**SIRS Equations**

We will be solving the stochastic version of the three equations for Si, Ii and Ri

where we will calculate the probability of population *i* to be infected as:

(see above for the definition of i), the probability of this population to recover as:

and the probability to lose immunity as:

with t being the time step. The force of infection, i is given by:

Using these three probabilities we can calculate the number of infected/recovered for each country as: