FLUVIEW
A Weekly Influenza Surveillance Report Prepared by the Influenza Division

Influenza Surveillance Summary: 2011-2012 Influenza Season

Synopsis

During the 2011-2012 influenza season (October 2, 2011 to September 29, 2012), influenza activity first began to increase in the southern and southeastern states in November, and peaked nationally in late February and early March. Compared with the previous season (2010-11), there were lower rates of hospitalization observed in all age groups, and the percentage of outpatient visits for influenza-like illness (ILI) was lower than during the 2010-11 influenza season. Nationally, influenza A (H3) was the predominant virus throughout the season, although influenza A 2009 H1N1 and influenza B also circulated. The predominant virus varied by U.S. Department of Health and Human Service (HHS) region and also by week.

U.S. Viral Surveillance

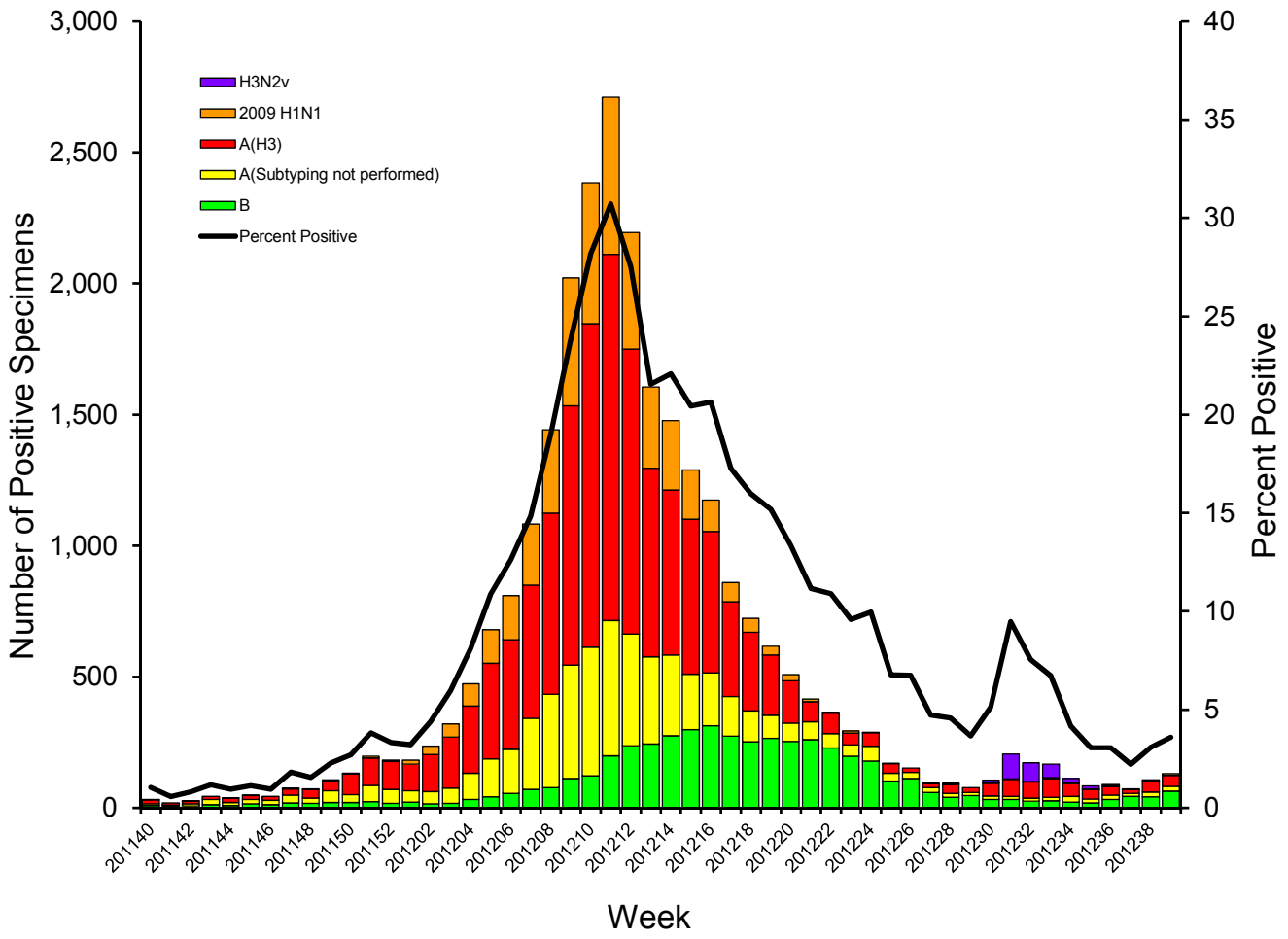
During October 2, 2011—Sept 29, 2012, World Health Organization (WHO) and National Respiratory and Enteric Virus Surveillance System (NREVSS) collaborating laboratories tested 234,456 specimens for influenza viruses; 27,012 (12%) were positive. Of the positive specimens, 22,069 (82%) were influenza A viruses, and 4,943 (18%) were influenza B viruses. Of the influenza A viruses, 16,740 (76%) were subtyped, and of those, 12,218 (73%) were influenza A (H3N2) viruses, 4,258 (25%) were 2009 H1N1 viruses, and 264 (2%) were influenza A (H3N2) variant* viruses.

The proportion of specimens that tested positive for influenza during the 2011-2012 season first exceeded 10%, indicating higher levels of virus circulation, during the week ending February 4, 2012 (Week 5). The proportion positive for influenza peaked at 31% during the week ending March 17, 2012 (Week 11), and fell below 10% during the week ending June 9, 2012 (Week 23).

While influenza A (H3N2) viruses predominated, 2009 H1N1 and influenza B viruses also circulated throughout the United States. The relative proportion of each circulating type and subtype of influenza virus varied by HHS region and week. From late May through mid-July 2012, influenza B viruses accounted for 44%-67% of influenza viruses reported nationally, with the majority coming from the southeastern states (HHS Region 4) and the western states (HHS Regions 9 and 10). Influenza B viruses were predominant in Region 4 from late May until late September, the end of the 2011-2012 season; influenza B viruses were predominant in Region 9 from late May until mid-July, and were predominant in Region 10 from late April until late July. The proportion of influenza positive specimens that were identified as 2009 H1N1 slowly increased nationally beginning during the week ending January 7, 2012 (Week 1) and peaked during the week ending March 3, 2012 (Week 9) when 33% of all subtyped influenza A viruses were 2009 H1N1.

Additional data can be found at http://gis.cdc.gov/grasp/fluview/fluportaldashboard.html.

Influenza Positive Tests Reported to CDC by U.S. WHO/NREVSS Collaborating Laboratories, National Summary, 2011-2012 Season



Novel Influenza A Viruses

A total of 325 human infections with variant influenza A viruses were reported during the 2011-2012 influenza season. Fifteen cases were identified between August 2011 and April 2012, and between July and September 2012 a larger outbreak of 310 cases in 11 states associated with exposure to swine at agricultural fairs was identified.

Of the 15 variant virus infections identified between August 2011 and April 2012, 13 were associated with influenza A (H3N2) variant (H3N2v) virus infection. These H3N2v viruses had the M gene from the 2009 H1N1 virus and were identified in six states: Indiana (2), Iowa (3), Maine (2), Pennsylvania (3), Utah (1), and West Virginia (2). One of the 13 cases occurred in an adult, and 12 occurred in children. Three cases required hospitalization; all patients recovered fully from their illness. Six of the 13 cases were in persons who reported no recent exposure to swine prior to illness onset. Of the two remaining variant virus infections identified during the 2011–12 season, one was associated with an influenza A (H1N2) variant (H1N2v) virus identified in Minnesota, and one case of influenza A (H1N1) variant (H1N1v) virus infection was identified in Wisconsin. One case was in a person who reported close contact with swine preceding symptom onset; both patients fully recovered.

Of the 310 cases identified in summer 2012, 306 were influenza A H3N2v from ten states: Hawaii (1), Illinois (4), Indiana (138), Maryland (12), Michigan (6), Minnesota (4), Ohio (107), Pennsylvania (11), West Virginia (3), and Wisconsin (20). Three influenza A H1N2v cases were identified in Minnesota and one influenza A H1N1v cases was identified in Missouri. Children accounted for 284 (92%) of cases; 16 patients were hospitalized with H3N2v, and one died. No hospitalizations or deaths associated with H1N1v or H1N2v were reported. While no sustained, ongoing person-to-person transmission with H3N2v was identified, possible person-to-person transmission was identified in 15 cases.

Antigenic Characterization

CDC has antigenically characterized 2,735 influenza viruses collected between October 1, 2011, and September 30, 2012 and submitted by U.S. laboratories. Those included 1,483 influenza A (H3N2) viruses, 625 2009 H1N1 viruses, and 627 influenza B viruses. Of the 1,483 influenza A (H3N2) viruses tested, 1,114 (75%) were A/Perth/16/2009-like, the 2011-2012 influenza vaccine for the Northern Hemisphere, 327 (22%) showed reduced titers with antiserum produced against A/Perth/16/2009, and 42 (3%) were A/Victoria/361/2011-like.

Of the 625 2009 H1N1 viruses tested, 601 (96%) were characterized as A/California/07/2009-like, the influenza A (H1N1) component of the 2011-12 Northern Hemisphere influenza vaccine, and 24 (4%) showed reduced titers with antisera produced against A/California/07/2009.

