

**2008-2009 Influenza Season
Week 8 ending February 28, 2009**

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

Synopsis: During week 8 (February 22-28, 2009), influenza activity in the United States remained at approximately the same level as in the previous week.

- One thousand four hundred eighteen (21.2%) 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.
- Five influenza-associated pediatric deaths were reported.
- The proportion of outpatient visits for influenza-like illness (ILI) was above the national baseline. ILI increased nationally and in five of the nine regions compared to the previous week. All nine surveillance regions reported ILI above their region-specific baselines.
- Thirty-one states reported widespread influenza activity, 16 states reported regional activity; the District of Columbia and two states reported local influenza activity; and Puerto Rico and one state reported sporadic influenza activity.
- One human infection with a novel influenza A virus was reported.

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	21.2%	47 of 51	3,513	379	6,963	3,501	22
New England	Elevated	25.1%	6 of 6	300	51	778	339	1
Mid-Atlantic	Elevated	16.8%	3 of 3	328	31	736	369	3
East North Central	Elevated	48.2%	5 of 5	578	49	92	234	0
West North Central	Elevated	24.8%	6 of 7	560	21	540	205	0
South Atlantic	Elevated	23.5%	7 of 9	620	49	1,005	655	4
East South Central	Elevated	29.9%	4 of 4	142	6	24	66	1
West South Central	Elevated	24.7%	4 of 4	329	23	3,026	1,403	6
Mountain	Elevated	13.8%	7 of 8	196	100	502	76	5
Pacific	Elevated	13.5%	5 of 5	460	49	260	154	2

* 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

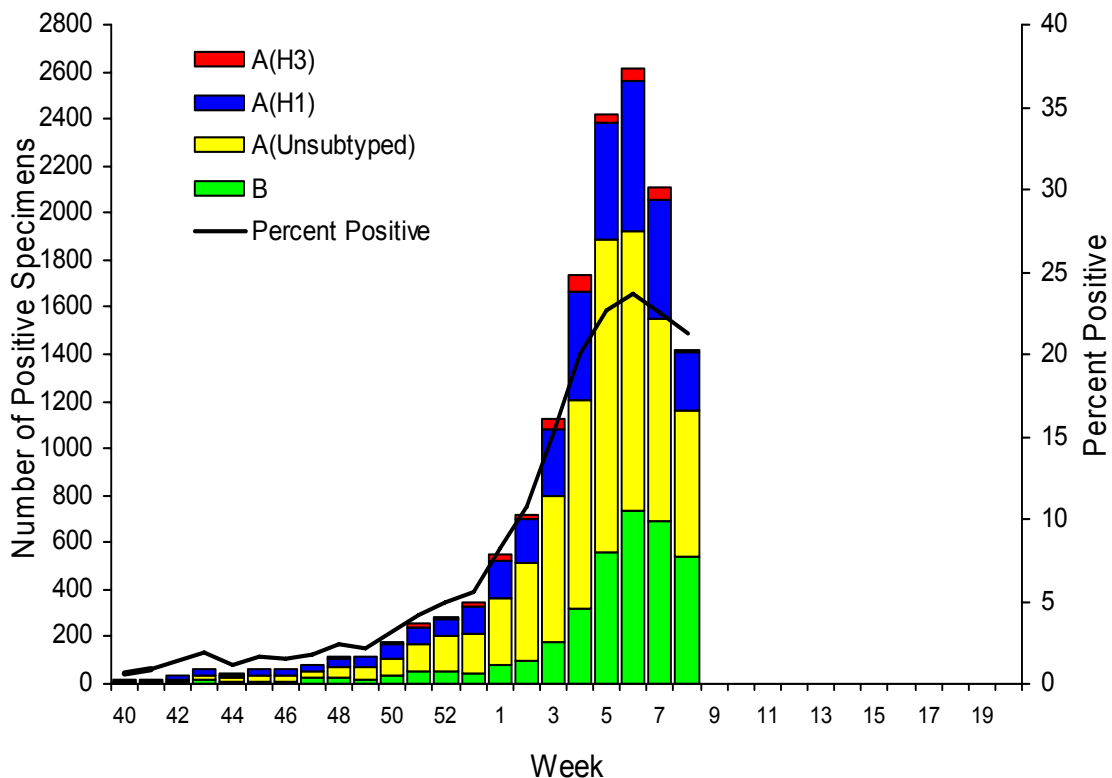
‡ Includes all 50 states and the District of Columbia

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 8	Cumulative for the Season
No. of specimens tested	6,680	128,321
No. of positive specimens (%)	1,418 (21.2%)	14,356 (11.2%)
Positive specimens by type/subtype		
Influenza A	879 (62.0%)	10,855 (75.6%)
 A (H1)	243 (27.6%)	3,513 (32.4%)
 A (H3)	12 (1.4%)	379 (3.5%)
 A (unsubtyped)	624 (71.0%)	6,963 (64.1%)
Influenza B	539 (38.0%)	3,501 (24.4%)

Since week 2 (the week ending January 17, 2009), when influenza activity increased nationally, influenza A (H1) viruses have predominated circulation nationally each week and for the season overall in all regions. Since week 2, 91% 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



Novel Influenza A Viruses: One case of human infection with a novel influenza A virus was reported by the Iowa Department of Public Health during week 8. The person was infected with a swine influenza A (H1N1) virus, and reported contact with ill pigs. Although human infection with swine influenza A virus resulting in illness appears to be uncommon, a few sporadic cases have been reported each year, usually among people in direct contact with ill pigs or who have been in places where pigs may have been present (e.g. agricultural fairs or farms). The sporadic cases of human infections with swine influenza viruses identified in recent years have not resulted in sustained human-to-human transmission or community outbreaks. Nonetheless, when cases are identified, CDC recommends thorough investigations to evaluate the extent of the outbreak and possible human-to-human transmission, as transmission patterns may change with changes in swine influenza viruses.

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 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 530 influenza viruses [325 influenza A (H1), 53 influenza A (H3) and 152 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 53 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-seven influenza B viruses tested belong to the B/Yamagata lineage and are related to the vaccine strain (B/Florida/04/2006). The remaining 115 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, 364 influenza A (H1N1), 56 influenza A (H3N2), and 166 influenza B viruses have been tested for resistance to the neuraminidase inhibitors (oseltamivir and zanamivir). Three hundred sixty-five influenza A (H1N1) and 56 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.

