

## Malaria

*Malaria is a Class B Disease and must be reported to the state within one business day.*

### Background

Malaria is caused by a protozoan parasite transmitted by Anopheles mosquitoes. There are five species of malaria parasite: *Plasmodium falciparum*, *P.vivax*, *P.ovale*, *P.malariae*, and *P.knowlesi*. The fifth species, *P.knowlesi*, a simian malaria parasite, has recently been observed transmitting malaria to humans in Southeast Asia. It was discovered in Malaysia; several human cases have also been reported in Thailand, Myanmar, and the Philippines.

Malaria is transmitted to humans through the bite of an infective mosquito who has previously taken a blood meal from an infected human. People usually become infected with malaria if they live in or travel to countries where there is regular malaria transmission. Rarely, infection can occur through blood transfusions or vertical transmission (from mother to child).

Symptoms typically begin ten days to four weeks after infection when a patient will develop with fever and flu-like illness (chills, headache, muscle aches, and fatigue). Additional symptoms include nausea, vomiting, diarrhea, anemia, and jaundice. If left untreated severe malaria can cause kidney failure, seizures, mental confusion, coma, and death. There are several antimalarial drugs available that should be taken early on in the course of illness. Two malaria species, *P.vivax* and *P.ovale*, can cause relapses.

### History

In the late 19<sup>th</sup> Century, approximately half of the United States was endemic for malaria. At the turn of the 20<sup>th</sup> Century, when the prevalence of malaria was approximately 350 cases per 100,000, the U.S. Public Health Service implemented protocols to control and reduce the spread of malaria. In 1942, the Malaria Control in War Areas (MCWA) was established to control malaria around military bases in the southern U.S. and its territories. In 1947, the National Malaria Eradication Program (NMEP) was created as a cooperative effort with state and local health agencies of 13 southeastern states and the Centers for Disease Control and Prevention (CDC). Their efforts consisted primarily of house-spray applications of Dichloro-diphenyl-trichloroethane (DDT). Malaria was successfully eradicated in the U.S. in 1951.

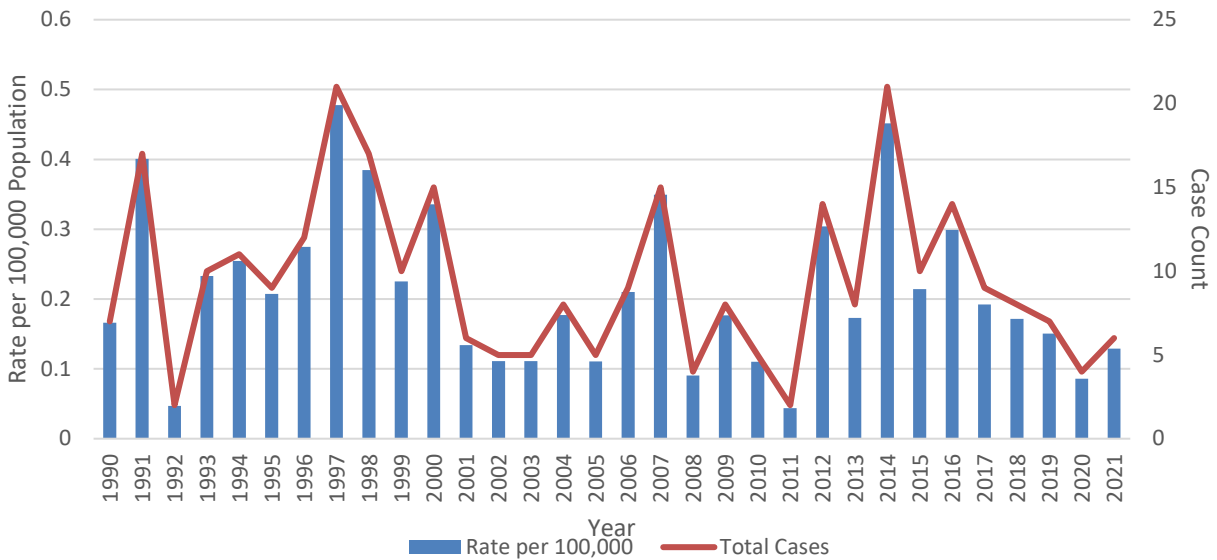
Around 2000 malaria cases are still reported in the US each year. The vast majority of these cases are travelers and immigrants with recent travel to endemic areas.