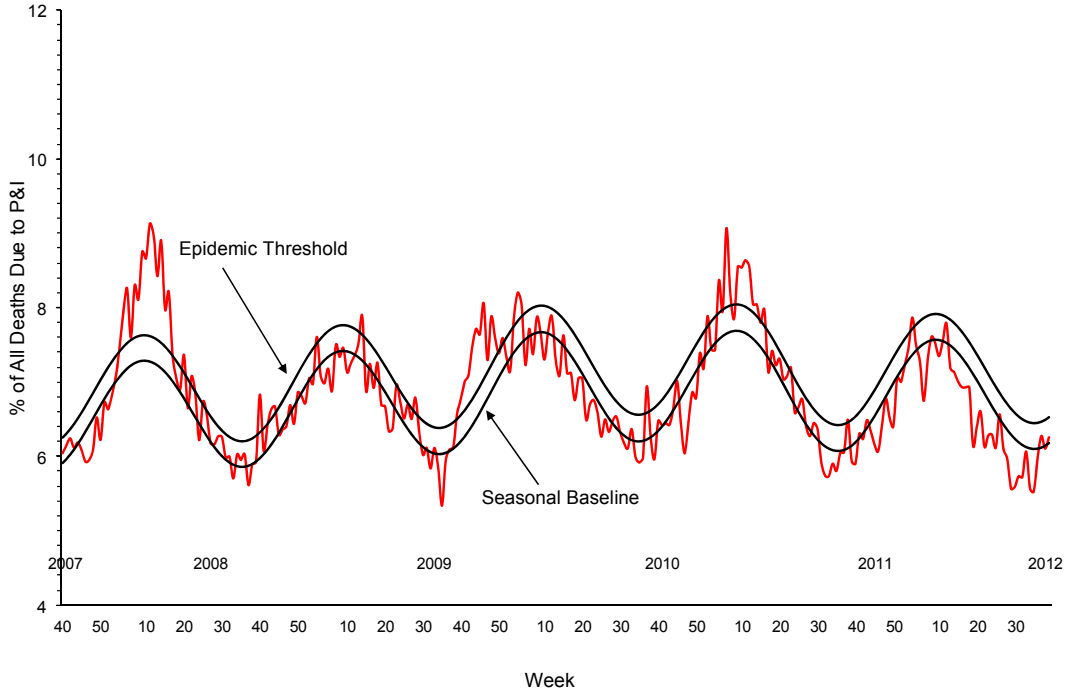
Of the 627 influenza B viruses tested, 324 (52%) belonged to the B/Victoria lineage of influenza B viruses and 303 (48%) belonged to the B/Yamagata lineage of influenza B viruses. Three hundred eight (95%) of the 324 B/Victoria lineage viruses were B/Brisbane/60/2008-like, the influenza B component of the 2011-12 Northern Hemisphere influenza vaccine and 16 (5%) showed reduced titers with antiserum produced against B/Brisbane/60/2008. All 303 B/Yamagata lineage viruses were characterized as B/Wisconsin/01/2010-like.

Antiviral Resistance

Among the 1,445 2009 influenza A (H1N1) positive specimens tested for resistance to oseltamivir, 19 (0.5%) were found to be resistant, and of the 623 2009 H1N1 viruses tested for resistance to Zanamivir, all were found to be sensitive. All 614 influenza B viruses and 1,836 influenza A (H3N2) viruses tested were found sensitive to both oseltamivir and zanamivir.

Pneumonia and Influenza (P&I) Mortality Surveillance
During the 2011-2012 influenza season, the percentage of deaths attributed to pneumonia and influenza (P&I) exceeded the epidemic threshold only during the week ending January 21, 2012 (Week 3). The percentage of deaths attributed to P&I was 7.9% in comparison to the threshold of 7.7%.

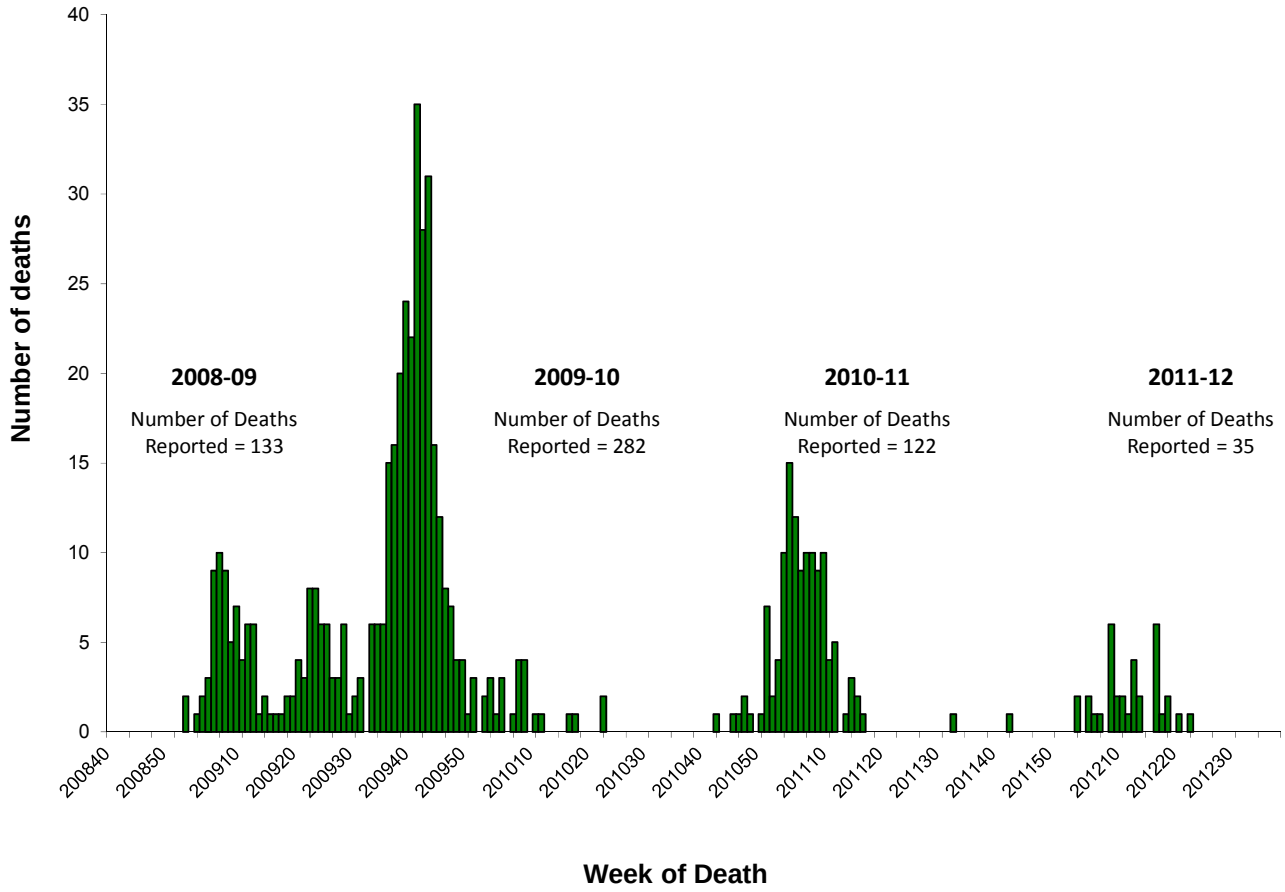
Pneumonia and Influenza Mortality for 122 U.S. Cities
National Summary, 2011-2012 Season



Influenza-Associated Pediatric Mortality
Thirty-five deaths associated with laboratory-confirmed influenza infections occurred among children aged <18 years during the 2011-2012 influenza season that were reported to the CDC**.** These deaths were reported from 19 states. The mean and median ages of children who died were 6.1 and 5.6 respectively; 6 children were aged <6 months, 2 were aged 6-23 months, 8 were aged 2-4 years, 14 were aged 5-11 years, and 5 were aged 12-17 years. Of the 35 deaths, 10 were associated with 2009 H1N1, 8 with influenza A (H3N2), 7 with influenza A for which subtyping was not performed, 9 with influenza B, and one for which the type was not distinguished. Excluding the 2009 pandemic season (April 15, 2009 to October 2, 2010) during which 348 influenza-associated pediatric deaths were reported, the number of deaths reported from the 2004-2005 season when influenza-associated pediatric mortality became a nationally notifiable condition to the 2010-2011 season ranged from 46 to 133 with a median of 88 deaths.

Additional data can be found at http://gis.cdc.gov/GRASP/Fluview/PedFluDeath.html.

Number of Influenza-Associated Pediatric Deaths by Week of Death, 2008-2009 Season to 2011-2012 Season



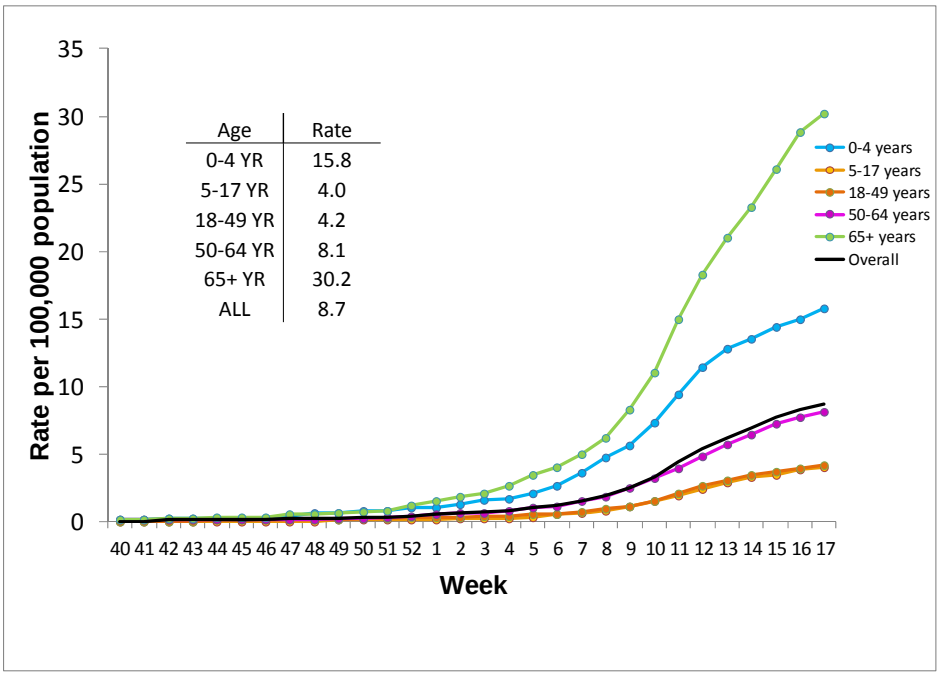
Influenza-Associated Hospitalizations

CDC monitors hospitalizations associated with laboratory-confirmed influenza infections using the FluSurv-NET surveillance system which combines data from the Emerging Infections Program (EIP) and additional participating sites. Based on FluSurv-NET surveillance data, the cumulative hospitalization rate (per 100,000 population) for October 1, 2011-April 30, 2012 was 15.8 among children aged 0-4 years, 4.0 among children aged 5-17 years, 4.2 among adults aged 18-49 years, 8.1 among adults aged 50-64 years, and 30.2 among adults aged ≥65 years.

Based on EIP data alone, the cumulative hospitalization rate (per 100,000 population) for October 1, 2011-April 30, 2012 was 15.0 among children aged 0-4 years, 3.6 among children aged 5-17 years, 3.8 among adults aged 18-49 years, 8.0 among adults aged 50-64 years, and 31.4 among adults aged ≥65 years.

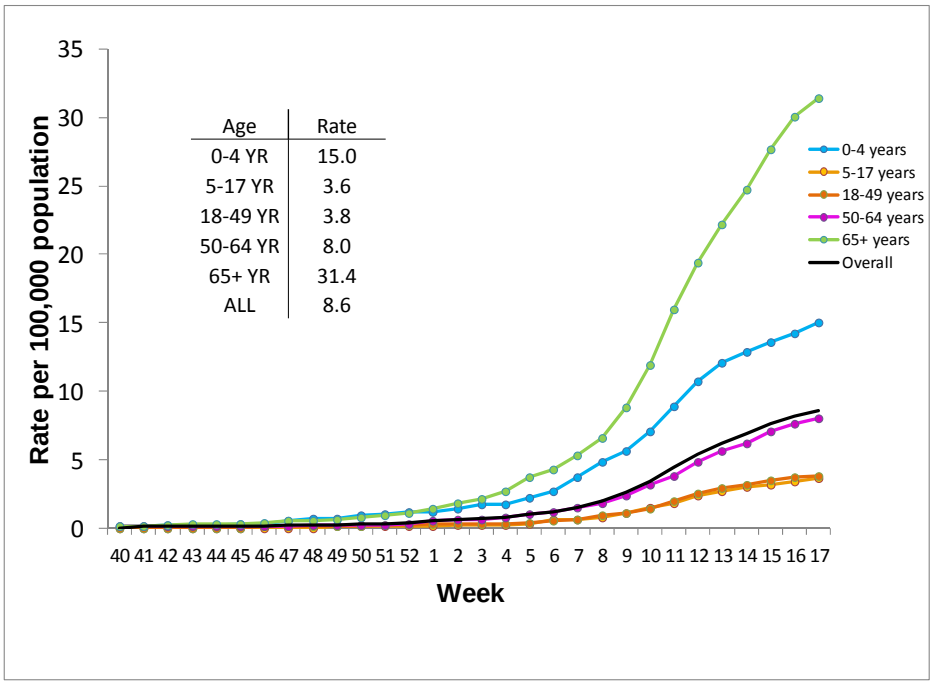
Additional data can be found at: http://gis.cdc.gov/GRASP/Fluview/FluHospRates.html

FluSurv-NET* Laboratory-Confirmed Cumulative Hospitalization Rates (per 100,000), 2011-12 Season



*FluSurv-NET results represent surveillance in the 10 Emerging Infections Program (EIP) states (CA, CO, CT, GA, MD, MN, NM, NY, OR, and TN) and four Influenza Hospitalization Surveillance Project (IHSP) states (MI, OH, RI, and UT)

Emerging Infections Program (EIP)* Laboratory-Confirmed Cumulative Hospitalization Rates (per 100,000), 2011-12 Season



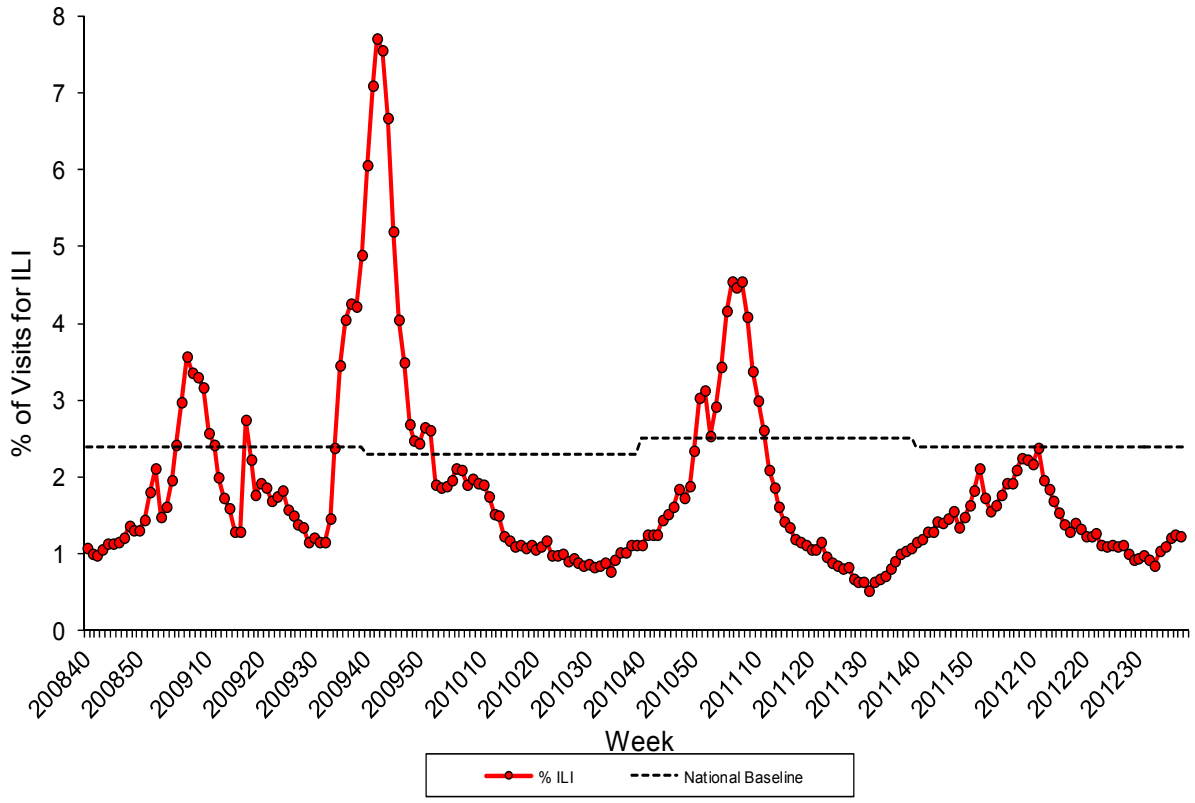
*EIP results represent surveillance in the 10 EIP states (CA, CO, CT, GA, MD, MN, NM, NY, OR, and TN)

During October 1, 2011-April 30, 2012, among adult patients hospitalized with laboratory-confirmed influenza for which medical chart data were available, the most frequently reported underlying medical conditions were cardiovascular disease (37%), metabolic disorders (36%), and obesity (35%). Among children hospitalized with laboratory-confirmed influenza with complete medical chart review, the most commonly reported underlying medical conditions were asthma (20%) and neurologic disorders (13%). However, almost half of the hospitalized children had no identified underlying medical conditions.

