

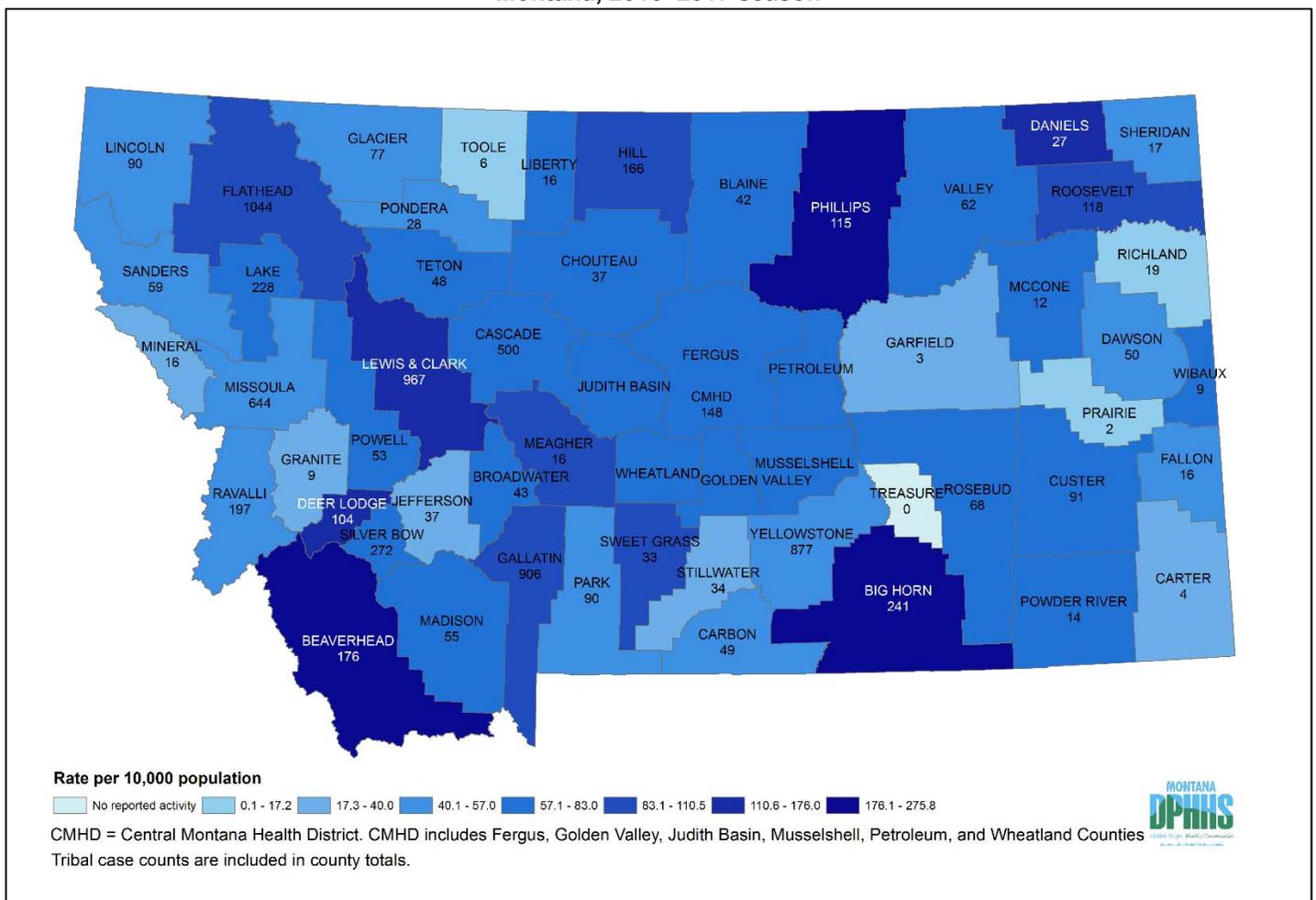
# Montana Influenza Summary: 2016–2017 Final Report

Montana's influenza activity level for the week ending on 6/3/2016 is defined as: SPORADIC<sup>1</sup>

**Overview:** Surveillance for the 2016–2017 influenza season officially began on October 1, 2016. The Montana Department of Health and Human Services (DPHHS) provided a weekly report throughout the influenza season that coordinates data from a variety of sources to give the most complete and up to date view of influenza activity in the state of Montana. This is the final report for the 2016–2017 influenza season.

