

2008-2009 Influenza Season
Week 14 ending April 11, 2009

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

Synopsis: During week 14 (April 5-11, 2009), influenza activity continued to decrease in the United States.

- Two hundred fifty-nine (9.0%) 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 at the epidemic threshold.
- Eight influenza-associated pediatric deaths were reported.
- The proportion of outpatient visits for influenza-like illness (ILI) was below the national baseline. Two of nine surveillance regions reported ILI above their region-specific baselines (East South Central and Mountain).
- One state reported widespread influenza activity, 14 states reported regional activity; 22 states reported local influenza activity; the District of Columbia, Puerto Rico, and 12 states reported sporadic influenza activity; and one state reported no 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	Normal	9.0%	15 of 51	6,151	713	10,115	8,428	53
New England	Normal	8.4%	0 of 6	444	67	1,057	729	1
Mid-Atlantic	Normal	19.9%	2 of 3	747	98	959	912	10
East North Central	Normal	31.4%	0 of 5	981	61	291	844	7
West North Central	Normal	13.0%	1 of 7	920	40	865	740	0
South Atlantic	Normal	14.9%	1 of 9	998	56	1,911	1,753	8
East South Central	Elevated	6.8%	2 of 4	186	6	58	108	4
West South Central	Normal	7.0%	0 of 4	588	40	3,695	2,309	11
Mountain	Elevated	15.8%	5 of 8	647	189	827	410	8
Pacific	Normal	13.4%	4 of 5	640	156	452	623	4

* 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

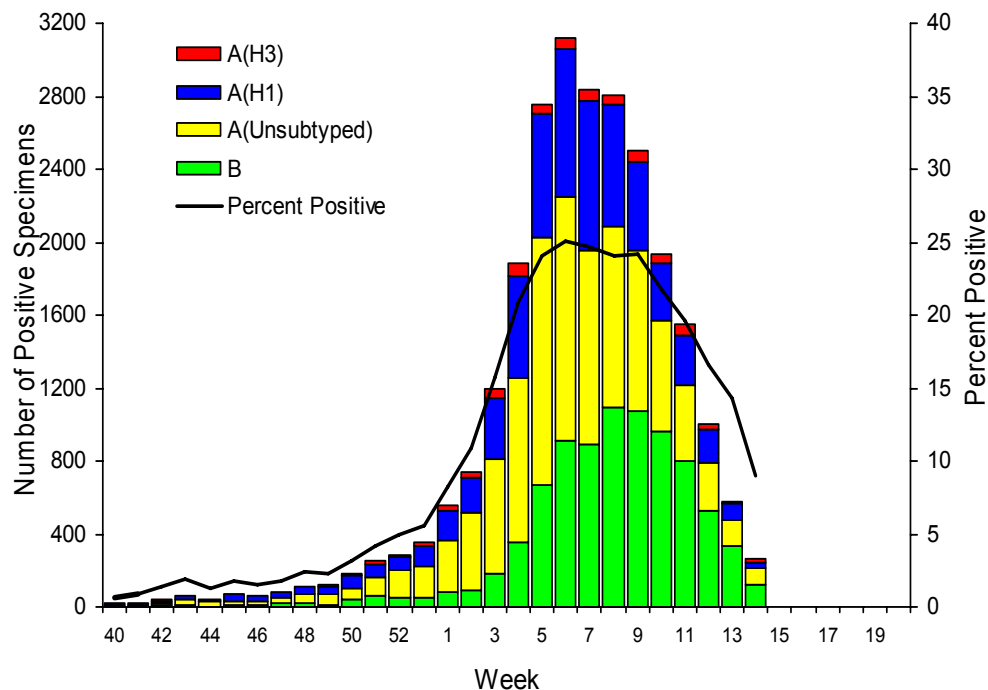
‡ Includes all 50 states and the District of Columbia

