

2008-2009 Influenza Season Week 24 ending June 20, 2009

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

On June 11, the World Health Organization raised the pandemic alert level from Phase 5 to Phase 6 indicating that an influenza pandemic is underway. The novel influenza A (H1N1) virus now will be referred to as “pandemic H1N1 influenza virus.”

Synopsis: During week 24 (June 14-20, 2009), influenza activity decreased in the United States, however, there were still higher levels of influenza-like illness than is normal for this time of year.

- Three thousand two hundred eighty-six (41.9%) 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.
- Over 99% of all subtyped influenza A viruses being reported to CDC were pandemic influenza A (H1N1) viruses.
- The proportion of deaths attributed to pneumonia and influenza (P&I) was below the epidemic threshold.
- Five influenza-associated pediatric deaths were reported and four of the five deaths were associated with pandemic influenza A (H1N1) virus infection.
- 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.
- Twelve states reported geographically widespread influenza activity, seven states reported regional influenza activity, the District of Columbia and 11 states reported local influenza activity, and Puerto Rico and 20 states reported sporadic 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)	Pandemic A (H1N1)	A (unable to sub-type)¶	A (Subtyping not performed)	B	Pediatric Deaths
Nation	Normal	41.9%	19 of 52	7,839	2,208	15,954	647	14,319	10,514	76
Region I	Elevated	37.0%	4 of 6	521	151	1,616	13	1,479	800	2
Region II	Elevated	42.8%	2 of 3	277	139	774	20	1,873	711	9
Region III	Normal	52.4%	5 of 6	1,300	216	2,397	0	709	1,360	9
Region IV	Normal	27.5%	1 of 8	829	119	520	44	2,051	1,216	6
Region V	Normal	54.0%	2 of 6	1,644	192	6,946	150	798	1,409	14
Region VI	Normal	13.7%	0 of 5	771	163	936	5	4,108	2,598	14
Region VII	Normal	11.2%	0 of 4	518	71	277	138	472	532	0
Region VIII	Normal	26.5%	2 of 6	530	216	895	57	1,528	499	6
Region IX	Normal	16.2%	3 of 4	1,061	630	785	28	860	699	15
Region X	Normal	22.1%	0 of 4	388	311	808	192	441	690	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, the District of Columbia, and Puerto Rico

¶ The majority of influenza A viruses that cannot be sub-typed as seasonal influenza viruses are pandemic 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.

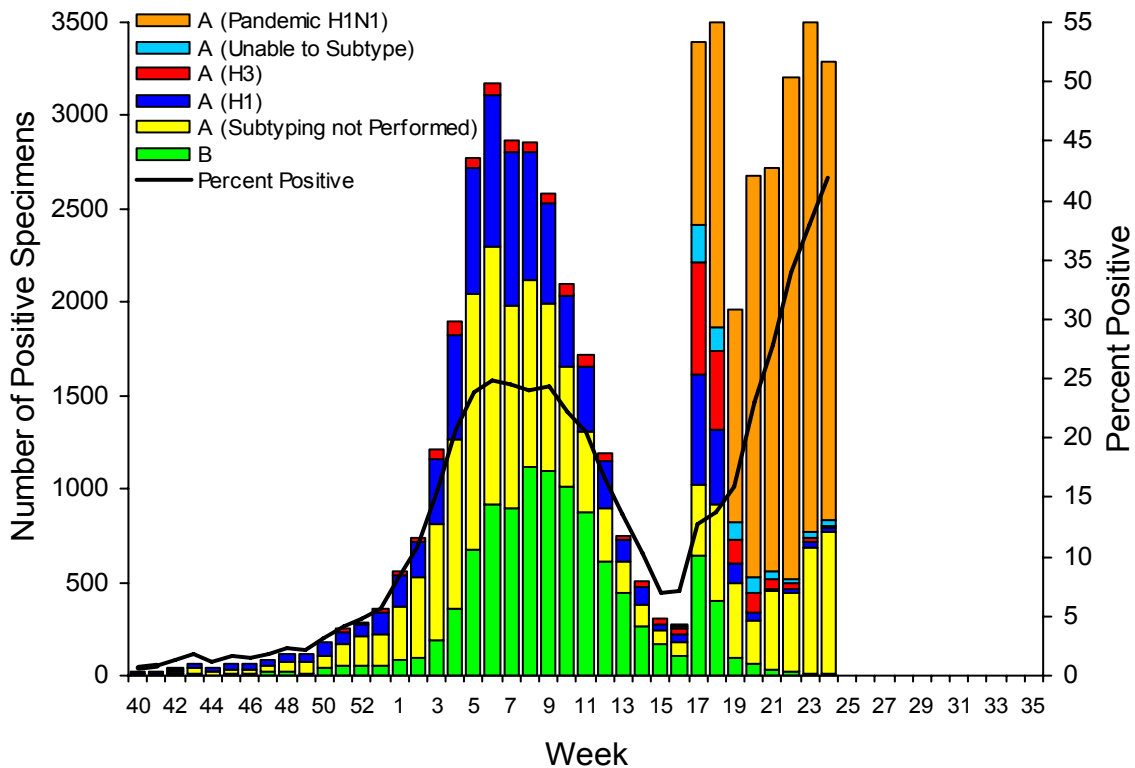
During the 2008-09 season, influenza A (H1), A (H3), and B viruses have co-circulated in the United States. On April 15 and 17, 2009, CDC confirmed the first two cases of pandemic influenza A (H1N1) virus in the United States. As of June 26, 2009, 27,717 confirmed and probable infections with pandemic influenza A (H1N1) virus and 127 deaths (33 deaths in individuals less than 25 years, 89 deaths in adults 25 years of age older, and five deaths with unknown age) have been identified by CDC and state and local public health departments. Reporting of pandemic influenza A (H1N1) viruses by U.S. WHO collaborating laboratories began during week 17 (week ending May 2, 2009). The results of tests performed during the current week are summarized in the table below.

