Pertussis

Pertussis is a Class A Disease and must be reported to the state within 24 hours.

Pertussis (Whooping Cough) is an acute bacterial disease caused by *Bordetella pertussis*. Humans are the only known host. Pertussis is highly contagious.

Pertussis is often characterized by a paroxysmal cough, post-tussive vomiting, and an inspiratory whoop. Pertussis also can occur as a mild or moderate cough illness in persons who have received the pertussis vaccine. In the U.S., most hospitalizations and nearly all deaths from pertussis are reported in infants younger than one year of age, but substantial morbidity does occur in other age groups.

Pertussis is vaccine-preventable. In the U.S. since the 1940s, infant/childhood vaccination has contributed to a reduction of more than 90% in pertussis-related morbidity and mortality. Estimates of childhood vaccination coverage comprised of more than three doses of pertussis-containing vaccine have exceeded 90% since 1994. Universal childhood vaccination is recommended. Despite widespread vaccination there has been an increasing trend in reported pertussis cases in the United States. Pertussis is an epidemic disease often exhibiting increased incidence in three- to five-year cycles. Immunization reduced the total number of cases, but did not change the cycles, suggesting that immunization controlled the disease, but not the propagation of infection in the human population.

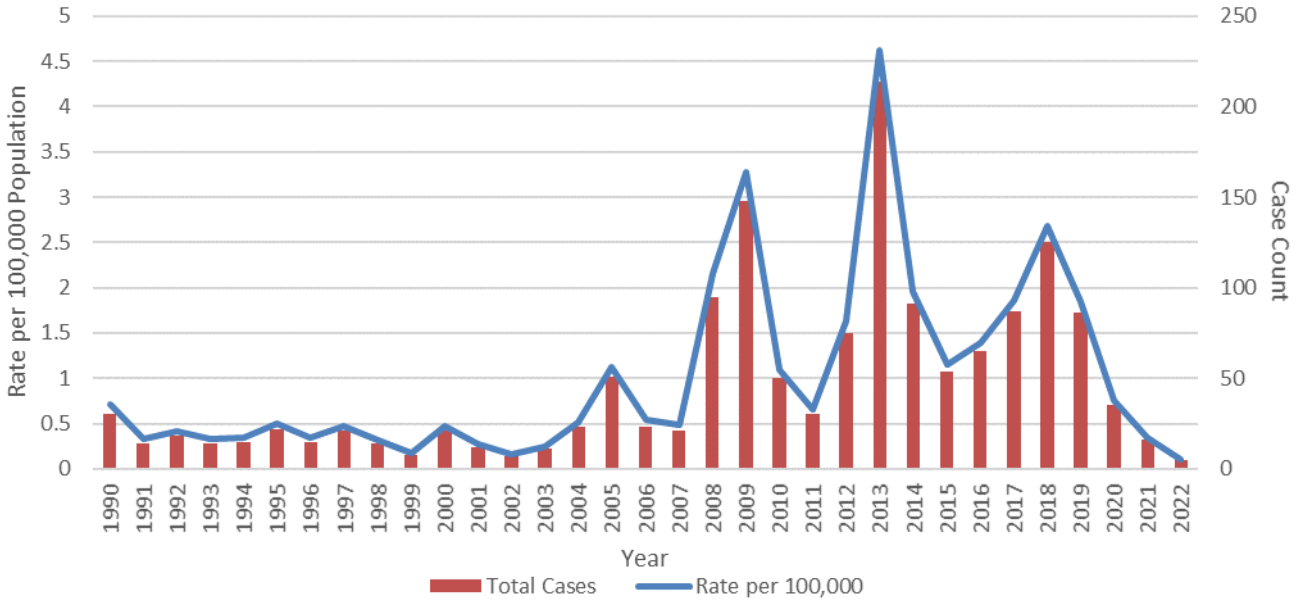
Recent studies support the hypothesis that pertussis infection is very common among adults. IgA antibodies to pertussis antigens are only produced after a natural infection and not after immunization. Prevalence studies of IgA antibodies show similar rates among adults in countries with generalized immunization (U.S.), and in countries with no systematic pertussis immunization (Germany in the 1970s).

