



Salt Lake County Annual Influenza Report

2016-2017 Season

Bureau of Epidemiology

Introduction

The 2016-2017 influenza season saw 621 confirmed influenza-associated hospitalizations reported from October 1, 2016 to April 30, 2017. As shown in Figure 1, influenza cases peaked during MMWR week 1 (week ending January 7, 2017) with 99 cases.

Compared to the five year average, the 2016-2017 season follows the same trend, with a dramatic peak occurring in early January. Yet the 2016-2017 season case count is considerably higher than the five year average.

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

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Figure 1

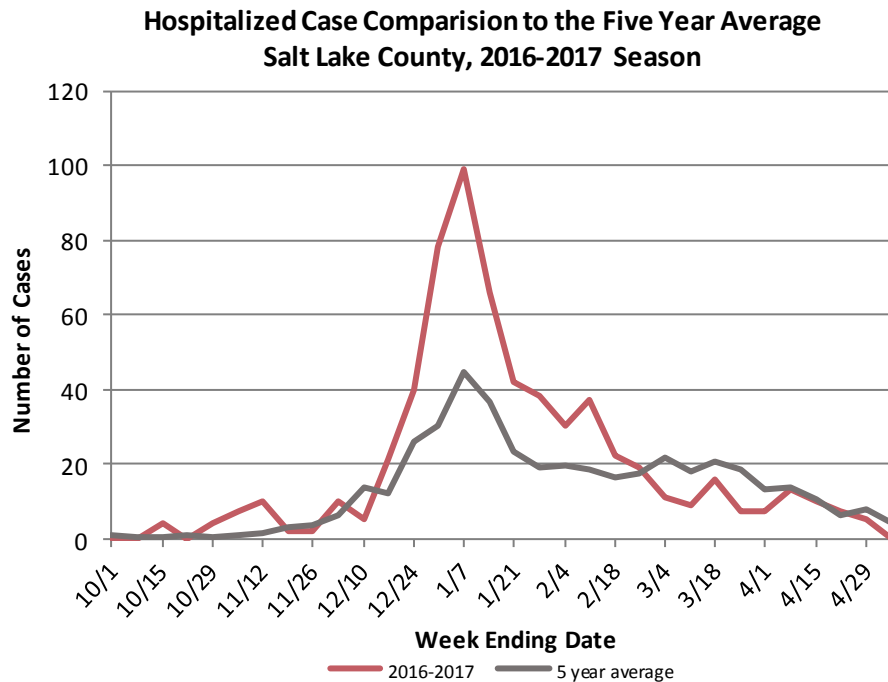
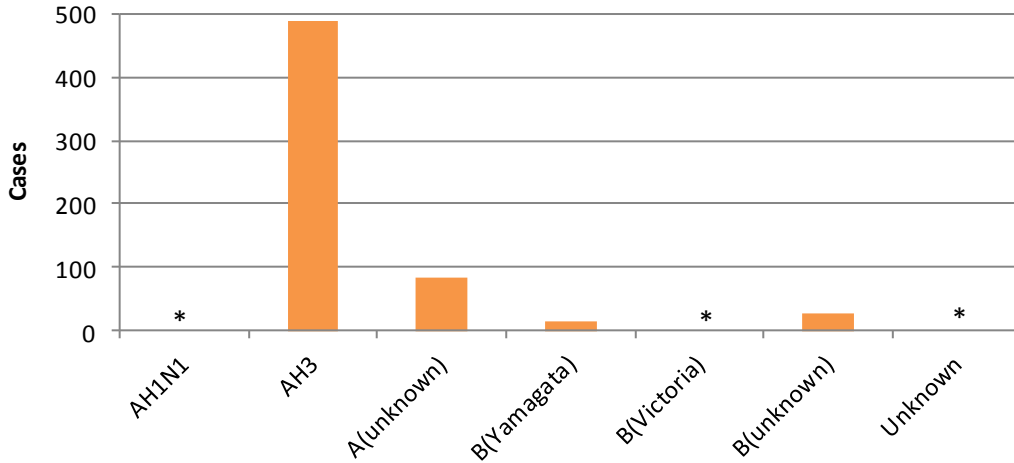


Figure 2

Hospitalized Influenza Cases by Type, Salt Lake County, 2016-2017 Season

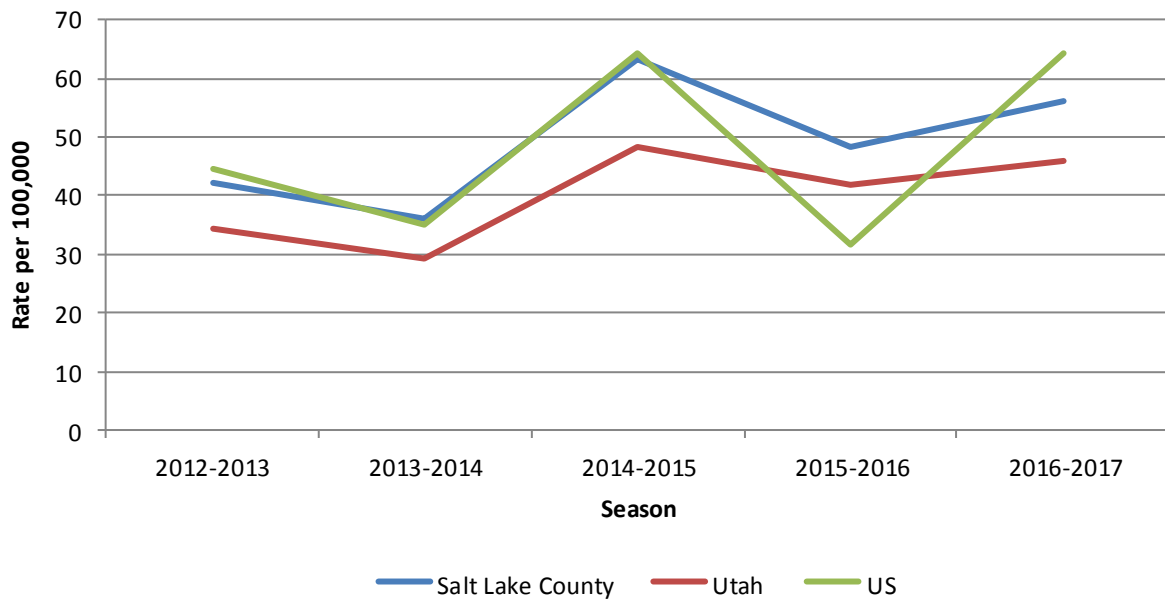


*Data suppressed due to low counts

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 56 per 100,000 population, compared with Utah at 46 and the national rate of 64 per 100,000 population. Figure 3 displays a five season comparison between Salt Lake County, Utah and the United States.

