

2015-2016 Influenza Season Week 2 ending January 16, 2016

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

Synopsis: During week 2 (January 10-16, 2016), influenza activity increased slightly in the United States.

- o **Viral Surveillance:** The most frequently identified influenza virus type reported by public health laboratories during week 2 was influenza A, with influenza A (H1N1)pdm09 viruses predominating. The percentage of respiratory specimens testing positive for influenza in clinical laboratories increased.
- o **Pneumonia and Influenza Mortality:** The proportion of deaths attributed to pneumonia and influenza (P&I) was below the system-specific epidemic threshold in the NCHS Mortality Surveillance System and above the system-specific epidemic threshold in the 122 Cities Mortality Reporting System.
- o **Influenza-associated Pediatric Deaths:** No influenza-associated pediatric deaths were reported.
- o **Influenza-associated Hospitalizations:** A cumulative rate for the season of 1.8 laboratory-confirmed influenza-associated hospitalizations per 100,000 population was reported.
- o **Outpatient Illness Surveillance:** The proportion of outpatient visits for influenza-like illness (ILI) was 2.1%, which is at the national baseline of 2.1%. Six of 10 regions reported ILI at or above region-specific baseline levels. Puerto Rico experienced high ILI activity; three states experienced moderate ILI activity; New York City and four states experienced low ILI activity; 43 states experienced minimal ILI activity; and the District of Columbia had insufficient data.
- o **Geographic Spread of Influenza:** The geographic spread of influenza in three states was reported as widespread; Puerto Rico and 10 states reported regional activity; Guam and 12 states reported local activity; the U.S. Virgin Islands and 24 states reported sporadic activity; and the District of Columbia and one state reported no influenza activity.

National and Regional Summary of Select Surveillance Components

HHS Surveillance Regions*	Data for current week			Data cumulative since October 4, 2015 (week 40)						
	Out-patient ILI†	Number of jurisdictions experiencing high or moderate ILI activity§	% respiratory specimens positive for flu in clinical laboratories‡	A(H1N1) pdm09	A (H3)	A (Subtyping not performed)	B Victoria lineage	B Yamagata lineage	B lineage not performed	Pediatric Deaths
Nation	Elevated	4 of 53	4.2%	591	558	95	46	152	150	7
Region 1	Elevated	0 of 6	1.7%	12	19	0	1	1	2	0
Region 2	Elevated	1 of 4	1.8%	28	69	3	1	0	9	1
Region 3	Elevated	1 of 6	0.8%	24	28	16	3	18	2	0
Region 4	Elevated	1 of 8	6.1%	14	36	23	1	0	46	3
Region 5	Normal	0 of 6	1.5%	86	37	35	1	17	2	0
Region 6	Elevated	0 of 5	1.8%	9	25	1	2	5	11	1
Region 7	Normal	0 of 4	1.1%	14	23	3	2	1	1	0
Region 8	Normal	0 of 6	3.4%	126	32	1	6	44	2	0
Region 9	Normal	1 of 4	6.7%	243	224	12	20	52	61	2
Region 10	Elevated	0 of 4	6.2%	35	65	1	9	14	14	0

*<http://www.hhs.gov/about/agencies/staff-divisions/iea/regional-offices/index.html>

† Elevated means the % of visits for ILI is at or above the national or region-specific baseline.

§ Includes all 50 states, New York City, the District of Columbia, and Puerto Rico

‡ National data are for current week; regional data are for the most recent three weeks.

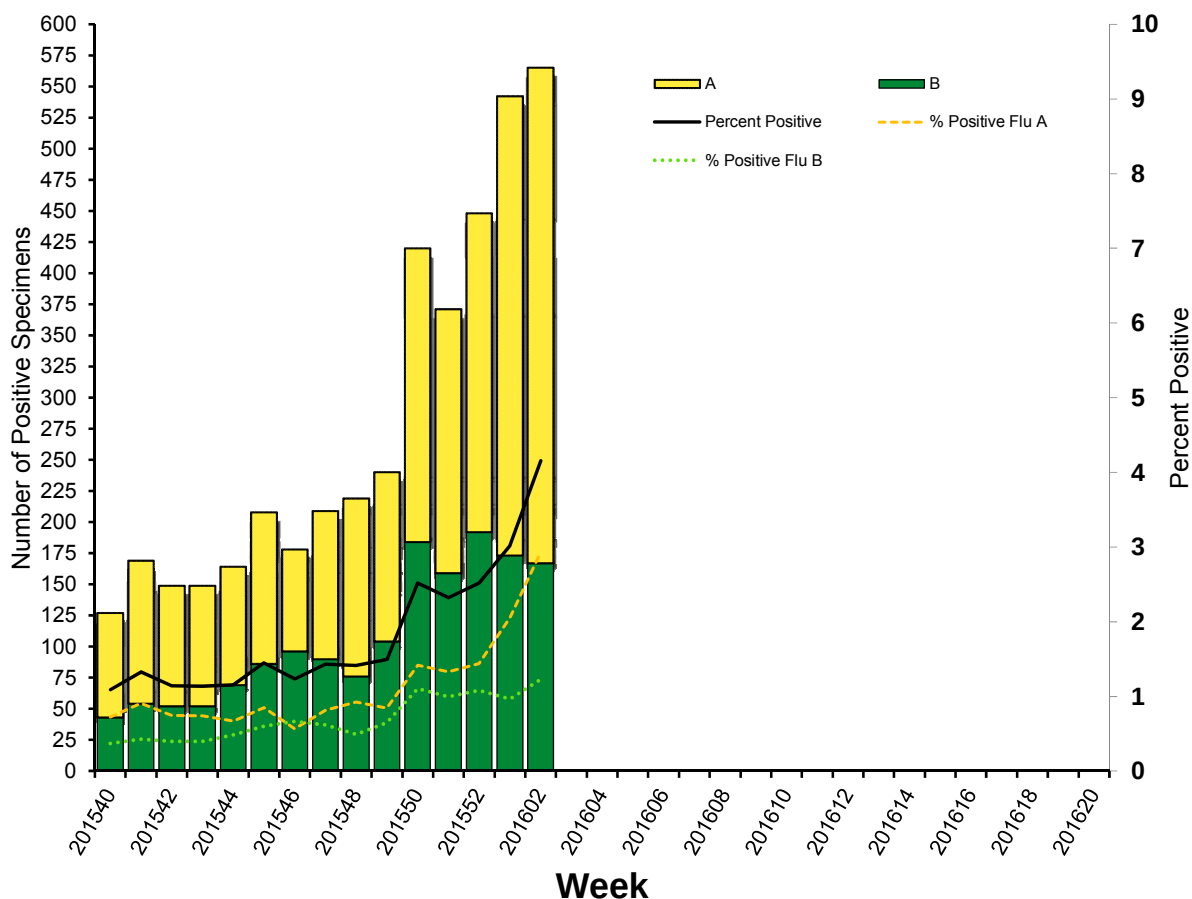
U.S. Virologic Surveillance: WHO and NREVSS collaborating laboratories, which include both public health and clinical laboratories located in all 50 states, Puerto Rico, and the District of Columbia, report to CDC the total number of respiratory specimens tested for influenza and the number positive for influenza by virus type. In addition, public health laboratories also report the influenza A subtype (H1 or H3) and influenza B lineage information of the viruses they test and the age or age group of the persons from whom the specimens were collected.

Additional data are available at <http://gis.cdc.gov/grasp/fluview/fluportaldashboard.html>.

The results of tests performed by clinical laboratories are summarized below.

	Week 2	Data Cumulative since October 4, 2015 (week 40)
No. of specimens tested	13,598	221,668
No. of positive specimens (%)	565 (4.2%)	4,158 (1.9%)
Positive specimens by type		
Influenza A	398 (70.4%)	2,561 (61.6%)
Influenza B	167 (29.6%)	1,597 (38.4%)

Influenza Positive Tests Reported to CDC by U.S. Clinical Laboratories, National Summary, 2015-2016 Season