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 14	Cumulative for the Season
No. of specimens tested	2,873	178,393
No. of positive specimens (%)	259 (9.0%)	25,407 (14.2%)
Positive specimens by type/subtype		
Influenza A	137 (52.9%)	16,979 (66.8%)
A (H1)	39 (28.5%)	6,151 (36.2%)
A (H3)	11 (8.0%)	713 (4.2%)
A (unsubtyped)	87 (63.5%)	10,115 (59.6%)
Influenza B	122 (47.1%)	8,428 (33.2%)

During the 2008-09 season, influenza A (H1), A (H3), and B viruses have co-circulated in the United States. Influenza A (H1) viruses have predominated during the season overall, however, the most commonly reported influenza virus has varied by week. From week 40 through week 10 (September 28, 2008 – March 14, 2009) influenza A (H1) viruses were more frequently reported and from weeks 11 through 13 (March 15 – April 4, 2009) more influenza B than influenza A viruses were reported. During week 14, more influenza A than influenza B viruses were reported nationally and in six of the nine surveillance regions.

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 the Food and Drug Administration (FDA) has made the same recommendations for the U.S. influenza vaccine. Both agencies are recommending 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 1,094 influenza viruses [723 influenza A (H1), 107 influenza A (H3) and 264 influenza B viruses] collected by U.S. laboratories since October 1, 2008.

All 723 influenza A (H1) viruses are related to the influenza A (H1N1) component of the 2008-09 influenza vaccine (A/Brisbane/59/2007). All 107 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. Fifty influenza B viruses tested belong to the B/Yamagata lineage and are related to the vaccine strain (B/Florida/04/2006). The remaining 214 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, 748 influenza A (H1N1), 112 influenza A (H3N2), and 301 influenza B viruses have been tested for resistance to the neuraminidase inhibitors (oseltamivir and zanamivir). Seven hundred twenty-nine influenza A (H1N1) and 108 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.

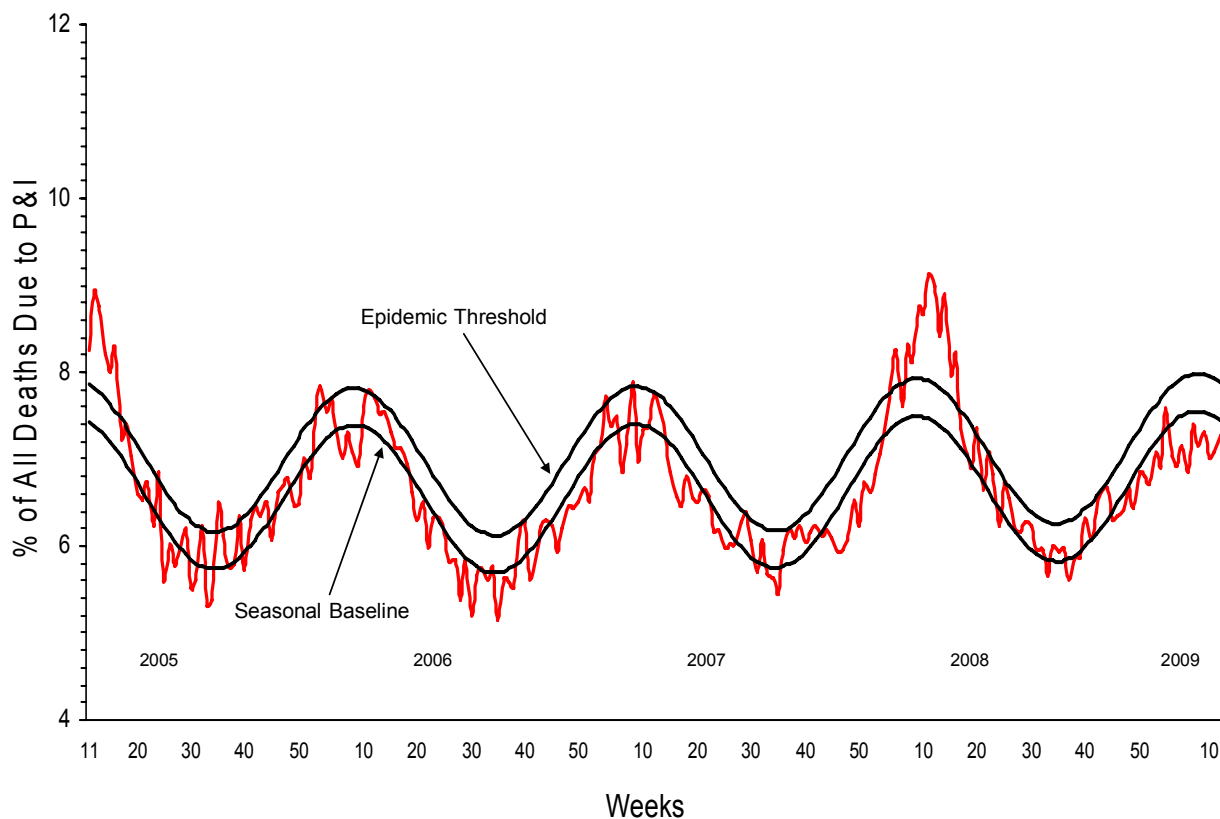
	Isolates tested (n)	Resistant Viruses, Number (%)		Isolates tested (n)	Resistant Viruses, Number (%)
		Oseltamivir	Zanamivir		Adamantanes
Influenza A (H1N1)	748	743 (99.3%)	0 (0)	729	3 (0.4%)
Influenza A (H3N2)	112	0 (0)	0 (0)	108	108 (100%)
Influenza B	301	0 (0)	0 (0)	N/A*	N/A*