Figure 3

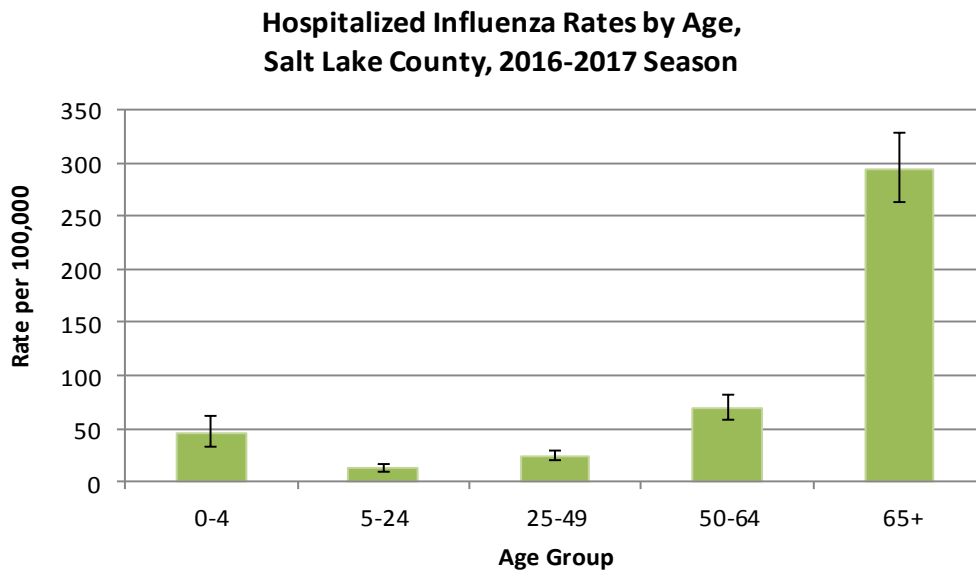
Five Season Hospitalized Influenza Rate Comparison



Demographic Profile

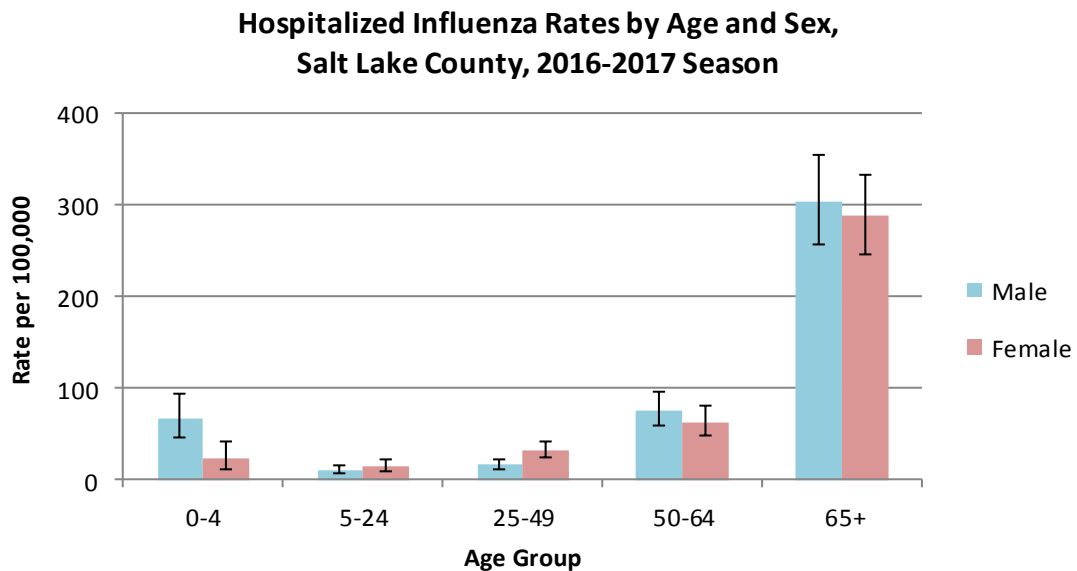
The 65+ age group was disproportionately affected by influenza compared to all other age groups, with a rate of 295 per 100,000 population. The lowest rate was among the 5-24 age group at 13 per 100,000 population. See figure 4.

Figure 4



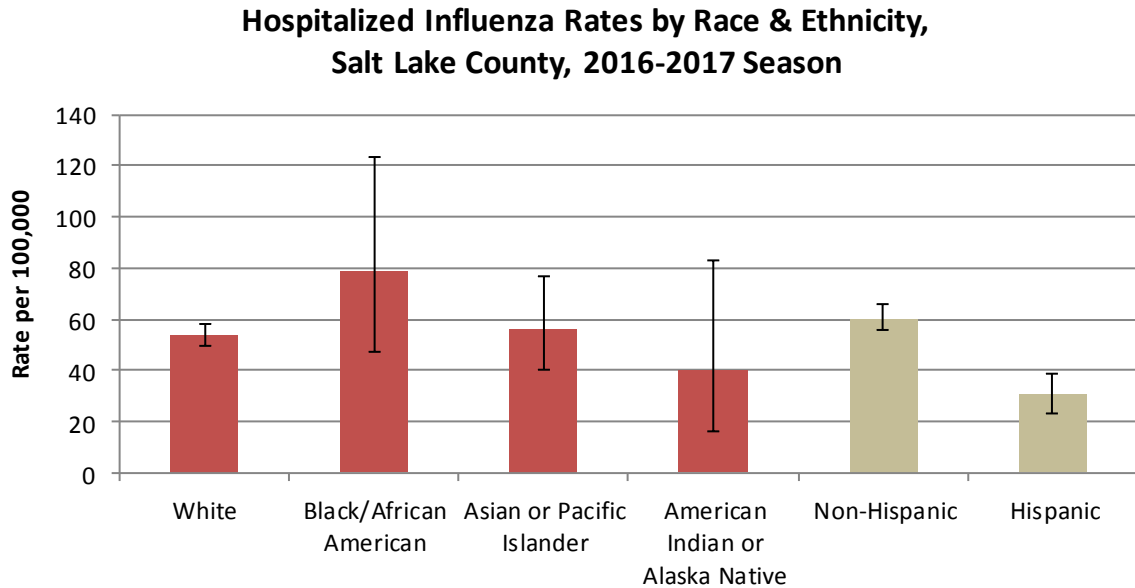
When looking at age and sex, there is a significant difference between males and females in the 0-4 age group. The highest rates were among both males and females over the age of 65. Male rates for the 65+ age group were 303 per 100,000 population and female rates were 288 per 100,000 population. See figure 5.

