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## 2008-2009 Influenza Season Summary

**This summary includes data on seasonal influenza activity and virus circulation from September 28, 2008 to April 18, 2009. Due to the onset of the 2009 influenza A (H1N1) pandemic in April 2009, all surveillance data after April 18 are included in the [2009-10 Season Summary](#).**

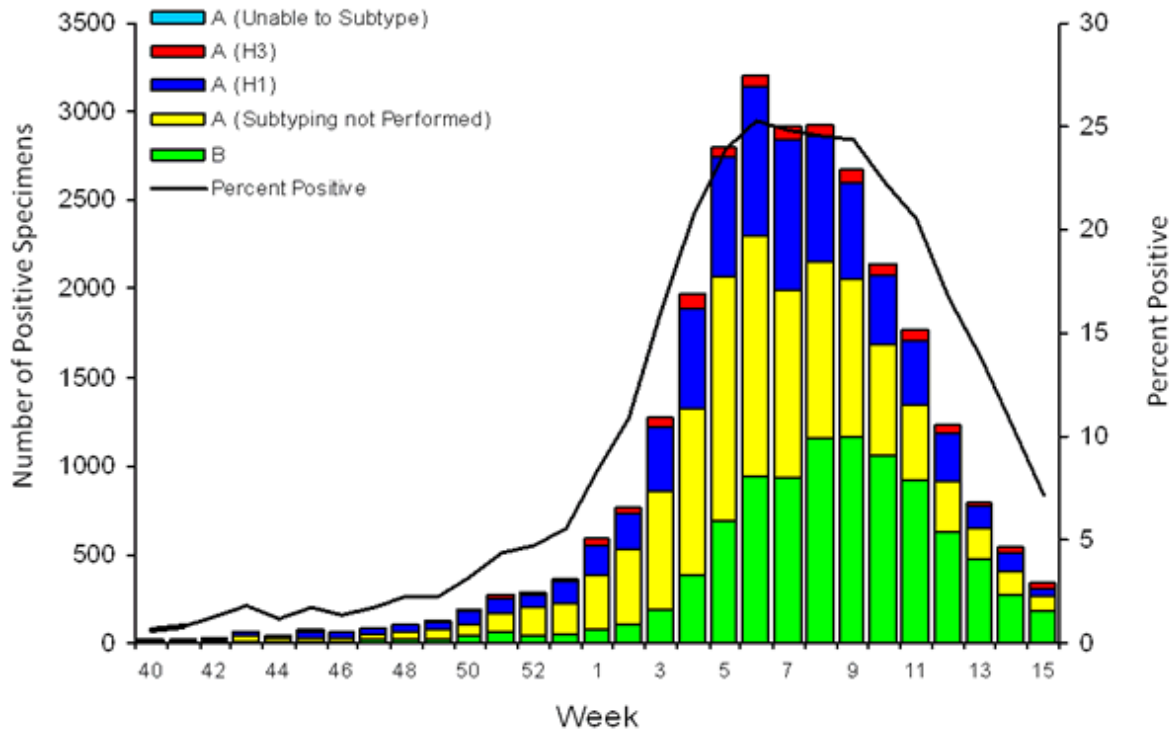
**(<http://wwwdev.cdc.gov/web/20140228233250/http://www.cdc.gov/flu/weekly/weeklyarchives2009-2010/09-10Summary.htm>).**

During the 2008-09 influenza season, low levels of influenza activity were reported from October through early January. Activity increased from mid-January and peaked in mid-February. Seasonal influenza A (H1N1) viruses predominated overall during the 2008-09 season, but influenza B viruses have been isolated more frequently than influenza A viruses from mid-March to mid-April. Widespread oseltamivir resistance was detected among circulating seasonal influenza A (H1N1) viruses and a high level of adamantane resistance was identified among influenza A (H3N2) viruses.