	Week 24
No. of specimens tested	7,844
No. of positive specimens (%)	3,286 (41.9%)
<i>Positive specimens by type/subtype</i>	
Influenza A	3,278 (99.8%)
A (pandemic H1N1)	2,452 (74.8%)
A (subtyping not performed)	765 (23.3%)
A (unable to subtype)	38 (1.2%)
A (H3)	6 (0.2%)
A (H1)	17 (0.5%)
Influenza B	8 (0.2%)

During week 24, seasonal influenza A (H1), A (H3), and B viruses co-circulated at low levels with pandemic influenza A (H1N1) viruses. Over 99% of all subtyped influenza A viruses being reported to CDC this week were pandemic 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 health care 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 1,635 seasonal human influenza viruses [947 influenza A (H1), 171 influenza A (H3) and 517 influenza B viruses] collected by U.S. laboratories since October 1, 2008, and 144 pandemic influenza A (H1N1) viruses.

All 947 influenza seasonal A (H1) viruses are related to the influenza A (H1N1) component of the 2008-09 influenza vaccine (A/Brisbane/59/2007). All 171 influenza A (H3N2) viruses are related to the A (H3N2) vaccine component (A/Brisbane/10/2007).

All 144 pandemic influenza A (H1N1) viruses are related to the A/California/07/2009 (H1N1) reference virus selected by WHO as a potential candidate for pandemic 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. Sixty-five influenza B viruses tested belong to the B/Yamagata lineage and are related to the vaccine strain (B/Florida/04/2006). The remaining 452 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 pandemic 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, 1,010 seasonal influenza A (H1N1), 183 influenza A (H3N2), and 550 influenza B viruses have been tested for resistance to the neuraminidase inhibitors (oseltamivir and zanamivir). One thousand twelve seasonal influenza A (H1N1) and 187 influenza A (H3N2) viruses have been tested for resistance to the adamantanes (amantadine and rimantadine). One hundred ninety-one pandemic influenza A (H1N1) viruses have been tested for resistance to the neuraminidase inhibitors (oseltamivir and zanamivir). One hundred seventy-seven pandemic 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)	1,010	1,005 (99.5%)	0 (0)	1,012	6 (0.6%)
Influenza A (H3N2)	183	0 (0)	0 (0)	187	187 (100%)
Influenza B	550	0 (0)	0 (0)	N/A*	N/A*
Pandemic Influenza A (H1N1)	191	0 (0)	0 (0)	177	177 (100%)

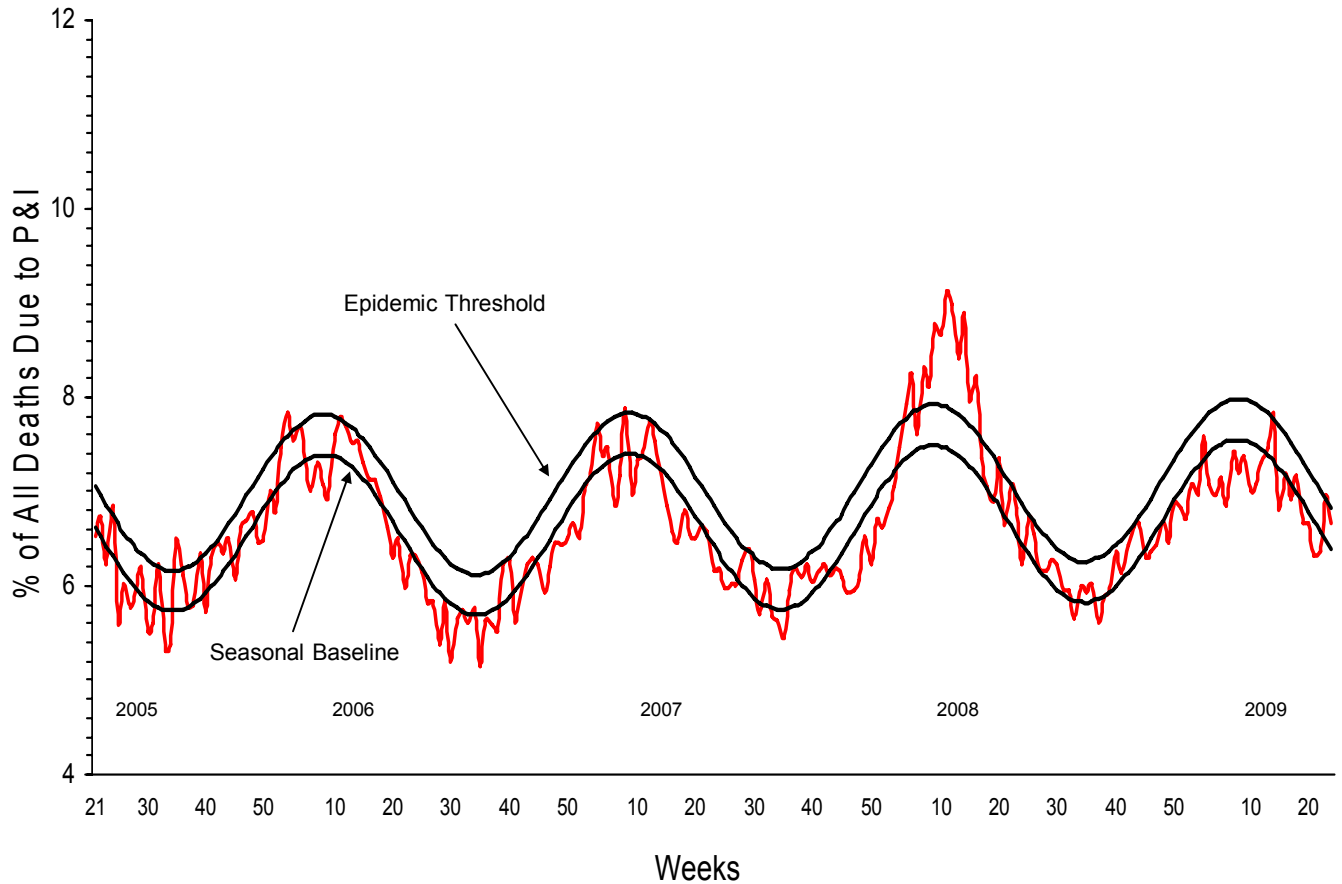
*The adamantanes (amantadine and rimantadine) are not effective against influenza B viruses.

The pandemic 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. Antiviral treatment with either oseltamivir or zanamivir is recommended for all patients with confirmed, probable or suspected cases of pandemic influenza A (H1N1) virus infection who are hospitalized or who are at higher risk for seasonal influenza complications. Additional information on antiviral recommendations for treatment and chemoprophylaxis of pandemic influenza A (H1N1) infection is available at <http://www.cdc.gov/h1n1flu/recommendations.htm>

Three seasonal influenza A (H1N1) viruses collected between February 8 and May 11, 2009 were found to be resistant to both oseltamivir and the adamantanes (amantadine and rimantadine). All influenza A (H1N1) viruses tested retain their sensitivity to zanamivir. The three dually resistant viruses represent less than 0.5% of all seasonal influenza A (H1N1) viruses tested during the 2008-09 influenza season, and as a result, no changes to the influenza antiviral treatment or prophylaxis recommendations will be made at this time. CDC will continue to monitor trends in antiviral resistance over the summer and throughout the upcoming 2009-10 influenza season.

Pneumonia and Influenza (P&I) Mortality Surveillance: During week 24, 6.7% of all deaths reported through the 122-Cities Mortality Reporting System were due to P&I. This percentage is below the epidemic threshold of 6.8% for week 24.

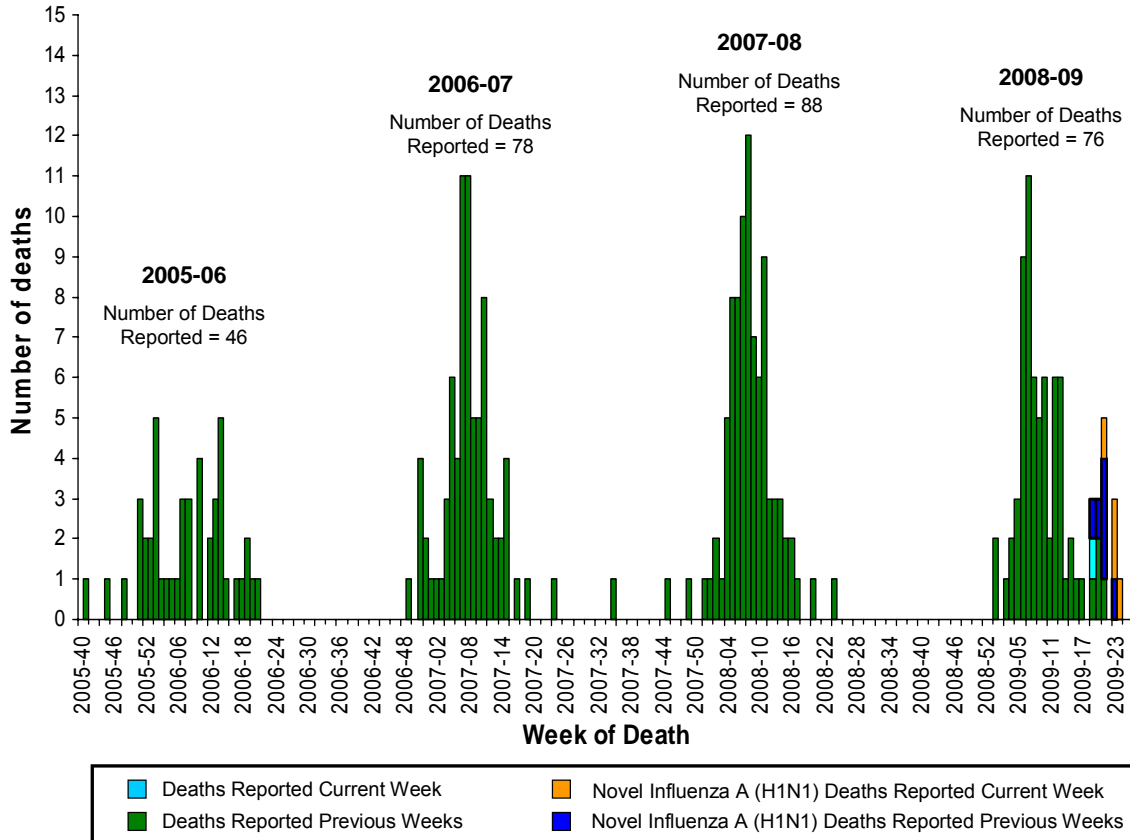
Pneumonia and Influenza Mortality for 122 U.S. Cities Week ending 6/20/2009



