FLUVIEW
A Weekly Influenza Surveillance Report Prepared by the Influenza Division
CDC

# 2016-2017 Influenza Season Week 50 ending December 17, 2016

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

## Synopsis:

During week 50 (December 11-17, 2016), influenza activity increased slightly in the United States.

- **Viral Surveillance:**The most frequently identified influenza virus subtype reported by public health laboratories during week 50 was influenza A (H3). The percentage of respiratory specimens testing positive for influenza in clinical laboratories increased.
- **Pneumonia and Influenza Mortality:** The proportion of deaths attributed to pneumonia and influenza (P&I) was below the system-specific epidemic threshold in the National Center for Health Statistics (NCHS) Mortality Surveillance System.
- **Influenza-associated Pediatric Deaths:** Two influenza-associated pediatric deaths were reported that occurred during the 2015-2016 season.
- **Influenza-associated Hospitalizations:** A cumulative rate for the season of 2.4 laboratory-confirmed influenza-associated hospitalizations per 100,000 population was reported.
- **Outpatient Illness Surveillance:** The proportion of outpatient visits for influenza-like illness (ILI) was 2.3%, which is above the national baseline of 2.2%. Five regions reported ILI at or above their region-specific baseline levels. One state and Puerto Rico experienced high ILI activity, two states and New York City experienced moderate ILI activity, ten states experienced low ILI activity, 37 states experienced minimal ILI activity, and the District of Columbia had insufficient data.
- **Geographic Spread of Influenza:**The geographic spread of influenza in Puerto Rico was reported as widespread; Guam, the U.S. Virgin Islands and 13 states reported as regional; the District of Columbia and 26 states reported local activity; and 11 states reported sporadic activity.

### National and Regional Summary of Select Surveillance Components

| | **Data for current week** | | | **Data cumulative since October 2, 2016 (week 40)** | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **HHS Surveillance Regions*** | **Out-patient ILI†** | **Number of jurisdictions reporting regional or widespread 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** | Elevated | 16 of 54 | 7.1% | 95 | 1,729 | 106 | 58 | 39 | 76 | 0 |
| **Region 1** | Normal | 3 of 6 | 2.6% | 0 | 75 | 0 | 0 | 1 | 0 | 0 |
| **Region 2** | Elevated | 3 of 4 | 4.3% | 0 | 125 | 3 | 16 | 4 | 11 | 0 |
| **Region 3** | Normal | 2 of 6 | 2.0% | 11 | 211 | 9 | 3 | 7 | 8 | 0 |
| **Region 4** | Elevated | 3 of 8 | 8.5% | 7 | 148 | 10 | 6 | 5 | 41 | 0 |
| **Region 5** | Normal | 0 of 6 | 2.1% | 6 | 163 | 62 | 20 | 6 | 4 | 0 |
| **Region 6** | Normal | 1 of 5 | 3.1% | 12 | 44 | 0 | 5 | 5 | 3 | 0 |
| **Region 7** | Normal | 0 of 4 | 2.3% | 2 | 46 | 5 | 4 | 2 | 0 | 0 |
| **Region 8** | Elevated | 0 of 6 | 4.5% | 30 | 219 | 4 | 0 | 1 | 1 | 0 |
| **Region 9** | Elevated | 1 of 5 | 4.4% | 25 | 447 | 10 | 2 | 8 | 4 | 0 |
| **Region 10** | Elevated | 3 of 4 | 11.6% | 2 | 251 | 3 | 2 | 0 | 4 | 0 |

*HHS regions (Region 1 CT, ME, MA, NH, RI, VT; Region 2: NJ, NY, Puerto Rico, US Virgin Islands; Region 3: DE, DC, MD, PA, VA, WV; Region 4: AL, FL, GA, KY, MS, NC, SC, TN; Region 5: IL, IN, MI, MN, OH, WI; Region 6: AR, LA, NM, OK, TX; Region 7: IA, KS, MO, NE; Region 8: CO, MT, ND, SD, UT, WY; Region 9: AZ, CA, Guam, HI, NV; and Region 10: AK, ID, OR, WA).

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

Â§ Includes all 50 states, the District of Columbia, Guam, Puerto Rico, and U.S. Virgin Islands

