FLUVIEW
A Weekly Influenza Surveillance Report Prepared by the Influenza Division

2015-2016 Influenza Season
Week 45 ending November 14, 2015

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

Synopsis: During week 45 (November 8-14, 2015), influenza activity increased slightly in the United States.

- **Viral Surveillance**: The most frequently identified influenza virus type reported by public health laboratories in week 45 was influenza A viruses, with influenza A (H3) viruses predominating. The percentage of respiratory specimens testing positive for influenza in clinical laboratories is low.
- **Pneumonia and Influenza Mortality**: The proportion of deaths attributed to pneumonia and influenza (P&I) was below their system-specific epidemic threshold in both the NCHS Mortality Surveillance System and the 122 Cities Mortality Reporting System.
- **Influenza-associated Pediatric Deaths**: One influenza-associated pediatric death was reported.
- **Outpatient Illness Surveillance**: The proportion of outpatient visits for influenza-like illness (ILI) was 1.6%, which is below the national baseline of 2.1%. Two of 10 regions reported ILI at or above region-specific baseline levels. One state experienced moderate ILI activity; Puerto Rico and two states experienced low ILI activity; New York City and 47 states experienced minimal ILI activity; and the District of Columbia had insufficient data.
- **Geographic Spread of Influenza**: The geographic spread of influenza in Guam was reported as widespread; Puerto Rico reported regional activity; four states reported local activity; 40 states reported sporadic activity; and the District of Columbia, the U.S. Virgin Islands, and six states 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
				Influenza test results from public health laboratories only						
Nation	Normal	1 of 53	1.6%	36	202	14	7	4	43	1
Region 1	Normal	0 of 6	0.3%	2	12	0	0	0	0	0
Region 2	Normal	0 of 4	0.6%	7	15	0	0	0	4	0
Region 3	Normal	0 of 6	0.5%	3	7	2	0	1	0	0
Region 4	Normal	1 of 8	2.8%	2	19	3	0	0	8	0
Region 5	Normal	0 of 6	1.0%	14	17	2	0	2	1	0
Region 6	Elevated	0 of 5	1.6%	0	12	0	1	0	6	0
Region 7	Elevated	0 of 4	0.8%	1	21	0	1	1	0	0
Region 8	Normal	0 of 6	0.2%	2	8	1	2	0	0	0
Region 9	Normal	0 of 4	1.3%	4	58	5	3	0	23	1
Region 10	Normal	0 of 4	0.4%	1	33	1	0	0	1	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.

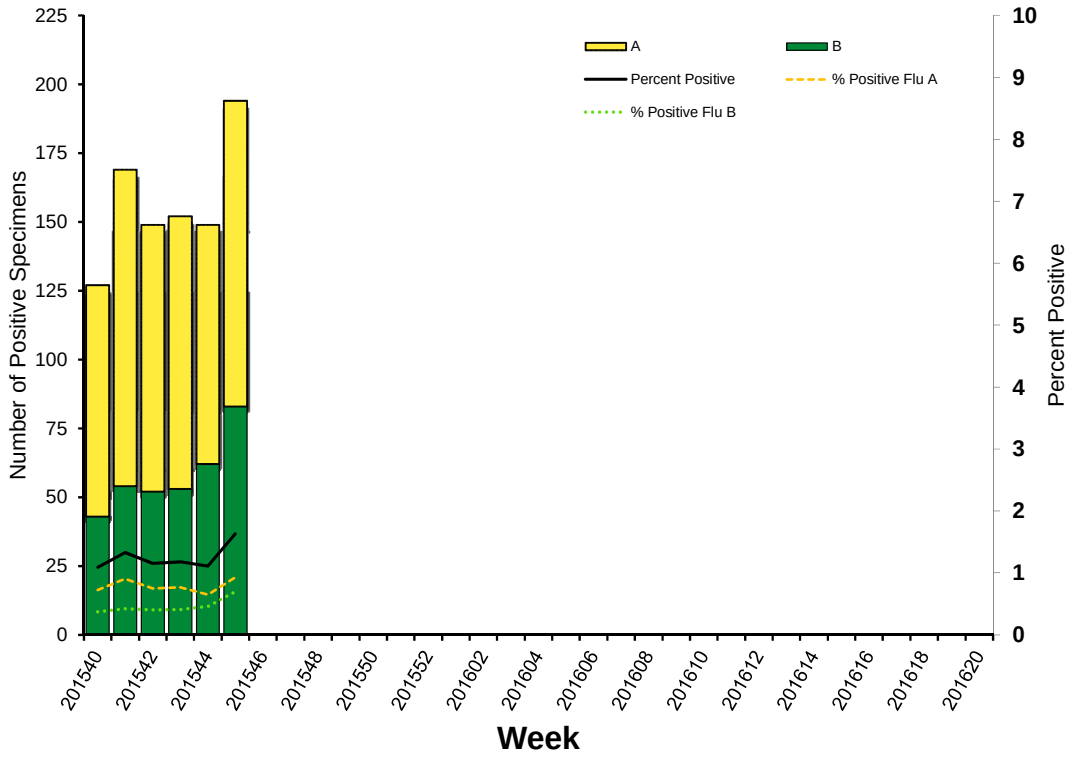
U.S. Virologic Surveillance: WHO and NREVSS collaborating laboratories, which include both public health and clinical laboratories located in all 50 states, Puerto Rico, and the District of Columbia, report to CDC the total number of respiratory specimens tested for influenza and the number positive for influenza 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 45	Data Cumulative since October 4, 2015 (week 40)
No. of specimens tested	11,899	75,518
No. of positive specimens (%)	194 (1.6%)	940 (1.2%)
Positive specimens by type		
Influenza A	111 (57.2%)	593 (63.1%)
Influenza B	83 (42.8%)	347 (36.9%)

