

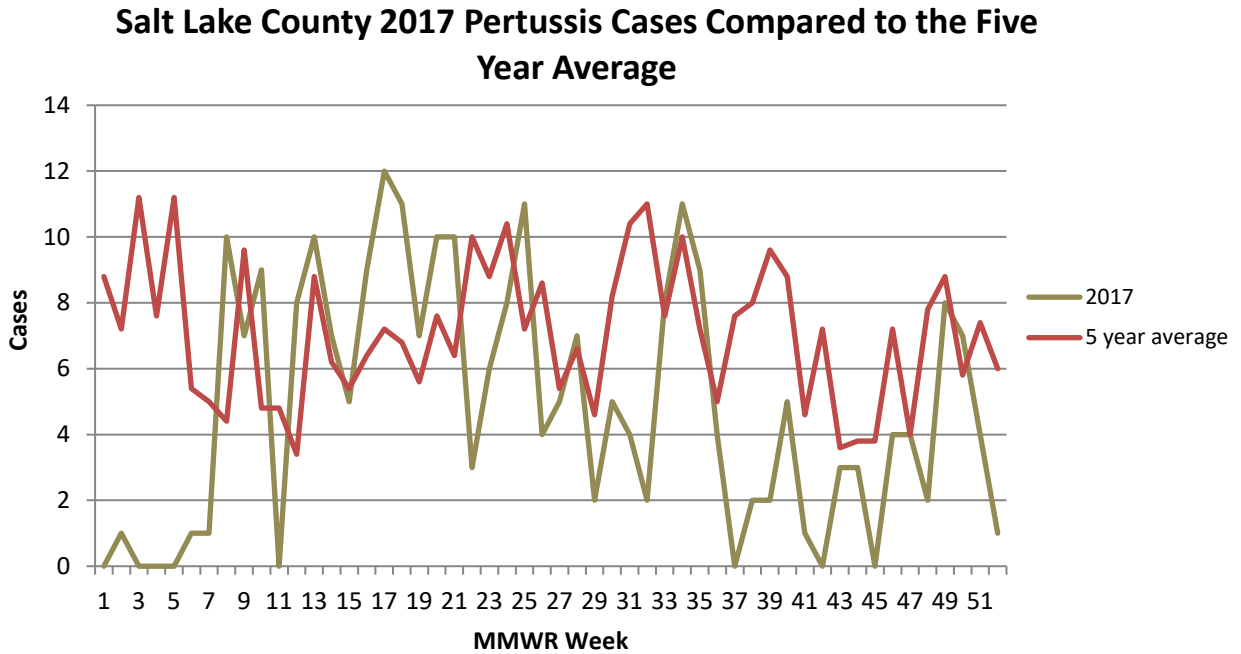


Pertussis: 2017 Year End Report

This report characterizes primary surveillance data collected by the Salt Lake County Health Department from questions on the Utah Pertussis Investigation Form and incorporates secondary data from the state of Utah (same form) and the United States (Centers for Disease Control and Prevention).

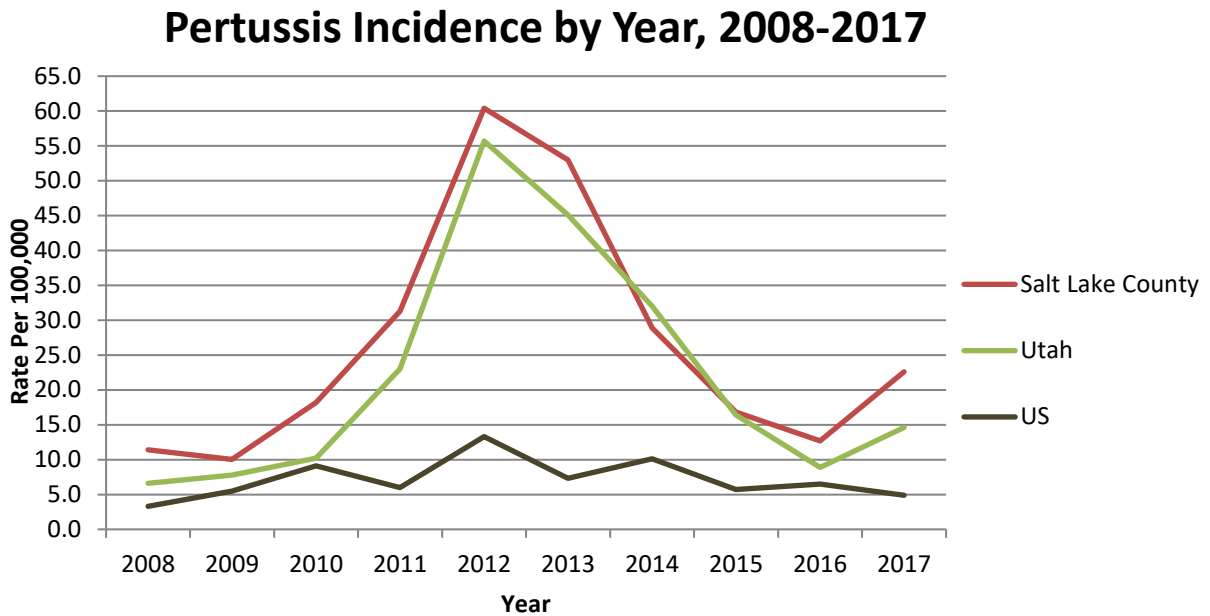
There were 253 confirmed and probable pertussis cases in Salt Lake County in 2017. Compared to the five-year average, case counts typically fell below the five-year average for all of 2017 (Figure 1).

Figure 1



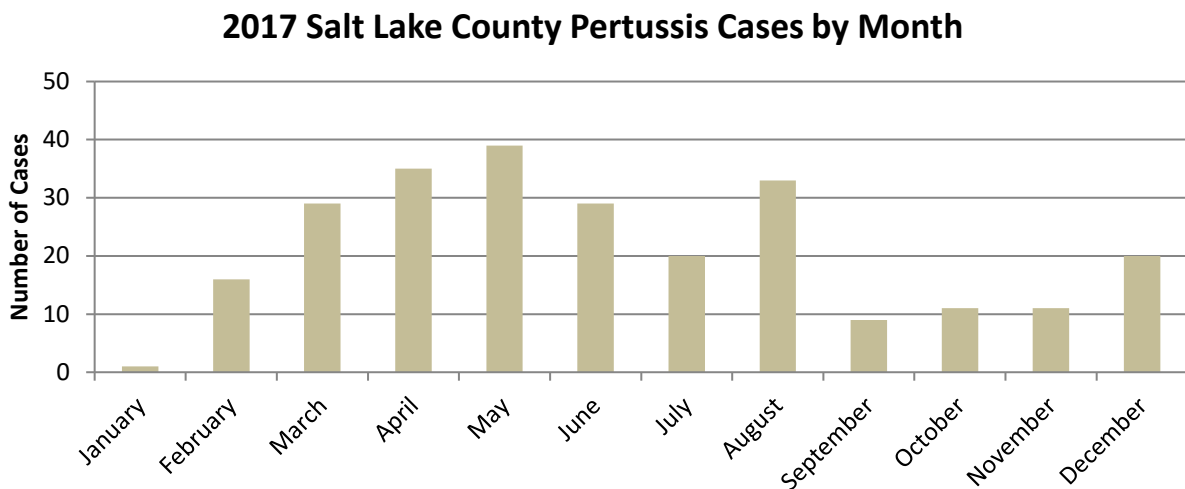
The incidence rate for Salt Lake County was 22.6 per 100,000 population. Over a ten-year period, Salt Lake County has had higher incidence rates than the US; however, Salt Lake County and Utah follow a similar trend (Figure 2).

Figure 2



During 2017, monthly trends show that the pertussis cases peaked in May, and again in August (Figure 3).