**Summary of Influenza Activity:** Influenza activity increased in mid-December 2016 and remained elevated for a total of 20 weeks. Peak activity occurred during weeks 3–5 (January 21 – February 4). Season totals include 7,935 cases, 829 hospitalizations and 56 deaths attributed to influenza. Twenty outbreaks of influenza were reported during the season. Influenza activity was reported from all but one county in Montana, and four counties reported fewer than five influenza cases for the entire season (range: 0–1044). Figure 1 displays 2016–2017 seasonal influenza activity as case counts by county. In addition, each county is shaded by the incidence rate of disease (per 10,000 population).

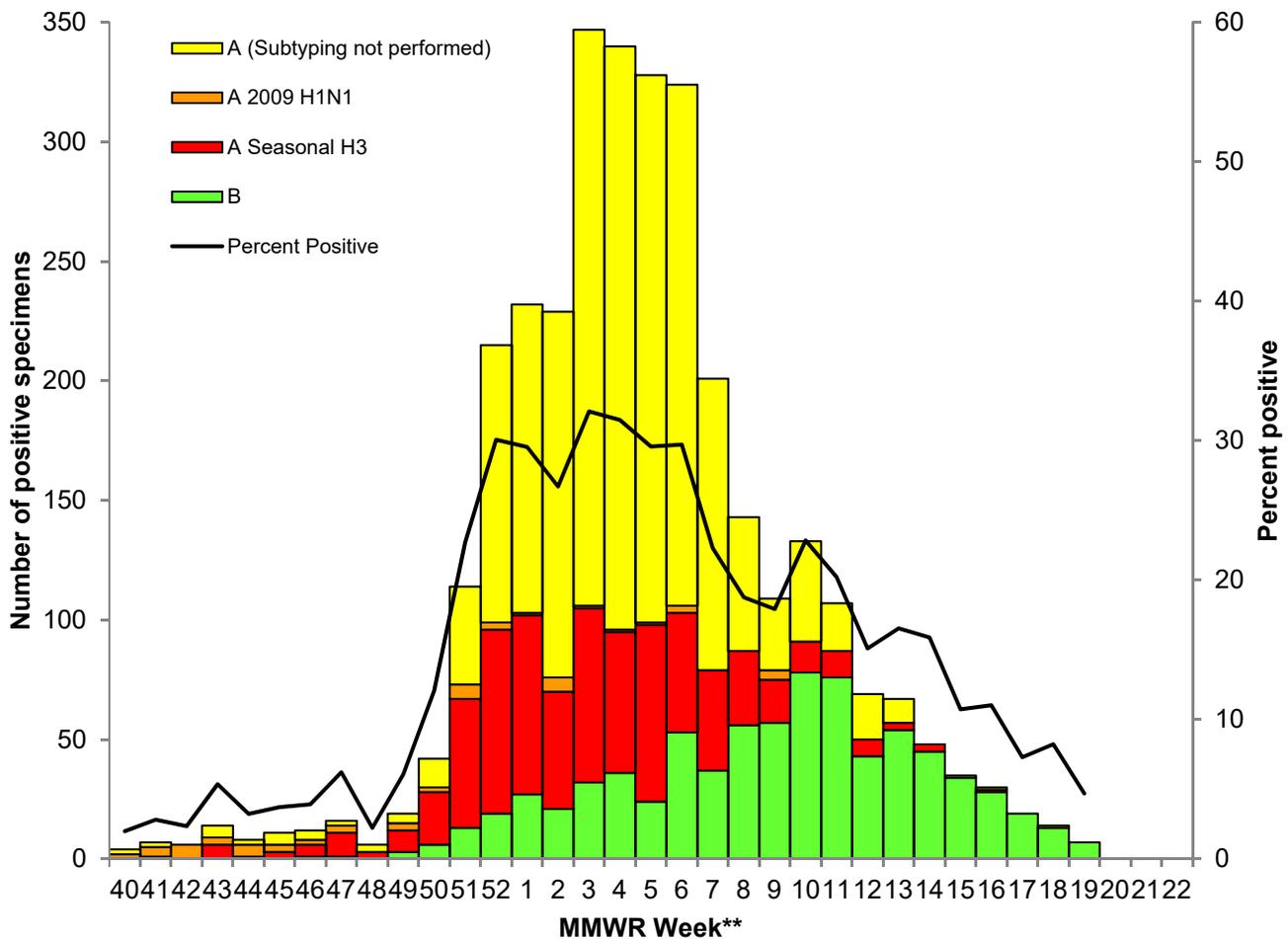
**Figure 1. Number and incidence of reported influenza cases by county of residence Montana, 2016–2017 season**



