

**2008-2009 Influenza Season**  
**Week 9 ending March 7, 2009**

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

**Synopsis:** During week 9 (March 1-7, 2009), influenza activity in the United States remained high, but is at approximately the same level as in the previous week.

- One thousand two hundred fifty-two (23.0%) 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 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 four of the nine regions compared to the previous week. All nine surveillance regions reported ILI above their region-specific baselines.
- Thirty-five states reported widespread influenza activity, 14 states reported regional activity; the District of Columbia and one state 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
<b>Nation</b>	Elevated	23.0%	49 of 51	4,144	451	7,886	4,524	26
<b>New England</b>	Elevated	23.6%	6 of 6	380	62	837	438	1
<b>Mid-Atlantic</b>	Elevated	23.5%	3 of 3	418	45	801	458	4
<b>East North Central</b>	Elevated	61.2%	5 of 5	674	54	97	343	1
<b>West North Central</b>	Elevated	23.0%	7 of 7	611	20	648	287	0
<b>South Atlantic</b>	Elevated	22.3%	8 of 9	682	49	1,227	833	3
<b>East South Central</b>	Elevated	24.9%	4 of 4	146	6	36	72	1
<b>West South Central</b>	Elevated	21.4%	4 of 4	330	23	3,381	1,684	8
<b>Mountain</b>	Elevated	18.1%	7 of 8	391	113	564	143	6
<b>Pacific</b>	Elevated	16.5%	5 of 5	512	79	295	266	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

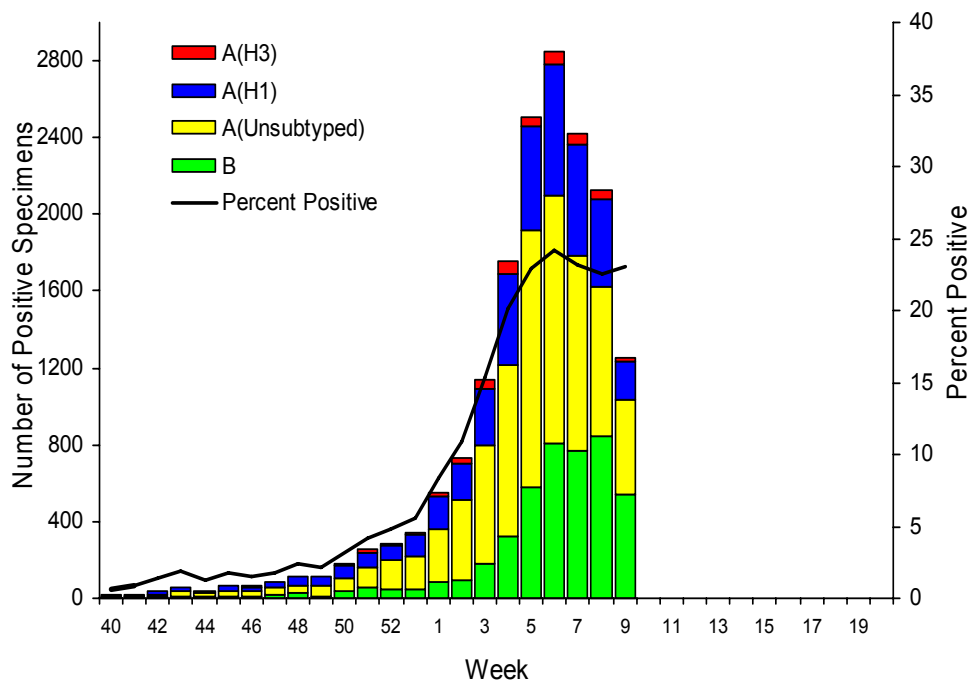
‡ Includes all 50 states and the District of Columbia

**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.

	<b>Week 9</b>	<b>Cumulative for the Season</b>
<b>No. of specimens tested</b>	5,446	138,318
<b>No. of positive specimens (%)</b>	1,252 (23.0%)	17,005 (12.3%)
<b>Positive specimens by type/subtype</b>		
<b>Influenza A</b>	711 (56.8%)	12,481 (73.4%)
<b>A (H1)</b>	193 (27.1%)	4,144 (33.2%)
<b>A (H3)</b>	21 (3.0%)	451 (3.6%)
<b>A (unsubtyped)</b>	497 (69.9%)	7,886 (63.2%)
<b>Influenza B</b>	541 (43.2%)	4,524 (26.6%)

