

2008-2009 Influenza Season Week 20 ending May 23, 2009

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

(Due to the response to the novel influenza A (H1N1) investigation, surveillance regions were changed from Census Divisions to Department of Health and Human Services (HHS) Regions.)

Synopsis: During week 20 (May 17 - 23, 2009), influenza activity decreased in the United States, however there are still higher levels of influenza-like illness than is normal for this time of year.

- One thousand four hundred fifty (22.4%) 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.
- One influenza-associated pediatric death was reported.
- The proportion of outpatient visits for influenza-like illness (ILI) was below the national baseline. Two of the 10 surveillance regions reported ILI above their region-specific baseline.
- Four states reported geographically widespread influenza activity, 11 states reported regional activity, the District of Columbia and 13 states reported local influenza activity; 21 states reported sporadic influenza activity, and one state reported no influenza activity.

National and Regional Summary of Select Surveillance Components

HHS Surveillance Regions*	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)	Novel A H1N1	A (could not be sub-typed)¶	A (Un-sub-typed)	B	Pediatric Deaths
Nation	Normal	22.4%	15 of 51	7,525	1,919	4,010	519	12,143	10,047	62
Region I	Normal	14.1%	2 of 6	525	143	422	15	1,088	799	1
Region II	Elevated	15.1%	2 of 2	270	121	174	13	1,121	710	8
Region III	Normal	18.2%	3 of 6	1,219	178	286	144	622	1,349	9
Region IV	Normal	10.5%	3 of 8	805	89	104	32	1,699	1,179	6
Region V	Normal	22.7%	1 of 6	1,621	170	2,095	101	489	1,282	10
Region VI	Normal	6.0%	1 of 5	716	95	184	4	3,971	2,434	12
Region VII	Normal	12.7%	0 of 4	493	54	101	139	453	526	0
Region VIII	Normal	8.8%	0 of 6	468	201	153	53	1,405	489	5
Region IX	Normal	42.1%	3 of 4	1,045	600	356	13	954	622	10
Region X	Elevated	30.3%	0 of 4	363	268	135	5	341	657	1

* HHS regions (Region I: CT, ME, MA, NH, RI, VT; Region II: NJ, NY, Puerto Rico, US Virgin Islands; Region III: DE, DC, MD, PA, VA, WV; Region IV: AL, FL, GA, KY, MS, NC, SC, TN; Region V: IL, IN, MI, MN, OH, WI; Region VI: AR, LA, NM, OK, TX; Region VII: IA, KS, MO, NE; Region VIII: CO, MT, ND, SD, UT, WY; Region IX: AZ, CA, Guam, HI, NV; and Region X: AK, ID, OR, WA)

† 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

¶ The majority of influenza A viruses that cannot be sub-typed as seasonal influenza viruses are novel A (H1N1) influenza viruses upon further testing

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.

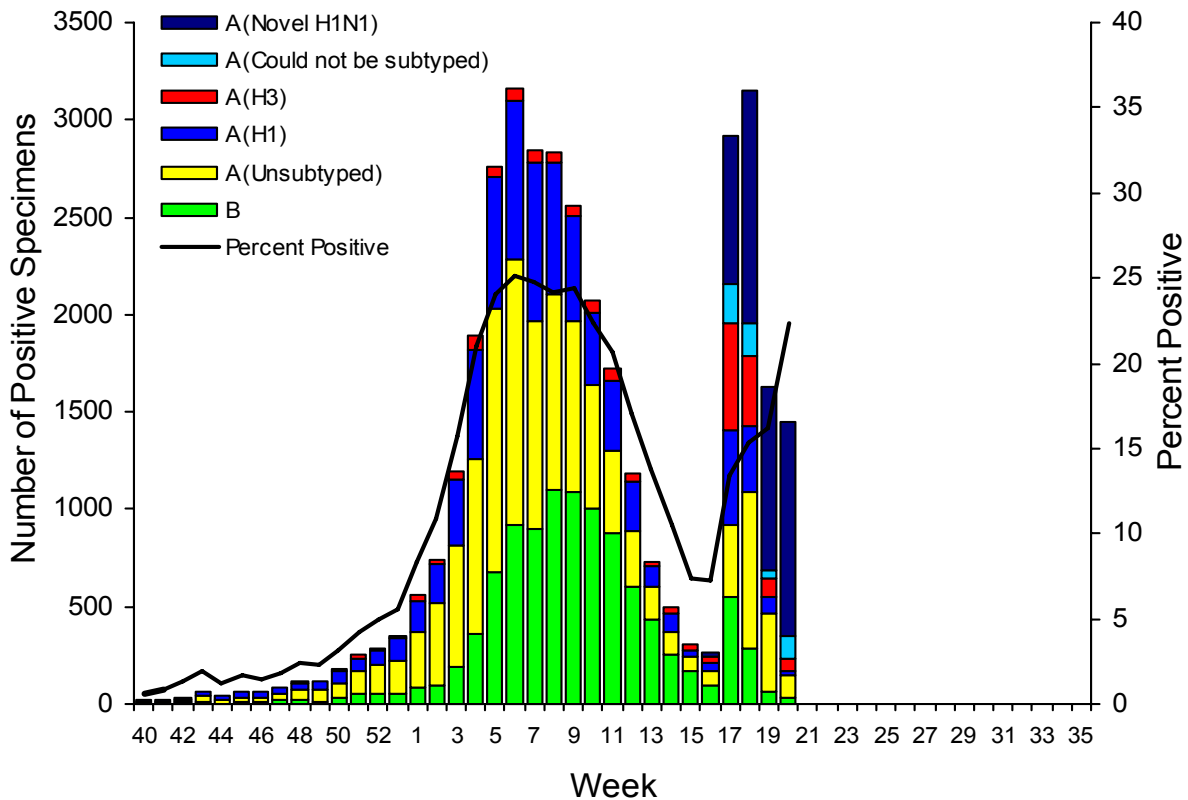
During the 2008-09 season, influenza A (H1), A (H3), and B viruses have co-circulated in the United States. On April 15 and 17, 2009, CDC confirmed that two cases of febrile respiratory illness occurring in children who reside in adjacent counties in southern California were caused by infection with a novel influenza A (H1N1) virus. As of May 29, 2009, 8,975 confirmed infections with novel influenza A (H1N1) virus have been identified by CDC and state and local public health departments. Reporting of novel influenza A (H1N1) viruses by U.S. WHO collaborating laboratories began during week 17. The results of tests performed during the current week are summarized in the table below.