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

Influenza A (H1N1) viruses from 44 states and Puerto Rico 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. Nationally, influenza A (H1N1) viruses have predominated during the season overall. Although influenza activity continues to decrease nationally, the relative proportion of influenza B viruses increased during March and April. During week 14, influenza B viruses accounted for 47% of the influenza viruses identified nationally. This presents challenges for the selection of antiviral medications for the treatment and chemoprophylaxis of influenza. Health care providers should be aware of the possibility of increased influenza B circulation in their area and continue to test patients for influenza and consult 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 14, 7.8% of all deaths reported through the 122-Cities Mortality Reporting System were due to P&I. This percentage is equal to the epidemic threshold of 7.8% for week 14.

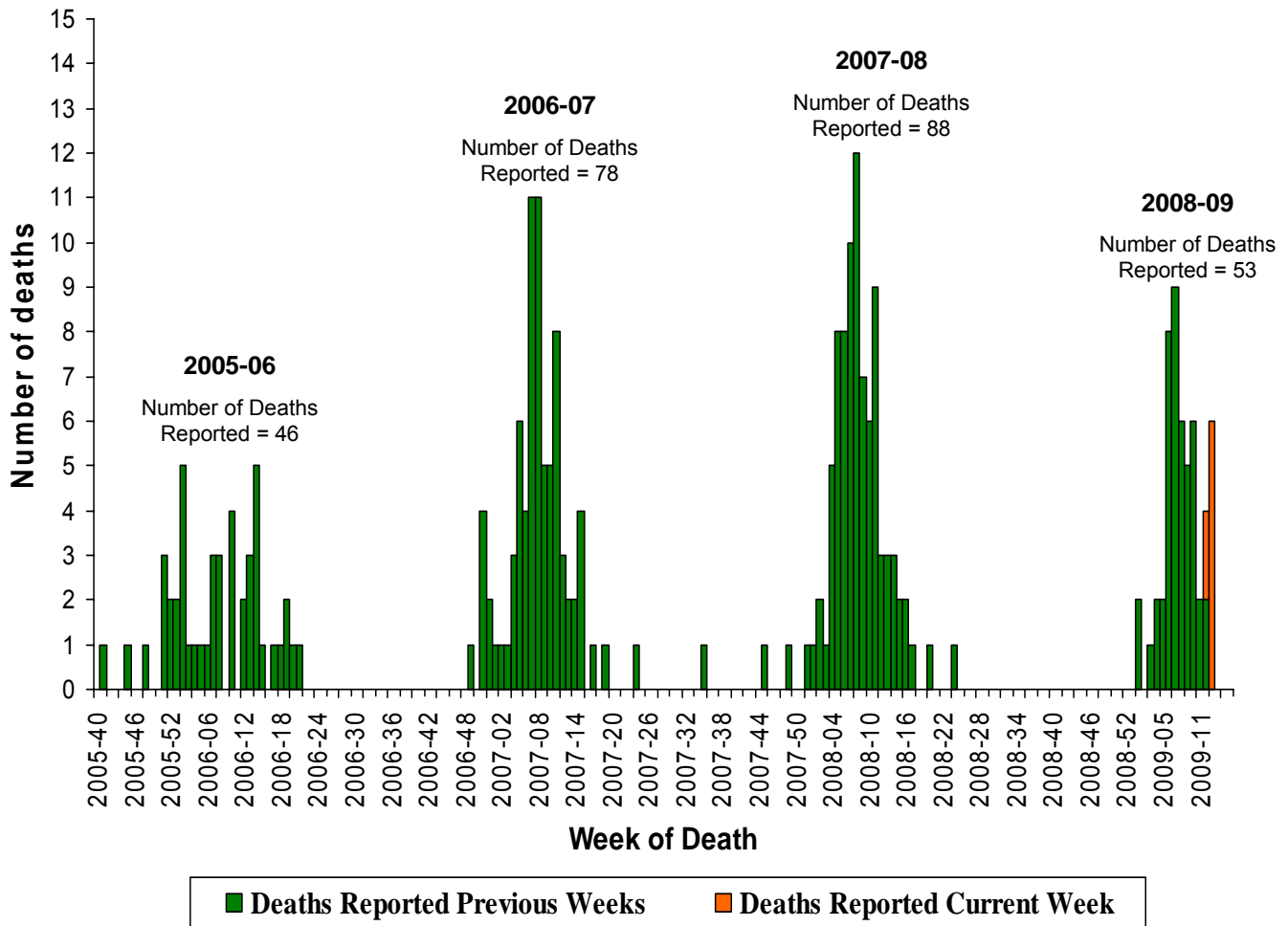
Pneumonia and Influenza Mortality for 122 U.S. Cities Week ending 4/11/2009



Influenza-Associated Pediatric Mortality: Eight influenza-associated pediatric deaths were reported to CDC during week 14 (Delaware, Michigan [2], Pennsylvania [2], Tennessee, and Texas [2]). The deaths reported this week occurred between March 22 and April 4, 2009. Since September 28, 2008, CDC has received 53 reports of influenza-associated pediatric deaths that occurred during the current season.

Of the 28 children who had specimens collected for bacterial culture from normally sterile sites, 12 (42.9%) were positive; *Staphylococcus aureus* was identified in eight (66.7%) of the 12 children. Three of the *S. aureus* isolates were sensitive to methicillin and five were methicillin resistant. All 12 children with bacterial coinfections were five years of age or older and 10 (83.3%) of the 12 children 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>).