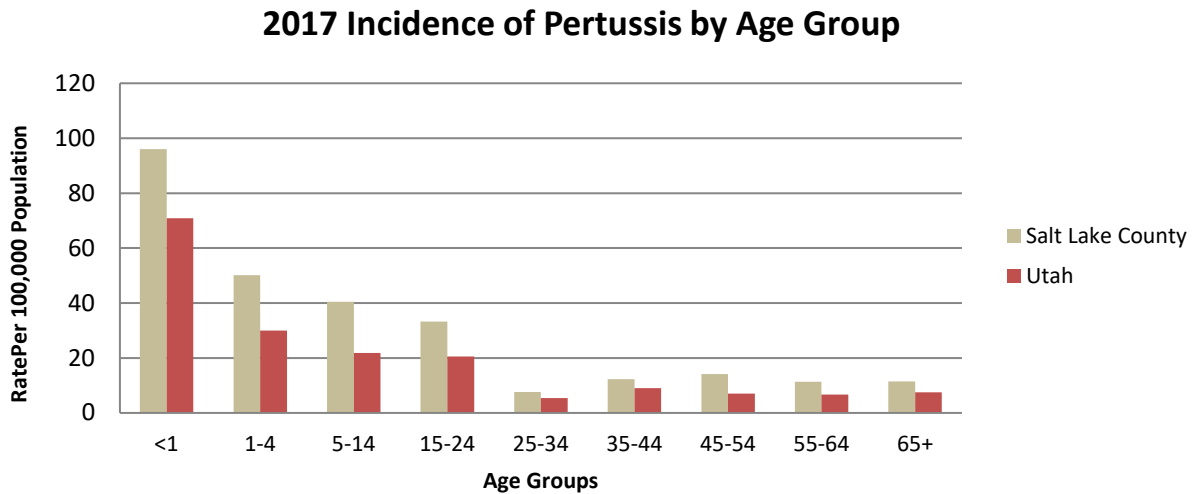
Figure 3



Demographics

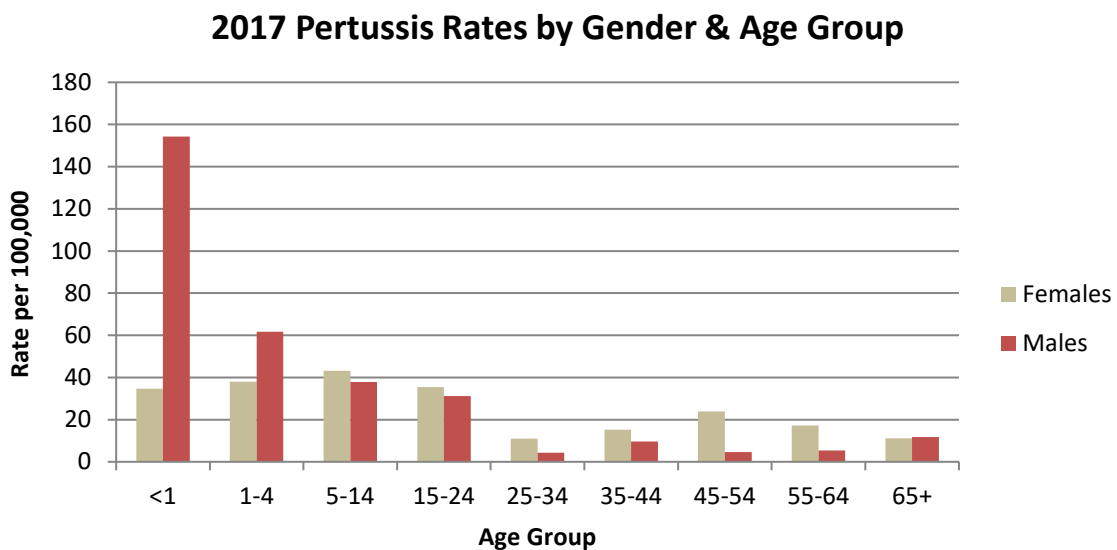
Pertussis surveillance for age is broken into nine standard age categories as shown in Figure 4. Incidence for pertussis in Salt Lake County is highest among the less than one age group at 96 per 100,000 population. Utah follows the same trend.

Figure 4



In 2017 females had a higher rate than males among total cases (24 per 100,000 population compared to 21). However, the rate for males in the <1 age group was nearly four and a half times higher than the female rate at 154 per 100,000 population compared to 35 (Figure 5).

Figure 5



As shown in Figures 6 and 7, pertussis rates are highest among the White and non-Hispanic populations of Salt Lake County.

