

## 2010-2011 Influenza Season Week 5 ending February 5, 2011

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

**Synopsis:** During week 5 (January 30-February 5, 2011), influenza activity in the United States increased.

- Of the 7,511 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, 2,377 (31.7%) were positive for influenza.
- The proportion of deaths attributed to pneumonia and influenza (P&I) was at the epidemic threshold.
- Eleven influenza-associated pediatric deaths were reported. Four of these deaths were associated with influenza B viruses, two of these deaths were associated with 2009 influenza A (H1N1) virus, one was associated with an influenza A (H3) virus, and four 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 4.6%, which is above the national baseline of 2.5%. Nine of the 10 regions (Regions 1, 2, 3, 4, 5, 6, 7, 8, and 10) reported ILI at or above region-specific baseline levels. Nineteen states experienced high ILI activity; nine states experienced moderate ILI activity; New York City and 10 states experienced low ILI activity; 12 states experienced minimal ILI activity, and the District of Columbia had insufficient data.
- The geographic spread of influenza in 37 states was reported as widespread; nine states reported regional influenza activity; the District of Columbia reported local activity, and Guam, Puerto Rico, the U.S. Virgin Islands, and four 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
<b>Nation</b>	Elevated	31.7%	46 of 54	7,845	3,249	5,402	6,145	30
<b>Region 1</b>	Elevated	39.4%	6 of 6	702	149	8	66	0
<b>Region 2</b>	Elevated	23.0%	2 of 4	327	69	472	66	4
<b>Region 3</b>	Elevated	43.5%	4 of 6	1,004	819	321	197	3
<b>Region 4</b>	Elevated	25.5%	8 of 8	757	558	1,816	2,966	6
<b>Region 5</b>	Elevated	50.3%	6 of 6	835	595	166	361	5
<b>Region 6</b>	Elevated	35.8%	5 of 5	1,216	167	1,234	1,222	5
<b>Region 7</b>	Elevated	35.5%	4 of 4	311	257	208	244	0
<b>Region 8</b>	Elevated	27.2%	5 of 6	1,251	225	937	302	4
<b>Region 9</b>	Normal	33.2%	3 of 5	1,135	310	217	678	3
<b>Region 10</b>	Elevated	25.4%	3 of 4	307	100	23	43	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.

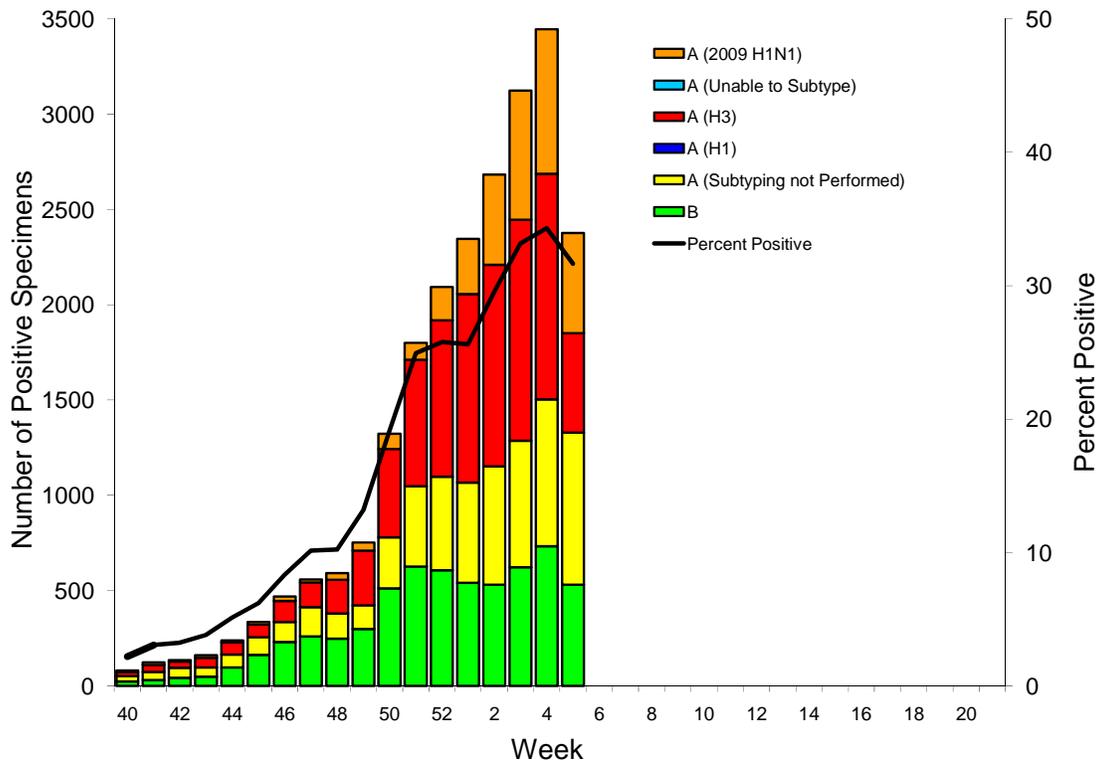
§ Includes all 50 states, the District of Columbia, Guam, Puerto Rico, and the U.S. Virgin Islands.

**U.S. Virologic Surveillance:** WHO and NREVSS collaborating laboratories located in all 50 states 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.

	<b>Week 5</b>
<b>No. of specimens tested</b>	7,511
<b>No. of positive specimens (%)</b>	2,377 (31.7%)
<b>Positive specimens by type/subtype</b>	
<b>Influenza A</b>	1,845 (77.6%)
<b>A (2009 H1N1)</b>	526 (28.5%)
<b>A (subtyping not performed)</b>	796 (43.1%)
<b>A (H3)</b>	523 (28.3%)
<b>Influenza B</b>	532 (22.4%)

