

2015-2016 Influenza Season Week 50 ending December 19, 2015

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

Synopsis: During week 50 (December 13-19, 2015), influenza activity increased slightly in the United States.

- **Viral Surveillance:** The most frequently identified influenza virus type reported by public health laboratories during week 50 was influenza A, with influenza A (H1N1)pdm09 viruses predominating. The percentage of respiratory specimens testing positive for influenza in clinical laboratories was 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 2.2%, which is above the national baseline of 2.1%. Four of 10 regions reported ILI at or above region-specific baseline levels. One state experienced high ILI activity; Puerto Rico and two states experienced moderate ILI activity; New York City and three states experienced low ILI activity; 44 states experienced minimal ILI activity; and the District of Columbia had insufficient data.
- **Geographic Spread of Influenza:** The geographic spread of influenza in Guam, Puerto Rico, and five states was reported as regional; the U.S. Virgin Islands and 14 states reported local activity; the District of Columbia and 27 states reported sporadic activity; and four 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
Nation	Elevated	4 of 53	2.9%	137	365	36	20	41	88	4
Region 1	Normal	0 of 6	0.5%	8	15	0	1	0	1	0
Region 2	Elevated	2 of 4	0.9%	14	38	0	0	0	4	0
Region 3	Elevated	0 of 6	0.5%	10	17	4	1	13	1	0
Region 4	Elevated	1 of 8	5.1%	3	25	7	0	0	24	2
Region 5	Normal	0 of 6	0.7%	43	30	11	1	7	3	0
Region 6	Elevated	1 of 5	1.0%	1	19	0	1	2	8	1
Region 7	Normal	0 of 4	1.0%	1	22	1	1	1	1	0
Region 8	Normal	0 of 6	0.8%	24	26	1	3	1	1	0
Region 9	Normal	0 of 4	1.5%	21	114	11	9	10	40	1
Region 10	Normal	0 of 4	2.5%	12	59	1	3	7	5	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.

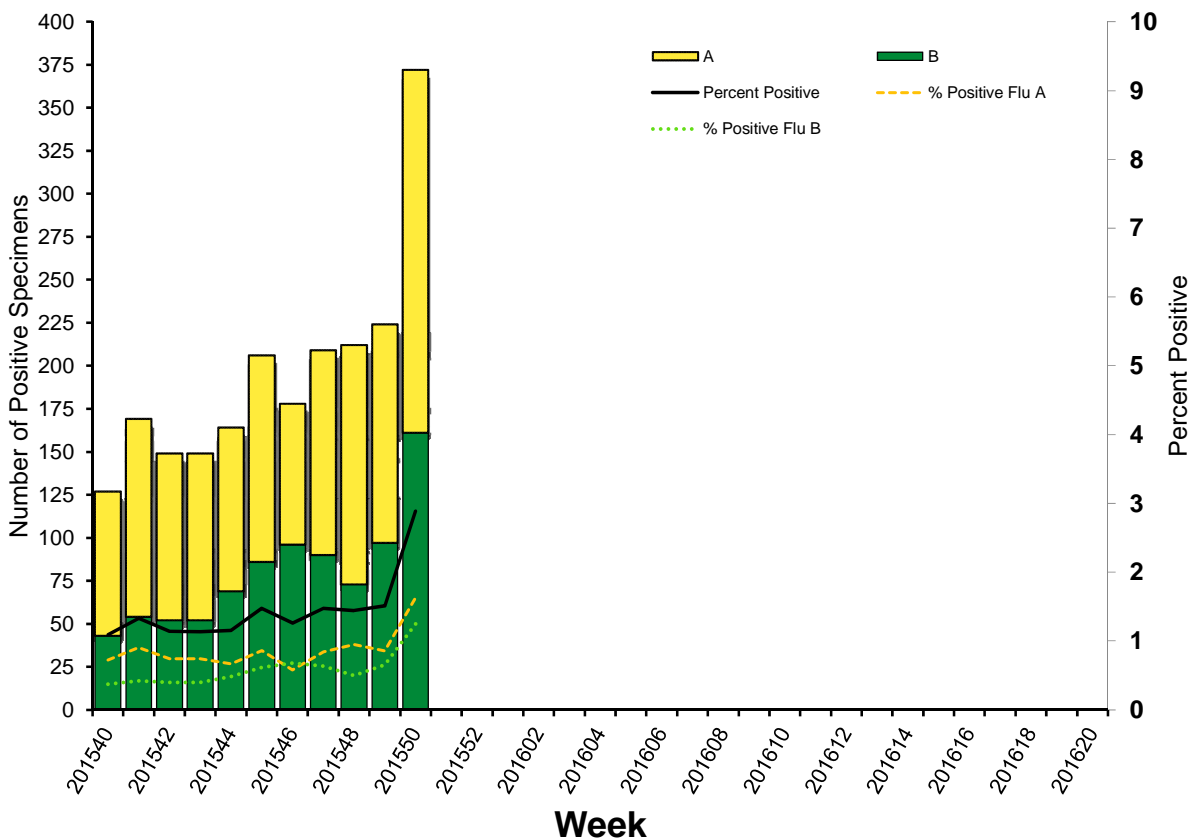
U.S. Virologic Surveillance: WHO and NREVSS collaborating laboratories, which include both public health and clinical laboratories located in all 50 states, Puerto Rico, and the District of Columbia, report to CDC the total number of respiratory specimens tested for influenza and the number positive 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 50	Data Cumulative since October 4, 2015 (week 40)
No. of specimens tested	12,890	149,359
No. of positive specimens (%)	372 (2.9%)	2,159 (1.5%)
Positive specimens by type		
Influenza A	211 (56.7%)	1,286 (59.6%)
Influenza B	161 (43.3%)	873 (40.4%)