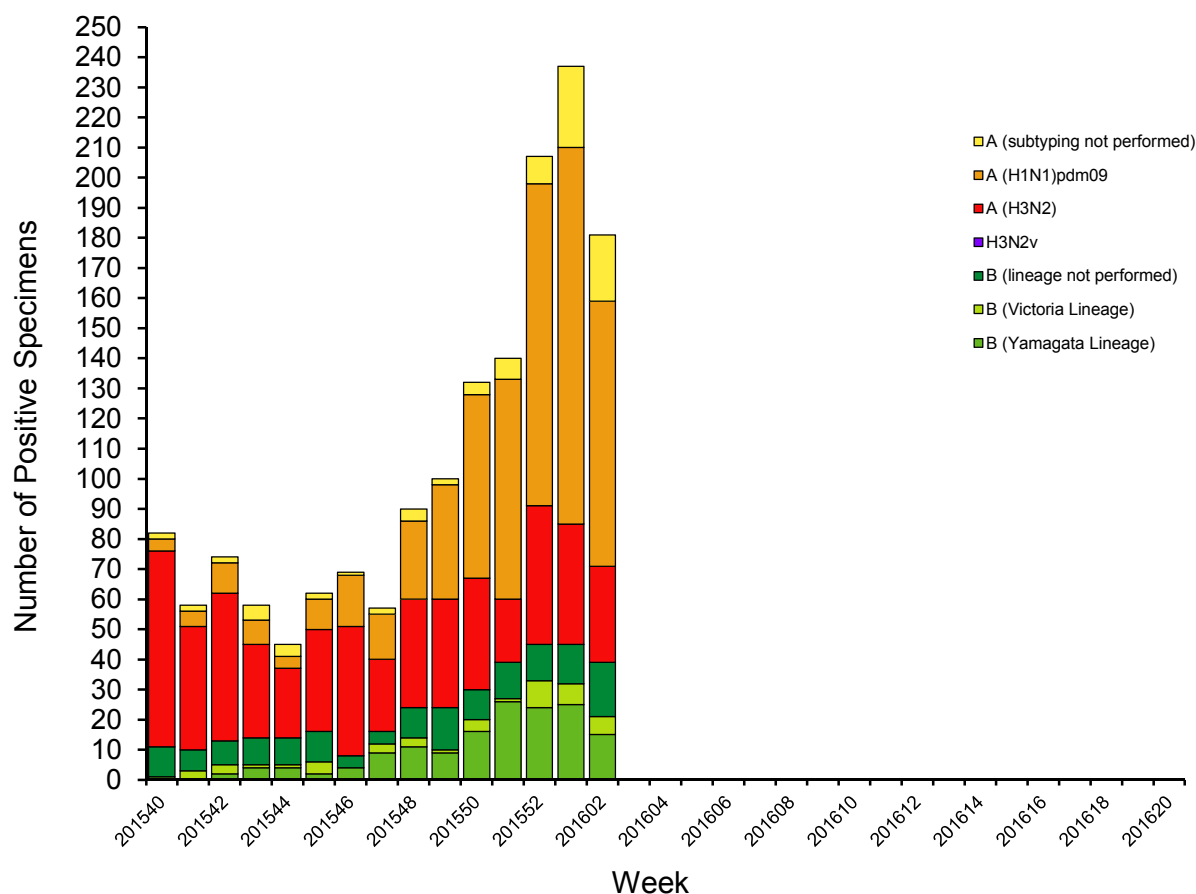


The results of tests performed by public health laboratories, as well as the age group distribution of influenza positive tests, are summarized below.

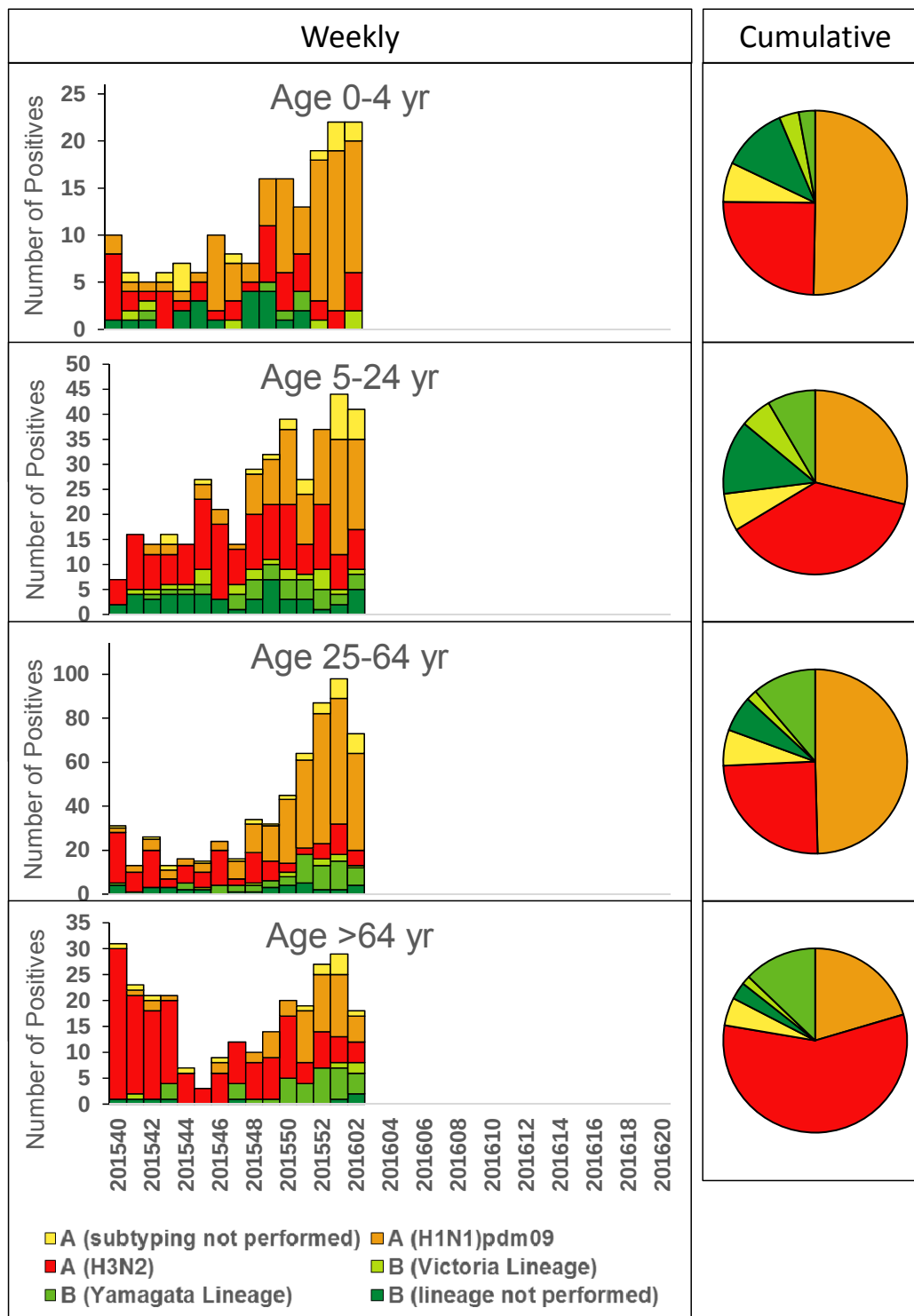
	Week 2	Data Cumulative since October 4, 2015 (week 40)
No. of specimens tested	845	19,270
No. of positive specimens*	181	1,592
<i>Positive specimens by type/subtype</i>		
Influenza A	142 (78.5%)	1,244 (78.1%)
A(H1N1)pmd09	88 (62.0%)	591 (47.5%)
H3	32 (22.5%)	558 (44.9%)
Subtyping not performed	22 (15.5%)	95 (7.6%)
Influenza B	39 (21.5%)	348 (21.9%)
Yamagata lineage	15 (38.5%)	152 (43.7%)
Victoria lineage	6 (15.4%)	46 (13.2%)
Lineage not performed	18 (46.2%)	150 (43.1%)

*The percent of specimens testing positive for influenza is not reported because public health laboratories often receive samples that have already tested positive for influenza at a clinical laboratory and therefore percent positive would not be a valid indicator of influenza activity. Additional information is available at <http://www.cdc.gov/flu/weekly/overview.htm>