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. However, the relative proportion of influenza B viruses is increasing nationally and regionally. While influenza activity remains at approximately the same level nationally as in the previous week, several surveillance regions reported an increase in influenza virus circulation, and four regions (East North Central, East South Central, Pacific, and West South Central) reported an equal or 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 Food and Drug Administration 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 596 influenza viruses [391 influenza A (H1), 53 influenza A (H3) and 152 influenza B viruses] collected by U.S. laboratories since October 1, 2008.

All 391 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, 422 influenza A (H1N1), 64 influenza A (H3N2), and 200 influenza B viruses have been tested for resistance to the neuraminidase inhibitors (oseltamivir and zanamivir). Four hundred twenty-two influenza A (H1N1) and 61 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.

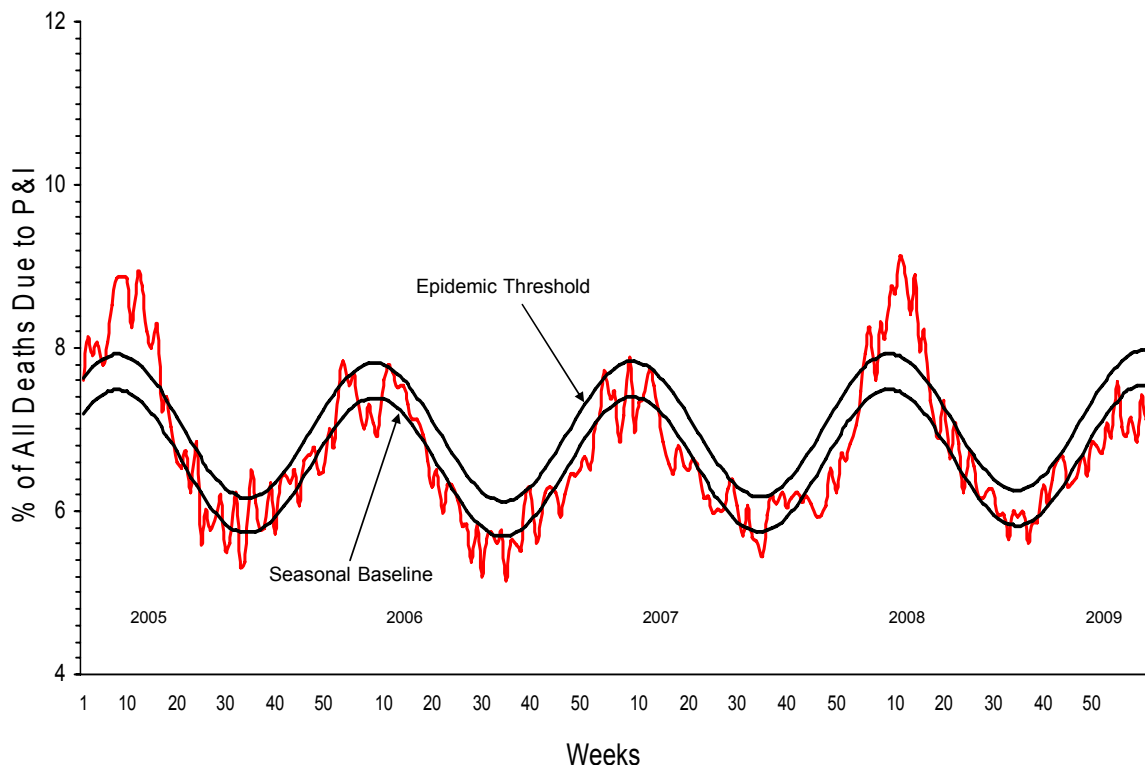
	Isolates tested (n)	Resistant Viruses, Number (%)		Isolates tested (n)	Resistant Viruses, Number (%)
		Oseltamivir	Zanamivir		Adamantanes
<b>Influenza A (H1N1)</b>	422	417 (98.8%)	0 (0)	422	3 (0.7%)
<b>Influenza A (H3N2)</b>	64	0 (0)	0 (0)	61	61 (100%)
<b>Influenza B</b>	200	0 (0)	0 (0)	N/A*	N/A*

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

Influenza A (H1N1) viruses from 37 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 remains at similar levels as last week nationally, several regions are reporting increasing levels of influenza virus circulation, and may have a higher relative proportion of influenza B viruses than at the national level or in other 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 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 9, 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 9.