**Laboratory Surveillance:** The Montana Public Health Laboratory (MTPHL) and partners\* report the number of specimens tested for influenza by Polymerase Chain Reaction (PCR) as well as the number of positives by influenza virus type and influenza A virus subtype. Table 1 presented below contains testing data for the 2016–2017 season. The most common subtype identified during this season was Influenza A H3; however, 32% of isolates were influenza B, which was higher than what is observed during an average influenza season (15%). Figure 2 demonstrates the type and subtypes identified as well as positivity rate over the course of the influenza season.

| Table 1. Influenza types confirmed by MTPHL and partners* |            |
|---|------------|
| Number of specimens tested                                | 15934      |
| Number of positive specimens (% positive)                 | 3253(20.4) |
| Positive specimens by type/subtype                        |            |
| Influenza A   | 2470       |
| 2009 H1N1   | 59         |
| Subtyping not performed                                   | 1714       |
| H3  | 700        |
| Influenza B   | 783        |

Figure 2. Influenza positive tests reported by the Montana Public Health Laboratory and partners\*, 2016–2017



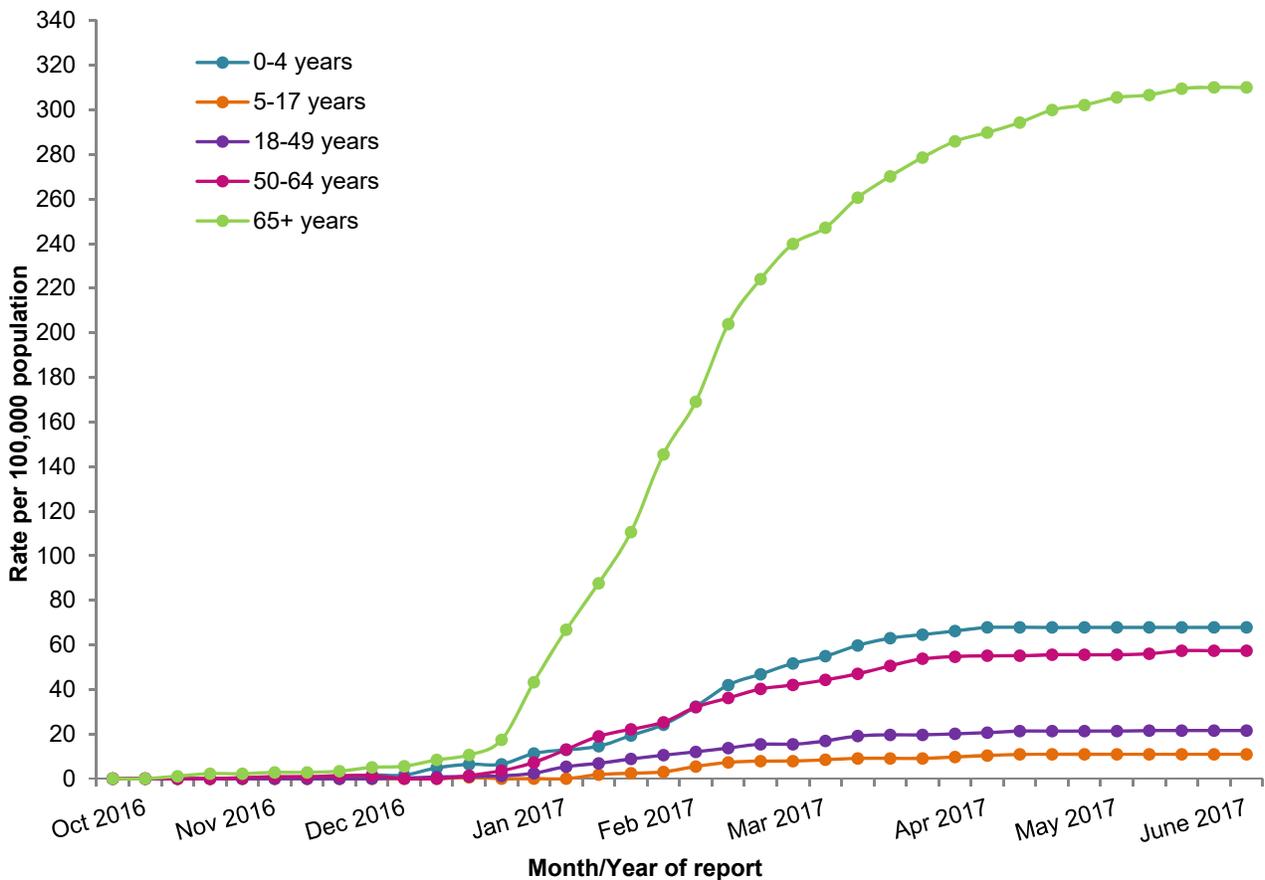
\*Partner laboratories include: Barrett Hospital and Healthcare, Benefis Healthcare System, Big Sandy Medical Center, Bighorn County Hospital, Billings Clinic Hospital, Bozeman Deaconess Hospital, Community Medical Center, Deer Lodge Medical Center, Glacier Medical Associates, Great Falls Clinic, Holy Rosary Health Care, KRMC, Madison Valley Medical Center, Montana Public Health Laboratory, St. Joseph Hospital, St. Patrick's Hospital, St. Peter's Hospital, St. Vincent Hospital, Trinity Hospital.  
 \*\*The MMWR week is the week of the epidemiologic year for which the National Notifiable Diseases Surveillance System (NNDSS) disease report is assigned by the reporting local or state health department for the purposes of MMWR disease incidence reporting and publishing. Values for MMWR week range from 1 to 53, although most years consist of 52 weeks.