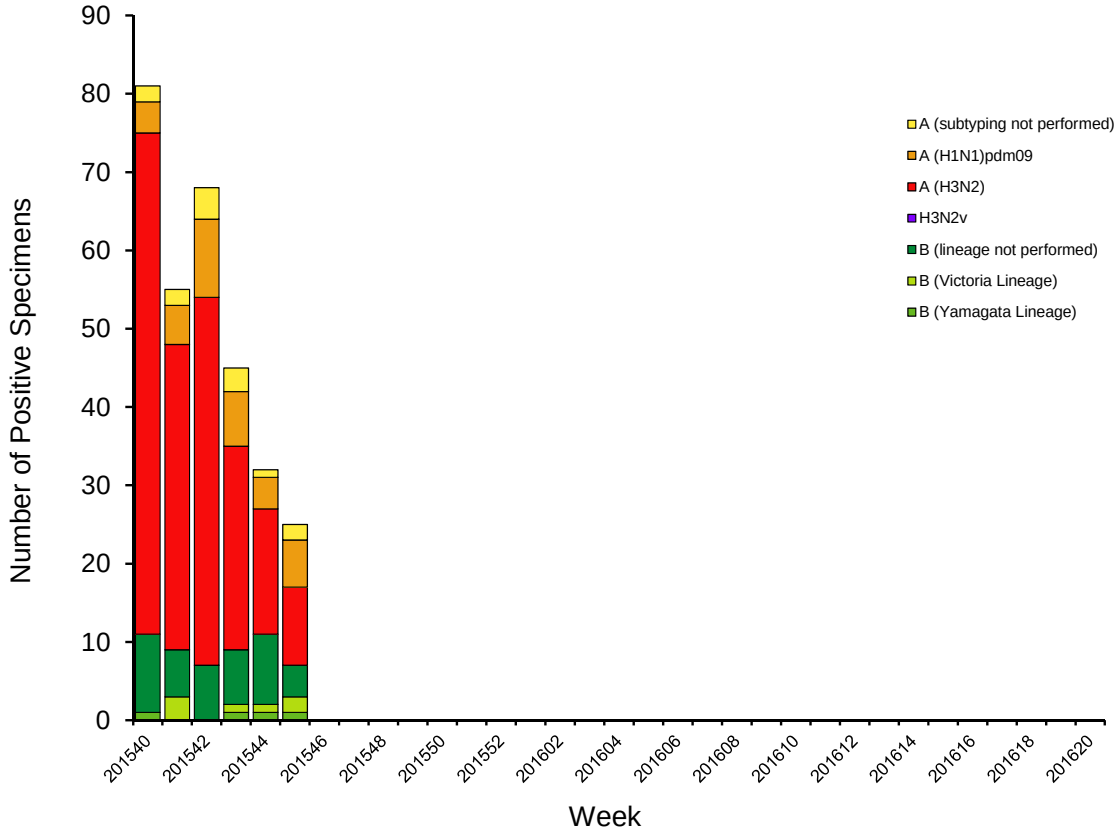
Influenza Positive Tests Reported to CDC by U.S. Clinical Laboratories, National Summary, 2015-16 Season



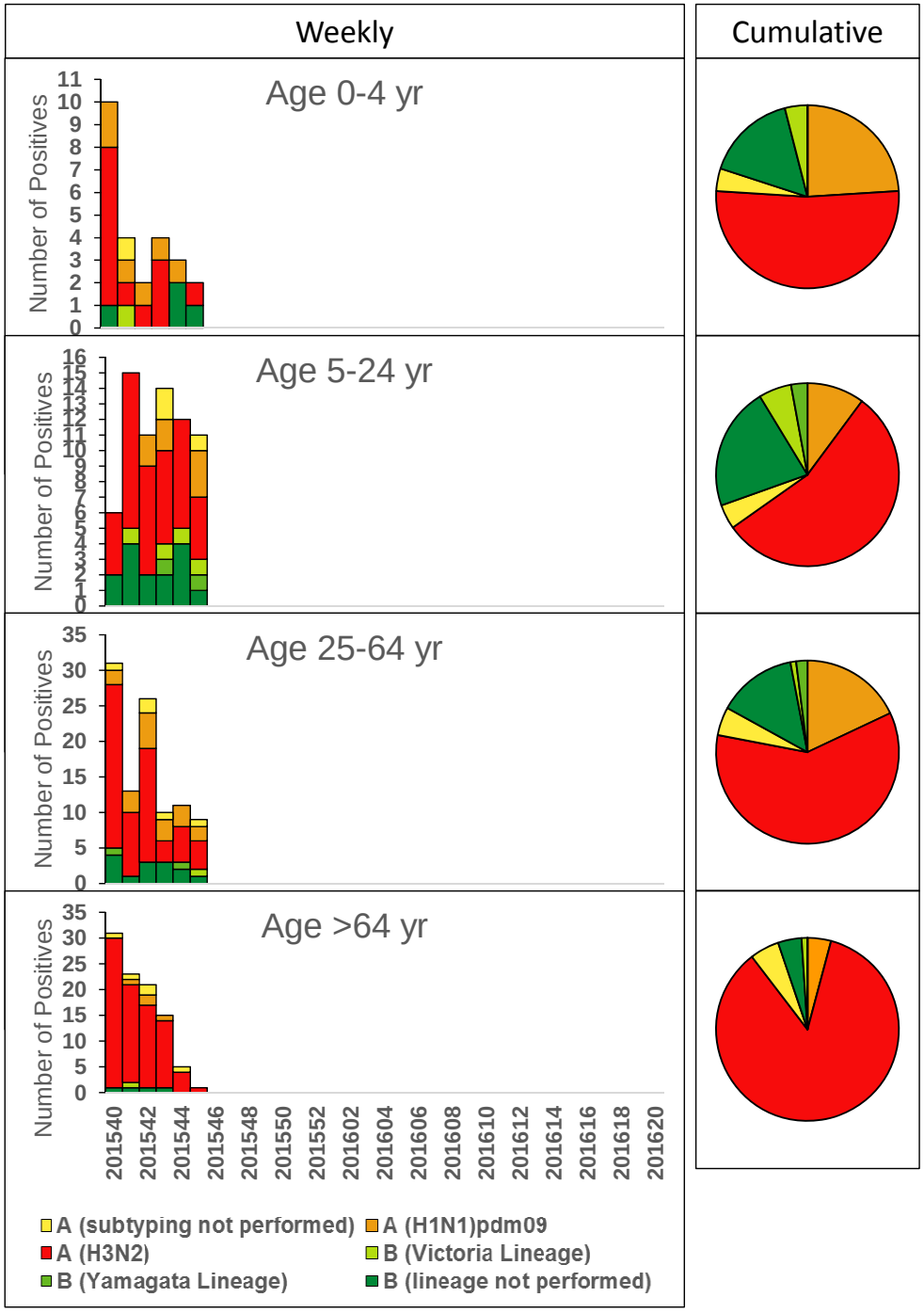
The results of tests performed by public health laboratories, as well as the age group distribution of influenza positive tests, are summarized below.