	Week 20
No. of specimens tested	6,469
No. of positive specimens (%)	1,450 (22.4%)
<i>Positive specimens by type/subtype</i>	
Influenza A	1,423 (98.1%)
A (H1)	24 (1.7%)
A (H3)	70 (4.9%)
A (unsubtyped)	116 (8.2%)
A (could not be subtyped)	117 (8.2%)
A (novel influenza H1N1)	1,096 (77.0%)
Influenza B	27 (1.9%)

During week 20, seasonal influenza A (H1), A (H3), and B viruses continue to co-circulate with novel influenza A (H1N1). Approximately 84% of all influenza viruses being reported to CDC are novel influenza A (H1N1) viruses.

The increase in the percentage of specimens testing positive for influenza by WHO and NREVSS collaborating laboratories may be due in part to changes in testing practices by healthcare providers, triaging of specimens by public health laboratories, an increase in the number of specimens collected from outbreaks, and other factors.

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



Antigenic Characterization: CDC has antigenically characterized 1,440 seasonal human influenza viruses [877 influenza A (H1), 162 influenza A (H3) and 401 influenza B viruses] collected by U.S. laboratories since October 1, 2008, and 84 novel A (H1N1) viruses.

All 877 influenza seasonal A (H1) viruses are related to the influenza A (H1N1) component of the 2008-09 influenza vaccine (A/Brisbane/59/2007). All 162 influenza A (H3N2) viruses are related to the A (H3N2) vaccine component (A/Brisbane/10/2007).

All 84 novel A (H1N1) viruses are related to the A/California/07/2009 (H1N1) reference virus selected by WHO as a potential candidate for novel influenza A (H1N1) vaccine.

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-eight influenza B viruses tested belong to the B/Yamagata lineage and are related to the vaccine strain (B/Florida/04/2006). The remaining 343 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. Antigenic characterization of novel influenza A (H1N1) viruses indicates that these viruses are antigenically and genetically unrelated to seasonal influenza A (H1N1) viruses, suggesting that little to no protection would be expected from vaccination with seasonal influenza vaccine.

Antiviral Resistance: Since October 1, 2008, 904 seasonal influenza A (H1N1), 158 influenza A (H3N2), and 444 influenza B viruses have been tested for resistance to the neuraminidase inhibitors (oseltamivir and zanamivir). Nine hundred fourteen seasonal influenza A (H1N1) and 158 influenza A (H3N2) viruses have been tested for resistance to the adamantanes (amantadine and rimantadine). One hundred thirty-nine novel influenza A (H1N1) viruses have been tested for resistance to the neuraminidase inhibitors (oseltamivir and zanamivir). One hundred nineteen novel influenza A (H1N1) 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
Seasonal Influenza A (H1N1)	904	899 (99.4%)	0 (0)	914	5 (0.5%)
Influenza A (H3N2)	158	0 (0)	0 (0)	158	145 (100%)
Influenza B	444	0 (0)	0 (0)	N/A*	N/A*
Novel Influenza A (H1N1)	139	0 (0)	0 (0)	119	119 (100%)