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

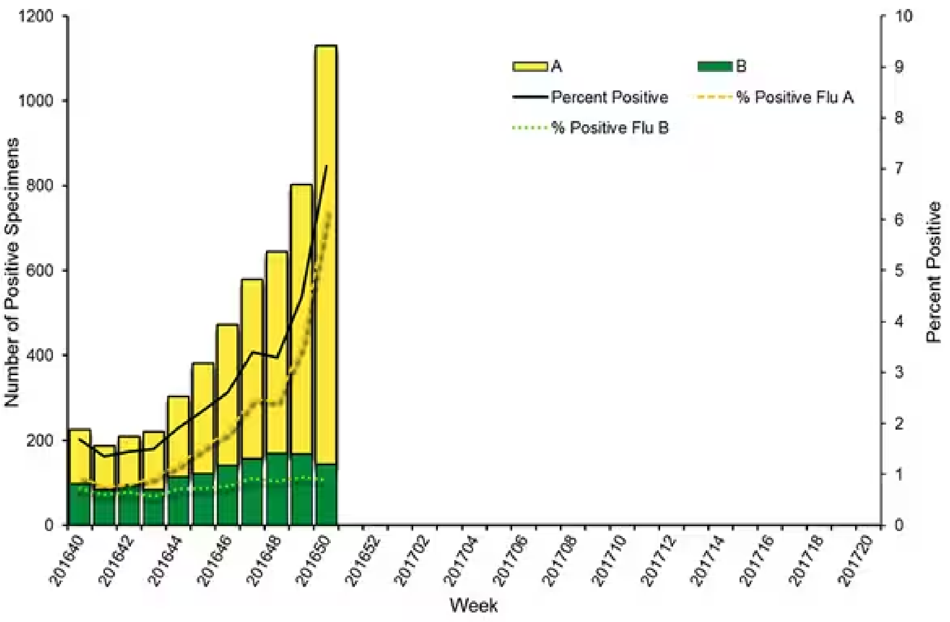
## U.S. Virologic Surveillance:

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 for 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 and http://gis.cdc.gov/grasp/fluview/flu_by_age_virus.html.

The results of tests performed by clinical laboratories during the current week are summarized below.

| | **Week 50** | **Data Cumulative since October 2, 2016 (Week 40)** |
|---|---|---|
| **No. of specimens tested** | 16,010 | 177,867 |
| **No. of positive specimens (%)** | 1,130 (7.1%) | 5,157 (2.9%) |
| ***Positive specimens by type*** | | |
| **Influenza A** | 986 (87.3%) | 3,786 (73.4%) |
| **Influenza B** | 144 (12.7%) | 1,371 (26.6%) |



Influenza Positive Tests Reported to CDC by U.S. Clinical Laboratories, National Summary, 2016-2017 Season

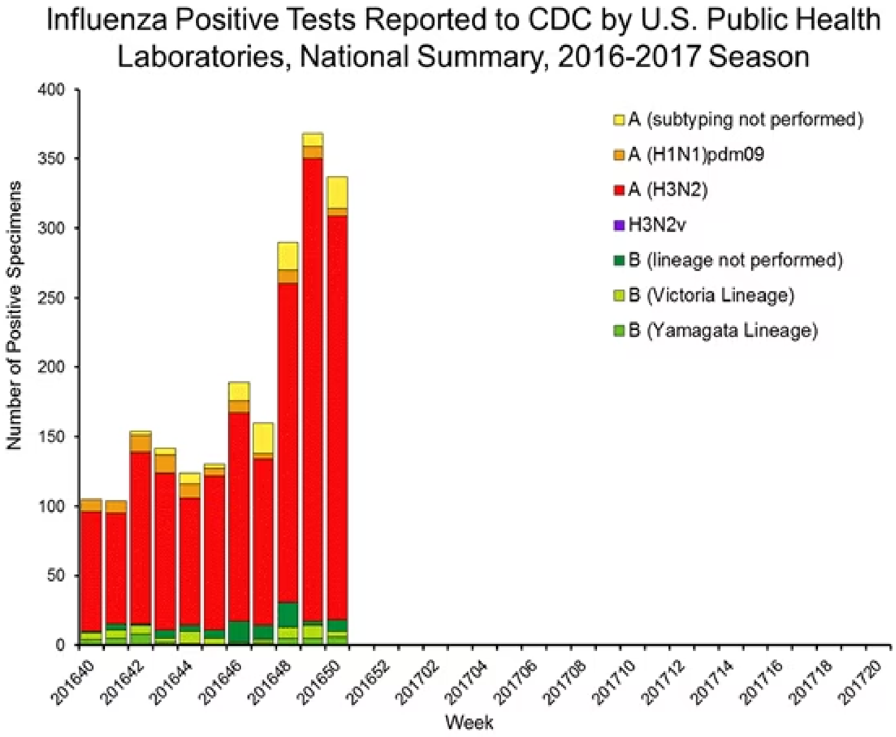
View National and Regional Level Graphs and Data | View Chart Data | View Full Screen | View PowerPoint Presentation

