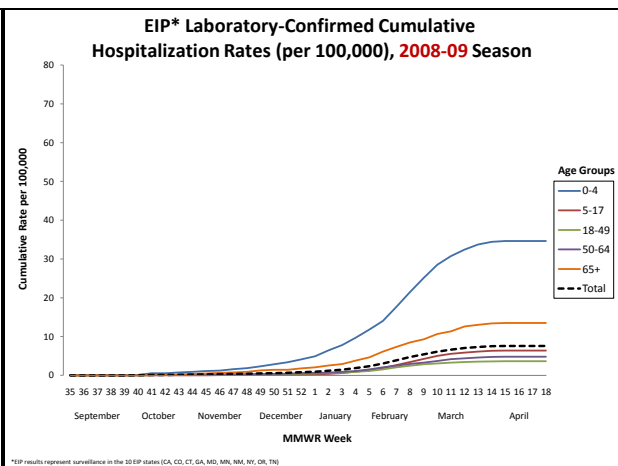
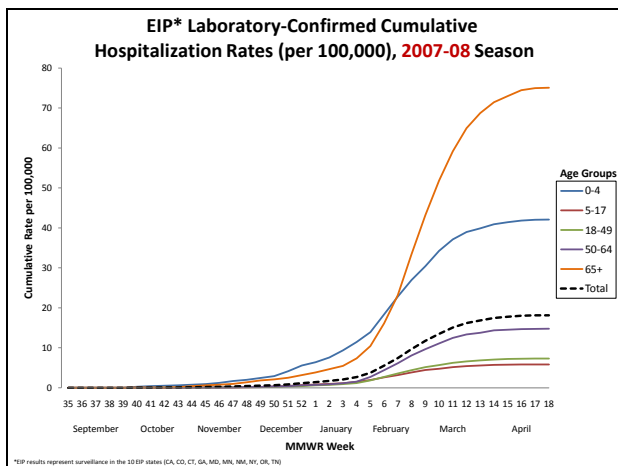
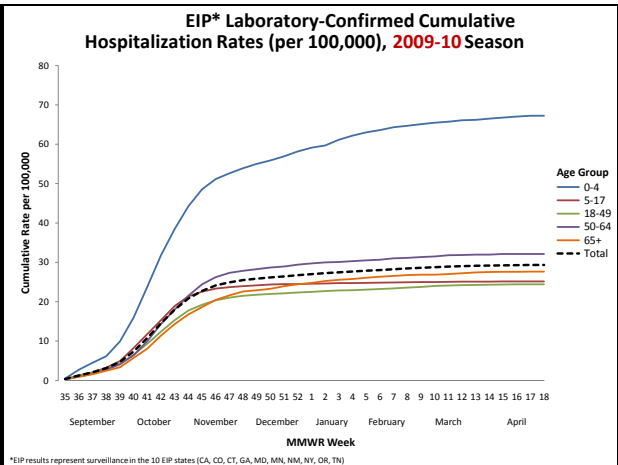
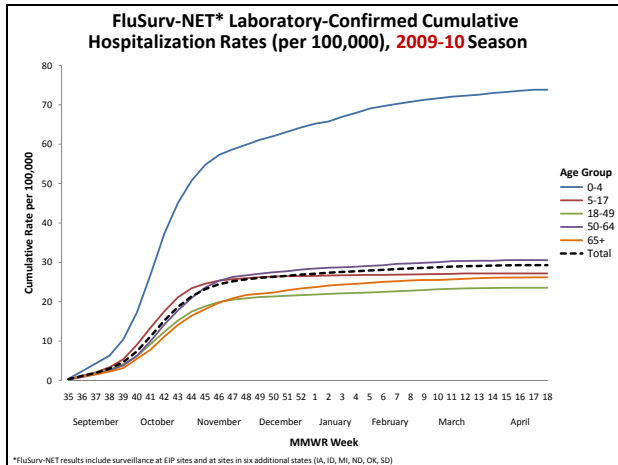
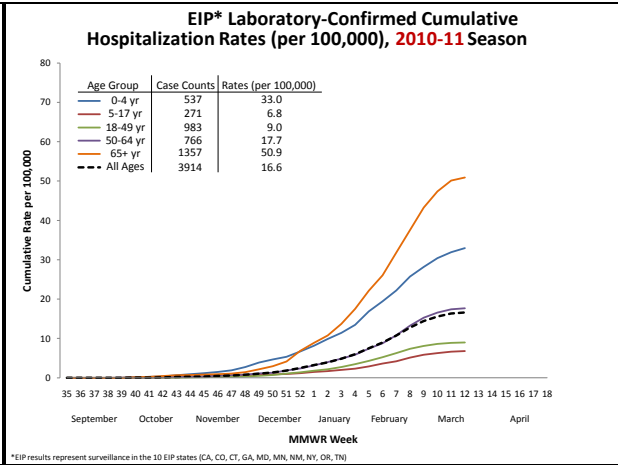
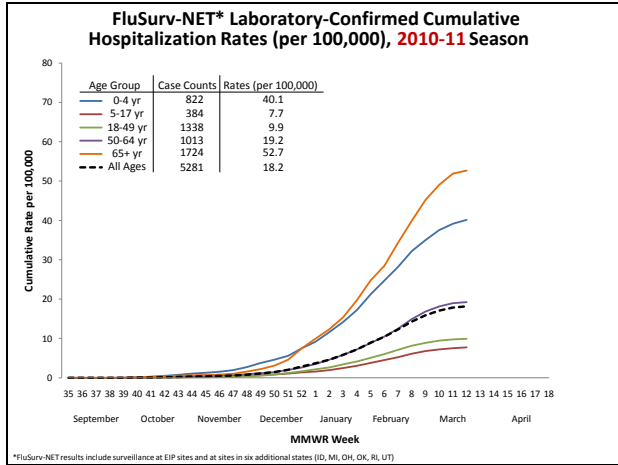
Eighty-nine deaths from 32 states (Arizona, California, Colorado, Florida, Georgia, Hawaii, Illinois, Indiana, Kentucky, Louisiana, Maine, Michigan, Minnesota, Missouri, Nevada, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, South Dakota, Texas, Utah, Vermont, Virginia, Washington, West Virginia, and Wisconsin), Chicago, and New York City have been reported during this influenza season. Thirty-three of the 89 deaths reported were associated with influenza B viruses; 21 were associated with 2009 influenza A (H1N1) viruses; 17 deaths reported were associated with influenza A (H3N2) viruses, and 18 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