**Influenza Hospitalizations:** Influenza cases, including hospitalizations and deaths, are reportable to public health in Montana. During the 2016–2017 season, 829 (80.3 per 100,000 population) influenza-associated hospitalizations were reported to public health. The highest rate of hospitalization was among adults aged  $\geq 65$  years (104/100,000 population, Figure 3). Peak hospitalizations occurred during the three-week period between January 21 through February 11.

There were 56 deaths attributed to influenza during the 2016–2017 season. The majority (82%) occurred among adults aged  $\geq 65$  years. No pediatric deaths (aged 0–17 years) were reported. Table 2 presents influenza hospitalizations and deaths for the 2016–2017 influenza season.

| Table 2. Influenza hospitalizations and deaths — Montana, 2016–2017 season |           |                 |                 |
|--|-----------|-----------------|-----------------|
| Hospitalizations   | Deaths    |                 |                 |
|  | Pediatric | Adult <65 years | Adult >65 years |
| 829  | 0         | 10              | 46              |

**Figure 3. Cumulative influenza hospitalization rates by age group — Montana, 2016–2017 season\***

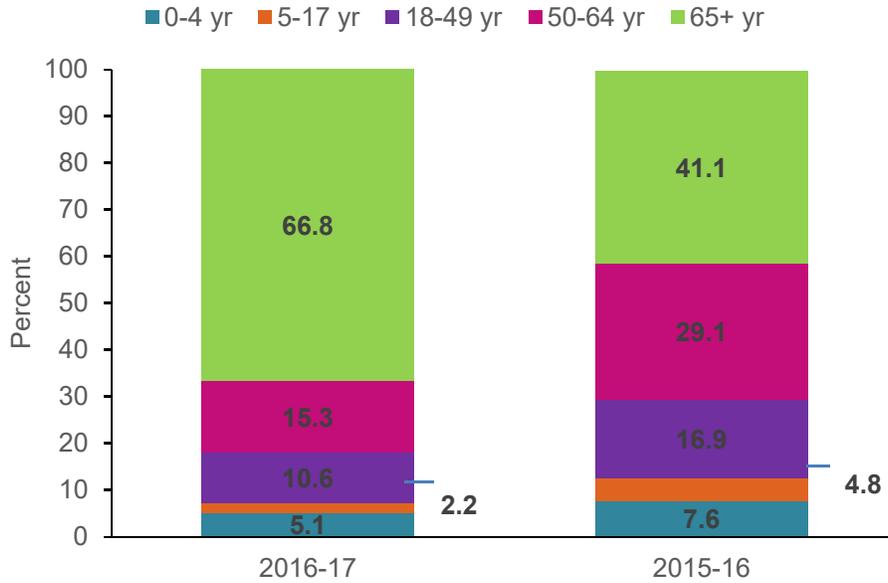


\*Reported by hospital admission date.