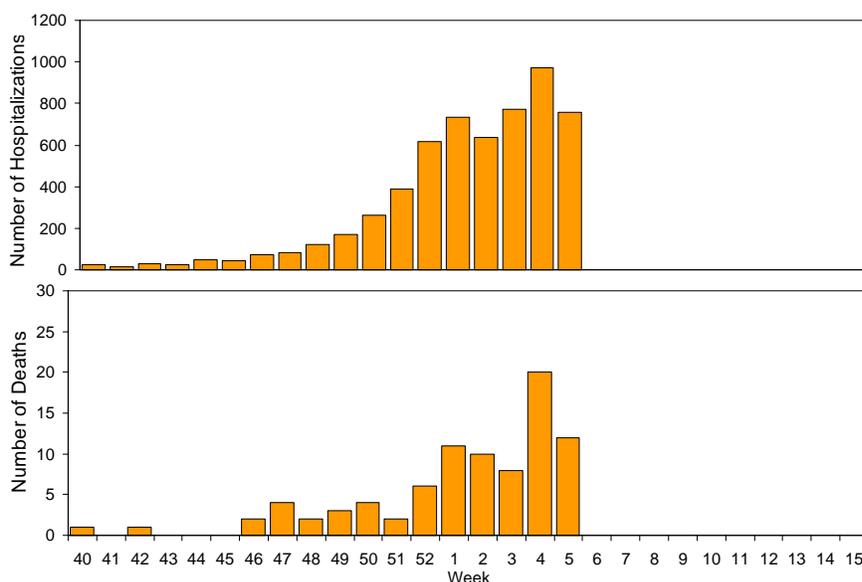
Although influenza A (H3) viruses have predominated circulation nationally during the 2010-11 season, all influenza types and subtypes have been identified at high levels. The predominant virus has varied by week, region, and even between states within the same region. Nationally, an increasing proportion of subtyped influenza A viruses have been identified as 2009 influenza A (H1) over the last several weeks, and during week 5 more 2009 influenza A (H1) viruses than influenza A (H3) viruses were reported.

### 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 19 jurisdictions reported during week 5. From October 3, 2010 – February 5, 2011, 5,777 laboratory-confirmed influenza associated hospitalizations and 86 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 564 influenza viruses [82 2009 influenza A (H1N1) viruses, 300 influenza A (H3N2) viruses, and 182 influenza B viruses] collected by U.S. laboratories since October 1, 2010.

### 2009 Influenza A (H1N1) [82]

- All 82 were characterized as A/California/7/2009-like, the influenza A (H1N1) component of the 2010-11 influenza vaccine for the Northern Hemisphere.

### Influenza A (H3N2) [300]

- Two hundred ninety-eight (99%) were characterized as A/Perth/16/2009-like, the influenza A (H3N2) component of the 2010-11 influenza vaccine for the Northern Hemisphere. Two viruses (1%) of the 300 tested showed reduced titers with antiserum produced against A/Perth/16/2009.

## **Influenza B (B/Victoria/02/87 and B/Yamagata/16/88 lineages) [182]**

### **Victoria Lineage [170]**

- One hundred seventy (93%) of the 182 influenza B viruses tested belong to the B/Victoria lineage of viruses.
  - 169 (99.4%) of these 170 viruses were characterized as B/Brisbane/60/2008-like, the recommended influenza B component for the 2010-11 Northern Hemisphere influenza vaccine.
  - One (0.6%) of these 170 viruses showed somewhat reduced titers with antisera produced against B/Brisbane/60/2008.

### **Yamagata Lineage [12]**

- Twelve (7%) of the 182 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 below combine the results of both test methods and includes 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.

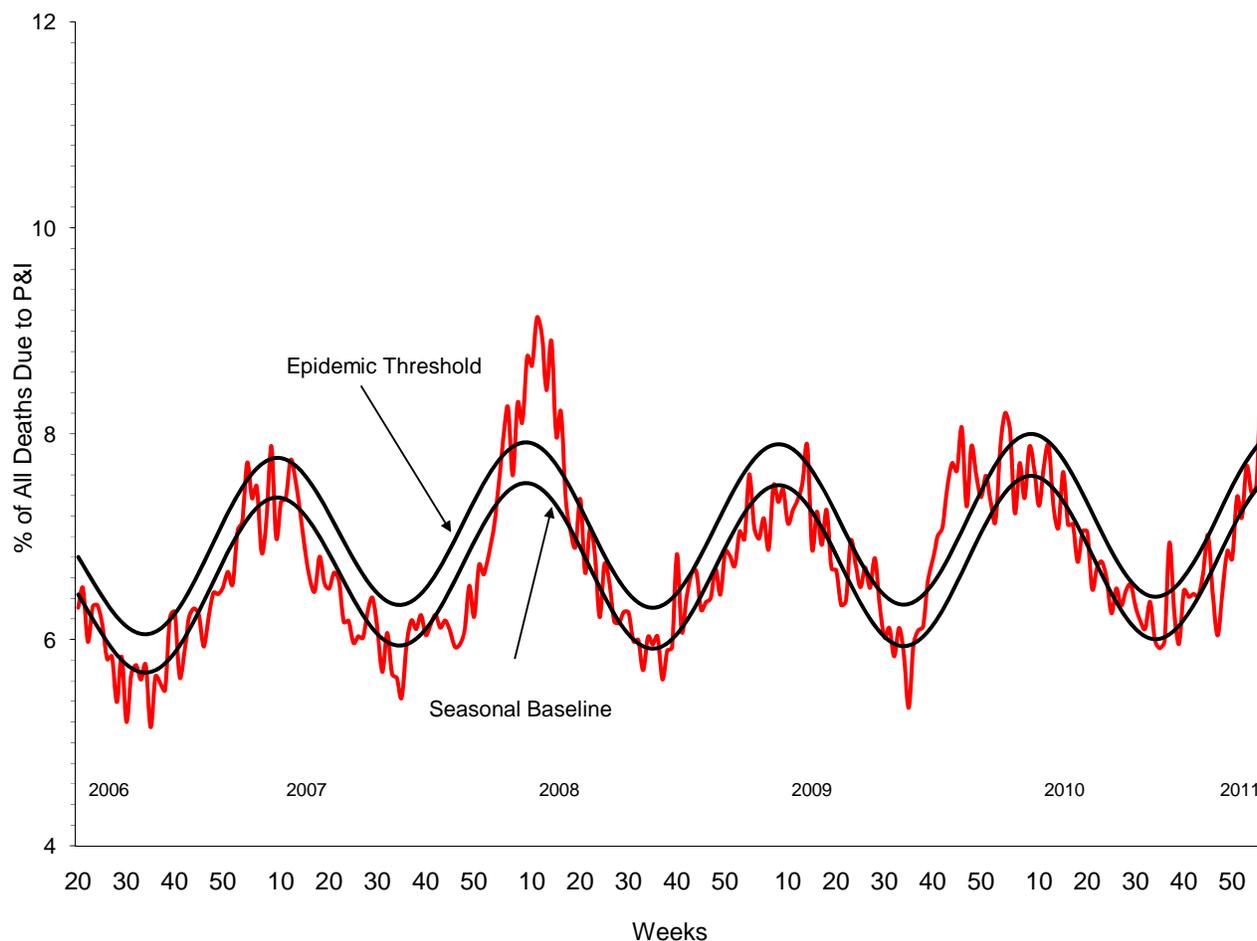
### **Neuraminidase Inhibitor Resistance Testing Results on Samples Collected Since October 1, 2010.**

