

**2008-2009 Influenza Season
Week 7 ending February 21, 2009**

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

Synopsis: During week 7 (February 15-21, 2009), influenza activity increased slightly in the United States.

- One thousand four hundred five (24.6%) 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 were positive for influenza.
- The proportion of deaths attributed to pneumonia and influenza (P&I) was below the epidemic threshold.
- Eight influenza-associated pediatric deaths were reported.
- The proportion of outpatient visits for influenza-like illness (ILI) was above the national baseline. ILI decreased nationally and in six of the nine regions compared to the previous week. The East North Central, East South Central, Mountain, New England, South Atlantic, West North Central, and West South Central regions reported ILI above their region-specific baselines.
- Twenty-seven states reported widespread influenza activity, 17 states reported regional activity; the District of Columbia and six states reported local influenza activity; and Puerto Rico reported sporadic influenza activity.

National and Regional Summary of Select Surveillance Components

	Data for current week			Data cumulative for the season				
	Out-patient ILI*	% positive for flu†	Number of jurisdictions reporting regional or widespread activity‡	A (H1)	A (H3)	A Unsub-typed	B	Pediatric Deaths
Nation	Elevated	24.6%	44 of 51	2,918	328	5,843	2,546	17
New England	Elevated	24.8%	6 of 6	229	23	641	236	1
Mid-Atlantic	Normal	16.0%	3 of 3	256	30	660	268	2
East North Central	Elevated	45.9%	4 of 5	449	47	73	154	0
West North Central	Elevated	22.1%	6 of 7	436	21	395	136	0
South Atlantic	Elevated	24.4%	8 of 9	560	44	791	506	2
East South Central	Elevated	16.9%	4 of 4	57	5	13	34	1
West South Central	Elevated	27.9%	1 of 4	326	23	2,644	1,064	6
Mountain	Elevated	13.2%	7 of 8	189	93	401	54	5
Pacific	Normal	12.9%	5 of 5	416	42	225	94	0

* 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

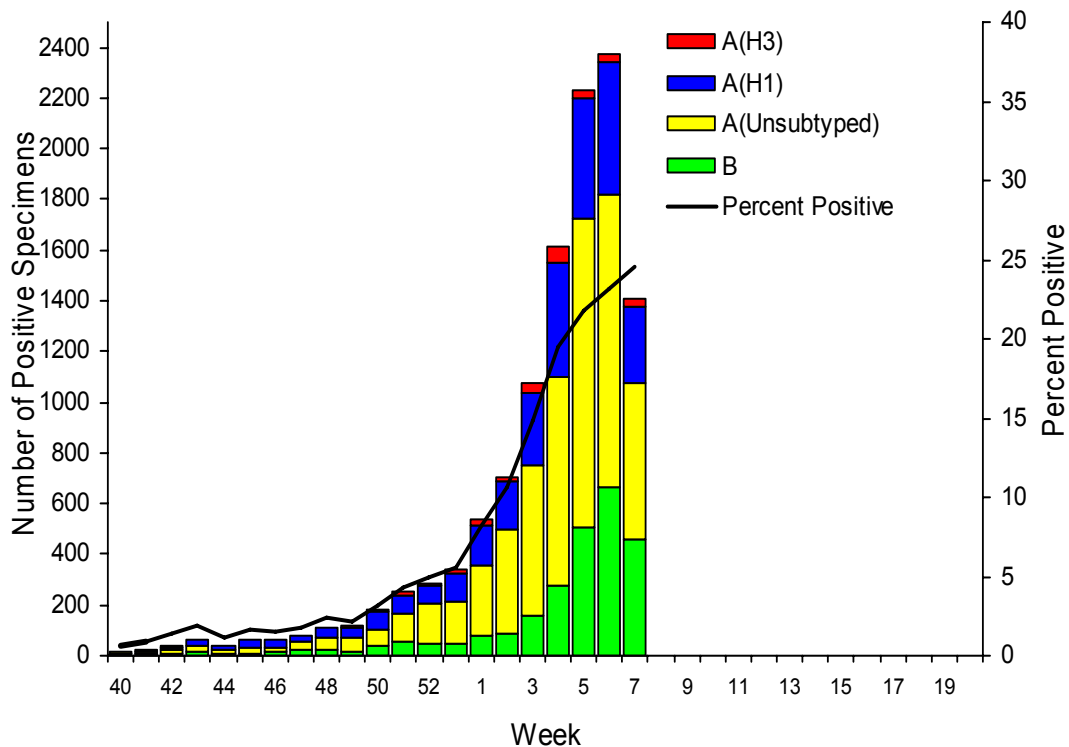
‡ Includes all 50 states and the District of Columbia

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 each week. The results of tests performed during the current week and cumulative totals for the season are summarized in the table below.

	Week 7	Cumulative for the Season
No. of specimens tested	5,715	115,870
No. of positive specimens (%)	1,405 (24.6%)	11,635 (10.0%)
Positive specimens by type/subtype		
Influenza A	950 (67.6%)	9,089 (78.1%)
 A (H1)	297 (31.3%)	2,918 (32.1%)
 A (H3)	31 (3.3%)	328 (3.6%)
 A (unsubtyped)	622 (65.5%)	5,843 (64.3%)
Influenza B	455 (32.4%)	2,546 (21.9%)

Since week 1 (the week ending January 10, 2009) when influenza activity began to increase nationally, influenza A (H1) viruses have predominated circulation nationally each week and for the season overall in all regions. Since week 1, 90% of subtyped influenza A viruses reported to CDC were influenza A (H1).

Influenza Positive Tests Reported to CDC by U.S. WHO/NREVSS Collaborating Laboratories, National Summary, 2008-09



Composition of the 2009-10 Influenza Vaccine: WHO has recommended vaccine strains for the 2009-10 Northern Hemisphere trivalent influenza vaccine, and FDA has made the same recommendations for the U.S. influenza vaccine. Both agencies recommend that the vaccine contain A/Brisbane/59/2007-like (H1N1), A/Brisbane/10/2007-like (H3N2), and B/Brisbane/60/2008-like (B/Victoria lineage) viruses. Only the influenza B component has been changed from the 2008-09 vaccine formulation. This recommendation was based on surveillance data related to epidemiology and antigenic characteristics, serological responses to 2008-09 vaccines, and the availability of candidate strains and reagents.

Antigenic Characterization: CDC has antigenically characterized 476 influenza viruses [325 influenza A (H1), 37 influenza A (H3) and 114 influenza B viruses] collected by U.S. laboratories since October 1, 2008.

All 325 influenza A (H1) viruses are related to the influenza A (H1N1) component of the 2008-09 influenza vaccine (A/Brisbane/59/2007). All 37 influenza A (H3N2) viruses are related to the A (H3N2) vaccine component (A/Brisbane/10/2007).

Influenza B viruses currently circulating can be divided into two distinct lineages represented by the B/Yamagata/16/88 and B/Victoria/02/87 viruses. Thirty-three influenza B viruses tested belong to the B/Yamagata lineage and are related to the vaccine strain (B/Florida/04/2006). The remaining 81 viruses belong to the B/Victoria lineage and are not related to the vaccine strain.

Data on antigenic characterization should be interpreted with caution given that antigenic characterization data is based on hemagglutination inhibition (HI) testing using a panel of reference ferret antisera and results may not correlate with clinical protection against circulating viruses provided by influenza vaccination.

Annual influenza vaccination is expected to provide the best protection against those virus strains that are related to the vaccine strains, but limited to no protection may be expected when the vaccine and circulating virus strains are so different as to be from different lineages, as is seen with the two lineages of influenza B viruses.

Antiviral Resistance: Since October 1, 2008, 325 influenza A (H1N1), 54 influenza A (H3N2), and 125 influenza B viruses have been tested for resistance to the neuraminidase inhibitors (oseltamivir and zanamivir). Three hundred twenty-five influenza A (H1N1) and 54 influenza A (H3N2) viruses have been tested for resistance to the adamantanes (amantadine and rimantadine). The results of antiviral resistance testing performed on these viruses are summarized in the table below.

