Pandemic modelling -- System of nonlinear DEs

I'll leave this one to Wikipedia below, and another **SIMIODE pdf. (https://csus.instructure.com/courses/66043/files/7010599/download?wrap=1)** However, I will make some general comments.

The overarching idea is that if we have a population of N people (which is fixed), and an infectious disease is introduced. Then each person in the population is either infected, susceptible to infection, or recovered (we assume people get full immunity once they have contracted the disease). The number of people in these categories can be defined as

$I(t)$ = number of infected persons at time t,

$S(t)$ = number of susceptible persons at time t, and

$R(t)$ = number of recovered persons at time .

Then a system of differential equations are build around the rates of change (i.e., derivatives) of these three functions.

Relevant Wikipedia articles:

- **Mathematical modelling of infectious diseases (https://en.wikipedia.org/wiki/Mathematical_modelling_of_infectious_disease)**
- **Compartmental models in epidemiology (https://en.wikipedia.org/wiki/Compartmental_models_in_epidemiology)**