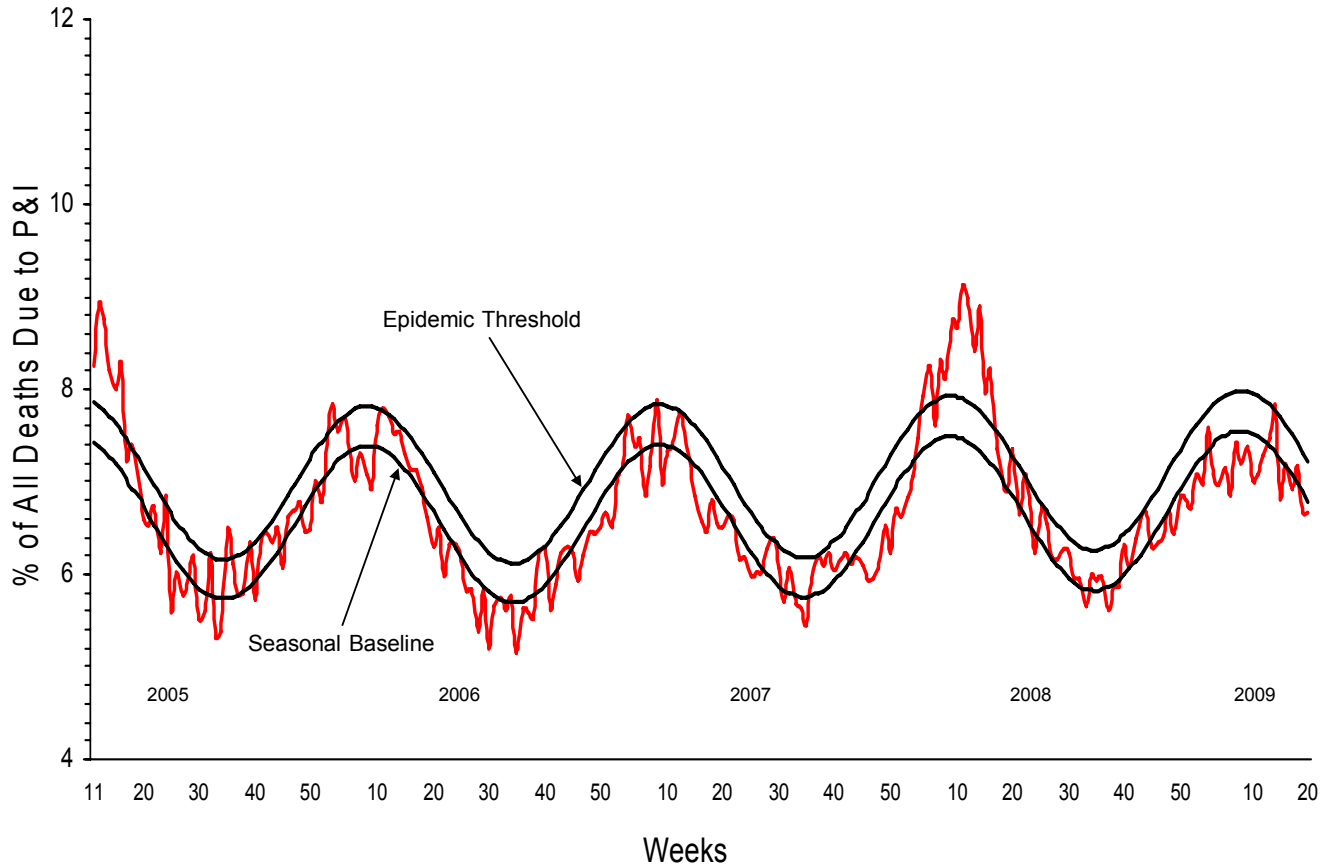
*The adamantanes (amantadine and rimantadine) are not effective against influenza B viruses.

Antiviral treatment with either oseltamivir or zanamivir is recommended for all patients with confirmed, probable or suspected cases of novel influenza A (H1N1) virus infection who are hospitalized or who are at higher risk for seasonal influenza complications. The novel influenza A (H1N1) virus is susceptible to both neuraminidase inhibitor antiviral medications zanamivir and oseltamivir. It is resistant to the adamantane antiviral medications, amantadine and rimantadine. Additional information on antiviral recommendations for treatment and chemoprophylaxis of novel influenza A (H1N1) infection is available at <http://www.cdc.gov/h1n1flu/recommendations.htm>

In areas that continue to have seasonal influenza activity, especially those with circulation of oseltamivir-resistant seasonal human influenza A (H1N1) viruses, clinicians might prefer to use either zanamivir or a combination of oseltamivir and either rimantadine or amantadine to provide adequate empiric treatment or chemoprophylaxis for patients who might have seasonal human influenza A (H1N1) virus infection.

Pneumonia and Influenza (P&I) Mortality Surveillance: During week 20, 6.7% of all deaths reported through the 122-Cities Mortality Reporting System were due to P&I. This percentage is below to the epidemic threshold of 7.2% for week 20.

