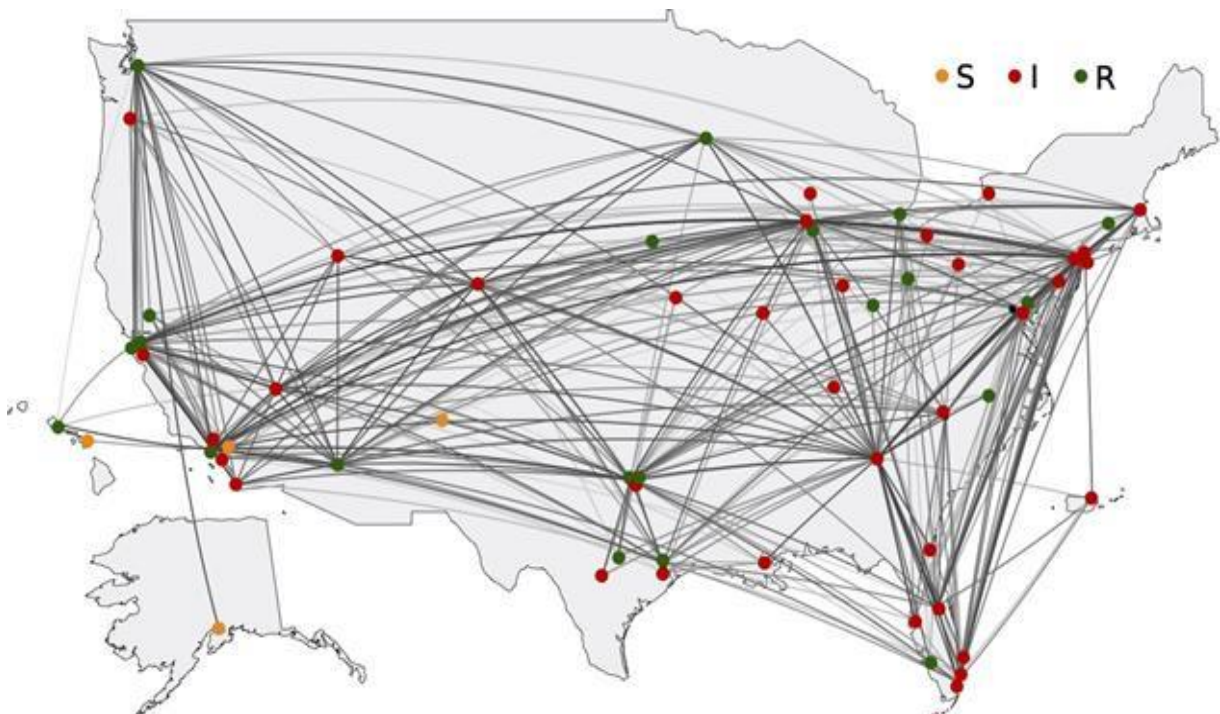


# Pandemics, marketing and opinion formation – the power of spreading processes

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The modern world comprises interlinked networks of contacts between individuals, computing devices and social groups, where infectious diseases, information and opinions propagate through their edges in a probabilistic or deterministic manner via interactions between individual constituents. The spread of information, opinions and marketing material can be modelled and analysed in a similar manner to that of epidemic spreading among humans or animals. To contain and mitigate the spread of infectious diseases one would like to model the spread accurately, implement effective prevention and mitigation policies and deploy vaccines in a way that minimises the spread. This is a difficult problem and becomes even harder in the presence of infectious but asymptomatic individual states. In the world of marketing and opinion setting, winners are those who maximise the impact by deploying resource to the most influential available nodes at the right time, occasionally in competition (or collaboration) with adversarial (supportive) spreading processes. These can represent opinion formation by political parties (competitive) or diseases that increase the susceptibility to mutual infections (collaborative). I will explain the modelling of epidemic spreading processes and present the probabilistic analytical framework for impact maximisation/minimisation we have developed, addressing the questions of vaccine (budget) deployment and spreading maximisation in single and competitive/collaborative processes. I will also present the analysis for epidemic spreading processes with infectious but asymptomatic states and the effectiveness of containment and mitigation steps in this case.



## References

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