## Viral Surveillance

From September 28, 2008, to April 18, 2009, World Health Organization (WHO) and National Respiratory and Enteric Virus Surveillance System (NREVSS) collaborating laboratories in the United States tested 195,744 respiratory specimens for influenza viruses, 27,682 (14%) of which were positive. Of these, 18,175 (66%) were positive for influenza A viruses, and 9,507 (34%) were positive for influenza B viruses. Of the 18,175 specimens positive for influenza A viruses, 7,631 (42%) were subtyped; 6,762 (87%) of these were seasonal influenza A (H1N1) viruses, and 869 (13%) were influenza A (H3N2) viruses. The percentage of specimens testing positive for influenza first exceeded the seasonal threshold of 10% during the week ending January 17, 2009, and peaked at 25.0% during the week ending February 14, 2009. For the week ending April 18, 2009, 7.2% of specimens tested for influenza were positive. The relative proportion of influenza B viruses increased during February and March, and from the week ending March 21, 2009 to the week ending April 18, 2009, >50% of the positive influenza specimens were influenza B.

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



[View WHO-NREVSS Regional Bar Charts](#)

(<http://wwwdev.cdc.gov/web/20140228233250/http://www.cdc.gov/flu/weekly/regions2008-2009/whousmaps.htm>) | [View Full Screen](#) (<http://wwwdev.cdc.gov/web/20140228233250/http://www.cdc.gov/flu/weekly/weeklyarchives2008-2009/WhoLabSummary.htm>) | [View PowerPoint Presentation](#)

(<http://wwwdev.cdc.gov/web/20140228233250/http://www.cdc.gov/flu/weekly/weeklyarchives2008-2009/FluViewSummary08-09.ppt>)

### Antigenic Characterization:

WHO collaborating laboratories in the United States are requested to submit a subset of their influenza virus isolates to CDC for further antigenic characterization. CDC antigenically characterized 1,137 influenza viruses collected by U.S. laboratories between October 1, 2008 and April 18, 2009, including 723 seasonal influenza A (H1N1), 107 influenza A (H3N2), and 307 influenza B viruses. All 723 seasonal influenza A (H1N1) viruses are related to the influenza A (H1N1) component of the 2008--09 influenza vaccine (A/Brisbane/59/2007). All 107 influenza A (H3N2) viruses are related to the influenza 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. Among the 307 influenza B viruses tested, 51 (17%) belong to the B/Yamagata lineage and are related to the vaccine strain (B/Florida/04/2006); the remaining 256 (83%) belong to the B/Victoria lineage.