Figure 5



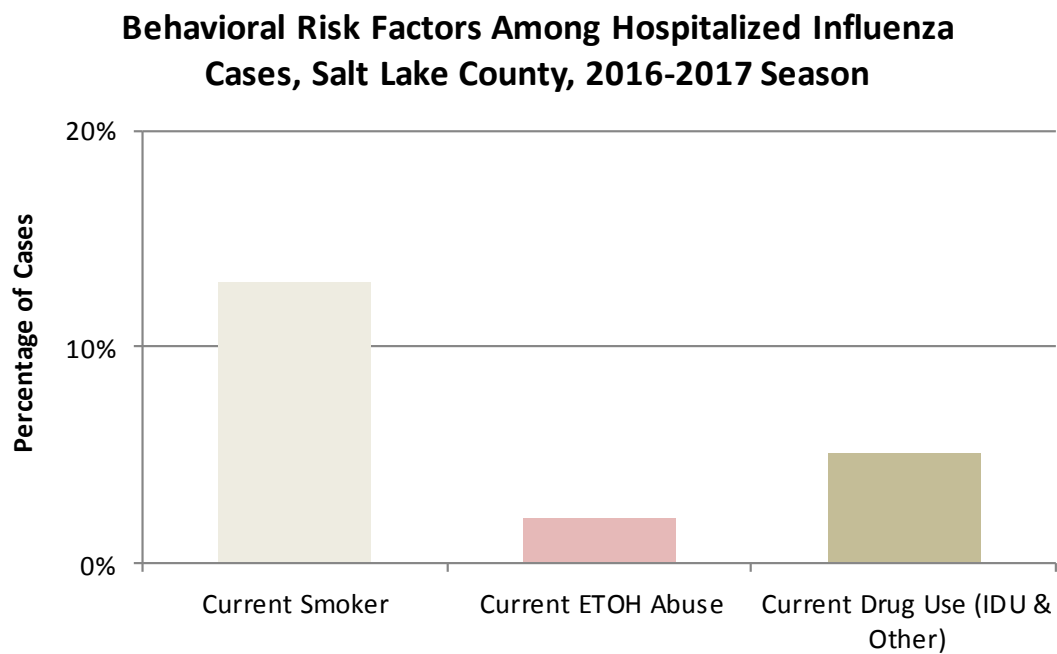
The highest rates of influenza were among the Black/African American community with a rate of 78 per 100,000 population. However the rate differences between all race categories was not statistically significant. A significant difference was found between non-Hispanic and Hispanic cases meaning that 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 13% 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 chronic metabolic disease and cardiovascular disease, with 43% of cases having some form of chronic metabolic disease and 39% of cases having some form of cardiovascular disease. Figure 8 displays the percent of cases affected by a range of underlying conditions.

Figure 8

Underlying Medical Conditions Among Hospitalized Influenza Cases, Salt Lake County, 2016-2017 Season

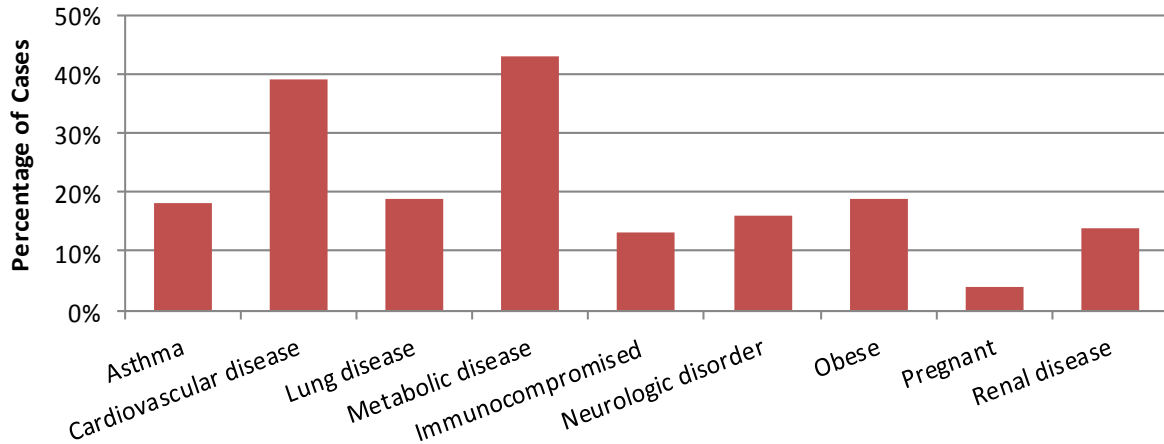
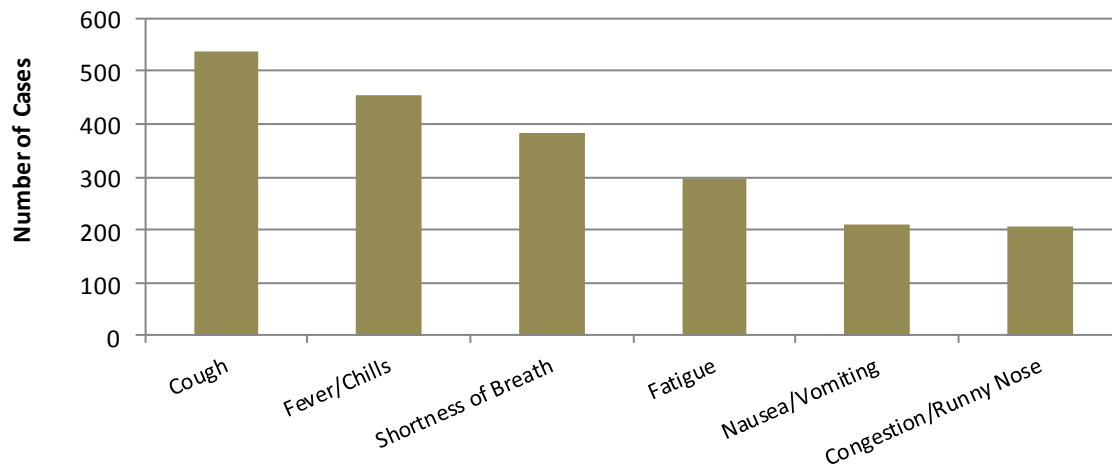