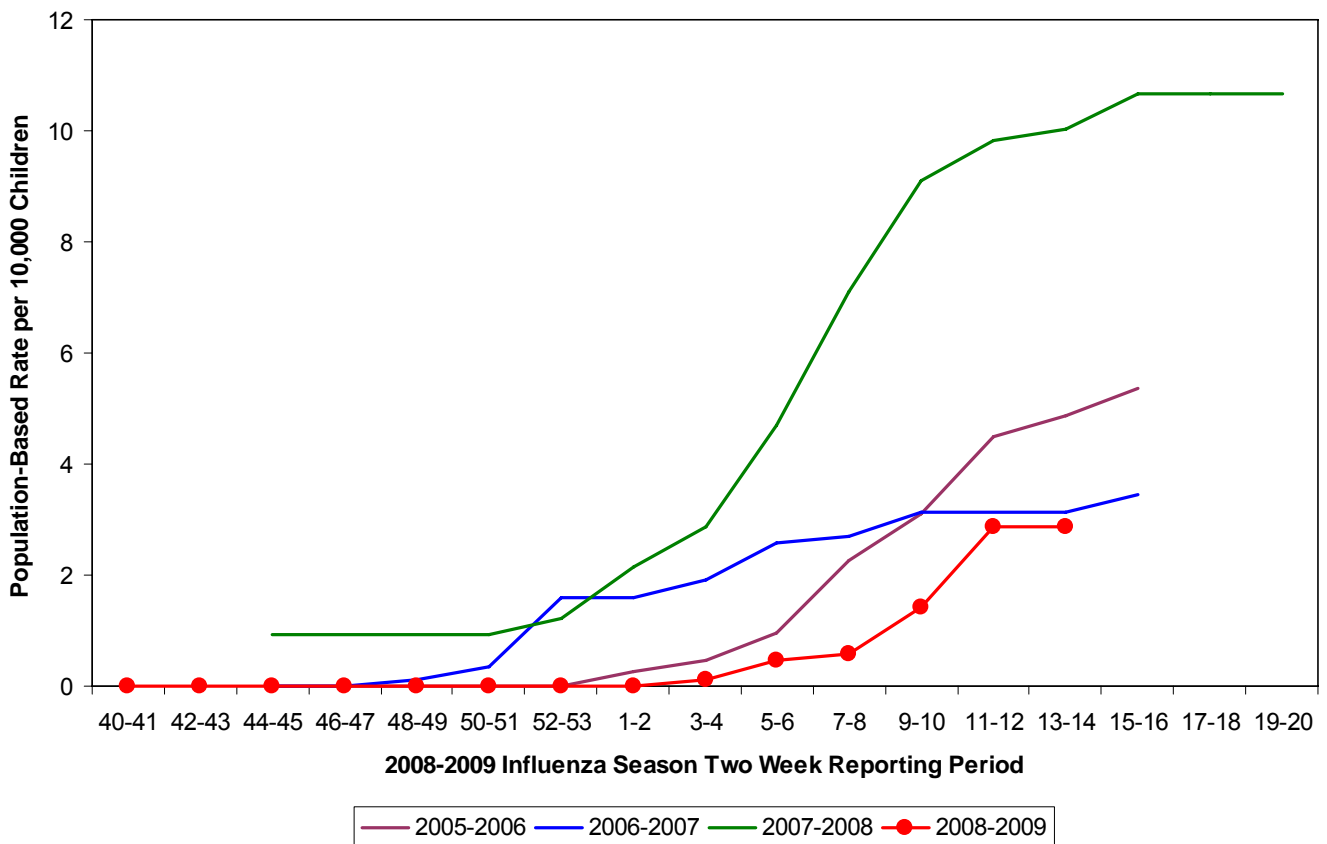
Number of Influenza-Associated Pediatric Deaths by Week of Death:
2005-06 season to present



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

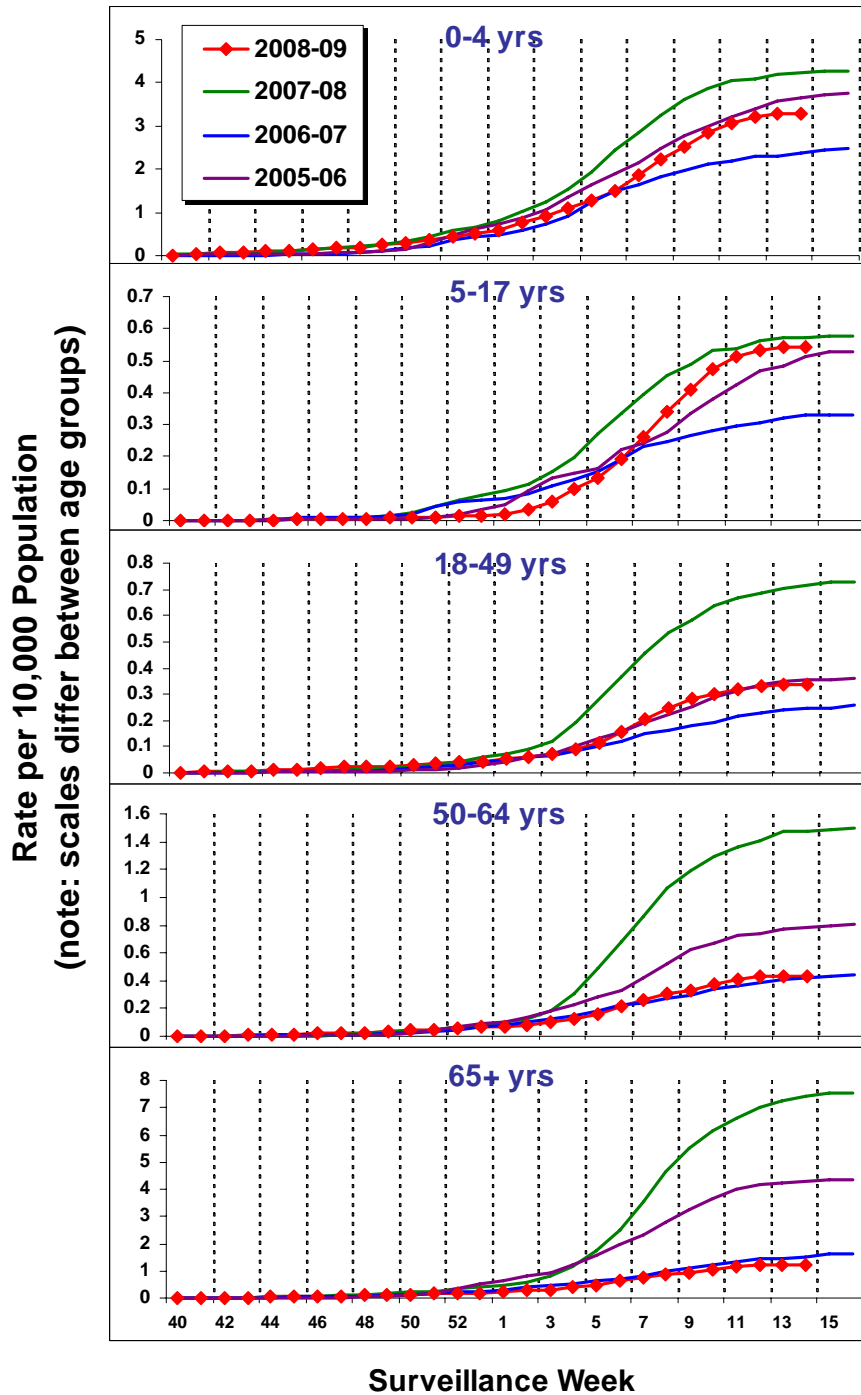
During October 12, 2008 to April 4, 2009, the preliminary laboratory-confirmed influenza-associated hospitalization rate for children 0-4 years old in the NVSN was 2.87 per 10,000. Because of case identification methods utilized in this study, a delay exists from the date of hospitalization to the date of report.

NVSN Influenza Laboratory-Confirmed Cumulative Hospitalization Rates for Children 0 - 4 Years, 2008-09 and Previous Three Seasons