	Week 45	Data Cumulative since October 4, 2015 (week 40)
No. of specimens tested	648	6,101
No. of positive specimens	25	306
Positive specimens by type/subtype		
Influenza A	18 (72.0%)	252 (82.4%)
A(H1N1)pmd09	6 (33.3%)	36 (14.3%)
H3	10 (55.6%)	202 (80.2%)
Subtyping not performed	2 (11.1%)	14 (5.6%)
Influenza B	7 (28.0%)	54 (17.6%)
Yamagata lineage	1 (14.3%)	4 (7.4%)
Victoria lineage	2 (28.6%)	7 (13.0%)
Lineage not performed	4 (57.1%)	43 (79.6%)

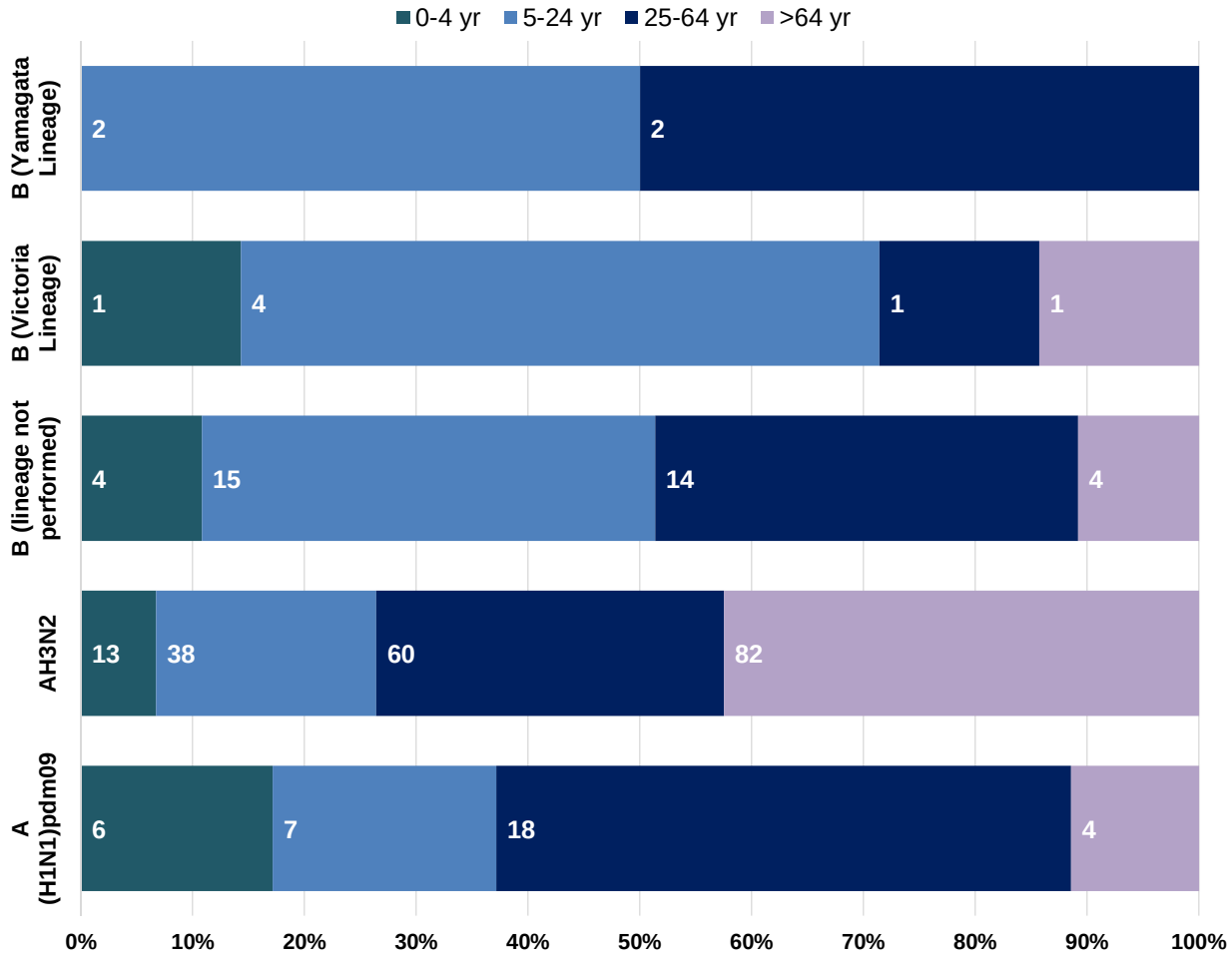
Influenza Positive Tests Reported to CDC by U.S. Public Health Laboratories, National Summary, 2015-16 Season



Age Group Distribution of Influenza Positive Specimens Reported by Public Health Laboratories, National Summary, 2015-16 Season



Age Group Proportions and Total by Influenza Subtype Reported by Public Health Laboratories, 2015-16 Season



Influenza Virus Characterization: CDC characterizes influenza viruses through one or more tests including genome sequencing, hemagglutination inhibition (HI), and/or neutralization assays. This data is 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 has been used most commonly to assess the similarity between reference viruses and circulating viruses as a proxy for vaccine effectiveness. Beginning in the 2014–2015 season and to date, however, a portion of influenza A (H3N2) viruses did 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 circulating 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 337 influenza viruses [14 A (H1N1)pdm09, 252 A (H3N2), and 71 influenza B viruses] collected by U.S. laboratories **during May 24-September 30, 2015**.

Influenza A Virus [266]

A (H1N1)pdm09 [14]: All 14 (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.

A (H3N2) [252]

- All 252 H3N2 viruses were genetically sequenced and all viruses belonged to genetic groups for which a majority of viruses antigenically characterized were similar to A/Switzerland/9715293/2013, the influenza A (H3N2) component of the 2015-2016 Northern Hemisphere vaccine.
- A subset of 106 H3N2 viruses also were antigenically characterized; 105 of 106 (99%) H3N2 viruses were A/Switzerland/9715293/2013-like by HI testing or neutralization testing.

Influenza B Virus [71]: Forty-four (62%) of the influenza B viruses characterized belonged to B/Yamagata/16/88 lineage and the remaining 27 (38%) influenza B viruses characterized belonged to B/Victoria/02/87 lineage.