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

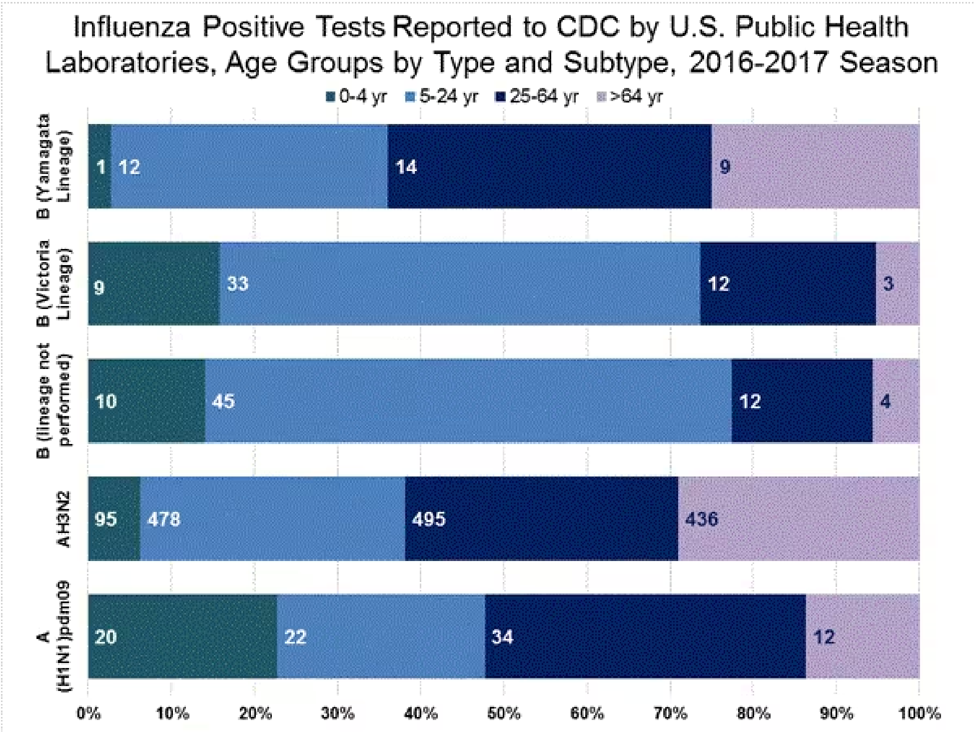
| | **Week 50** | **Data Cumulative since October 2, 2016 (Week 40)** |
|---|---|---|
| **No. of specimens tested** | 1,094 | 12,496 |
| **No. of positive specimens*** | 337 | 2,103 |
| ***Positive specimens by type/subtype*** | | |
| **Influenza A** | 319 (94.7%) | 1,930 (91.8%) |
| **A(H1N1)pmd09** | 5 (1.6%) | 95 (4.9%) |
| **H3** | 291 (91.2%) | 1,729 (89.6%) |
| **Subtyping not performed** | 23 (7.2%) | 106 (5.5%) |

| | **Week 50** | **Data Cumulative since October 2, 2016 (Week 40)** |
|---|---|---|
| **Influenza B** | 18 (5.3%) | 173 (8.2%) |
| **Yamagata lineage** | 6 (33.3%) | 39 (22.5%) |
| **Victoria lineage** | 4 (22.2%) | 58 (33.5%) |
| **Lineage not performed** | 8 (44.4%) | 76 (43.9%) |

*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.



View National and Regional Level Graphs and Data | View Chart Data | View Full Screen | View PowerPoint Presentation



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## Influenza Virus Characterization:

CDC characterizes influenza viruses through one or more tests including genomic 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 a time as vaccine effectiveness estimates are available.

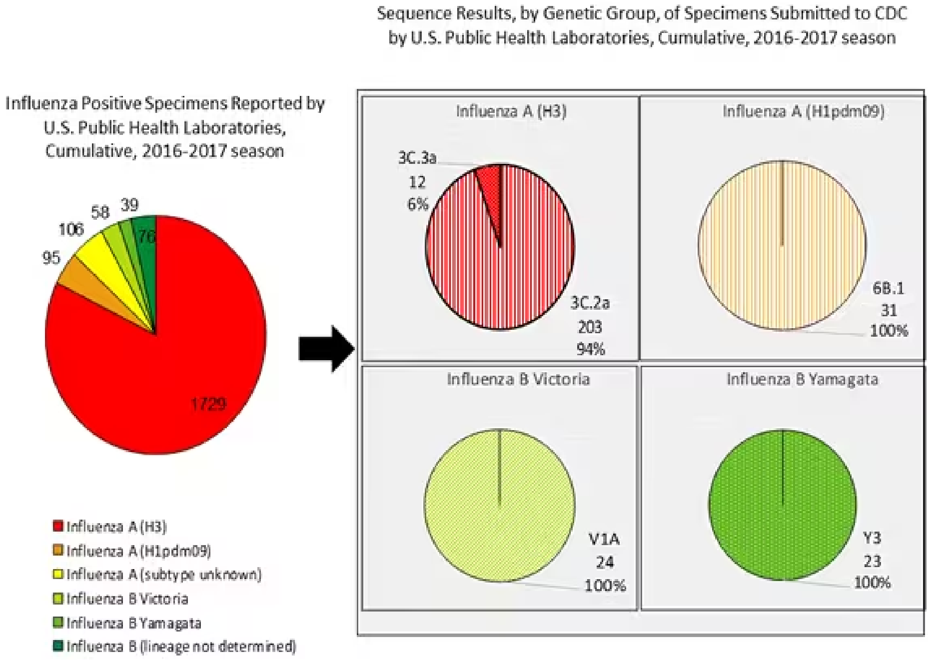
For nearly all virus positive surveillance samples received at CDC, next-generation sequencing is performed to ascertain genomic data of circulating influenza viruses. Viruses can be classified into genetic groups/clades based on analysis of their HA gene segments using phylogenetics and key amino acid changes (Klimov Vaccine 2012).