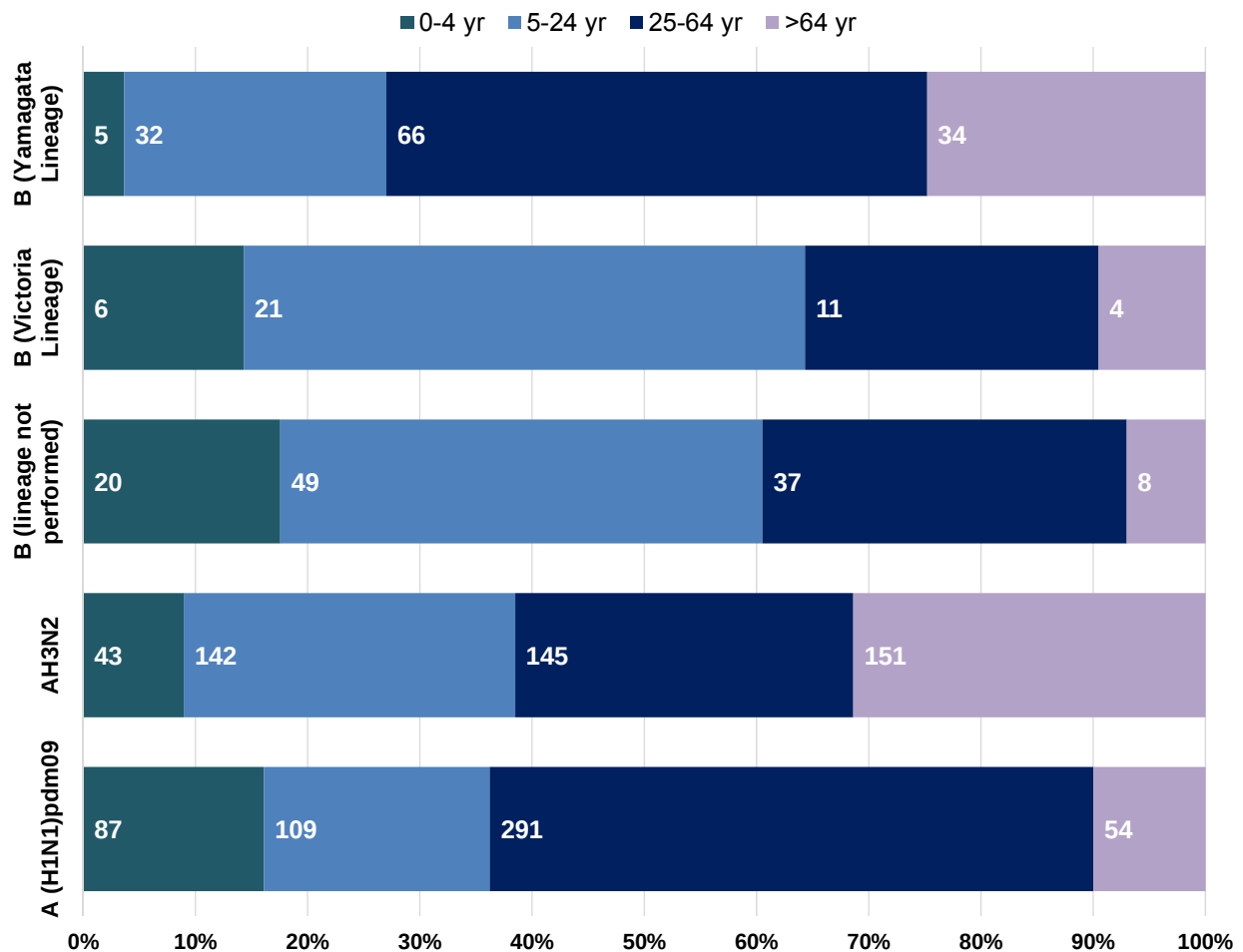
Influenza Positive Tests Reported to CDC by U.S. Public Health Laboratories, National Summary, 2015-2016 Season



Age Group Distribution of Influenza Positive Specimens Reported by Public Health Laboratories, National Summary, 2015-2016 Season



Age Group Proportions and Total by Influenza Subtype Reported by Public Health Laboratories, 2015-2016 Season



Influenza Virus Characterization: CDC characterizes influenza viruses through one or more tests including [genome sequencing](#), [hemagglutination inhibition \(HI\)](#), and/or neutralization assays. These data are used to compare how similar currently circulating influenza viruses are to the reference viruses used for developing influenza vaccines, and to monitor for changes in circulating influenza viruses. Historically, HI data have been used most commonly to assess the similarity between reference viruses and circulating viruses to suggest how well the vaccine may work until such time as vaccine effectiveness estimates are available. During the 2014–2015 season and to date this season, however, a portion of influenza A (H3N2) viruses do not yield sufficient hemagglutination titers for antigenic characterization by HI. For many of these viruses, CDC performs genetic characterization to determine the genetic group identity of those viruses. In this way, antigenic properties of these viruses can be inferred from viruses within the same genetic group that have been characterized antigenically.

CDC has characterized 259 influenza viruses [74 A (H1N1)pdm09, 135 A (H3N2), and 50 influenza B viruses] collected by U.S. laboratories **since October 1, 2015**.

Influenza A Virus [209]

- **A (H1N1)pdm09 [74]:** All 74 (100%) influenza A (H1N1)pdm09 viruses were antigenically characterized as A/California/7/2009-like, the influenza A (H1N1) component of the 2015-2016 Northern Hemisphere vaccine.
- **A (H3N2) [135]:** All 135 H3N2 viruses were genetically sequenced and all viruses belonged to genetic groups for which a majority of viruses antigenically characterized were similar to the cell-propagated A/Switzerland/9715293/2013, the influenza A (H3N2) reference virus representing the 2015-2016 Northern Hemisphere vaccine component.
 - o A subset of 80 H3N2 viruses also were antigenically characterized; 79 of 80 (98.8%) H3N2 viruses were A/Switzerland/9715293/2013-like by HI testing or neutralization testing.

Influenza B Virus [50]

- **Yamagata Lineage [25]:** All 25 (100%) B/Yamagata-lineage viruses were antigenically characterized as B/Phuket/3073/2013-like, which is included as an influenza B component of the 2015-2016 Northern Hemisphere trivalent and quadrivalent influenza vaccines.
- **Victoria Lineage [25]:** All 25 (100%) B/Victoria-lineage viruses were antigenically characterized as B/Brisbane/60/2008-like, which is included as an influenza B component of the 2015-2016 Northern Hemisphere quadrivalent influenza vaccines.

Antiviral Resistance: Testing of influenza A(H1N1)pdm09, A(H3N2), and influenza B virus isolates for resistance to neuraminidase inhibitors (oseltamivir, zanamivir, and peramivir) is performed at CDC using a functional assay. Additional A(H1N1)pdm09 and A(H3N2) clinical samples are tested for mutations of the virus known to confer oseltamivir resistance. The data summarized below combine the results of both testing methods. These samples are routinely obtained for surveillance purposes rather than for diagnostic testing of patients suspected to be infected with antiviral-resistant virus.

High levels of resistance to the adamantanes (amantadine and rimantadine) persist among A(H1N1)pdm09 and A(H3N2) viruses (the adamantanes are not effective against influenza B viruses). Therefore, data from adamantane resistance testing are not presented below.

Neuraminidase Inhibitor Resistance Testing Results on Samples Collected Since October 1, 2015

	Oseltamivir		Zanamivir		Peramivir	
	Virus Samples tested (n)	Resistant Viruses, Number (%)	Virus Samples tested (n)	Resistant Viruses, Number (%)	Virus Samples tested (n)	Resistant Viruses, Number (%)
Influenza A(H1N1)pdm09	93	1 (1.1)	81	0 (0.0)	93	1 (1.1)
Influenza A (H3N2)	180	0 (0.0)	180	0 (0.0)	174	0 (0.0)
Influenza B	77	0 (0.0)	77	0 (0.0)	77	0 (0.0)

The majority of recently circulating influenza viruses are susceptible to the neuraminidase inhibitor antiviral medications, oseltamivir, zanamivir, and peramivir; however, rare sporadic instances of oseltamivir-resistant and peramivir-resistant influenza A (H1N1)pdm09 and oseltamivir-resistant influenza A (H3N2) viruses have been detected worldwide. Antiviral treatment as early as possible is recommended for patients with confirmed or suspected influenza who have severe, complicated, or progressive illness; who require hospitalization; or who are at [high risk](#) for serious influenza-related complications. Additional information on recommendations for treatment and chemoprophylaxis of influenza virus infection with antiviral agents is available at <http://www.cdc.gov/flu/antivirals/index.htm>.