Yamagata Lineage [44]: All 44 (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 [27]: All 27 (100%) B/Victoria-lineage viruses were antigenically characterized as B/Brisbane/60/2008-like, the virus that is included as an influenza B component of the 2015-2016 Northern Hemisphere quadrivalent influenza vaccine.

CDC has characterized 12 influenza viruses [one A (H1N1)pdm09, 10 A (H3N2), and one influenza B virus] collected by U.S. laboratories **since October 1, 2015**.

The 10 influenza A (H3N2) viruses collected since October 1, 2015 have been genetically sequenced and all viruses belonged to genetic groups for which a majority of viruses antigenically characterized were similar to A/Switzerland/9715293/2013, the influenza A (H3N2) component of the 2015-2016 Northern Hemisphere vaccine. Six viruses (one A (H1N1)pdm09, four A (H3N2), and one B/Yamagata-lineage) collected since October 1, 2015 have been antigenically characterized. All six were similar to the 2015-2016 Northern Hemisphere influenza vaccine components.

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)pmd09	0	0 (0.0)	0	0 (0.0)	0	0 (0.0)
Influenza A (H3N2)	13	0 (0.0)	13	0 (0.0)	13	0 (0.0)
Influenza B	0	0 (0.0)	0	0 (0.0)	0	0 (0.0)

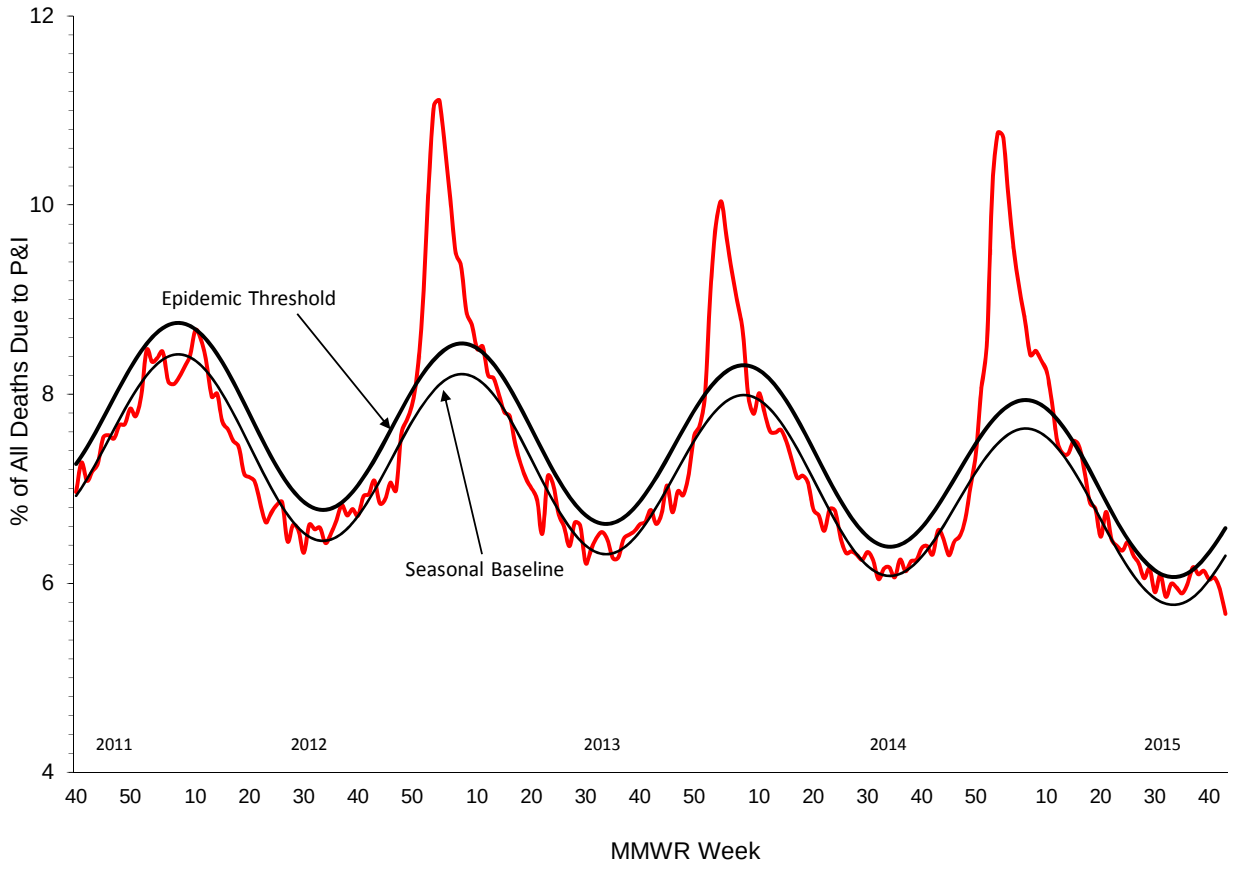
The majority of recently circulating influenza viruses are susceptible to the neuraminidase inhibitor antiviral medications, oseltamivir, zanamivir, and peramivir; however, rare sporadic instances of oseltamivir-resistant and peramivir-resistant influenza A (H1N1)pdm09 and oseltamivir-resistant influenza A (H3N2) viruses have been detected worldwide. Antiviral treatment is recommended as early as possible 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 November 19, 2015, 5.7% of the deaths occurring during the week ending October 31, 2015 (week 43) were due to P&I. This percentage is below the epidemic threshold of 6.6% for week 43.

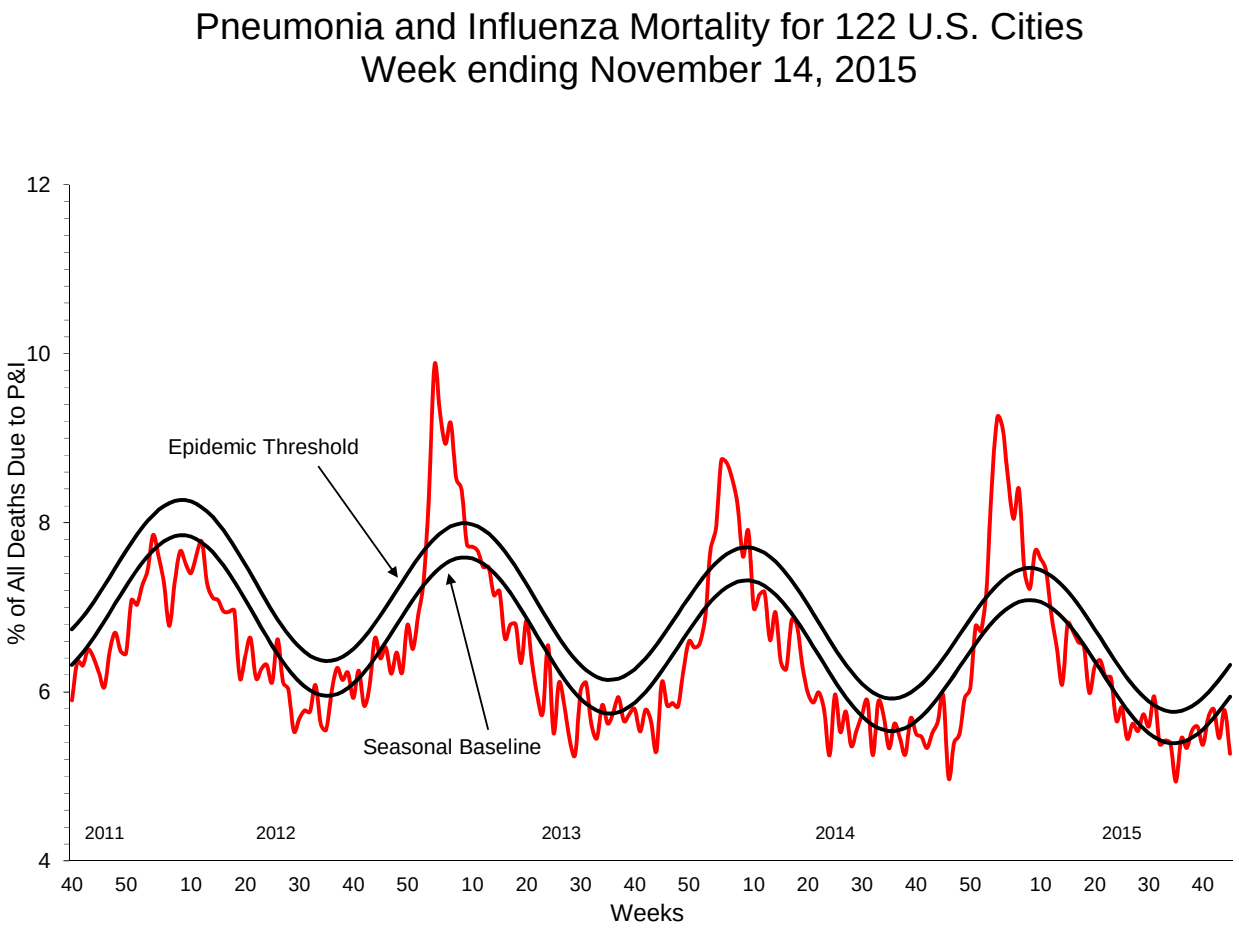
Region and state-specific data are available at http://www.cdc.gov/flu/weekly/nchs.htm.

Pneumonia and Influenza Mortality from
the National Center for Health Statistics Mortality Surveillance System
Data through the week ending October 31, 2015, as of November 19, 2015



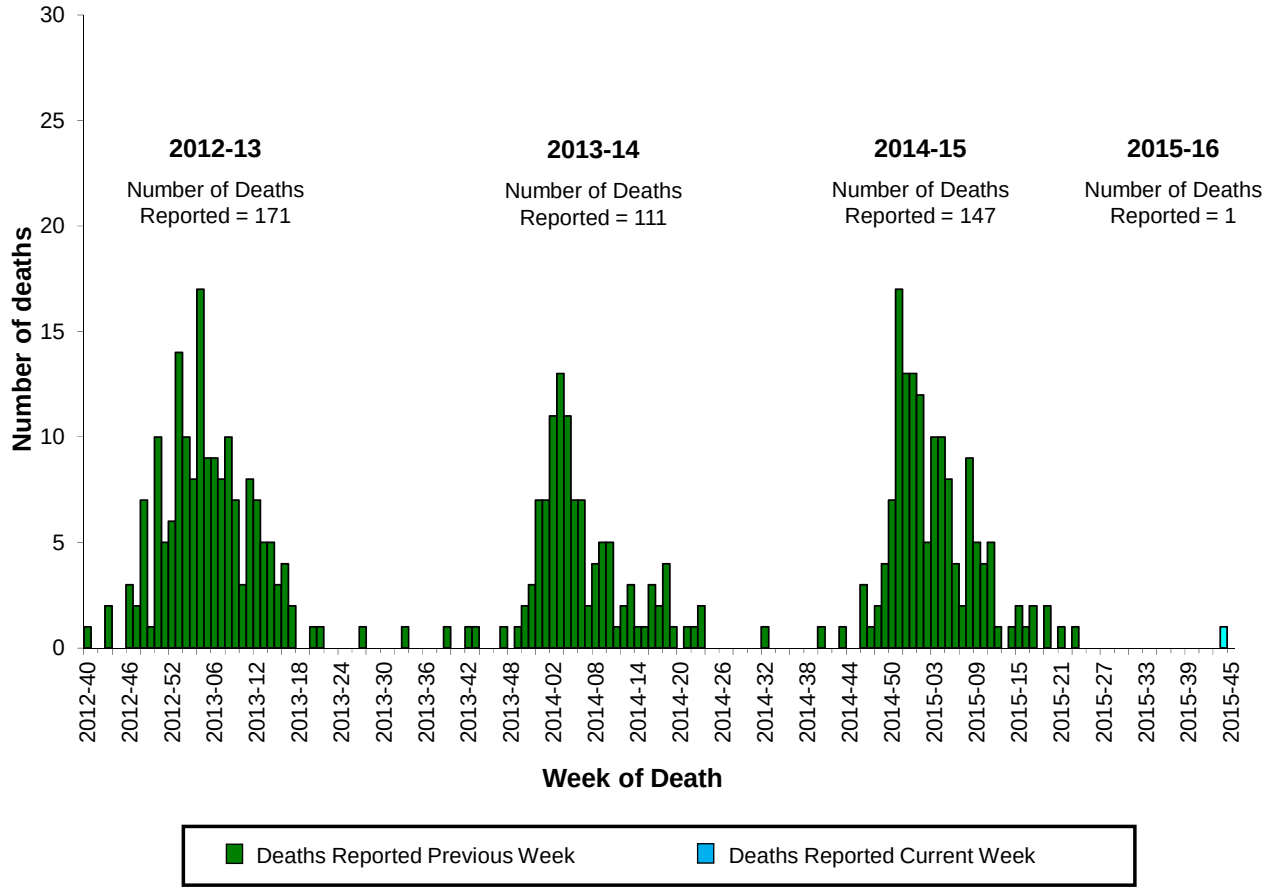
122 Cities Mortality Reporting System

During week 45, 5.3% of all deaths reported through the 122 Cities Mortality Reporting System were due to P&I. This percentage was below the epidemic threshold of 6.3% for week 45.