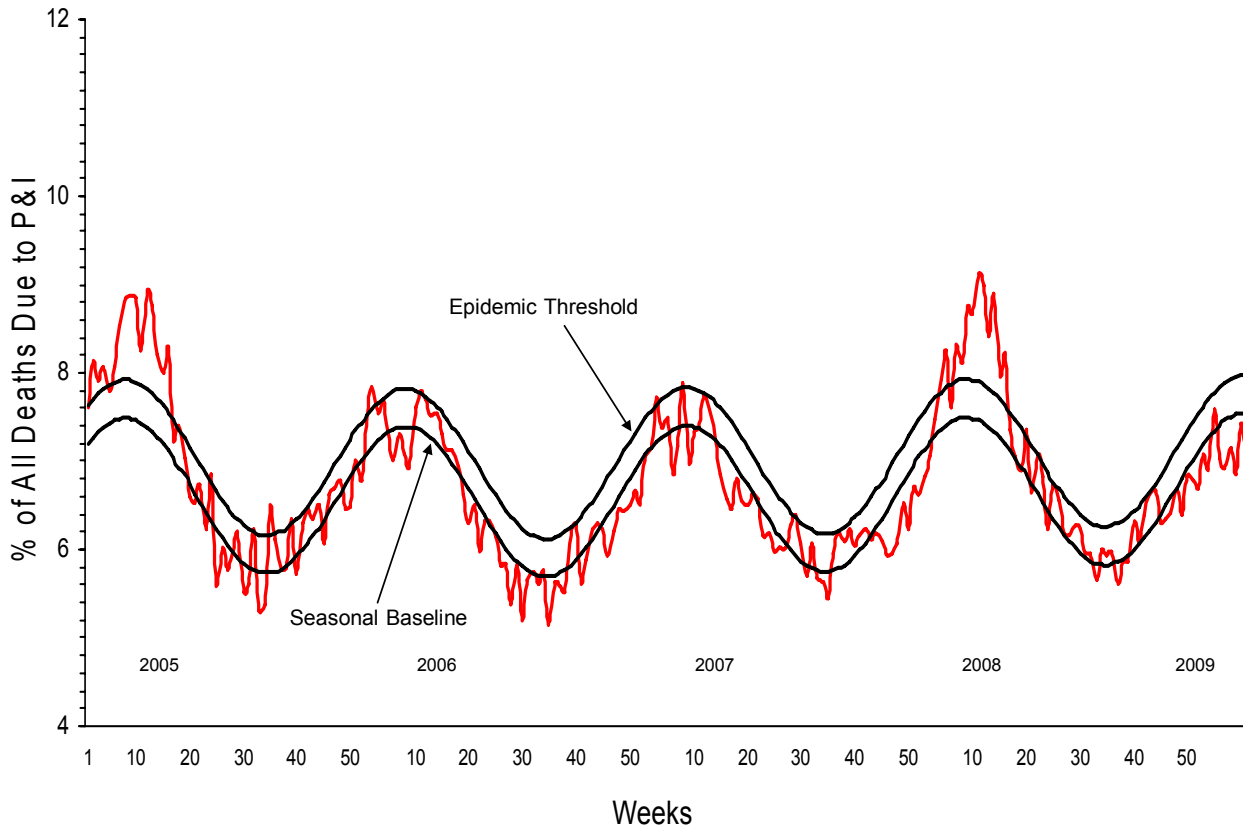
	Isolates tested (n)	Resistant Viruses, Number (%)		Isolates tested (n)	Resistant Viruses, Number (%)
		Oseltamivir	Zanamivir		Adamantanes
Influenza A (H1N1)	364	359 (98.6%)	0 (0)	365	3 (0.8%)
Influenza A (H3N2)	56	0 (0)	0 (0)	56	56 (100%)
Influenza B	166	0 (0)	0 (0)	N/A*	N/A*

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

Influenza A (H1N1) viruses from 36 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 8, 7.2% 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 8.