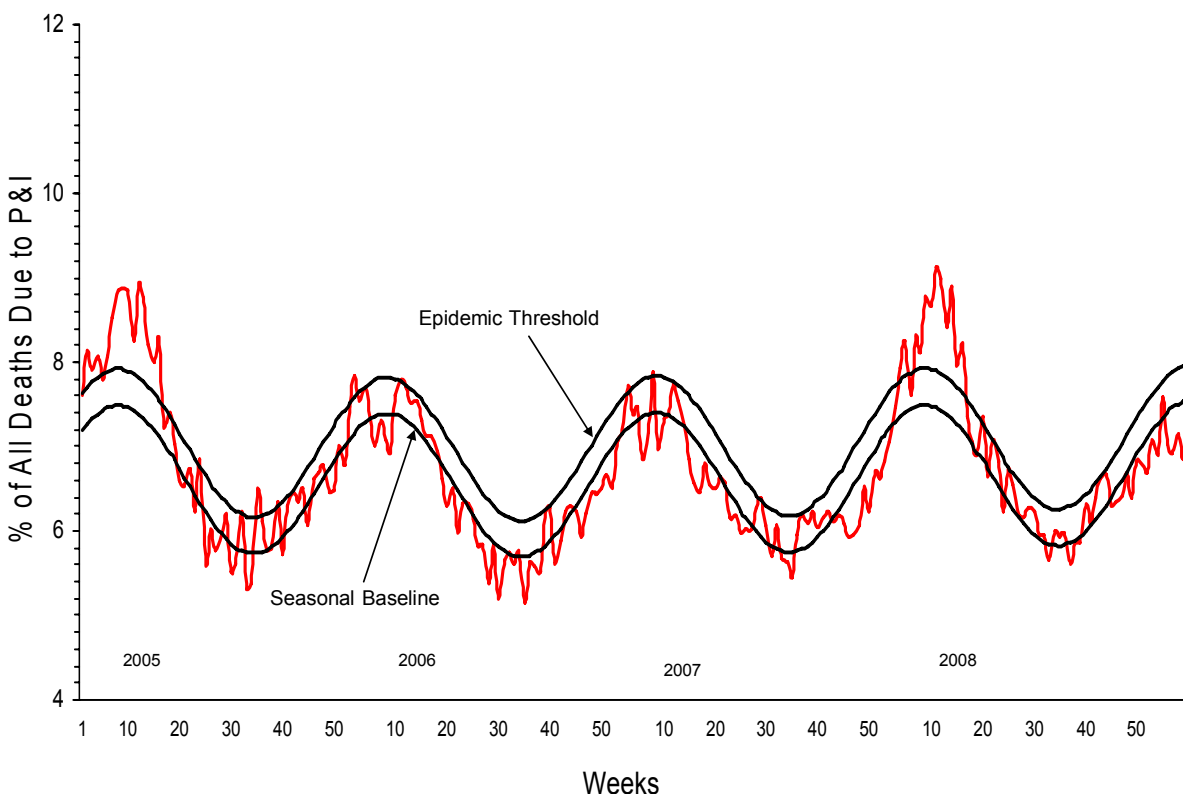
	Isolates tested (n)	Resistant Viruses, Number (%)		Isolates tested (n)	Resistant Viruses, Number (%)
		Oseltamivir	Zanamivir		Adamantanes
Influenza A (H1N1)	325	321 (98.8%)	0 (0)	325	2 (0.6%)
Influenza A (H3N2)	54	0 (0)	0 (0)	54	54 (100%)
Influenza B	125	0 (0)	0 (0)	N/A*	N/A*

*The adamantanes (amantadine and rimantadine) are not effective against influenza B viruses.

Influenza A (H1N1) viruses from 35 states have been tested for antiviral resistance to oseltamivir so far this season. To date, all influenza A (H3N2) viruses tested are resistant to the adamantanes and all oseltamivir-resistant influenza A (H1N1) viruses tested are sensitive to the adamantanes. Influenza activity in the United States increased this week with influenza A (H1N1) viruses predominating overall. However, the level of activity and the relative proportion of circulating virus types or subtypes have varied by region and may vary over the course of the season. This presents challenges for the selection of antiviral medications for the treatment and chemoprophylaxis of influenza and highlights the importance of testing patients for influenza and consulting local surveillance data when evaluating patients with acute respiratory infections during the influenza season. CDC issued interim recommendations for the use of influenza antiviral medications in the setting of oseltamivir resistance among circulating influenza A (H1N1) viruses on December 19, 2008. These interim recommendations are available at <http://www2a.cdc.gov/HAN/ArchiveSys/ViewMsgV.asp?AlertNum=00279>.

Pneumonia and Influenza (P&I) Mortality Surveillance: During week 7, 7.4% of all deaths reported through the 122-Cities Mortality Reporting System were due to P&I. This percentage is below the epidemic threshold of 8.0% for week 7.