	Virus Samples tested (n)	Resistant Viruses, Number (%)	Virus Samples tested (n)	Resistant Viruses, Number (%)
		Oseltamivir		Zanamivir
<b>Seasonal Influenza A (H1N1)</b>	0	0 (0.0)	0	0 (0.0)
<b>Influenza A (H3N2)</b>	158	0 (0.0)	158	0 (0.0)
<b>Influenza B</b>	119	0 (0.0)	119	0 (0.0)
<b>2009 Influenza A (H1N1)</b>	87	0 (0.0)	33	0 (0.0)

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 5, 8.0% of all deaths reported through the 122-Cities Mortality Reporting System were due to P&I. This percentage was at the epidemic threshold of 8.0% for week 5.

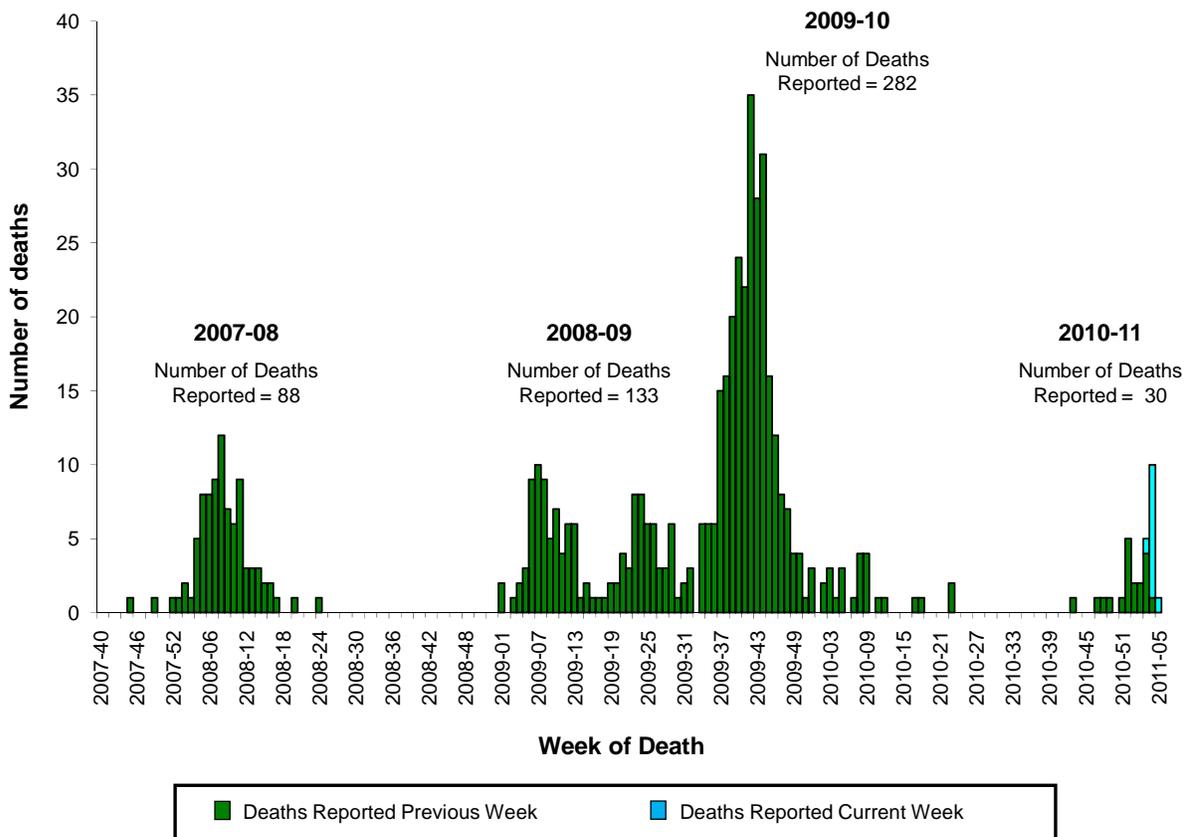
### Pneumonia and Influenza Mortality for 122 U.S. Cities Week ending 2/5/2011



**Influenza-Associated Pediatric Mortality:** Eleven influenza-associated pediatric deaths were reported to CDC during week 5. Four of these deaths were associated with influenza B viruses, two of these deaths were associated with 2009 influenza A (H1N1) virus, one was associated with an influenza A (H3) virus, and four were associated with an influenza A virus for which the subtype was not determined. Thirty deaths from 18 states (Arizona, Colorado, Florida, Georgia, Illinois, Indiana, Louisiana, Michigan, New Jersey, New York, North Carolina, North Dakota, Oklahoma, Pennsylvania, Texas, Utah, Virginia, and West Virginia) and New York City have been reported during this influenza season.