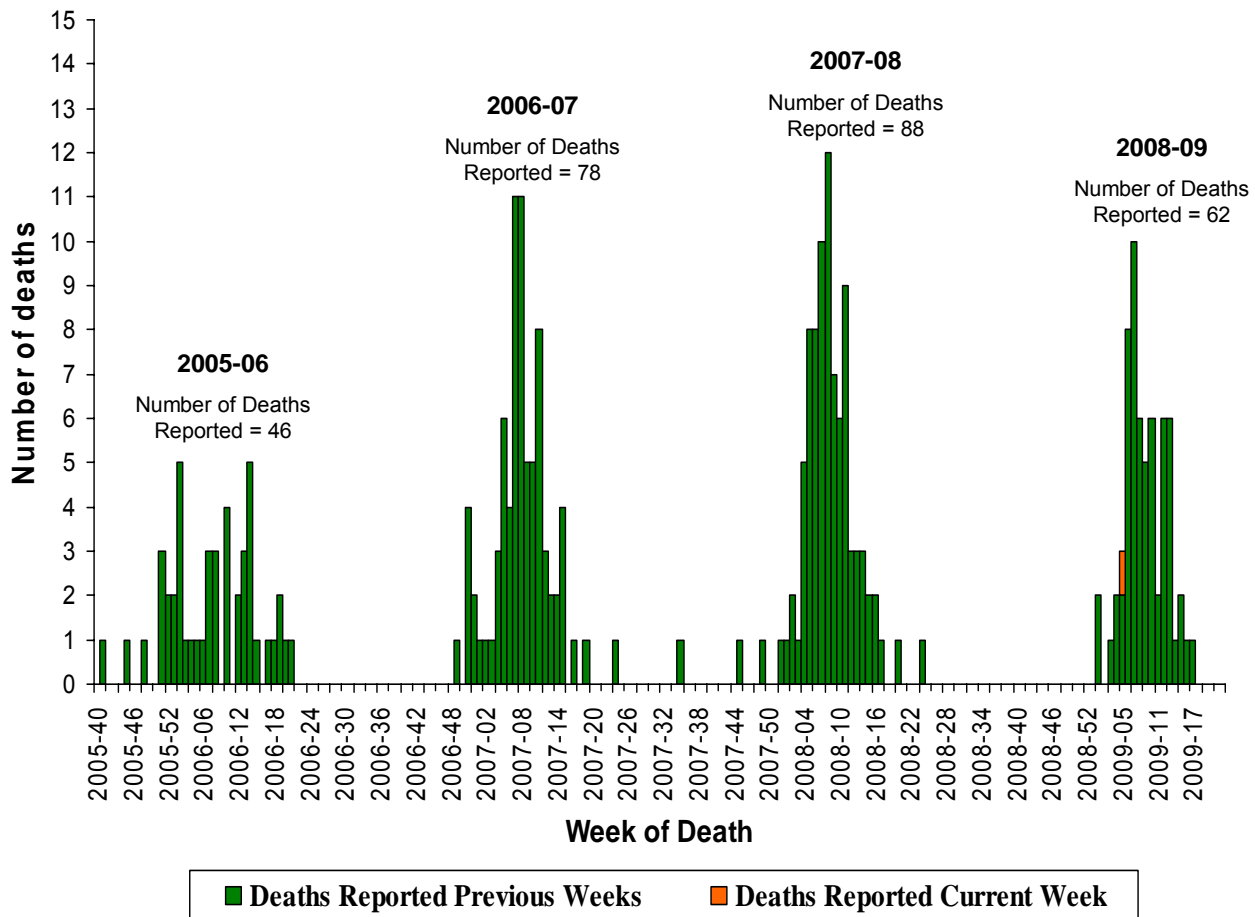
Pneumonia and Influenza Mortality for 122 U.S. Cities Week ending 5/23/2009



Influenza-Associated Pediatric Mortality: One influenza-associated pediatric death was reported to CDC during week 20 (Ohio); and was due to an influenza A virus. The death reported this week occurred during week 5 (the week ending February 7, 2009). Since September 28, 2008, CDC has received 62 reports of influenza-associated pediatric deaths that occurred during the current influenza season.

Of the 31 children who had specimens collected for bacterial culture from normally sterile sites, 13 (41.9%) were positive; *Staphylococcus aureus* was identified in eight (61.5%) of the 13 children. Three of the *S. aureus* isolates were sensitive to methicillin and five were methicillin resistant. Twelve of the 13 children with bacterial coinfections were five years of age or older and 10 (76.9%) of the 13 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>).