Case, Rates and Trends

In the U.S. in the 1960s and 1970s, reported pertussis cases exhibited expected peaks and troughs. Reported cases reached a low in the late 1980s and 1990s. The number increased progressively in the 2000s. A large increase in reported cases has occurred among adolescents, who become susceptible to pertussis approximately six to ten years after childhood vaccination. More recently, booster vaccines for adolescents and adults combining pertussis antigens with tetanus and diphtheria toxoids (Tdap) were approved by the Food and Drug Administration (FDA). The Tdap is currently recommended for 11 to 12-year olds, with an additional dose administered every ten years thereafter to boost immunity.

In the past 15 years the number of pertussis cases in Louisiana has increased, with peaks of 148 cases in 2009 and 218 cases in 2013. All Louisiana rates are below the national average incidence of 4.9 per 100,000 persons in 2017 (Centers of Disease Control and Prevention [CDC]), (Figure 1).

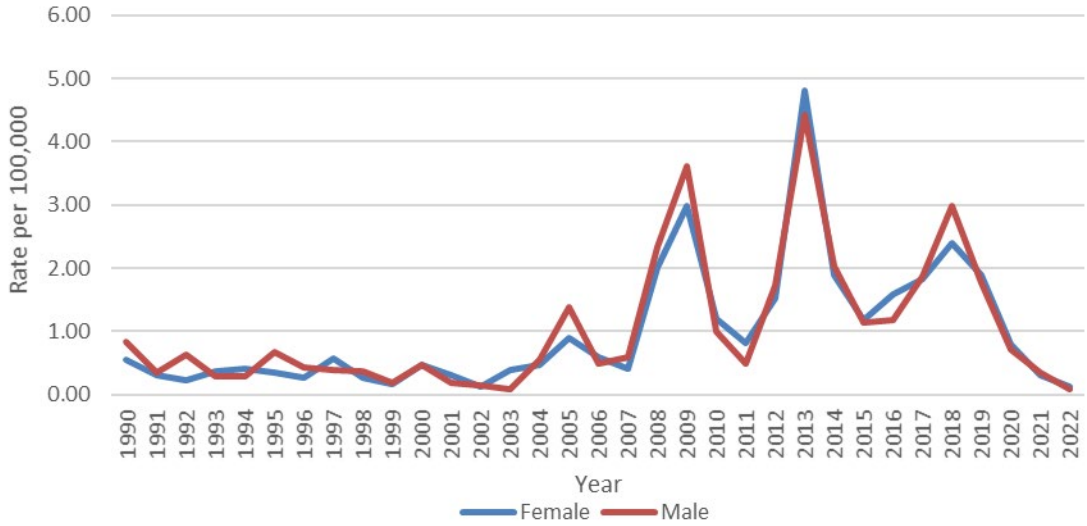
Figure 1: Pertussis cases and five-year average incidence rates - Louisiana, 1990-2022