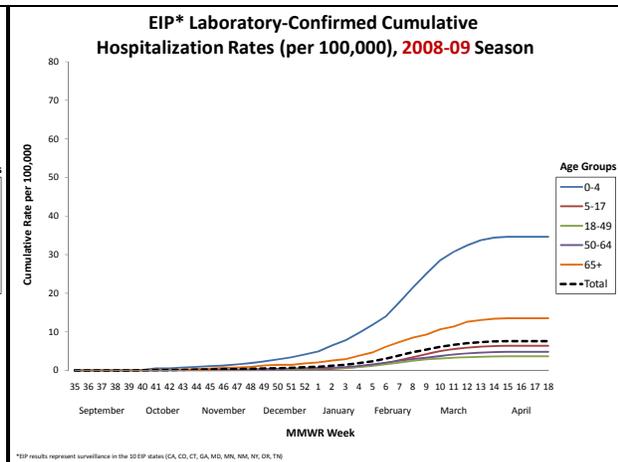
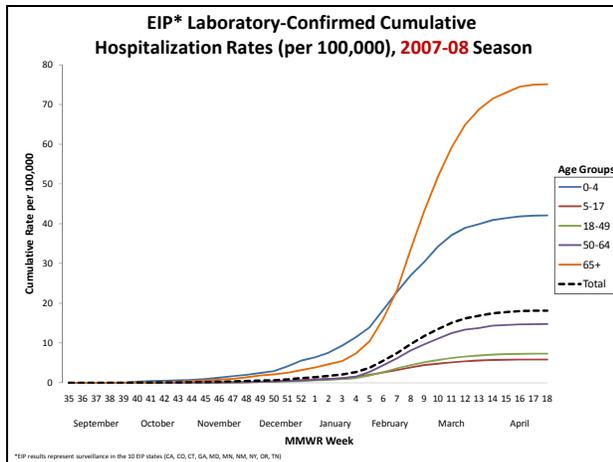
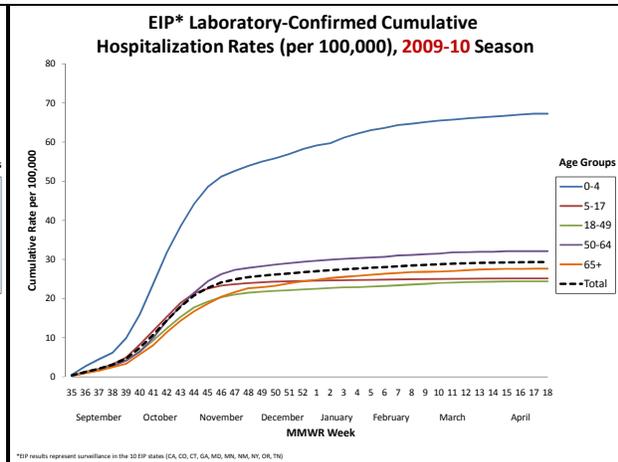
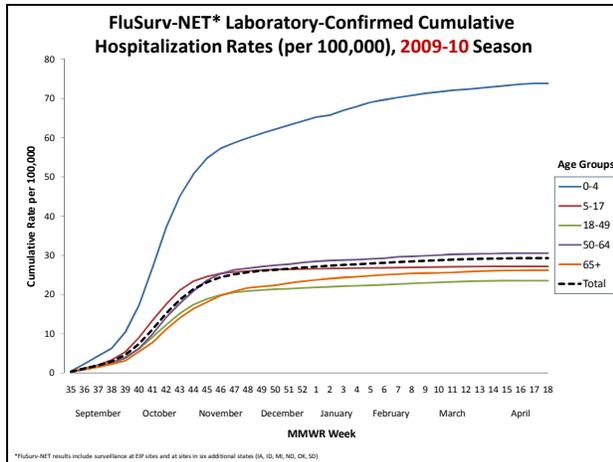
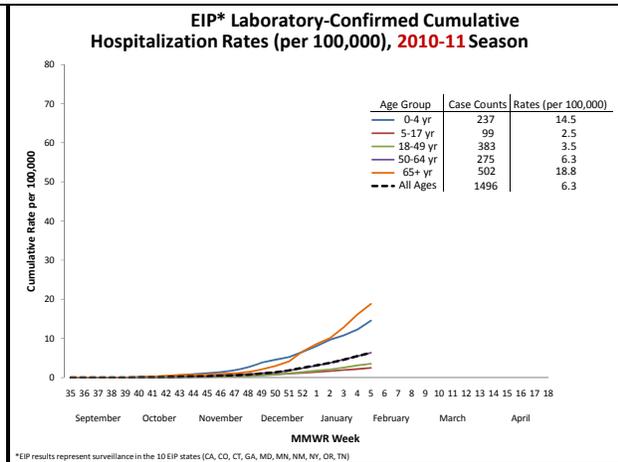
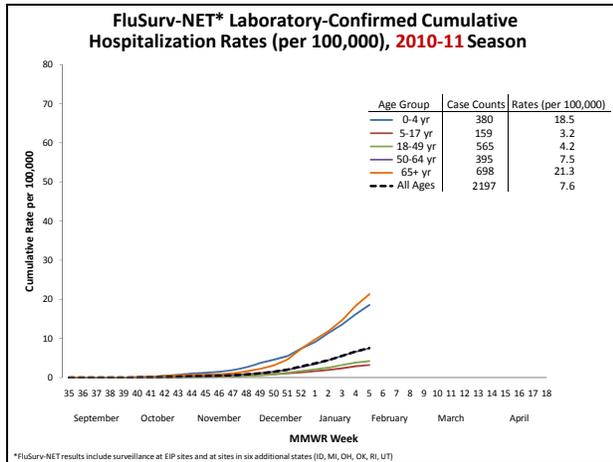
Twelve of the 30 deaths reported were associated with influenza B viruses, nine deaths reported were associated with influenza A (H3) viruses, three were associated with 2009 influenza A (H1N1) viruses, and six were associated with an influenza A virus for which the subtype was not determined.