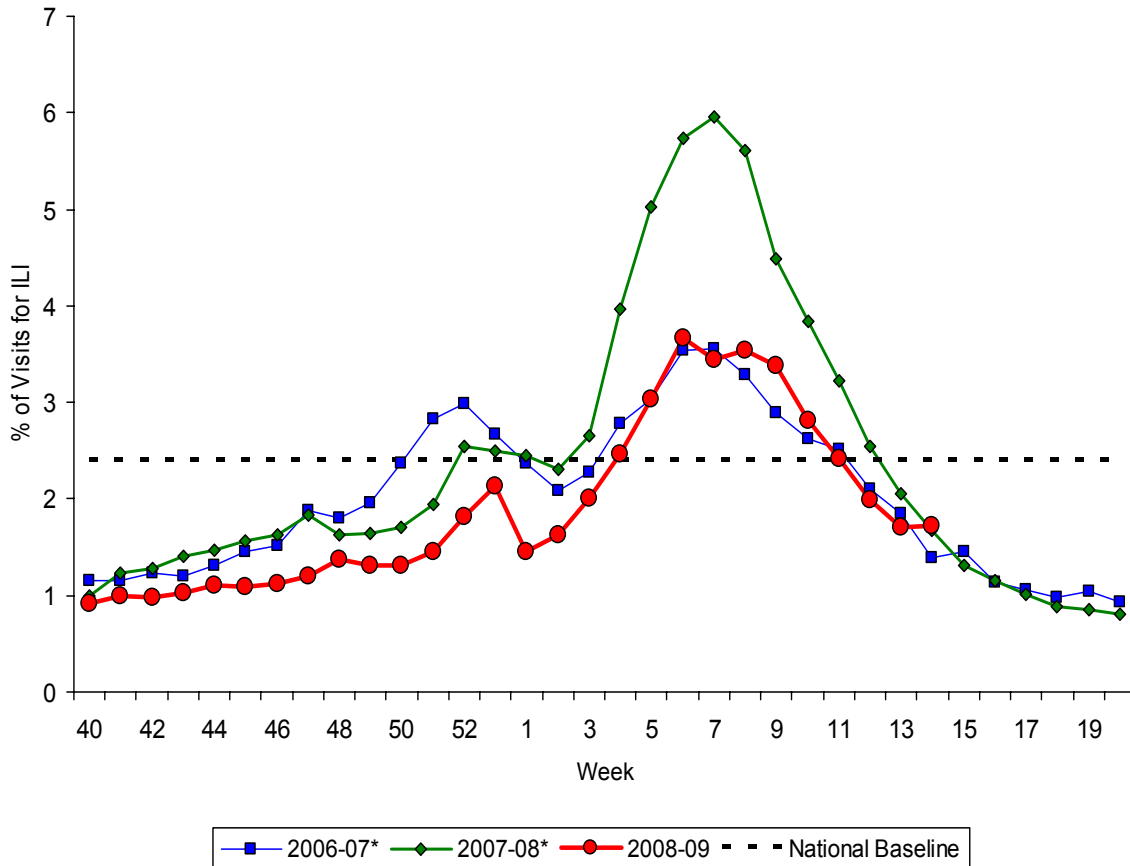
During October 1, 2008 – April 11, 2009, preliminary laboratory-confirmed influenza-associated hospitalization rates reported by the EIP for children aged 0-4 years and 5-17 years were 3.3 per 10,000 and 0.5 per 10,000, respectively. For adults aged 18-49 years, 50-64 years, and ≥ 65 years, the rates were 0.3 per 10,000, 0.4 per 10,000, and 1.2 per 10,000, respectively.

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



Outpatient Illness Surveillance: Nationwide during week 14, 1.7% of patient visits reported through the U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet) were due to influenza-like illness (ILI). This percentage is below the national baseline of 2.4%.