Figure 9 displays the top six symptoms cases reported prior to hospital admission. Cough and fever were the top symptoms reported, with 86% of patients reporting a cough and 73% of patients reporting a fever.

Figure 9

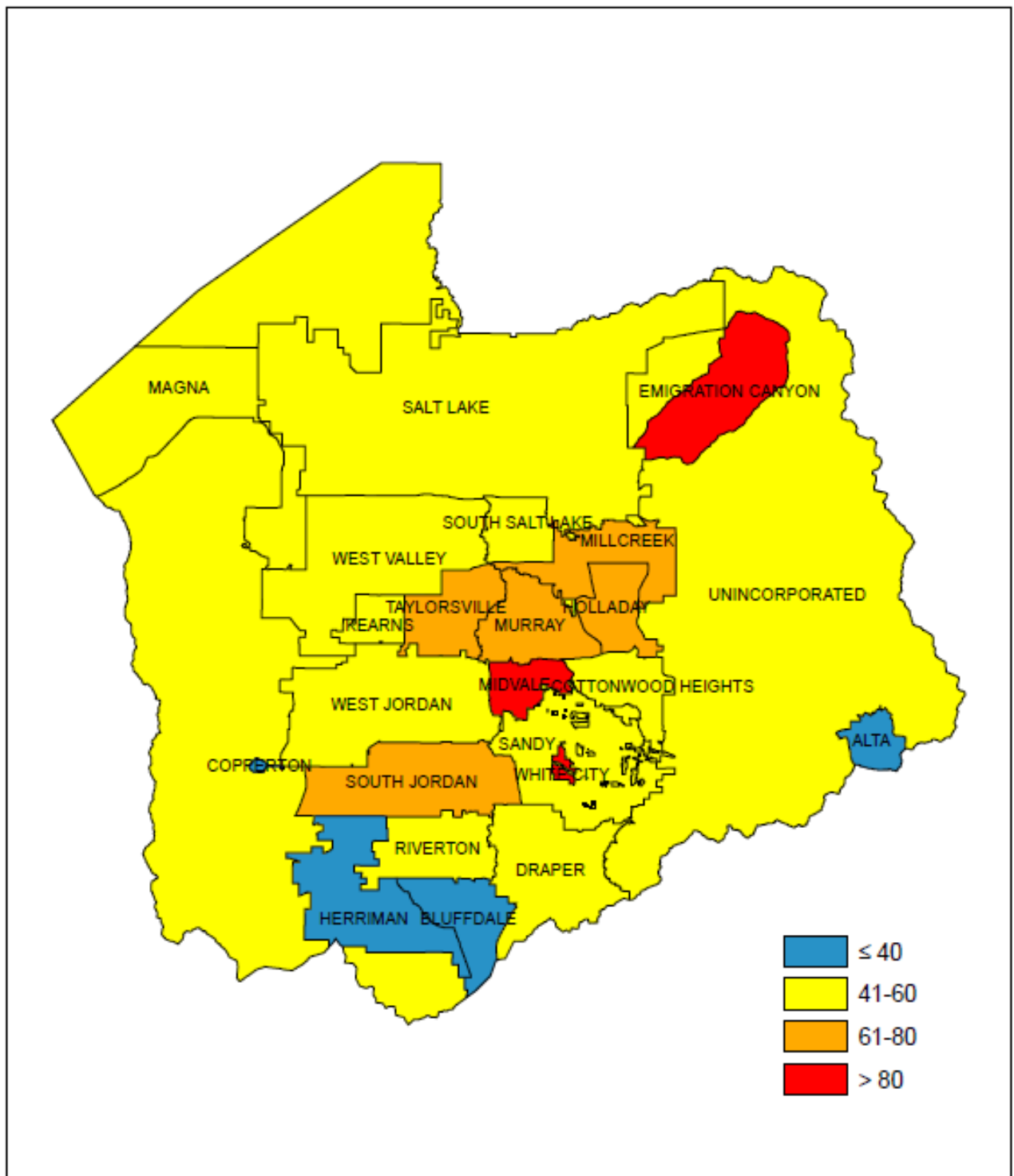
Common Symptoms at Admission for Influenza-Associated Hospitalizations, Salt Lake County, 2016-2017 Season



2016-2017 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. Emigration Canyon, Midvale and White City saw the greatest burden of influenza.

