

**2008-2009 Influenza Season  
Week 13 ending April 4, 2009**

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

**Synopsis:** During week 13 (March 29-April 4, 2009), influenza activity continued to decrease in the United States.

- Three hundred forty-eight (12.3%) 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.
- Two influenza-associated pediatric deaths were reported.
- The proportion of outpatient visits for influenza-like illness (ILI) was below the national baseline. One of nine surveillance regions reported ILI above their region-specific baseline (Mountain).
- Four states reported widespread influenza activity, 18 states reported regional activity; 20 states reported local influenza activity; the District of Columbia and seven states reported sporadic influenza activity; and one state did not report.

**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
<b>Nation</b>	Normal	12.3%	22 of 51	6,049	686	9,951	8,107	45
<b>New England</b>	Normal	10.1%	3 of 6	435	67	1,039	686	1
<b>Mid-Atlantic</b>	Normal	25.3%	3 of 3	725	91	953	866	8
<b>East North Central</b>	Normal	33.3%	0 of 5	960	61	281	805	5
<b>West North Central</b>	Normal	17.4%	1 of 7	905	37	845	695	0
<b>South Atlantic</b>	Normal	18.3%	2 of 9	987	56	1,851	1,692	7
<b>East South Central</b>	Normal	10.4%	3 of 4	181	6	56	101	3
<b>West South Central</b>	Normal	9.6%	0 of 4	588	40	3,679	2,298	9
<b>Mountain</b>	Elevated	20.8%	5 of 8	647	187	815	402	8
<b>Pacific</b>	Normal	15.3%	5 of 5	621	141	432	562	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

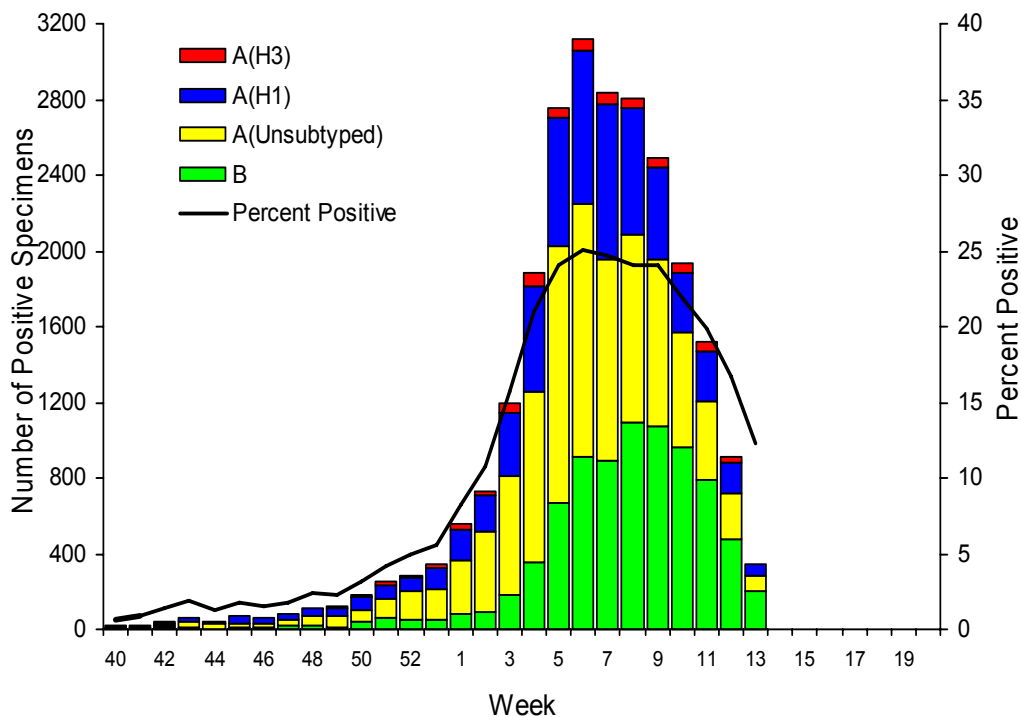
‡ Includes all 50 states and the District of Columbia