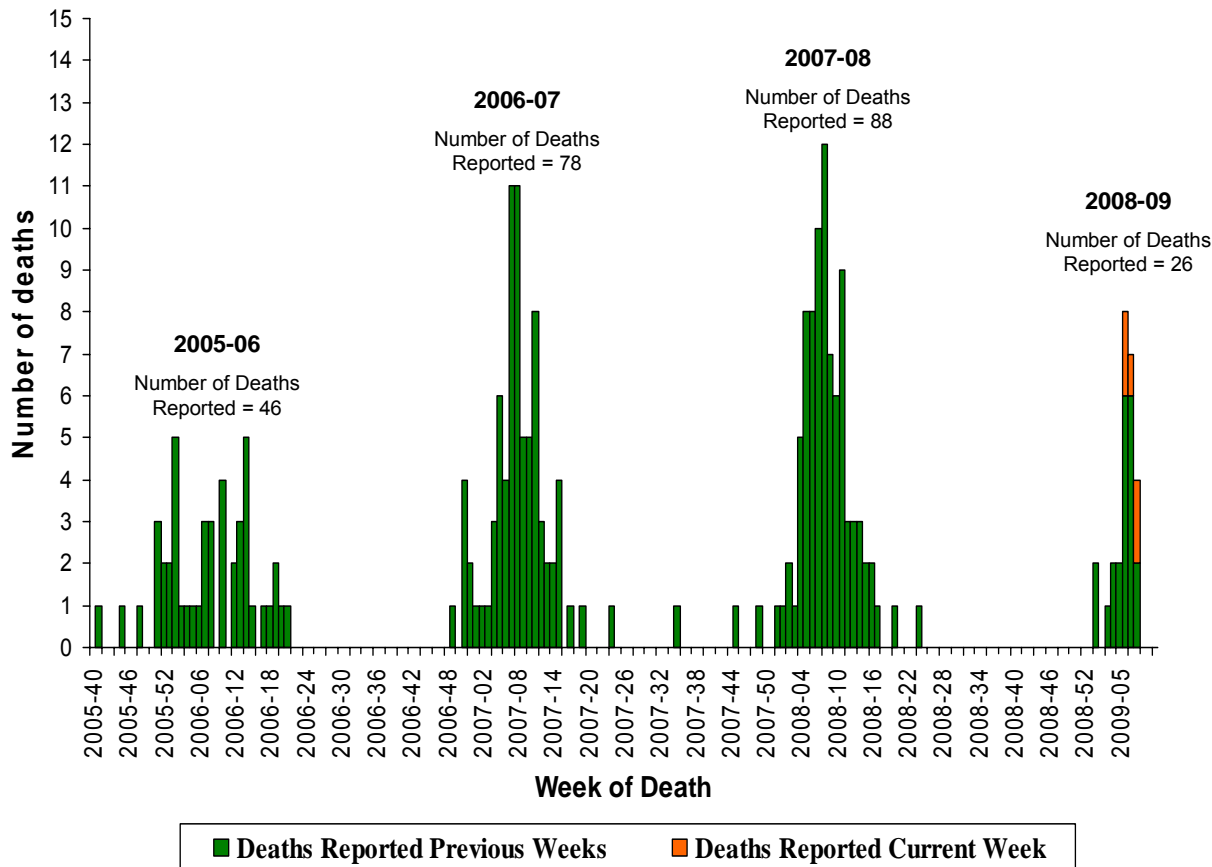
Pneumonia and Influenza Mortality for 122 U.S. Cities  
Week ending 3/7/2009



**Influenza-Associated Pediatric Mortality:** Five influenza-associated pediatric deaths were reported to CDC during week 9 (Illinois, New York City, Texas [2], and Utah). The deaths reported this week occurred between February 13 and February 28, 2009. The pediatric death that was reported from Florida during week 6 was later reclassified by the state as not due to influenza. Since September 28, 2008, CDC has received 26 reports of influenza-associated pediatric deaths that occurred during the current season.

