

What causes pre-symptomatic transmission?

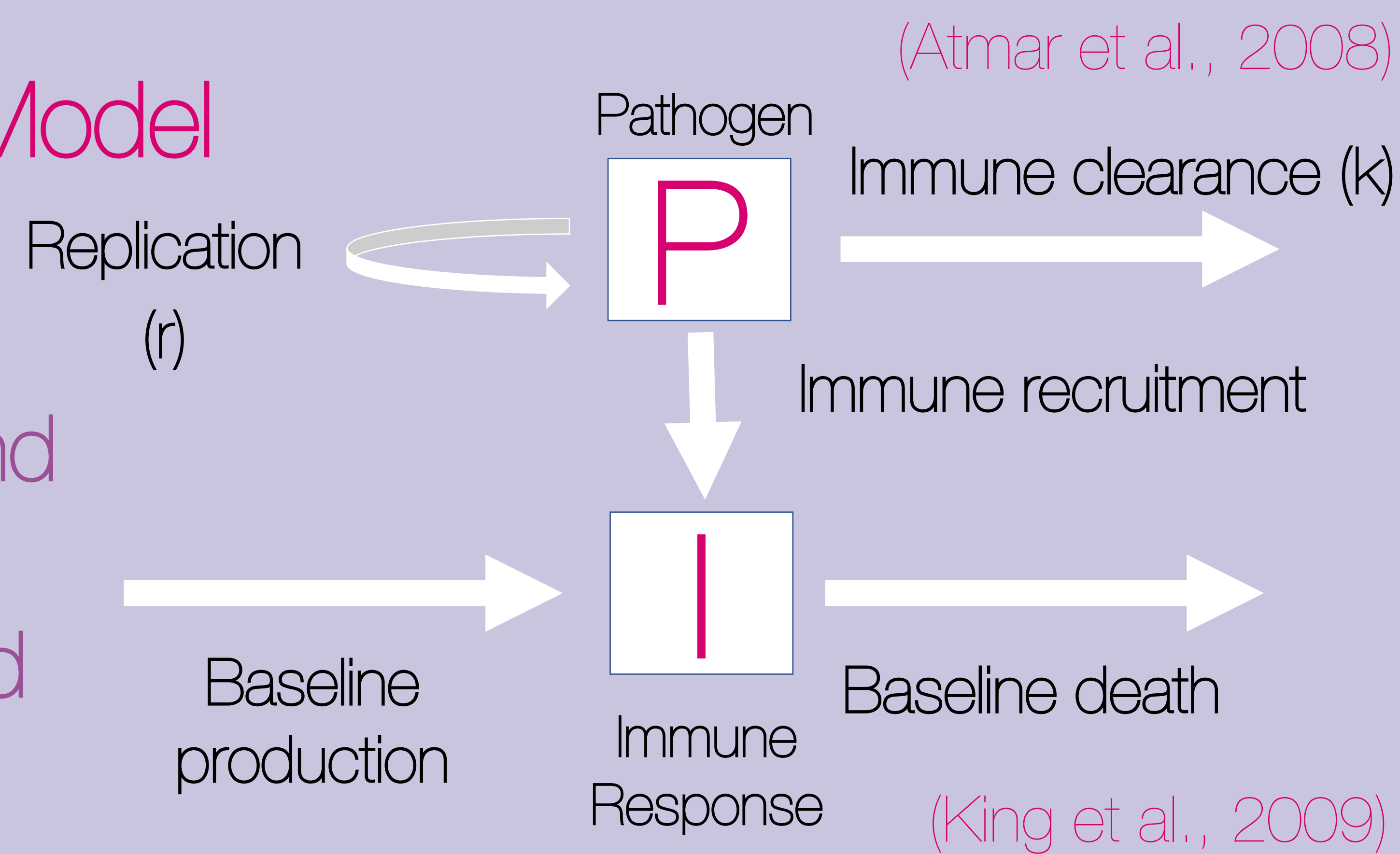
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Predicting when pre-symptomatic transmission will occur allows us to develop appropriate intervention measures during disease outbreaks.