**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.

	<b>Week 13</b>	<b>Cumulative for the Season</b>
<b>No. of specimens tested</b>	2,829	173,397
<b>No. of positive specimens (%)</b>	348 (12.3%)	24,793 (14.3%)
<b>Positive specimens by type/subtype</b>		
<b>Influenza A</b>	145 (41.7%)	16,686 (67.9%)
<b>    A (H1)</b>	54 (37.2%)	6,049 (36.3%)
<b>    A (H3)</b>	7 (4.8%)	686 (4.1%)
<b>    A (unsubtyped)</b>	84 (57.9%)	9,951 (59.6%)
<b>Influenza B</b>	203 (58.3%)	8,107 (32.1%)

Since week 2 (the week ending January 17, 2009), when influenza activity increased nationally, influenza A (H1) viruses have predominated during the season overall. However, while influenza activity continues to decrease nationally, the relative proportion of influenza B viruses is increasing nationally and regionally. Six surveillance regions (East North Central, New England, Pacific, South Atlantic, West North Central, and West South Central) reported a higher proportion of influenza B viruses compared to influenza A viruses this week.

### 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 945 influenza viruses [594 influenza A (H1), 88 influenza A (H3) and 263 influenza B viruses] collected by U.S. laboratories since October 1, 2008.

All 594 influenza A (H1) viruses are related to the influenza A (H1N1) component of the 2008-09 influenza vaccine (A/Brisbane/59/2007). All 88 influenza A (H3) 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 213 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, 699 influenza A (H1N1), 103 influenza A(H3N2), and 274 influenza B viruses have been tested for resistance to the neuraminidase inhibitors (oseltamivir and zanamivir). Six hundred eighty-three influenza A (H1N1) and 100 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.

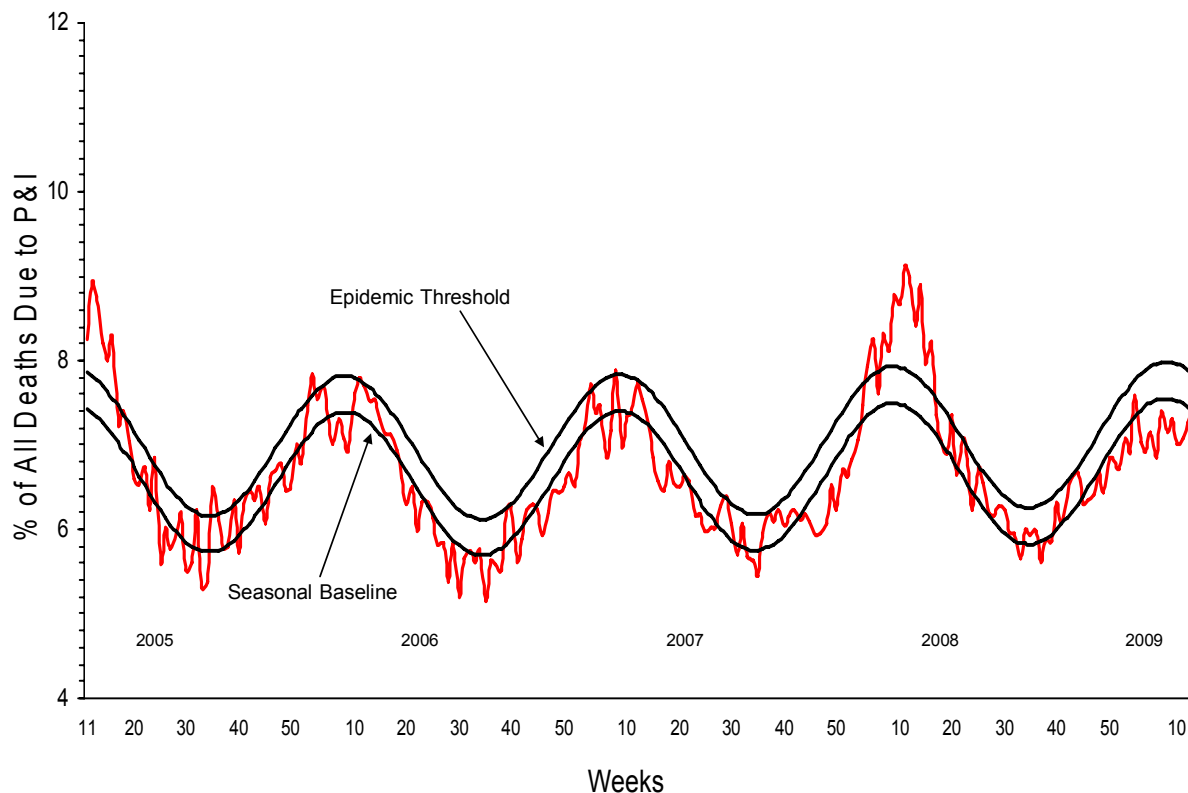
	Isolates tested (n)	Resistant Viruses, Number (%)		Isolates tested (n)	Resistant Viruses, Number (%)
		Oseltamivir	Zanamivir		Adamantanes
<b>Influenza A (H1N1)</b>	699	694 (99.3%)	0 (0)	683	3 (0.4%)
<b>Influenza A (H3N2)</b>	103	0 (0)	0 (0)	100	100 (100%)
<b>Influenza B</b>	274	0 (0)	0 (0)	N/A*	N/A*