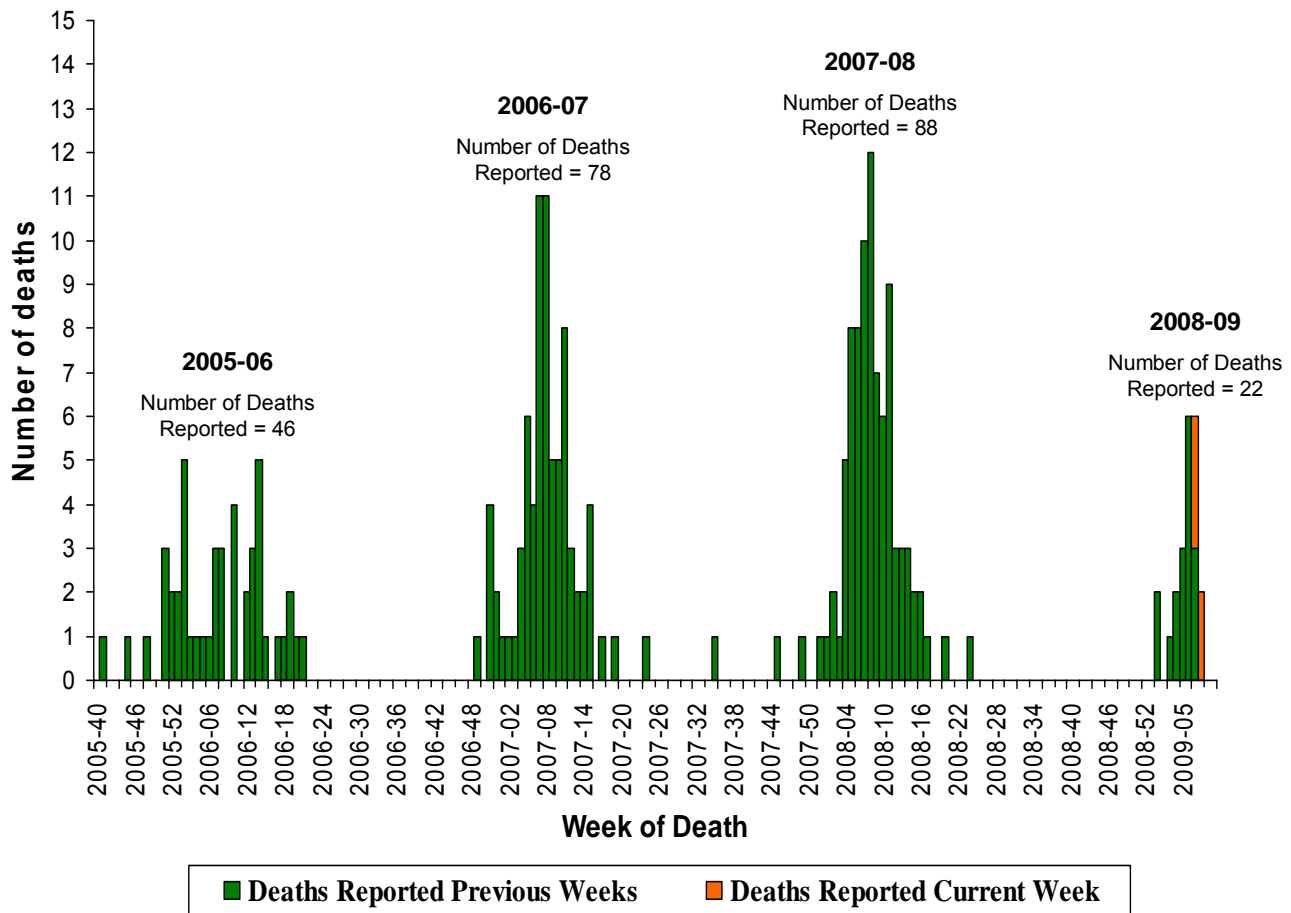
Pneumonia and Influenza Mortality for 122 U.S. Cities Week ending 02/28/2009



Influenza-Associated Pediatric Mortality: Five influenza-associated pediatric deaths were reported to CDC during week 8 (California [2], Maryland [2], and New York). The deaths reported this week occurred between February 15 and February 28, 2009. Since September 28, 2008, CDC has received 22 reports of influenza-associated pediatric deaths that occurred during the current season.

Of the 20 children who were tested for bacterial coinfections, 14 (70.0%) were positive; *Staphylococcus aureus* was identified in 12 (85.7%) of the 14 children. Five of the *S. aureus* isolates were sensitive to methicillin, six were methicillin resistant, and one had no sensitivity results reported. Eleven (78.6%) of the 14 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>).