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



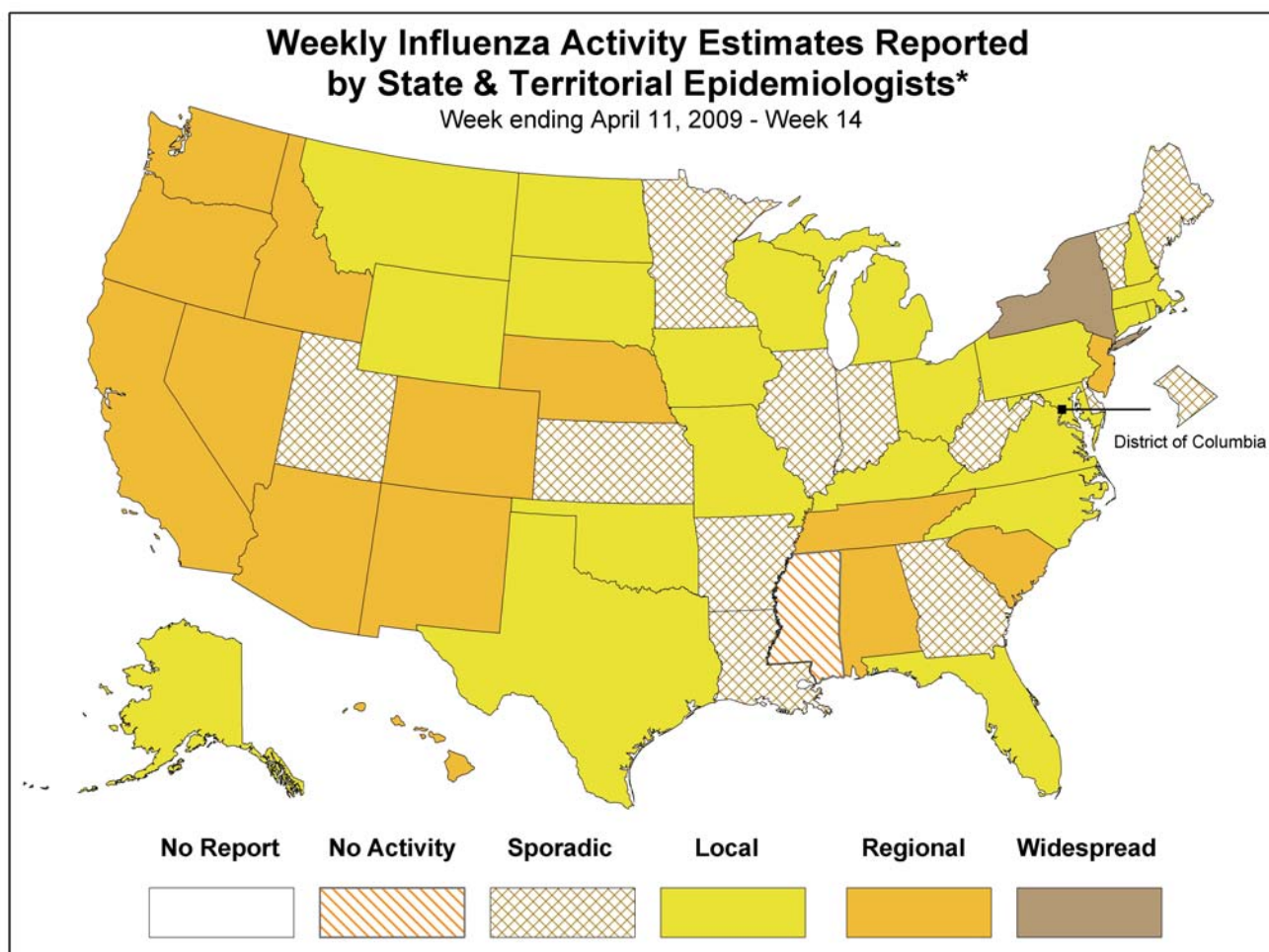
*There was no week 53 during the 2006-07 and 2007-08 seasons, therefore the week 53 data point for those seasons is an average of weeks 52 and 1.

On a regional level, the percentage of visits for ILI ranged from 0.9% to 2.8%. Two of the nine surveillance regions reported an ILI percentage 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 (%)	0.9	1.9	1.3	1.0	1.2	2.6	2.8	1.6	2.1
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 14, the following influenza activity was reported:

- Widespread influenza activity was reported by one state (New York).
- Regional influenza activity was reported by 14 states (Alabama, Arizona, California, Colorado, Hawaii, Idaho, Nebraska, Nevada, New Jersey, New Mexico, Oregon, South Carolina, Tennessee, and Washington).
- Local influenza activity was reported by 22 states (Alaska, Connecticut, Florida, Iowa, Kentucky, Maryland, Massachusetts, Michigan, Missouri, Montana, New Hampshire, North Carolina, North Dakota, Ohio, Oklahoma, Pennsylvania, Rhode Island, South Dakota, Texas, Virginia, Wisconsin, and Wyoming).
- Sporadic activity was reported by the District of Columbia, Puerto Rico, and 12 states (Arkansas, Delaware, Georgia, Illinois, Indiana, Kansas, Louisiana, Maine, Minnesota, Utah, Vermont, and West Virginia).
- No influenza activity was reported by one state (Mississippi).



* 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: April 17, 2009.