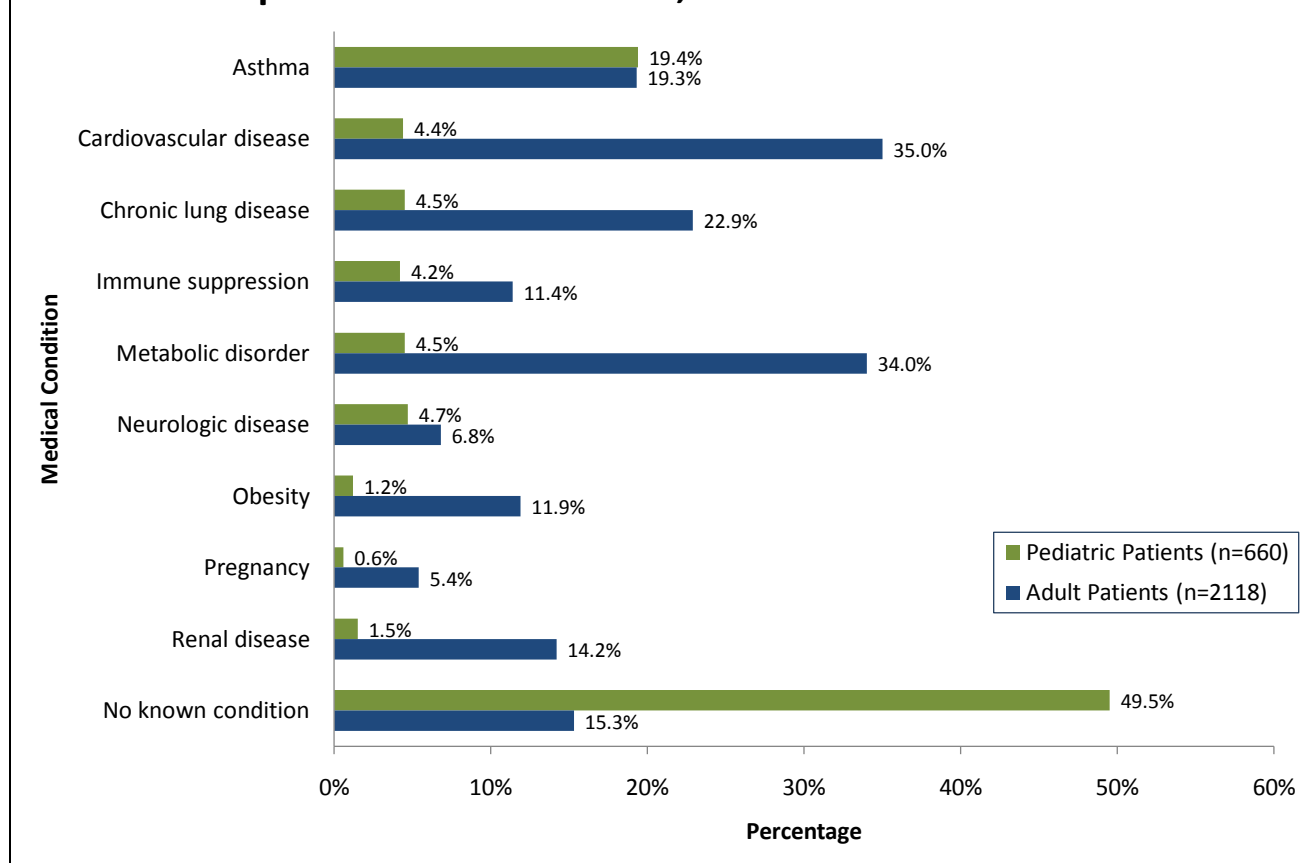
Influenza-Associated Hospitalizations: FluSurv-NET conducts population-based surveillance for laboratory-confirmed influenza-associated hospitalizations in children (persons younger than 18 years) and adults. The current network covers over 80 counties in the 10 Emerging Infections Program (EIP) states (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 March 26, 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 March 29, 2011. Includes 2,778 (of a total 5,298 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	5,298	7,517	1,698	3,930	1,279
Age in Years					
0-4	825 (15.6)	1,326 (17.6)	549 (32.3)	639 (16.3)	393 (30.7)
5-17	385 (7.3)	1,204 (16.0)	244 (14.4)	221 (5.6)	130 (10.2)
18-49	1,344 (25.4)	2,779 (37.0)	374 (22.0)	736 (18.7)	246 (19.2)
50-64	1,013 (19.1)	1,458 (19.4)	201 (11.8)	585 (14.9)	155 (12.1)
65+	1,728 (32.6)	750 (10.0)	330 (19.4)	1,749 (44.5)	355 (27.8)
Sex					
Male	2,459 (46.4)	3,517 (46.8)	832 (49.0)	1,825 (46.4)	631 (49.3)
Female	2,830 (53.4)	4,000 (53.2)	866 (51.0)	2,104 (53.5)	648 (50.7)
Flu Type and Subtype					
Influenza A	4,355 (82.2)	7,355 (97.8)	1,236 (72.8)	2,562 (65.2)	1,082 (84.6)
Specimens subtyped ⁴	1,198	5,325	--	--	--
A (H1)	0 (0.0)	0 (0.0)	--	--	--
A (H3)	793 (66.2)	3 (0.1)	--	--	--
A (2009 H1N1)	405 (33.8)	5,322 (99.9)	--	--	--
Influenza B	807 (15.2)	52 (0.7)	382 (22.5)	1,199 (30.5)	149 (11.6)
Intensive Care Unit	466 (16.8)	1,560 (20.8)	298 (17.6)	495 (12.6)	198 (15.5)
Mechanical Ventilation	198 (7.1)	758 (10.1)	157 (9.2)	252 (6.4)	111 (8.7)
Diagnosis of Pneumonia	750 (27.0)	2,804 (37.3)	407 (24.0)	1,220 (31.0)	404 (31.6)
Died	63 (2.3)	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.

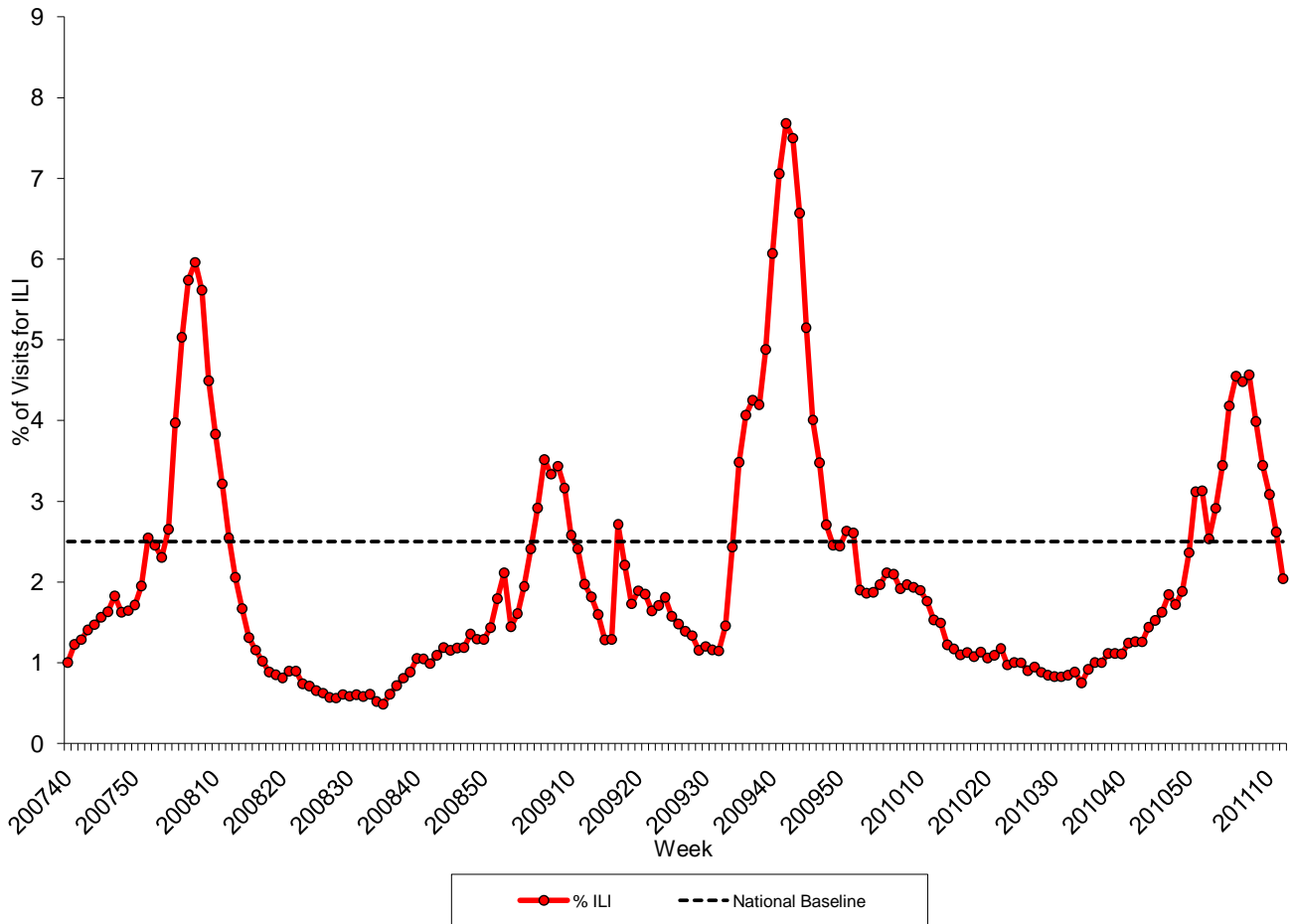
²FluSurv-Net includes surveillance at EIP sites and at sites in additional states (IA, ID, MI, ND, OK, SD in 2009-2010; ID, MI, OH, OK, RI, UT in 2010-2011).

³Data as of March 29, 2011. Results describing influenza A subtype, intensive care unit admission, mechanical ventilation, diagnosis of pneumonia, and death are from 2,778 (of a total 5,298 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.

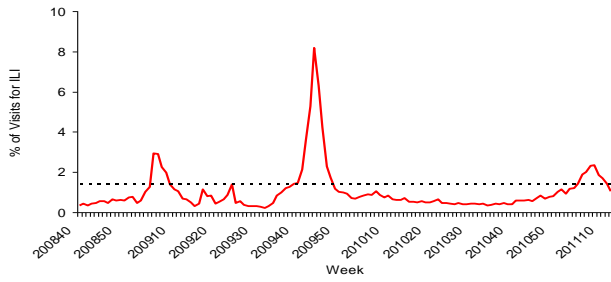
Outpatient Illness Surveillance: Nationwide during week 12, 2.0% of patient visits reported through the U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet) were due to influenza-like illness (ILI). This percentage is below the national baseline of 2.5%.

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 – March 26, 2011

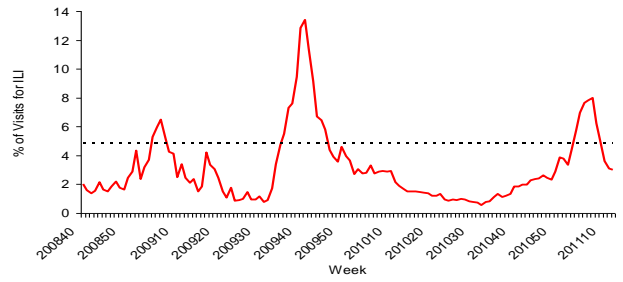


On a regional level, the percentage of outpatient visits for ILI ranged from 1.0% to 3.2% during week 12. Two of the 10 regions (Regions 2 and 10) reported ILI at or above region-specific baseline levels.