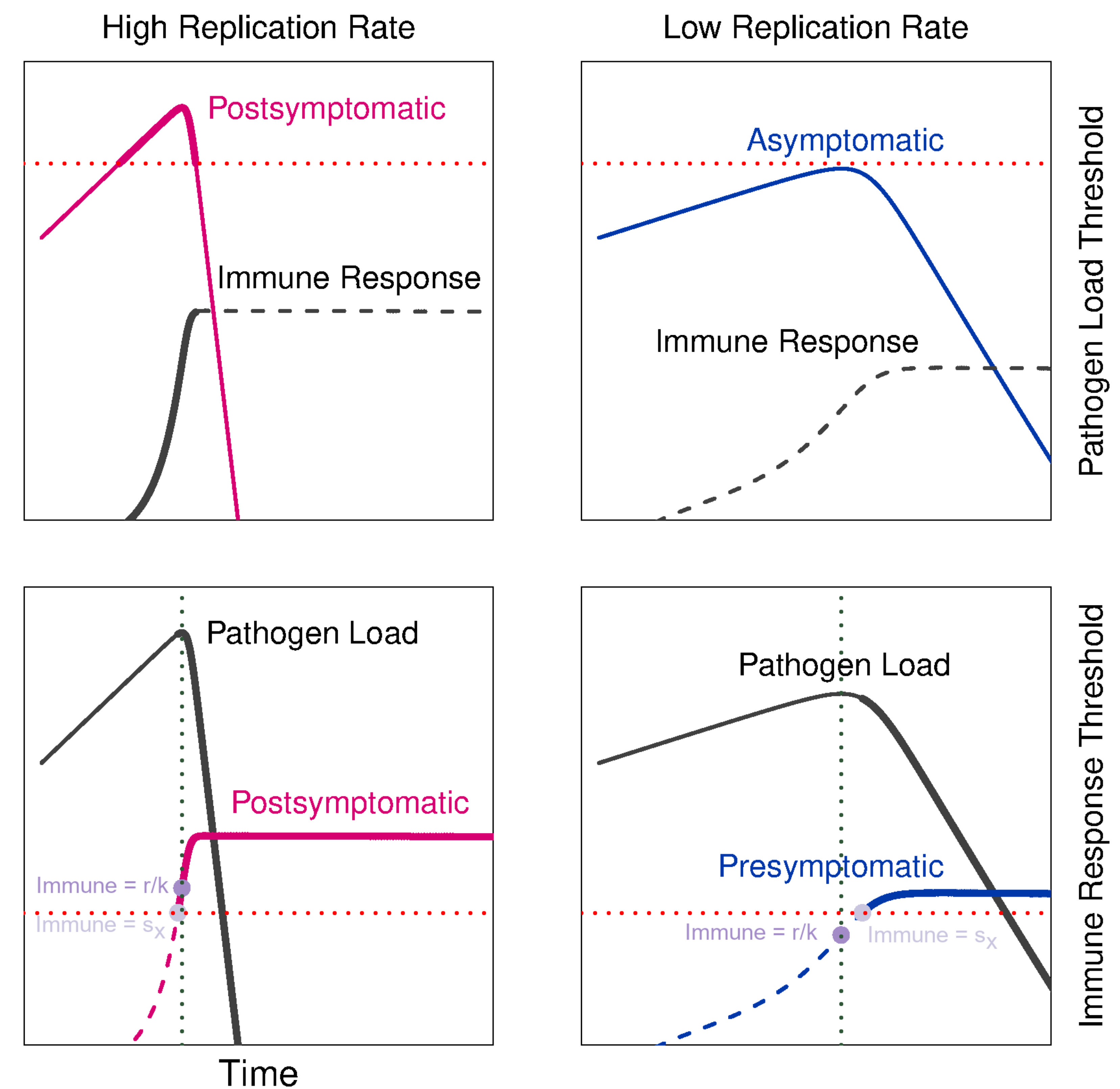
Our definition: pre-symptomatic transmission occurs when peak viral load comes before symptom onset

