Salt Lake County Annual Influenza Report
2017-18 Season
Epidemiology Bureau

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Introduction

The 2017-18 influenza season saw 977 confirmed influenza-associated hospitalizations reported from October 1, 2017 to April 30, 2018. As shown in Figure 1, influenza cases peaked during MMWR week 1 (week ending January 6, 2018) with 126 cases.

Compared to the five year average, the 2017-18 season follows a similar trend, with a dramatic peak occurring in early January. Yet the 2017-18 season case count is considerably higher than the five year average. The 2017-18 season is one of the worst seasons on record, with case counts exceeding the 2009 AH1N1 pandemic.

Figure 1

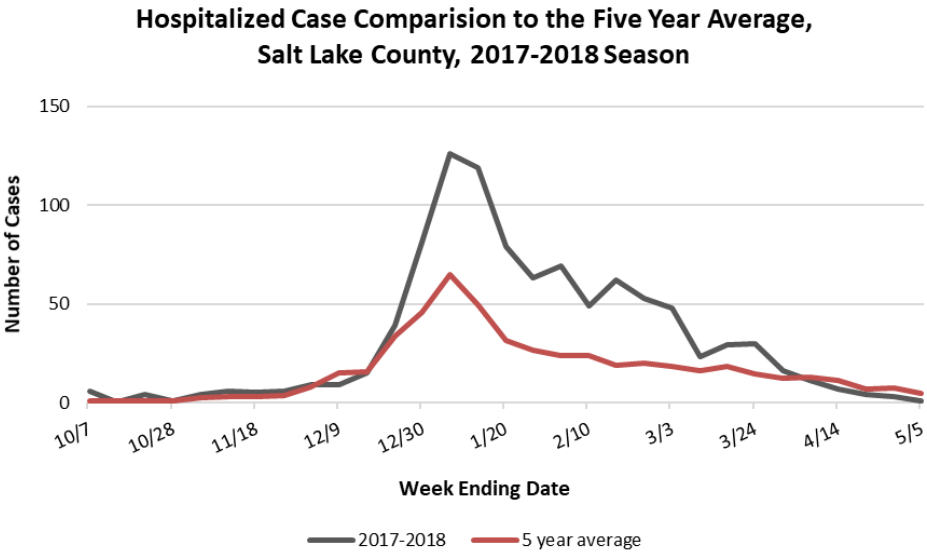
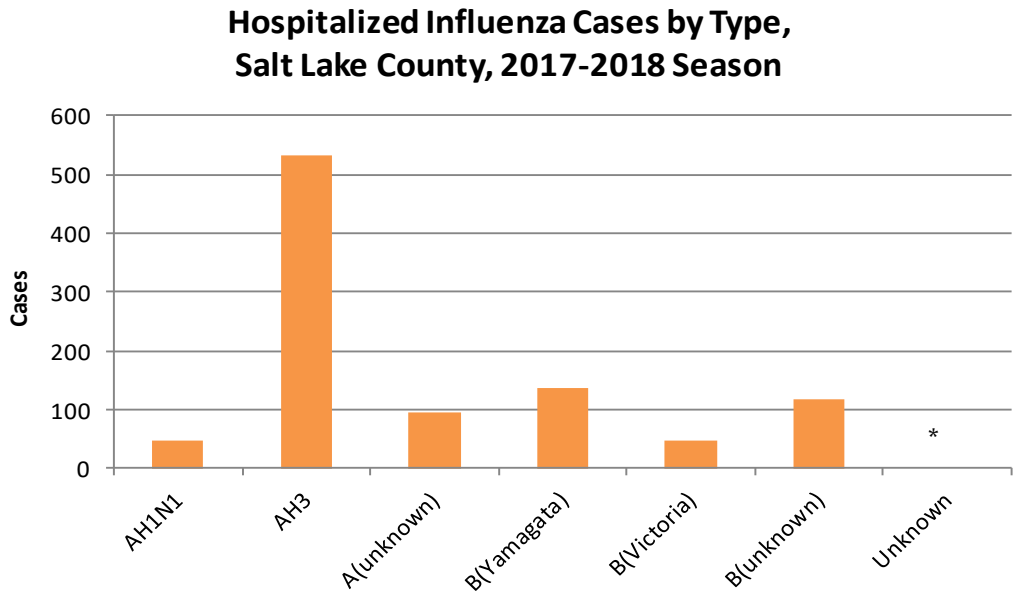


Figure 2 displays the number of hospitalized cases by influenza type, with AH3 having the highest case count.

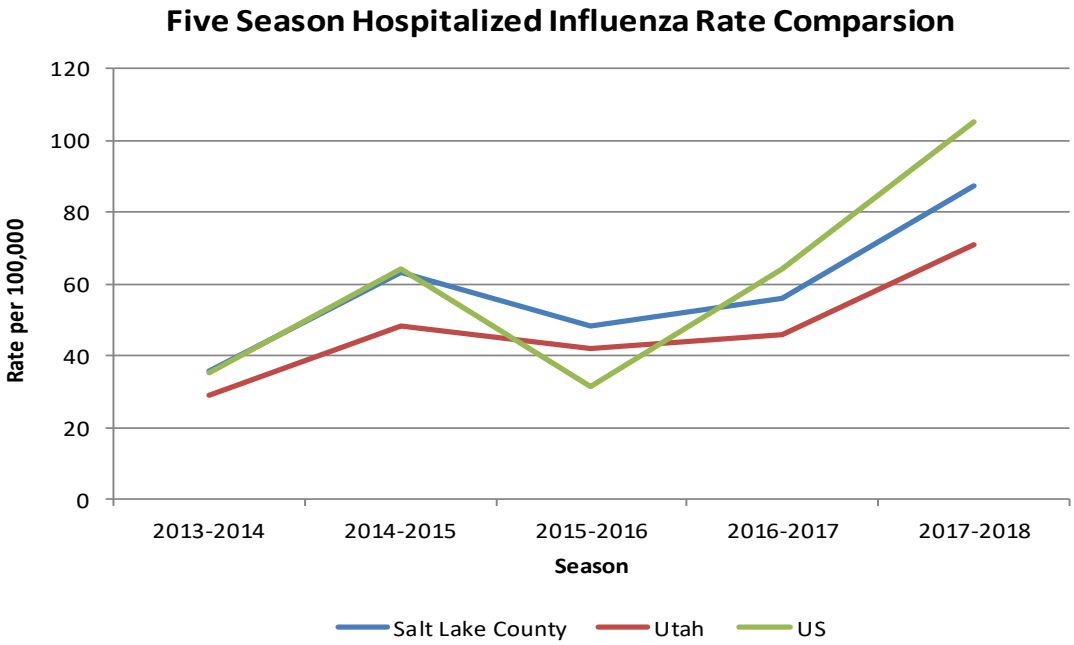
Figure 2



*Data suppressed due to low counts

When compared to influenza rates for Utah and the United States, Salt Lake County was lower than the national rate, yet higher than the rate statewide. Salt Lake County's hospitalized influenza rate was 87 per 100,000 population, compared with Utah at 71 and the national rate of 105 per 100,000 population. Figure 3 displays a five season comparison between Salt Lake County, Utah and the United States.