Influenza-Associated Pediatric Mortality: Five influenza-associated pediatric deaths were reported to CDC during week 24 (California, Connecticut, Indiana, Minnesota, and Wisconsin). Four of these deaths were associated with pandemic influenza A (H1N1) virus infection and one death was due to influenza A (subtyping not performed) virus. The deaths reported this week occurred during weeks 19-24 (the weeks ending May 10-June 20, 2009). Since September 28, 2008, CDC has received 76 reports of influenza-associated pediatric deaths that occurred during the current influenza season, 10 of which were due to pandemic influenza A (H1N1) virus infections.

Of the 37 children who had specimens collected for bacterial culture from normally sterile sites, 15 (40.5%) were positive; *Staphylococcus aureus* was identified in nine (60.0%) of the 15 children. Four of the *S. aureus* isolates were sensitive to methicillin and five were methicillin resistant. Thirteen (86.7%) of the 15 children with bacterial coinfections were five years of age or older and 10 (66.7%) of the 15 children were 12 years of age or older. Five of the 10 children with confirmed pandemic influenza A (H1N1) infection had a specimen collected from a normally sterile site; one of the five children had a positive bacterial culture. 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>).

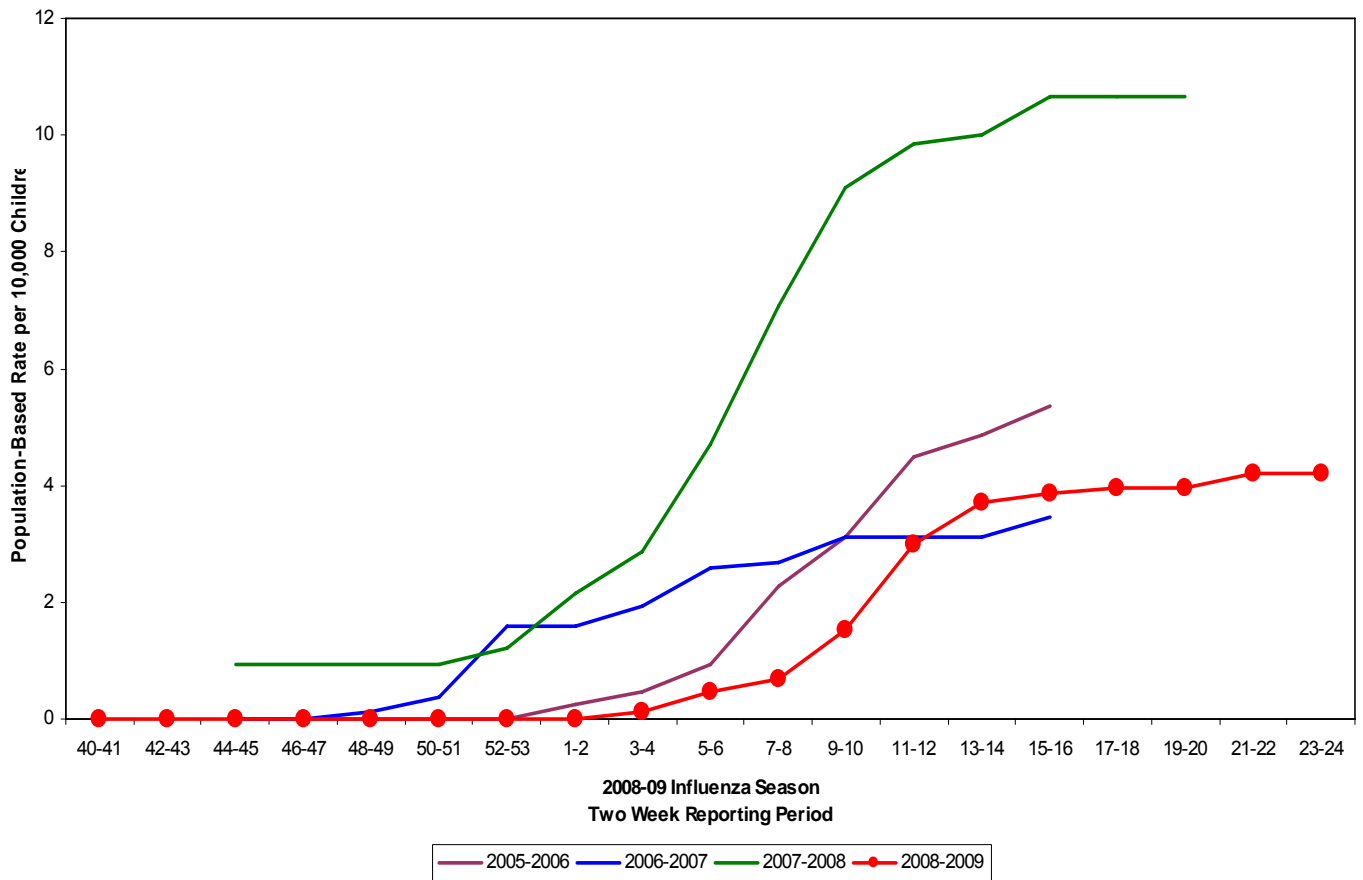
Number of Influenza-Associated Pediatric Deaths by Week of Death:
2005-06 season to present



