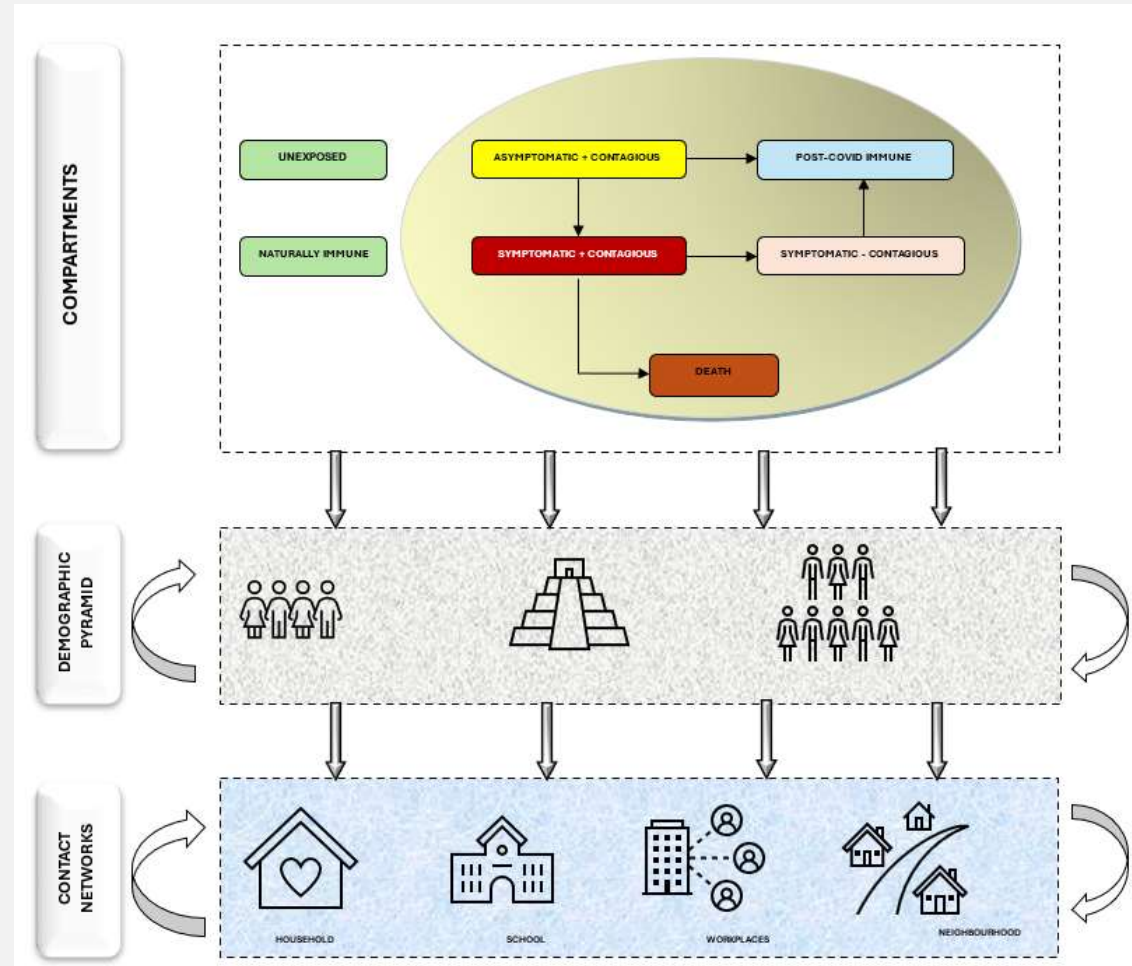


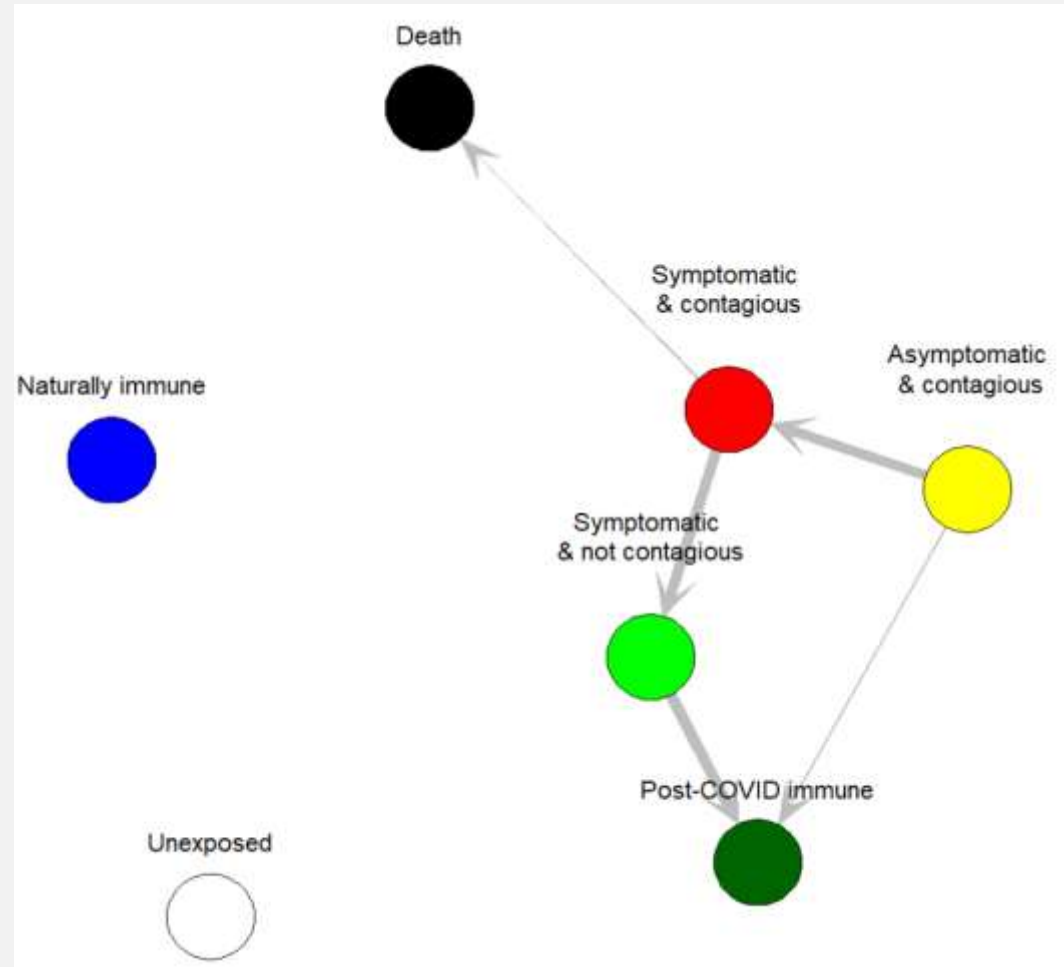