Because of the risk of transmission through blood transfusion several guidelines have been established. People who have travelled to an endemic area are deferred from donating blood for three months after their return. People who have had malaria or have lived in an endemic area are deferred for three years after treatment or arrival.

### Incidence in Louisiana

In 2021, there were six cases of malaria reported in Louisiana, which is less than the average over the past 20 years of 9.25 cases. The incidence rate in 2021 was 0.13 per 100,000 population, which is below the 10-year average incidence rate of 0.22 per 100,000 population (Figure 1).

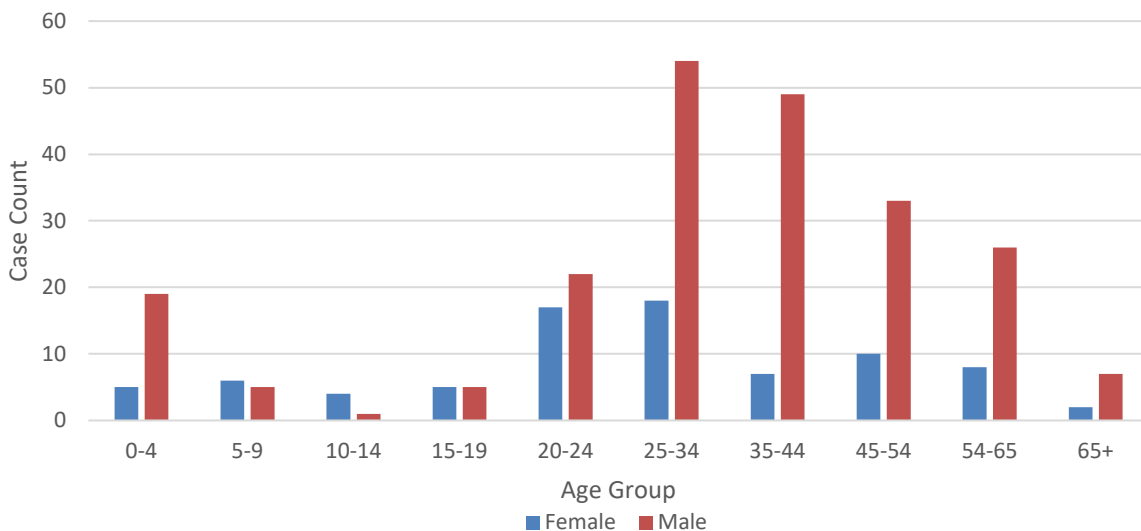
Figure 1: Malaria Cases and Incidence Rate - Louisiana, 1990-2021



### Incidence Rates by Sex and Age

For the period from 1990 to 2021, there was an average of 6.9 cases per year for males and 2.6 cases per year for females. The average incidence rate for males was 0.31 cases per 100,000 population and 0.13 cases per 100,000 population for females; the rate ratio for males to females is 2.38. The majority of the malaria cases were adult males between 25 to 64 years of age. Among the females, the majority of the cases were young adults aged 20 to 34 years (Figure 2).

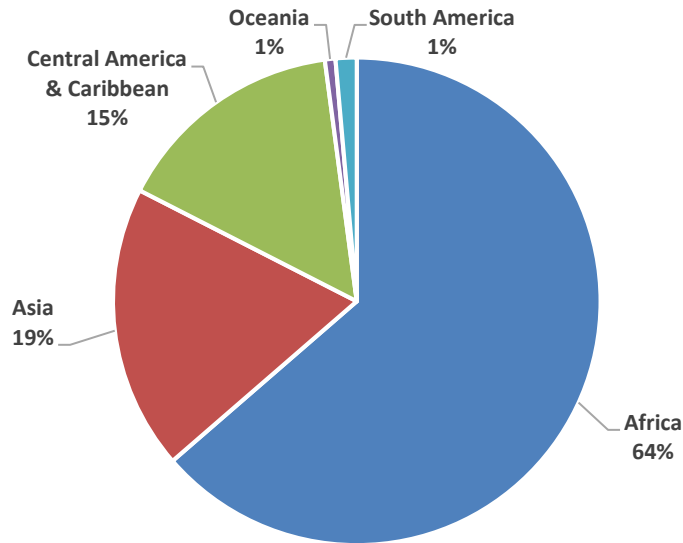
Figure 2: Malaria Cases by Sex and Age - Louisiana, 1990-2021



### Travel Locations

All reported cases of malaria were acquired outside of the United States. Prior to illness, the majority of malaria cases (64%) reported travel to Africa, followed by 19% reporting travel to Asia and 15% reporting travel to Central America and the Caribbean. Only a few cases reported traveling to Oceania or South America (Figure 3).