The majority of Montanans who were hospitalized due to influenza were aged  $\geq 65$  years with a median age of 72 years. This is similar to the characterization of influenza-associated hospitalizations in the United States during the 2016–2017 season, but the age group proportions differ from the 2015–2016 influenza season in Montana (Figure 4).

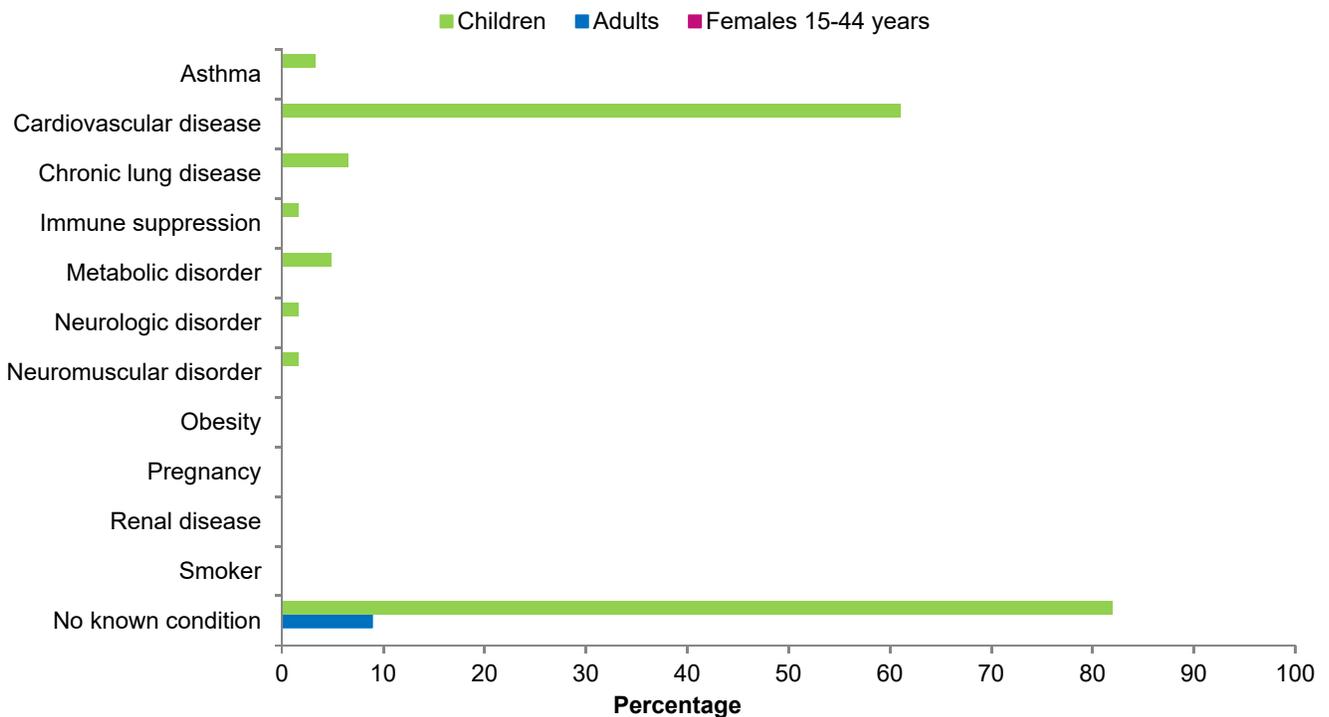
Influenza type A was the predominant virus identified in individuals hospitalized for influenza (74%). Of those hospitalized for influenza with documented immunization status (n=747), 46% had not received seasonal influenza vaccine.

**Figure 4. Influenza hospitalizations by age group — Montana, 2015–2016 vs. 2016–2017 seasons**



Hospitalized individuals were assessed for comorbidities present at the time of admit (Figure 5). Of those with documented comorbidity status (n=816), 18% of children (<18 years) and 91% of adults presented with at least one comorbidity at the time of hospitalization. Cardiovascular disease was the most common comorbidity documented in children (61%) and adults (50%). Ten percent of females aged 15–44 years were pregnant at the time of hospitalization.