Figure 6

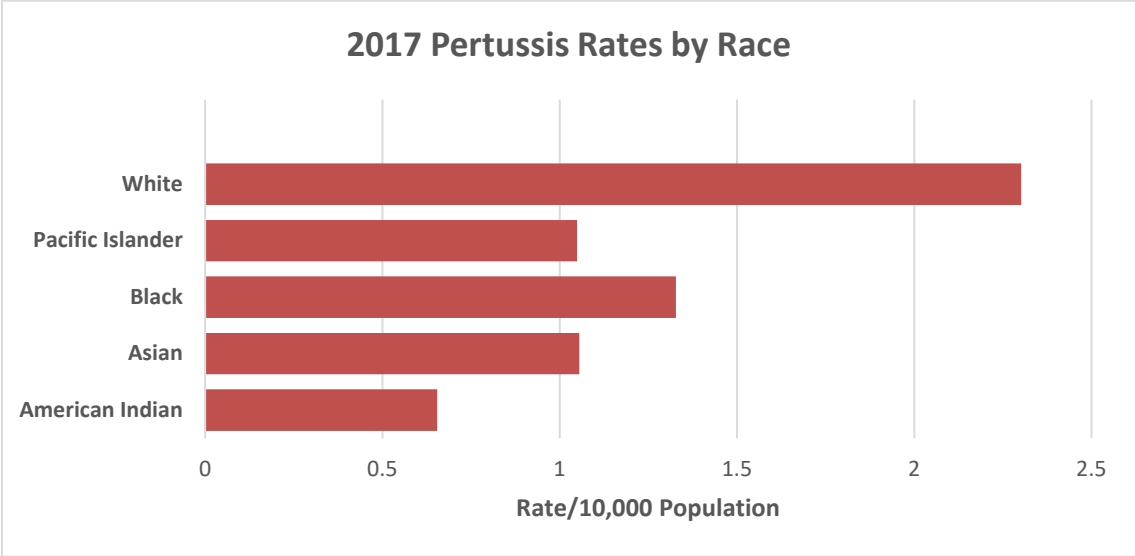
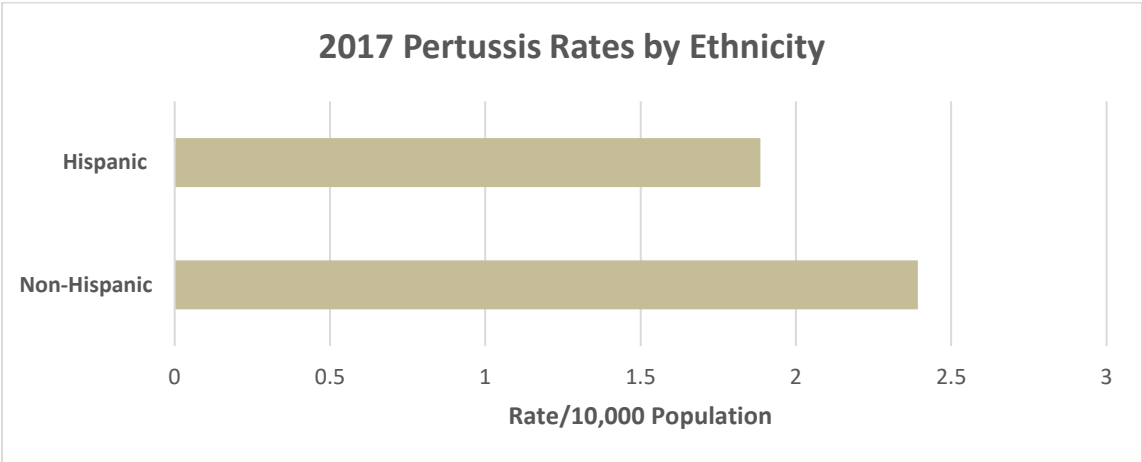