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

Influenza A (H1N1) viruses from 44 states 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. While influenza activity continues to decrease nationally, the relative proportion of influenza B viruses is increasing. During week 13, influenza B viruses accounted for 58% of the influenza viruses identified nationally, and more than 50% of the influenza viruses identified in six of the nine surveillance regions. 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 13, 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 7.8% for week 13.

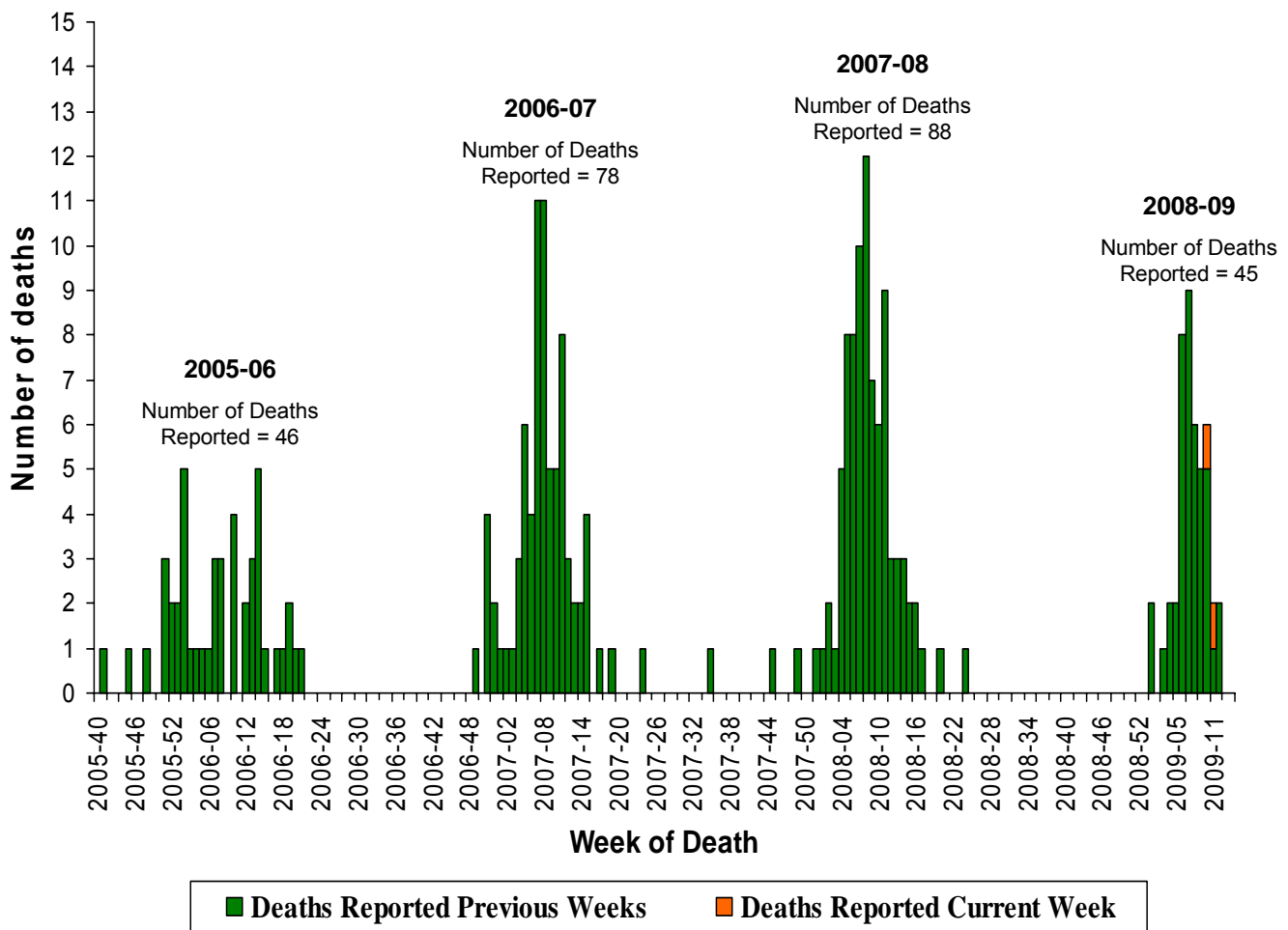
### Pneumonia and Influenza Mortality for 122 U.S. Cities Week ending 4/4/2009