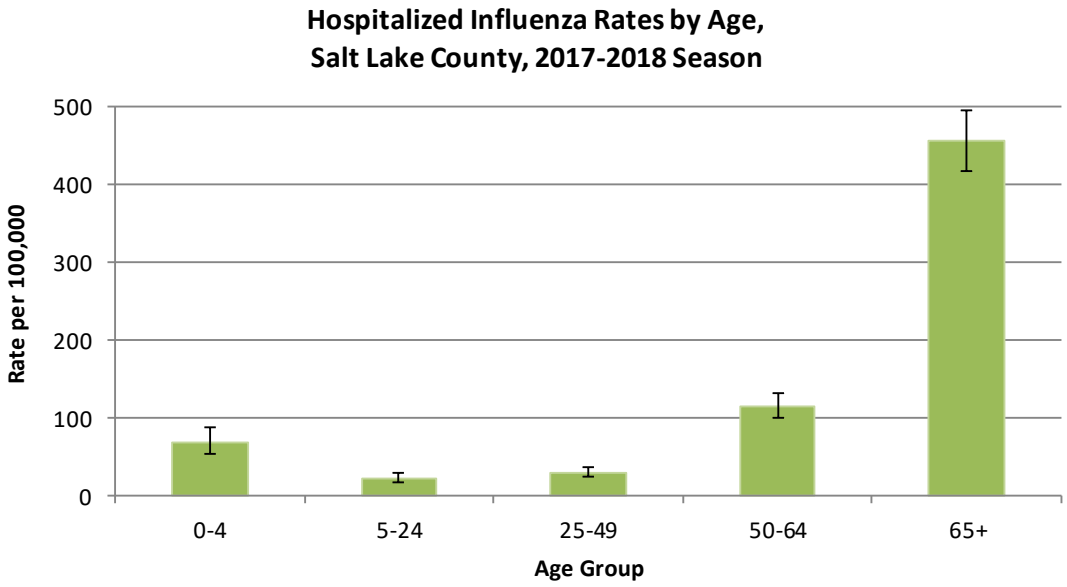
Figure 3



Demographic Profile

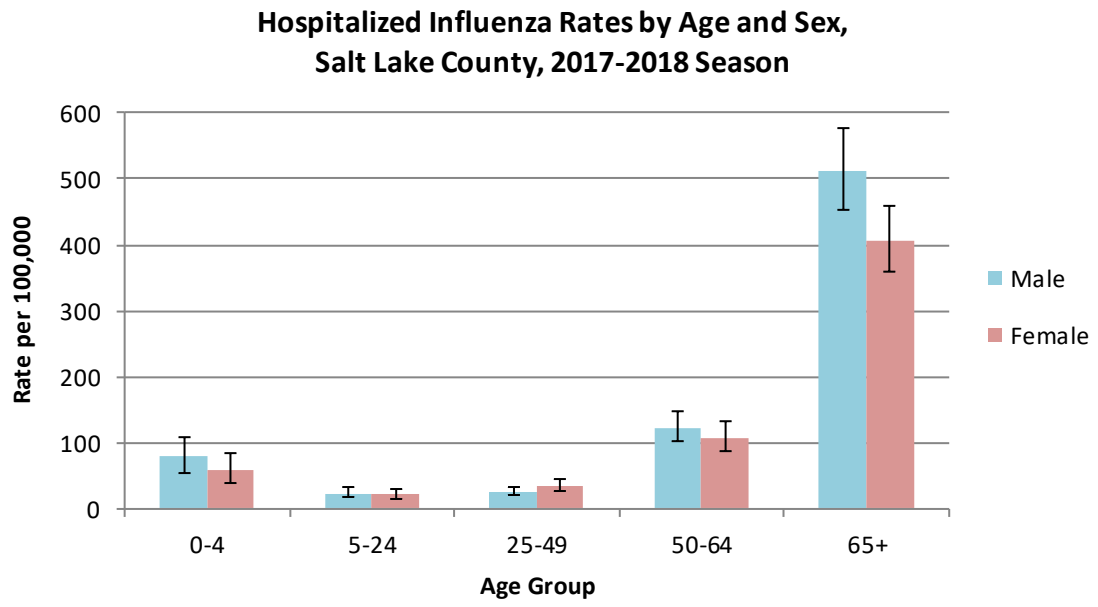
The 65+ age group was disproportionately affected by influenza compared to all other age groups, with a rate of 455 per 100,000 population. The lowest rate was among the 5-24 age group at 22 per 100,000 population. See figure 4.

Figure 4



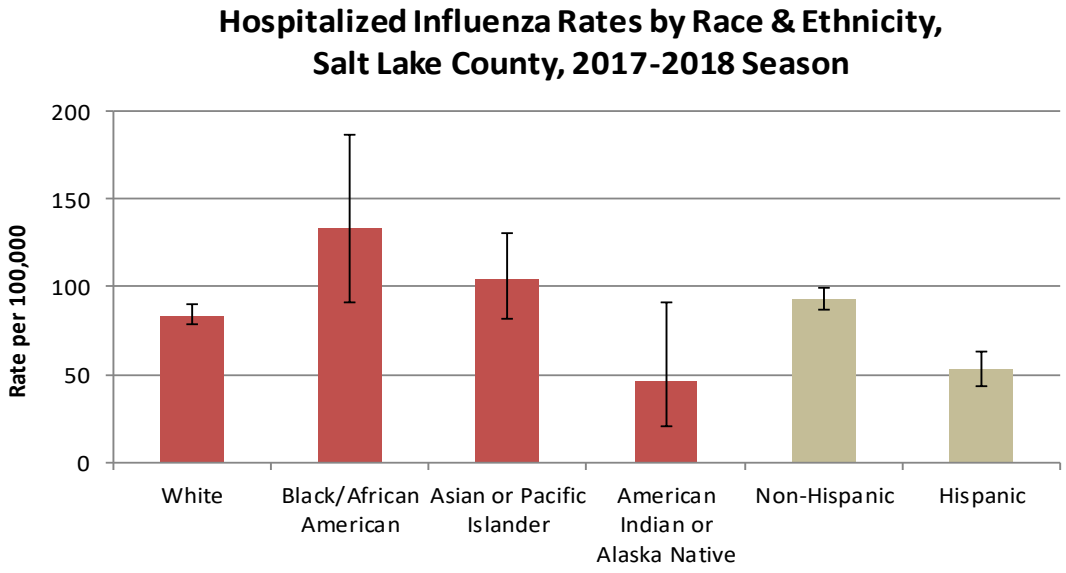
When looking at age and sex, there were no significant differences between males and females in any age group. The highest rates were among both males and females over the age of 65. Male rates for the 65+ age group were 513 per 100,000 population and female rates were 407 per 100,000 population. See figure 5.