Outpatient Illness Surveillance

The weekly percentage of outpatient visits for ILI to the U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet) only met the national baseline (2.4%) once, the week ending March 17, 2012 (Week 11).

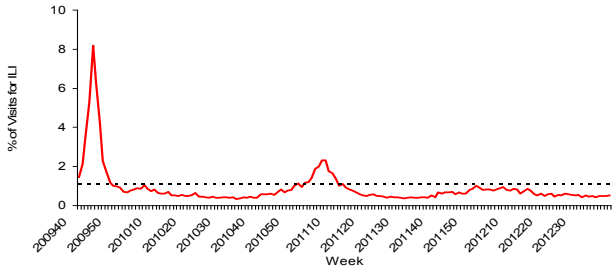
Percentage of Visits for Influenza-like Illness (ILI) Reported by the U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet), Weekly National Summary, 2011-2012 and Selected Previous Seasons



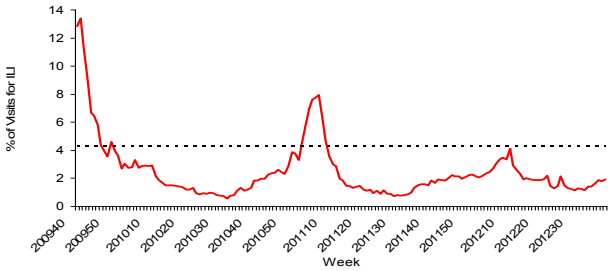
The peak percentage of outpatient visits for ILI varied by region, however, Regions 1, 2, 3, 6, and 9 all failed to meet or exceed their respective regional baselines.

Additional ILINet data can be found at http://gis.cdc.gov/grasp/fluview/fluportaldashboard.html.