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 June 13, 2009, the preliminary laboratory-confirmed influenza-associated hospitalization rate for children 0-4 years old in the NVSN was 4.2 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.

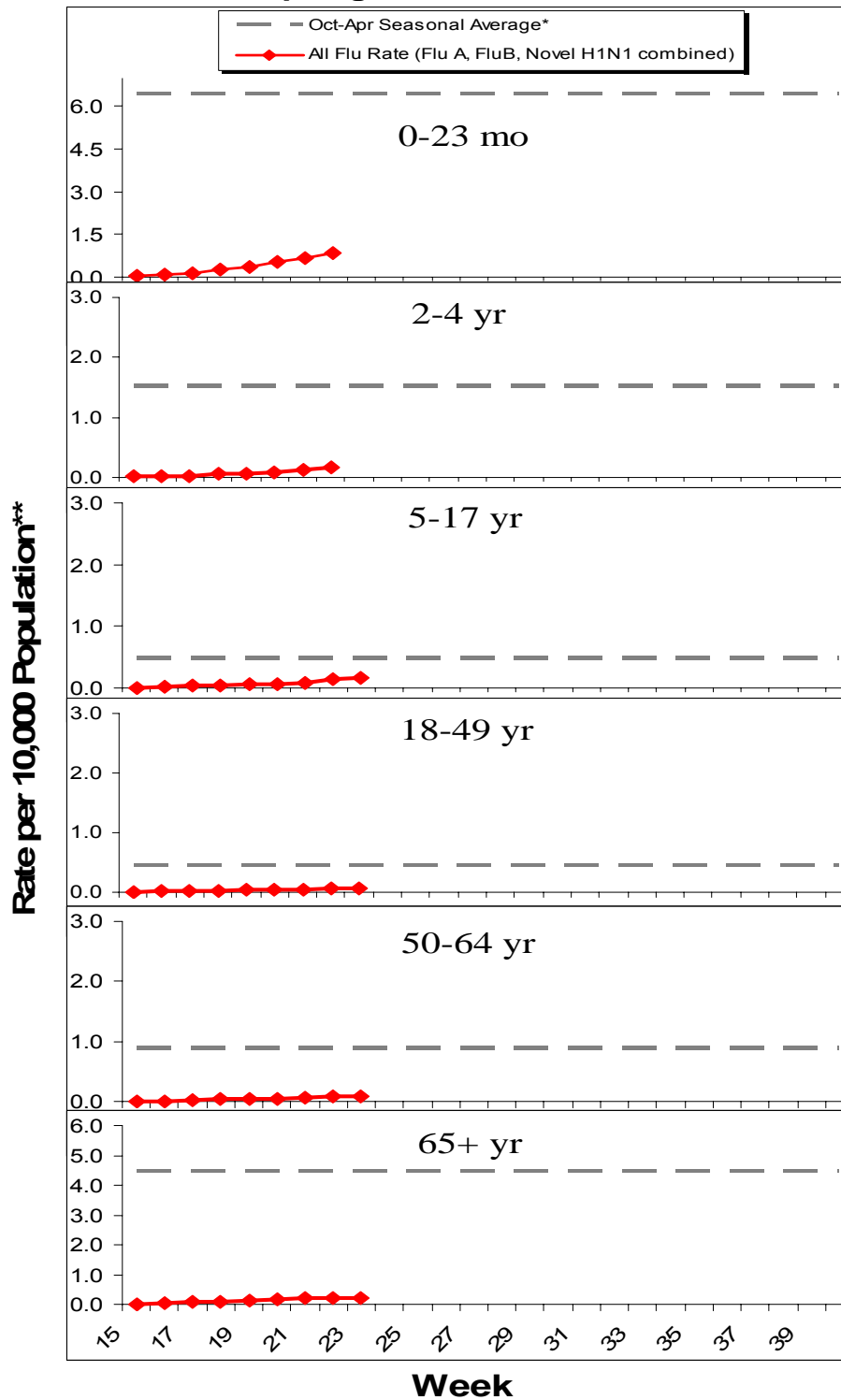
NVSN Influenza Laboratory-Confirmed Cumulative Hospitalization Rates for Children 0 - 4 Years, 2008-09 and Previous Three Seasons



During April 15, 2009 to June 20, 2009, the following preliminary laboratory-confirmed overall influenza associated hospitalization rates were reported by the EIP (*rates include type A, type B, and confirmed Pandemic H1N1*):

Rates for children aged 0-23 months, 2-4 years, and 5-17 years were 1.1, 0.3, and 0.3 per 10,000, respectively. Rates for adults aged 18-49 years, 50-64 years, and ≥ 65 years were 0.1, 0.1, and 0.2 per 10,000, respectively.