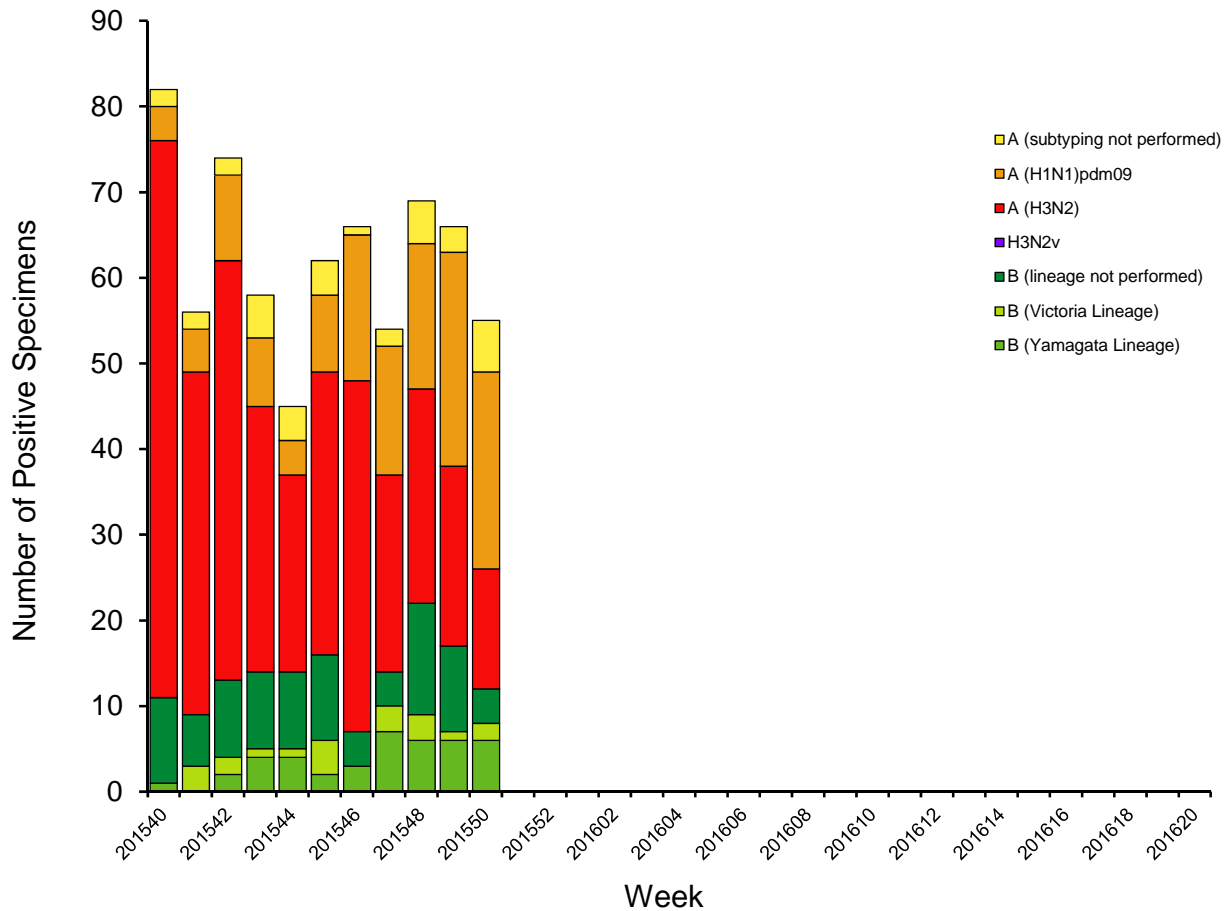
Influenza Positive Tests Reported to CDC by U.S. Clinical Laboratories, National Summary, 2015-2016 Season



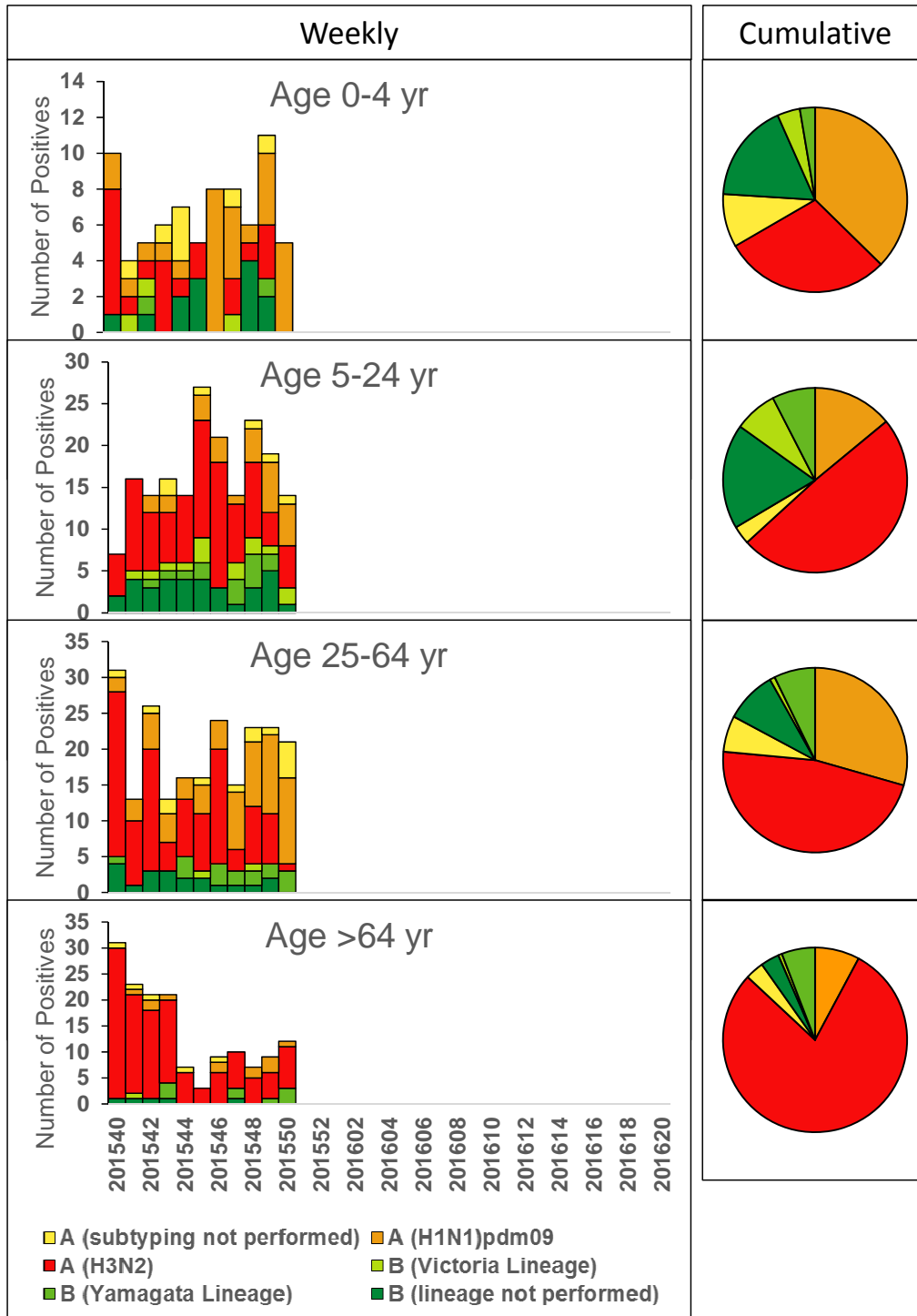
The results of tests performed by public health laboratories, as well as the age group distribution of influenza positive tests, are summarized below.