Of the 24 children who were tested for bacterial coinfections, 18 (75.0%) were positive; *Staphylococcus aureus* was identified in 12 (66.7%) of the 18 children. Five of the *S. aureus* isolates were sensitive to methicillin, six were methicillin resistant, and one had no sensitivity results reported. Fourteen (77.8%) children with bacterial coinfections were five years of age or older and twelve (66.7%) of the eighteen 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>).

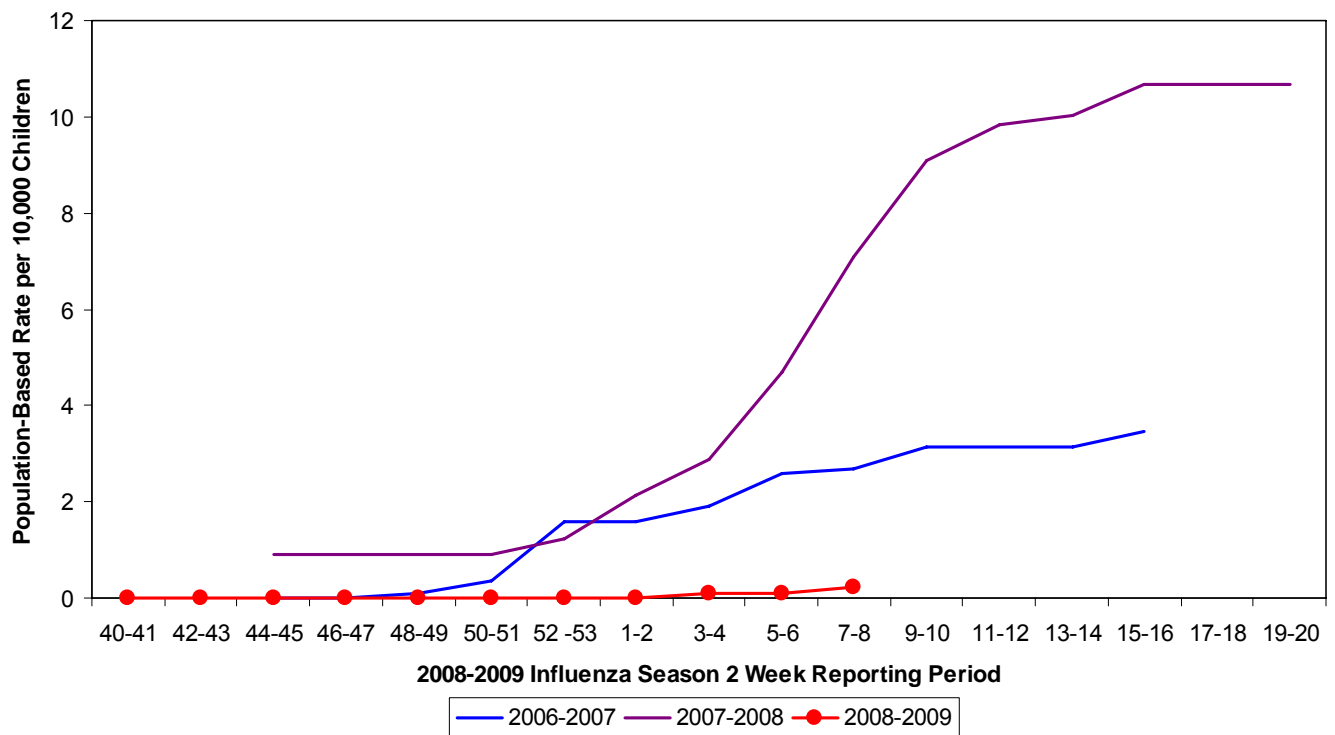
Number of Influenza-Associated Pediatric Deaths by Week of Death:  
2005-06 season to present