### Composition of the 2009--10 Influenza Vaccine

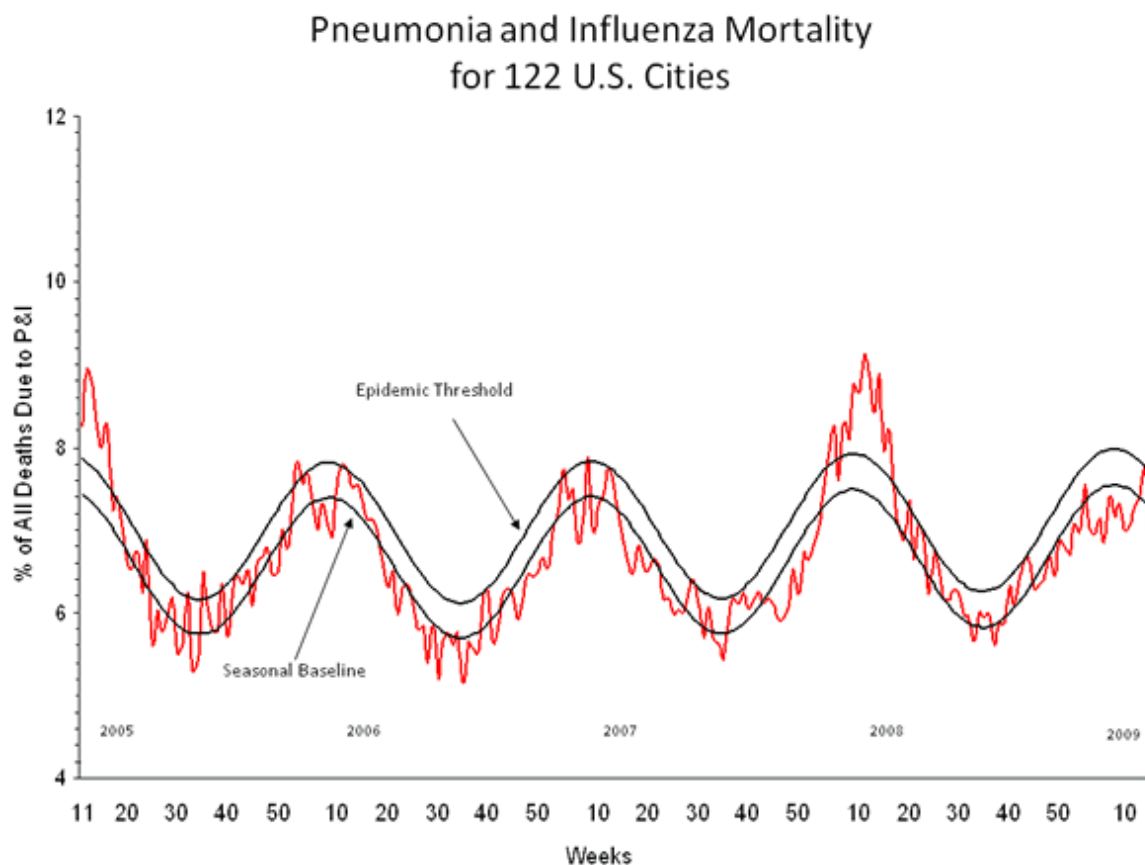
WHO recommended that the 2009--10 Northern Hemisphere trivalent influenza vaccine contain A/Brisbane/59/2007-like (H1N1), A/Brisbane/10/2007-like (H3N2), and B/Brisbane/60/2008-like (B/Victoria lineage) viruses. The Food and Drug Administration's Vaccines and Related Biological Products Advisory Committee recommended these same vaccine strains be included in the 2009--10 influenza vaccine for the United States. Only the influenza B component represents a change from the 2008--09 vaccine formulation. These recommendations were based on antigenic and genetic analyses of recently isolated influenza viruses, epidemiologic data, post-vaccination serologic studies in humans, and the availability of candidate vaccine strains and reagents.

## Antiviral Resistance of Influenza Virus Isolates

CDC conducts surveillance for resistance of circulating influenza viruses to licensed influenza antiviral medications: adamantanes (amantadine and rimantadine) and neuraminidase inhibitors (zanamivir and oseltamivir). From October 1, 2008 to April 18, 2009, 770 seasonal influenza A (H1N1) viruses were tested for neuraminidase inhibitor resistance, and 765 (99.4%) were resistant to oseltamivir; all were sensitive to zanamivir. All 118 influenza A (H3N2) and all 328 influenza B viruses tested were sensitive to oseltamivir and zanamivir. Three seasonal influenza A (H1N1) viruses (0.4%) and 116 (100%) influenza A (H3N2) viruses tested were resistant to adamantanes (amantadine and rimantadine). The adamantanes are not effective against influenza B viruses. None of the seasonal influenza A (H1N1) viruses tested were resistant to both oseltamivir and adamantanes.

## Pneumonia and Influenza (P&I) Mortality Surveillance

From September 28, 2008 to April 18, 2009, the weekly percentage of deaths attributed to pneumonia and influenza ranged from 6.1% to 7.9%, and was elevated above the epidemic threshold for only one week (week ending April 11, 2009, week 14).