	Week 50	Data Cumulative since October 4, 2015 (week 40)
No. of specimens tested	707	12,821
No. of positive specimens	55	687
Positive specimens by type/subtype		
Influenza A	43 (78.2%)	538 (78.3%)
A(H1N1)pmd09	23 (53.5%)	137 (25.5%)
H3	14 (32.6%)	365 (67.8%)
Subtyping not performed	6 (14.0%)	36 (6.7%)
Influenza B	12 (21.8%)	149 (21.7%)
Yamagata lineage	6 (50.0%)	41 (27.5%)
Victoria lineage	2 (16.7%)	20 (13.4%)
Lineage not performed	4 (33.3%)	88 (59.1%)

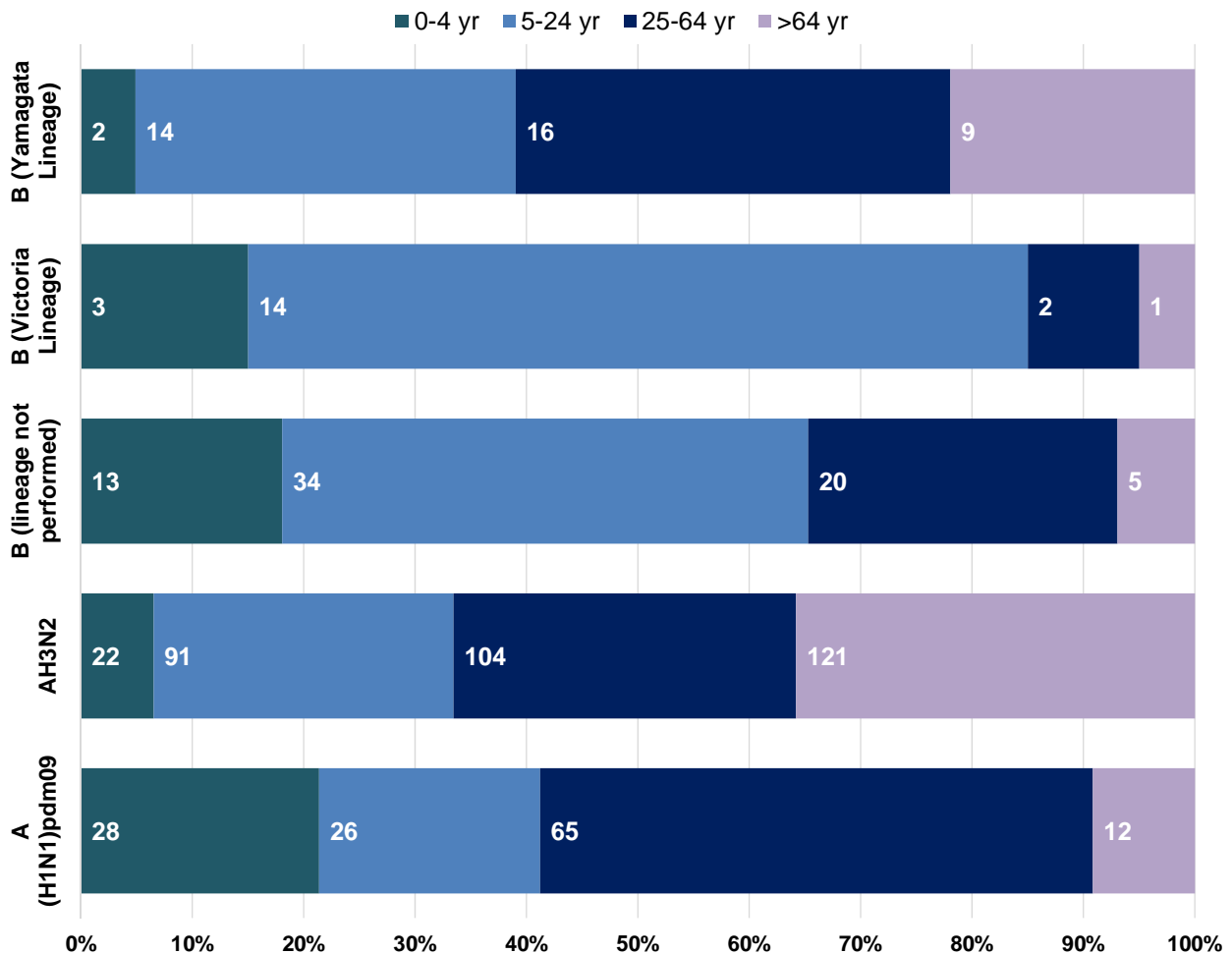
Influenza Positive Tests Reported to CDC by U.S. Public Health Laboratories, National Summary, 2015-2016 Season



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, 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 155 influenza viruses [34 A (H1N1)pdm09, 105 A (H3N2), and 16 influenza B viruses] collected by U.S. laboratories **since October 1, 2015**.