**Influenza-Associated Pediatric Mortality:** Two influenza-associated pediatric deaths were reported to CDC during week 13 (Illinois and Virginia). The deaths reported this week occurred between March 8 and March 21, 2009. Since September 28, 2008, CDC has received 45 reports of influenza-associated pediatric deaths that occurred during the current season.

Of the 27 children who had specimens collected for bacterial culture from normally sterile sites, 12 (44.4%) 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>).

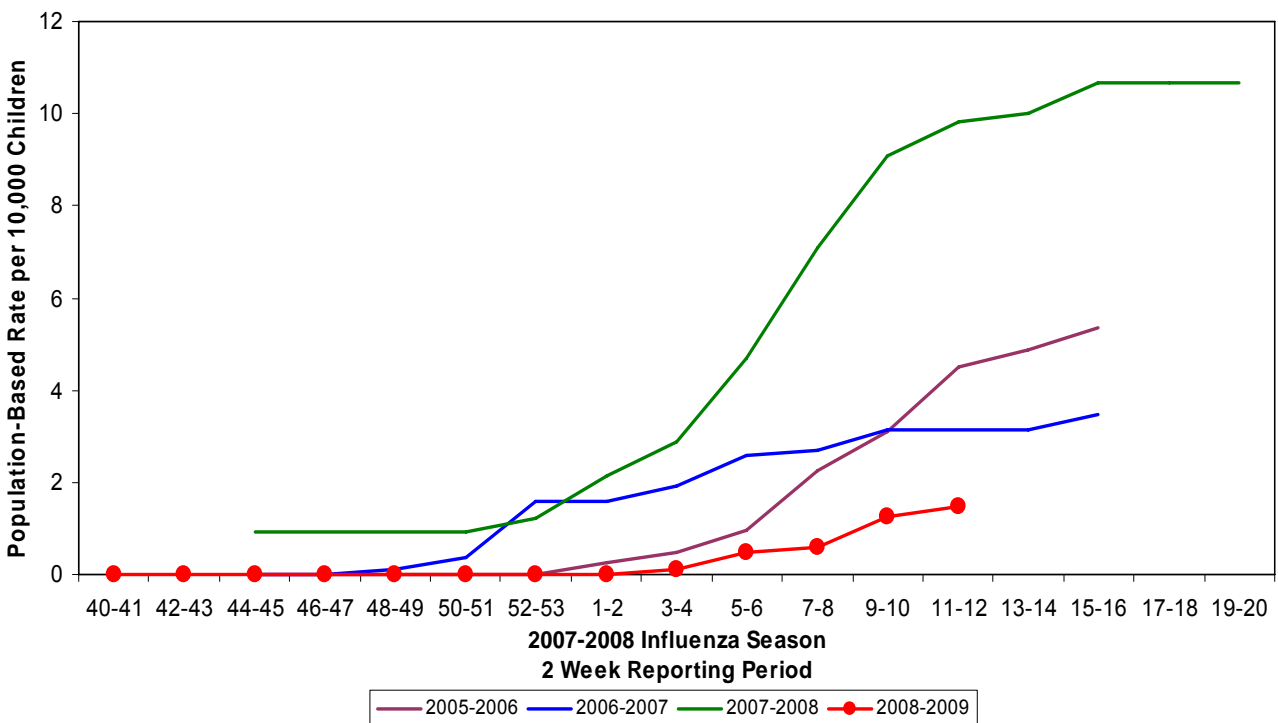
Number of Influenza-Associated Pediatric Deaths by Week of Death:  
2005-06 season to present