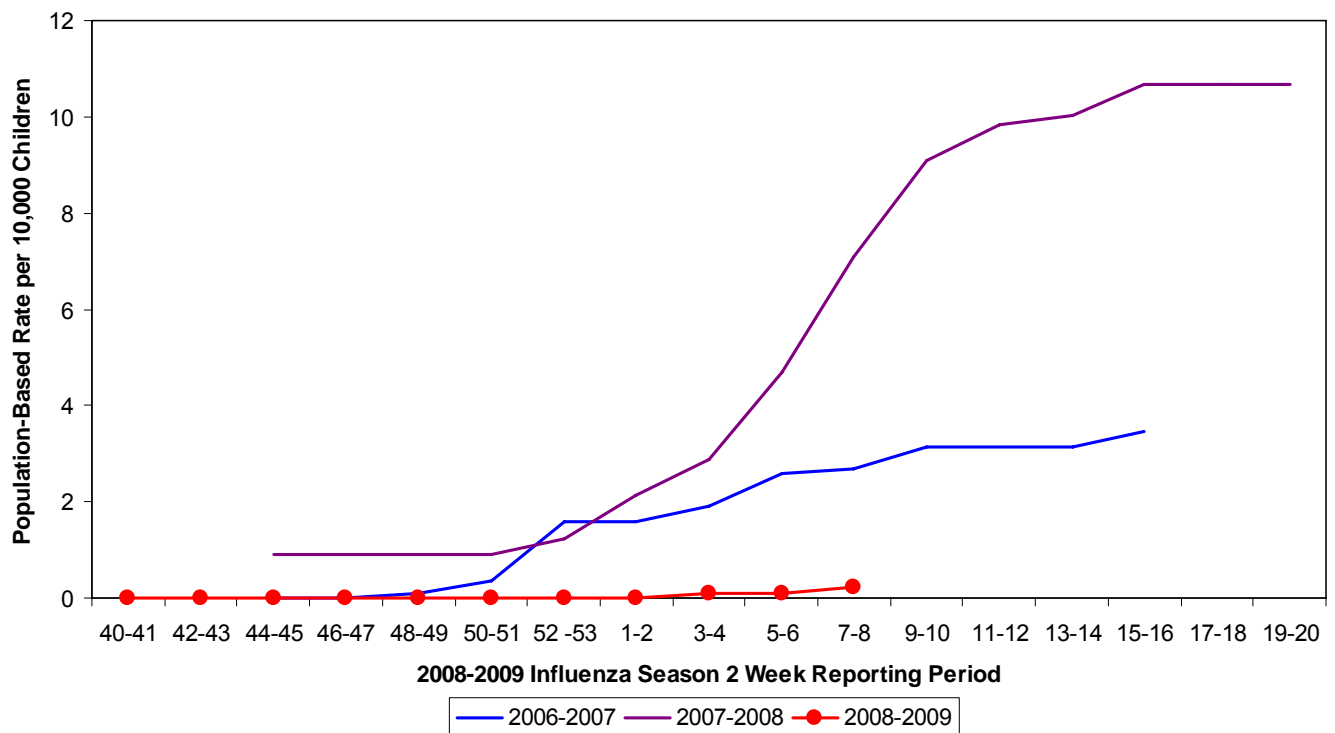
Number of Influenza-Associated Pediatric Deaths by Week of Death:
2005-06 season to present



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.