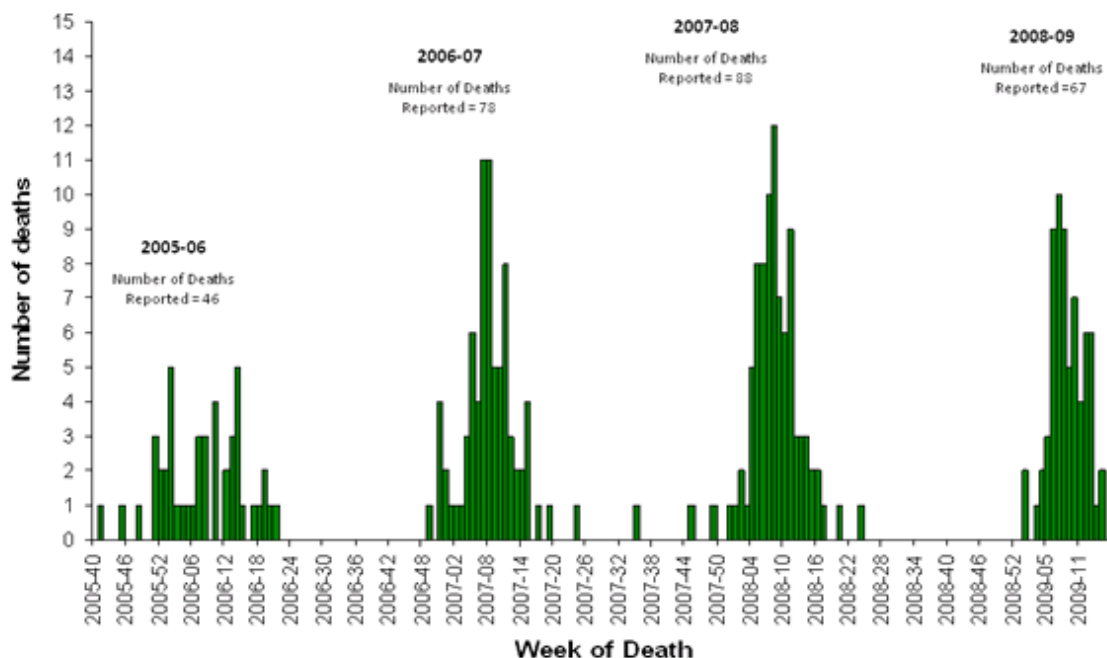
[View Full Screen \(http://wwwdev.cdc.gov/web/20140228233250/http://www.cdc.gov/flu/weekly/weeklyarchives2008-2009/bigpiSummary.htm\)](http://wwwdev.cdc.gov/web/20140228233250/http://www.cdc.gov/flu/weekly/weeklyarchives2008-2009/bigpiSummary.htm)

From October 1, 2008, to April 11, 2009, preliminary rates of laboratory-confirmed influenza-associated hospitalization reported by the EIP for children aged 0--4 years and 5--17 years were 34.6 and 6.4 per 100,000, respectively. For adults aged 18--49 years, 50--64 years, and ≥65 years, the rates were 3.6, 4.8, and 13.5 per 100,000, respectively. Please note that hospitalization rates are presented per 10,000 persons in the NVSN and per 100,000 persons in the EIP. While rates are similar between the NVSN and the EIP when presented with same denominator (28.7 hospitalizations per 100,000 children 0-4 years in the NVSN and 34.6 per 100,000 children hospitalizations in the EIP) any remaining differences likely result from the different case-finding methods and the different populations monitored.

## Influenza-Associated Pediatric Mortality

From September 28, 2008, to April 18, 2009, 67 deaths associated with laboratory-confirmed influenza infections occurring among children aged <18 years were reported to CDC. These deaths were reported from 24 states and New York City. The mean and median ages of children who died were 8.1 years and 8.0 years, respectively. Nine children were aged < 6 months, nine were aged 6-23 months, eight were aged 2-4 years, 17 were aged 5-11 years, and 24 were aged 12-17 years. Of the 67 deaths, 30 were associated with influenza B viruses, eight with seasonal influenza A (H1) viruses, three with influenza A (H3) viruses, and 26 with influenza A virus for which the subtype was not determined.

