

Project Proposal

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Malarial Mosquitoes

Malaria is a life-threatening mosquito-borne blood disease. It originates from the infected Anopheles mosquito that transmits a parasite. This enters the victim's blood system and into their liver where the parasite reproduces. The ending result is the victim getting a high fever that entails shaking chills and pain or in worst case scenarios, coma and death. With the rising epidemic of malaria, it has been a concern within the health care industry on the parasite resistance to antimalaria drugs and the clearance rates.

According to the World Health Organization (WHO), an estimated 3.2 billion people are at risk of malaria which has made this mosquito-borne infection a critical public health problem. There was an estimated 438,000 people that died from malaria in 2015 and 620,000 in 2017.

Resistance to anti-malarial drugs has led malaria researchers to investigate what covariates (parasite and host factors) are associated with resistance. In this regard, investigation of how covariates impact malaria parasites clearance is often performed using a two-stage approach in which the WWARN Parasite Clearance Estimator or PCE is used to estimate parasite clearance rates and then the estimated parasite clearance is regressed on the covariates. However, the recently developed Bayesian Clearance Estimator instead leads to more accurate results for hierarchical regression modelling which motivated the authors to implement the method as an R package, called "bhrcr".