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



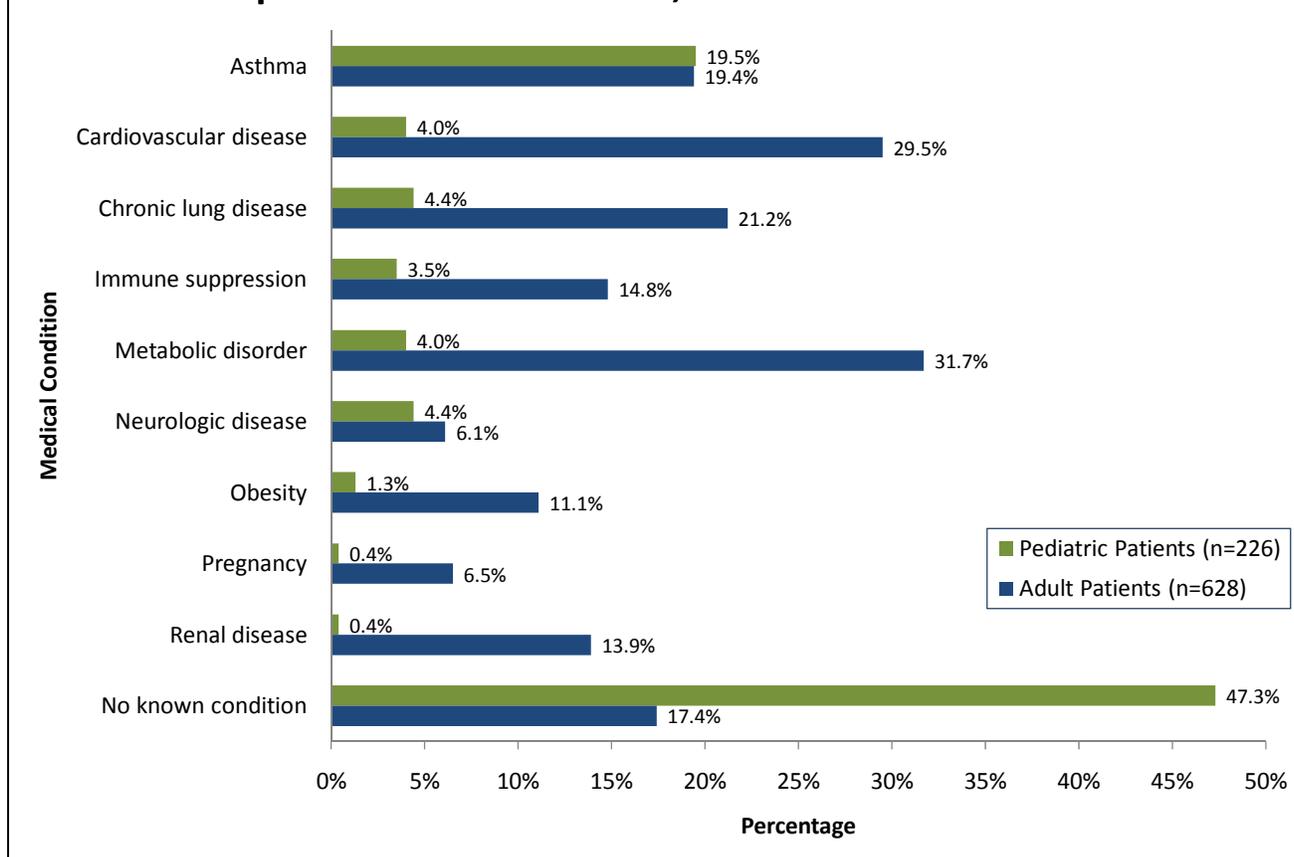
**Influenza-Associated Hospitalizations:** FluSurv-NET conducts population-based surveillance for laboratory-confirmed influenza-associated hospitalizations in children (persons younger than 18 years) and adults. The current network covers over 80 counties in the 10 Emerging Infections Program (EIP) 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 February 5, 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 conditions<sup>1</sup> in patients hospitalized with influenza, FluSurv-NET 2010-2011<sup>2</sup>



<sup>1</sup>Asthma 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/m<sup>2</sup> in patients 20 years of age or older, or equal to or greater than the 95<sup>th</sup> 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.

<sup>2</sup>Data as of February 8, 2011. Includes 854 (of a total 2,217 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 EIP<sup>1</sup> and FluSurv-NET<sup>2</sup> sites, 2006-2011**

	2010-2011 FluSurv- NET <sup>3</sup> N (%)	2009-2010 FluSurv- NET <sup>3</sup> N (%)	2008-2009 EIP N (%)	2007-2008 EIP N (%)	2006-2007 EIP N (%)
<b>Total Cases</b>	2,217	7,517	1,698	3,930	1,279
<b>Age in Years</b>					
0-4	384 (17.3)	1,326 (17.6)	549 (32.3)	639 (16.3)	393 (30.7)
5-17	159 (7.2)	1,204 (16.0)	244 (14.4)	221 (5.6)	130 (10.2)
18-49	568 (25.6)	2,779 (37.0)	374 (22.0)	736 (18.7)	246 (19.2)
50-64	397 (17.9)	1,458 (19.4)	201 (11.8)	585 (14.9)	155 (12.1)
65+	701 (31.6)	750 (10.0)	330 (19.4)	1,749 (44.5)	355 (27.8)
<b>Sex</b>					
Male	1,022 (46.1)	3,517 (46.8)	832 (49.0)	1,825 (46.4)	631 (49.3)
Female	1,183 (53.4)	4,000 (53.2)	866 (51.0)	2,104 (53.5)	648 (50.7)
<b>Flu Type and Subtype</b>					
Influenza A	1,759 (79.3)	7,355 (97.8)	1,236 (72.8)	2,562 (65.2)	1,082 (84.6)
Specimens subtyped <sup>4</sup>	340	5,325	--	--	--
A (H1)	0 (0.0)	0 (0.0)	--	--	--
A (H3)	287 (84.4)	3 (0.1)	--	--	--
A (2009 H1N1)	53 (15.6)	5,322 (99.9)	--	--	--
Influenza B	348 (15.7)	52 (0.7)	382 (22.5)	1,199 (30.5)	149 (11.6)
<b>Intensive Care Unit</b>	140 (16.4)	1,560 (20.8)	298 (17.6)	495 (12.6)	198 (15.5)
<b>Mechanical Ventilation</b>	50 (5.9)	758 (10.1)	157 (9.2)	252 (6.4)	111 (8.7)
<b>Diagnosis of Pneumonia</b>	226 (26.5)	2,804 (37.3)	407 (24.0)	1,220 (31.0)	404 (31.6)
<b>Died</b>	18 (2.1)	222 (3.0)	49 (2.9)	104 (2.6)	24 (1.9)