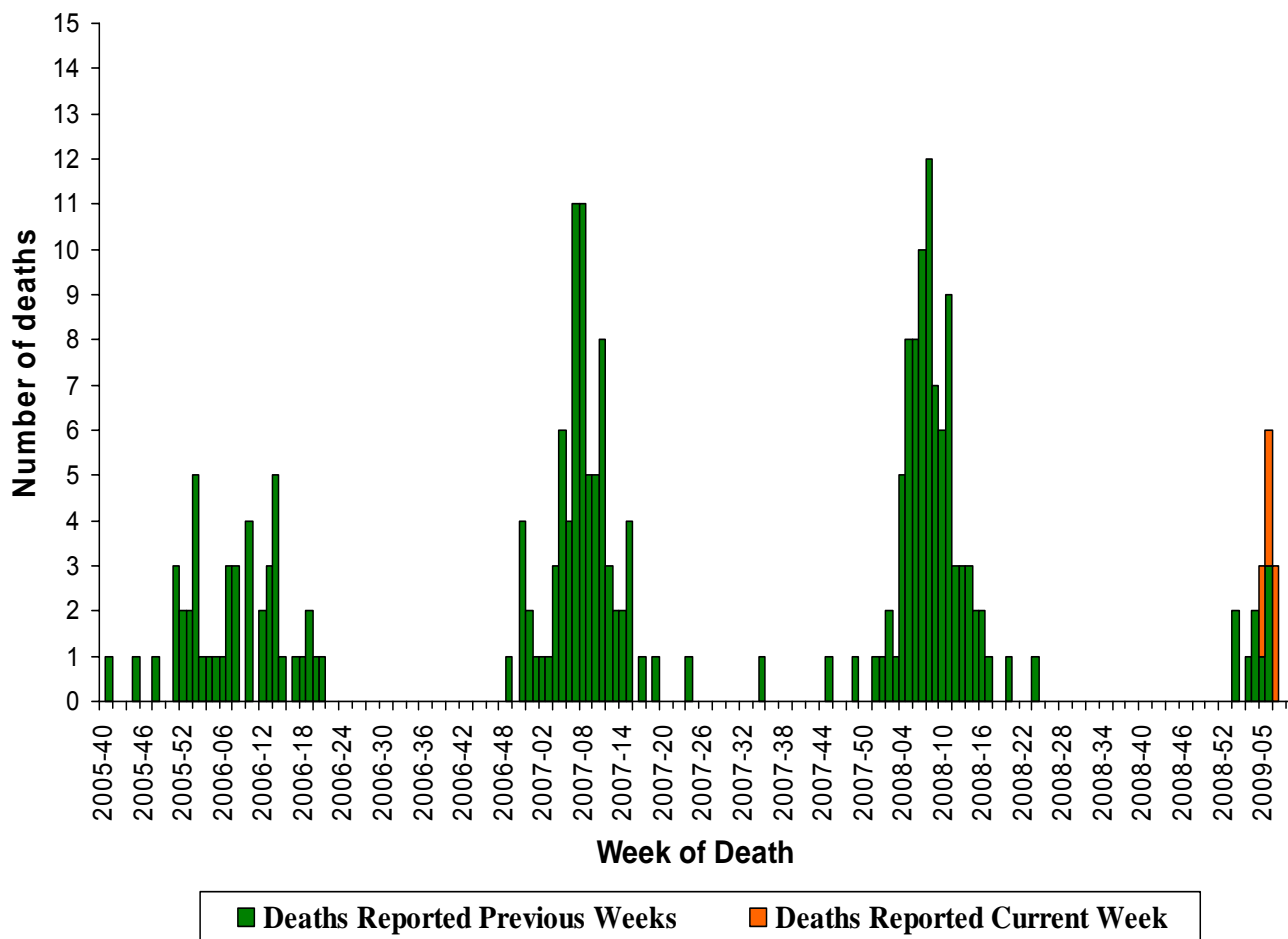
Pneumonia and Influenza Mortality for 122 U.S. Cities
Week ending 02/21/2009



Influenza-Associated Pediatric Mortality: Eight influenza-associated pediatric deaths were reported to CDC during week 7 (Arizona, Colorado [2], Massachusetts and Texas [4]). The deaths reported this week occurred between February 1 and February 18, 2009. Since September 28, 2008, CDC has received 17 reports of influenza-associated pediatric deaths that occurred during the current season.