Figure 5



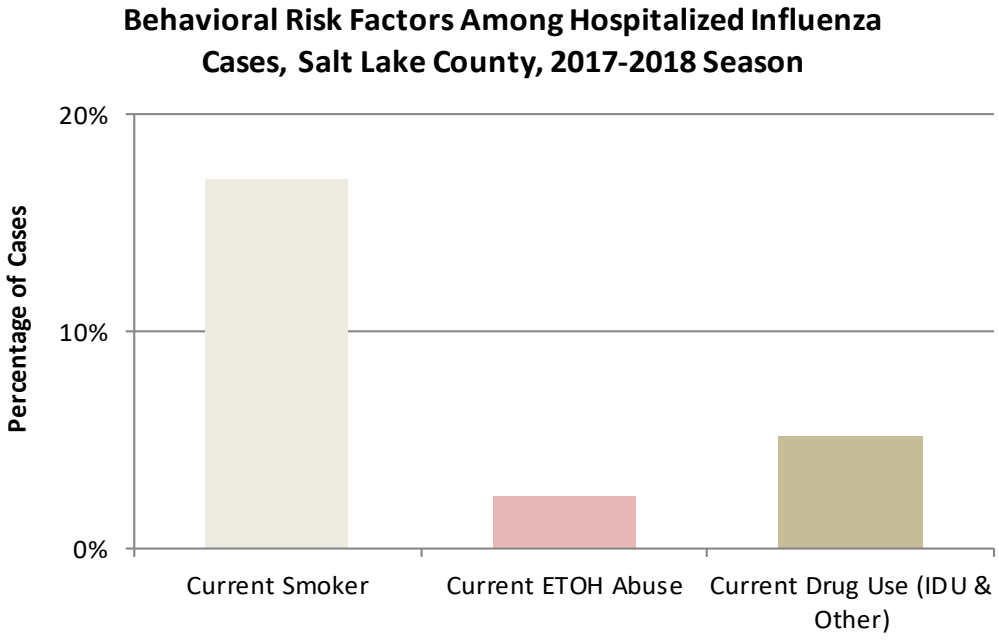
The highest rates of influenza were among the black/African American community with a rate of 133 per 100,000 population. A significant difference was found between white cases and black/African American cases, meaning that African Americans were more likely to be hospitalized with influenza than whites. A significant difference was also found between non-Hispanic and Hispanic cases meaning that non-Hispanics were more likely to be hospitalized with influenza than Hispanics. See figure 6.

Figure 6



Behavioral risk factors were analyzed to identify additional conditions that may contribute to hospitalization due to influenza. Smoking was the highest risk factor, with 17% of hospitalized cases reporting current smoking habits. See figure 7.

Figure 7



Salt Lake County influenza cases had a variety of underlying conditions upon hospitalization. The two most common conditions among cases were cardiovascular disease and metabolic disease, with 40% of cases having some form of cardiovascular disease and 36% of cases having some form of metabolic disease . Figure 8 displays the percent of cases affected by a range of underlying conditions.

Figure 8

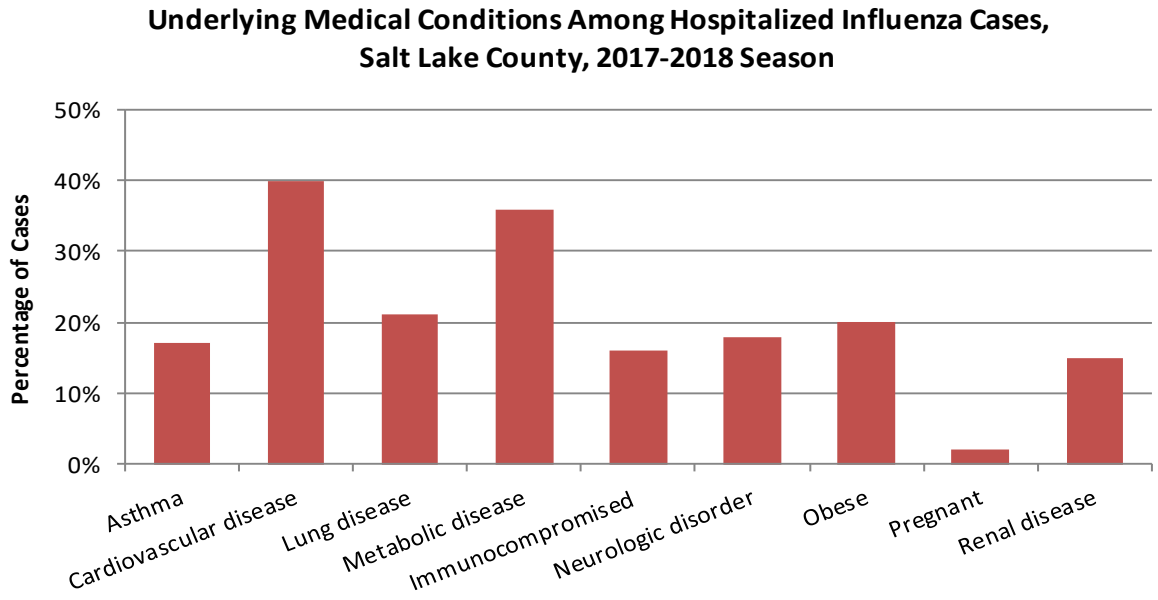
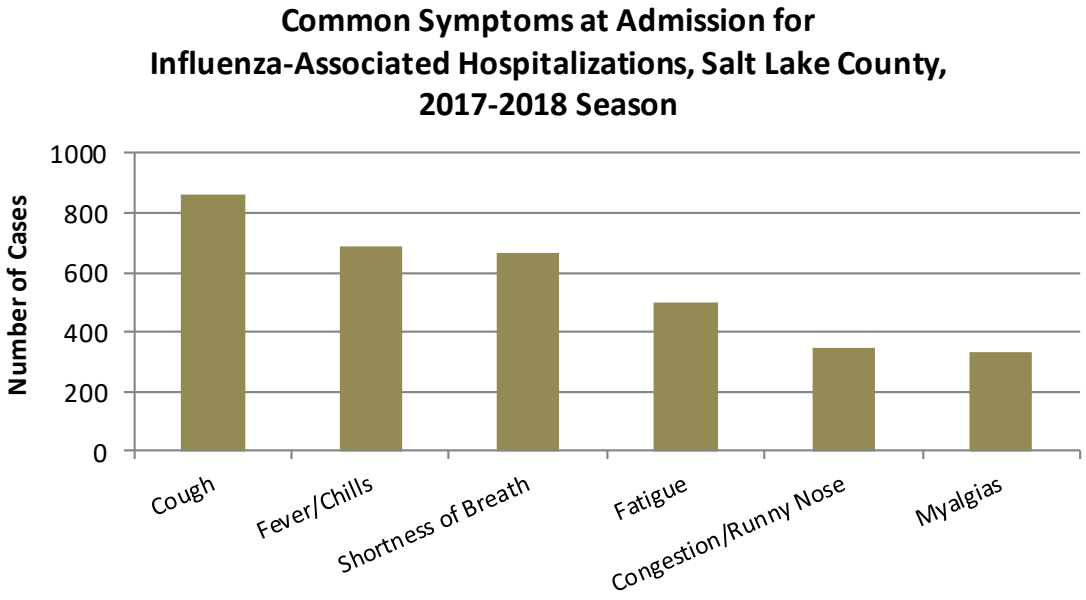


Figure 9 displays the top six symptoms cases reported prior to hospital admission. Cough and fever were the top symptoms reported, with 88% of patients reporting a cough and 70% of patients reporting a fever.

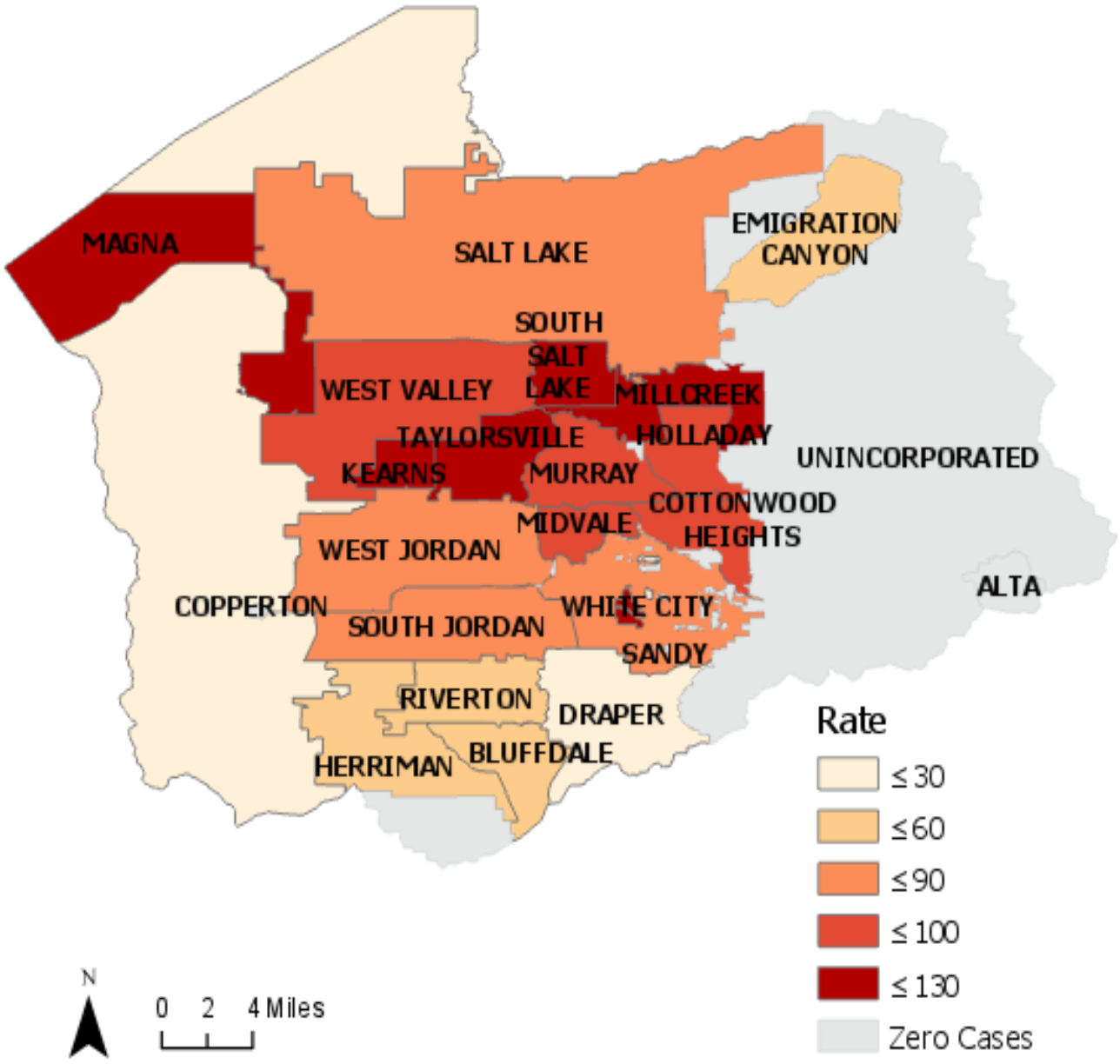
Figure 9



2017-2018 Influenza Season: Influenza-associated Hospitalizations in Salt Lake County (per 100,000)

Figure 10 shows the number of influenza cases per 100,000 population by city within Salt Lake County. Magna, Kearns, Taylorsville, South Salt Lake and Millcreek saw the greatest burden of influenza.

Figure 10



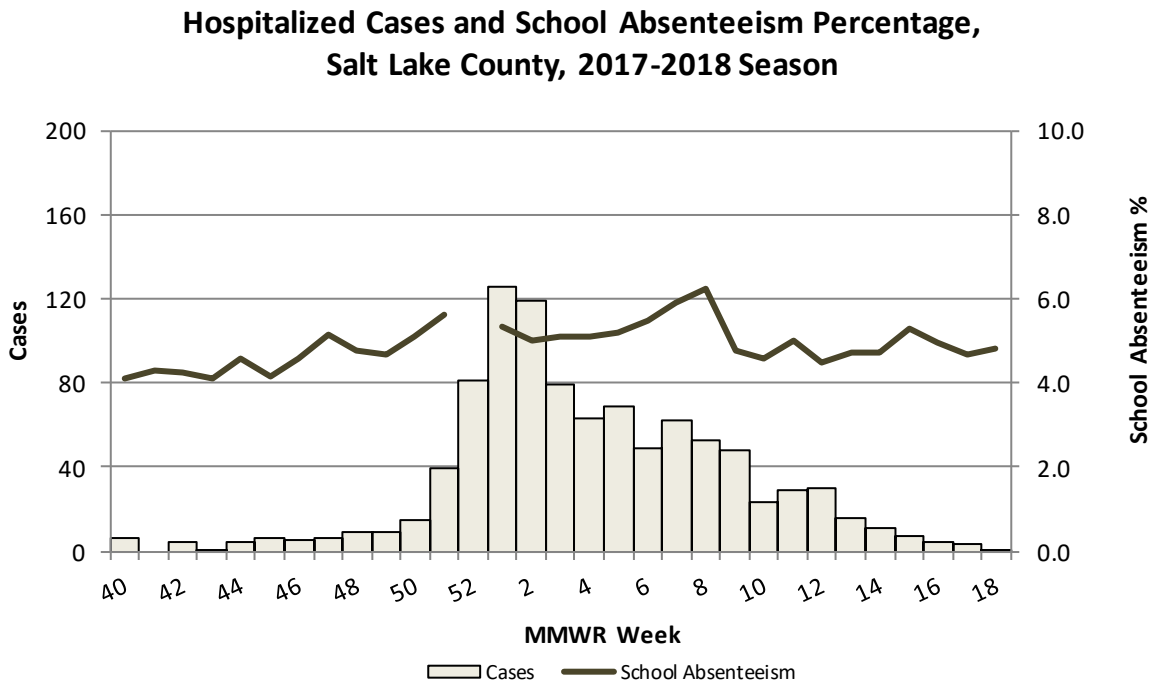
*Rates calculated using American Community Survey (ACS) 2016 5-year population estimates, except Census Designated Places (Copperton, Emigration Canyon, Kearns, Magna, Millcreek, White City; ACS 2015) and unincorporated Salt Lake County (Census 2010), U.S. Census Bureau.

