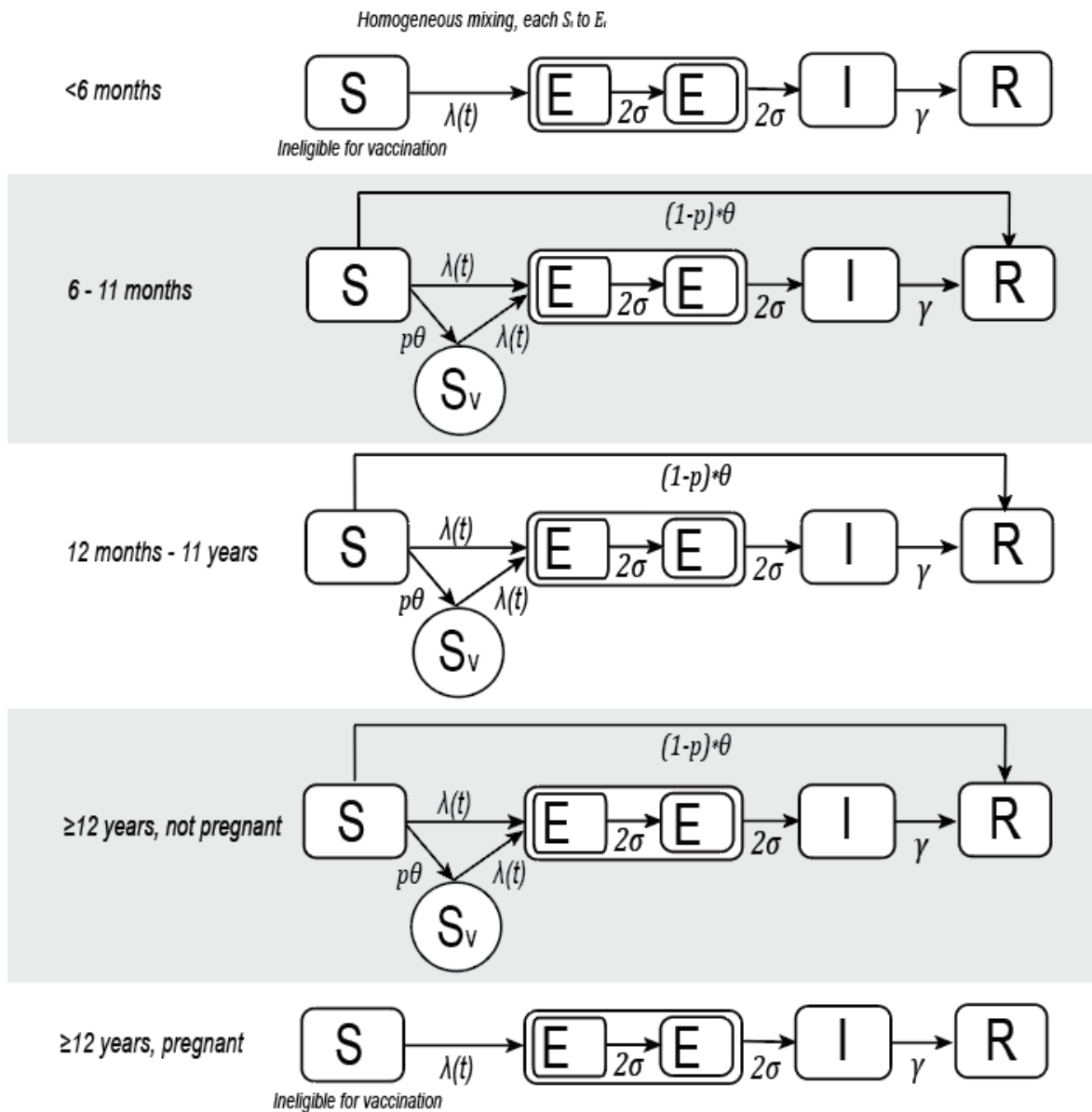


**SUPPLEMENTARY FIGURE. Schematic representation of measles compartmental model.**



**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  $\lambda(t) = \beta \cdot I(t)$ : the transmission rate  $\beta$ , 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  $\gamma$ . The effect of MMR vaccination is denoted by  $\theta$ ; 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.