### Number of Influenza-Associated Pediatric Deaths by Week of Death: 2005-06 season through 2008-09 season



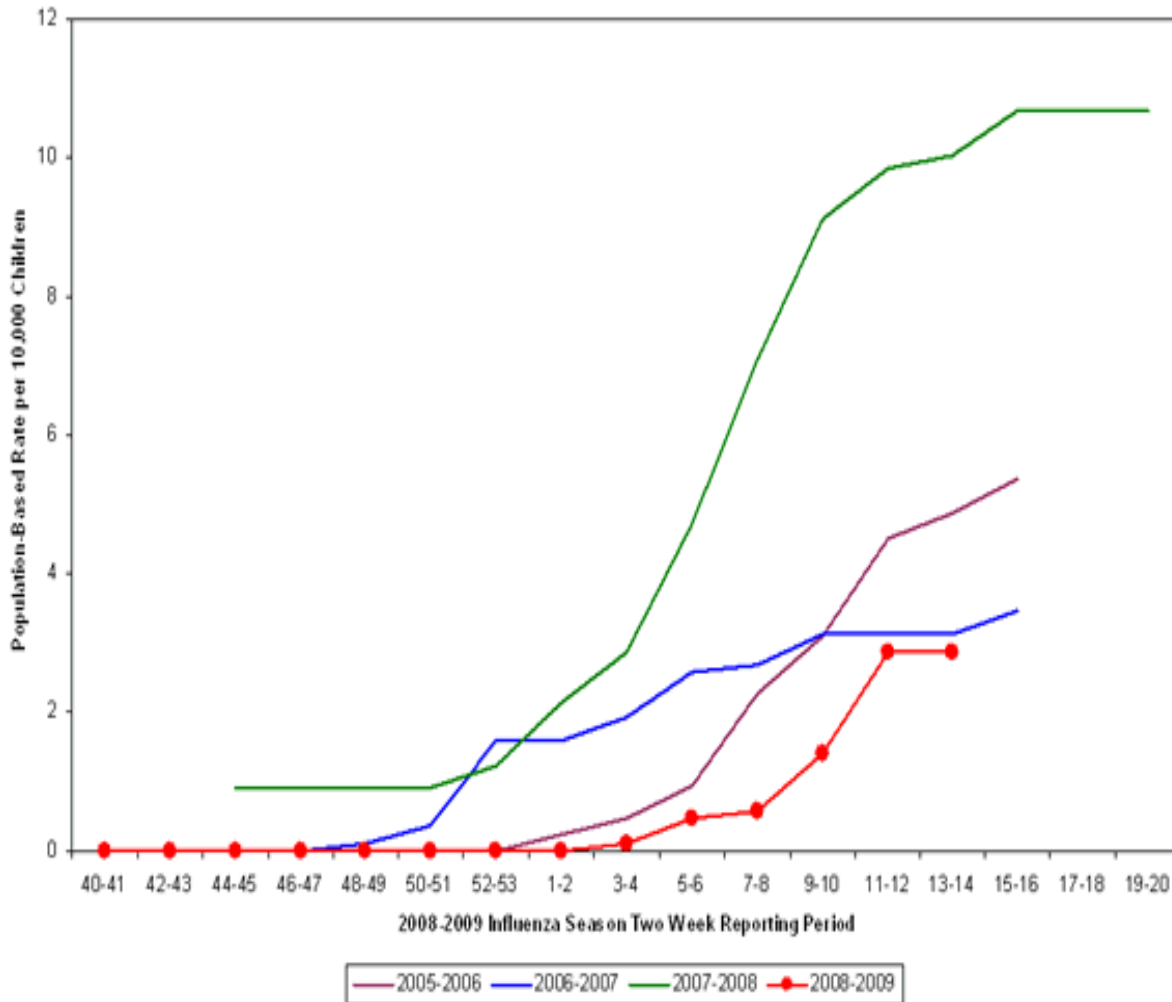
[View Full Screen \(http://wwwdev.cdc.gov/web/20140228233250/http://www.cdc.gov/flu/weekly/weeklyarchives2008-2009/IPDSummary.htm\)](http://wwwdev.cdc.gov/web/20140228233250/http://www.cdc.gov/flu/weekly/weeklyarchives2008-2009/IPDSummary.htm)