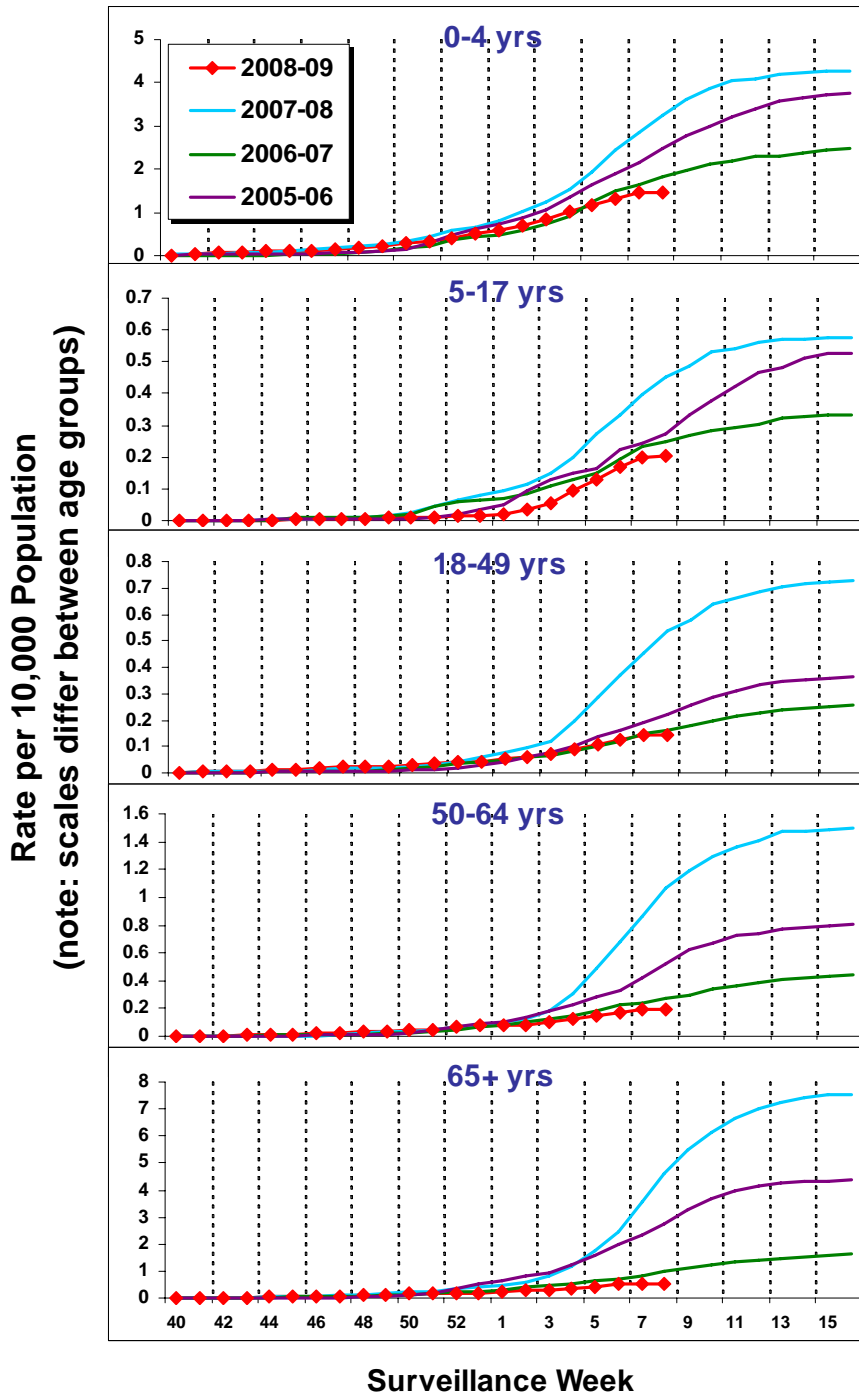
During October 12, 2008 to February 21, 2009, the preliminary laboratory-confirmed influenza-associated hospitalization rate for children 0-4 years old in the NVSN was 0.22 per 10,000. Due to case identification methods utilized in this study, a delay exists from the date of hospitalization to the date of report.

