**Evaluating *Anopheles stephensi*'s Impact on Malaria Distribution in Ethiopia Using Epidemiological Data**

Malaria is a life-threatening disease caused by infected female *Anopheles* mosquitoes. In 2023, there were 263 million malaria cases with 567,000 deaths and children accounted for about 76% of all malaria deaths. Even though there are five main *Plasmodium* parasites that are responsible for causing malaria in humans, two of the most common ones are *Plasmodium falciparum and P. vivax.* Malaria control efforts are always updated using guidelines set by the WHO and the CDC, but the diversity of species indicates the need for targeted interventions and varying control efforts across regions. *Anopheles stephensi* is an invasive malaria vector that can transmit both *P. falciparum* and *P. vivax.* It was originally confined to South Asia and the Arabian Peninsula, but it has recently spread to the Horn of Africa and Yemen. *An. stephensi* is responsible for recent malaria outbreaks in HoA, which raises concern about increased malaria transmission. It’s ability to thrive in urban environments, endure high temperatures as well as a variety of insecticides alters the effectiveness of current control strategies.

The main research questions I was trying to ask with this project were: How has the presence of *Anopheles stephensi* influenced malaria transmission in Ethiopia? What trends in malaria cases can be observed before and after *Anopheles stephensi* was detected*?* How can we develop a tool for visualizing the transmission pattern of this invasive species? Although we have epidemiological data collected from Ethiopia, the data still needs a lot of organization hence I couldn’t use it for this project. Instead, I generated epidemiological data with the help of ChatGPT to use for mapping the distribution of malaria cases across Ethiopia. The overall goal of this project is to help identify potential links between the spread of *An. stephensi* and changes in malaria transmission, identify high risk areas and develop targeted intervention strategies.