Influenza A Virus [139]

- **A (H1N1)pdm09 [34]:** All 34 (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) [105]:** All 105 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.
 - A subset of 66 H3N2 viruses also were antigenically characterized; 65 of 66 (98.5%) H3N2 viruses were A/Switzerland/9715293/2013-like by HI testing or neutralization testing.

Influenza B Virus [16]

- **Yamagata Lineage [9]:** All nine (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 [7]:** All seven (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	27	1 (3.7)	27	0 (0.0)	27	1 (3.7)
Influenza A (H3N2)	126	0 (0.0)	126	0 (0.0)	126	0 (0.0)
Influenza B	29	0 (0.0)	29	0 (0.0)	29	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>.

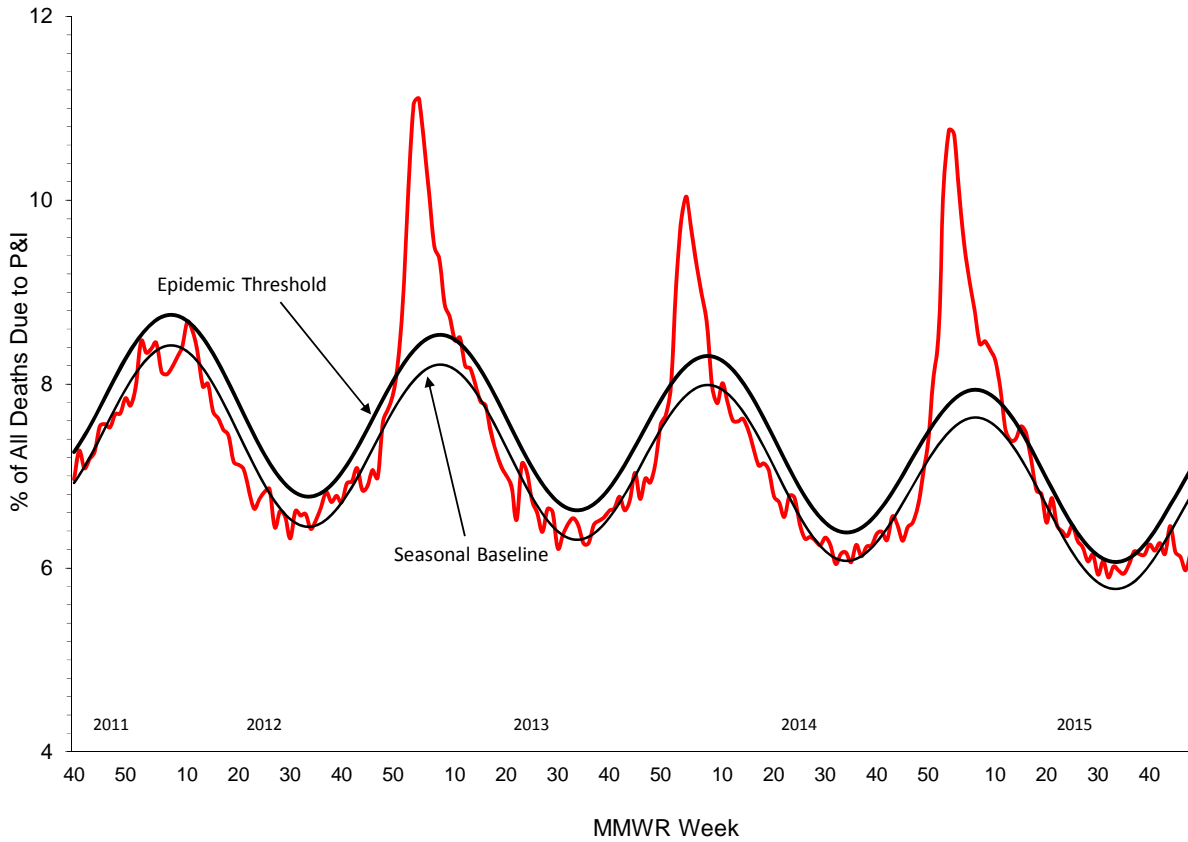
Pneumonia and Influenza (P&I) Mortality Surveillance: Rapid tracking of pneumonia and influenza-associated deaths is done through two systems, the National Center for Health Statistics (NCHS) Mortality Surveillance System and the 122 Cities Mortality Reporting System. NCHS mortality surveillance data 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 December 24, 2015, 6.2% of the deaths occurring during the week ending December 5, 2015 (week 48) were due to P&I. This percentage is below the epidemic threshold of 7.1% for week 48.