Outpatient Surveillance

Outpatient influenza surveillance is an integral component to tracking influenza trends in Salt Lake County. Influenza-like-illness (ILI) surveillance is one such tool used to monitor influenza patterns. Due to discrepancies with the data during the 2017-18 season, ILI data cannot be included in this report.

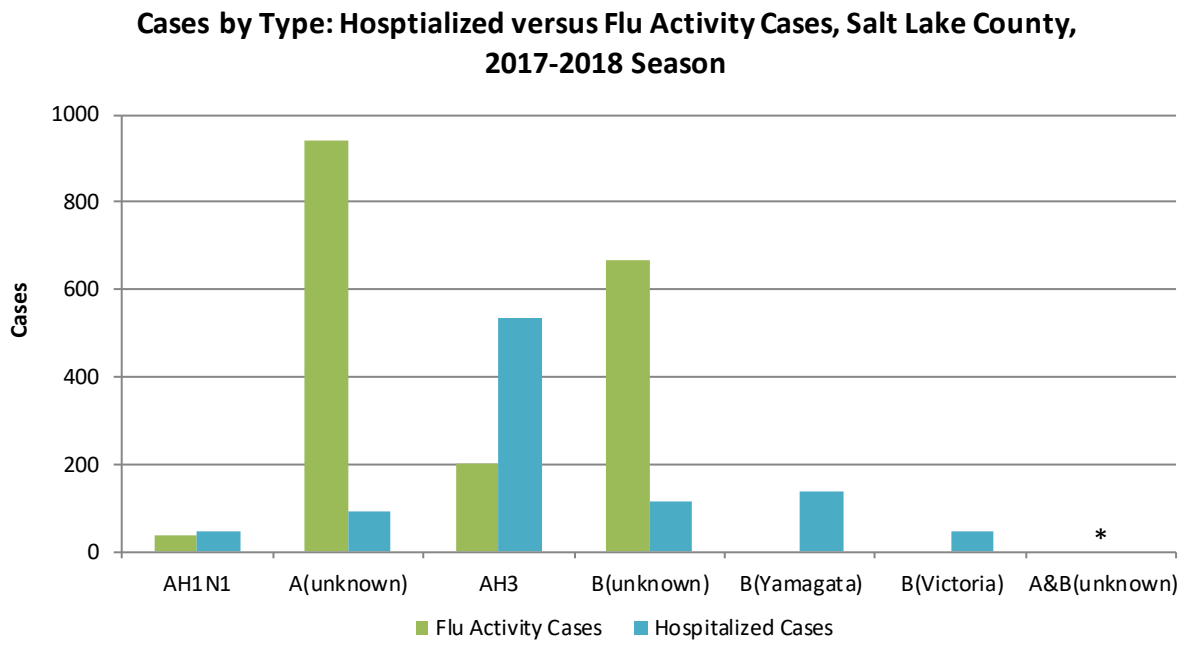
School absenteeism followed the same trend as hospitalized cases, with greater absences occurring at the height of the season during MMWR week 1. There is spike in school absenteeism around MMWR week 7, which also matches the uptick in cases around the same time. See figure 11.

Figure 11



Influenza activity cases are non-hospitalized patients that are primarily evaluated in emergency departments and outpatient clinics. Like hospitalized cases, influenza activity cases were primarily type A, with a majority of cases not subtyped. Figure 12 compares hospitalized and influenza activity cases by type, highlighting the lack of subtyping among non-hospitalized patients.

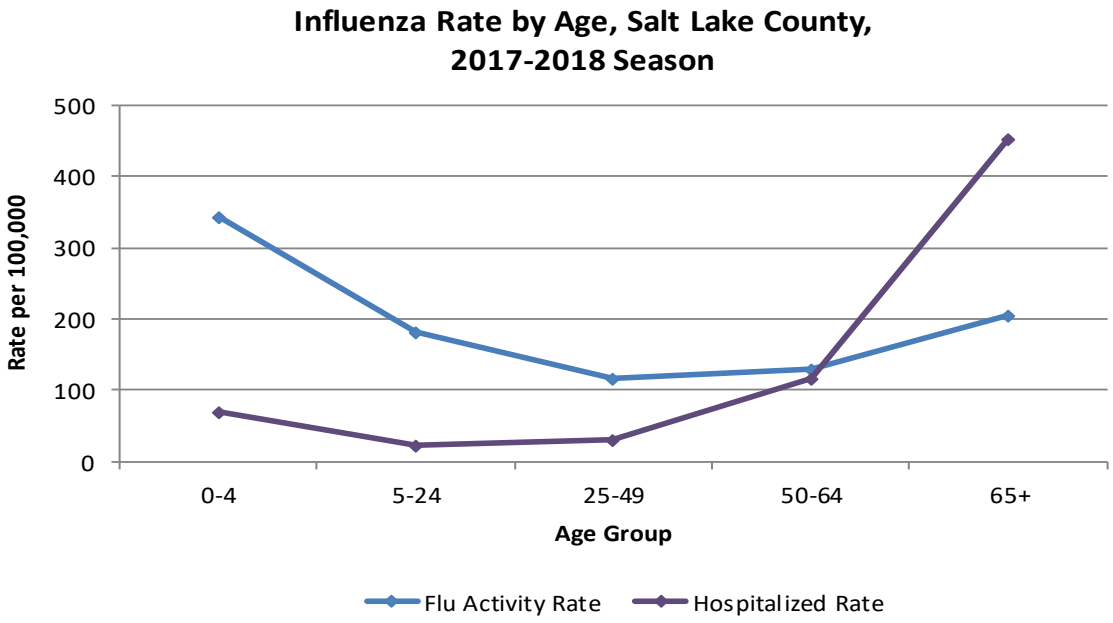
Figure 12



*Data suppressed due to low counts

When comparing rates by age between hospitalized and influenza activity cases, both populations follow a different trend. Among hospitalized cases, the highest rate was among patients in the 65+ age group at 455 per 100,000 population. However, the highest rate among influenza activity cases was found in the 0-4 age group at 345 per 100,000 population. This could indicate that all age groups were affected by influenza, but the 65+ age group experienced more severe disease than other age groups, which required hospitalization. The influenza rate by age trend for both populations is displayed in figure 13.