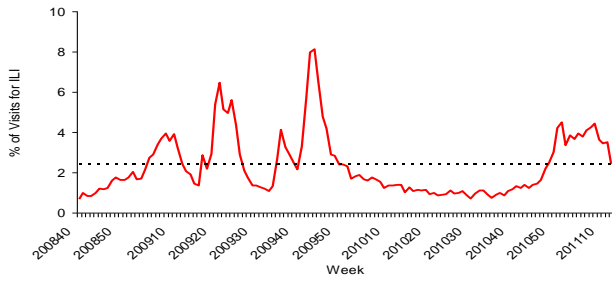
Region 1 - CT, ME, MA, NH, RI, VT



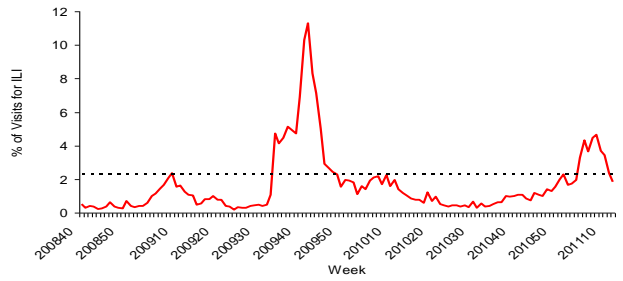
Region 6 - AR, LA, NM, OK, TX



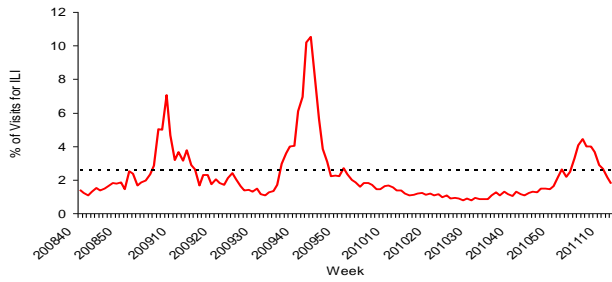
Region 2 - NJ, NY, USVI



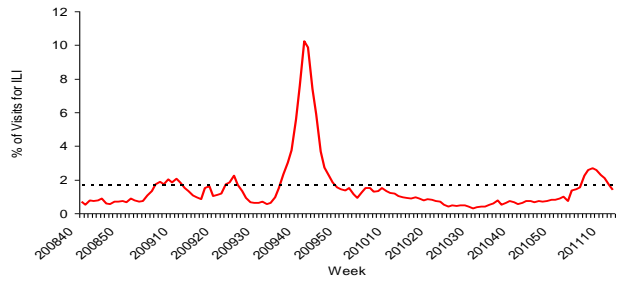
Region 7 - IA, KS, MO, NE



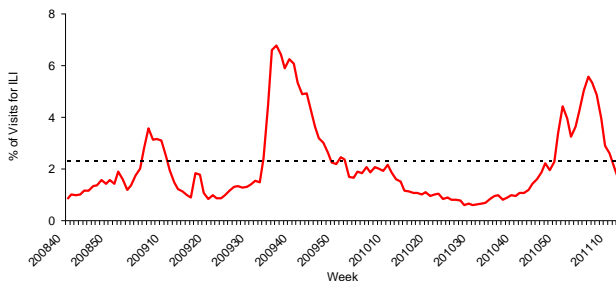
Region 3 - DE, DC, MD, PA, VA, WV



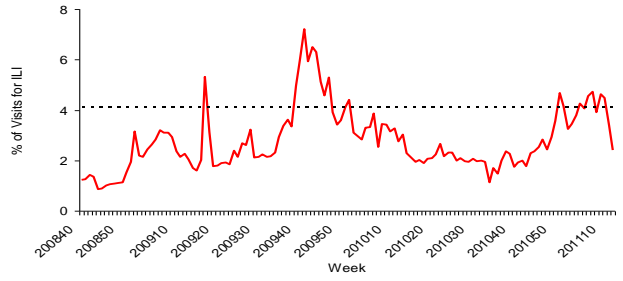
Region 8 - CO, MT, ND, SD, UT, WY



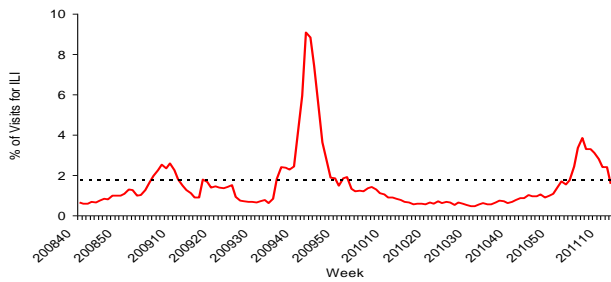
Region 4 - AL, FL, GA, KY, MS, NC, SC, TN