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



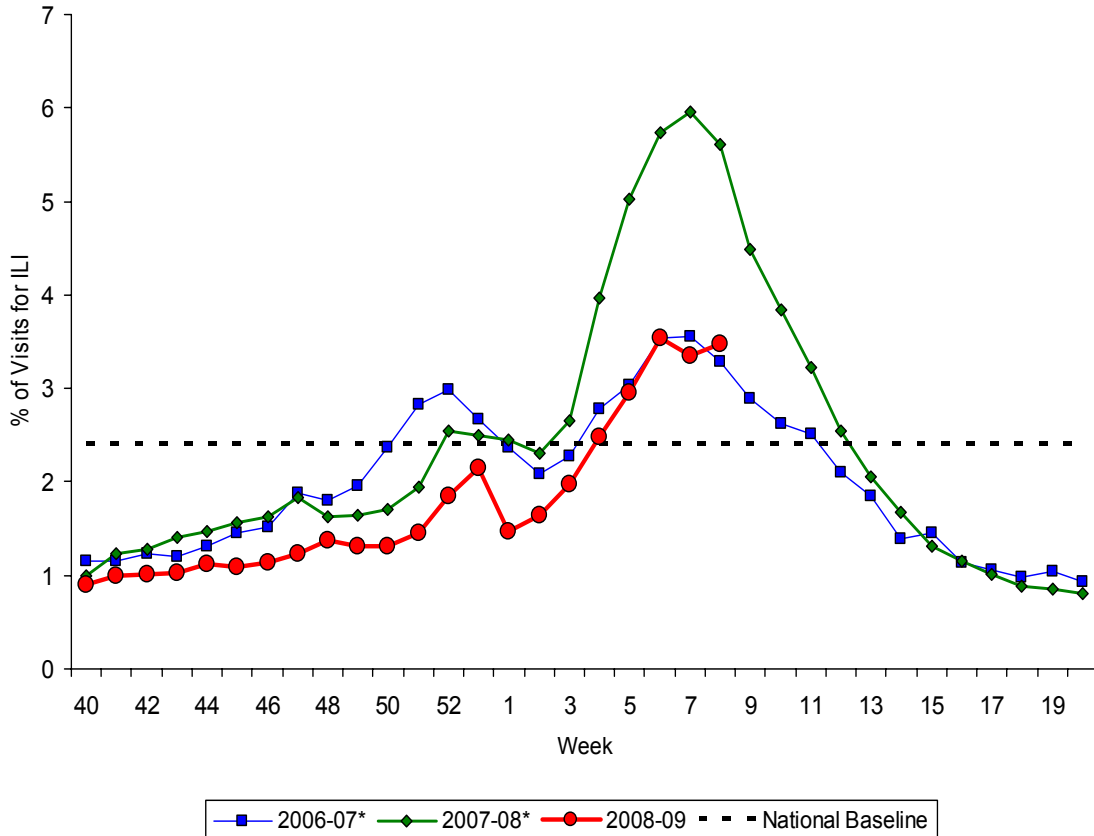
During October 1, 2008 – February 28, 2009, preliminary laboratory-confirmed influenza-associated hospitalization rates reported by the EIP for children aged 0-4 years and 5-17 years were 1.5 per 10,000 and 0.2 per 10,000, respectively. For adults aged 18-49 years, 50-64 years, and ≥ 65 years, the rates were 0.1 per 10,000, 0.2 per 10,000, and 0.5 per 10,000, respectively.

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



Outpatient Illness Surveillance: Nationwide during week 8, 3.5% 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