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

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

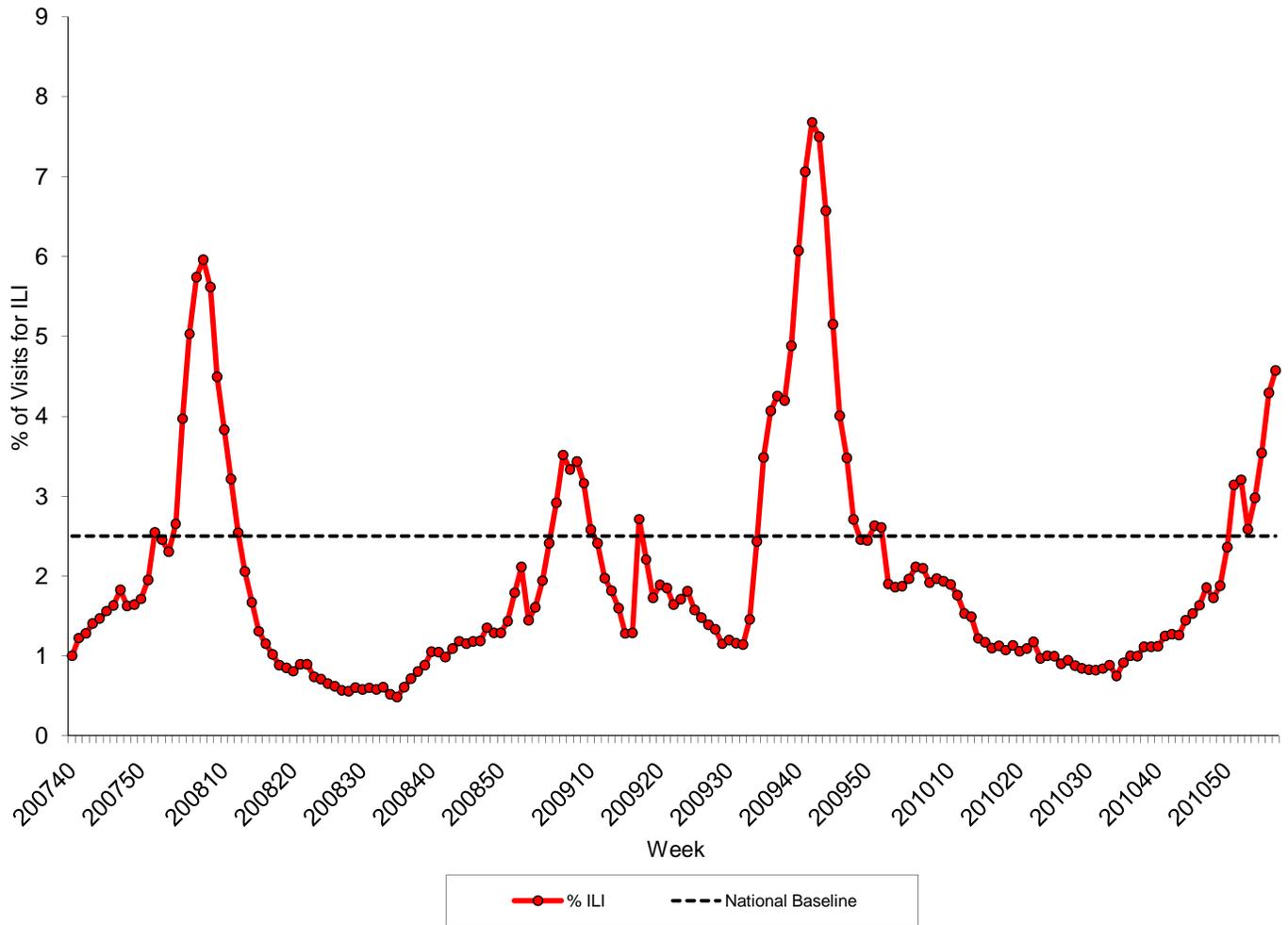
<sup>2</sup>FluSurv-Net includes surveillance at EIP sites and at sites in additional states (IA, ID, MI, ND, OK, SD in 2009-2010; ID, MI, OH, OK, RI, UT in 2010-2011).

<sup>3</sup>Data as of February 8, 2011. Results describing influenza A subtype, intensive care unit admission, mechanical ventilation, diagnosis of pneumonia, and death are from 7,512 (of a total 7,517 reported) and 854 (of a total 2,217 reported) cases for which data collection has been completed through the medical chart review stage for the 2009-2010 and 2010-2011 seasons, respectively.

<sup>4</sup>Influenza 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.