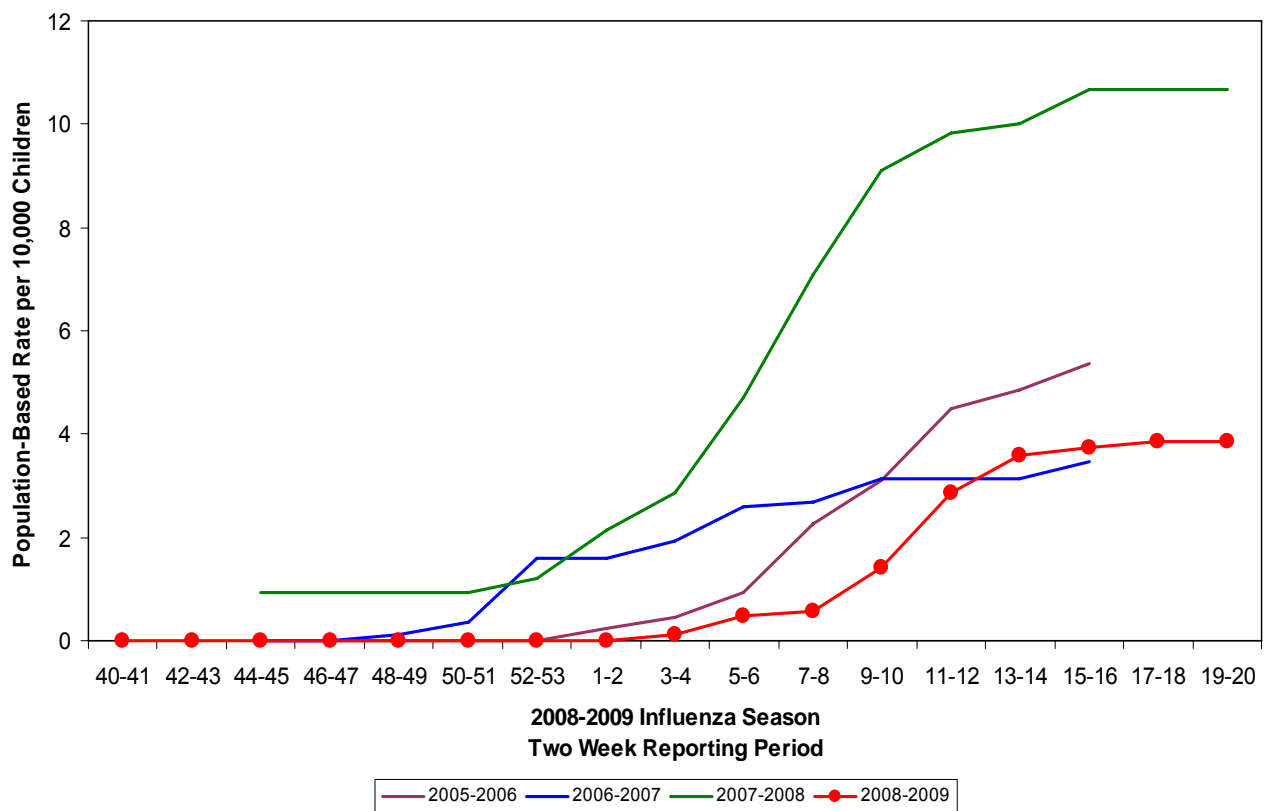
Number of Influenza-Associated Pediatric Deaths by Week of Death:
2005-06 season to present



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).

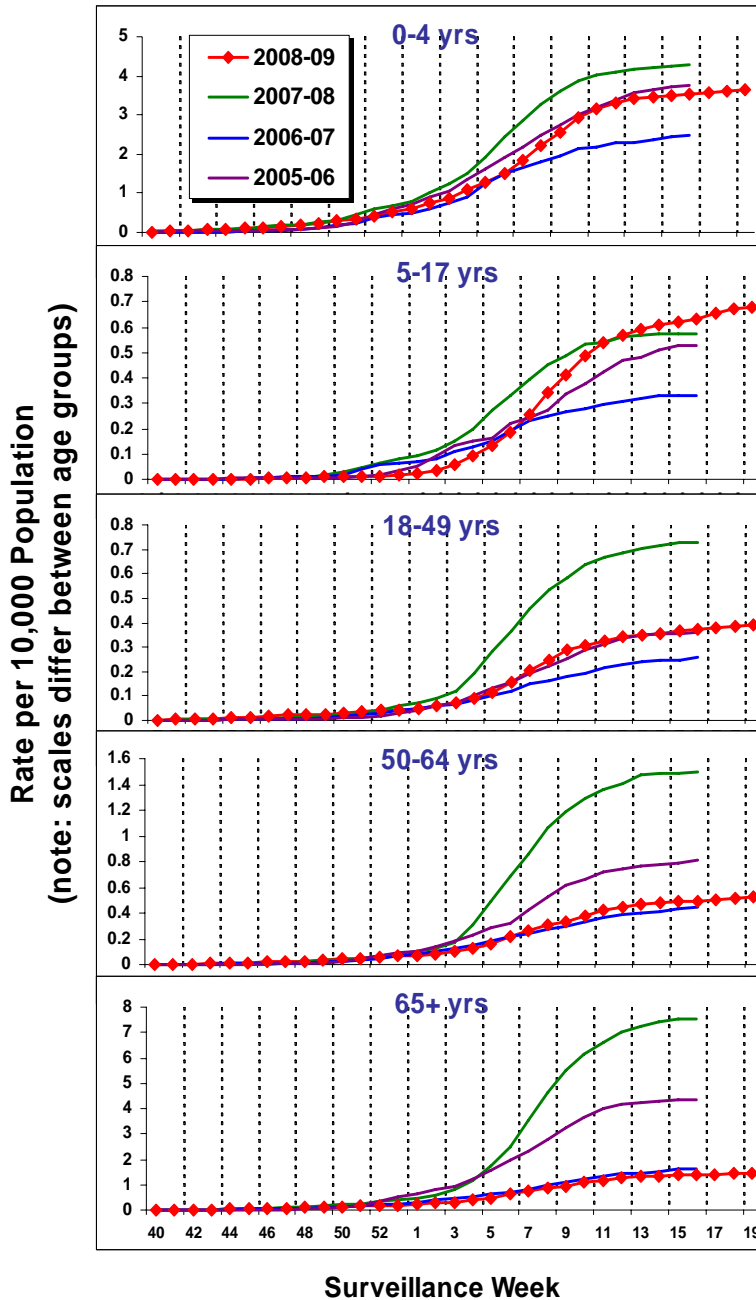
During October 12, 2008 to May 16, 2009, the preliminary laboratory-confirmed influenza-associated hospitalization rate for children 0-4 years old in the NVSN was 3.85 per 10,000. Because of case identification methods utilized in this study, there is a delay from the date of hospitalization to the date of report.