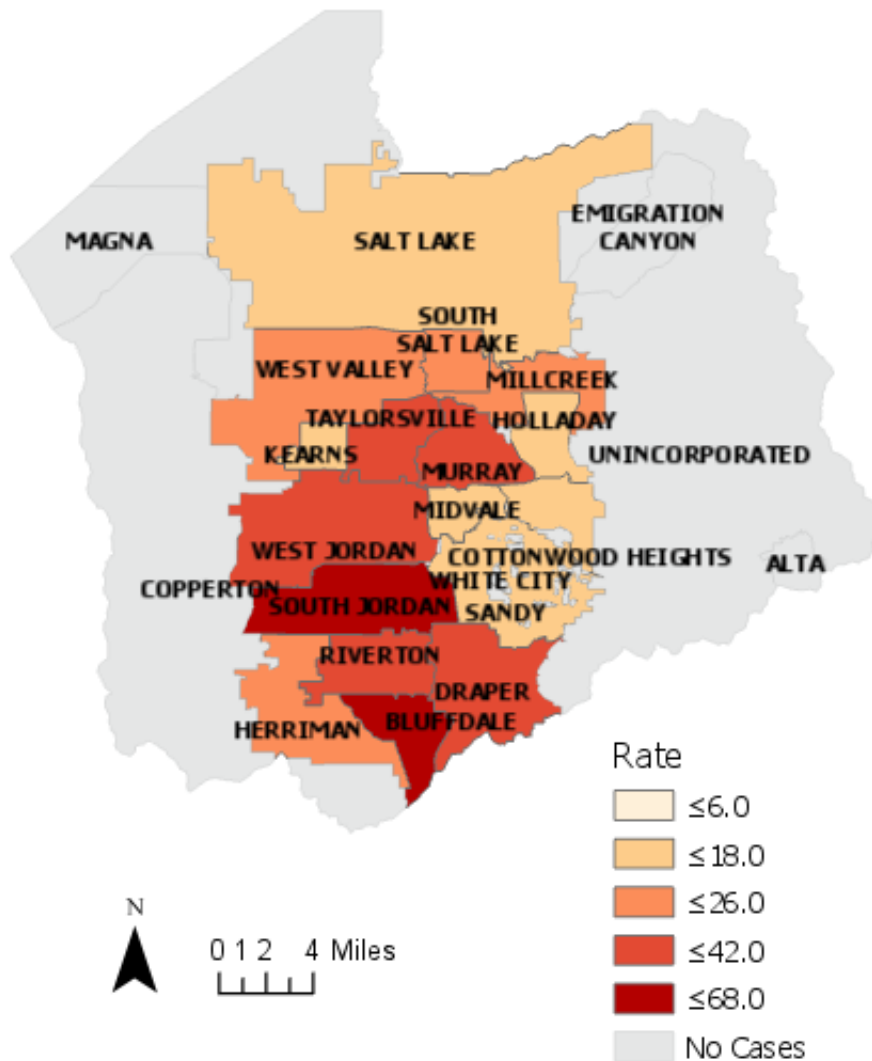
Figure 7



In 2017 the city of Sandy saw a decrease in rate when compared to 2016. On the contrary, South Jordan, Bluffdale, Draper, Murray, Taylorsville, West Valley, Millcreek, and South Salt Lake all saw an increase. Riverton, West Jordan, and Herriman had rates similar to those seen in 2016.

Figure 8

2017 Pertussis Rates by City per 100,000 Population



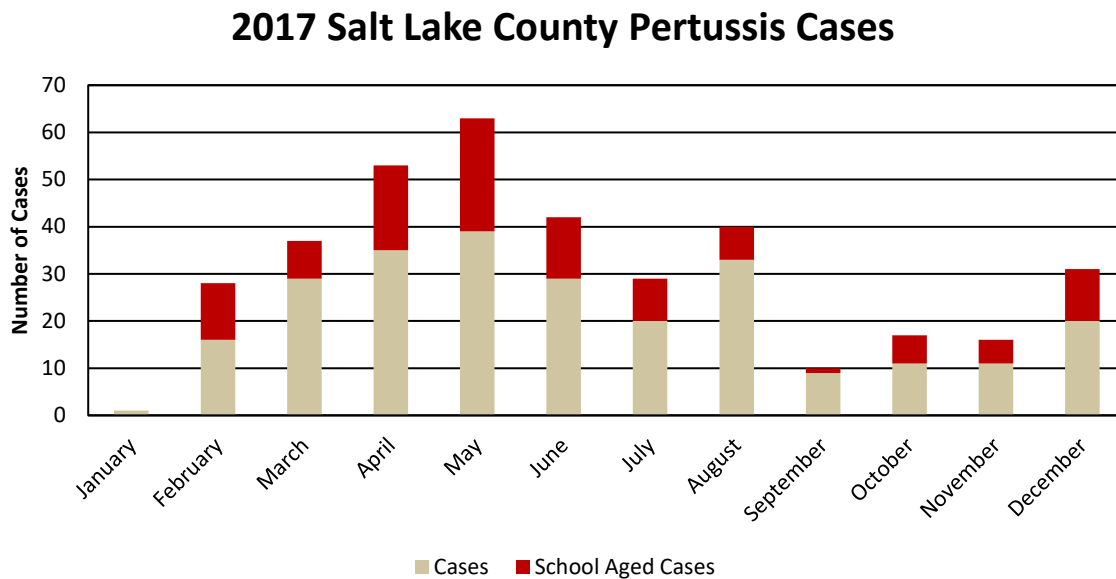
*Rates calculated using American Community Survey (ACS) 2016 5-year population estimates, except Census Designated Places (Copperton, Emigration Canyon, Kearns, Magna, Millcreek, White City; ACS 2015) and unincorporated Salt Lake County (Census 2010), U.S. Census Bureau.

Outbreaks

There were thirteen pertussis outbreaks identified in Salt Lake County in 2017. Outbreaks occurred at four high schools, one middle school, two elementary schools, one charter school, one school for children with disabilities, and four daycares. Nine of the 13 outbreaks were limited to 4 cases or less. Of the larger outbreaks, two were in secondary schools, one was in a school for children with disabilities, and one was in a charter school. The largest outbreak was in the charter school which had an exemption rate of 11%, which is high for a school within Salt Lake County (average rate is 4%). Forty-two percent of all cases were part of or connected to a school outbreak. Eight percent of cases involved in outbreaks were not vaccinated.

Forty-five percent of cases occurred in school aged children. Figure 9 shows the number of cases reported each month in school aged children (ages 5-18) compared to total cases.