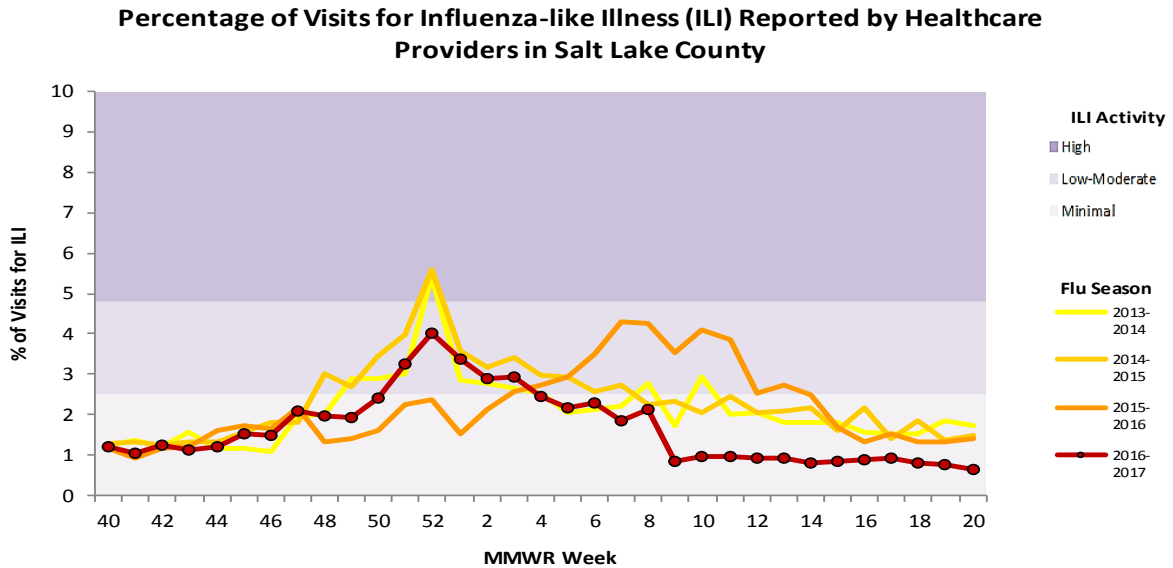
Figure 10



Outpatient Surveillance

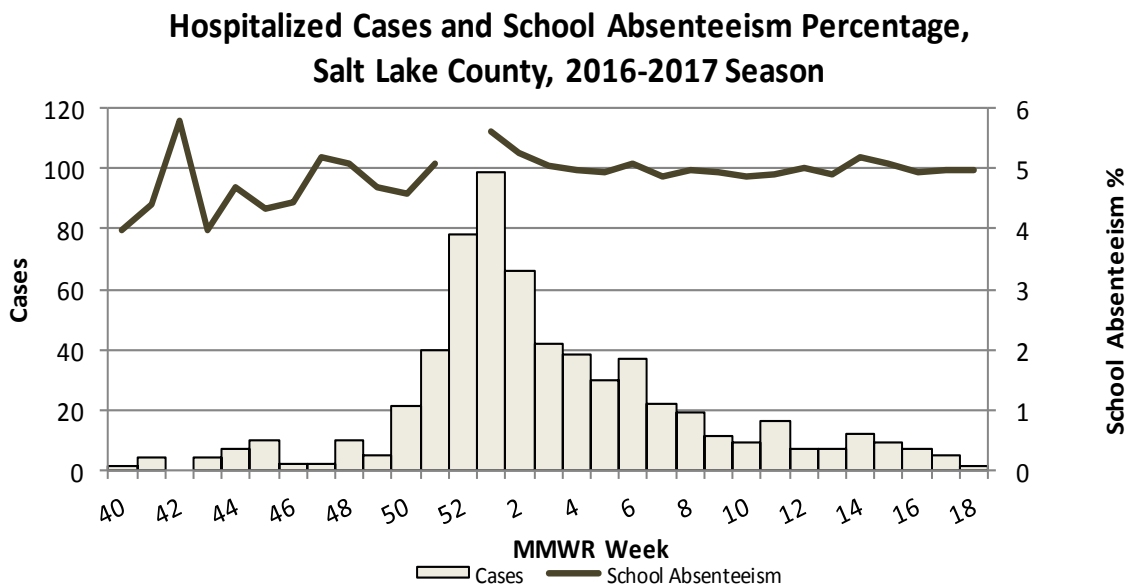
Outpatient influenza surveillance is an integral component to tracking influenza trends in Salt Lake County. Influenza-like-illness (ILI) surveillance is one such tool used to monitor influenza patterns. Figure 11 displays a four season ILI comparison for Salt Lake County. The 2016-2017 ILI trend peaks at the same time as hospitalized influenza cases, but has a dramatic decline in the spring.

Figure 11



School absenteeism followed the same trend as hospitalized cases, with absences peaking at the height of the season during MMWR week 1. There is spike in school absenteeism at the beginning of the influenza season which does not coincide with the case trend and is unknown as to why. See figure 12.

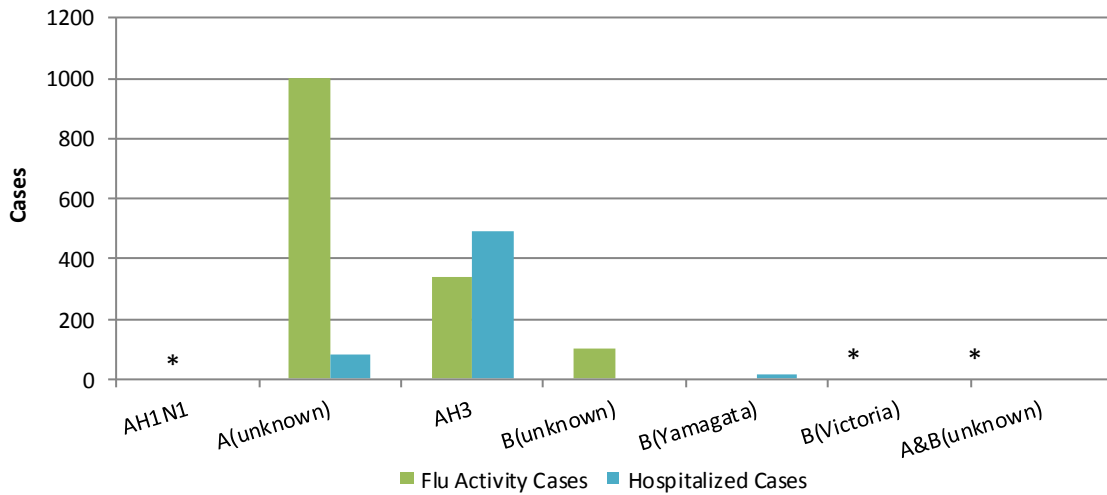
Figure 12



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 13 compares hospitalized and influenza activity cases by type, highlighting the lack of subtyping among non-hospitalized patients.