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

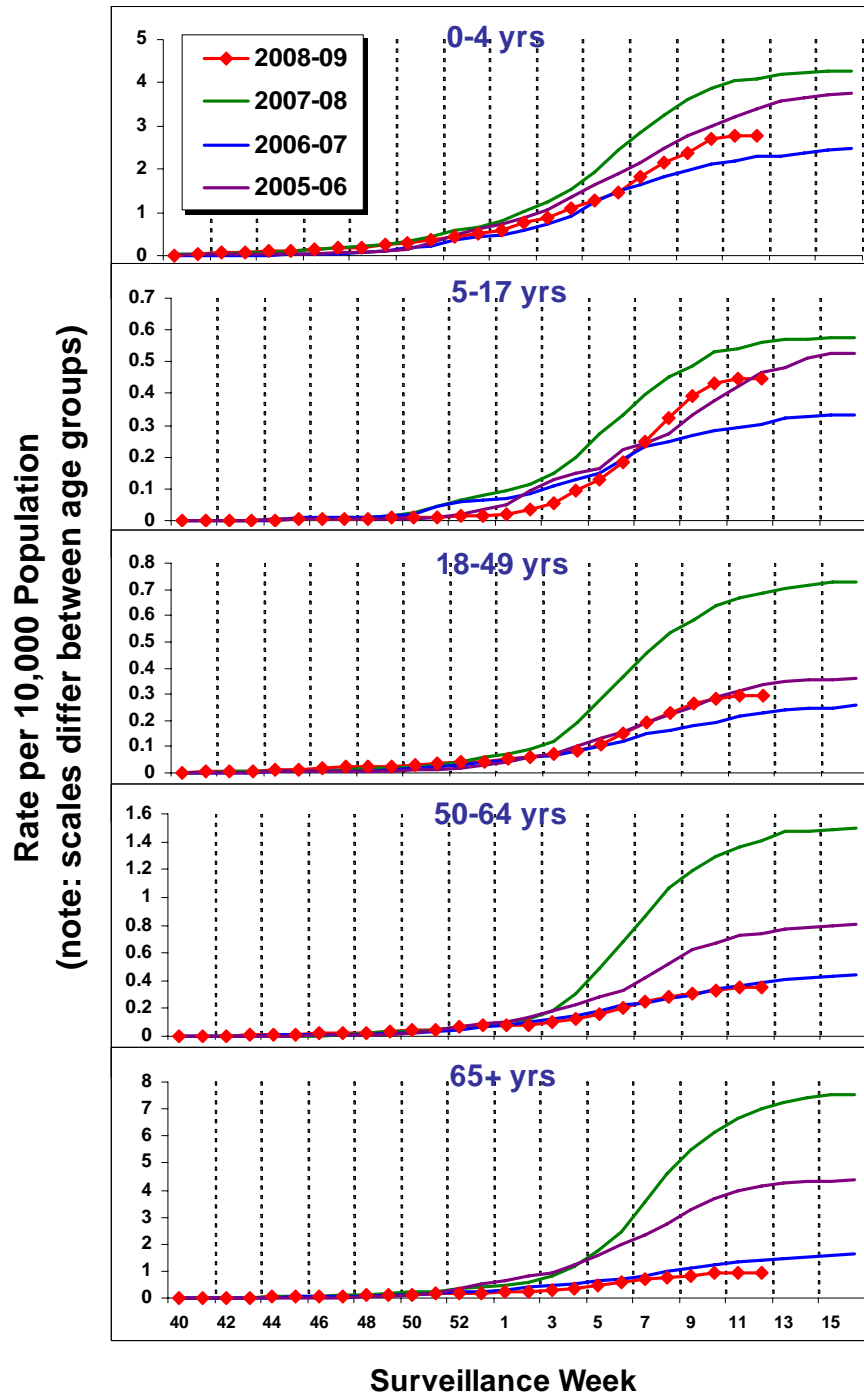
During October 12, 2008 to March 21, 2009, the preliminary laboratory-confirmed influenza-associated hospitalization rate for children 0-4 years old in the NVSN was 1.46 per 10,000. Because of case identification methods utilized in this study, a delay exists from the date of hospitalization to the date of report.