A proportion of influenza A (H3N2) viruses donâ€™t yield sufficient hemagglutination titers for antigenic characterization using the hemagglutination inhibition test. Therefore, CDC selects a subset of influenza A (H3N2) viruses to test using a focus reduction assay for supplementary antigenic characterization.

## Genetic Characterization

During the 2016-2017 season, 2,103 influenza positive specimens have been collected and reported by public health laboratories in the United States (figure, left). CDC genetically characterized 293 influenza viruses [31 influenza A (H1N1)pdm09, 215 influenza A (H3N2), and 47 influenza B viruses] collected by U.S. laboratories. The HA gene segment of all influenza A (H1N1)pdm09 viruses analyzed belonged to genetic group 6B.1. Influenza A (H3N2) virus HA gene segments analyzed belonged to genetic groups 3C.2a or 3C.3a. Genetic group 3C.2a includes a newly emerging subgroup known as 3C.2a1. The HA of influenza B/Victoria-lineage viruses all belonged to genetic group V1A. The HA of influenza B/Yamagata-lineage viruses analyzed all belonged to genetic group Y3.

The majority of U.S. viruses submitted for characterization come from state and local public health laboratories. Due to Right Size Roadmap considerations, specimen submission guidance issued to the laboratories request that, if available, 2 influenza A (H1N1), 2 A influenza (H3N2), and 2 influenza B viruses be submitted every other week. Because of this, the number of each virus type/subtype characterized should be approximately equal. In the figure below, the results of tests performed by public health labs are presented on the left and sequence results by genetic group of specimens submitted to CDC are presented on the right.



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## Antigenic Characterization

CDC has antigenically characterized 89 influenza viruses [26 influenza A (H1N1)pdm09, 42 influenza A (H3N2), and 21 influenza B viruses] collected by U.S. laboratories since October 1, 2016.

**Influenza A Virus [68]**

- **A (H1N1)pdm09 [26]:** All 26 (100%) influenza A (H1N1)pdm09 viruses were antigenically characterized using ferret post-infection antisera as A/California/7/2009-like, the influenza A (H1N1) component of the 2016-2017 Northern Hemisphere vaccine.
- **A (H3N2) [42]:** 39 of 42 (92.9%) influenza A (H3N2) viruses were antigenically characterized as A/Hong Kong/4801/2014-like, a virus that belongs in genetic group 3C.2a and is the influenza A (H3N2) component of the 2016-2017 Northern Hemisphere vaccine, by HI testing or neutralization testing. Among the viruses which reacted poorly with ferret antisera raised against A/Hong Kong/4801/2014-like viruses, all 3 (100%) are more closely related to A/Switzerland/9715293/2013, a virus belonging to genetic group 3C.3a.

**Influenza B Virus [21]**

- **Victoria Lineage [7]:** 6 of 7 (85.7%) B/Victoria-lineage viruses were antigenically characterized using ferret post-infection antisera as B/Brisbane/60/2008-like, which is included as an influenza B component of the 2016-2017 Northern Hemisphere trivalent and quadrivalent influenza vaccines.
- **Yamagata Lineage [14]:** All 14 (100%) B/Yamagata-lineage viruses were antigenically characterized using ferret post-infection antisera as B/Phuket/3073/2013-like, which is included as an influenza B component of the 2016-2017 Northern Hemisphere quadrivalent influenza vaccines.

## Antiviral Resistance:

Testing of influenza A (H1N1)pdm09, influenza 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 influenza A (H1N1)pdm09 and influenza 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 influenza A (H1N1)pdm09 and influenza 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, 2016

| | 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** | 35 | 0 (0.0) | 35 | 0 (0.0) | 35 | 0 (0.0) |
| **Influenza A (H3N2)** | 154 | 0 (0.0) | 154 | 0 (0.0) | 123 | 0 (0.0) |
| **Influenza B** | 47 | 0 (0.0) | 47 | 0 (0.0) | 47 | 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 viruses 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.