## Influenza-Associated Hospitalizations

Hospitalizations associated with laboratory-confirmed influenza infections were monitored by two population-based surveillance networks, the New Vaccine Surveillance Network (NVSN) and the Emerging Infections Program (EIP).

From October 12, 2008 to April 4, 2009, the preliminary laboratory-confirmed influenza-associated hospitalization rate for children 0-4 years old in the NVSN was 2.87 per 10,000. Data collection for influenza-associated hospitalizations in the NVSN was completed during the 2008-09 influenza season and will no longer be a component of routine U.S. influenza surveillance.

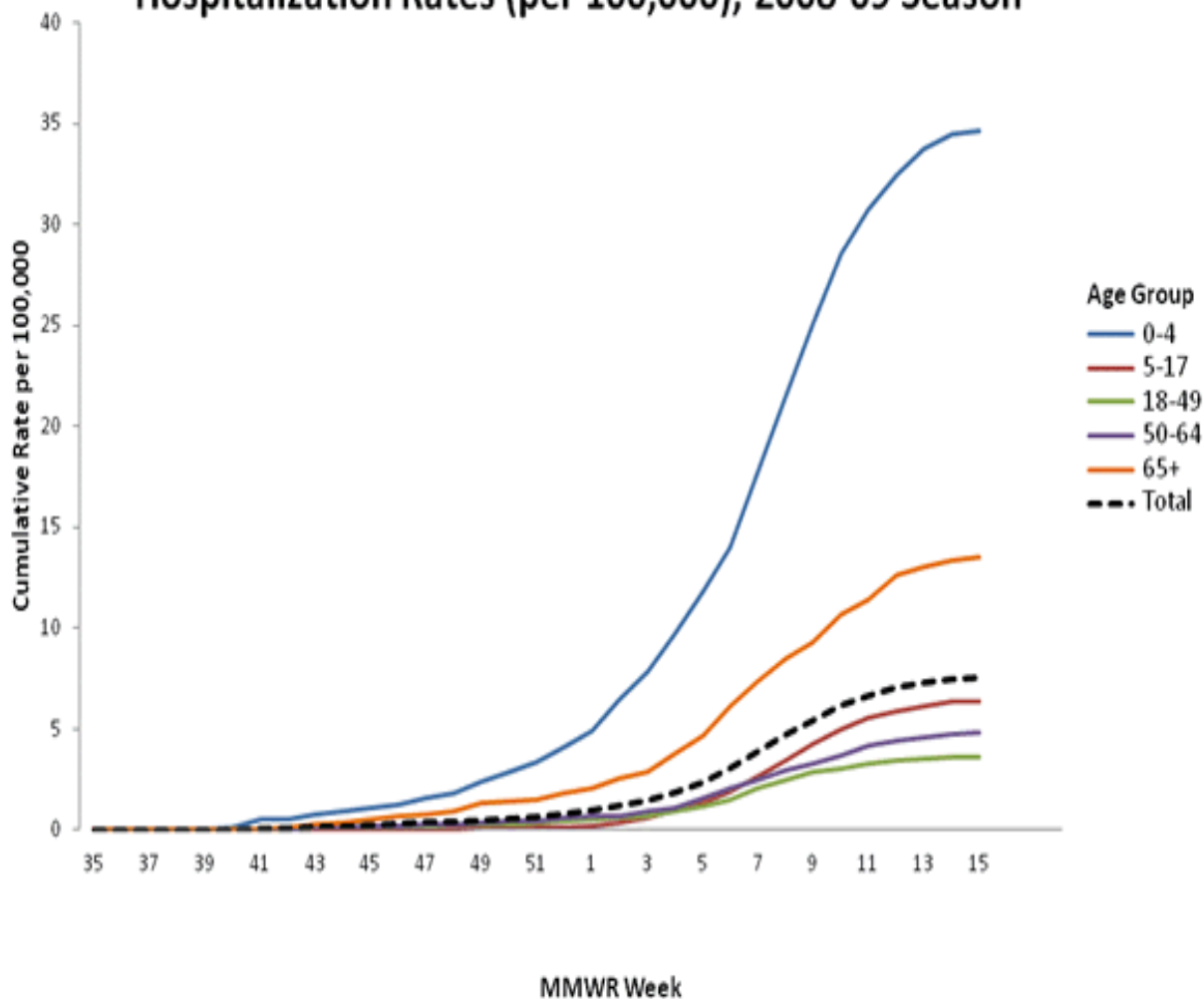
## NVSN Influenza Laboratory-Confirmed Cumulative Hospitalization Rates for Children 0 - 4 Years, 2008-09 and Previous Three Seasons