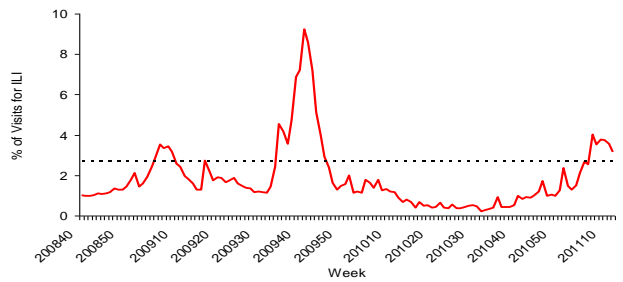
Region 9 - AZ, CA, HI, NV



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



Region 10 - AK, ID, OR, WA



NOTE: Scales differ between regions

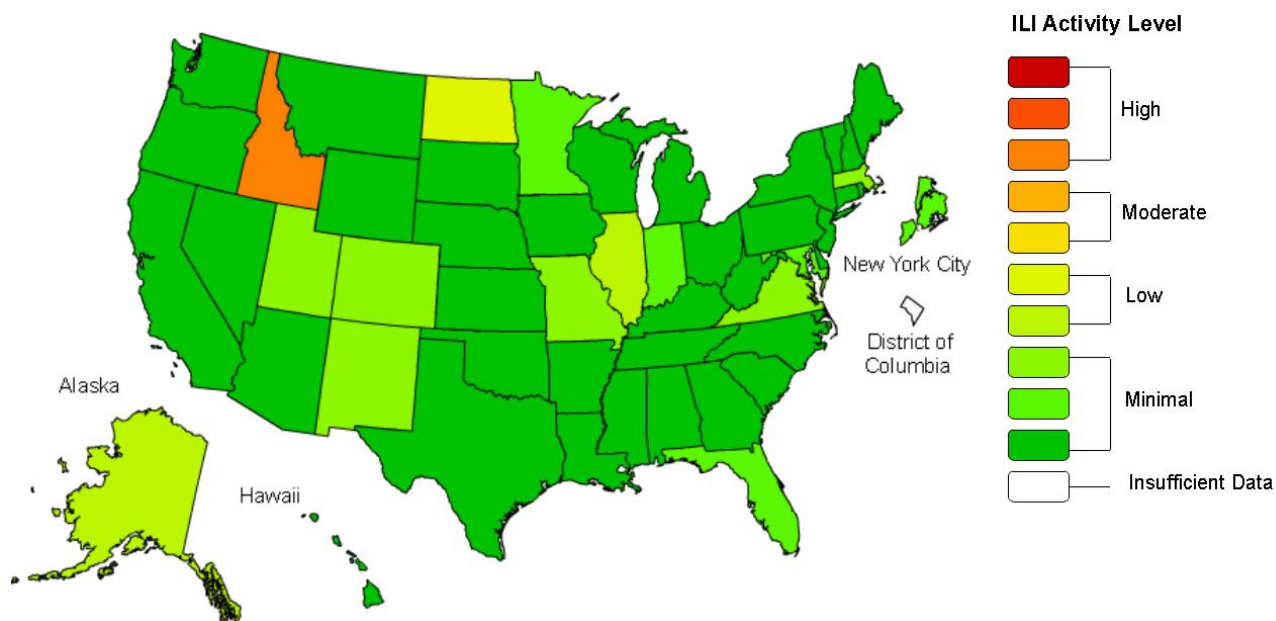
*Use of the regional baselines for state data is not appropriate.

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 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 is caused by influenza; however, when combined with laboratory data, the information on ILI activity provides a clear picture of influenza activity in the United States.

During week 12, the following ILI activity levels were experienced:

- One state (Idaho) experienced high ILI activity.
- Three states (Alaska, Illinois, and North Dakota) experienced low ILI activity.
- Minimal ILI activity was experienced by New York City and 46 states (Alabama, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Georgia, Hawaii, 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, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, and Wyoming).
- 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 12 ending Mar 26, 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.