There are 2 models of symptom onset: one based on crossing a pathogen load threshold and one based on crossing an immune response threshold

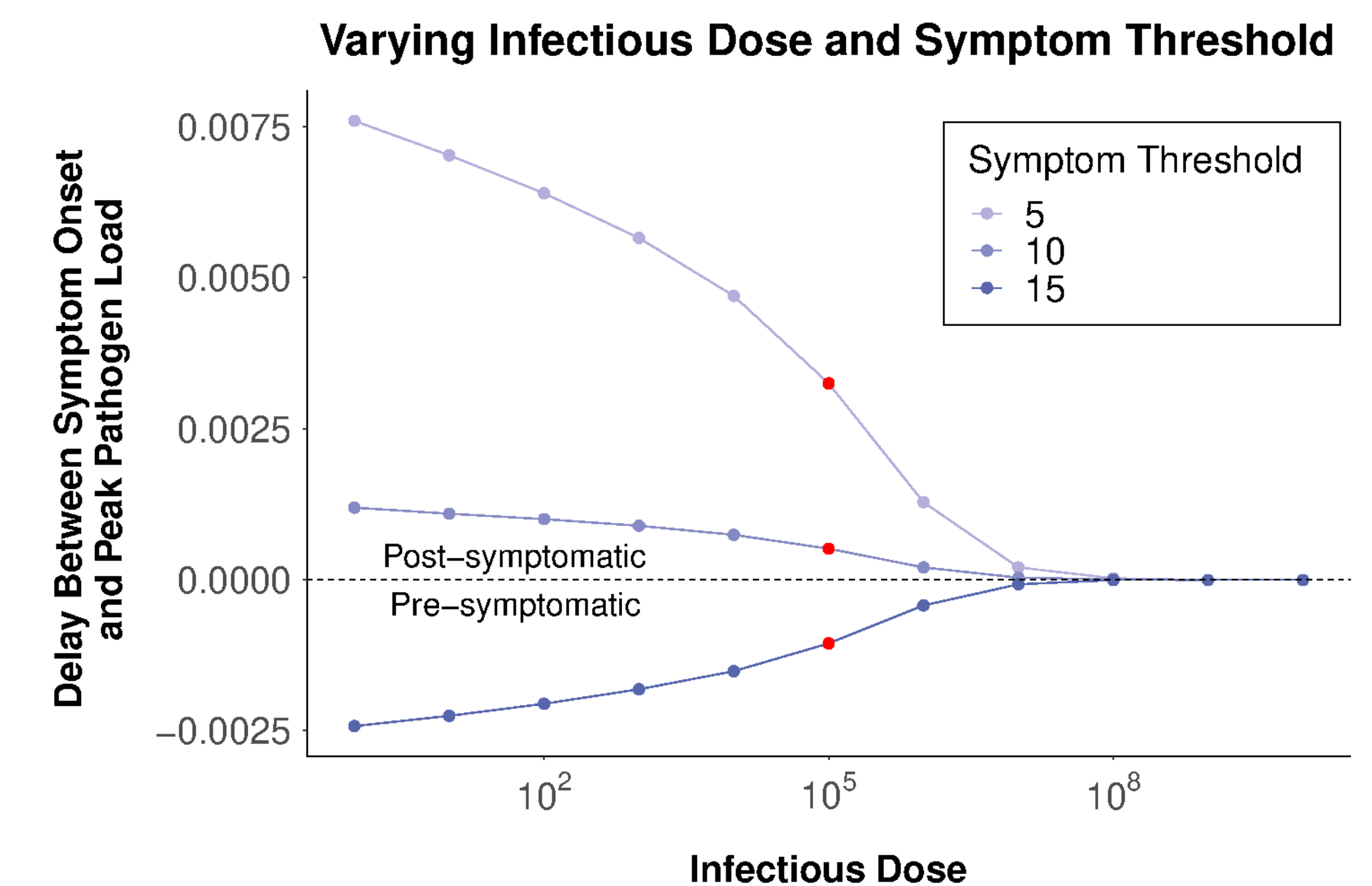