Sex, Age group and Race Distribution

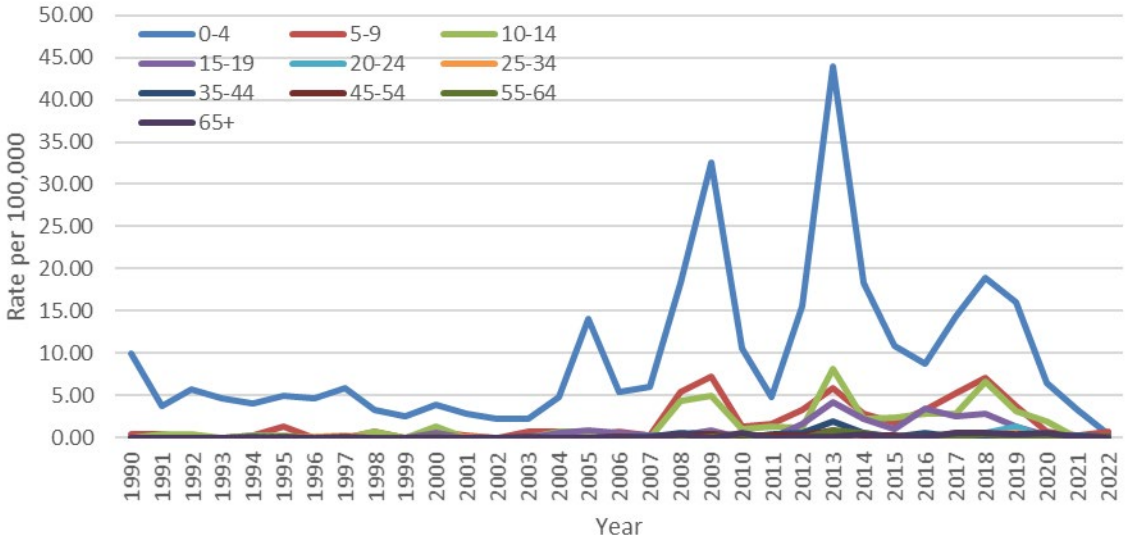
There is no significant difference between males and females even when calculated by gender and age group (Figure 2).

Figure 2: Pertussis annual incidence rates by gender – Louisiana 1990 - 2022



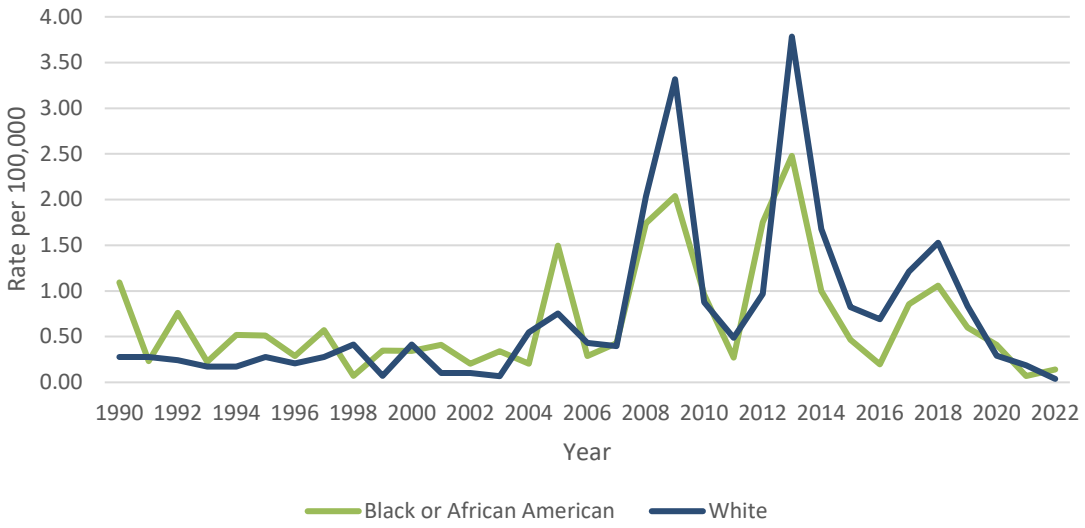
The age group distribution shows that pertussis in Louisiana mostly affects infants (newborn to one year of age), and young children more than adolescents and adults. In recent years however, incidence rates have increased among adults. Adult cases are generally under-reported because they are not diagnosed, due to the usual mild nature of symptoms in older victims (Figure 3).

Figure 3: Pertussis incidence rates by age group - Louisiana, 1990-2022



The distribution by race shows that rates are slightly higher among the White population in more recent years compared to African-Americans (Figure 4).

Figure 4: Pertussis average incidence rates by race and age - Louisiana, 1990-2022



The geographical distribution does not show any trends or differences throughout the state.