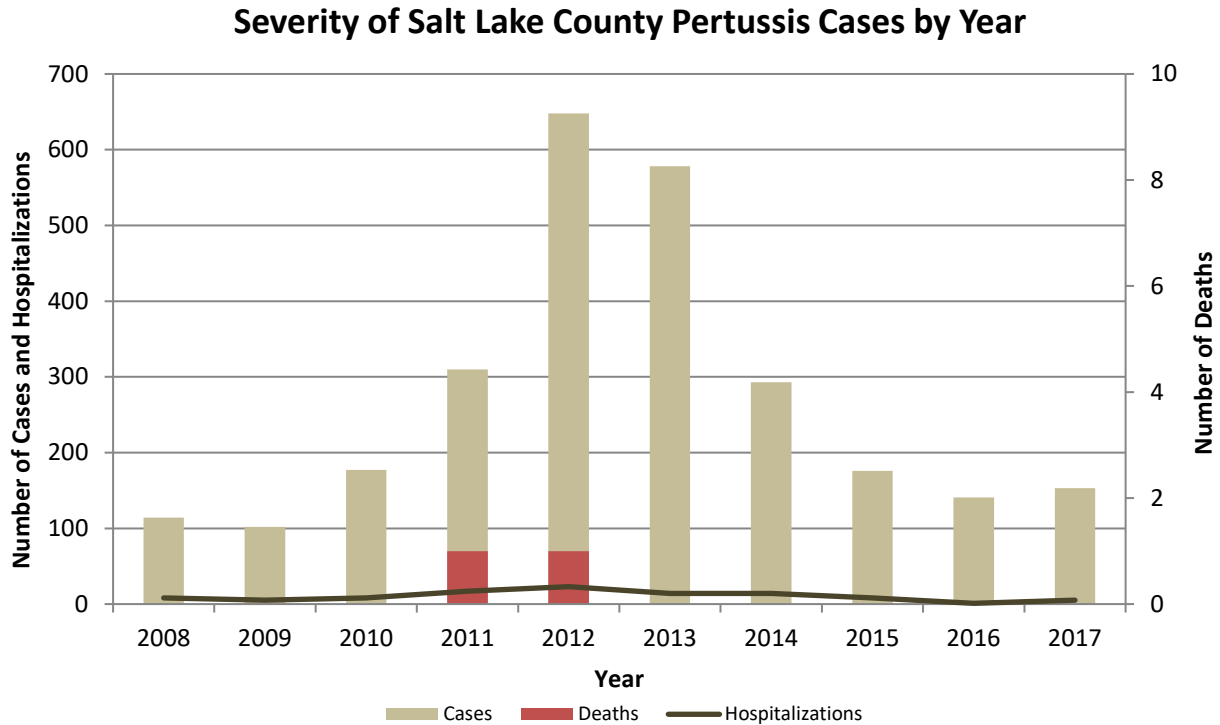
Figure 9



Severity

Severity remained low among 2017 pertussis cases (Figure 10). There were no deaths from pertussis in 2016 in Salt Lake County or in Utah.

Figure 10



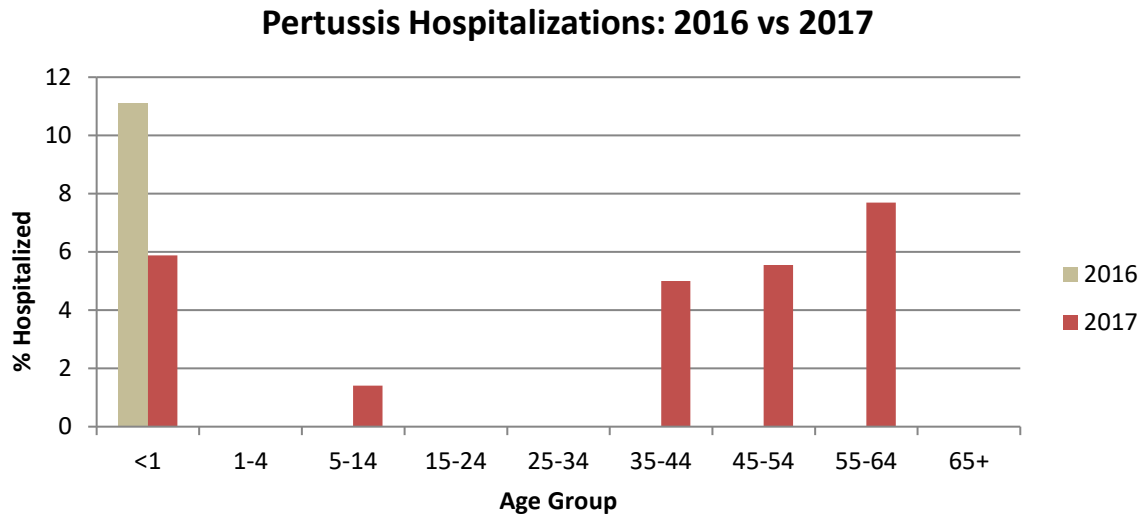
Salt Lake County saw a lower percentage of hospitalized cases when compared to Utah in 2017 with 2% of cases compared to 4% (Table 1).