Influenza-Associated Pediatric Mortality: One influenza-associated pediatric death was reported to CDC during week 45. This death was associated with an influenza A virus for which no subtyping was performed and occurred during week 44 (the week ending November 7, 2015). A total of one influenza-associated pediatric death has been reported during the 2015-2016 season.

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

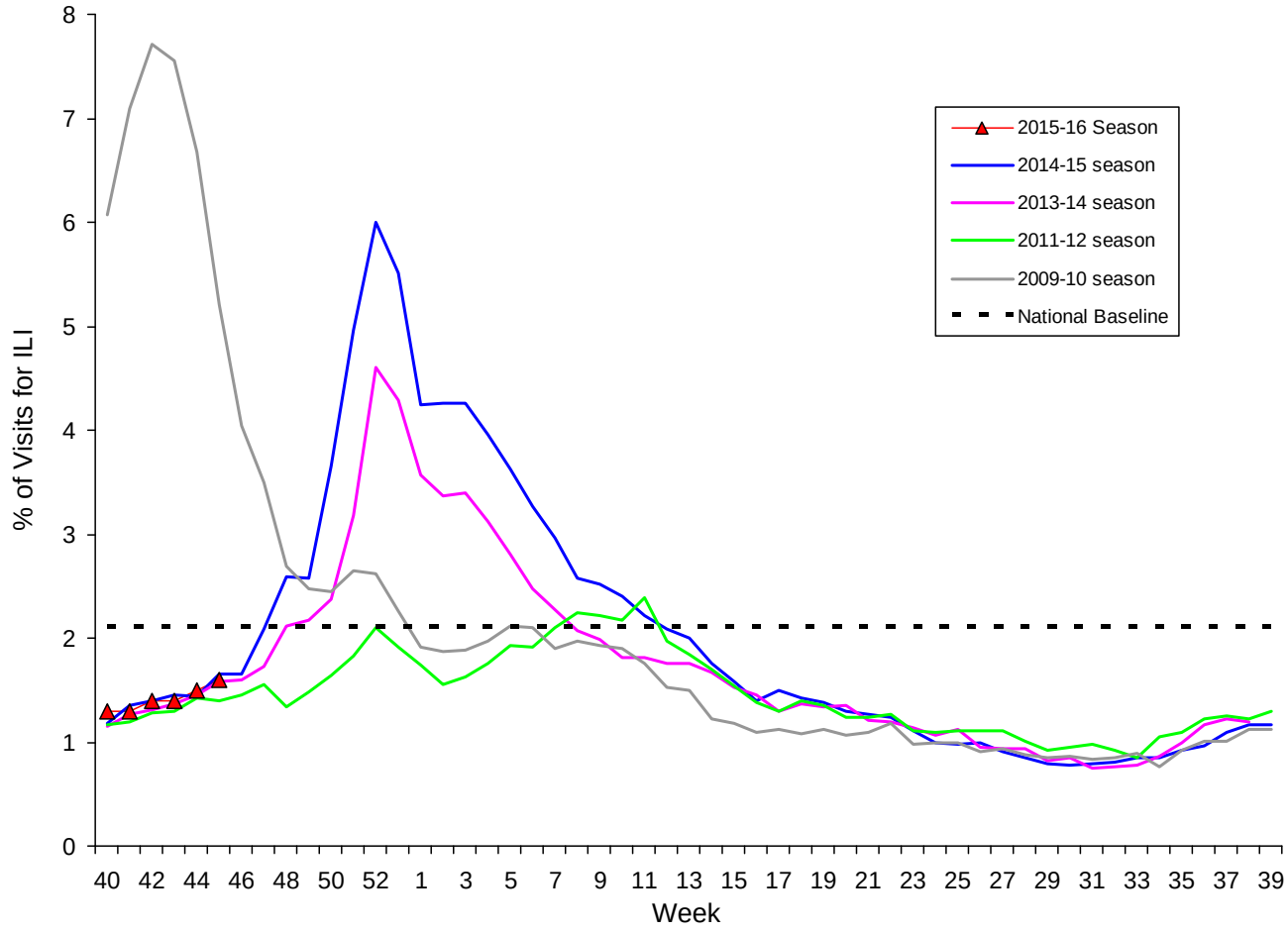


Influenza-Associated Hospitalizations: The Influenza Hospitalization Surveillance Network (FluSurv-NET) conducts all age population-based surveillance for laboratory-confirmed influenza-related hospitalizations in select counties in the Emerging Infections Program (EIP) states and Influenza Hospitalization Surveillance Project (IHSP) states. FluSurv-NET estimated hospitalization rates will be updated weekly starting later this season. 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.