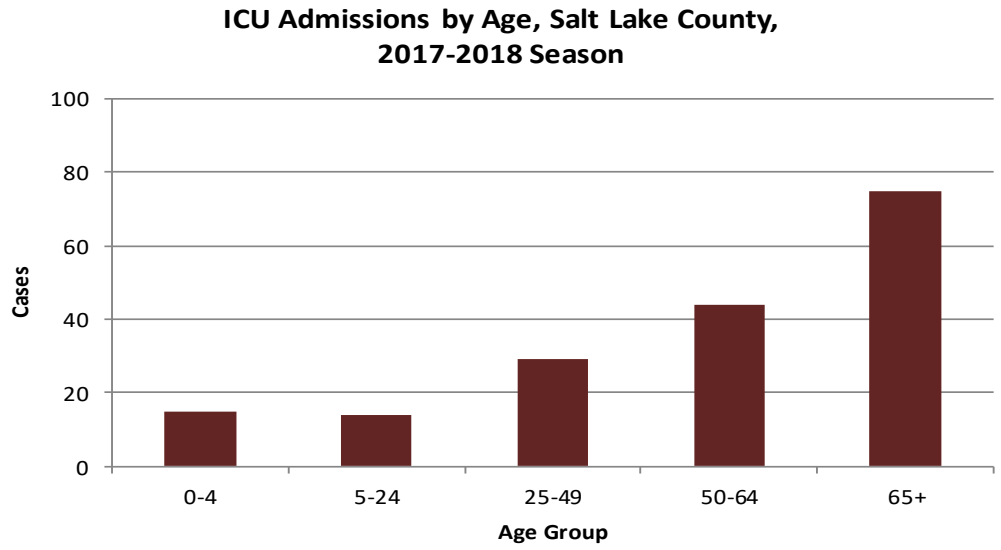
Figure 13



Severity

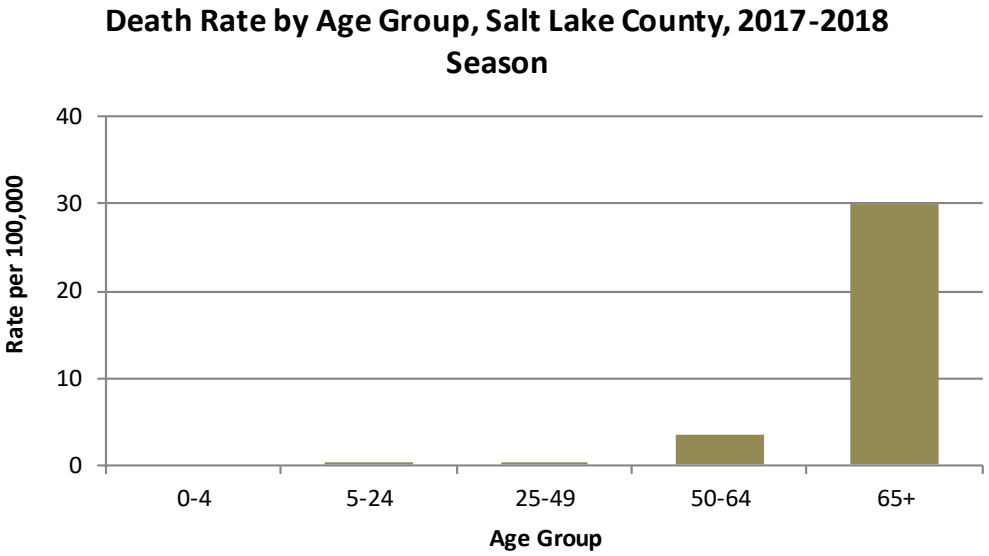
Eighteen percent of hospitalized influenza cases during the 2017-18 season were admitted to an intensive care unit (ICU), compared to 15% during the 2016-17 season. The 65+ age group had the highest number of cases admitted to an ICU. Figure 14 shows the ICU distribution by age among all hospitalized cases.

Figure 14



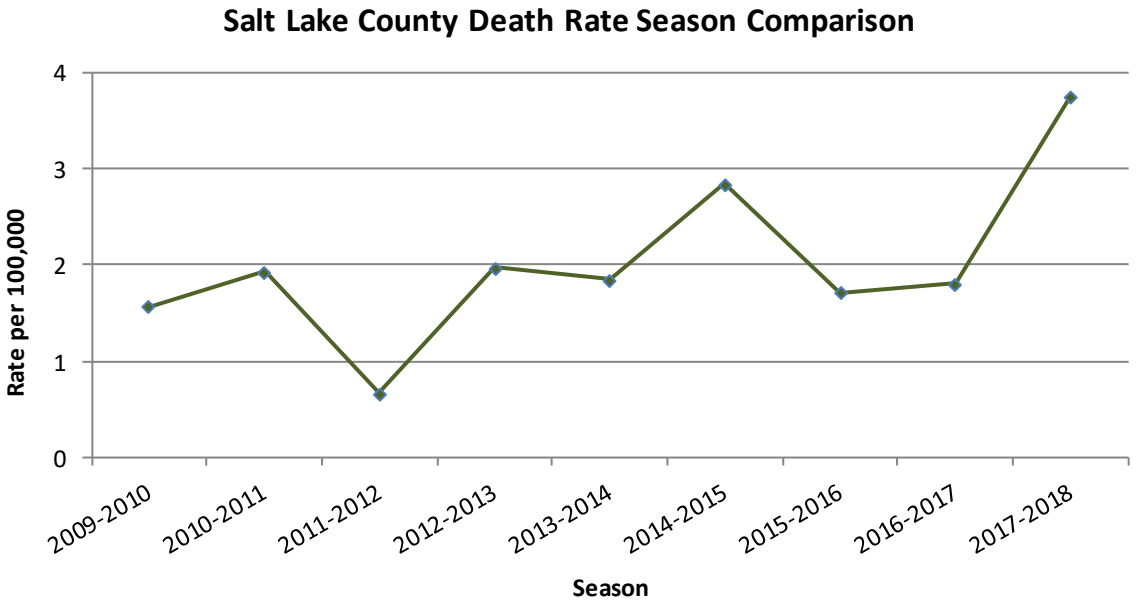
There were 42 influenza-related deaths during the 2017-18 season, compared to 20 deaths during the 2016-17 season. The highest death rate was among the 65+ age group with 30 per 100,000 population. Figure 15 displays the death rates that occurred by age.

Figure 15



When looking at a multi-season comparison, the 2017-18 season had the highest death rate throughout nine seasons. See figure 16.

Figure 16



Pneumonia and influenza (P&I) mortality surveillance is a tool used to find influenza-related deaths that may have been missed through the traditional reporting system. P&I was elevated for one week throughout the 2017-18 season, which is less than the number of elevations seen during the 2016-17 season. See figure 17.