EIP Influenza Laboratory-Confirmed Cumulative Hospitalization Rates, Spring/Summer 2009

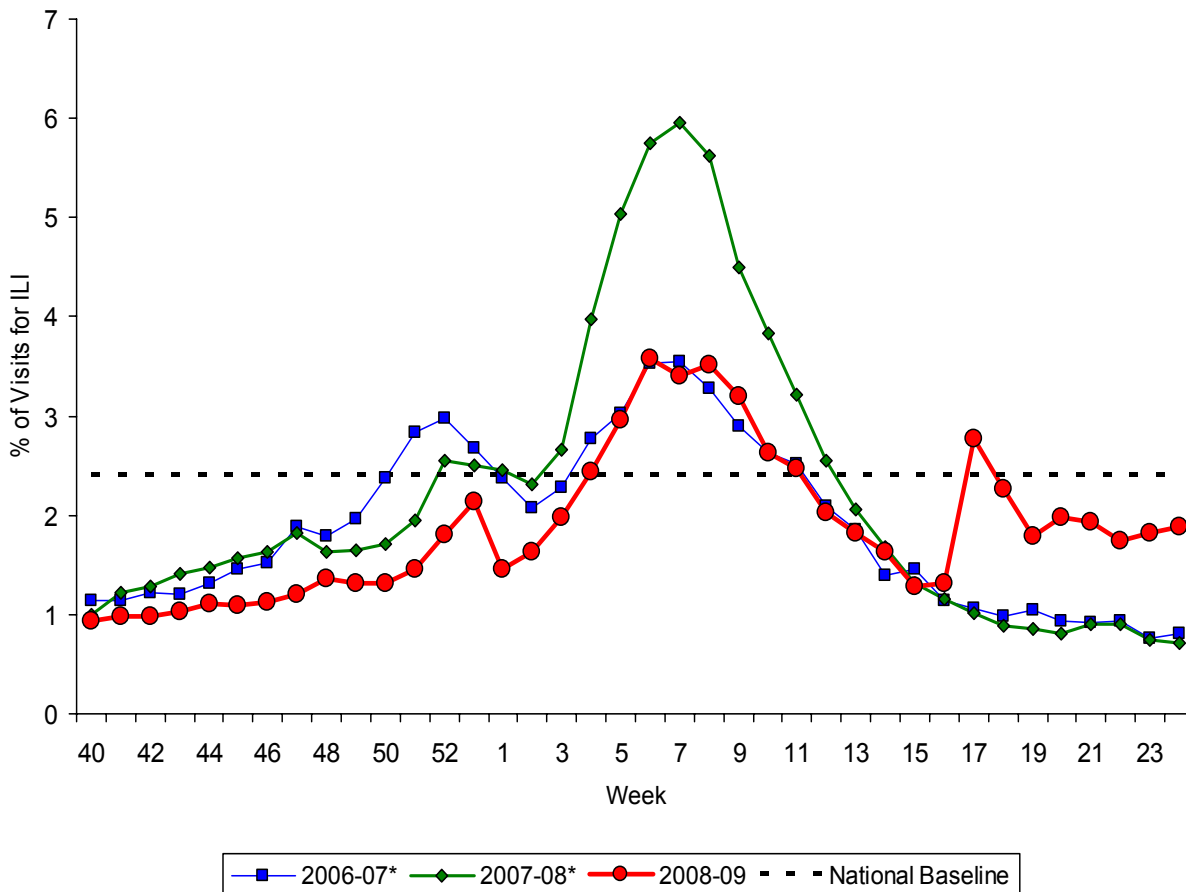


*This value represents an age group-specific average influenza rate from October 1 to April 30 from the 2005-06, 2006-07, and 2007-08 influenza seasons.