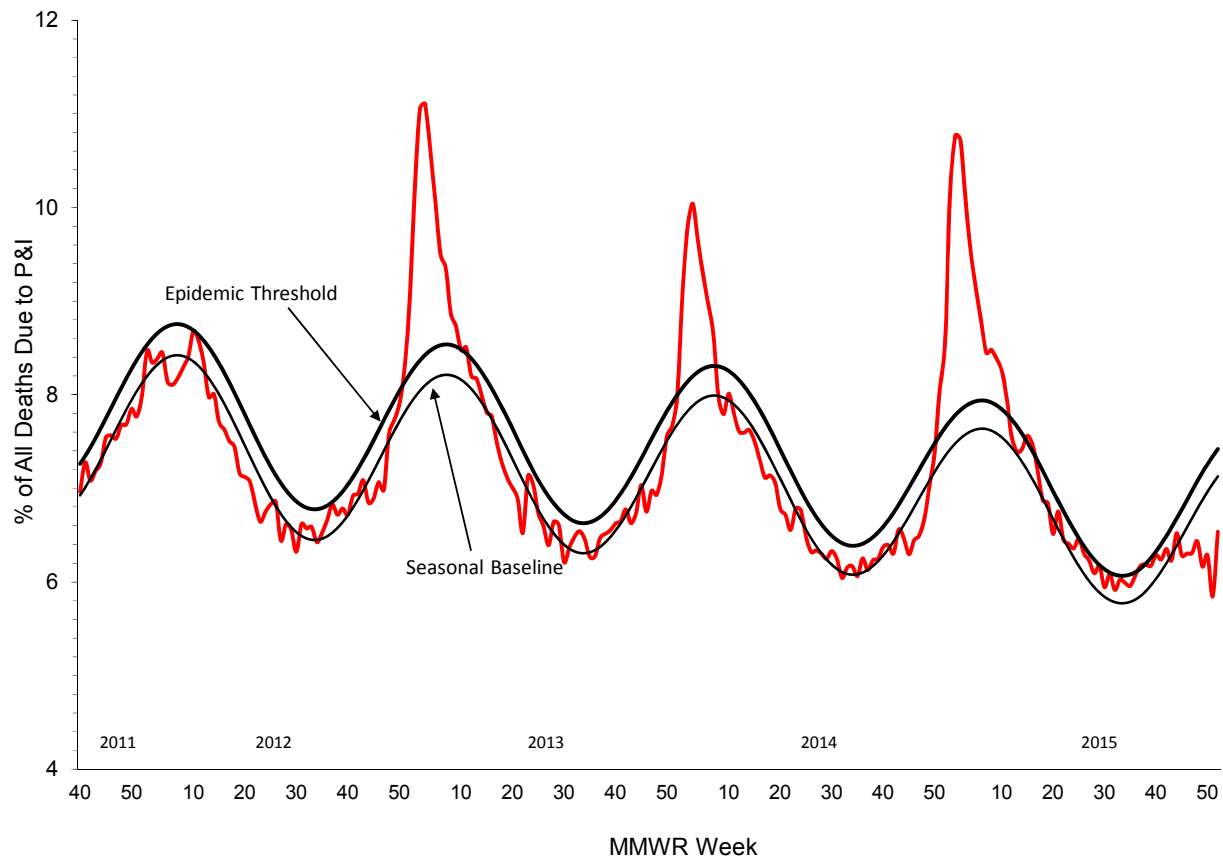
[Pneumonia and Influenza \(P&I\) Mortality Surveillance](#): Rapid tracking of pneumonia and influenza-associated deaths is done through two systems, the National Center for Health Statistics (NCHS) Mortality Surveillance System and the 122 Cities Mortality Reporting System. NCHS mortality surveillance data are presented by the week the death occurred and P&I percentages are released two weeks after the week of death to allow for collection of enough data to produce a stable P&I percentage. Users of the data should not expect the two systems to produce the same percentages, and the percent P&I deaths from each system should be compared to the corresponding system-specific baselines and thresholds.

NCHS Mortality Surveillance Data:

Based on NCHS mortality surveillance data available on January 21, 2016, 6.5% of the deaths occurring during the week ending January 2, 2016 (week 52) were due to P&I. This percentage is below the epidemic threshold of 7.4% for week 52.

Region and state-specific data are available at <http://www.cdc.gov/flu/weekly/nchs.htm>.

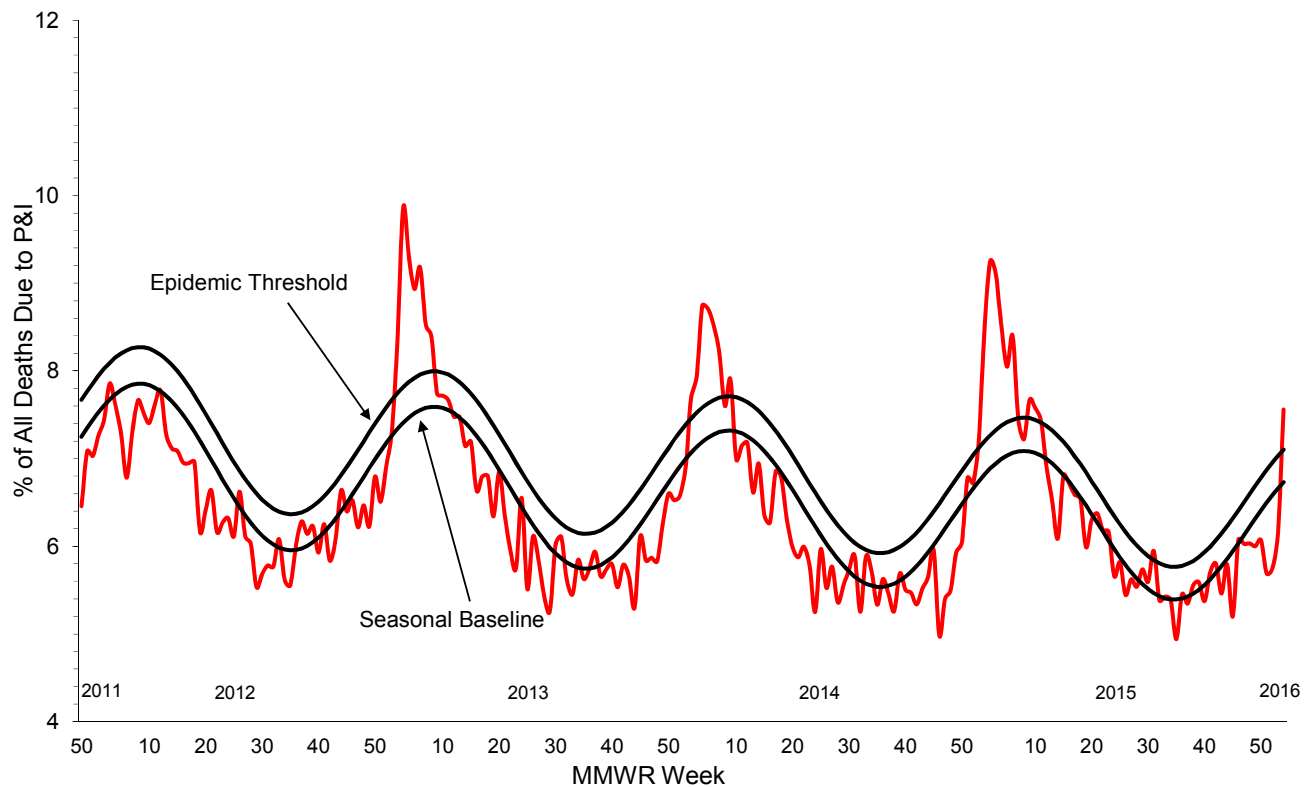
Pneumonia and Influenza Mortality from
the National Center for Health Statistics Mortality Surveillance System
Data through the week ending January 2, 2016, as of January 21, 2016



122 Cities Mortality Reporting System

During week 2, 7.6% of all deaths reported through the 122 Cities Mortality Reporting System were due to P&I. This percentage was above the epidemic threshold of 7.1% for week 2.

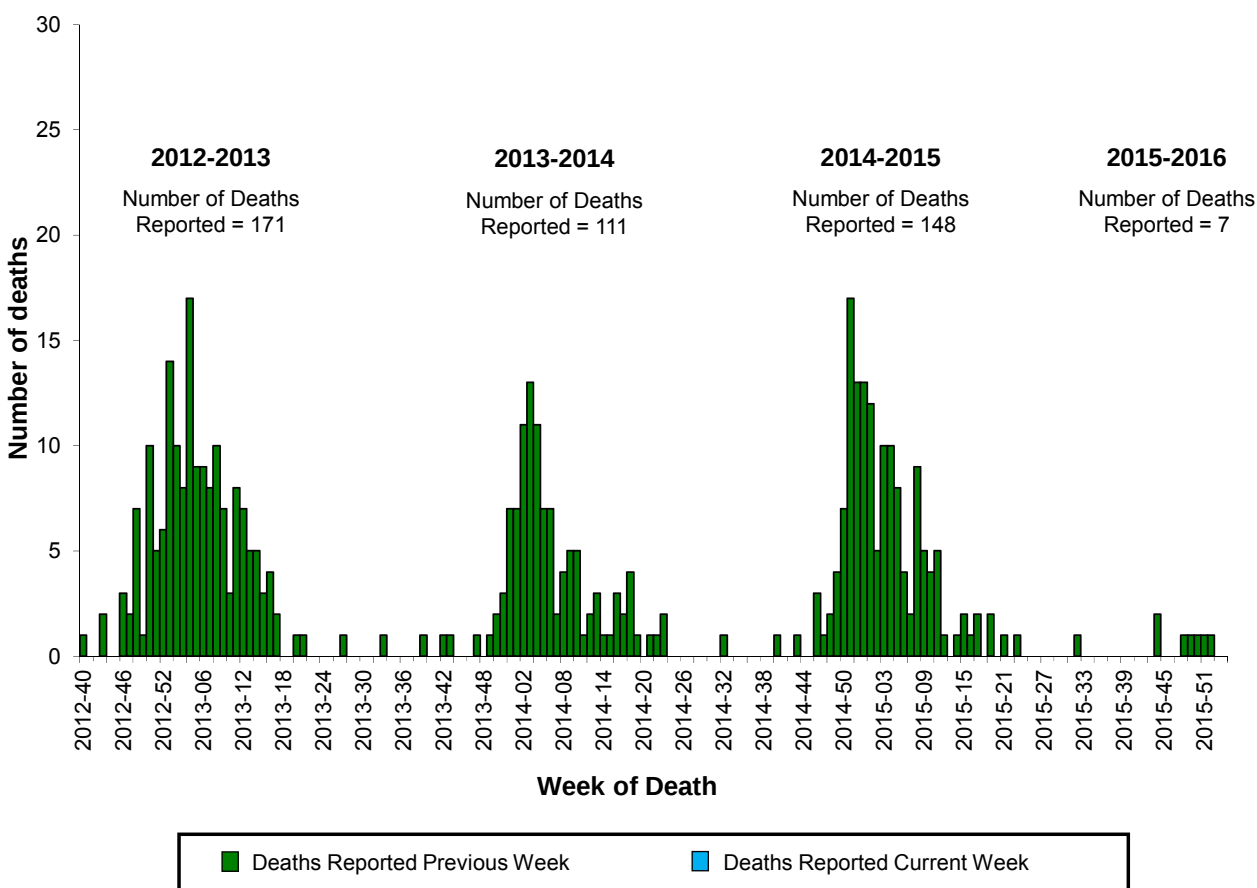
Pneumonia and Influenza Mortality for 122 U.S. Cities Week ending January 16, 2016