Table 1

Year	% Hospitalized SLCO	% Hospitalized Utah
2008	7	7
2009	5	5
2010	5	5
2011	5	4
2012	4	3
2013	2	2
2014	5	4
2015	5	3
2016	1	5
2017	2	4

Contrary to 2016, where the only hospitalizations occurred in the <1 age group, 2017 saw hospitalizations in five different age groups. The highest rate of hospitalizations occurred in the 55-64 age group (Figure 11).

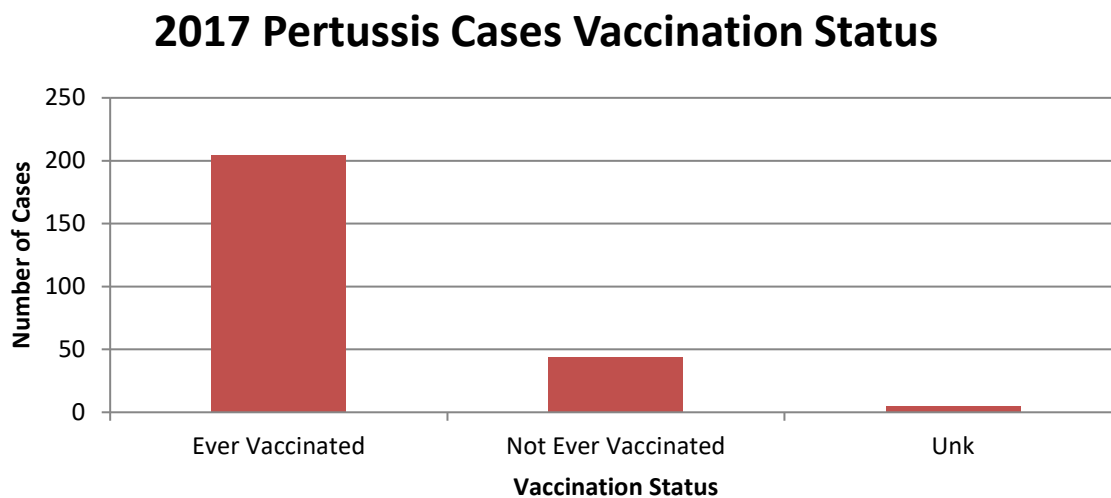
Figure 11



Vaccination

The percentage of cases that were vaccinated in 2017 was 81%. Of those cases, 72% were considered up to date. Out of the 253 pertussis cases in Salt Lake County, 17% of cases had never been vaccinated (Figure 12).

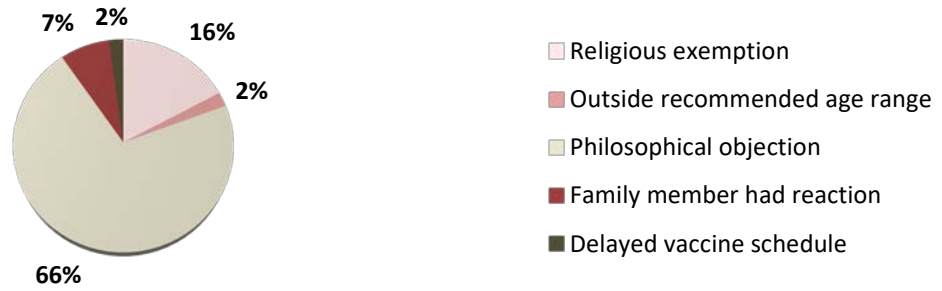
Figure 12



The most common reasons for never having received a vaccine were philosophical and religious objections. Other reasons given were adverse reaction in a family member, and participation in a delayed vaccination schedule (Figure 13).