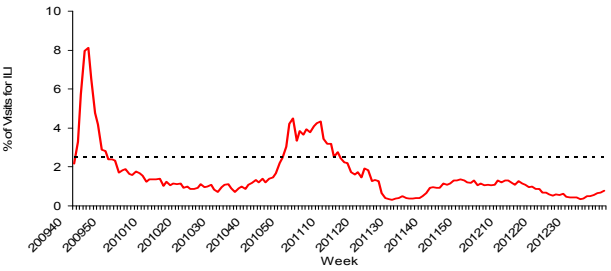
Region 1 - CT, ME, MA, NH, RI, VT



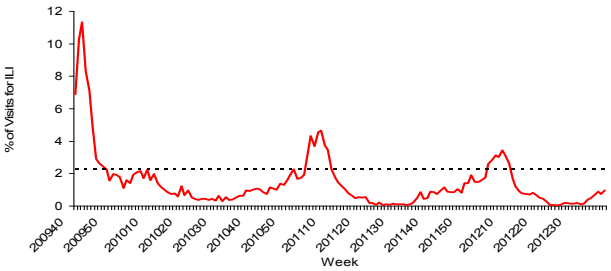
Region 6 - AR, LA, NM, OK, TX



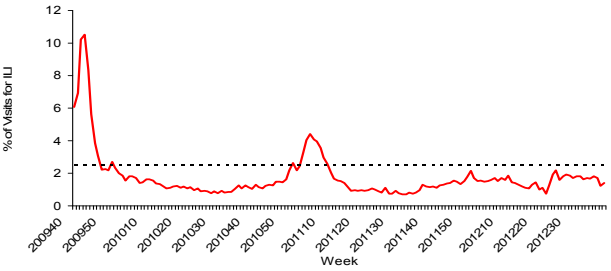
Region 2 - NJ, NY, USVI



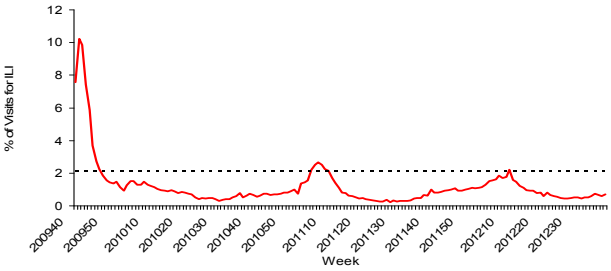
Region 7 - IA, KS, MO, NE



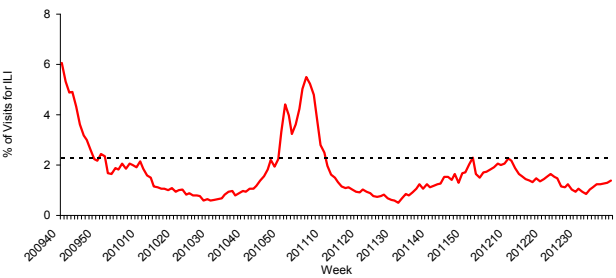
Region 3 - DE, DC, MD, PA, VA, WV



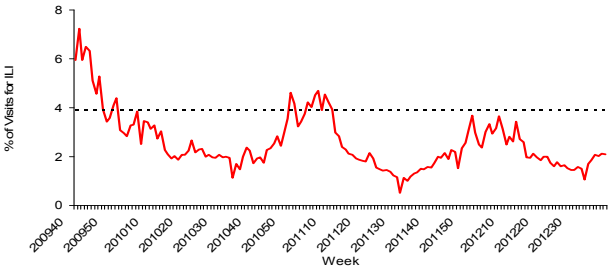
Region 8 - CO, MT, ND, SD, UT, WY



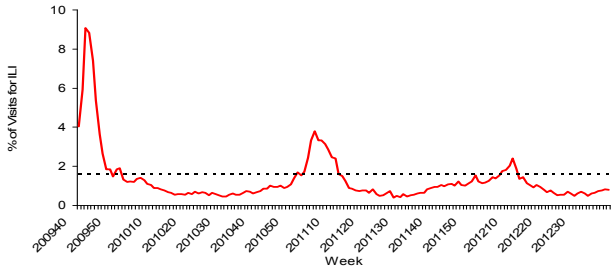
Region 4 - AL, FL, GA, KY, MS, NC, SC, TN



