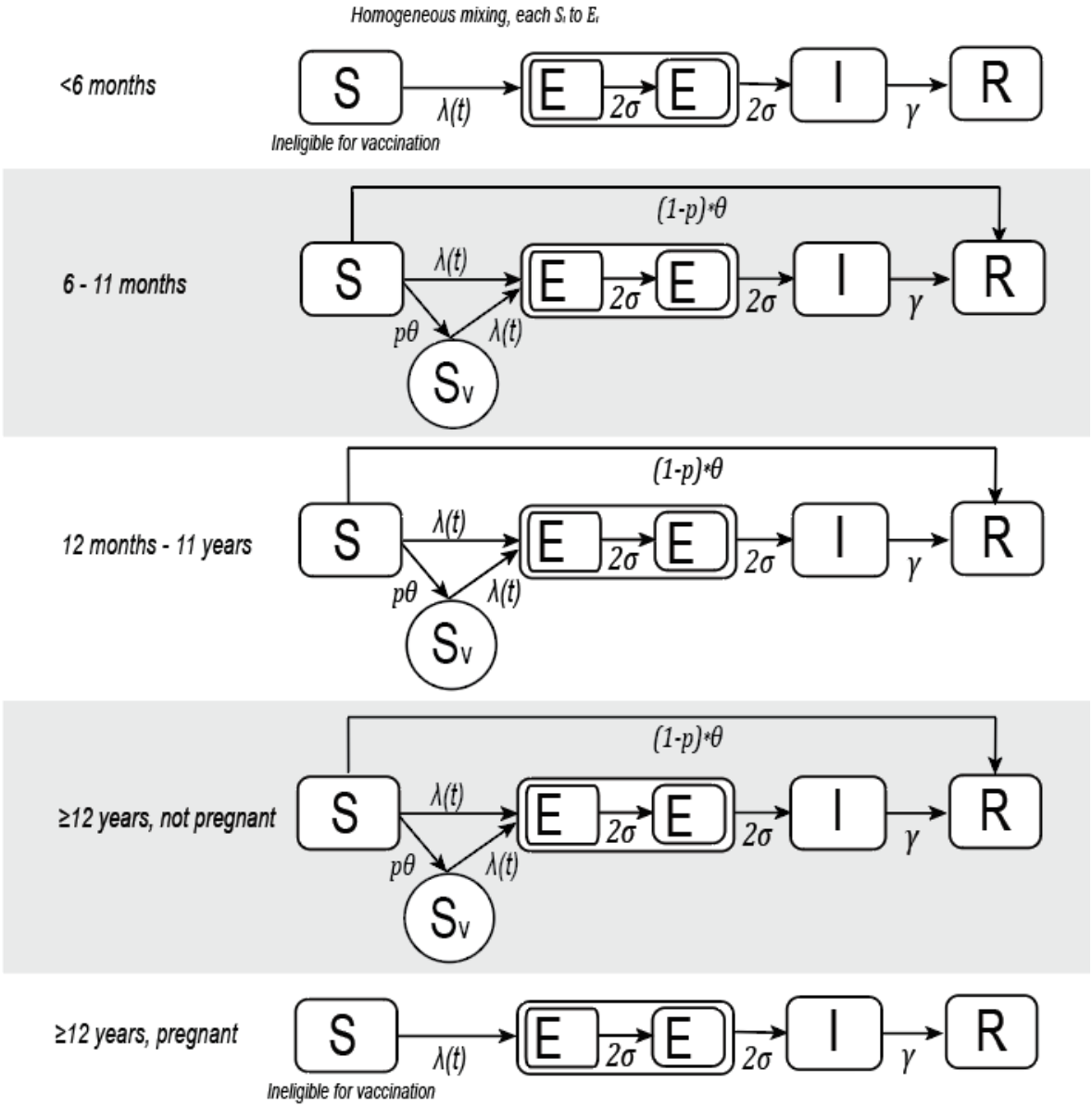
SUPPLEMENTARY FIGURE. Schematic representation of measles compartmental model.



Abbreviations: E = exposed; I = infected; MMR = measles, mumps, and rubella; R = removed; S = susceptible.

The model represents a closed population in which individuals belong to one of four disease states: susceptible, exposed, infected, and removed. The model incorporates stochasticity using the adaptive tau-leaping algorithm. Susceptible individuals are exposed by the force of infection $\lambda(t) = \beta * I(t)$: the transmission rate β, times the number $I(t)$ of infectious persons at time t, and progress to the exposed preinfectious state. There are two compartments for the exposed state to reduce the variance of the latent, exposed distribution, each with mean duration $(1/\sigma)/2$. Transitions into removed compartments are determined by rate γ. The effect of MMR vaccination is denoted by θ; susceptible persons are removed from the susceptible compartment and added to the removed compartment based on the date MMR vaccine was administered, with a lag-time of 7 days. The delay between onset of infectiousness and rash onset is exponentially distributed with mean 2.5 days. The compartment S_v represents primary vaccine failures, with *p* representing the probability of primary vaccine failure. Not shown on the model diagram is the active case-finding intervention, which reduces the duration of infectiousness.