Figure 13

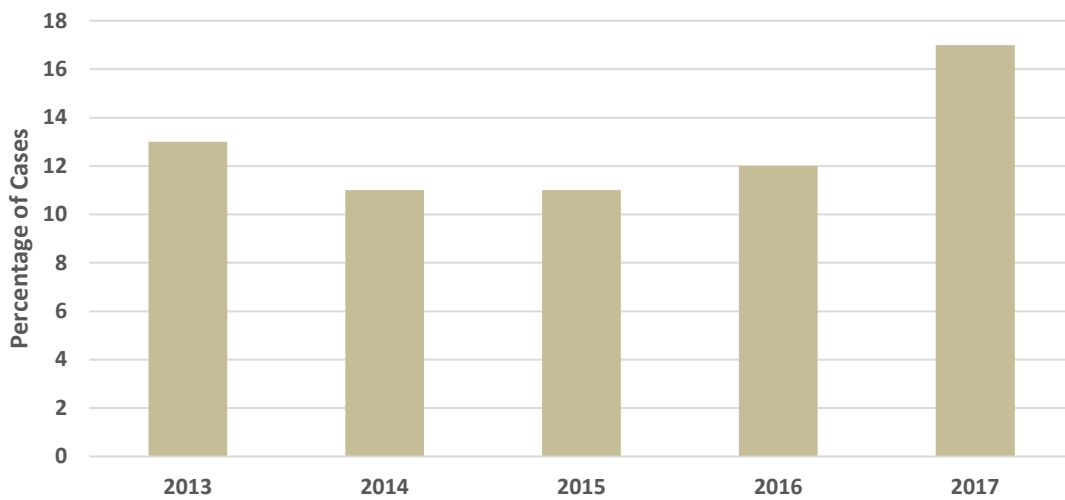
Salt Lake County 2017 Pertussis Cases Reasons for Not Receiving Vaccine



The percent of cases that have never been vaccinated increased in 2017 from 12 percent in 2016 to 17 percent (Figure 14).

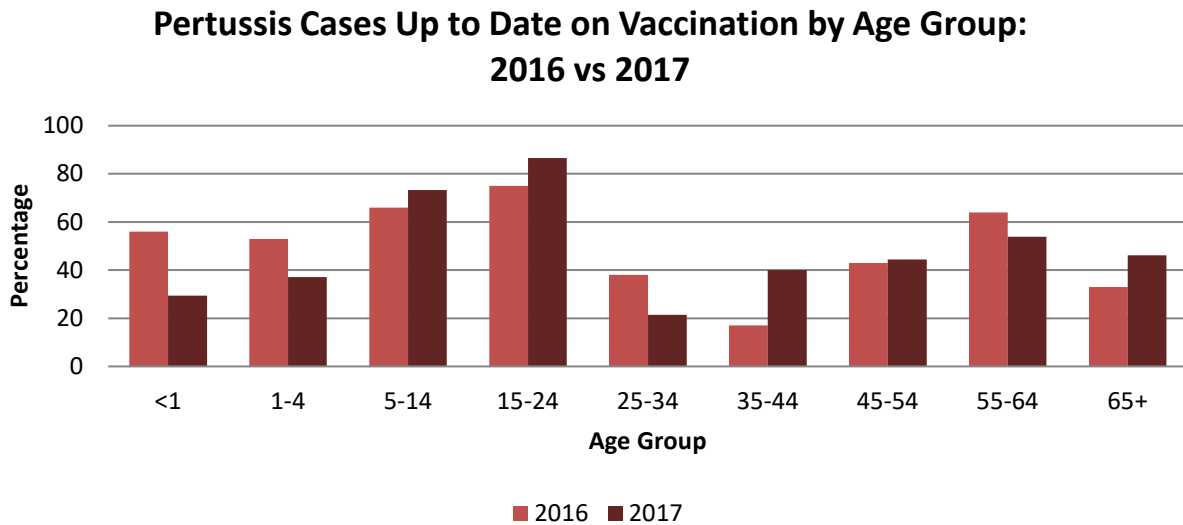
Figure 14

**Percent of Unvaccinated Pertussis Cases
Salt Lake County 2013-2017**



Vaccination rates were highest for those 15-24 years of age in both 2016 and 2017 (Figure 15). Considerable improvement was made in the 35-44 age group, while the <1, 1-4, and 25-34 age groups all saw a decline between 2016 and 2017 regarding up to date status. For cases less than one year of age, only 29% were considered up to date.

Figure 15



Conclusion

The incidence of pertussis cases in Salt Lake County saw an increase in 2017 for the first time since 2012. The percentage of cases that were vaccinated dropped in 2017 from 85% to 81%. Of the unvaccinated cases, 92% were ages 15 and younger, with 57% being under the age of 5. For cases under the age of one, 71% were either unvaccinated or not up to date. The percentage of cases that had never been vaccinated increased in 2017 to 17%, up from 12% in 2015. However, the number of cases that were considered up to date increased from 54% in 2016 to 72% in 2016.

The city of Sandy saw a decrease in rate when compared to 2016, while South Jordan, Bluffdale, Draper, Murray, Taylorsville, West Valley, Millcreek, and South Salt Lake all saw an increase. The rates for Riverton, West Jordan, and Herriman were similar to those seen in 2016.