Agent-Based Simulation of Contact Networks and Mobility Patterns for COVID-19 in Kenya

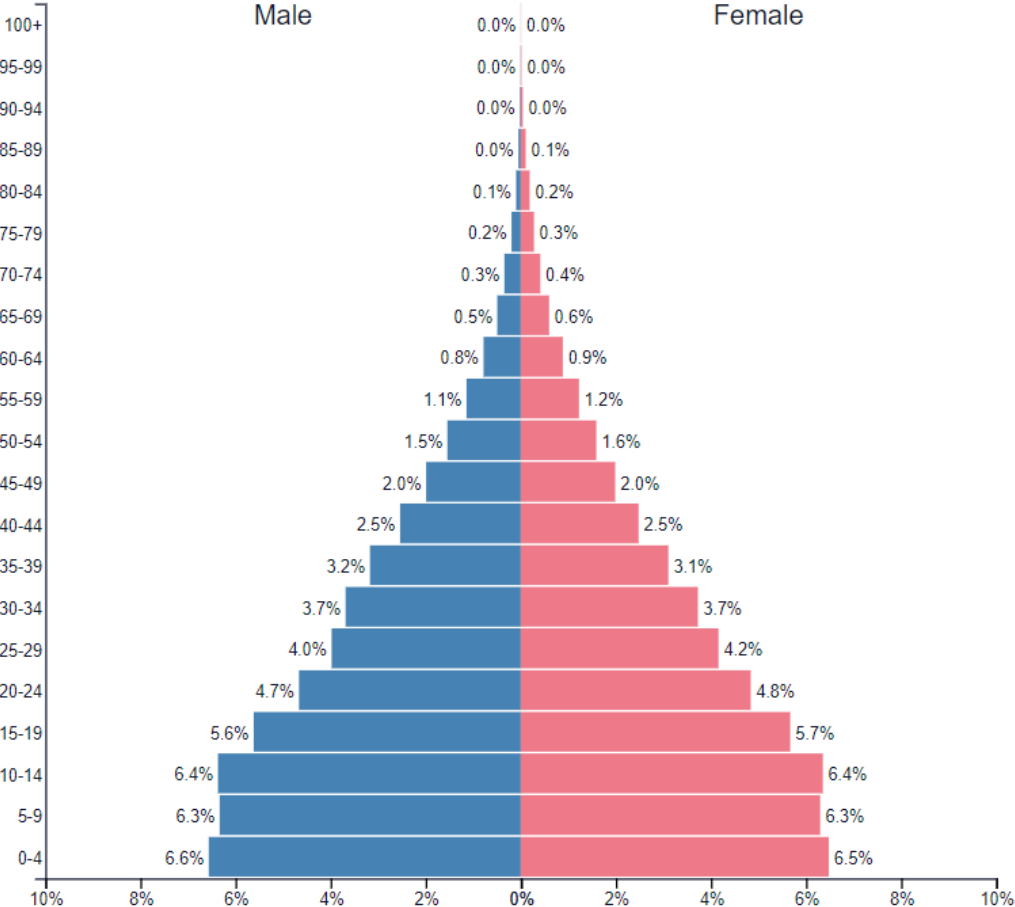
Simulating Epidemic Spread using ABM



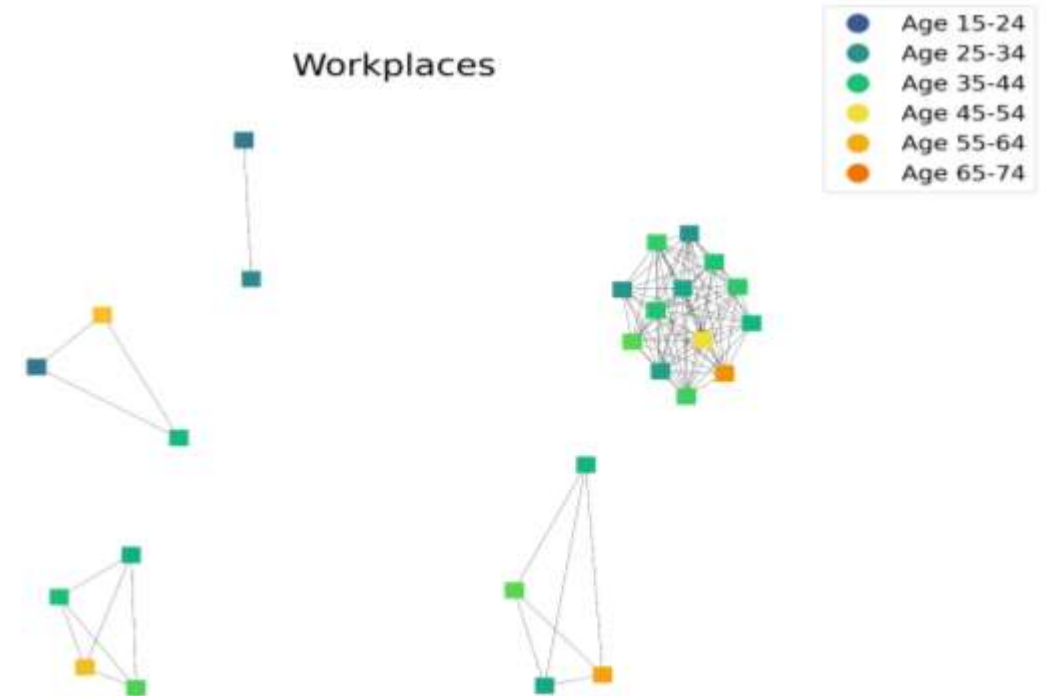