[View Full Screen \(http://wwwdev.cdc.gov/web/20140228233250/http://www.cdc.gov/flu/weekly/weeklyarchives2008-2009/EIP1Summary.htm\)](http://wwwdev.cdc.gov/web/20140228233250/http://www.cdc.gov/flu/weekly/weeklyarchives2008-2009/EIP1Summary.htm)

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## EIP Laboratory-Confirmed Cumulative Hospitalization Rates (per 100,000), 2008-09 Season

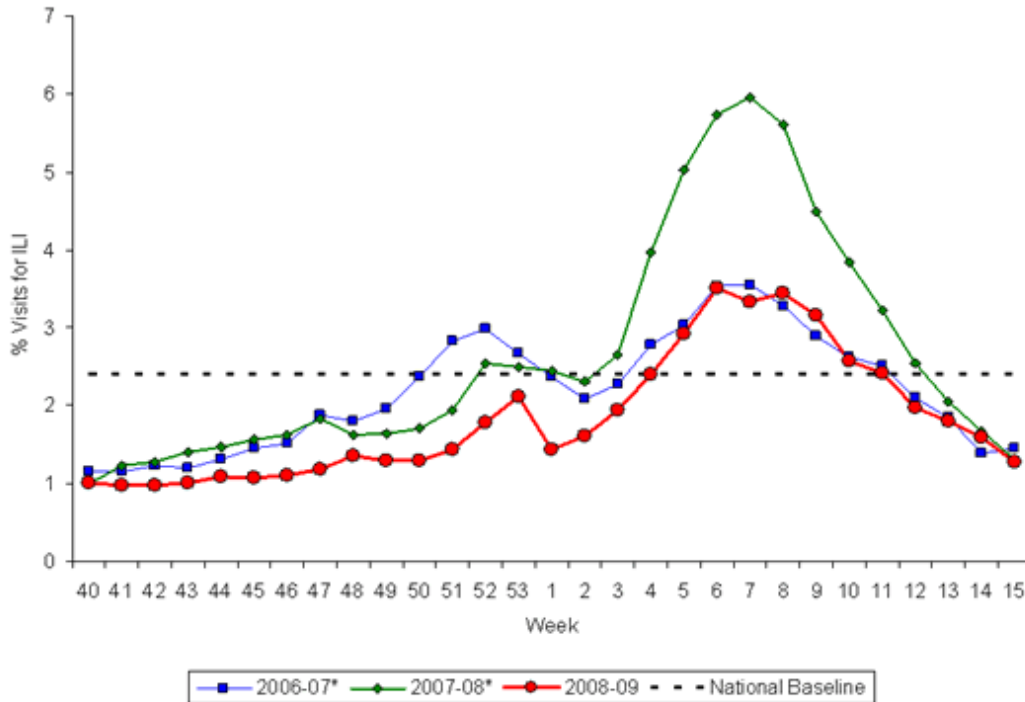


[View Full Screen \(http://wwwdev.cdc.gov/web/20140228233250/http://www.cdc.gov/flu/weekly/weeklyarchives2008-2009/EIP2Summary.htm\)](http://wwwdev.cdc.gov/web/20140228233250/http://www.cdc.gov/flu/weekly/weeklyarchives2008-2009/EIP2Summary.htm)

### Outpatient Illness Surveillance:

The weekly percentage of outpatient visits for influenza-like illness (ILI) to the U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet) ranged from 1.0% during the week ending October 18, 2008 (week 42), to 3.5% for the week ending February 14, 2009 (week 6) and was at or exceeded the national baseline (2.4%) for eight consecutive weeks, weeks 4–11. Each of the nine surveillance regions experienced at least two weeks above region specific baseline levels, and the timing of increased ILI activity was similar between regions. New England experienced the earliest ILI peak during week 5 (week ending February 7, 2009), followed by the South Atlantic and West South Central regions in week 6 (week ending February 14, 2009), Mid-Atlantic and Mountain regions in week 8 (week ending February 28, 2009), and by the East North Central, West North Central, East South Central, and Pacific regions during week 9 (week ending March 7, 2009).

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.

[View ILI Regional Charts \(http://wwwdev.cdc.gov/web/20140228233250/http://www.cdc.gov/flu/weekly/regions2008-2009/senmaps.htm\)](http://wwwdev.cdc.gov/web/20140228233250/http://www.cdc.gov/flu/weekly/regions2008-2009/senmaps.htm) | [View Full Screen](#)