Bacterial coinfections were confirmed in 10 (58.8%) of the 17 children; *Staphylococcus aureus* was identified in eight (80.0%) of the ten children. Three of the *S. aureus* isolates were sensitive to methicillin, four were methicillin resistant, and one had no sensitivity results reported. Eight (80.0%) of the 10 children with bacterial coinfections were 12 years of age or older. An increase in the number of influenza-associated pediatric deaths with bacterial coinfections was first recognized during the 2006-07 influenza season. In January 2008, interim testing and reporting recommendations were released regarding influenza and bacterial coinfections in children and are available at (<http://www2a.cdc.gov/HAN/ArchiveSys/ViewMsgV.asp?AlertNum=00268>).

Number of Influenza-Associated Pediatric Deaths by Week of Death:
2005-06 season to present

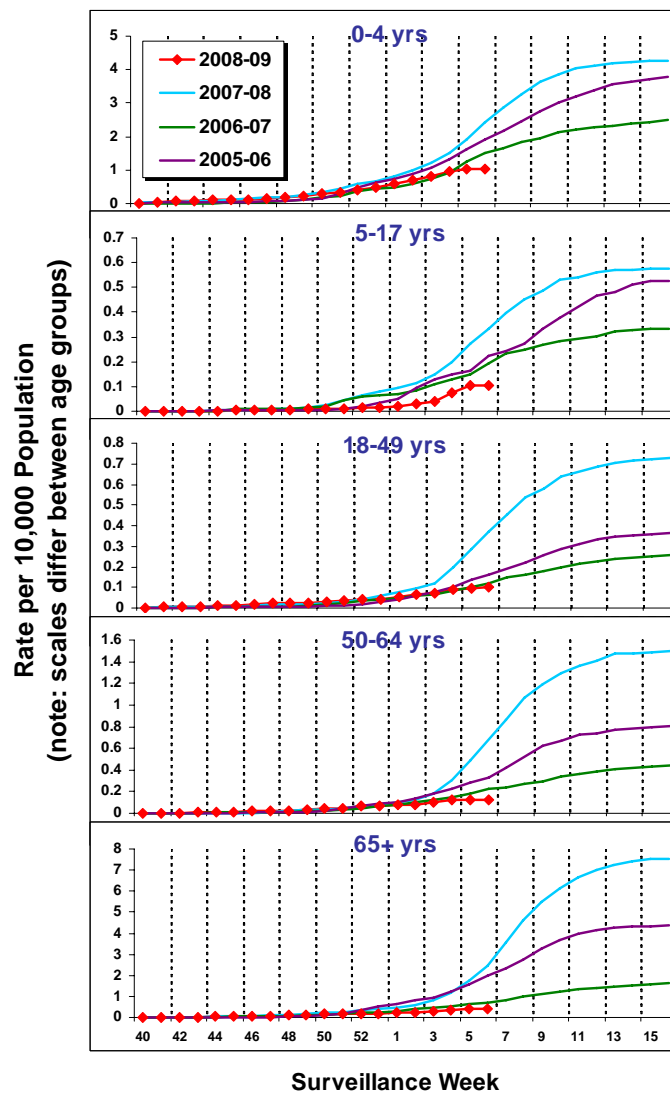


Influenza-Associated Hospitalizations: Laboratory-confirmed influenza-associated hospitalizations are monitored in two population-based surveillance networks: the Emerging Infections Program (EIP) and the New Vaccine Surveillance Network (NVSN). These two systems provide updates of surveillance data every two weeks.

No influenza-associated hospitalizations have been reported from the New Vaccine Surveillance Network this season. Due to case identification methods utilized in this study, a delay exists from the date of hospitalization to the date of report. An update will be provided in subsequent weeks as epidemiologic information and testing results are obtained.