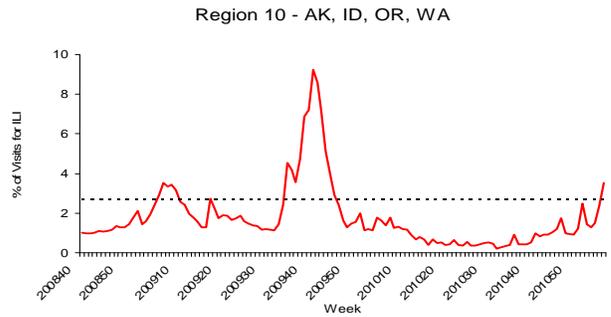
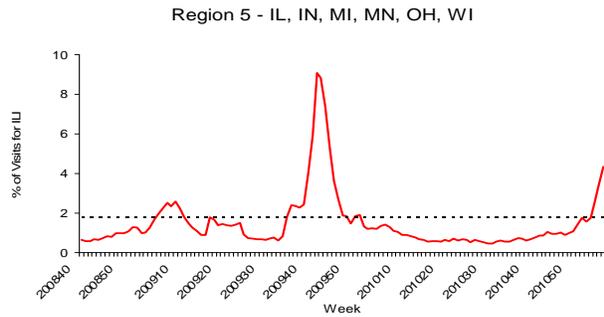
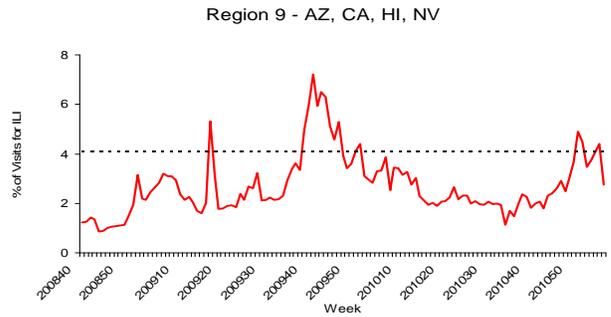
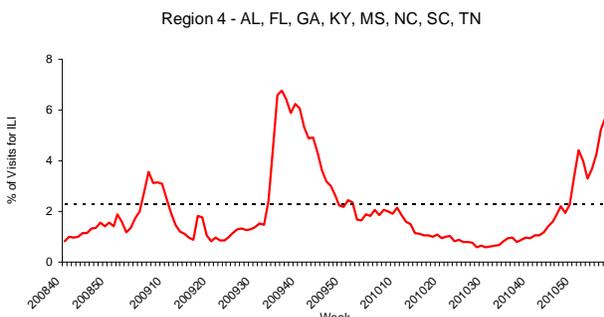
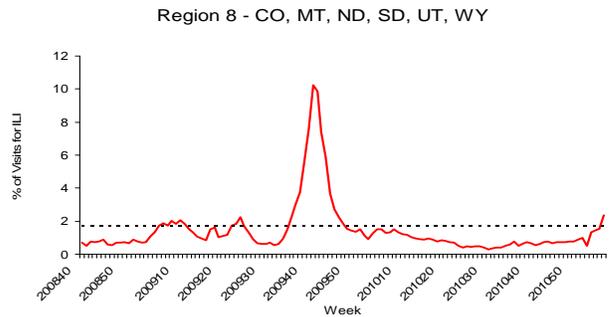
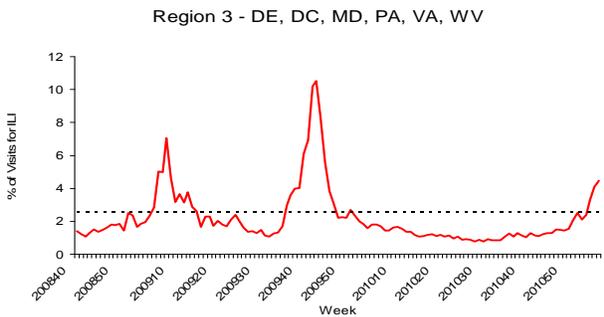
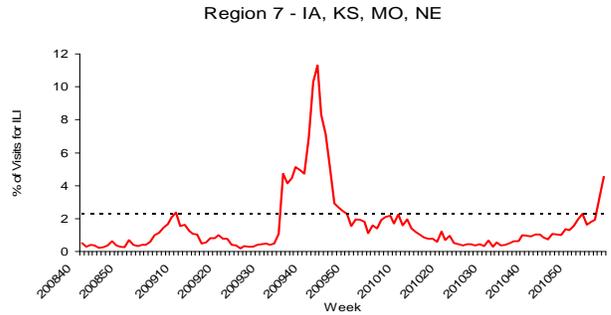
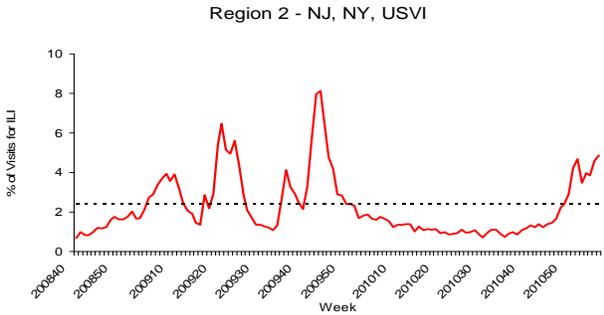
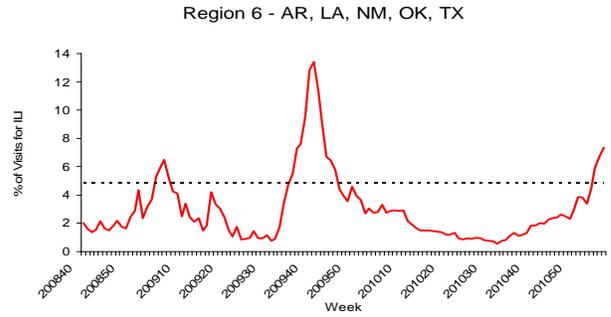
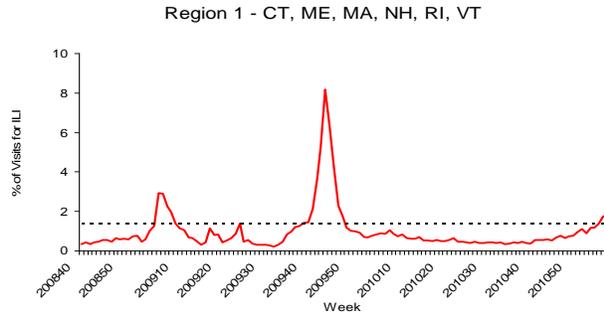
**Outpatient Illness Surveillance:** Nationwide during week 5, 4.6% of patient visits reported through the U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet) were due to influenza-like illness (ILI). This percentage is above the national baseline of 2.5%.

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 – February 5, 2011



On a regional level, the percentage of outpatient visits for ILI ranged from 1.8% to 7.3% during week 5. Nine of the 10 regions (Regions 1, 2, 3, 4, 5, 6, 7, 8, and 10) reported a proportion of outpatient visits for ILI at or above region-specific baseline levels.

Note: The region specific baseline for Region 8 was modified this week from 1.4% to 1.7% to reflect changes to data from previous seasons. These additional data did not affect the national baseline which remains at 2.5% for this season.



NOTE: Scales differ between regions

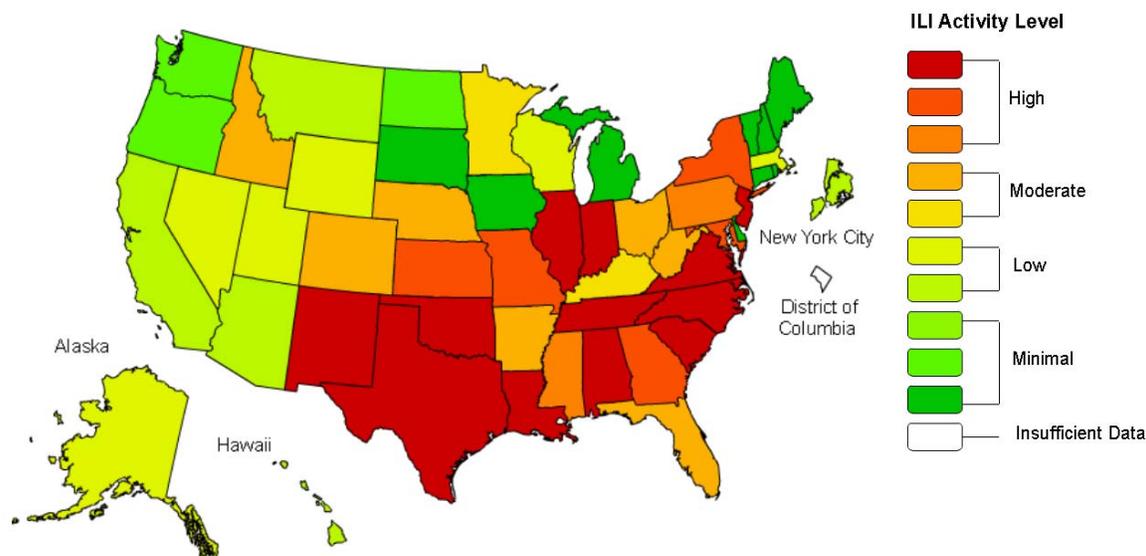
\*Use of the regional baselines for state data is not appropriate.