Influenza-Associated Pediatric Mortality: No influenza-associated pediatric deaths were reported to CDC during week 2. A total of seven influenza-associated pediatric deaths have been reported during the 2015-2016 season.

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

Number of Influenza-Associated Pediatric Deaths by Week of Death: 2012-2013 season to present



Influenza-Associated Hospitalizations: The Influenza Hospitalization Surveillance Network (FluSurv-NET) conducts population-based surveillance for laboratory-confirmed influenza-related hospitalizations in children younger than 18 years of age (since the 2003-2004 influenza season) and adults (since the 2005-2006 influenza season).

The FluSurv-NET covers more than 70 counties in the 10 Emerging Infections Program (EIP) states (CA, CO, CT, GA, MD, MN, NM, NY, OR, and TN) and additional Influenza Hospitalization Surveillance Project (IHSP) states. The IHSP began during the 2009-2010 season to enhance surveillance during the 2009 H1N1 pandemic. IHSP sites included IA, ID, MI, OK and SD during the 2009-2010 season; ID, MI, OH, OK, RI, and UT during the 2010-2011 season; MI, OH, RI, and UT during the 2011-2012 season; IA, MI, OH, RI, and UT during the 2012-2013 season; and MI, OH, and UT during the 2013-2014, 2014-15 and 2015-16 seasons.

Data gathered are used to estimate age-specific hospitalization rates on a weekly basis, and describe characteristics of persons hospitalized with severe influenza illness. The rates provided are likely to be an underestimate as influenza-related hospitalizations can be missed, either because testing is not performed, or because cases may be attributed to other causes of pneumonia or other common influenza-related complications.

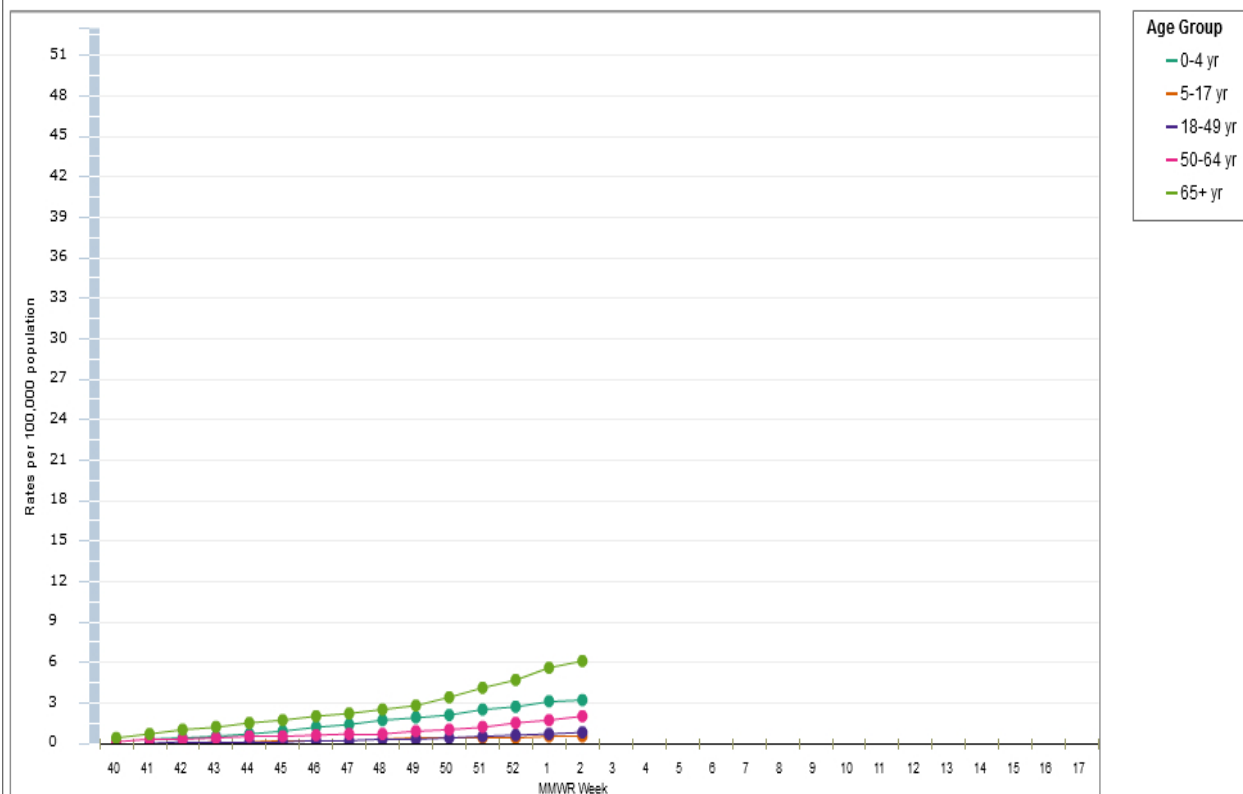
Between October 1, 2015 and January 16, 2016, 494 laboratory-confirmed influenza-associated hospitalizations were reported. The overall hospitalization rate was 1.8 per 100,000 population. The highest rate of hospitalization was among adults aged ≥ 65 years (6.1 per 100,000 population), followed by children aged 0-4 years (3.2 per 100,000 population). Among all hospitalizations, 323 (65.4%) were associated with influenza A, 142 (28.7%) with influenza B, 16 (3.2%) with influenza A and B co-infection, and 13 (2.6%) had no virus type information. Among those with influenza A subtype information, 56 (72.7%) were A(H1N1)pdm09 and 21 (27.3%) were A(H3N2) virus.

Clinical findings are preliminary and based on 165 (33.4%) cases with complete medical chart abstraction. The majority (87.1%) of hospitalized adults had at least one reported underlying medical condition; the most commonly reported were metabolic disorders, cardiovascular disease, and obesity. There were 25 hospitalized children with complete medical chart abstraction, 16 (64.0%) had no identified underlying medical conditions. The most commonly reported underlying medical conditions among pediatric patients were asthma, cardiovascular disease, chronic lung disease and neurologic disorders. Among the 9 hospitalized women of childbearing age (15-44 years), 3 were pregnant.