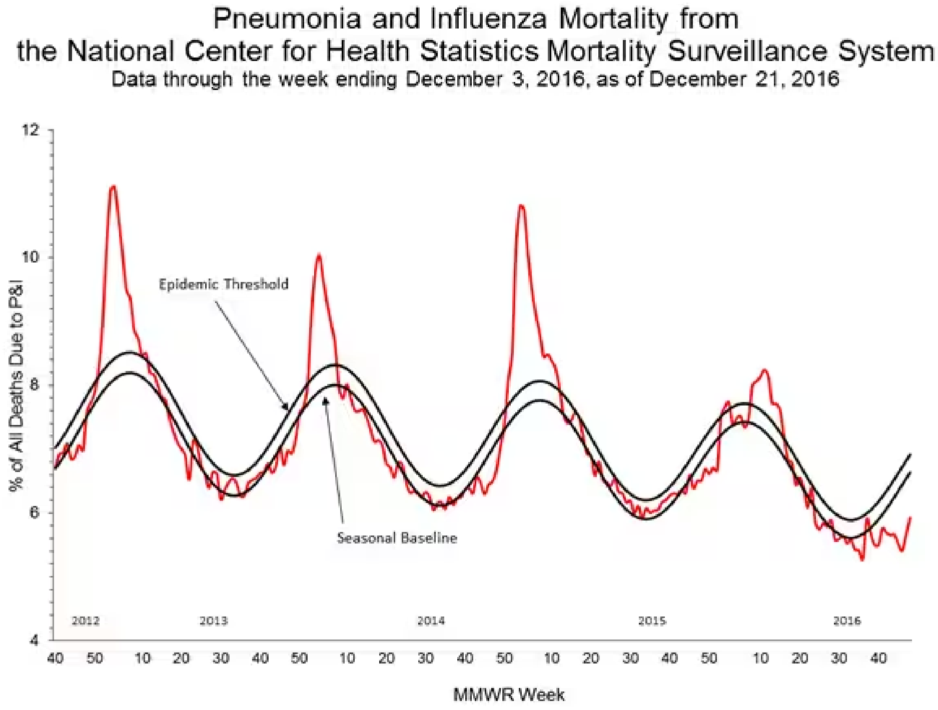
## Pneumonia and Influenza (P&I) Mortality Surveillance:

Based on National Center for Health Statistics (NCHS) mortality surveillance data available on December 21, 2016, 5.9% of the deaths occurring during the week ending December 3, 2016 (week 48) were due to P&I. This percentage is below the epidemic threshold of 6.9% for week 48.

Background: Weekly mortality surveillance data includes a combination of machine coded and manually coded causes of death collected from death certificates. There is a backlog of data requiring manual coding within NCHS mortality surveillance data. The percentages of deaths due to P&I are higher among manually coded records than more rapidly available machine coded records and may result in initially reported P&I percentages that are lower than percentages calculated from final data. Efforts continue to reduce and monitor the number of records awaiting manual coding.

Beginning in the week ending October 8, 2016 (week 40), CDC retired the 122 Cities Mortality Reporting System and uses only the NCHS Mortality Surveillance System.

Region and state-specific data are available at http://gis.cdc.gov/grasp/fluview/mortality.html.



Pneumonia and Influenza Mortality from the National Center for Health Statistics Mortality Surveillance System

Data through the week ending December 3, 2016, as of December 21, 2016

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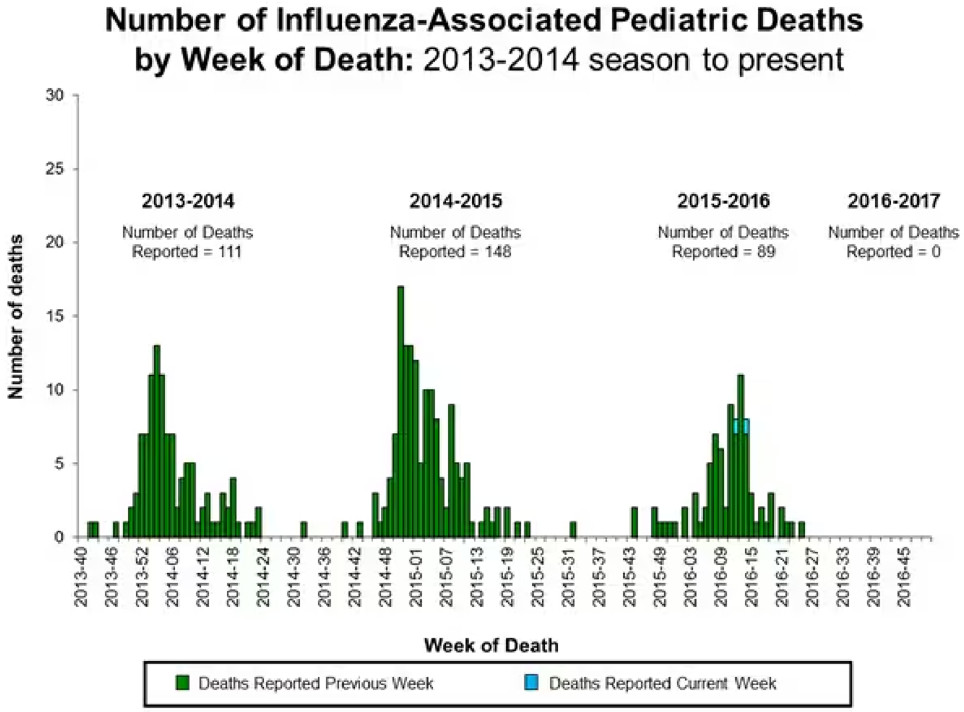
## Influenza-Associated Pediatric Mortality:

Two influenza-associated pediatric deaths that occurred during the 2015-2016 season were reported to CDC during week 50. One death was associated with an influenza A (H3) virus and one was associated with an influenza B virus. These deaths bring the total number of reported influenza-associated pediatric deaths occurring during that season to 89.

No influenza-associated pediatric deaths for the 2016-2017 season have been reported to CDC.

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



Number of Influenza-Associated Pediatric Deaths by Week of Death: 2013-2014 season to present

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# 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).

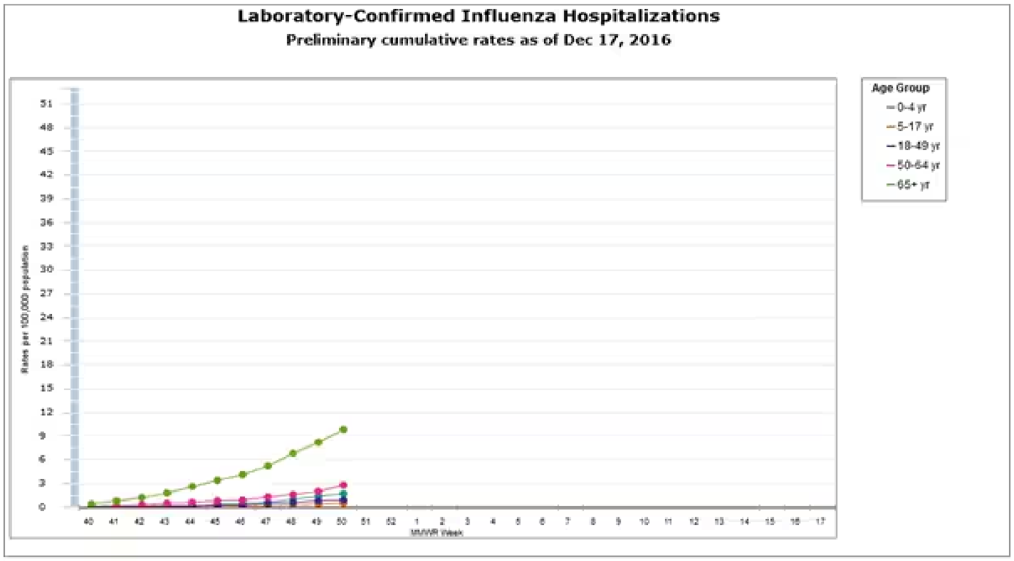
The FluSurv-NET covers more than 70 counties in the 10 Emerging Infections Program (EIP) states (CA, CO, CT, GA, MD, MN, NM, NY, OR, and TN) and additional Influenza Hospitalization Surveillance Project (IHSP) states. The IHSP began during the 2009-2010 season to enhance surveillance during the 2009 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, 2015-16, and 2016-17 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, 2016 and December 17, 2016, 676 laboratory-confirmed influenza-associated hospitalizations were reported. The overall hospitalization rate was 2.4 per 100,000 population. The highest rate of hospitalization was among adults aged â‰¥65 years (9.8 per 100,000 population), followed by adults aged 50-64 (2.8 per 100,000 population) and children aged 0-4 years (1.7 per 100,000 population). Among 676 hospitalizations, 566 (83.7%) were associated with influenza A virus, 92 (13.6%) with influenza B virus, 6 (0.9%) with influenza A virus and influenza B virus co-infection, and 12 (1.8%) with influenza virus for which the type was not determined. Among those with influenza A subtype information, 179 (98.9%) were A(H3N2) and 2 (1.1%) were A(H1N1)pdm09 virus.

Clinical findings are preliminary and based on 175 (25.9%) cases with complete medical chart abstraction. Among 164 hospitalized adults with complete medical chart abstraction, 154 (93.9%) had at least one reported underlying medical condition; the most commonly reported were obesity, cardiovascular disease, metabolic disorders and chronic lung disease. Among 11 hospitalized children with complete medical chart abstraction, 6 (54.6%) had at least one underlying medical condition; the most commonly reported were asthma and neurologic disorder. Among the 13 hospitalized women of childbearing age (15-44 years), 0 (0%) 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.



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. Cumulative incidence rates are calculated using the National Center for Health Statisticsâ€™ (NCHS) population estimates for the counties included in the surveillance catchment area.

