

# IS-7: Deriving Control Reproduction Number for Spider Metapopulation Networks

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Human migration and mobility, can affect and get impacted by spread of an outbreak. A patchy network system can explain this procedure. In this work, we present a framework to evaluate the target reproduction number of a metapopulation system as a function of small patches reproduction number in order to better control of outbreak by controlling the most proper patches or the movement between patches. We analytically provide the critical fraction of patches should be controlled in order to control outbreak in the whole system. We implement our analysis for a heterogeneous network (spider metapopulation network) . These family of networks are useful in explaining the spread of disease in household-school and or urban core-suburb area in metropolitan regions.