Figure 13

Cases by Type: Hospitalized versus Flu Activity Cases, Salt Lake County, 2016-2017 Season

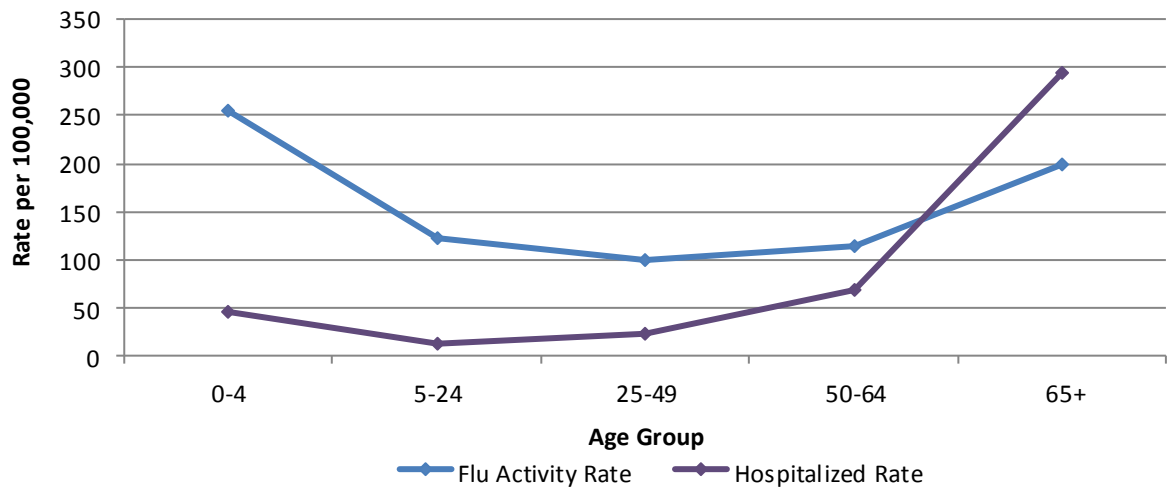


*Data suppressed due to low counts

When comparing rates by age between hospitalized and influenza activity cases, both populations follow a similar trend. Among hospitalized cases, the highest rate was among patients 65+ years of age at 295 per 100,000 population. The highest rate among influenza activity cases was found in the 0-4 age group at 256 per 100,000 population. The influenza rate by age trend for both populations is displayed in figure 14.

Figure 14

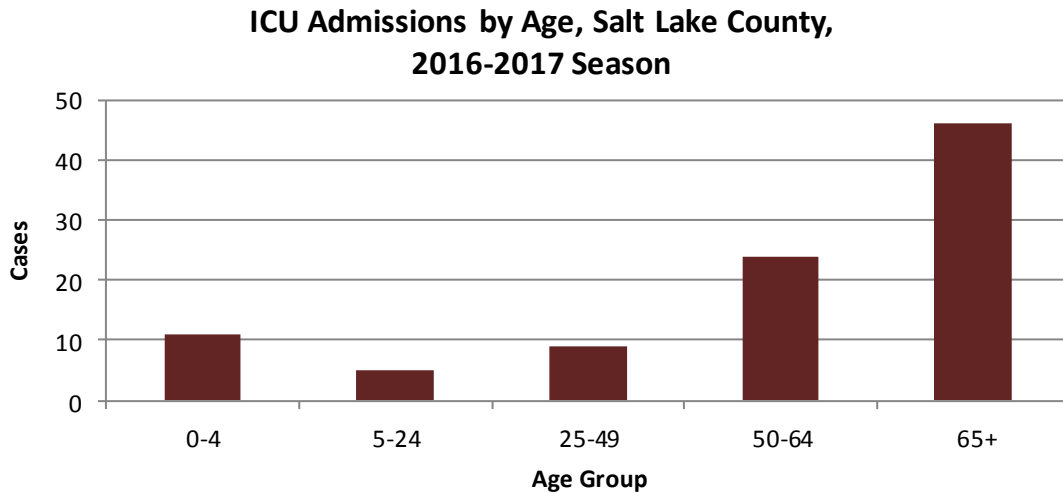
Influenza Rate by Age, Salt Lake County, 2016-2017 Season



Severity

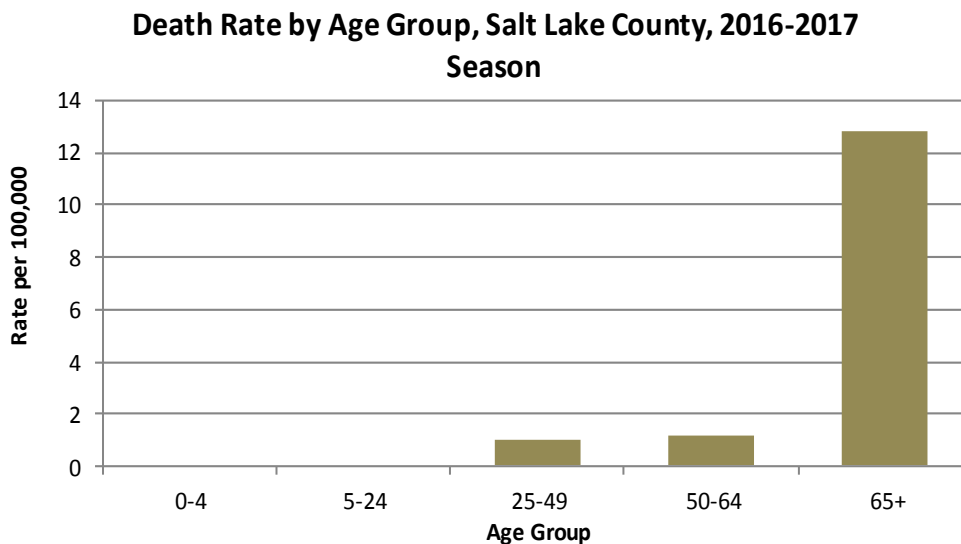
Fifteen percent of hospitalized influenza cases during the 2016-2017 season were admitted to an intensive care unit (ICU). The 65+ age group had the highest number of cases admitted to an ICU. Figure 15 shows the ICU distribution by age among all hospitalized cases.