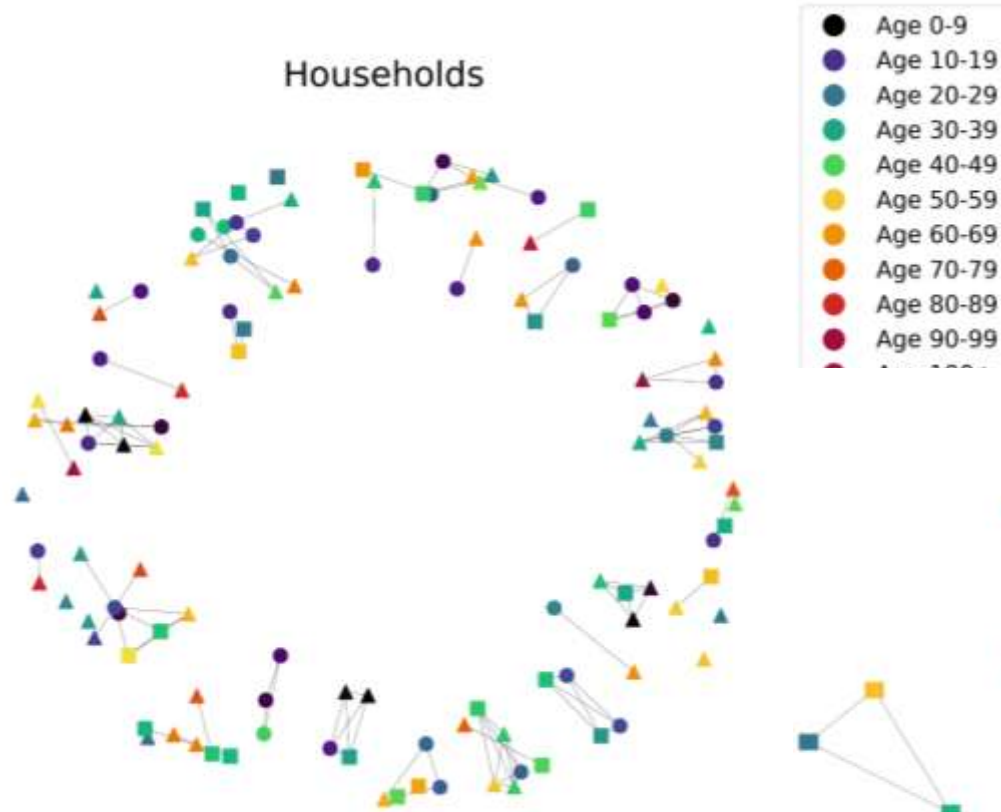
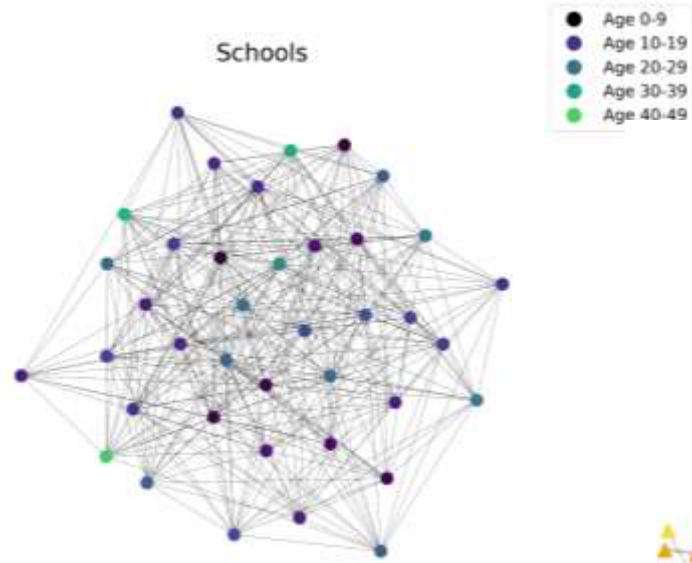