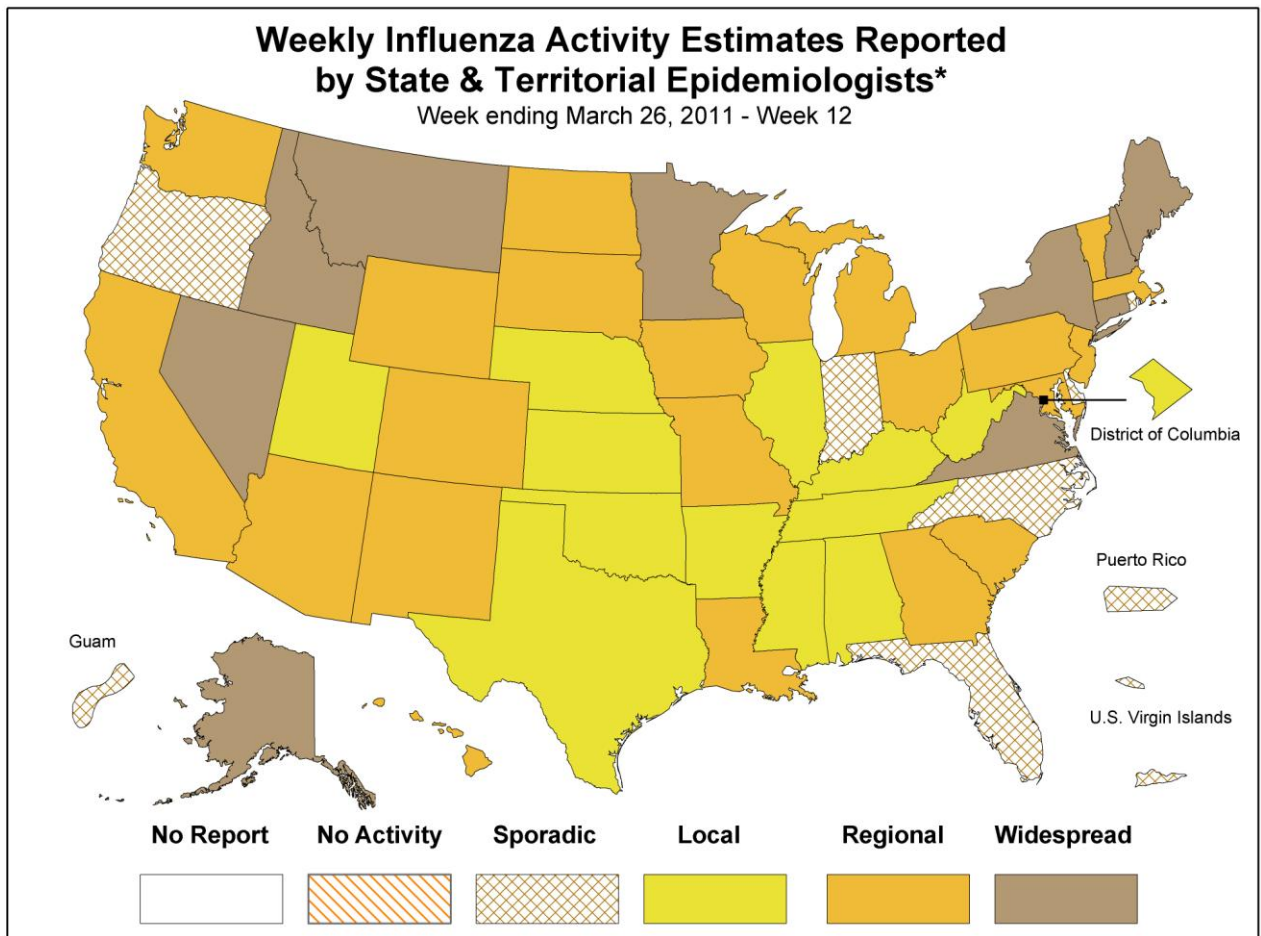
Data displayed in this map are based on data collected in ILINet, whereas the State and Territorial flu activity map are based on reports from state and territorial epidemiologists. The data presented in this map is preliminary and may change as more data is received.

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 12, the following influenza activity was reported:

- Widespread influenza activity was reported by ten states (Alaska, Connecticut, Idaho, Maine, Minnesota, Montana, Nevada, New Hampshire, New York, and Virginia).
- Regional influenza activity was reported by 22 states (Arizona, California, Colorado, Georgia, Hawaii, Iowa, Louisiana, Maryland, Massachusetts, Michigan, Missouri, New Jersey, New Mexico, North Dakota, Ohio, Pennsylvania, South Carolina, South Dakota, Vermont, Washington, Wisconsin, and Wyoming).
- Local influenza activity was reported by the District of Columbia and 12 states (Alabama, Arkansas, Illinois, Kansas, Kentucky, Mississippi, Nebraska, Oklahoma, Tennessee, Texas, Utah, and West Virginia).
- Sporadic influenza activity was reported by Guam, Puerto Rico, the U.S. Virgin Islands, and six states (Delaware, Florida, Indiana, North Carolina, Oregon, and Rhode Island).



* 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 1, 2011.