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



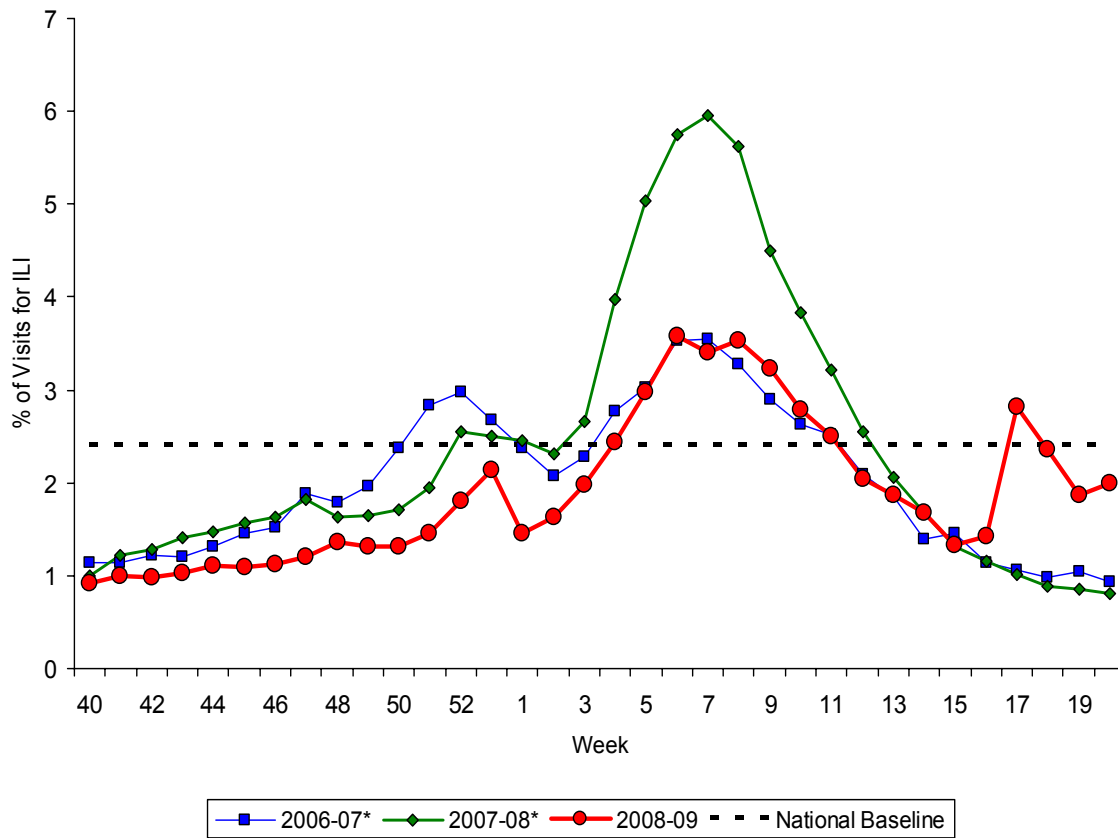
During October 1, 2008 – May 16, 2009, preliminary laboratory-confirmed influenza-associated hospitalization rates reported by the EIP for children aged 0-4 years and 5-17 years were 3.7 per 10,000 and 0.7 per 10,000, respectively. For adults aged 18-49 years, 50-64 years, and ≥ 65 years, the rates were 0.4 per 10,000, 0.5 per 10,000, and 1.5 per 10,000, respectively.