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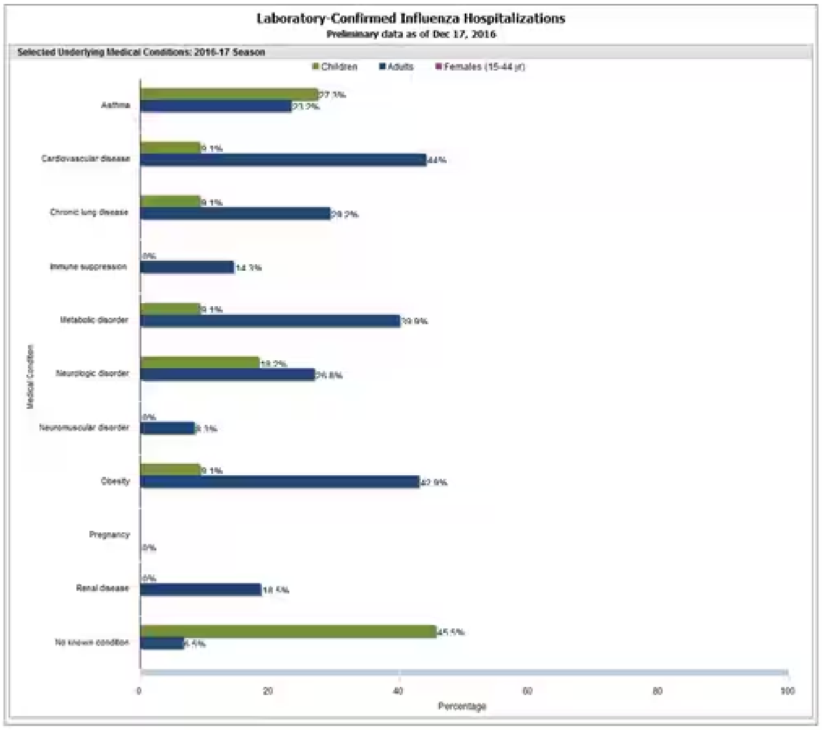

FluSurv-NET data are preliminary and displayed as they become available. Therefore, figures are based on varying denominators as some variables represent information that may require more time to be collected. Data are refreshed and updated weekly. Asthma includes a medical diagnosis of asthma or reactive 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.

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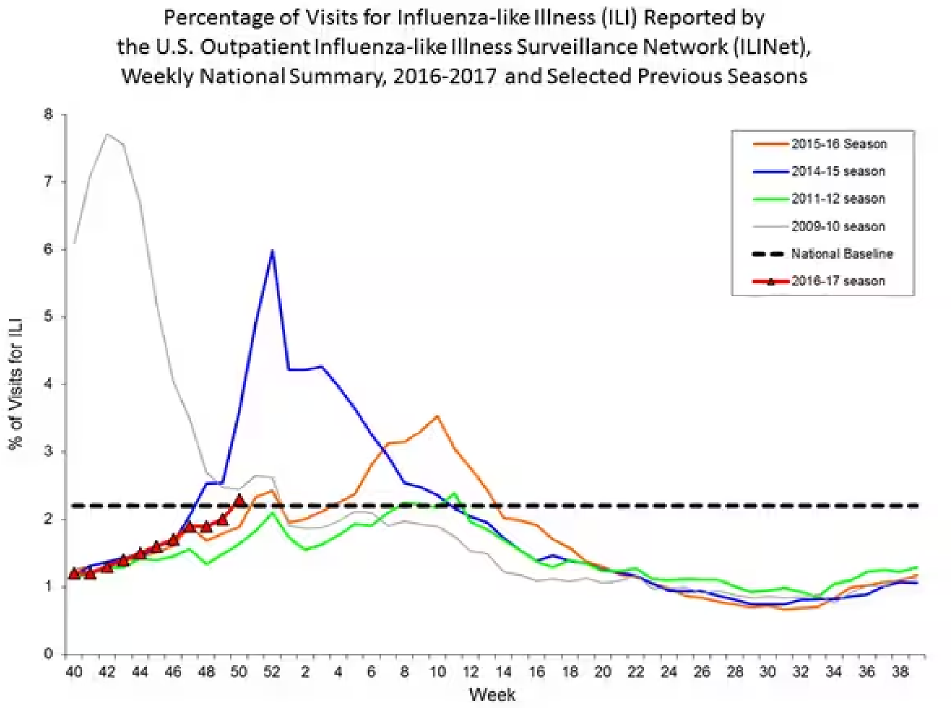
## Outpatient Illness Surveillance:

Nationwide during week 50, 2.3% 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 2.2%.

*(ILI is defined as fever (temperature of 100Â°F [37.8Â°C] or greater) and cough and/or sore throat.)*

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



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On a regional level, the percentage of outpatient visits for ILI ranged from 1.1% to 3.5% during week 50. Five regions (regions 2, 4, 8, 9 and 10) reported a proportion of outpatient visits for ILI at or above their region-specific baseline levels.

