

Figure 1. Confirmed malaria cases by country, EU/EEA, 2022

Source: Country reports.

Among 5 388 cases with known importation status, 99.8% were travel-related. The majority of these cases (76.5%) were infected in West Africa.

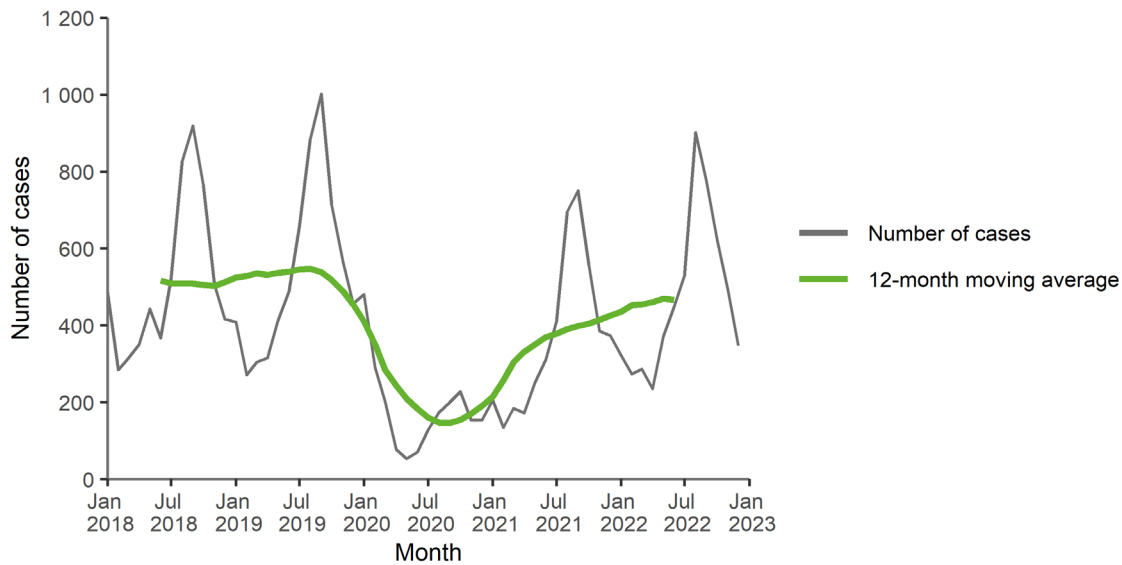
From [the EU's outermost regions](#), nine locally acquired cases of malaria (*Plasmodium vivax*) were reported from French Guiana, while zero locally acquired cases were reported from Martinique, Guadeloupe, Saint Martin, Réunion, Mayotte, Azores, Madeira, and the Canary Islands.

Thirteen confirmed *P. falciparum* cases were reported as locally acquired in the EU. Of those, eight cases were reported as airport-related (4 cases associated to four different French airports by France, a cluster of three cases among airport staff by Germany [5] and one case by Ireland); three cases were categorised as cryptic (epidemiologic investigations failed to identify an apparent mode of acquisition) by France; and two cases were reported as hospital-acquired by Spain [6].

Of 5 635 confirmed cases for which the pathogen was reported, 4 831 (85.7%) had *P. falciparum*, 123 (2.2 %) had *P. vivax*, 249 (4.4 %) had *P. ovale*, 174 (3.1%) had *P. malariae*, and 250 (4.4%) cases had infections with unspecified *Plasmodium* species. There were eight cases with mixed infections. The case fatality was 0.6% among all 2 827 malaria cases with a known outcome (16 deaths were reported).