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



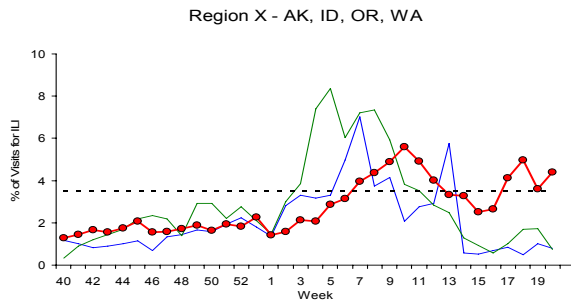
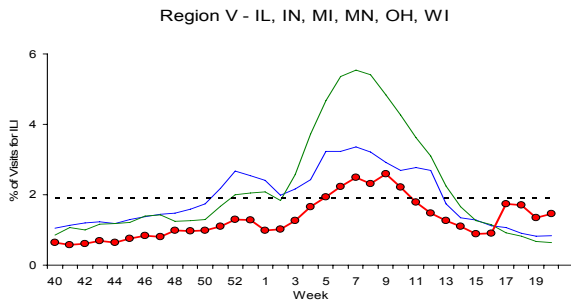
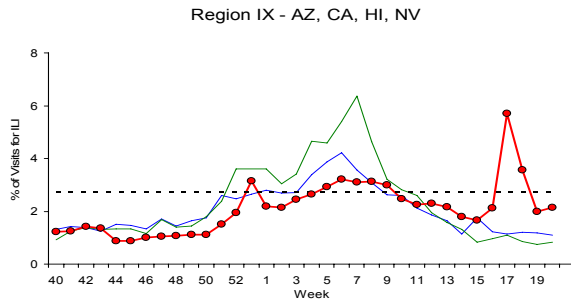
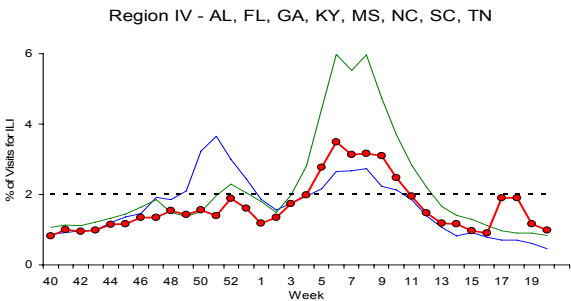
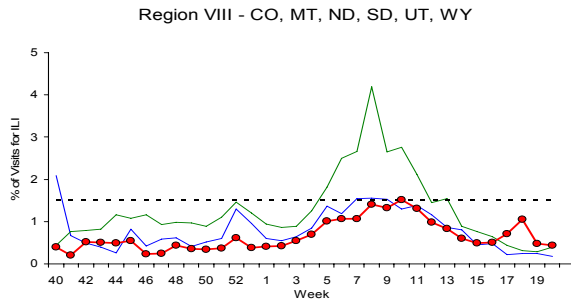
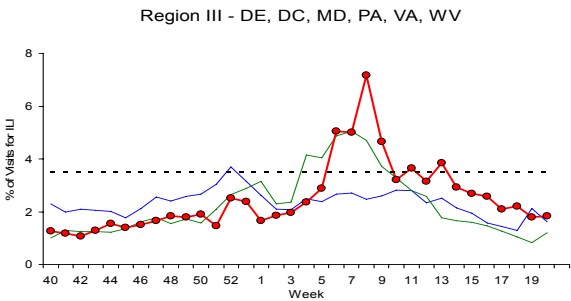
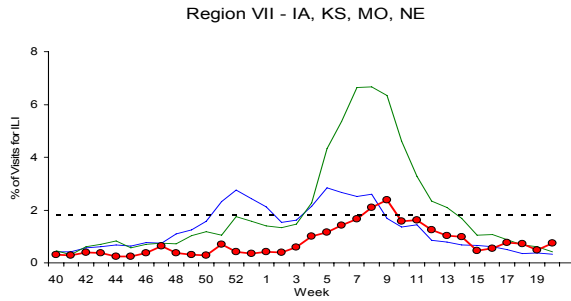
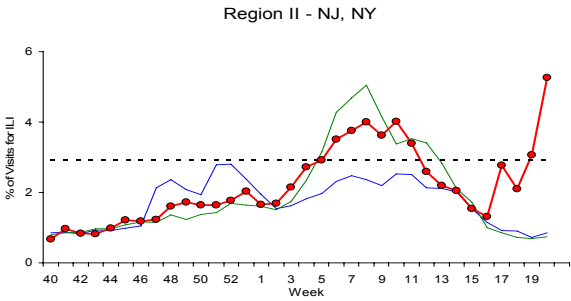
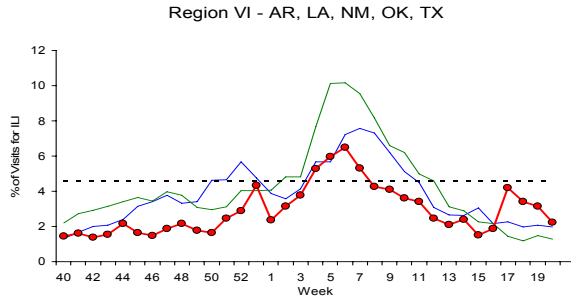
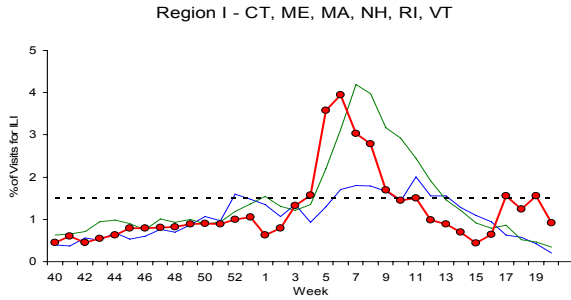
Outpatient Illness Surveillance: Nationwide during week 20, 2.0% of patient visits reported through the U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet) were due to influenza-like illness (ILI). This percentage is below the national baseline of 2.4%.