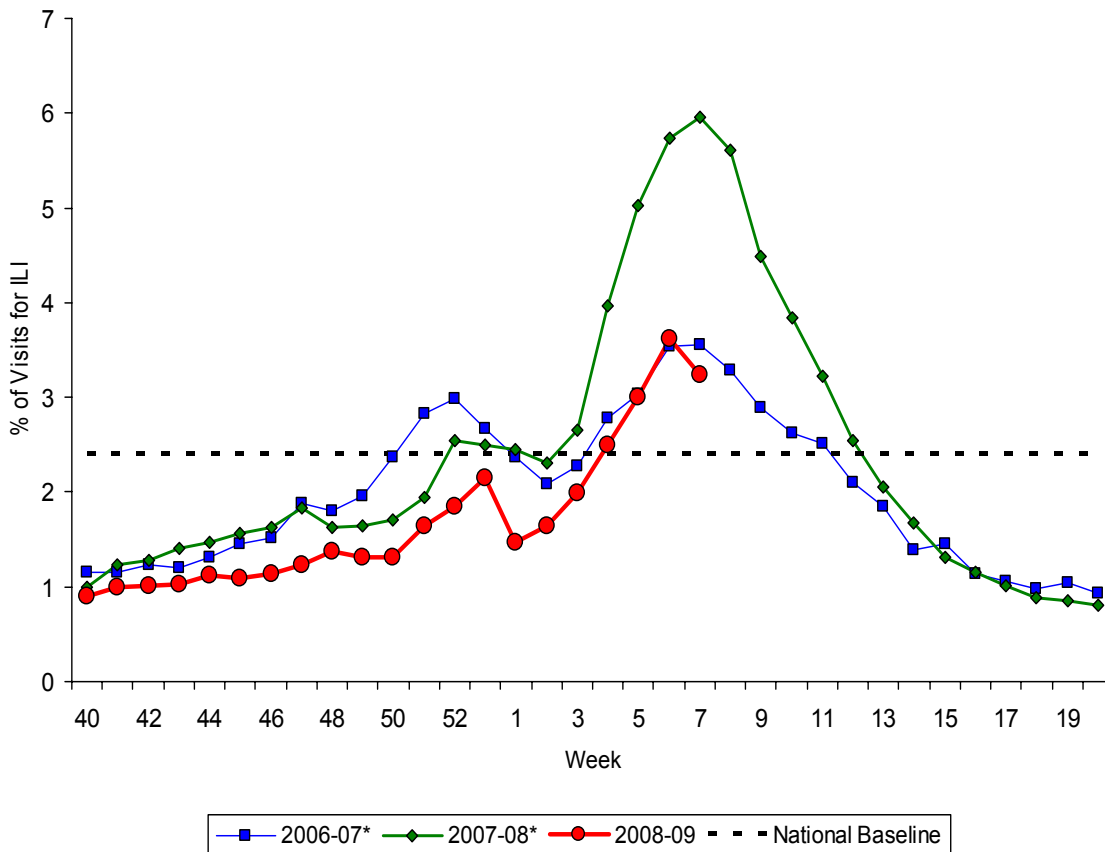
During October 1, 2008 – February 14, 2009, preliminary laboratory-confirmed influenza-associated hospitalization rates reported by the EIP for children aged 0-4 years and 5-17 years were 1.0 per 10,000 and 0.1 per 10,000, respectively. For adults aged 18-49 years, 50-64 years, and ≥ 65 years, the rates were 0.1 per 10,000, 0.1 per 10,000, and 0.4 per 10,000, respectively.

EIP Influenza Laboratory-Confirmed Cumulative Hospitalization Rates, 2008-09 and Previous 3 Seasons



Outpatient Illness Surveillance: Nationwide during week 7, 3.2% 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 2.4%.

Percentage of Visits for Influenza-like Illness (ILI) Reported by the U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet), National Summary, 2008-09 and Previous Two Seasons