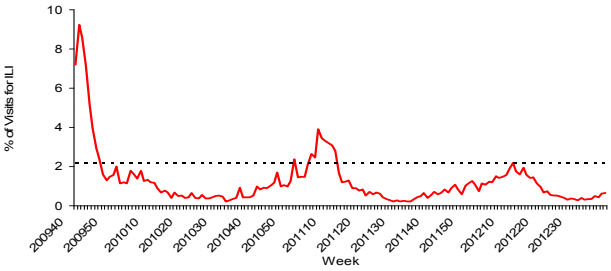
Region 9 - AZ, CA, HI, NV

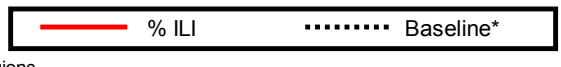


Region 5 - IL, IN, MI, MN, OH, WI



Region 10 - AK, ID, OR, WA

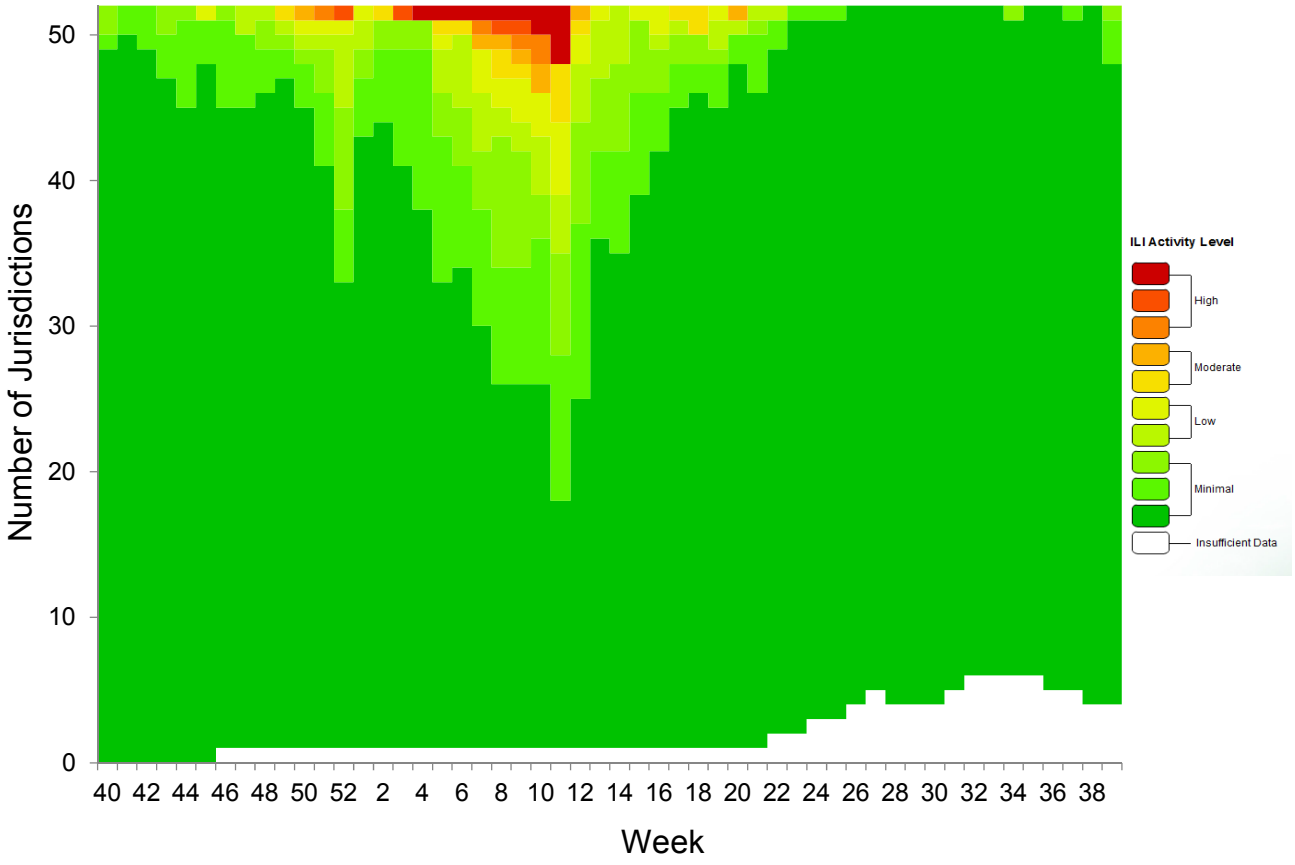




NOTE: Scales differ between regions

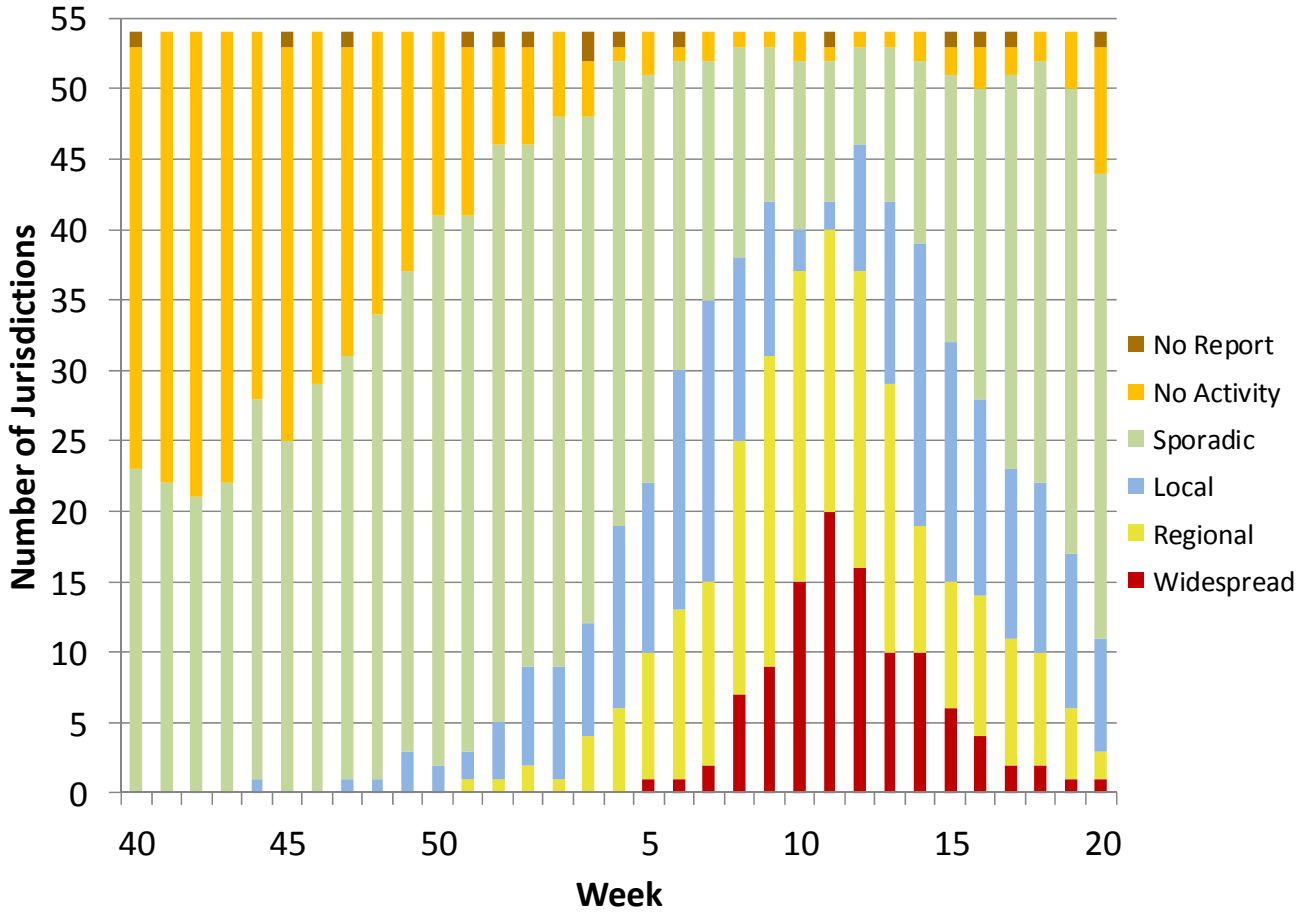
*Use of the regional baselines for state data is not appropriate.

Outpatient data collected in ILINet are used to produce a measure of ILI activity. The number of jurisdictions experiencing high ILI activity peaked at 4 jurisdictions during the week ending March 17, 2012.



Geographic spread of Influenza Assessed by State and Territorial Epidemiologists
State and territorial epidemiologists from all 50 states, the District of Columbia, Guam, Puerto Rico, and the U.S. Virgin Islands report the geographic distribution of influenza in their jurisdiction through a weekly influenza activity code. The geographic distribution of influenza activity was most extensive during the week ending in March 17, 2012 (week 11), when 40 jurisdictions reported either regional or widespread influenza activity. The number of jurisdictions reporting widespread influenza activity tapered off through the rest of the season, and by the week ending May 19, 2012 (week 20), only one state reported widespread activity. The peak number of jurisdictions reporting widespread or regional activity in a single week during the previous three seasons has ranged from 49 to 51.

Influenza Activity Estimates Reported by State and Territorial Epidemiologists, 2011-2012 Season



A description of surveillance methods can be found at: http://www.cdc.gov/flu/weekly/overview.htm

* Influenza viruses that circulate in swine are called swine influenza viruses when isolated from swine, but are called variant viruses when isolated from humans. A variant virus (human isolate) might or might not have the M gene from the influenza A (H1N1)pdm09 virus, along with other genetic changes. Seasonal influenza A (H3N2) viruses that circulate worldwide in the human population have significant antigenic and genetic differences from influenza A (H3N2) viruses circulating in swine. Additional information is available at http://www.who.int/influenza/gisrs_laboratory/terminology_ah3n2v/en/index.html