**Note: The scales for the 0-23 month and the ≥65 year age groups differ from other age groups.

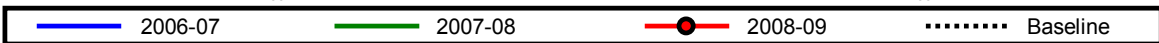
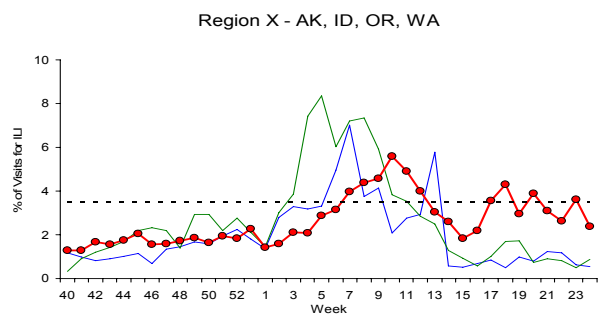
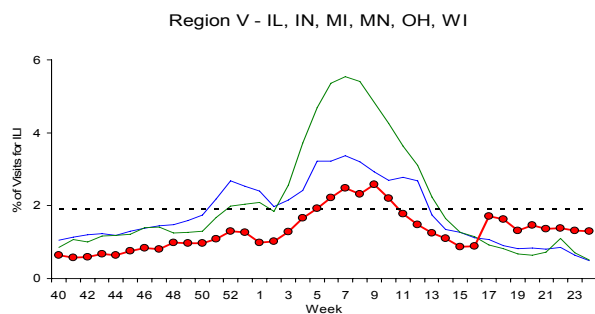
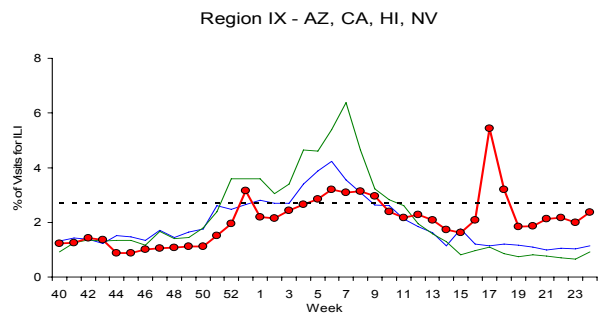
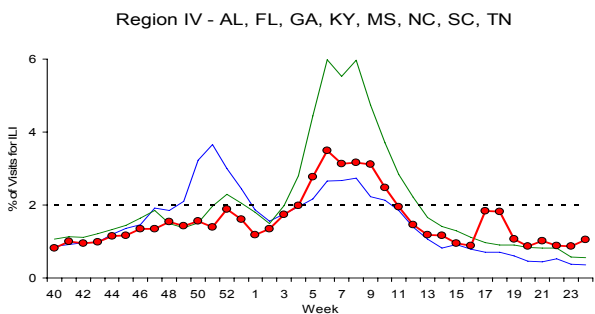
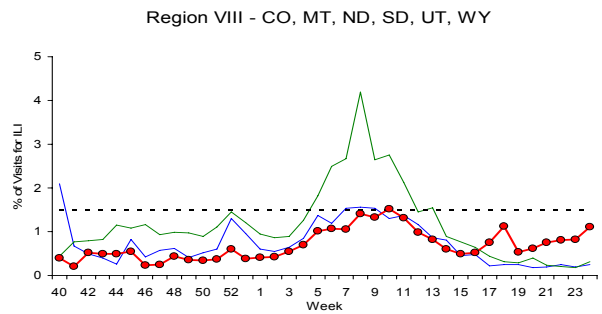
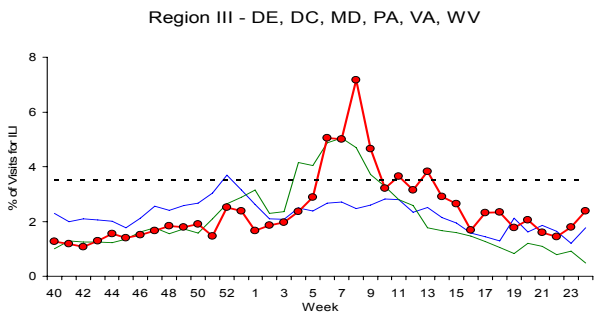
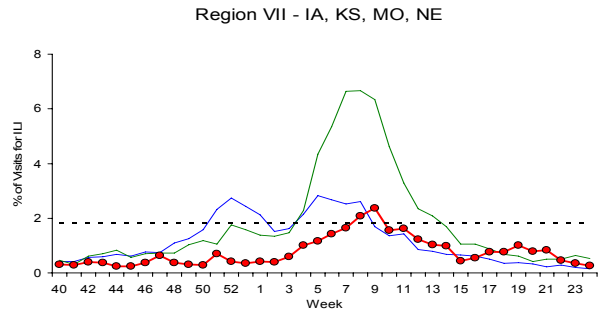
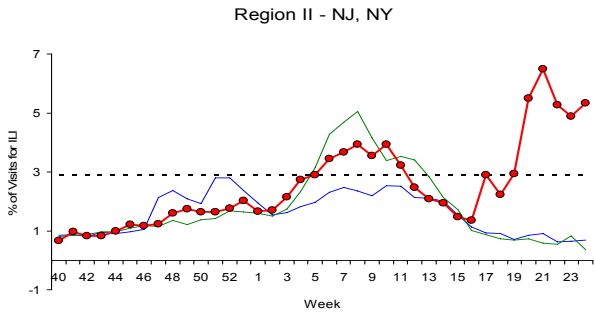
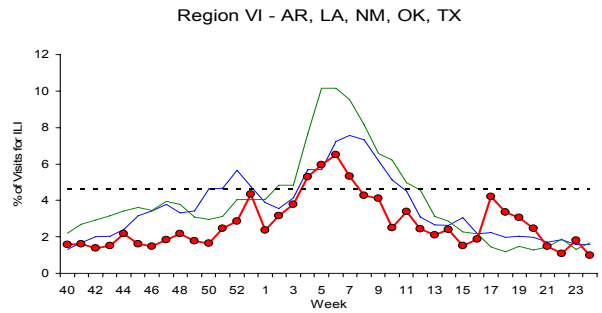
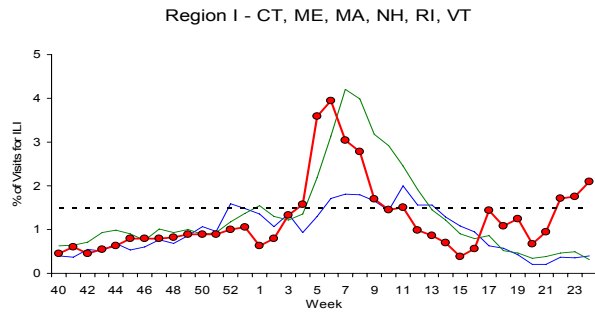
Outpatient Illness Surveillance: Nationwide during week 24, 1.9% of patient visits reported through the U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet) were due to influenza-like illness (ILI). This percentage is below the national baseline of 2.4%.