[\(http://wwwdev.cdc.gov/web/20140228233250/http://www.cdc.gov/flu/weekly/weeklyarchives2008-2009/picILISummary.htm\)](http://wwwdev.cdc.gov/web/20140228233250/http://www.cdc.gov/flu/weekly/weeklyarchives2008-2009/picILISummary.htm) | [View PowerPoint Presentation \(http://wwwdev.cdc.gov/web/20140228233250/http://www.cdc.gov/flu/weekly/weeklyarchives2008-2009/FluViewSummary08-09.ppt\)](#)

## State-Specific Activity Levels

State and territorial epidemiologists report the geographic distribution of influenza in their state through a weekly influenza activity code. Widespread activity was first reported during the week ending January 10, 2009 (week 1). The geographic distribution of influenza activity was most extensive during the week ending March 7, 2009 (week 9), when 35 jurisdictions reported widespread influenza activity and 14 states reported regional influenza activity. Regional or widespread influenza activity has been reported during at least one week by 49 states and Puerto Rico. No jurisdictions reported widespread influenza activity during the week ending April 18, 2009 (week 15).

 [Weekly Assessment of Influenza Activity by State and Territorial Epidemiologists](#)

[View Full Screen \(http://wwwdev.cdc.gov/web/20140228233250/http://www.cdc.gov/flu/weekly/weeklyarchives2008-2009/weeklyassessmentSummary.htm\)](http://wwwdev.cdc.gov/web/20140228233250/http://www.cdc.gov/flu/weekly/weeklyarchives2008-2009/weeklyassessmentSummary.htm)

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A description of surveillance methods is available at: <http://www.cdc.gov/flu/weekly/fluactivity.htm>  
[\(http://wwwdev.cdc.gov/web/20140228233250/http://www.cdc.gov/flu/weekly/fluactivity.htm\)](http://wwwdev.cdc.gov/web/20140228233250/http://www.cdc.gov/flu/weekly/fluactivity.htm)



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s.pageName=document.title; s.channel="Seasonal Flu"; siteCatalyst.setAzEntry("Seasonal Flu");  
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Federal, State, and Local Governments");
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