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 outpatient visits for ILI ranged from 0.4% to 5.3%. Two of the 10 surveillance regions reported an ILI percentage above their region specific baseline (Regions II and X). ILI increased during week 20 in six of 10 regions compared to week 19.



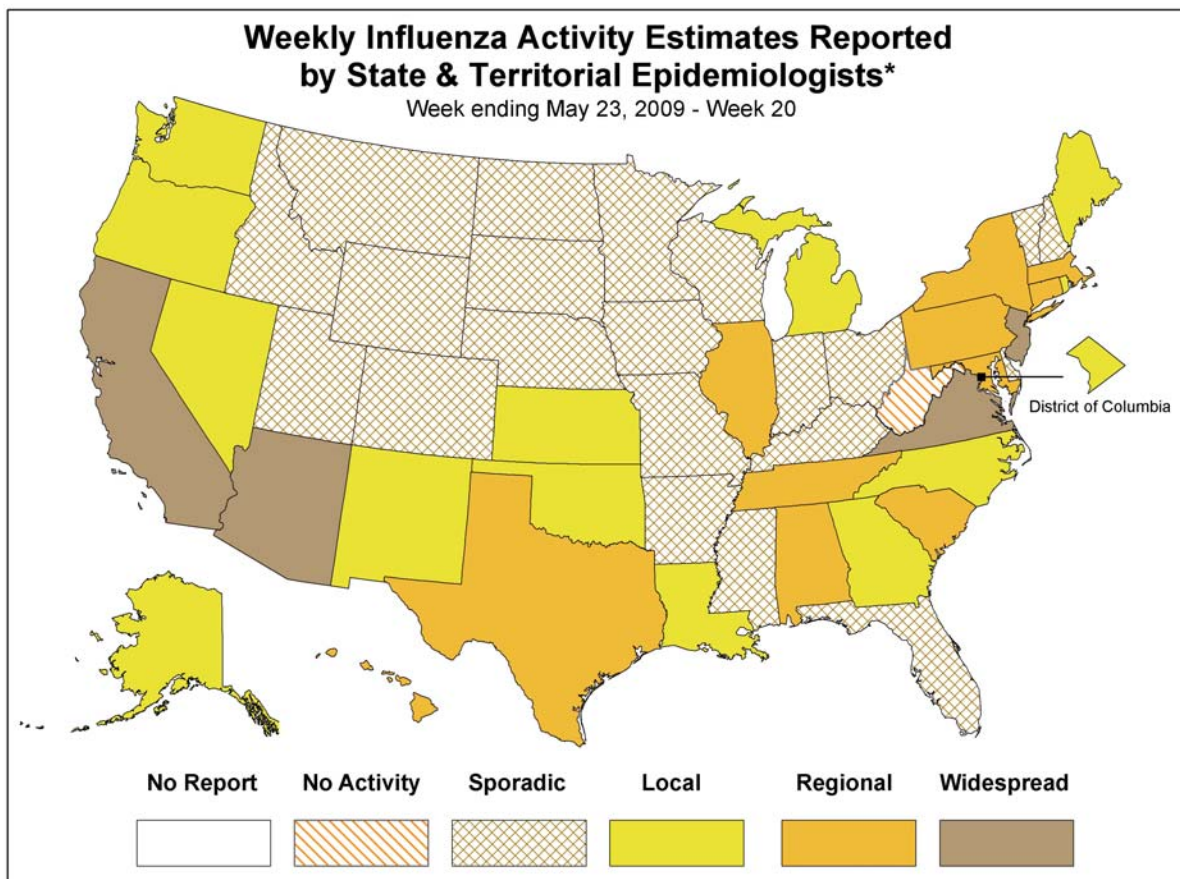
NOTE: Scales differ between regions

NOTE: 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.

Geographic Spread of Influenza as Assessed by State and Territorial Epidemiologists: The influenza activity reported by state and territorial epidemiologists indicates geographic spread of both seasonal influenza and novel influenza A (H1N1) viruses and does not measure the severity of influenza activity.

During week 20, the following influenza activity was reported:

- Widespread influenza activity was reported by four states (Arizona, California, New Jersey, and Virginia).
- Regional influenza activity was reported by 11 states (Alabama, Connecticut, Hawaii, Illinois, Maryland, Massachusetts, New York, Pennsylvania, South Carolina, Tennessee, and Texas).
- Local influenza activity was reported by the District of Columbia and 13 states (Alaska, Georgia, Kansas, Louisiana, Maine, Michigan, Nevada, New Mexico, North Carolina, Oklahoma, Oregon, Rhode Island, and Washington).
- Sporadic activity was reported by 21 states (Arkansas, Colorado, Delaware, Florida, Idaho, Indiana, Iowa, Kentucky, Minnesota, Mississippi, Missouri, Montana, Nebraska, New Hampshire, North Dakota, Ohio, South Dakota, Utah, Vermont, Wisconsin, and Wyoming).
- No influenza activity was reported by 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: May 29, 2009.