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 0.3% to 5.3%. Two of the 10 surveillance regions reported an ILI percentage above their region specific baseline (Regions I and II). ILI increased during week 24 in six of 10 regions compared to week 23.



NOTE: Scales differ between regions

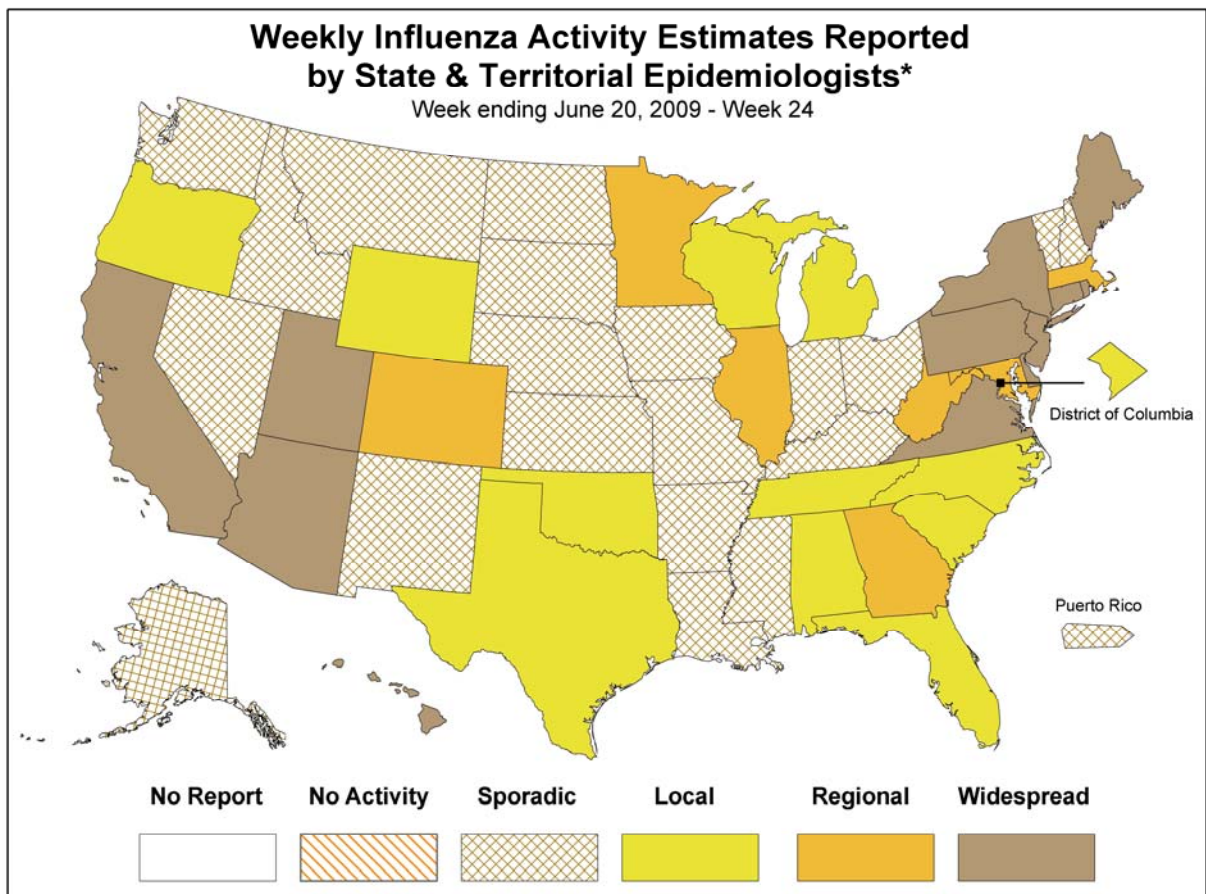
NOTE: There was no week 53 during the 2006-07 and 2007-08 seasons, therefore the week 53 data point for those seasons is an average of weeks 52 and 1.



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 pandemic influenza A (H1N1) viruses and does not measure the severity of influenza activity.

During week 24, the following influenza activity was reported:

- Widespread influenza activity was reported by 12 states (Arizona, California, Connecticut, Delaware, Hawaii, Maine, New Jersey, New York, Pennsylvania, Rhode Island, Utah, and Virginia).
- Regional influenza activity was reported by seven states (Colorado, Georgia, Illinois, Maryland, Massachusetts, Minnesota, and West Virginia).
- Local influenza activity was reported by the District of Columbia and 11 states (Alabama, Florida, Michigan, North Carolina, Oklahoma, Oregon, South Carolina, Tennessee, Texas, Wisconsin, and Wyoming).
- Sporadic activity was reported by Puerto Rico and 20 states (Alaska, Arkansas, Idaho, Indiana, Iowa, Kansas, Kentucky, Louisiana, Mississippi, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Mexico, North Dakota, Ohio, South Dakota, Vermont, and Washington).



* 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>

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