PROJECT TITLE: Mathematical modeling for Malaria

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Project Description

Now that mosquitoes are resistant to DDT, malaria has reemerged in many areas and is spreading into new regions as temperature changes occur. Malaria spreads from infected mosquitoes (the vector) to humans (the host) by biting, and susceptible mosquitoes can be infected when they bite an infected human. Humans can recover from malaria, but infected mosquitoes remain infected for their lifetime.

This project seeks answers to possible questions like,
1. In the absence of intervention methods or change in social behavior, what is the expected size of the malaria burden, either as peak, final size or endemic level?
2. How effective could bed nets be at reducing the cost of malaria?

Requirements: The student should have completed MATH2073 or MATH2074 course, with a minimum grade of C.

Expected Research Tasks: 1. Literature reviews; 2. Basic modeling using differential equations; 3. Programming using Matlab or Maple or R to do numerical simulations; 4. Writing a scientific report; 5. Presentation.

Training and Support: I will meet regularly (weekly or bi-weekly) with the student, to provide training and support for the Expected Research Tasks 1 through 5.