Biological States in the Model



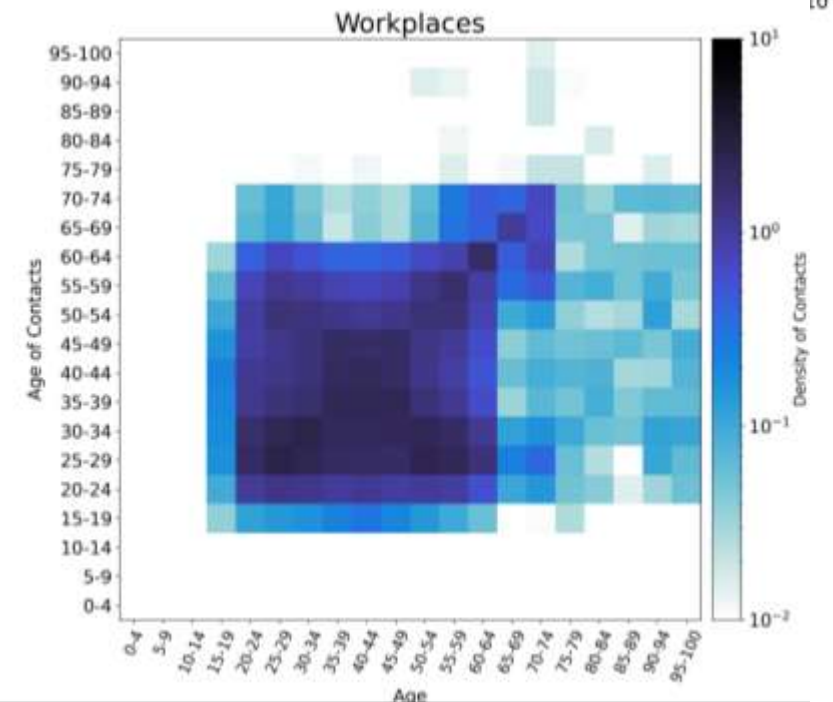
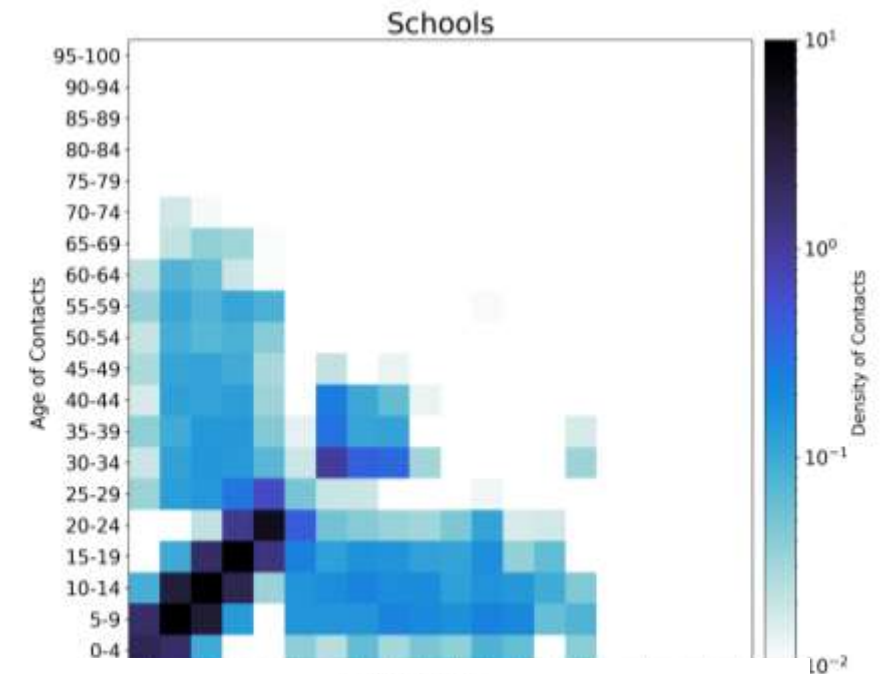
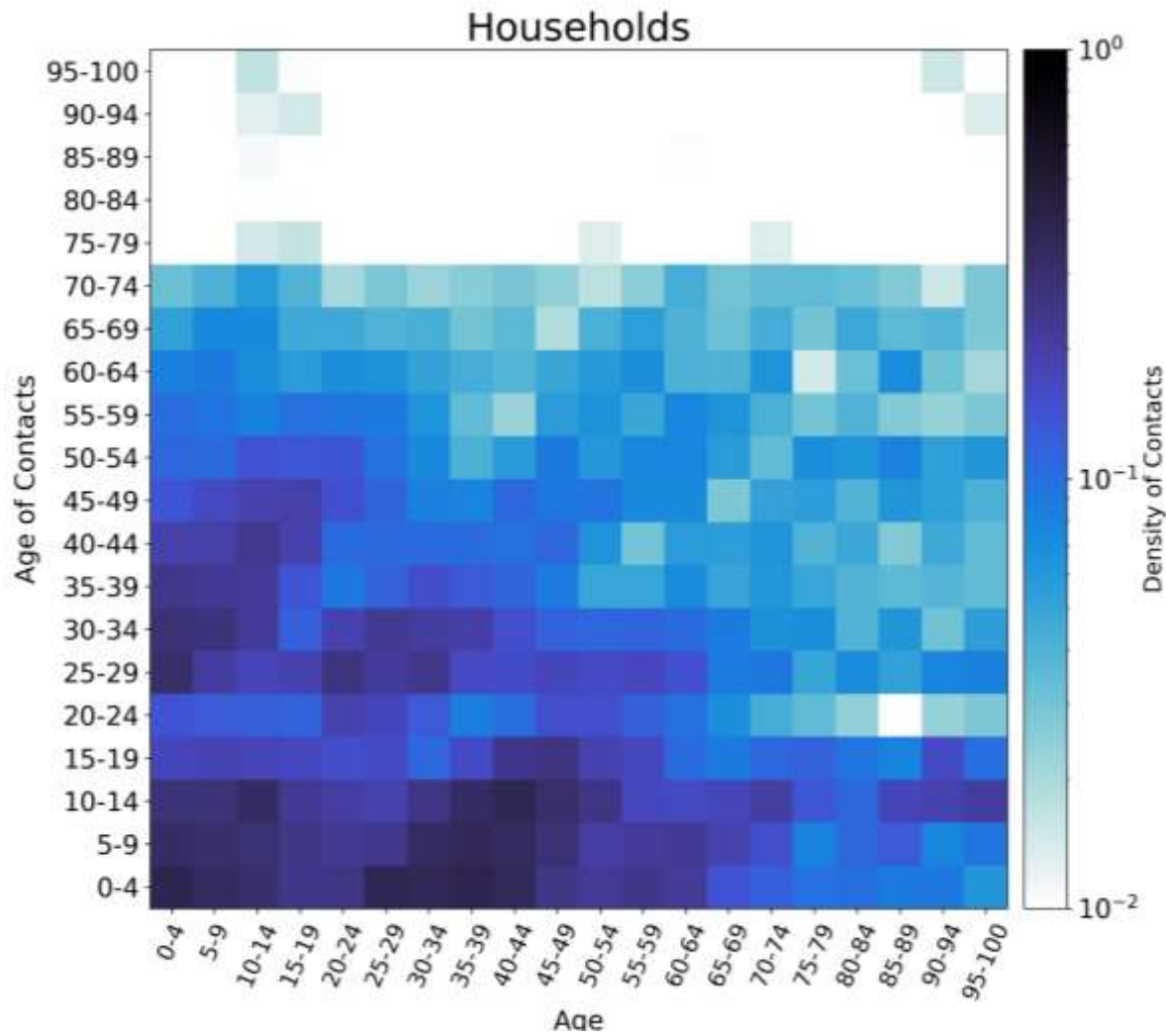
Building the Demographic and Social Networks