**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.

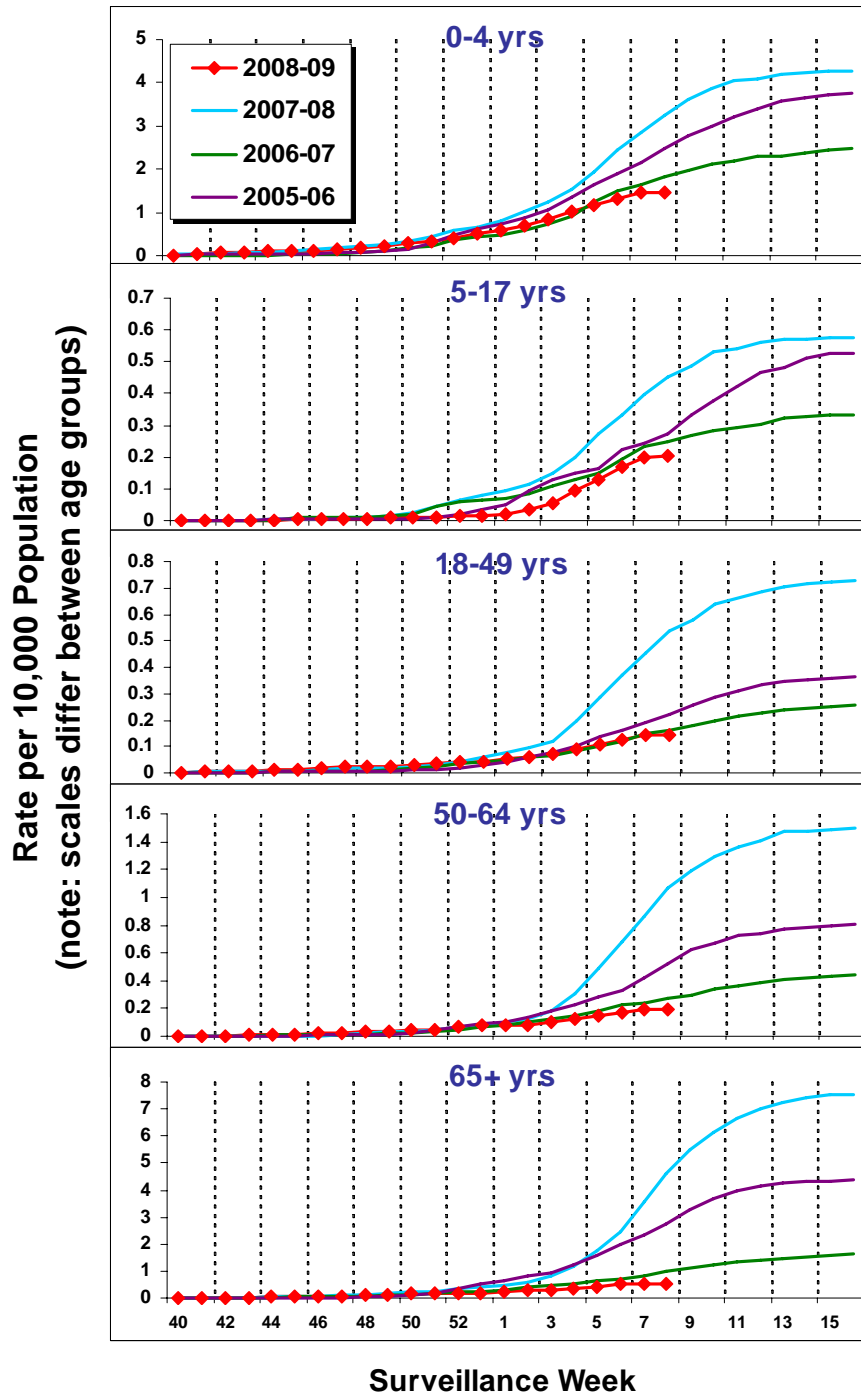
During October 12, 2008 to February 21, 2009, the preliminary laboratory-confirmed influenza-associated hospitalization rate for children 0-4 years old in the NVSN was 0.22 per 10,000. Due to case identification methods utilized in this study, a delay exists from the date of hospitalization to the date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