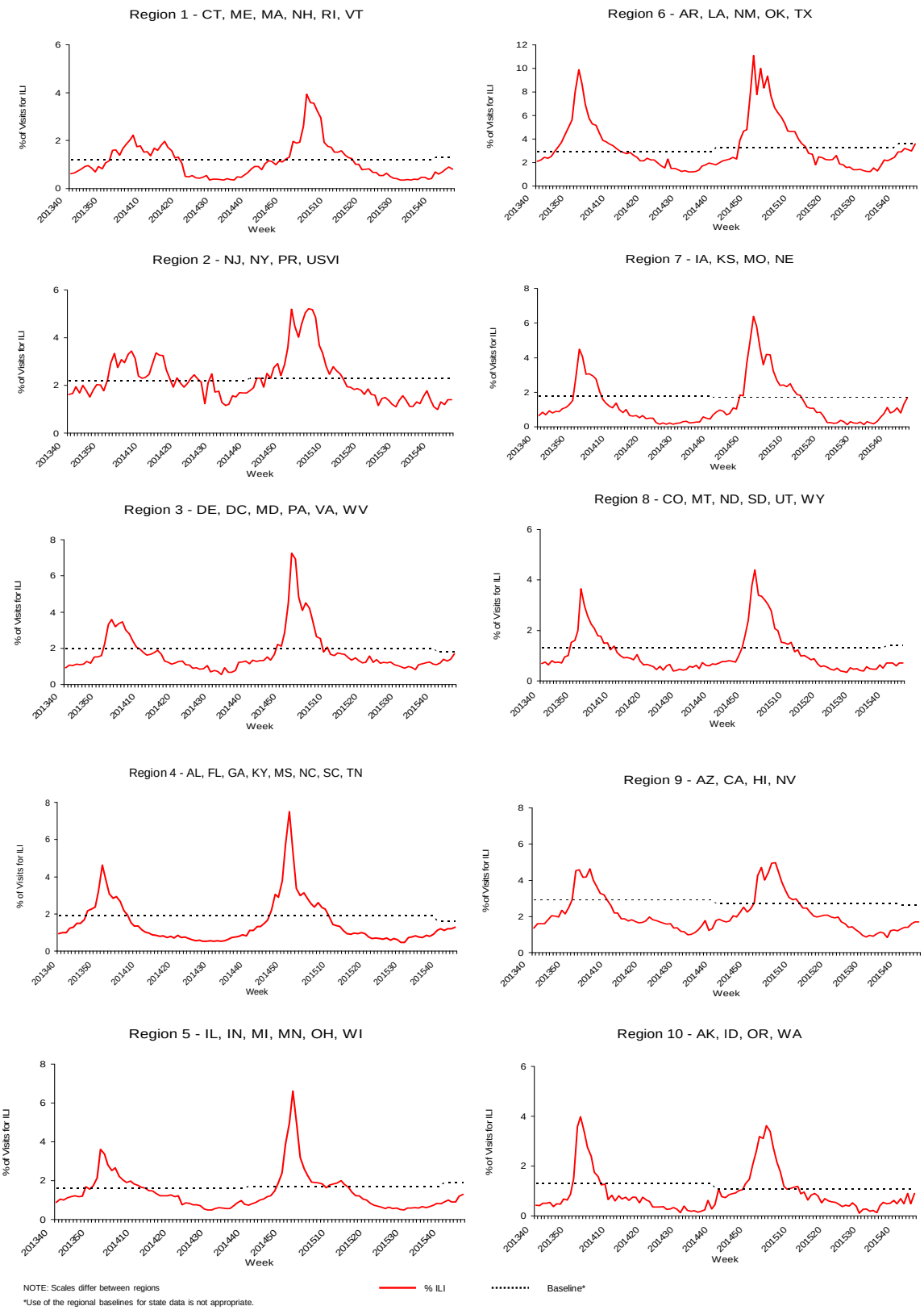
Outpatient Illness Surveillance: Nationwide during week 45, 1.6% of patient visits reported through the U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet) were due to influenza-like illness (ILI). This percentage is below the national baseline of 2.1%. *(ILI is defined as fever (temperature of 100°F [37.8°C] or greater) and cough and/or sore throat.)*

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 0.7% to 3.6% during week 45. Two regions (Regions 6 and 7) reported a proportion of outpatient visits for ILI at or above their region-specific baseline levels.

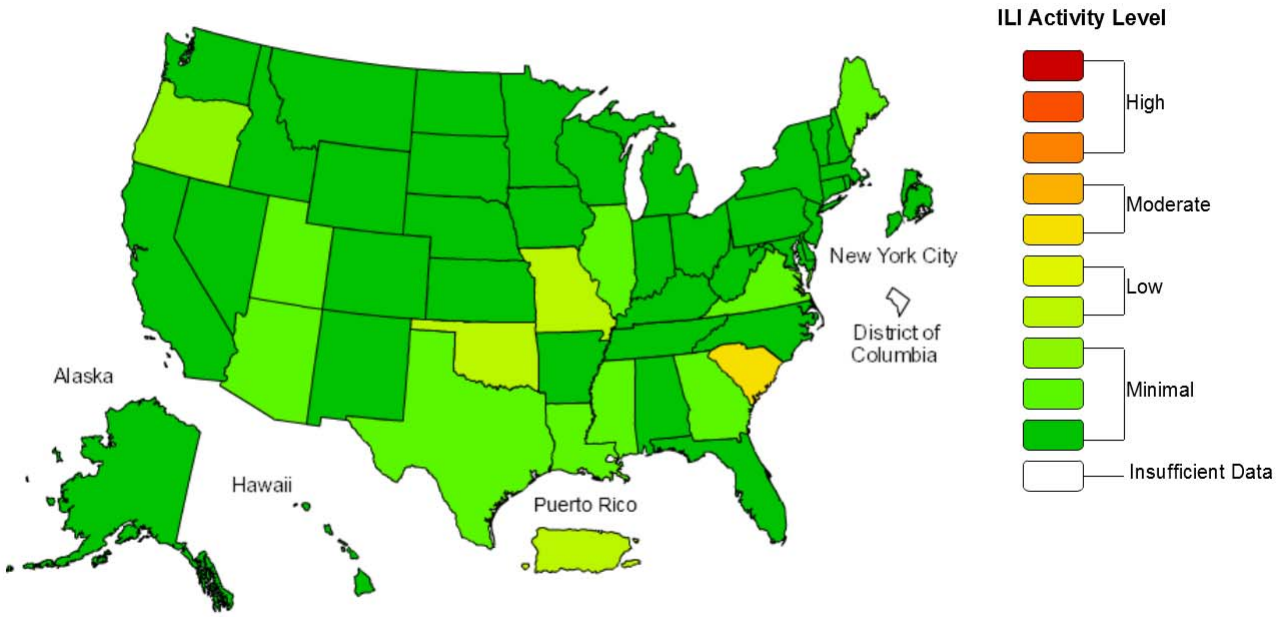

Region 1 - CT, ME, MA, NH, RI, VT
Region 6 - AR, LA, NM, OK, TX
Region 2 - NJ, NY, PR, USVI
Region 7 - IA, KS, MO, NE
Region 3 - DE, DC, MD, PA, VA, WV
Region 8 - CO, MT, ND, SD, UT, WY
Region 4 - AL, FL, GA, KY, MS, NC, SC, TN
Region 9 - AZ, CA, HI, NV
Region 5 - IL, IN, MI, MN, OH, WI
Region 10 - AK, ID, OR, WA
% of Visits for ILI
Week
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 45, the following ILI activity levels were experienced:

- One state (South Carolina) experienced moderate ILI activity.
- Puerto Rico and two states (Missouri and Oklahoma) experienced low ILI activity.
- New York City and 47 states (Alaska, Alabama, Arkansas, Arizona, California, Colorado, Connecticut, Delaware, Florida, Georgia, Hawaii, Iowa, Idaho, Illinois, Indiana, Kansas, Kentucky, Louisiana, Massachusetts, Maryland, Maine, Michigan, Minnesota, Mississippi, Montana, North Carolina, North Dakota, Nebraska, New Hampshire, New Jersey, New Mexico, Nevada, New York, Ohio, Oregon, Pennsylvania, Rhode Island, South Dakota, Tennessee, Texas, Utah, Virginia, Vermont, Washington, Wisconsin, West Virginia, 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 45 ending Nov 14, 2015

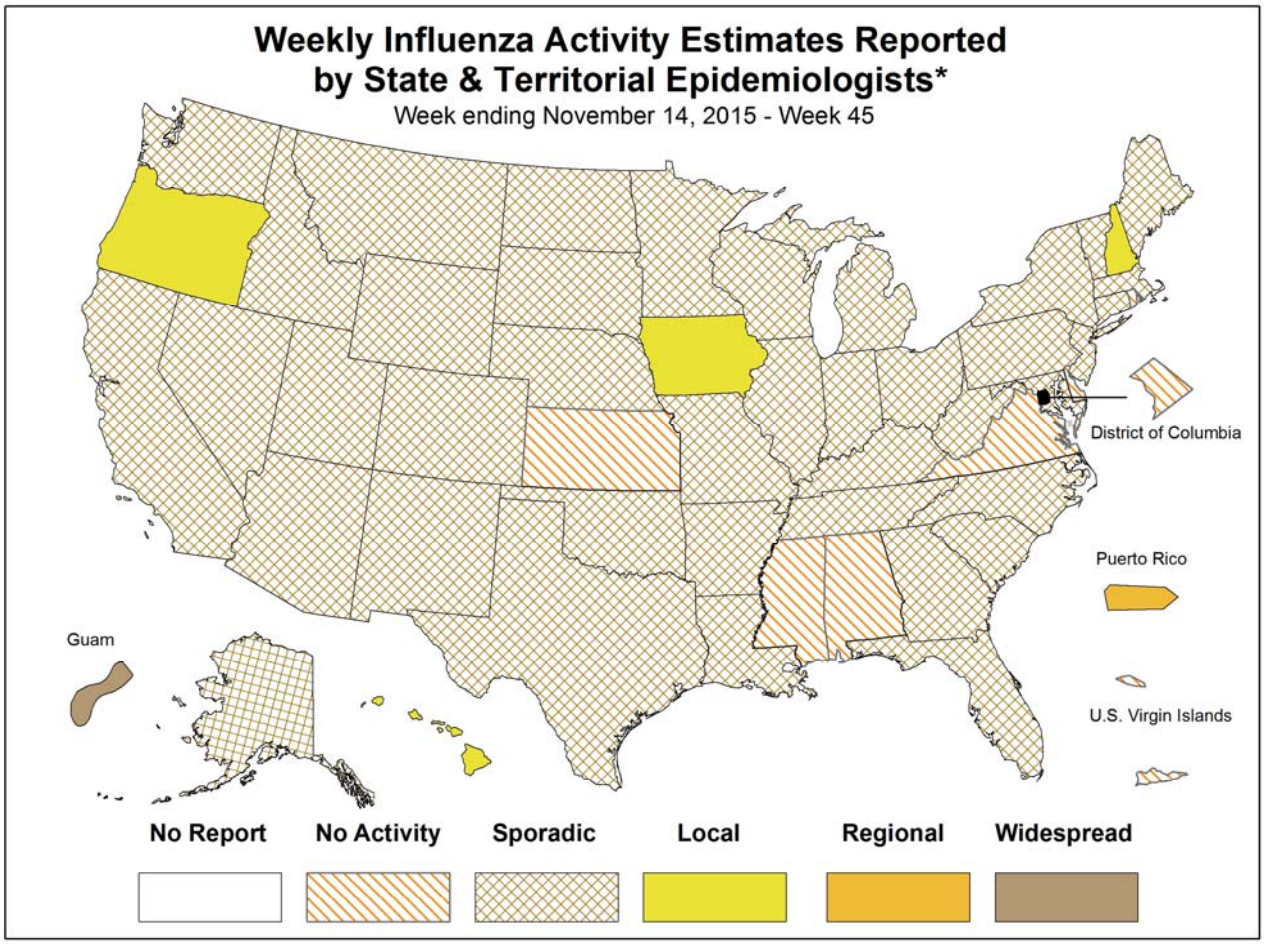


*This map uses the proportion of outpatient visits to health care providers for influenza-like illness to measure the ILI activity level within a state. It does not, however, measure the extent of geographic spread of flu within a state. Therefore, outbreaks occurring in a single city could cause the state to display high activity levels.
Data collected in ILINet may disproportionally 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 45, the following influenza activity was reported:

- Widespread influenza activity was reported by Guam.
- Regional influenza activity was reported by Puerto Rico.
- Local influenza activity was reported by four states (Hawaii, Iowa, New Hampshire, and Oregon).
- Sporadic influenza activity was reported by 40 states (Alaska, Arizona, Arkansas, California, Colorado, Connecticut, Florida, Georgia, Idaho, Illinois, Indiana, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nebraska, Nevada, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Pennsylvania, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Washington, West Virginia, Wisconsin, and Wyoming).
- No influenza activity was reported by the District of Columbia, the U.S. Virgin Islands, and six states (Alabama, Delaware, Kansas, Mississippi, Rhode Island, and Virginia).



* 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: WHO/Europe at http://www.flunewseurope.org/ and the European Centre for Disease Prevention and Control at http://ecdc.europa.eu/en/publications/surveillance_reports/influenza/Pages/weekly_influenza_surveillance_overview.aspx

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.

Any links provided to non-Federal organizations are provided solely as a service to our users. These links do not constitute an endorsement of these organizations or their programs by CDC or the Federal Government, and none should be inferred. CDC is not responsible for the content of the individual organization web pages found at these links.

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: November 20, 2015.