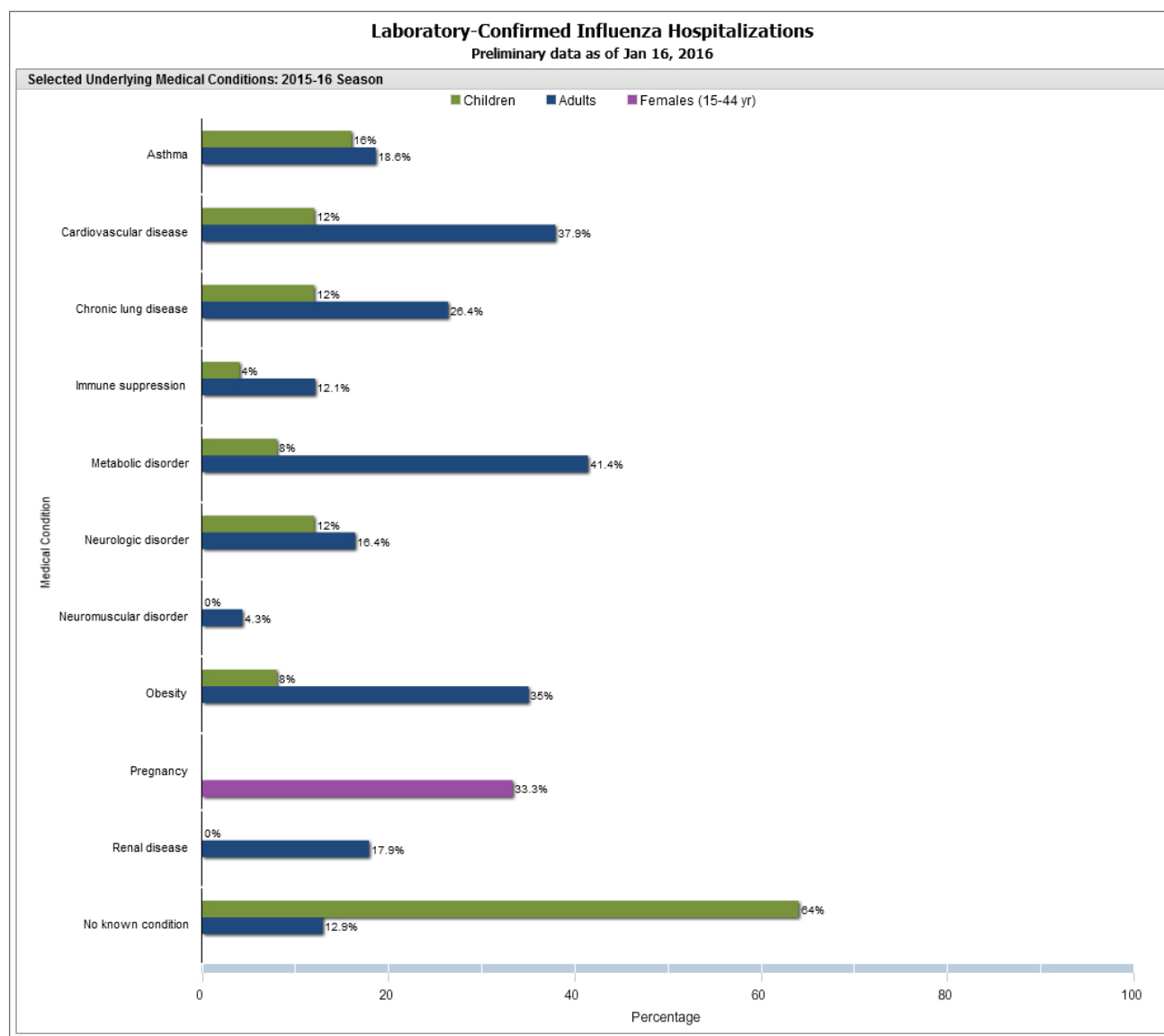
Additional FluSurv-NET data can be found at: <http://gis.cdc.gov/GRASP/Fluview/FluHospRates.html> and <http://gis.cdc.gov/grasp/fluview/FluHospChars.html>.

Laboratory-Confirmed Influenza Hospitalizations

Preliminary cumulative rates as of Jan 16, 2016



Data from the Influenza Hospitalization Surveillance Network (FluSurv-NET), a population-based surveillance for influenza related hospitalizations in children and adults in 13 U.S. states. Incidence rates are calculated using the National Center for Health Statistics' (NCHS) population estimates for the counties included in the surveillance catchment area.



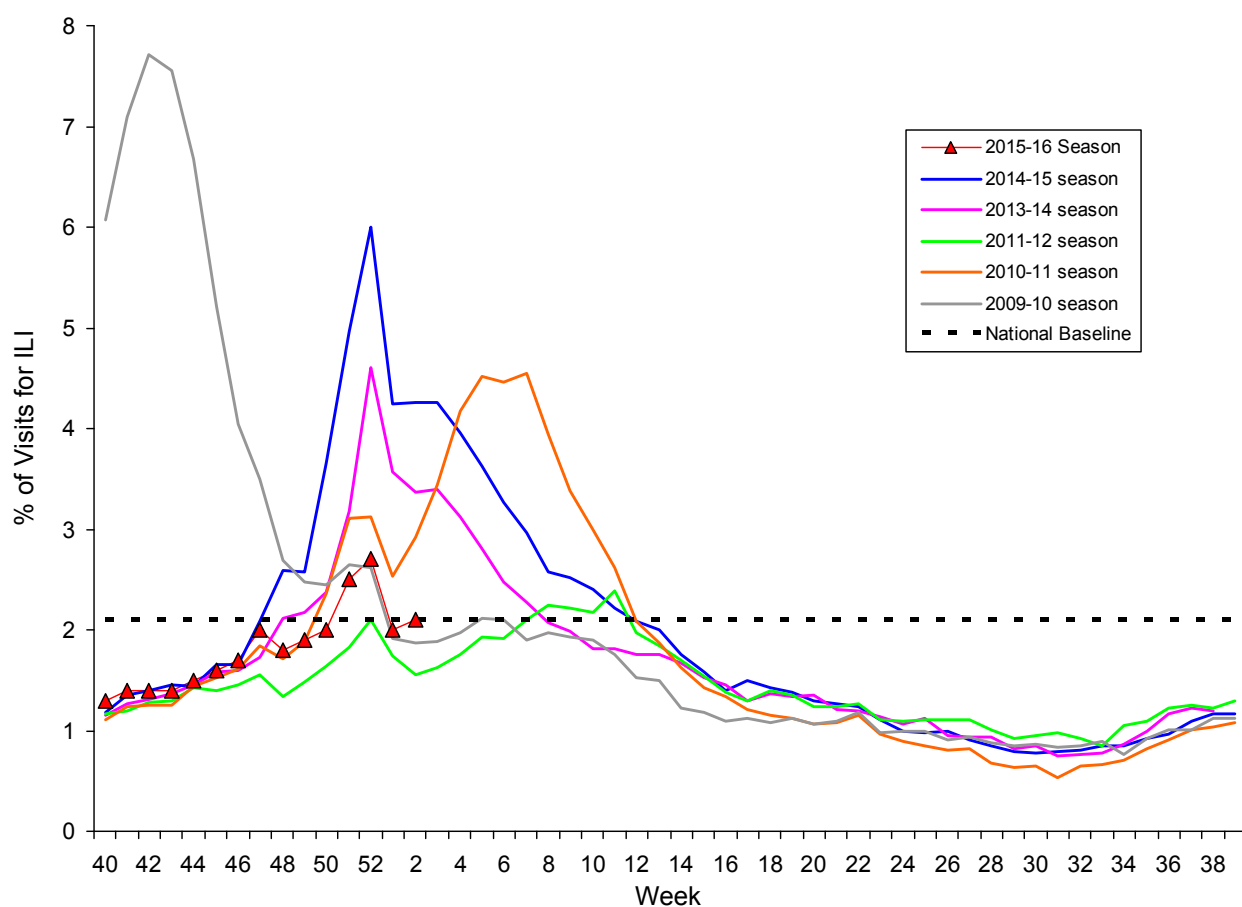
FluSurv-NET data are preliminary and displayed as they become available. Therefore, figures are based on varying denominators as some variables represent information that may require more time to be collected. Data are refreshed and updated weekly. Asthma includes a medical diagnosis of asthma or reactive airway disease; Cardiovascular diseases include conditions such as coronary heart disease, cardiac valve disorders, congestive heart failure, and pulmonary hypertension; does not include isolated hypertension; Chronic lung diseases include conditions such as chronic obstructive pulmonary disease, bronchiolitis obliterans, chronic aspiration pneumonia, and interstitial lung disease; Immune suppression includes conditions such as immunoglobulin deficiency, leukemia, lymphoma, HIV/AIDS, and individuals taking immunosuppressive medications; Metabolic disorders include conditions such as diabetes mellitus; Neurologic diseases include conditions such as seizure disorders, cerebral palsy, and cognitive dysfunction; Neuromuscular diseases include conditions such as multiple sclerosis and muscular dystrophy; Obesity was assigned if indicated in patient's medical chart or if body mass index (BMI) >30 kg/m²; Pregnancy percentage calculated using number of female cases aged between 15 and 44 years of age as the denominator; Renal diseases include conditions such as acute or chronic renal failure, nephrotic syndrome, glomerulonephritis, and impaired creatinine clearance; No known condition indicates that the case did not have any known high risk medical condition indicated in medical chart at the time of hospitalization.