Figure 17

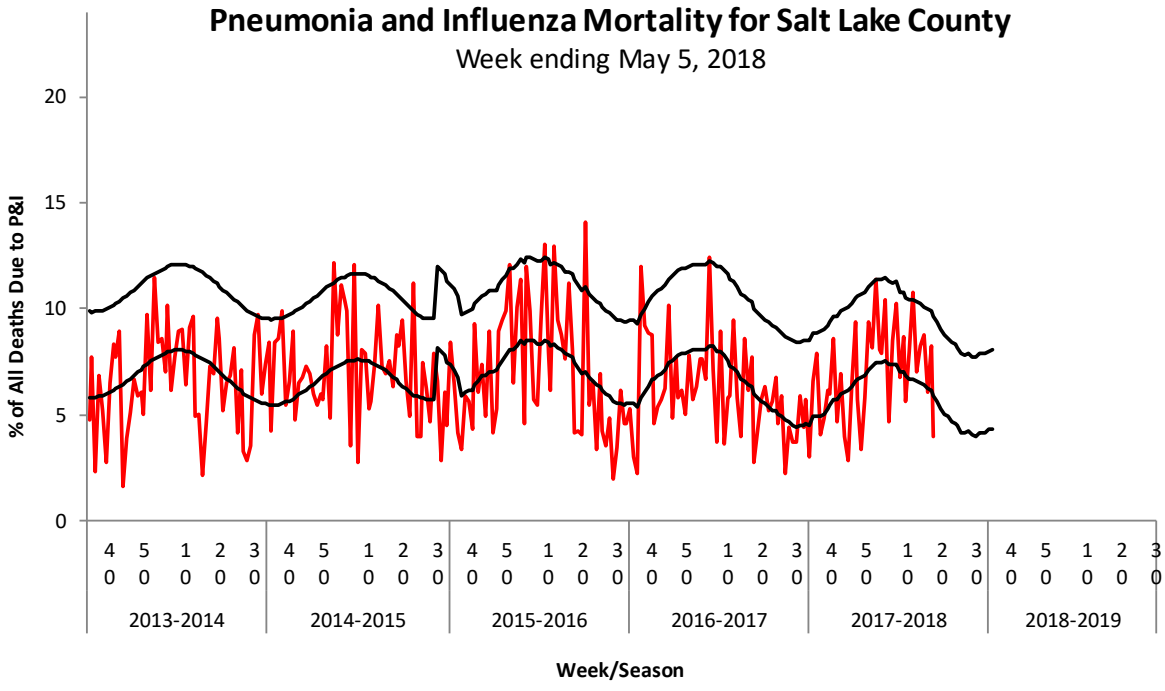
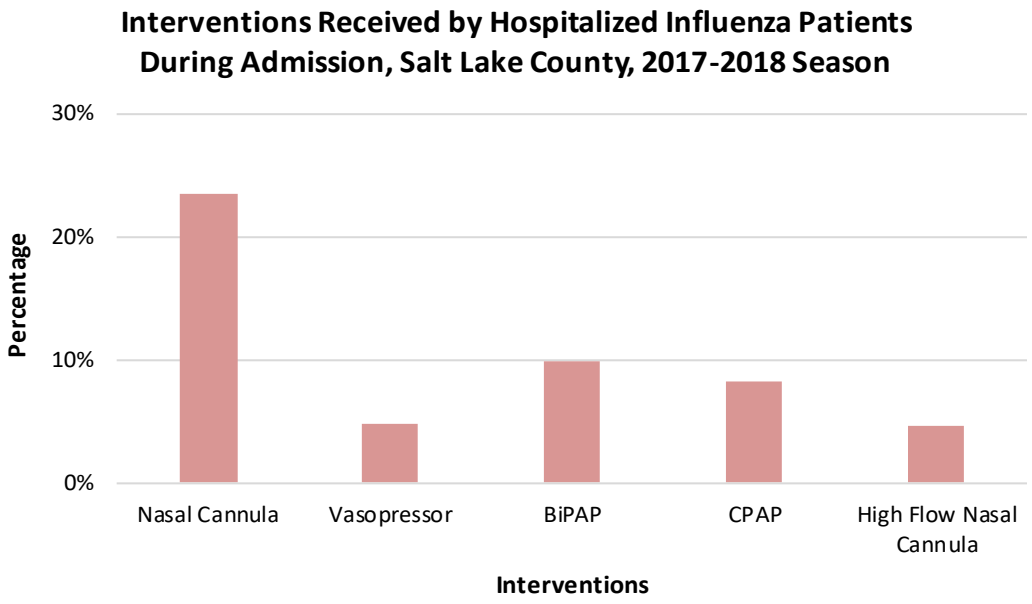


Figure 18 displays a variety of interventions that occurred during hospitalization that indicate disease severity. The most frequent intervention was receiving nasal cannula, with 23% of hospitalized influenza patients receiving nasal cannula in the emergency department or upon admission.

Figure 18



Eighteen influenza outbreaks were identified during the 2017-18 season, compared to 16 throughout the 2016-17 season. Table 1 shows what type of facilities the outbreaks occurred in and the influenza type that was circulating. All facilities were educated about proper hygiene, disinfection and the importance of vaccination.

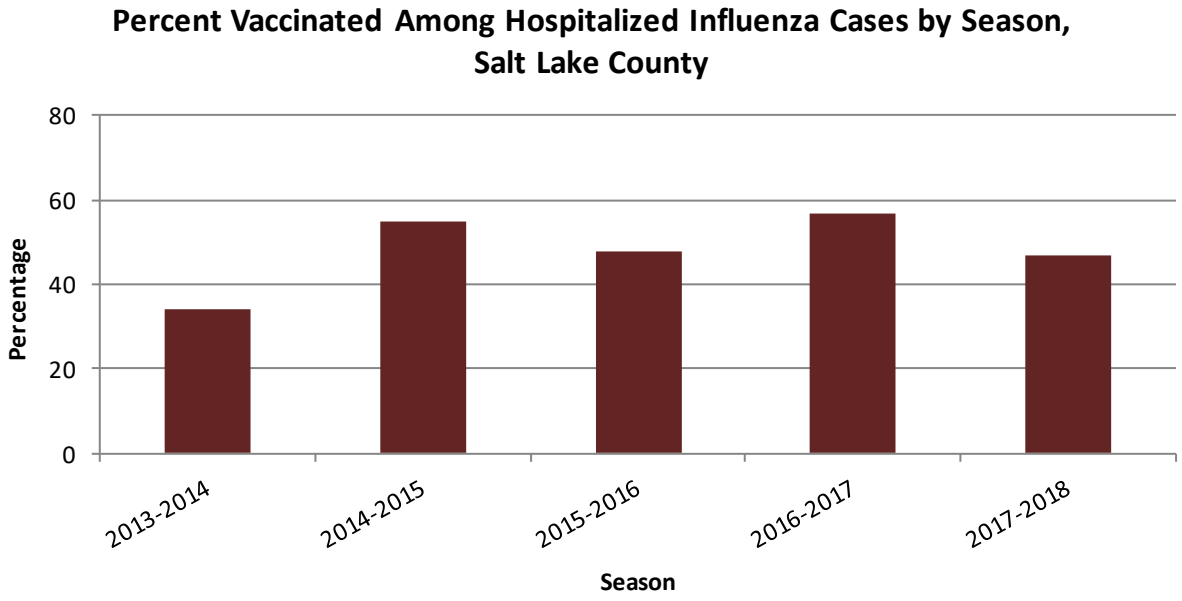
Table 1

Facility Type	Number of Facilities Affected	Number of Ill Cases	Number of Cases Tested Positive	Influenza Type	Number of Cases Vaccinated
Long Term Care Facility	18	162	103	A(unk), A(H3), B (unk), B(Yamagata), B(Victoria)	43