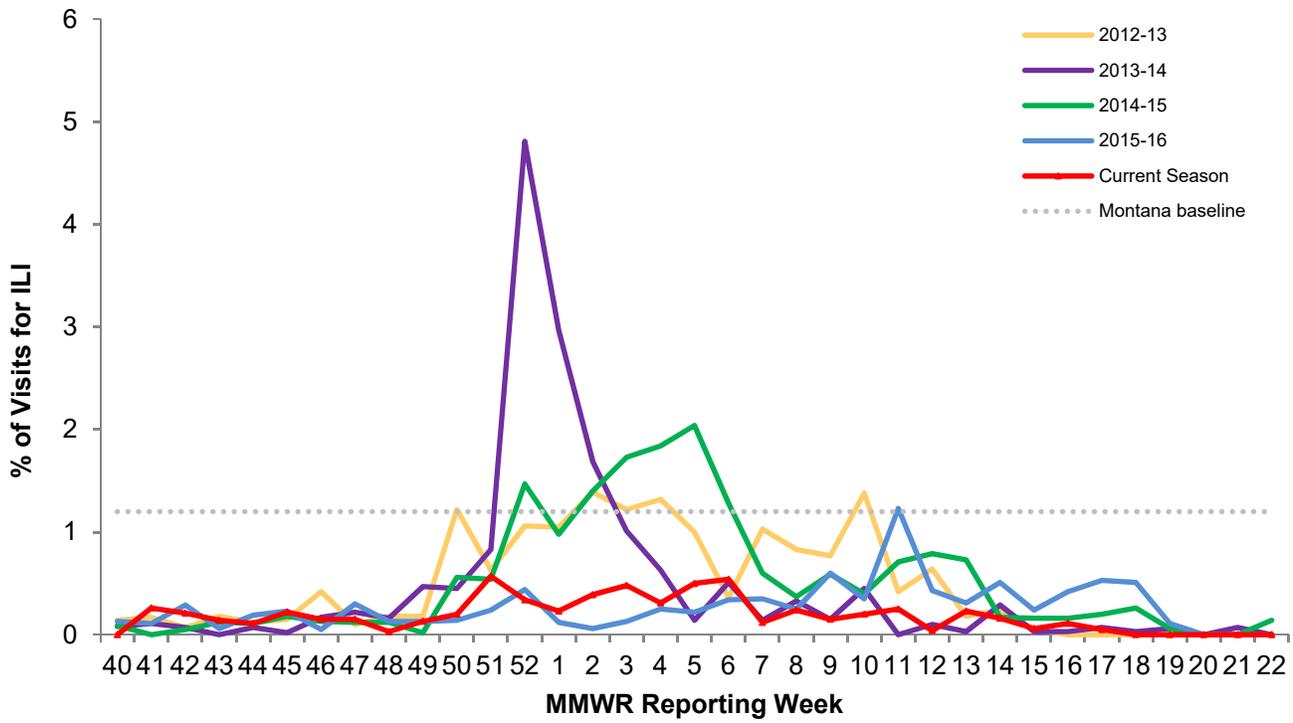
**Figure 5. Selected underlying medical conditions of hospitalized individuals — Montana, 2016–2017 season<sup>2</sup>**



**Outbreaks:** Twenty influenza outbreaks were reported from ten jurisdictions during the 2016-17 season with 657 cases, 21 hospitalizations, and nine deaths identified. The majority of outbreaks (70%) were confirmed as influenza A. The most common settings were assisted living and long term care facilities (85%). Control measures were implemented within two days in 94% of identified outbreaks.