**ILINet Activity Indicator Map:** Data collected in ILINet are used to produce a measure of ILI activity\* by state. Activity levels are based on the percent of outpatient visits in a state due to ILI and are compared to the average percent of ILI visits that occur during spring and fall weeks with little or no influenza virus circulation. Activity levels range from minimal, which would correspond to ILI activity from outpatient clinics being below the average, to high, which would correspond to ILI activity from outpatient clinics being much higher than 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 5, the following ILI activity levels were experienced:

- Nineteen states (Alabama, Georgia, Illinois, Indiana, Kansas, Louisiana, Maryland, Mississippi, Missouri, New Jersey, New Mexico, New York, North Carolina, Oklahoma, Pennsylvania, South Carolina, Tennessee, Texas, and Virginia) experienced high ILI activity.
- Nine states (Arkansas, Colorado, Florida, Idaho, Kentucky, Minnesota, Nebraska, Ohio, and West Virginia) experienced moderate ILI activity.
- New York City and 10 states (Alaska, Arizona, California, Hawaii, Massachusetts, Montana, Nevada, Utah, Wisconsin, and Wyoming) experienced low ILI activity.
- Minimal ILI activity was experienced by 12 states (Connecticut, Delaware, Iowa, Maine, Michigan, New Hampshire, North Dakota, Oregon, Rhode Island, South Dakota, Vermont, and Washington).
- 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 5 ending Feb 05, 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.

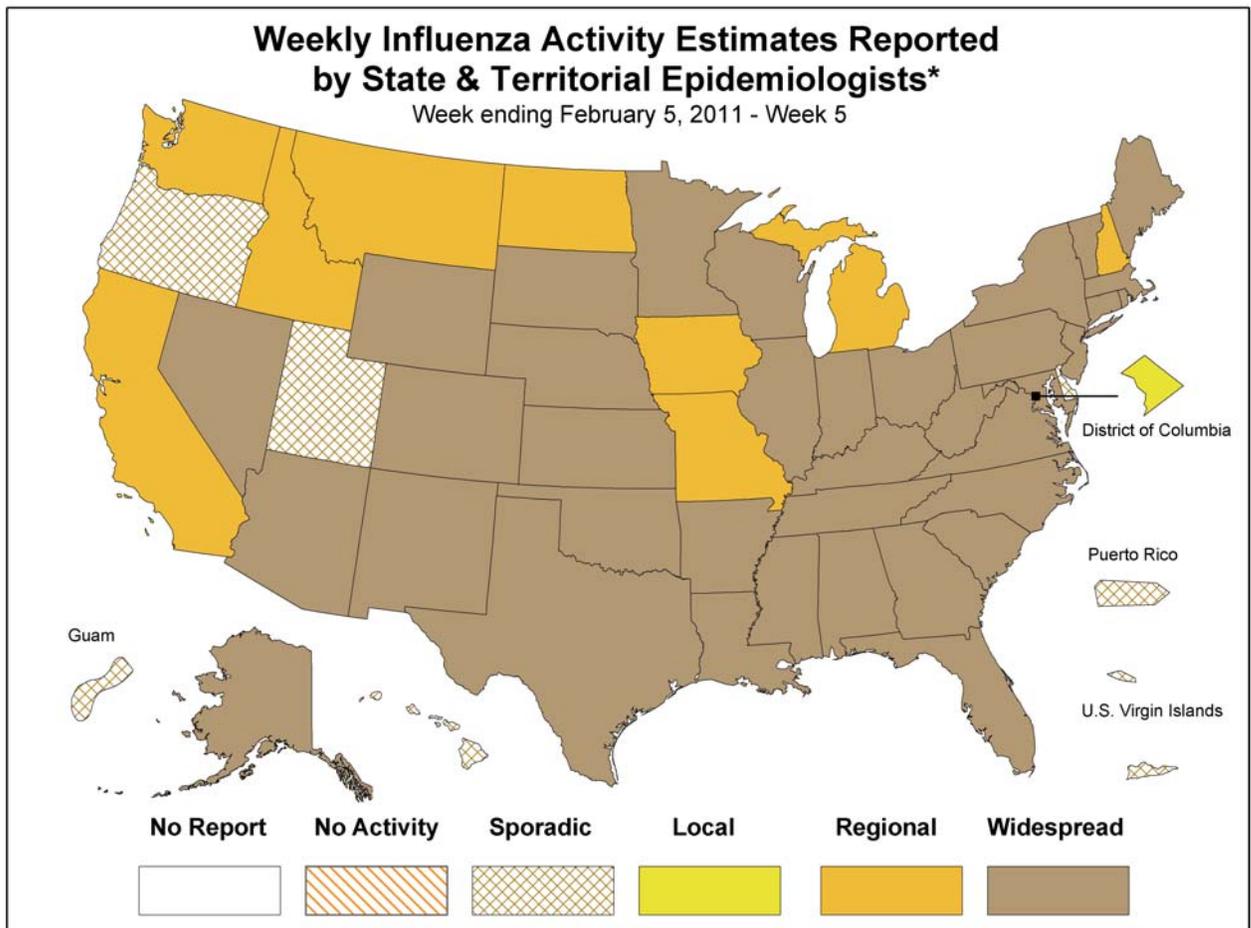
Data displayed in this map are based on data collected in ILINet, whereas the State and Territorial flu activity map are based on reports from state and territorial epidemiologists. The data presented in this map is preliminary and may change as more data is received.

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 5, the following influenza activity was reported:

- Widespread influenza activity was reported by 37 states (Alabama, Alaska, Arizona, Arkansas, Colorado, Connecticut, Florida, Georgia, Illinois, Indiana, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Minnesota, Mississippi, Nebraska, Nevada, New Jersey, New Mexico, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Vermont, Virginia, West Virginia, Wisconsin, and Wyoming).
- Regional influenza activity was reported by nine states (California, Idaho, Iowa, Michigan, Missouri, Montana, New Hampshire, North Dakota, and Washington).
- The District of Columbia reported local activity.
- Sporadic influenza activity was reported by Guam, Puerto Rico, the U.S. Virgin Islands, and four states (Delaware, Hawaii, Oregon, and Utah).



\* 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 U.S. 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/Activities/Surveillance/EISN/Pages/home.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: February 11, 2011.