Outpatient Illness Surveillance: Nationwide during week 2, 2.1% 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 at the national baseline of 2.1%. (*ILI is defined as fever (temperature of 100°F [37.8°C] or greater) and cough and/or sore throat.*)

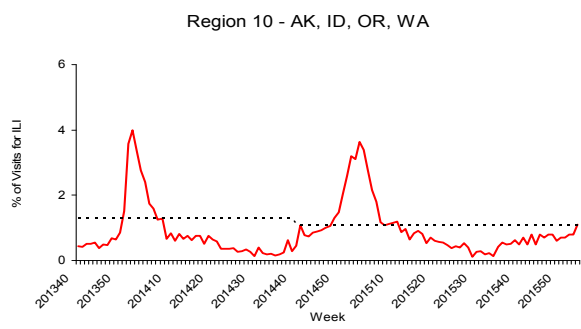
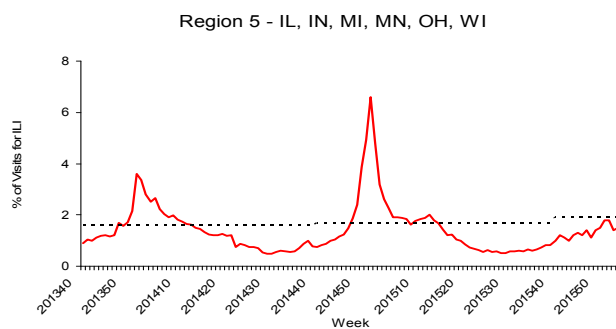
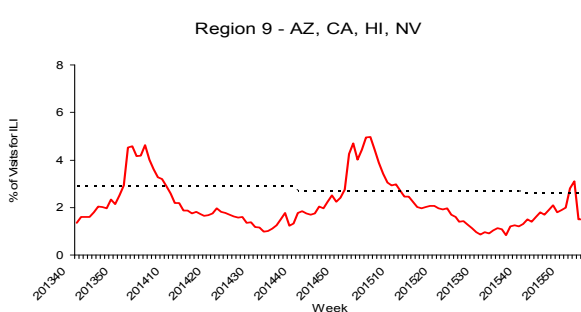
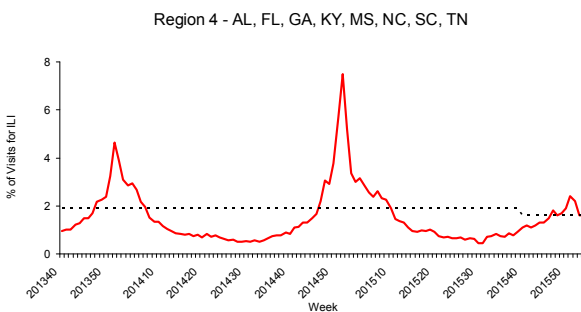
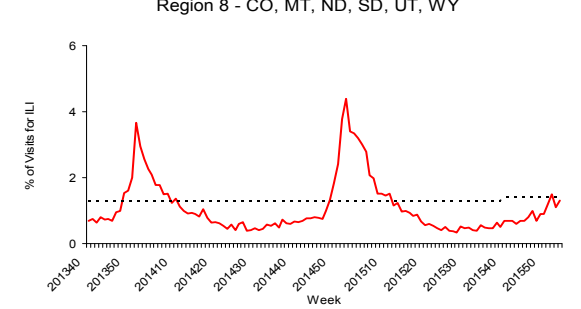
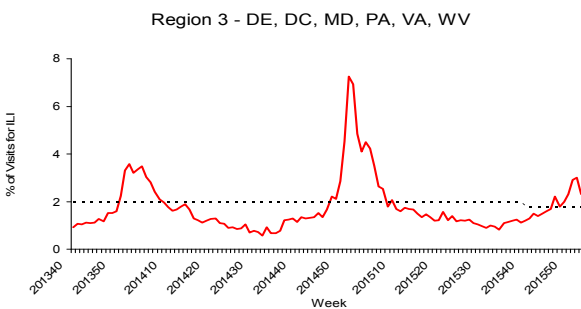
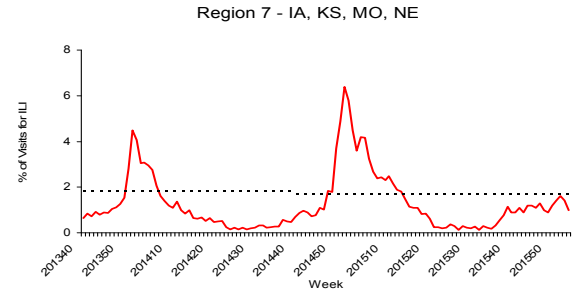
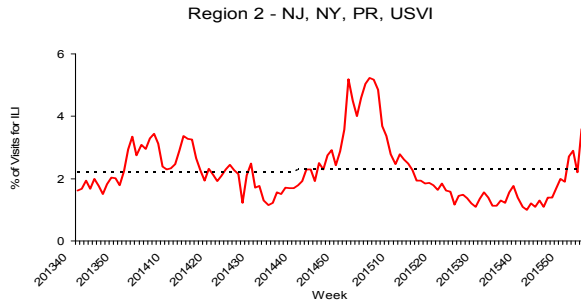
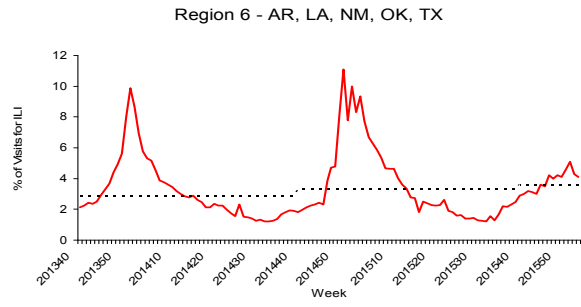
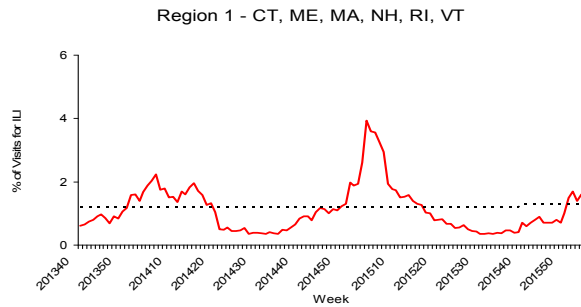
The increase in the percentage of patient visits for ILI in previous weeks may be influenced in part by a reduction in routine healthcare visits during the holidays, as has occurred in previous seasons.

Additional data are available at <http://gis.cdc.gov/grasp/fluview/fluportaldashboard.html>.

Percentage of Visits for Influenza-like Illness (ILI) Reported by the U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet), Weekly National Summary, 2015-2016 and Selected Previous Seasons



On a regional level, the percentage of outpatient visits for ILI ranged from 1.0% to 4.1% during week 2. Six regions (Regions 1, 2, 3, 4, 6, and 10) reported a proportion of outpatient visits for ILI at or above their region-specific baseline levels.



NOTE: Scales differ between regions

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

— % ILI

..... Baseline*

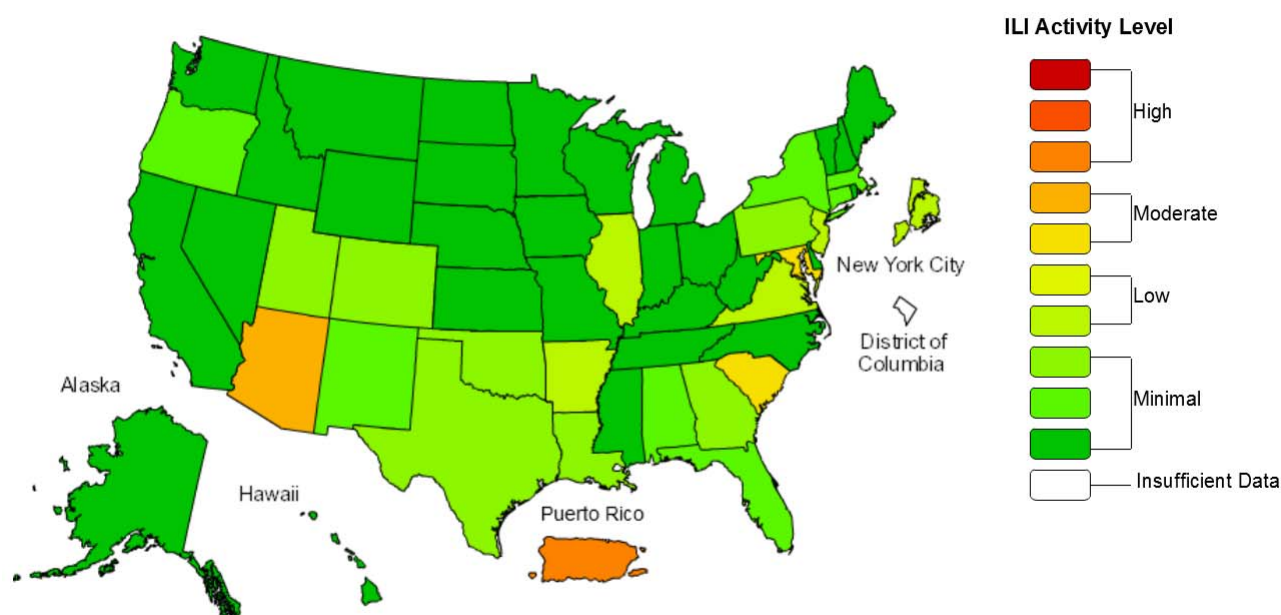


ILINet State Activity Indicator Map: Data collected in ILINet are used to produce a measure of ILI activity* by state. Activity levels are based on the percent of outpatient visits in a state due to ILI and are compared to the average percent of ILI visits that occur during weeks with little or no influenza virus circulation. Activity levels range from minimal, which would correspond to ILI activity from outpatient clinics being below, or only slightly above, the average, to high, which would correspond to ILI activity from outpatient clinics being much higher than average.