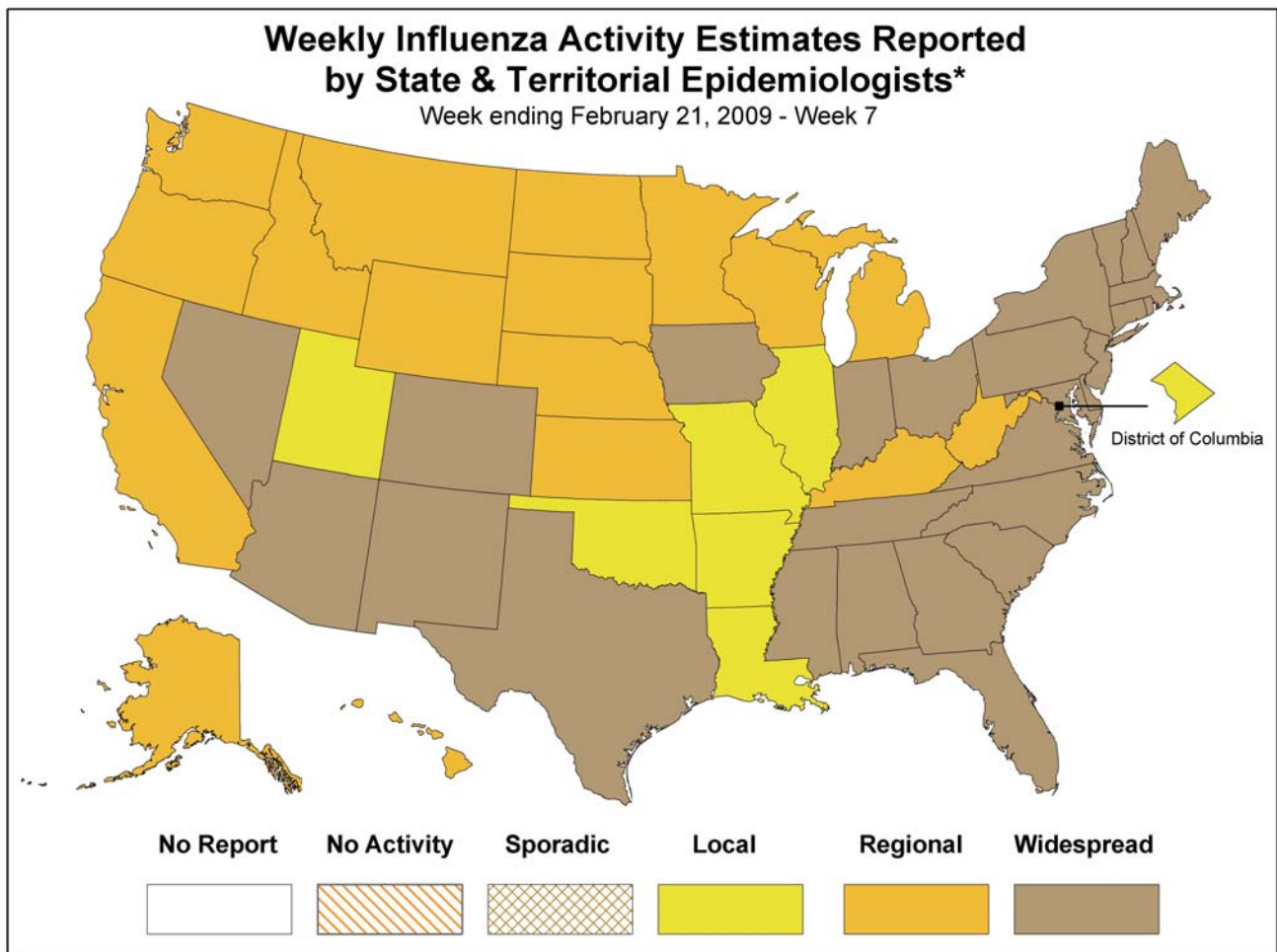
*There was no week 53 during the 2006-07 and 2007-08 seasons, therefore the week 53 data point for those seasons is an average of weeks 52 and 1.

On a regional level, the percentage of visits for ILI decreased in six of the nine regions compared to the previous week and ranged from 1.9% to 5.9%. Seven of nine surveillance regions reported ILI percentages above their region specific baselines.

Region	New England	Mid-Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific
Reported ILI (%)	2.9	2.8	2.6	1.9	3.6	2.7	5.9	3.0	2.9
Region-Specific Baseline	1.5	2.9	1.9	1.7	2.2	2.5	4.8	1.5	3.0

Geographic Spread of Influenza as Assessed by State and Territorial Epidemiologists: During week 7, the following influenza activity was reported:

- Widespread influenza activity was reported by 27 states (Alabama, Arizona, Colorado, Connecticut, Delaware, Florida, Georgia, Indiana, Iowa, Maine, Maryland, Massachusetts, Mississippi, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, South Carolina, Tennessee, Texas, Vermont, and Virginia).
- Regional influenza activity was reported by 17 states (Alaska, California, Hawaii, Idaho, Kansas, Kentucky, Michigan, Minnesota, Montana, Nebraska, North Dakota, Oregon, South Dakota, Washington, West Virginia, Wisconsin, and Wyoming).
- Local influenza activity was reported by the District of Columbia and six states (Arkansas, Illinois, Louisiana, Missouri, Oklahoma, and Utah).
- Sporadic activity was reported by Puerto Rico.



* 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/fluactivity.htm>

Report prepared: February 27, 2009.