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



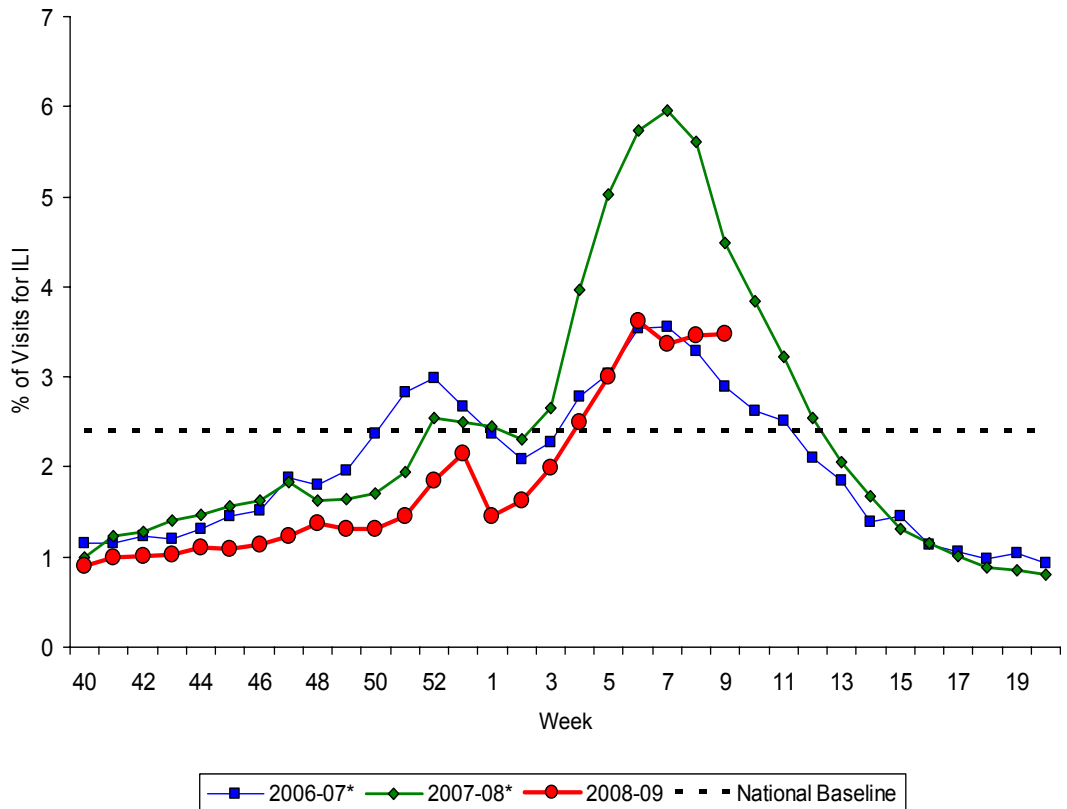
During October 1, 2008 – February 28, 2009, preliminary laboratory-confirmed influenza-associated hospitalization rates reported by the EIP for children aged 0-4 years and 5-17 years were 1.5 per 10,000 and 0.2 per 10,000, respectively. For adults aged 18-49 years, 50-64 years, and ≥ 65 years, the rates 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 9, 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.

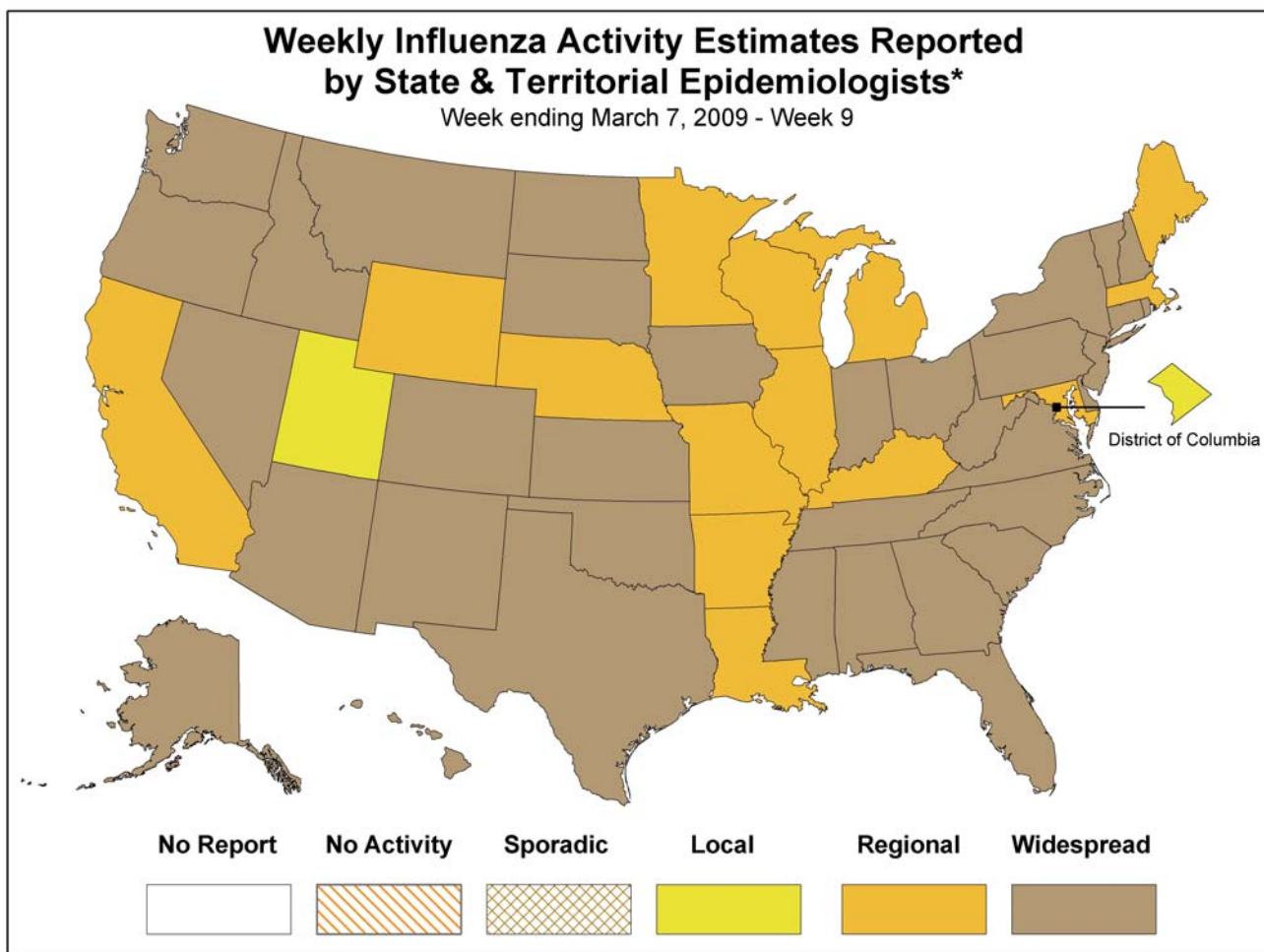
On a regional level, the percentage of visits for ILI increased in four of the nine regions (East North Central, East South Central, Pacific, and West North Central) compared to the previous week and ranged from 2.1% to 4.9%. All nine surveillance regions reported ILI percentages above their region specific baselines.

Region	New England	Mid-Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific
Reported ILI (%)	2.1	3.8	3.1	2.8	3.5	4.0	4.9	2.1	3.6
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 9, the following influenza activity was reported:

- Widespread influenza activity was reported by 35 states (Alabama, Alaska, Arizona, Colorado, Connecticut, Delaware, Florida, Georgia, Hawaii, Idaho, Indiana, Iowa, Kansas, Mississippi, Montana, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Vermont, Virginia, Washington, and West Virginia).
- Regional influenza activity was reported by 14 states (Arkansas, California, Illinois, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Nebraska, Wisconsin, and Wyoming).
- Local influenza activity was reported by the District of Columbia and one state (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: March 13, 2009.