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



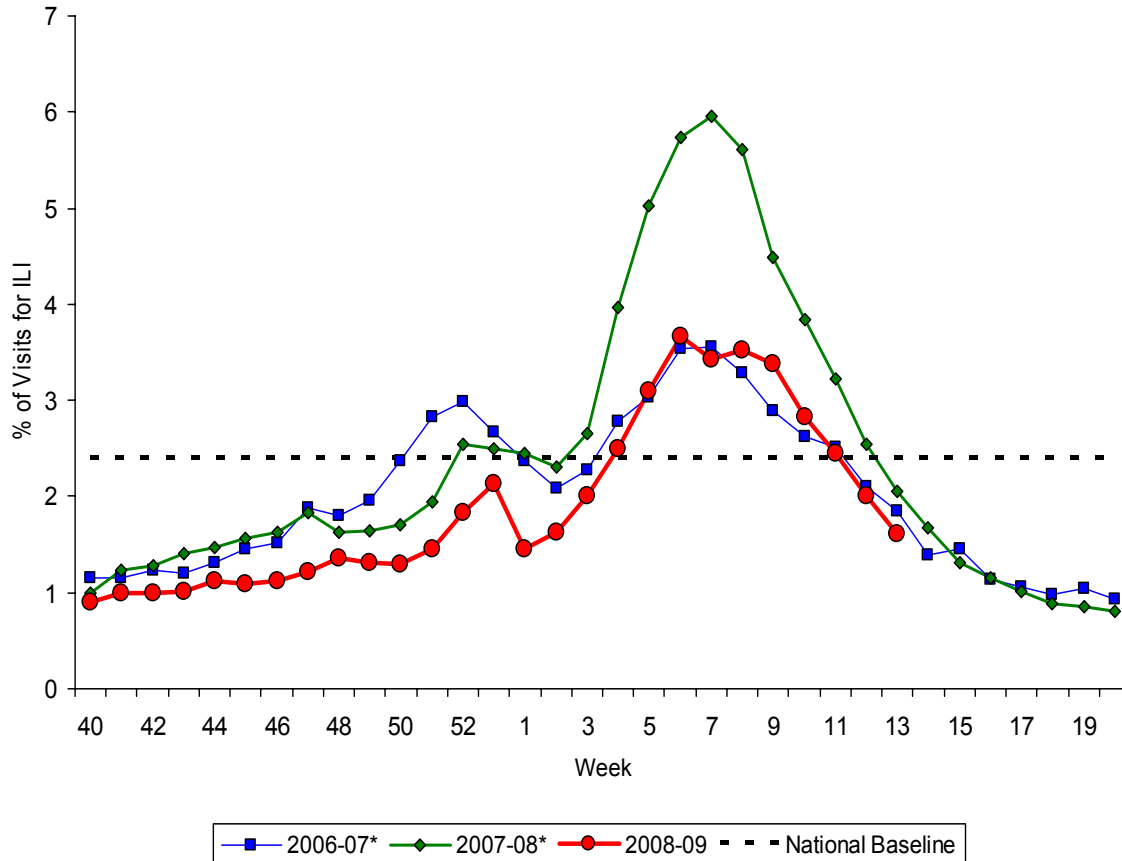
During October 1, 2008 – March 28, 2009, preliminary laboratory-confirmed influenza-associated hospitalization rates reported by the EIP for children aged 0-4 years and 5-17 years were 2.8 per 10,000 and 0.5 per 10,000, respectively. For adults aged 18-49 years, 50-64 years, and ≥ 65 years, the rates were 0.3 per 10,000, 0.4 per 10,000, and 1.0 per 10,000, respectively.

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



**Outpatient Illness Surveillance:** Nationwide during week 13, 1.6% 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 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.