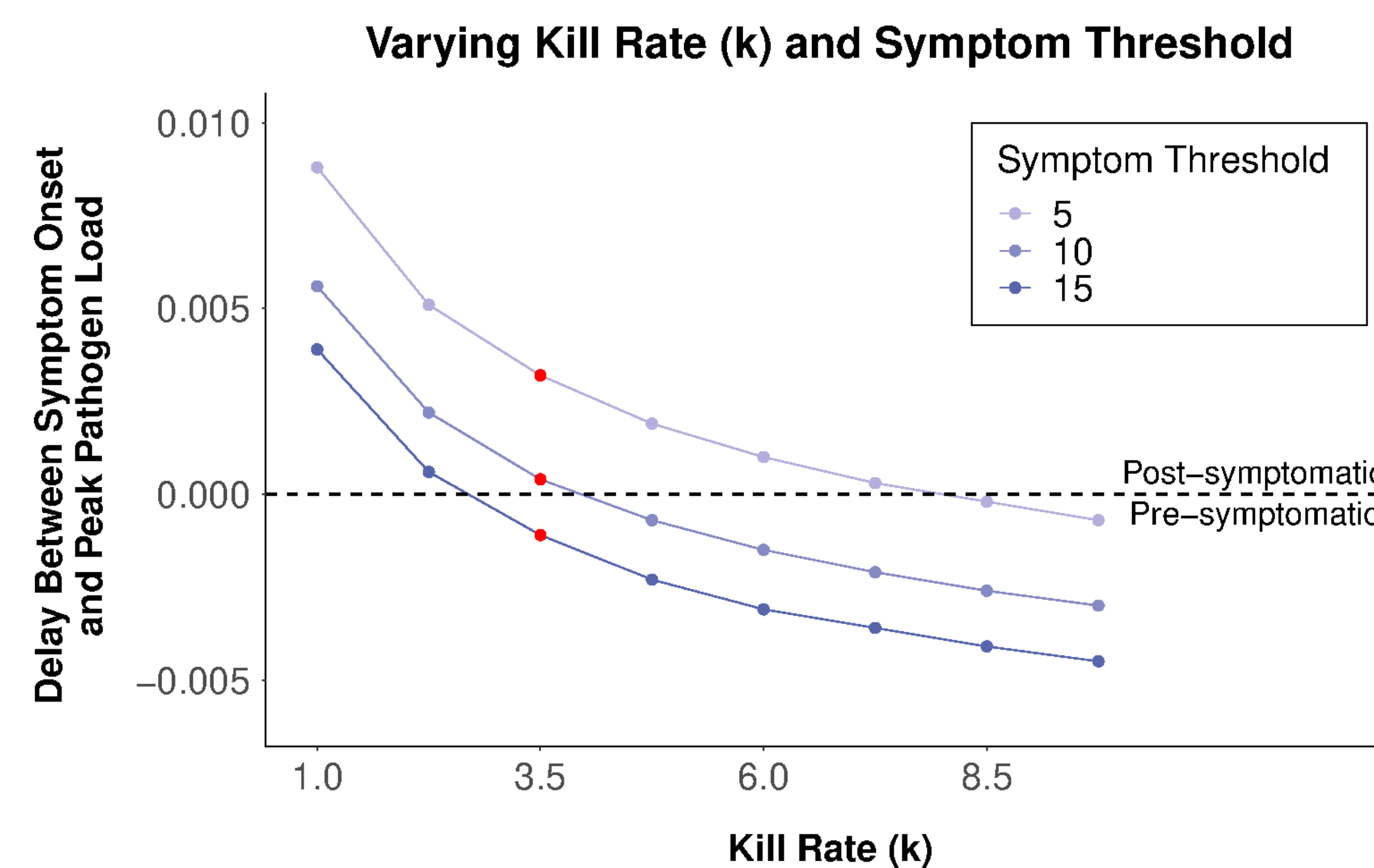
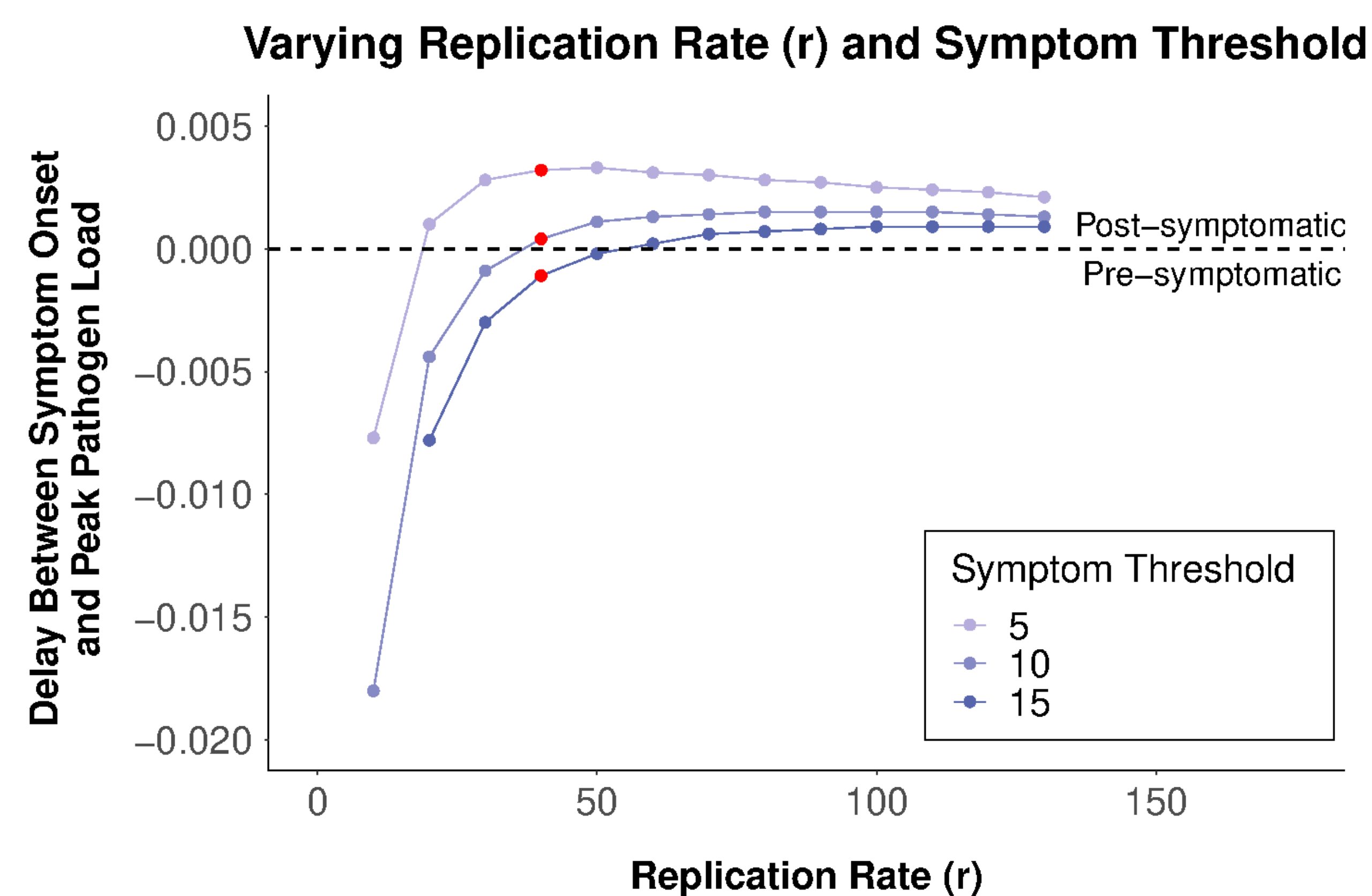
Model



Pre-symptomatic transmission occurs only with symptom thresholds based on immune response



Assuming an immune response threshold,



Pre-symptomatic transmission increases with immune competency and decreases with pathogen replication rate