During week 2, the following ILI activity levels were experienced:

- Puerto Rico experienced high ILI activity.
- Three states (Arizona, Maryland, and South Carolina) experienced moderate ILI activity.
- New York City and four states (Arkansas, Illinois, New Jersey, and Virginia) experienced low ILI activity.
- 43 states (Alabama, Alaska, California, Colorado, Connecticut, Delaware, Florida, Georgia, Hawaii, Idaho, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Dakota, Tennessee, Texas, Utah, Vermont, Washington, West Virginia, Wisconsin, and Wyoming) experienced minimal ILI activity.
- Data were insufficient to calculate an ILI activity level from the District of Columbia.

Influenza-Like Illness (ILI) Activity Level Indicator Determined by Data Reported to ILINet
2015-16 Influenza Season Week 2 ending Jan 16, 2016

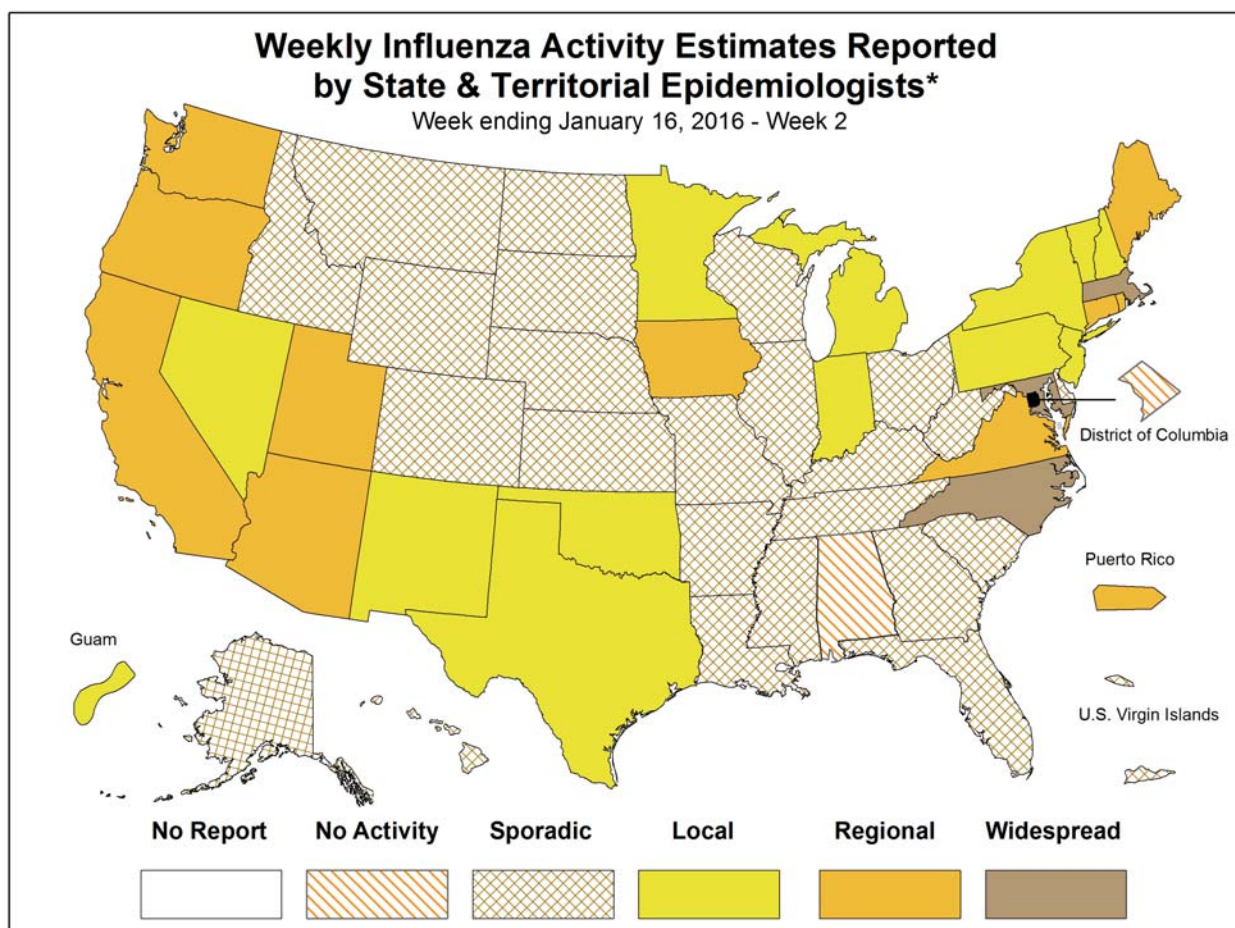


*This map uses the proportion of outpatient visits to health care providers for influenza-like illness to measure the ILI activity level within a state. It does not, however, measure the extent of geographic spread of flu within a state. Therefore, outbreaks occurring in a single city could cause the state to display high activity levels. Data collected in ILINet may disproportionately represent certain populations within a state, and therefore, may not accurately depict the full picture of influenza activity for the whole state. Data displayed in this map are based on data collected in ILINet, whereas the State and Territorial flu activity map is based on reports from state and territorial epidemiologists. The data presented in this map is preliminary and may change as more data is received. Differences in the data presented here by CDC and independently by some state health departments likely represent differing levels of data completeness with data presented by the state likely being the more complete.

Geographic Spread of Influenza as Assessed by State and Territorial Epidemiologists: The influenza activity reported by state and territorial epidemiologists indicates geographic spread of influenza viruses, but does not measure the severity of influenza activity.

During week 2, the following influenza activity was reported:

- Widespread influenza activity was reported by three states (Maryland, Massachusetts, and North Carolina).
- Regional influenza activity was reported by Puerto Rico and ten states (Arizona, California, Connecticut, Iowa, Maine, Oregon, Rhode Island, Utah, Virginia, and Washington).
- Local influenza activity was reported by Guam and 12 states (Indiana, Michigan, Minnesota, Nevada, New Hampshire, New Jersey, New Mexico, New York, Oklahoma, Pennsylvania, Texas, and Vermont).
- Sporadic influenza activity was reported by the U.S. Virgin Islands and 24 states (Alaska, Arkansas, Colorado, Delaware, Florida, Georgia, Hawaii, Idaho, Illinois, Kansas, Kentucky, Louisiana, Mississippi, Missouri, Montana, Nebraska, North Dakota, Ohio, South Carolina, South Dakota, Tennessee, West Virginia, Wisconsin, and Wyoming).
- The District of Columbia and one state (Alabama) reported no influenza activity.



* This map indicates geographic spread & does not measure the severity of influenza activity

Additional National and International Influenza Surveillance Information

FluView Interactive: FluView includes enhanced web-based interactive applications that can provide dynamic visuals of the influenza data collected and analyzed by CDC. These FluView Interactive applications allow people to create customized, visual interpretations of influenza data, as well as make comparisons across flu seasons, regions, age groups and a variety of other demographics. To access these tools, visit <http://www.cdc.gov/flu/weekly/fluviewinteractive.htm>.

U.S. State, territorial, and local influenza surveillance: Click on a jurisdiction below to access the latest local influenza information.

Alabama	Alaska	Arizona	Arkansas	California
Colorado	Connecticut	Delaware	District of Columbia	Florida
Georgia	Hawaii	Idaho	Illinois	Indiana
Iowa	Kansas	Kentucky	Louisiana	Maine
Maryland	Massachusetts	Michigan	Minnesota	Mississippi
Missouri	Montana	Nebraska	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	Utah
Vermont	Virginia	Washington	West Virginia	Wisconsin
Wyoming	New York City	Puerto Rico	U.S. Virgin Islands	

World Health Organization: Additional influenza surveillance information from participating WHO member nations is available through [FluNet](#) and the [Global Epidemiology Reports](#).

WHO Collaborating Centers for Influenza located in [Australia](#), [China](#), [Japan](#), the [United Kingdom](#), and the [United States](#) (CDC in Atlanta, Georgia).

Europe: For the most recent influenza surveillance information from Europe, please see WHO/Europe and the European Centre for Disease Prevention and Control at <http://www.flunewseurope.org/>

Public Health Agency of Canada: The most up-to-date influenza information from Canada is available at <http://www.phac-aspc.gc.ca/fluwatch/>.

Public Health England: The most up-to-date influenza information from the United Kingdom is available at <https://www.gov.uk/government/statistics/weekly-national-flu-reports>.

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An overview of the CDC influenza surveillance system, including methodology and detailed descriptions of each data component, is available at: <http://www.cdc.gov/flu/weekly/overview.htm>.

Report prepared: January 22, 2016.