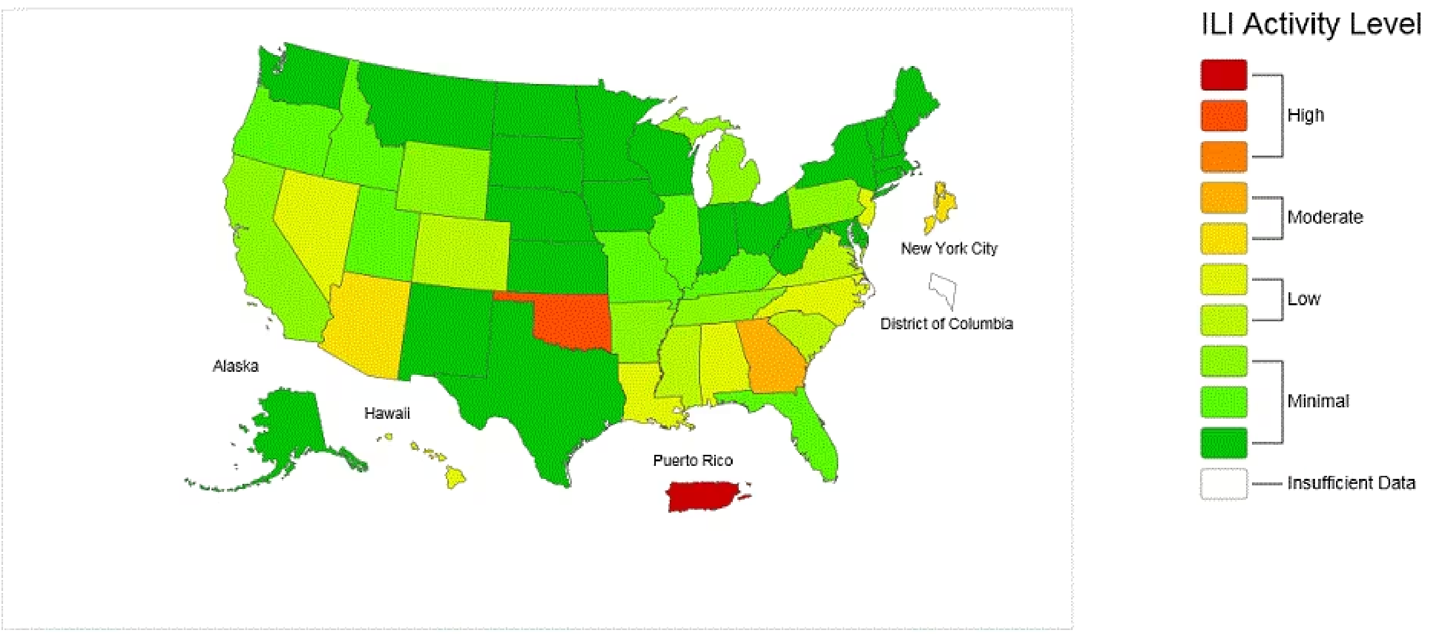
## ILINet State Activity Indicator Map:

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 (Oklahoma) and Puerto Rico experienced high ILI activity.
- Two states (Arizona and Georgia) and New York City experienced moderate ILI activity.
- Ten states (Alabama, Colorado, Hawaii, Louisiana, Mississippi, Nevada, New Jersey, North Carolina, South Carolina and Virginia) experienced low ILI activity.
- 37 states (Alaska, Arkansas, California, Connecticut, Delaware, Florida, Idaho, Illinois, Indiana, Iowa, Kanas, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nebraska, New Hampshire, New Mexico, New York, North Dakota, Ohio, 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
2016-17 Influenza Season Week 50 ending Dec 17, 2016



**Click on map to launch interactive tool**

*This map uses the proportion of outpatient visits to health care providers for ILI 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 are 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:

- Widespread influenza activity was reported by Puerto Rico.
- Regional influenza activity was reported by Guam, the U.S. Virgin Islands, and 13 states (Alabama, Alaska, Connecticut, Massachusetts, New Hampshire, New York, North Carolina, Oklahoma, Oregon, Pennsylvania, South Carolina, Virginia, and Washington).
- Local influenza activity was reported by the District of Columbia and 26 states (Arizona, Arkansas, Colorado, Delaware, Florida, Georgia, Hawaii, Idaho, Indiana, Kentucky, Louisiana, Maine, Maryland, Michigan, Minnesota, Mississippi, Missouri, Nebraska, Nevada, New Jersey, North Dakota, Ohio, Tennessee, Texas, Utah, and Wyoming).
- Sporadic influenza activity was reported by 11 states (California, Illinois, Iowa, Kansas, Montana, New Mexico, Rhode Island, South Dakota, Vermont, West Virginia, and Wisconsin).

CDC Centers for Disease Control and Prevention

Flu Activity data in XML Format | View Full Screen

# 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 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
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

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.

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