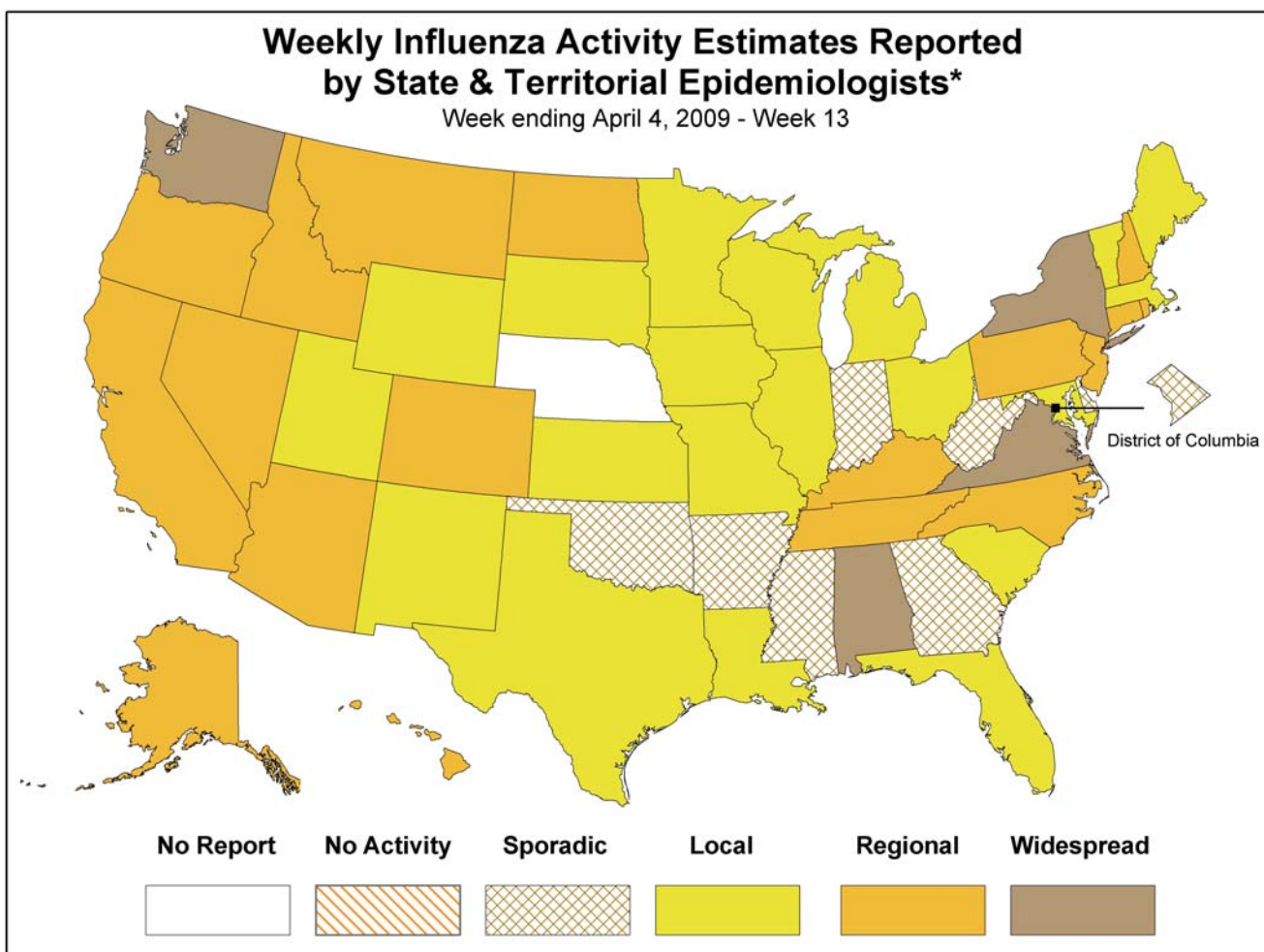
On a regional level, the percentage of visits for ILI ranged from 1.2% to 2.4%. One of the nine surveillance regions reported an ILI percentage above their region specific baseline.

Region	New England	Mid-Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific
Reported ILI (%)	1.2	1.6	1.3	1.5	1.3	1.7	2.4	<b>1.7</b>	1.8
Region-Specific Baseline	1.5	2.9	1.9	1.7	2.2	2.5	4.8	<b>1.5</b>	3.0



**Geographic Spread of Influenza as Assessed by State and Territorial Epidemiologists:** During week 13, the following influenza activity was reported:

- Widespread influenza activity was reported by four states (Alabama, New York, Virginia, and Washington).
- Regional influenza activity was reported by 18 states (Alaska, Arizona, California, Colorado, Connecticut, Hawaii, Idaho, Kentucky, Montana, Nevada, New Hampshire, New Jersey, North Carolina, North Dakota, Oregon, Pennsylvania, Rhode Island, and Tennessee).
- Local influenza activity was reported by 20 states (Florida, Illinois, Iowa, Kansas, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, New Mexico, Ohio, South Carolina, South Dakota, Texas, Utah, Vermont, Wisconsin, and Wyoming).
- Sporadic activity was reported by the District of Columbia and seven states (Arkansas, Delaware, Georgia, Indiana, Mississippi, Oklahoma, and West Virginia).
- One state did not report (Nebraska).



\* 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 10, 2009.