Figure 15



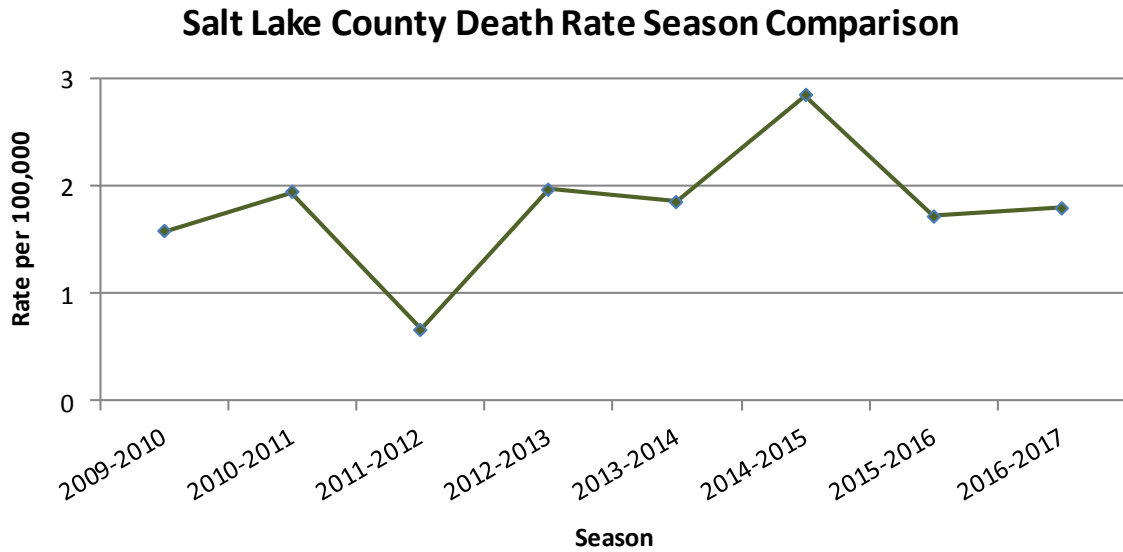
There were 20 influenza-related deaths during the 2016-2017 season. The highest death rate was among the 65+ age group with 13 per 100,000 population. Figure 16 displays the death rates that occurred during the 2016-2017 season by age.

Figure 16



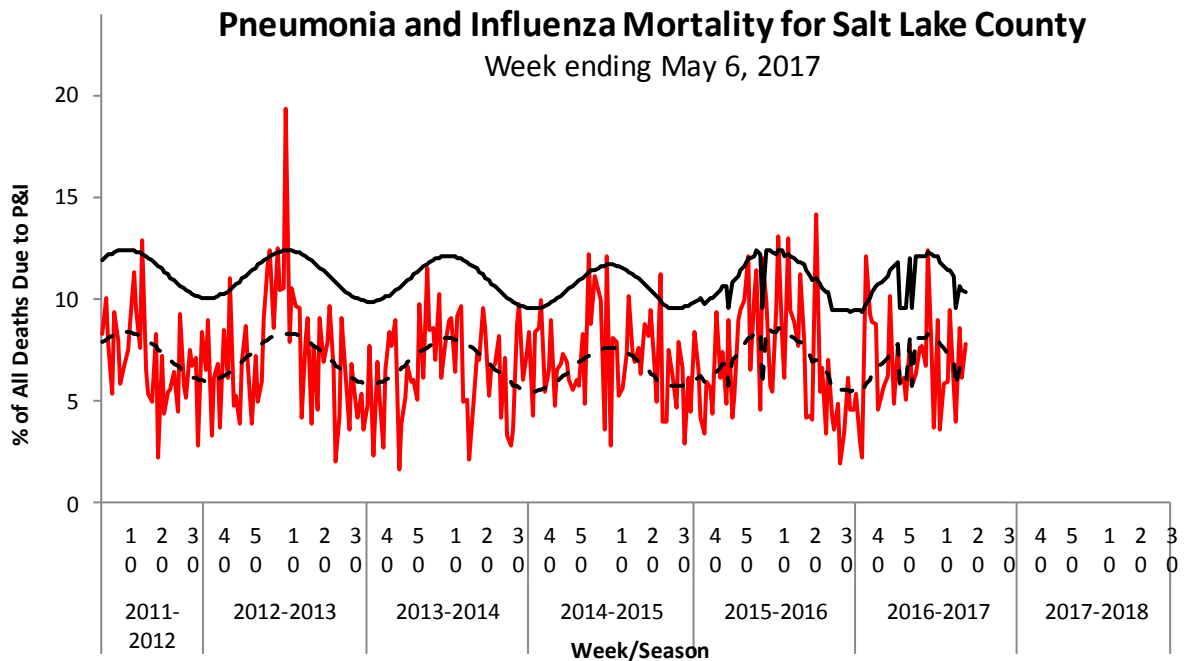
When looking at a multi-season comparison, death rates were slightly higher during the 2016-2017 season when compared to the 2015-2016 season. See figure 17.

Figure 17



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 two weeks throughout the 2016-2017 season, which is less than the number of elevations seen during the 2015-2016 season. See figure 18.

Figure 18



Sixteen influenza outbreaks were identified during the 2016-2017 season, compared to six throughout the 2015-2016 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.

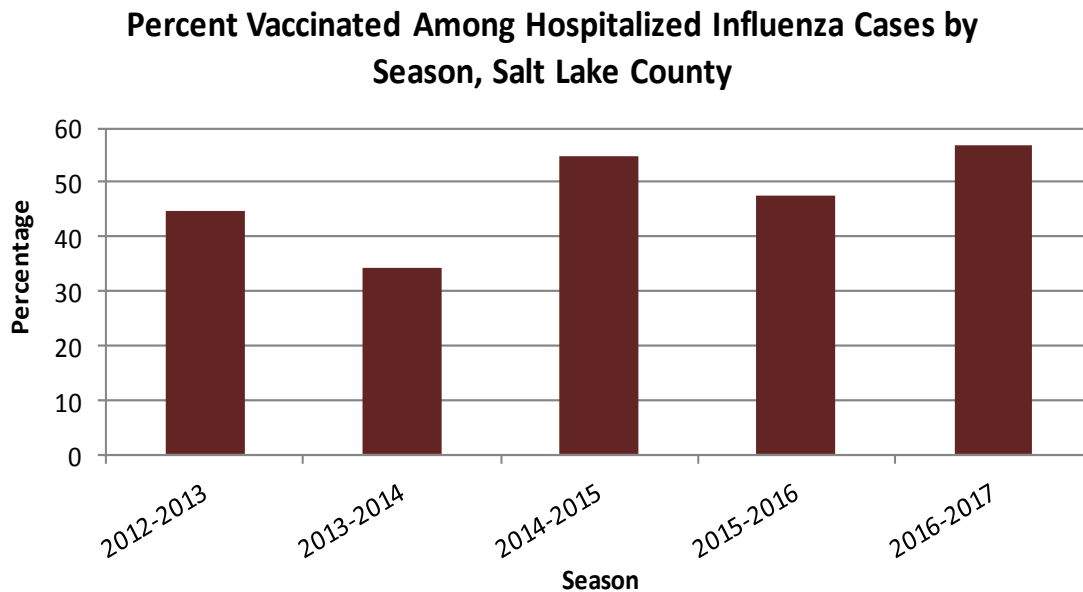
Table 1

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	15	127	58	AH3	27
Homeless Shelter	1	8	8	AH3	3

Vaccine

A five season comparison shows that the percent vaccinated for the 2016-2017 season was higher than the 2015-2016 season. Fifty-seven percent of cases were vaccinated during the 2016-2017 season compared to 48% the season prior. See figure 19.