Vaccine

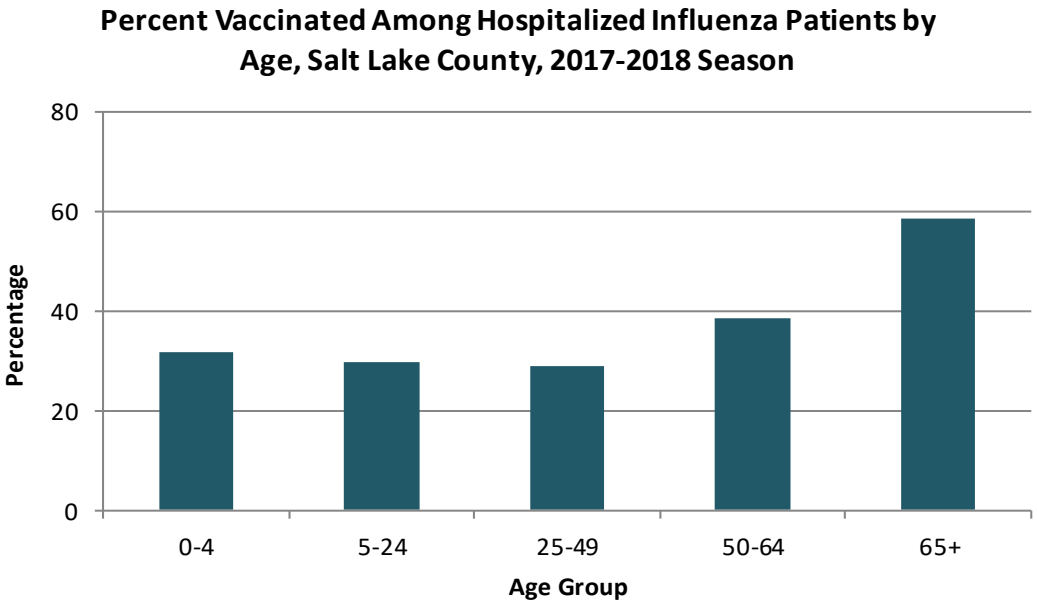
A five season comparison shows that the percent vaccinated for the 2017-18 season was lower than the 2016-17 season. Forty-seven percent of cases were vaccinated during the 2017-18 season compared to 57% the season prior. See figure 19.

Figure 19



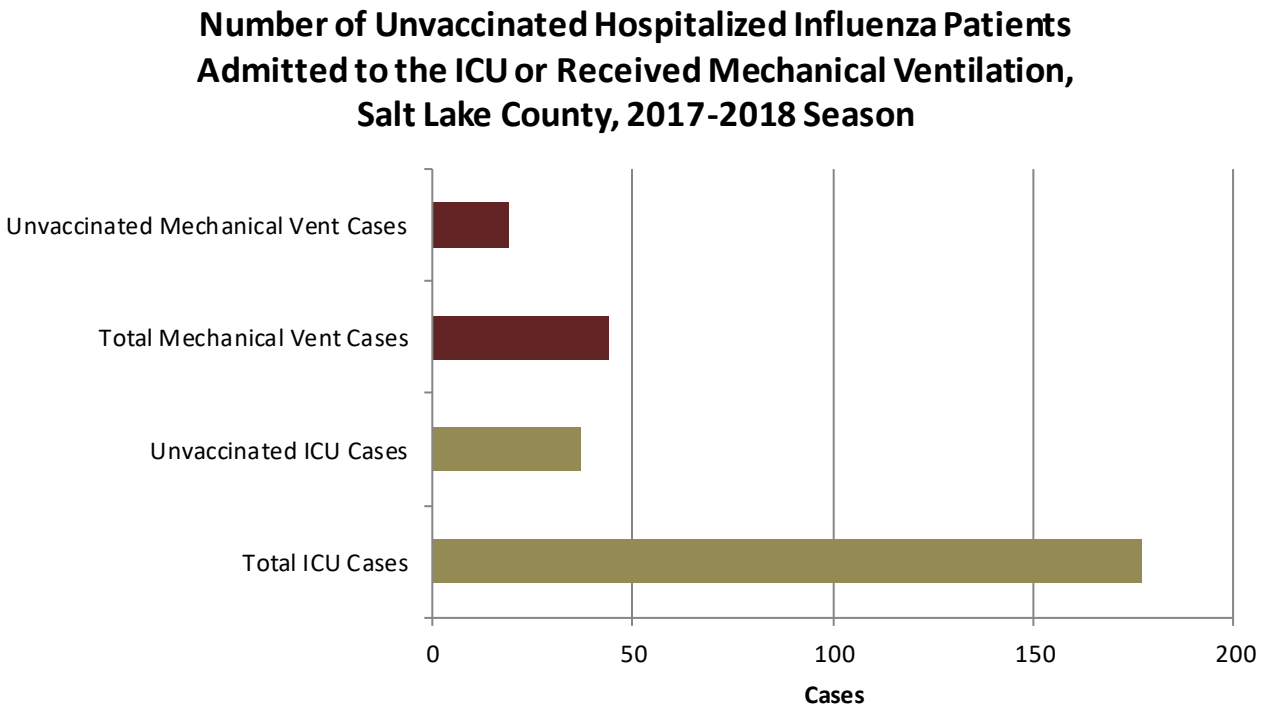
When divided by age, the 65+ age group had the highest percent vaccinated at 58%, with the 25-49 age group having the lowest percent vaccinated at 29%. See figure 20.

Figure 20



Out of 177 total ICU admissions during the 2017-18 season, 21% of those admissions were among unvaccinated patients. Forty-four hospitalized influenza patients received mechanical ventilation, where 43% of those patients were unvaccinated. Of note, the amount of hospitalized influenza patients who received mechanical ventilation doubled during the 2017-18 season compared to the 2016-17 season. See figure 21.

Figure 21



Conclusion

The 2017-18 season was one of the most burdensome on record, with case counts in Salt Lake County exceeding that of the 2009 AH1N1 pandemic. The season peaked when expected for a traditional influenza season, with the majority of cases reported at the beginning of January. This pattern coincides with past seasons that were predominantly AH3 strain. Unlike the 2016-17 season that only had 7% of cases identified as type B, 31% of the 2017-18 cases were identified as type B.

A statistically significant difference was found between the white and black/African American communities, indicating that African Americans were more likely to be hospitalized from influenza than whites. Non-Hispanics were also found to be disproportionately affected by influenza when compared to Hispanics. As for age, the 65+ age group had the greatest rate of all age categories, which is typically seen during a predominant AH3 season.

The 2017-18 season saw the highest number of deaths among the 65+ age group, which was similar to the season prior. When looking at a nine season comparison, the 2017-18 season had the highest rate of death across all age categories. Among hospitalized cases for the 2017-18 season, 47% of cases were vaccinated compared to hospitalized cases for the 2016-17 season at 57%. Although influenza vaccines are not 100% effective in preventing the contraction of influenza, it is still the most effective method to fight against infection.