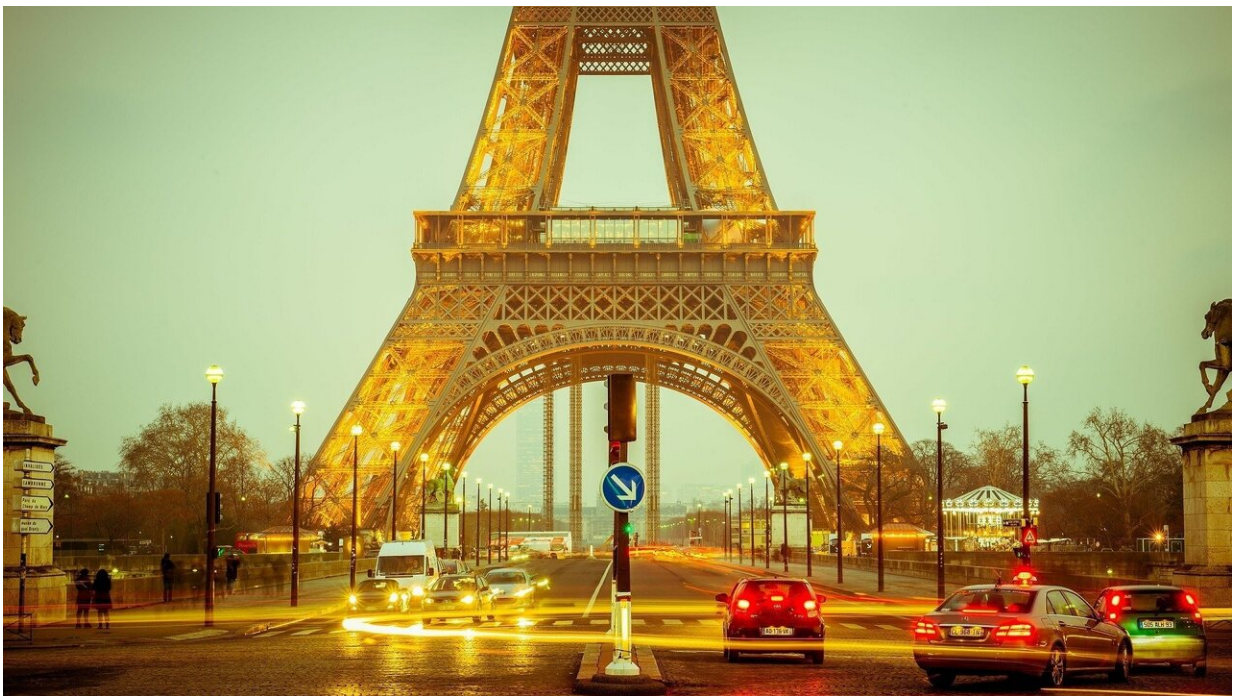


How the Paris Olympics could become a super-spreader event for dengue

June 12 2024, by Mark Booth



Credit: Pixabay/CC0 Public Domain

In September 2023, several people came down with [dengue](#) fever in Paris, France. The presence of this mosquito-borne disease was notable for two reasons. It was the most northerly outbreak ever recorded, and

none of the people had traveled recently. This demonstrated it is now possible for dengue to be transmitted locally in northern Europe.

These facts are important in 2024 because of the Olympics. France waits in anticipation of more than [10 million](#) athletes, spectators, officials and tourists descending on the city for the event. The French government knows there is a risk of dengue. In Paris, [hundreds of sites](#) are being regularly checked for the presence of the dengue-carrying mosquitoes. Will this be enough?

The concept of the [super-spreader](#) in infection epidemiology is not new. In essence, it means that a small fraction of a population, maybe just one person, is responsible for most of the cases. A famous historical super-spreader was "[typhoid Mary](#)". Mary Mallon was an asymptomatic carrier of typhoid who may have infected over 100 people.

A study published in the journal *Nature* suggests that about 15% of people were responsible for 85% of cases of COVID in Hunan Province, China. In terms of dengue, [one analysis from Peru](#) of super-spreading suggests 8% of human-occupied spaces are responsible for over half of cases. (It should be noted that dengue cannot be caught directly from another human, only from the bite of a dengue-carrying mosquito.)

This is not the first time the Olympics has been identified as a risk factor for viral epidemics. The 2016 Olympics in Brazil [were almost postponed](#) because of fears about Zika—another virus transmitted by the Aedes mosquito.

In the end, any worries were put to bed, because there were [no reported cases](#).

Fear about COVID spreading via the Tokyo Olympics brought about drastic measures to limit transmission. At that event, few infections occurred inside the Olympic bubble, but there was an [increase in cases](#) among the general population.

So what is different about Paris?

Aedes has spread considerably further than in 2016, and the number of dengue cases worldwide has increased dramatically in the same period. In 2016 there were 5.2 million cases reported worldwide. Halfway through 2024, there have already been [7.6 million cases](#).

Visitors from more than 200 countries are expected in France for the Olympics. Many of those countries are already experiencing dengue this year.

For the Paris Olympics to become a [super-spreader event](#), several factors must overlap. There needs to be enough mosquitoes, enough susceptible *and* already-infected people, enough time and enough mosquito bites.

Perfectly adapted

The tiger mosquito is perfectly adapted to the urban Paris environment. It needs just the smallest amount of water in a small container to lay its eggs. It preferentially feeds on humans, at dawn and dusk. The eggs themselves can withstand dry conditions for months. Once wet again, the eggs will hatch.

What makes this situation potentially dangerous for Paris is that some of these mosquitoes may have dengue already inside them, [passed down from their mother](#). This could significantly reduce the number of bites needed to start an epidemic.

Within the time frame of the Olympics, an infected athlete or spectator could be bitten once by a mosquito and seed an epidemic in a week or so. Each female mosquito can lay up to 200 eggs at a time.

Most dengue cases are asymptomatic. People infected before or during the Olympics may have no idea they are carrying the virus. They might take the virus back home and seed an epidemic there without ever knowing it.

Whether people get sick or not, they are carrying the virus and can transmit the infection onwards if they get bitten by an Aedes mosquito.

At the Rio Carnival this year, a dengue outbreak just days before the event led to a [public health emergency being called](#), but the event wasn't cancelled.

There will be no [public health emergency](#) in Paris because the event itself is the risk factor. Anyone living, working, visiting, competing, volunteering or even just passing through Paris during the Olympic period is going to be part of a huge [natural experiment](#)—whether they know it or not.

This article is republished from [The Conversation](#) under a Creative Commons license. Read the [original article](#).

Provided by The Conversation

Citation: How the Paris Olympics could become a super-spreader event for dengue (2024, June

12) retrieved 22 June 2024 from <https://medicalxpress.com/news/2024-06-paris-olympics-super-spreader-event.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.