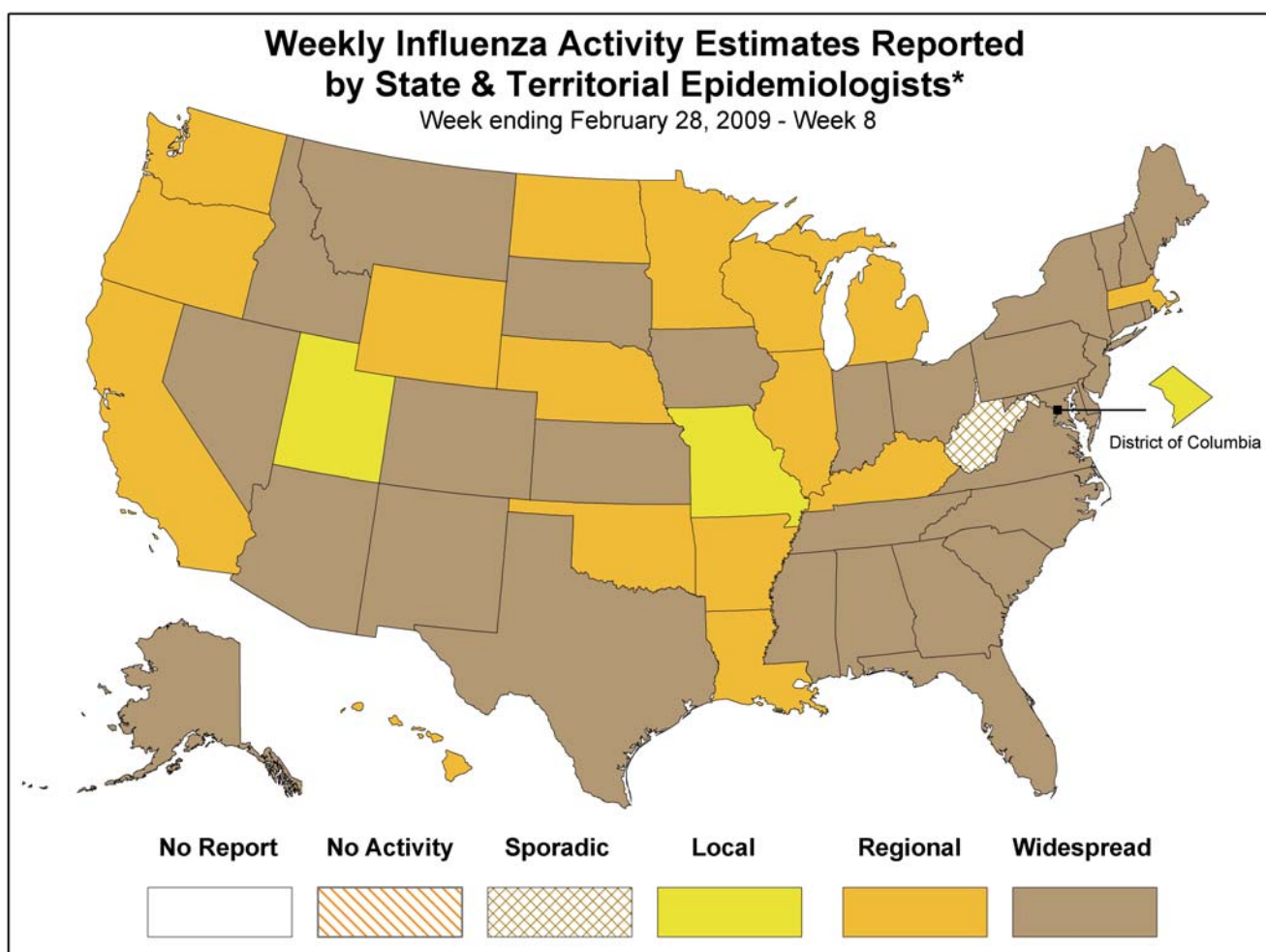
*There was no week 53 during the 2006-07 and 2007-08 seasons, therefore the week 53 data point for those seasons is an average of weeks 52 and 1.

On a regional level, the percentage of visits for ILI increased in five of the nine regions compared to the previous week and ranged from 1.9% to 5.0%. All 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 (%)	2.8	4.6	2.7	2.1	3.9	3.8	5.0	1.9	3.1
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 8, the following influenza activity was reported:

- Widespread influenza activity was reported by 31 states (Alabama, Alaska, Arizona, Colorado, Connecticut, Delaware, Florida, Georgia, Idaho, Indiana, Iowa, Kansas, Maine, Maryland, Mississippi, Montana, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Vermont, and Virginia).
- Regional influenza activity was reported by 16 states (Arkansas, California, Hawaii, Illinois, Kentucky, Louisiana, Massachusetts, Michigan, Minnesota, Nebraska, North Dakota, Oklahoma, Oregon, Washington, Wisconsin, and Wyoming).
- Local influenza activity was reported by the District of Columbia and two states (Missouri and Utah).
- Sporadic activity was reported by Puerto Rico and one state (West Virginia).



* 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: March 6, 2009.