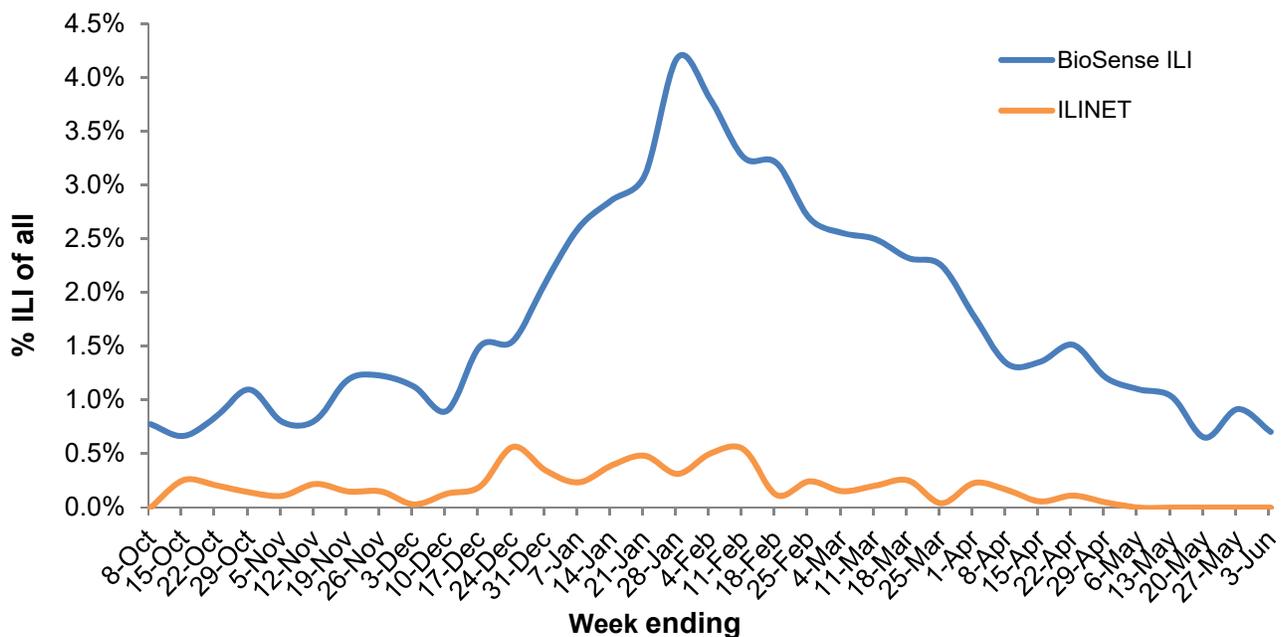
**Influenza-like Illness (ILI):** The U.S. Outpatient ILI Surveillance Network (ILINet) is a national system that conducts surveillance for Influenza-like illness (ILI) in outpatient healthcare facilities. ILI is defined as a fever (temperature of 100° F or greater), cough, and/or sore throat. During the 2016–2017 season, 11 facilities participated in ILINet in Montana. ILI activity for the season consistently remained below baseline (Figure 6).

**Figure 6. Percentage of influenza-like illness (ILI) reported by sentinel providers — Montana, selected seasons**



**Syndromic Surveillance vs. ILI:** BioSense is the syndromic surveillance system in place for Montana that captures approximately 75% of emergency room (ER) visits across the state. ER visits associated with influenza like illness (ILI) are compared with ILINet data for the 2016–2017 season in Montana (Figure 7).

**Figure 7. Comparison of ILINet and BioSense reports of Influenza-Like Illness (ILI) — Montana, 2016-2017**



---

**<sup>1</sup>Influenza Activity:** State health departments report the estimated level of geographic spread of influenza activity in their states each week through the **State and Territorial Epidemiologists Reports**. States report geographic spread of influenza activity as no activity, sporadic, local, regional, or widespread. These levels are defined as follows:

- **No Activity:** No laboratory–confirmed cases of influenza and no reported increase in the number of cases of ILI.
- **Sporadic:** Small numbers of laboratory–confirmed influenza cases or a single laboratory–confirmed influenza outbreak has been reported, but there is no increase in cases of ILI.
- **Local:** Outbreaks of influenza or increases in ILI cases and recent laboratory–confirmed influenza in a single region of the state.
- **Regional:** Outbreaks of influenza or increases in ILI and recent laboratory confirmed influenza in at least two but less than half the regions of the state with recent laboratory evidence of influenza in those regions.
- **Widespread:** Outbreaks of influenza or increases in ILI cases and recent laboratory–confirmed influenza in at least half the regions of the state with recent laboratory evidence of influenza in the state.

**<sup>2</sup>Comorbidity** categories are defined as:

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 asthma, chronic obstructive pulmonary disease (COPD), 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, thyroid dysfunction, adrenal insufficiency, and liver disease.

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 the hospitalization report.

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.

Smoker was assigned if current smoking status was indicated in the hospitalization report.

No known condition indicates that the case did not have any known underlying medical condition indicated at the time of hospitalization.

*For additional information on influenza activity in Montana, please contact your local health department or the Department of Public Health and Human Services' Communicable Disease Epidemiology Section at (406) 444–0273 or visit*

<http://dphhs.mt.gov/publichealth/cdepi/diseases/influenza.aspx>