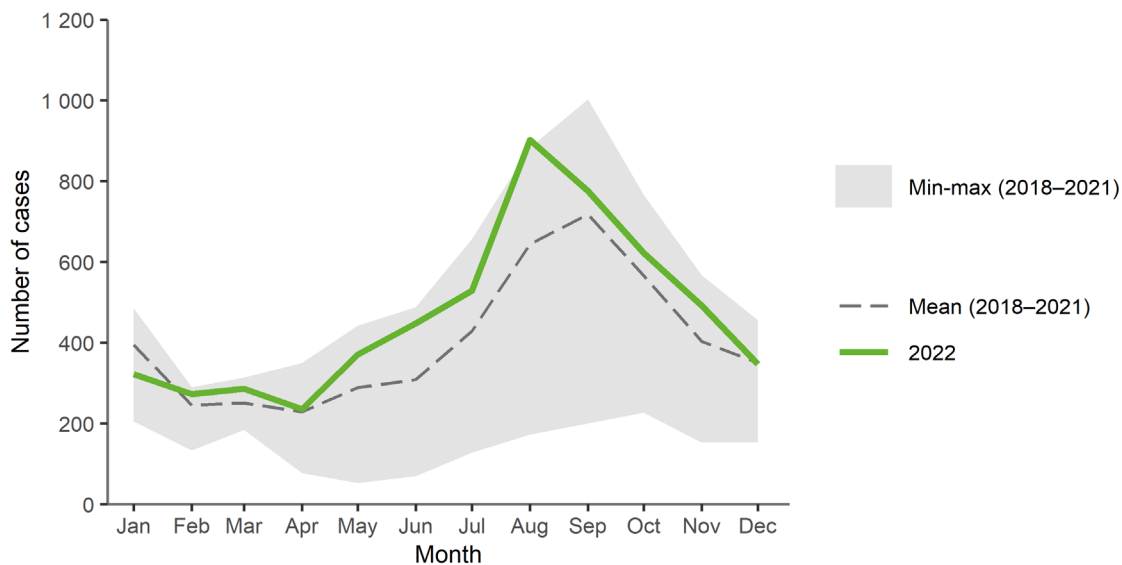
A marked seasonal pattern was observed across the 25 countries consistently reporting malaria during 2018, 2019, 2021, and 2022, with cases increasing during and immediately after the summer holiday months (July–September). In 2020, there was no seasonal pattern, probably as an effect of travel restrictions due to the COVID-19 pandemic (Figure 2).

Figure 2. Confirmed malaria cases by month, EU/EEA, 2018–2022



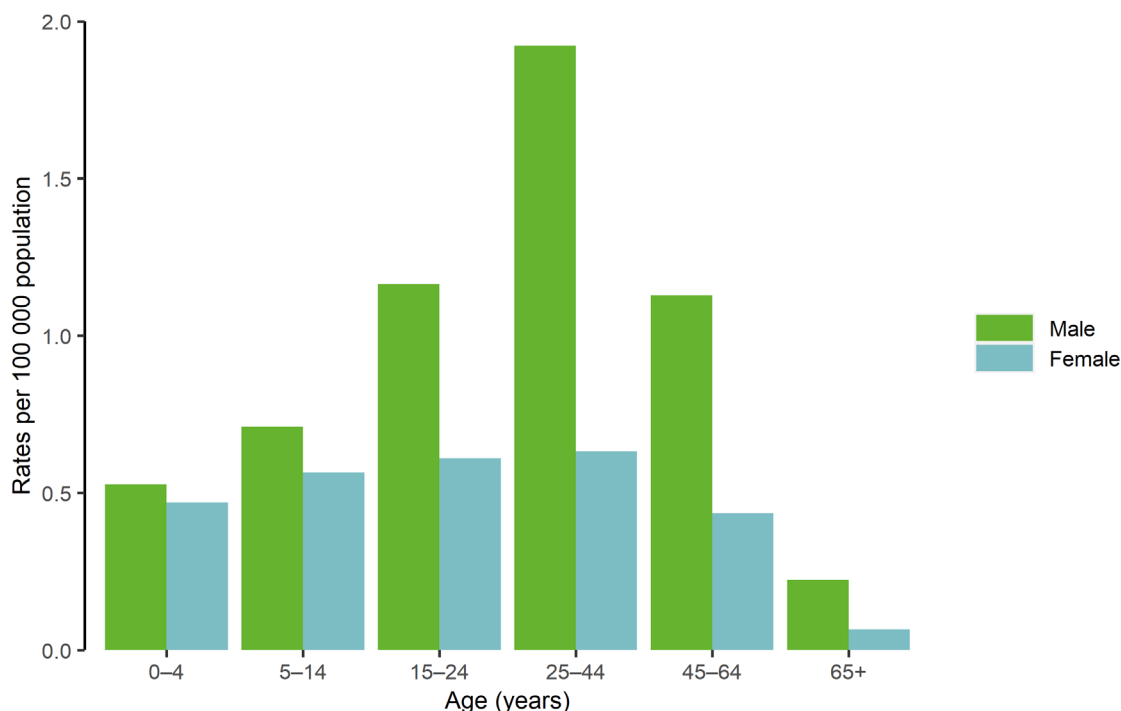
Source: Country reports from Austria, Cyprus, Czechia, Estonia, Finland, France, Germany, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, and Sweden.

Figure 3. Confirmed malaria cases by month, EU/EEA, 2022 and 2018–2021



Source: Country reports from Austria, Cyprus, Czechia, Estonia, Finland, France, Germany, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, and Sweden.

In 2022, the overall rate of confirmed malaria cases was higher among men than women (1.1 and 0.4 cases per 100 000 population, respectively; male-to-female ratio: 2:1). In both men and women, the notification rate was highest in the age group 25–44 years (1.9 and 0.6 cases per 100 000 population, respectively), followed by 15–24 years (Figure 4).

Figure 4. Confirmed malaria rates per 100 000 population, by age and gender, EU/EEA, 2022

Source: Country reports from Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, and Sweden.

Discussion

The World Health Organization estimated that there were 249 million malaria cases globally in 2022, five million more than in 2021 [1]. The increase was predominantly observed in Pakistan, Ethiopia, Nigeria, Uganda, and Papua New Guinea.

Plasmodium falciparum is the most prevalent malaria parasite in West Africa (almost 100%), Central Africa (100%), high transmission countries in East and Southern Africa (almost 100%), low transmission countries in East and Southern Africa (91%), the Eastern Mediterranean (71%), the Western Pacific (73%), and South-East Asia (54%), while *P. vivax* is the dominant malaria species in the Americas (72%) [1]. Notification rates in the EU/EEA were substantially lower in 2020, 2021 and 2022 compared to previous years (2018–2019). The number of cases reported in 2020 was likely affected by the COVID-19 pandemic, but other factors might have contributed (e.g. diagnostic capacity and surveillance in EU/EEA countries). Travel restrictions, as well as personal behavioural changes, resulted in a decrease in travel to endemic areas, which is the main driver of malaria cases in the EU/EEA. The increasing numbers of cases in 2021 and 2022 probably reflects the lifting of the travel restrictions [7].

Nearly all malaria cases reported by EU/EEA countries for 2022 were imported. The countries reporting the highest numbers of cases have historical, economic, linguistic, and cultural links with endemic areas, particularly in Africa and the Americas. Most of the imported malaria cases in France and Spain are linked to travel routes from West Africa [8]. Seasonality and age distribution of cases in Europe most likely reflect travel patterns to malaria-endemic countries. The literature suggests that a substantial proportion of imported malaria cases in the EU/EEA occur among recent immigrants from malaria-endemic countries and more settled migrants who have travelled to visit friends and relatives in malaria-endemic countries [9]. Outside Europe, certain EU outermost regions are endemic for malaria, including French Guiana and Mayotte. Data about cases among residents of these regions are not collected through TESSy.

As in previous years, a small number of sporadic autochthonous malaria cases were reported in the EU/EEA in 2022, but no sustained transmission has been reported. Of note, in 2022, in addition to the eight cases classified as airport malaria mentioned above, Belgium* also reported one case of airport malaria [10].

* Belgium does not separately report autochthonous cases in its aggregated reporting to TESSy.

Public health implications

Awareness about malaria among clinicians and travellers, particularly among people visiting friends and relatives in malaria-endemic countries, should remain a focus of attention. Individuals visiting friends and relatives in malaria-endemic countries often have an incorrect risk perception and are less likely than other travellers to seek pre-travel advice and use the recommended malaria prevention measures. In addition, the duration of their trips tends to be longer, increasing the risk of exposure [11]. In Europe, malaria chemoprophylaxis is only recommended for travellers to malaria-endemic countries. The choice of prophylactic drugs and prevention measures depends mainly on local malaria epidemiology, duration of potential exposure to vectors, parasite resistance patterns, level and seasonality of transmission, prophylactic drug tolerance, age, and pregnancy. As a result of the nocturnal feeding habits of most *Anopheles* mosquitoes, protection measures against mosquito bites include the use of (preferably long-lasting insecticidal) bed nets, clothes that cover most of the body, and insect repellent on exposed skin.

With regard to malaria transmission through substances of human origin (e.g. blood products or organ transplants), vigilance should remain high. In addition, healthcare providers should be aware that hospital transmission of malaria is rare but possible, irrespective of the *Plasmodium* species involved. Clinicians should therefore consider the possibility of hospital-acquired malaria in hospitalised or recently discharged patients who develop an unexplained fever or malaria-like clinical syndrome, especially if their hospital admission coincided with that of another patient admitted with malaria [12].

As *Anopheles* mosquitoes are widely present in Europe, local vectorial transmission of *Plasmodium* following introduction of the parasite by a travel-related case remains possible in the EU/EEA. Although airport malaria is rare, *Plasmodium* transmission via mosquitos imported from endemic areas sporadically occur.

Malaria remains a risk to the EU/EEA, and there is a need for continuous malaria surveillance, preparedness, and prevention in the EU/EEA.

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