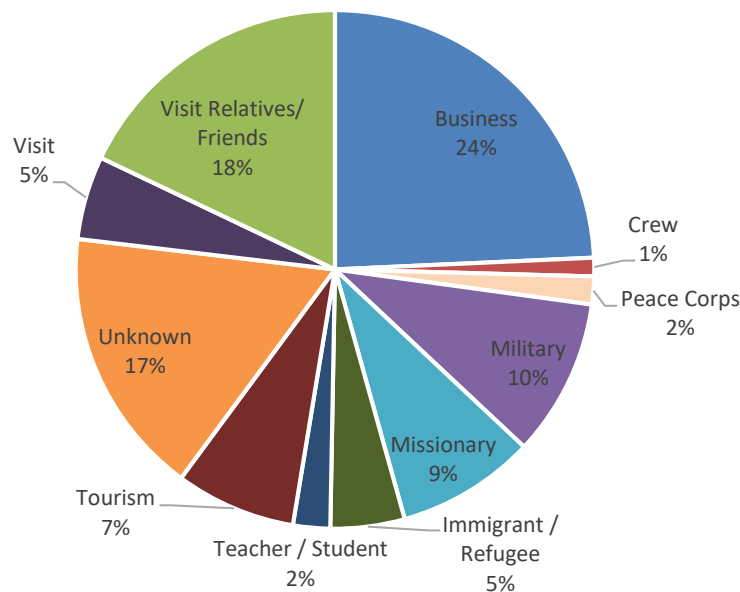
Figure 3: Malaria Cases Travel Locations Prior to Illness - Louisiana, 2000-2021



### Reason for Travel

The most common reasons for travel reported by malaria cases from 2000 to 2021 were: business (24%); visiting relatives and friends (18%); and unable to obtain (17%). Additional cases reported tourism, missionary trips, military trips, country visit, immigration, Peace Corps volunteer, academic trip, and airline crew as reasons for travel (Figure 4).

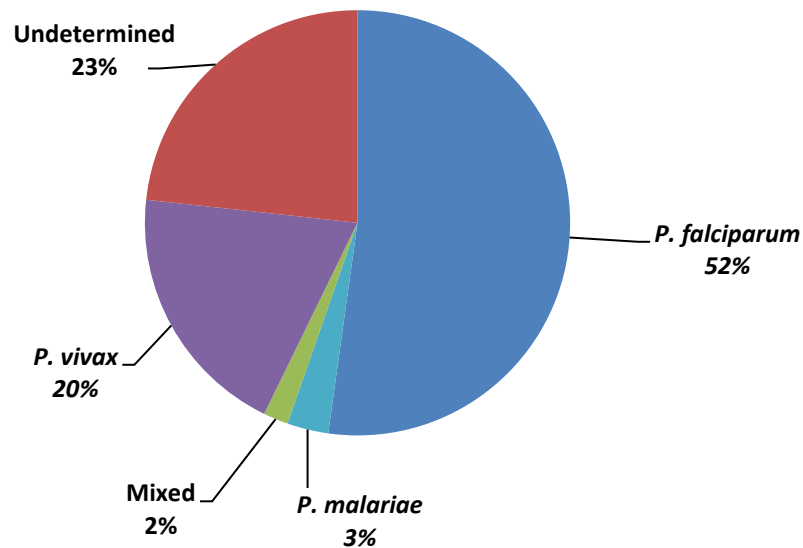
Figure 4: Malaria Cases Reason for Travel – Louisiana, 2000-2021



### ***Plasmodium* Species**

The majority of reported malaria cases were infected with *P.falciparum* (52%) followed by *P.vivax* (20%). Species were undetermined in 23% of malaria cases, and mixed species were reported in 2% of cases (Figure 5).

Figure 5: *Plasmodium* Species – Louisiana, 2000-2021



### **Mortality**

Since 2000, there have been six malaria deaths reported in Louisiana.

### **Prevention**

Due to the resurgence of malaria during the past decade, travelers to malaria endemic areas need to protect themselves against acquiring infection. Two preventative measures include using insect repellent and bed nets, as well as taking chemo-prophylaxis. Anti-malarial drugs are often highly important in preventing malaria infection and can be prescribed by a physician.