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

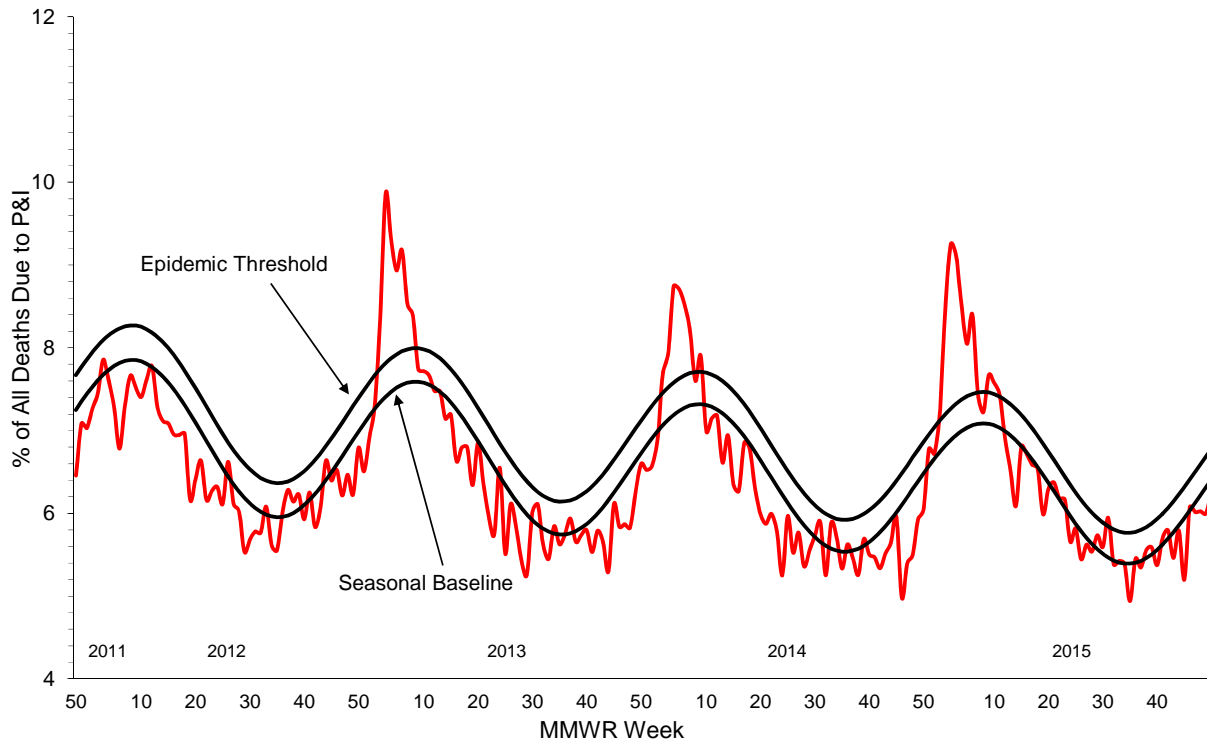
Pneumonia and Influenza Mortality from the National Center for Health Statistics Mortality Surveillance System Data through the week ending December 5, 2015, as of December 24, 2015



122 Cities Mortality Reporting System

During week 50, 6.3% of all deaths reported through the 122 Cities Mortality Reporting System were due to P&I. This percentage was below the epidemic threshold of 6.8% for week 50.

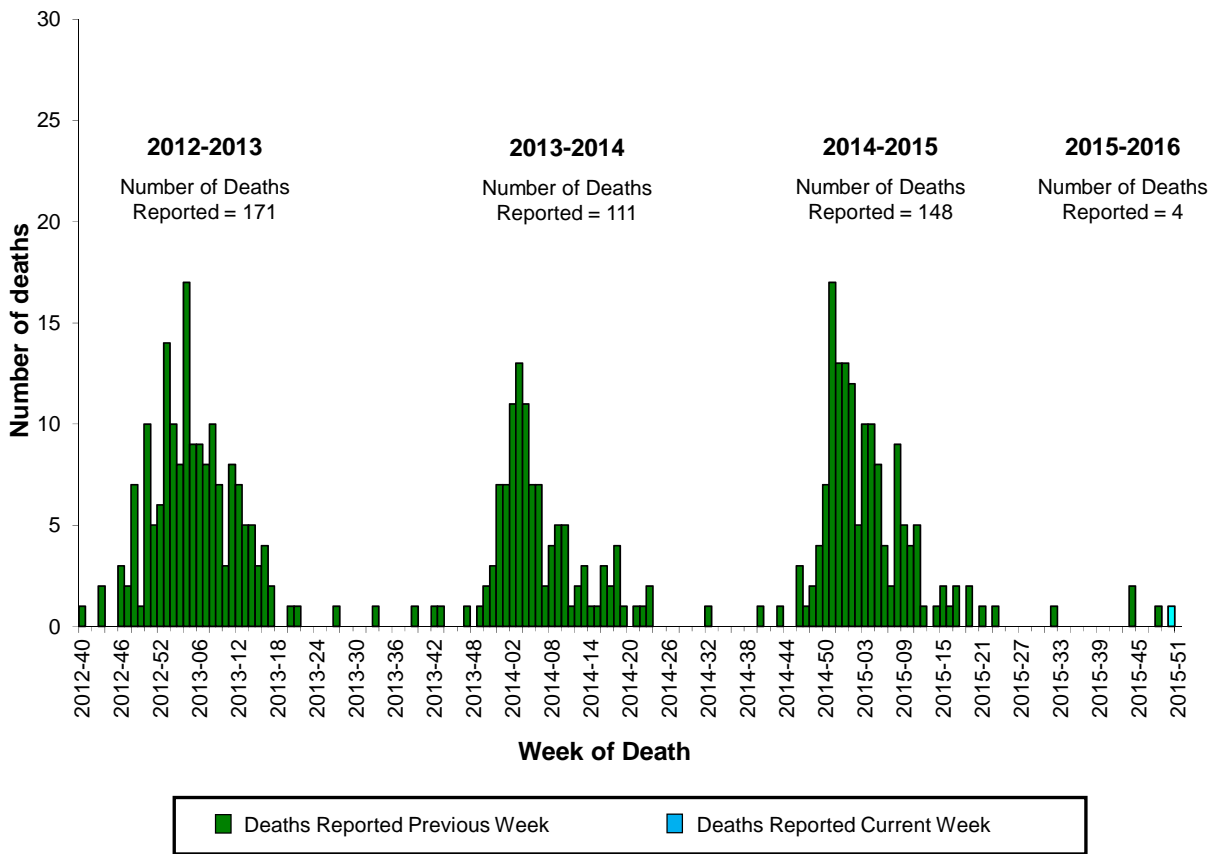
Pneumonia and Influenza Mortality for 122 U.S. Cities Week ending December 19, 2015



Influenza-Associated Pediatric Mortality: One influenza-associated pediatric death was reported to CDC during week 50. This death was associated with an influenza A virus for which no subtyping was performed and occurred during week 50 (the week ending December 19, 2015). A total of four 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

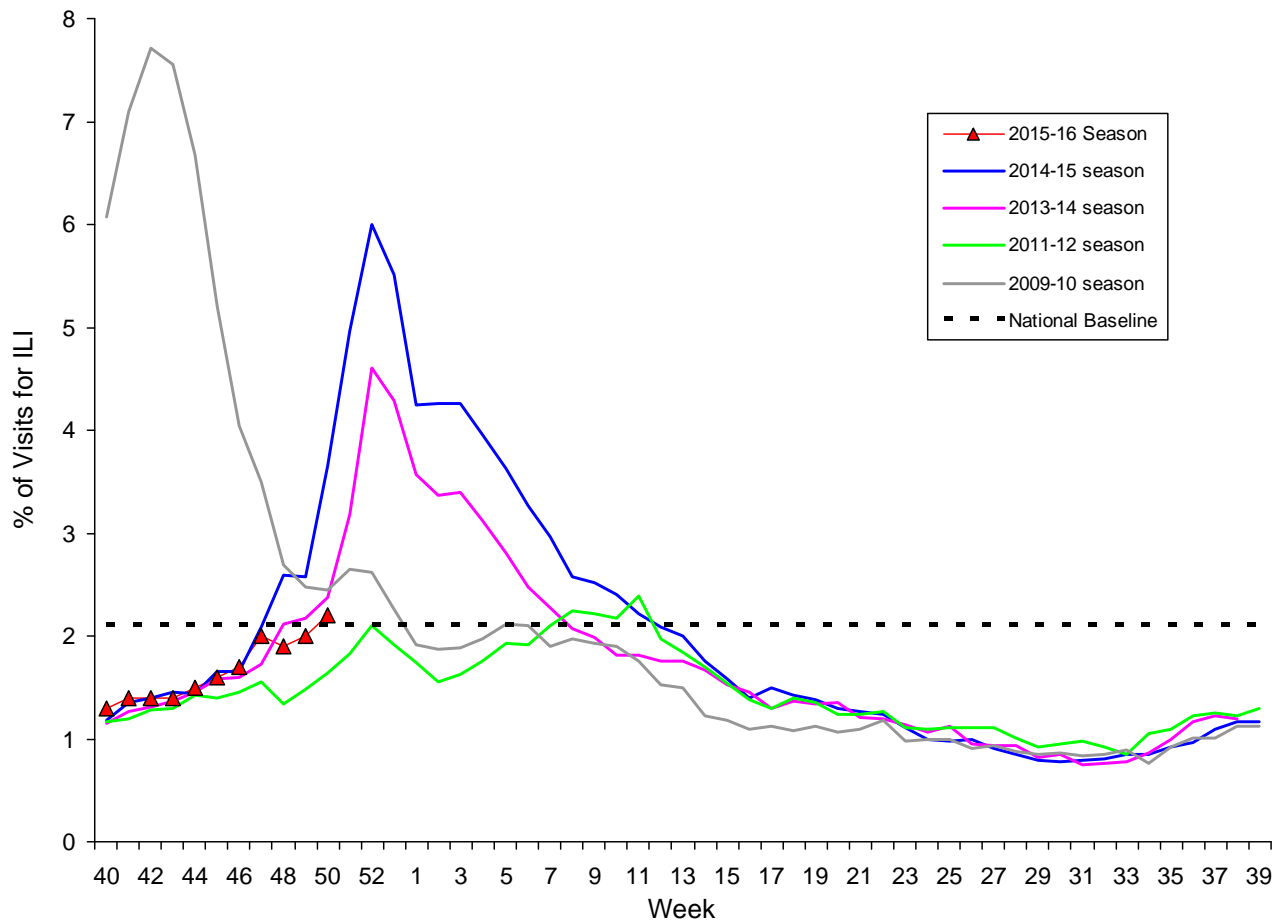


Influenza-Associated Hospitalizations: The Influenza Hospitalization Surveillance Network (FluSurv-NET) conducts all age population-based surveillance for laboratory-confirmed influenza-related hospitalizations in select counties in the Emerging Infections Program (EIP) states and Influenza Hospitalization 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>.

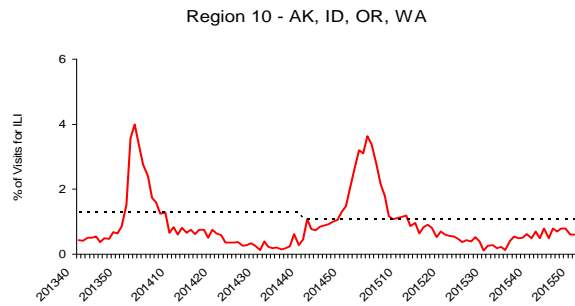
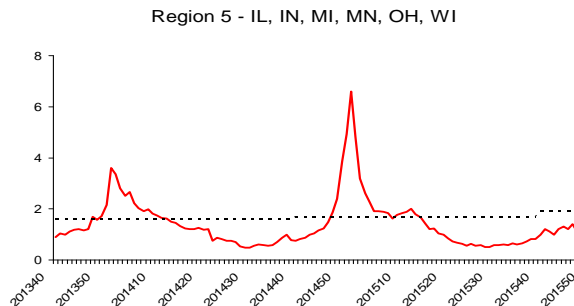
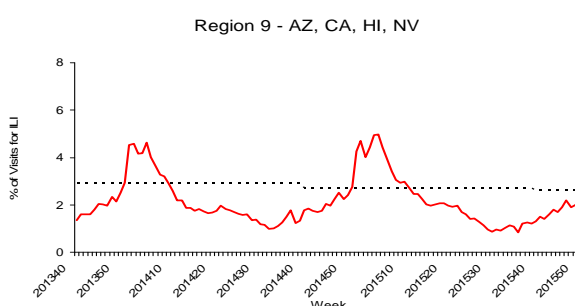
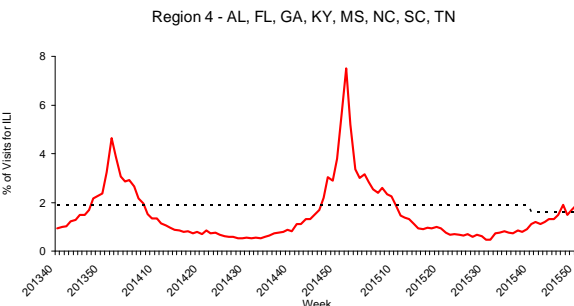
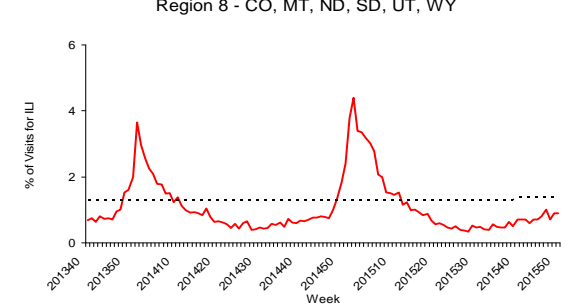
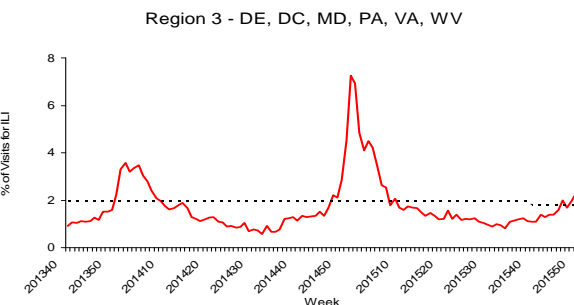
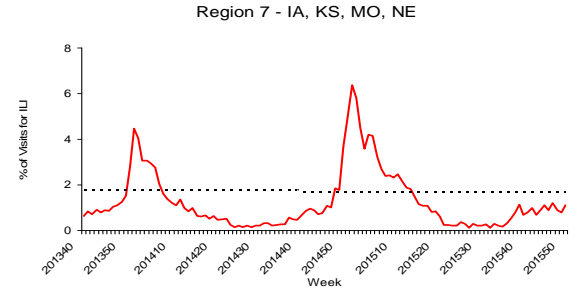
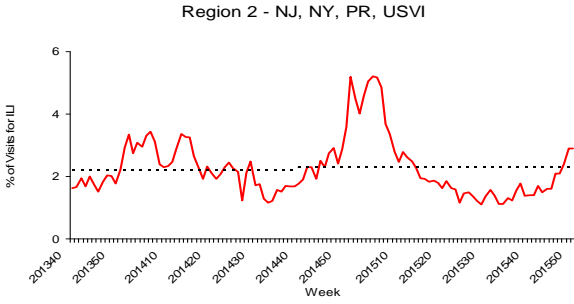
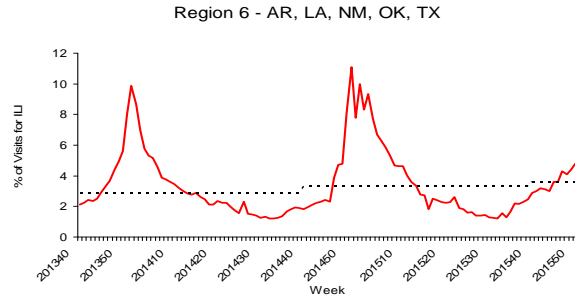
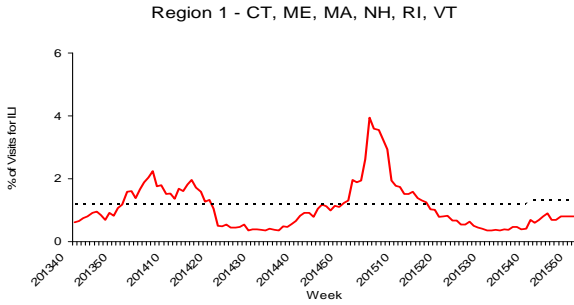
Outpatient Illness Surveillance: Nationwide during week 50, 2.2% of patient visits reported through the U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet) were due to influenza-like illness (ILI). This percentage is above the national baseline of 2.1%. (ILI is defined as fever (temperature 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 0.6% to 4.8% during week 50. Four regions (Regions 2, 3, 4, and 6) 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*

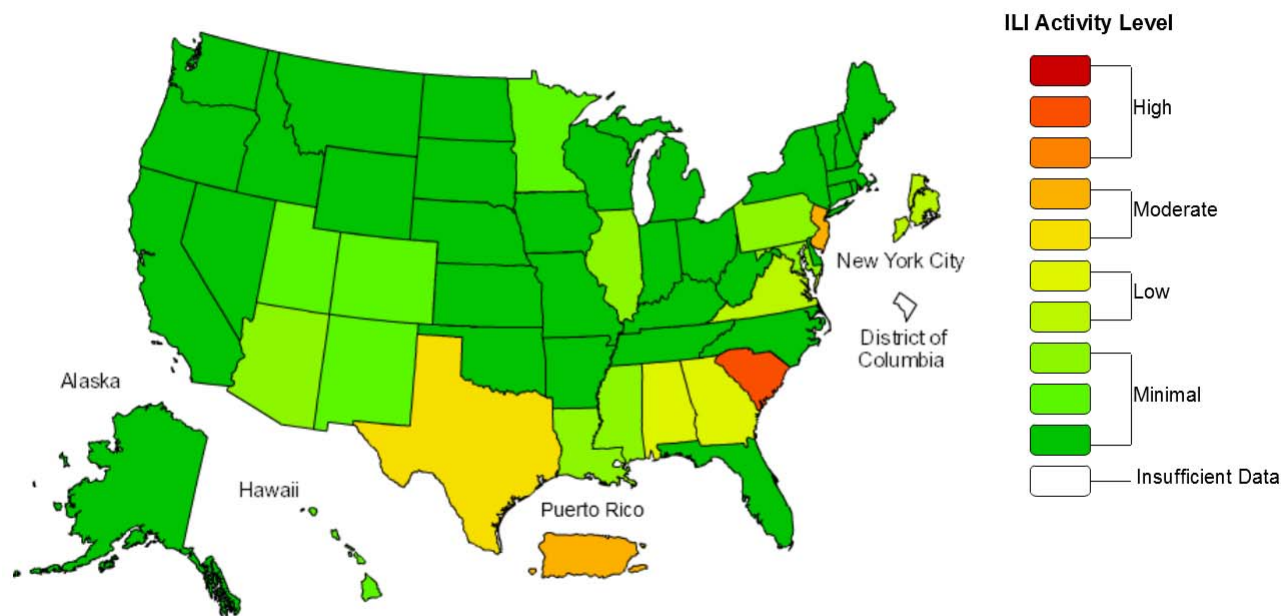


ILINet State Activity Indicator Map: Data collected in ILINet are used to produce a measure of ILI activity* by state. Activity levels are based on the percent of outpatient visits in a state due to ILI and are compared to the average percent of ILI visits that occur during weeks with little or no influenza 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 50, the following ILI activity levels were experienced:

- One state (South Carolina) experienced high ILI activity.
- Puerto Rico and two states (New Jersey and Texas) experienced moderate ILI activity.
- New York City and three states (Alabama, Georgia, and Virginia) experienced low ILI activity.
- 44 states (Alaska, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Hawaii, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, 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, 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 50 ending Dec 19, 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.

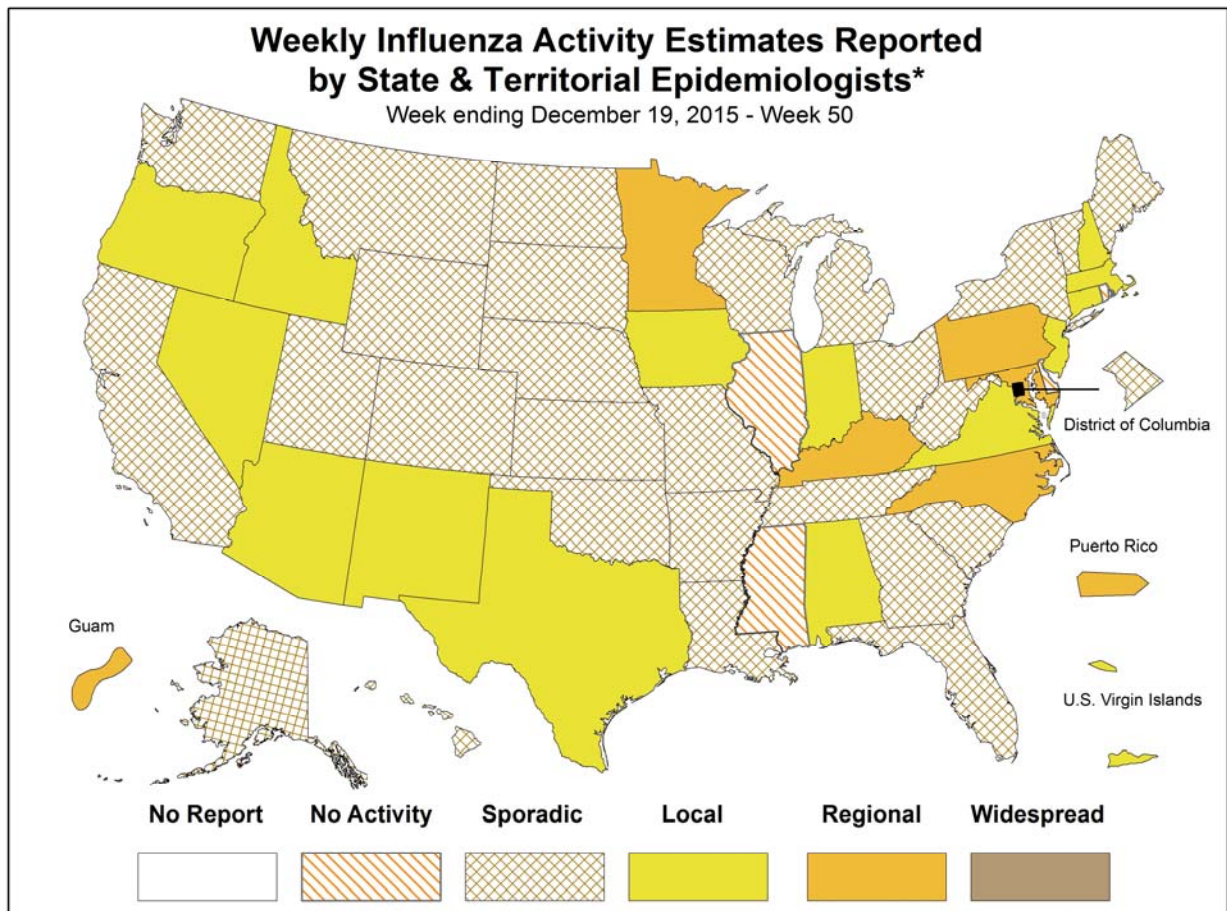
Data collected in ILINet may disproportionately represent certain populations within a state, and therefore, may not accurately depict the full picture of influenza activity for the whole state.

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 50, the following influenza activity was reported:

- Regional influenza activity was reported by Guam, Puerto Rico and five states (Kentucky, Maryland, Minnesota, North Carolina, and Pennsylvania).
- Local influenza activity was reported by the U.S. Virgin Islands and 14 states (Alabama, Arizona, Connecticut, Idaho, Indiana, Iowa, Massachusetts, Nevada, New Hampshire, New Jersey, New Mexico, Oregon, Texas, and Virginia).
- Sporadic influenza activity was reported by the District of Columbia and 27 states (Alaska, Arkansas, California, Colorado, Florida, Georgia, Hawaii, Kansas, Louisiana, Maine, Michigan, Missouri, Montana, Nebraska, New York, North Dakota, Ohio, Oklahoma, South Carolina, South Dakota, Tennessee, Utah, Vermont, Washington, West Virginia, Wisconsin, and Wyoming).
- No influenza activity was reported by four states (Delaware, Illinois, Mississippi, and Rhode Island).



* 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: December 28, 2015.