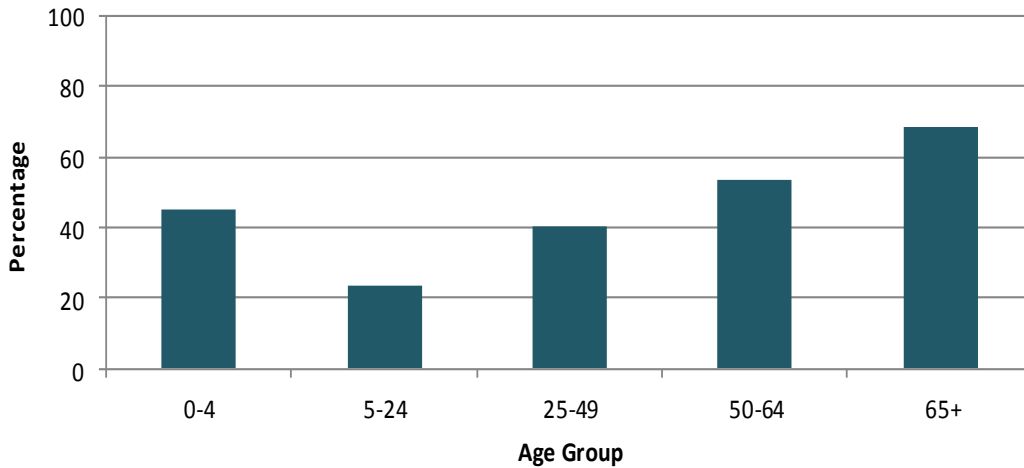
Figure 19



When divided by age, the 65+ age group had the highest percent vaccinated at 69%, with the 5-24 age group having the lowest percent vaccinated at 45%. See figure 20.

Figure 20

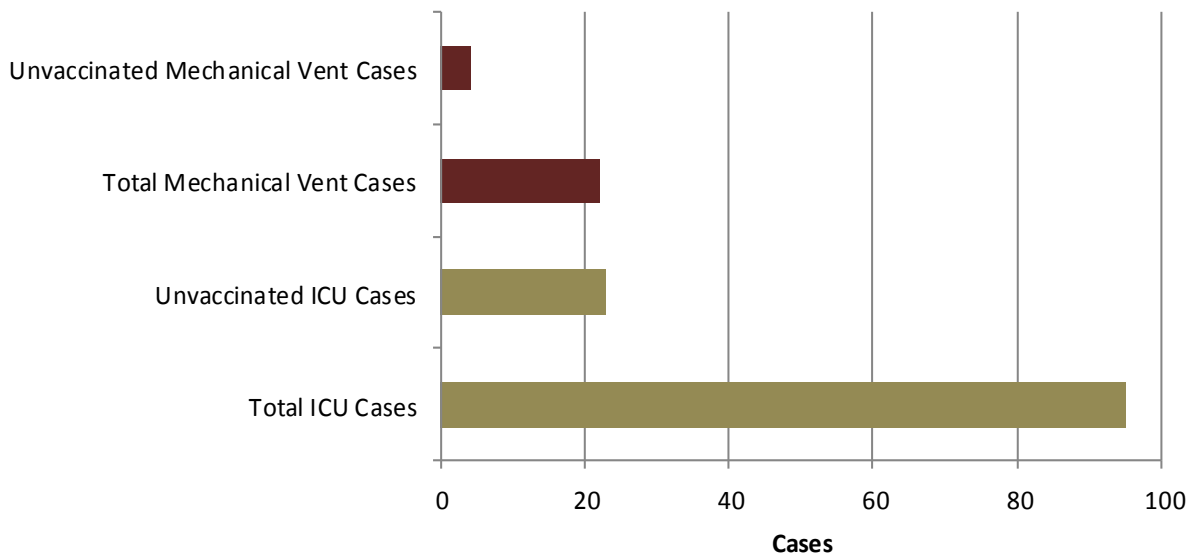
Percent Vaccinated Among Hospitalized Influenza Patients by Age, Salt Lake County, 2016-2017 Season



Out of 95 total ICU admissions during the 2016-2017 season, 24% of those admissions were among unvaccinated patients. Twenty-two hospitalized influenza patients received mechanical ventilation, where 18% of those patients were unvaccinated. See figure 21.

Figure 21

Number of Unvaccinated Hospitalized Influenza Patients Admitted to the ICU or Received Mechanical Ventilation, Salt Lake County, 2016-2017 Season



Conclusion

The 2016-2017 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 2015-2016 season that saw a considerable presence of type B(Yamagata) or B(Victoria), only 7% of 2016-2017 cases were type B. Racial categories were not found to have a statistically significant difference from one another when hospitalized for influenza. Yet non-Hispanics were found to be disproportionately affected by influenza when compared to Hispanics. As for age, AH3 strain typically affects the 65+ age group at a greater rate than all other age categories, which was true for the 2016-2017 season.

The 2016-2017 season saw a higher number of deaths among the 65+ age group, which was similar to the season prior. Severity of illness was lower when compared to the 2015-2016 season, with 20% less cases being admitted to the ICU and 44% less cases receiving mechanical ventilation during the 2016-2017 season. Among hospitalized cases for the 2016-2017 season, 57% of cases were vaccinated when compared to hospitalized cases for the 2015-2016 season at 48%. Although influenza vaccines are not 100% effective in preventing the contraction of influenza, it is still the most effective method to fight against infection.