

## Malaria Project – Read Me First

This is a summary of the materials you have at your disposal for the malaria modeling project and some guidance on how to get started.

1. Read the overall competition instructions for an overview of the projects and the nature of the materials you will receive
2. A document summarizing the model framework, background information, modeling parameters, instructions for completing both the basic model and bonus modeling assignments. (Mathematical Modeling for Malaria Control).
3. References to several documents on the web explaining more about the disease, how it has been modeled before, and statistics on the occurrence of the disease and at the bottom of the document. After you look over the instructions, you should check these articles for a deeper understanding of the system you are modeling.
4. An additional article on the economic costs of malaria in Ghana. This report provides some information you may be able to use on the bonus exercises.
5. A starting code in Python to guide you through what you need to do to complete the basic project. (`malaria_control_start.py`). You will need to open this in a SAGE notebook to work on it.

Before you start coding, make sure you fully understand the modeling assignment and the mathematics behind this simplified model of malaria. The sample code has been divided into multiple cells dividing the definition of inputs and discrete sets of outputs. This should allow you to add and test portions of the code incrementally. For each portion, once you have inserted the additional code, you should have Python evaluate the completed sections and debug any coding errors. You should also check on the intermediate numerical results to make sure they make logical sense.

While part of your team is working on the code, others should read the references more thoroughly so that your team can answer the questions about how this model simplifies the real system. They can also begin to investigate some of the bonus questions so that you are prepared to add one or more of these once the basic model is complete.

Make sure your basic model and the associated presentation showing recommended sensitivity analyses and answers to the other basic question are complete before you launch into extra additions to the model.