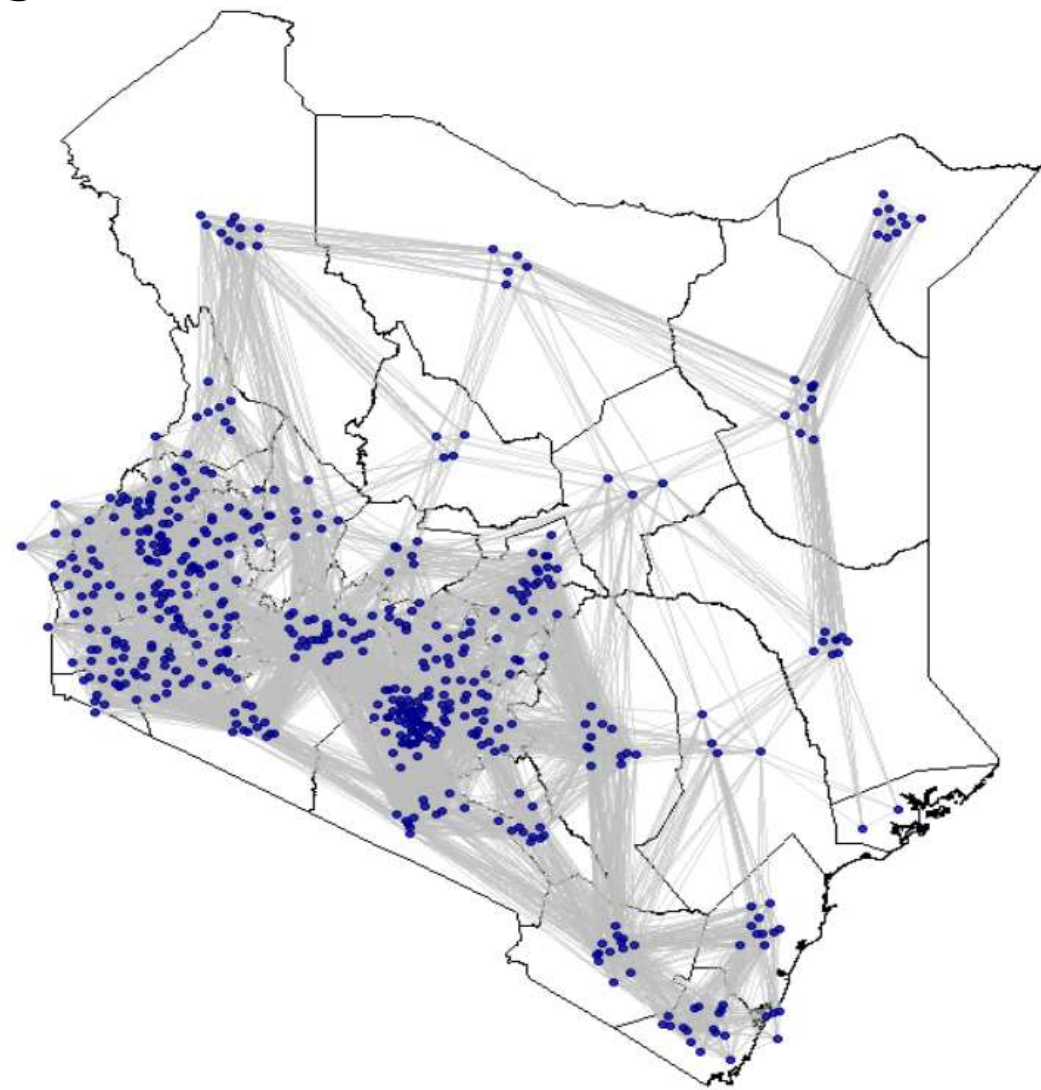
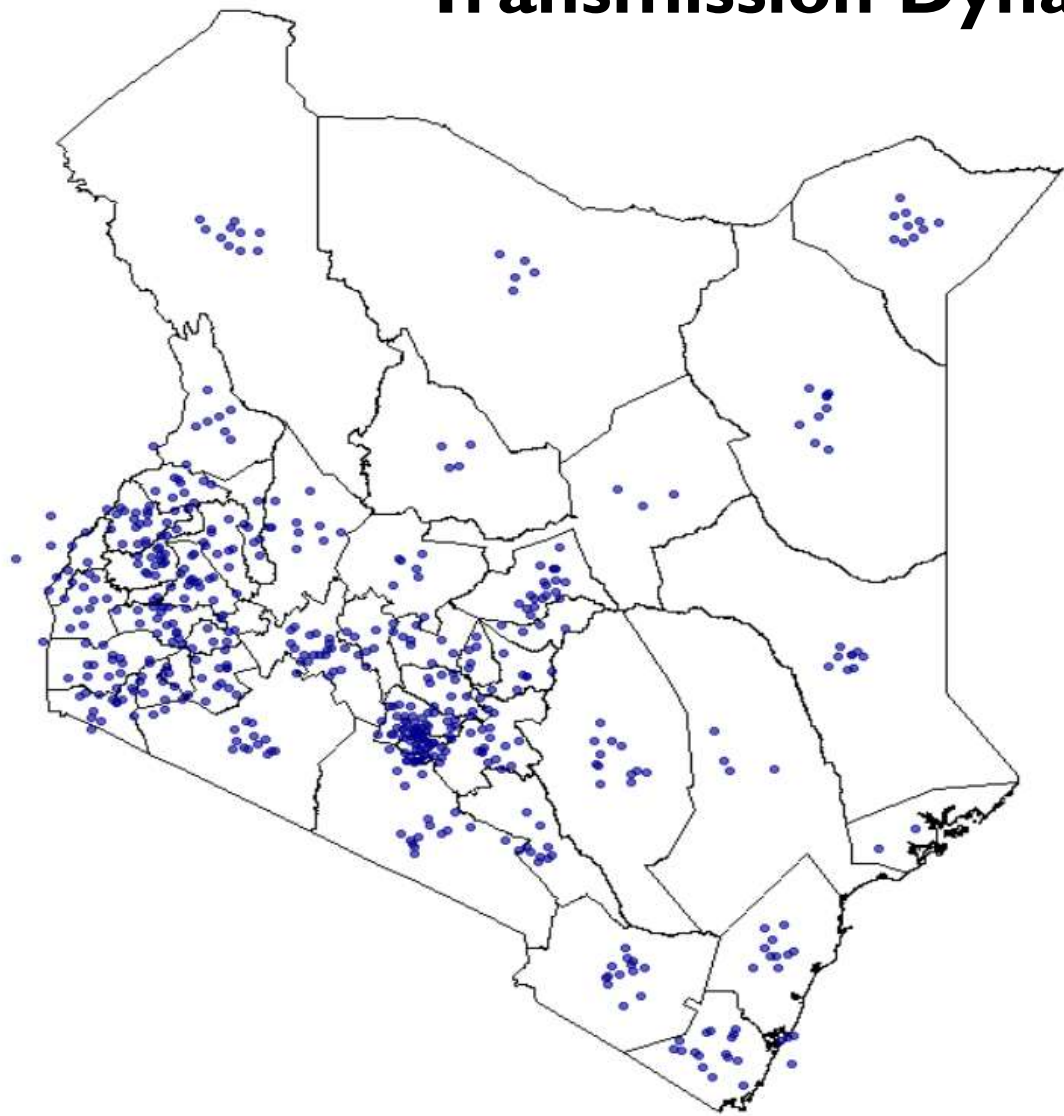
Building the Demographic and Social Networks



Building the Demographic and Social Networks



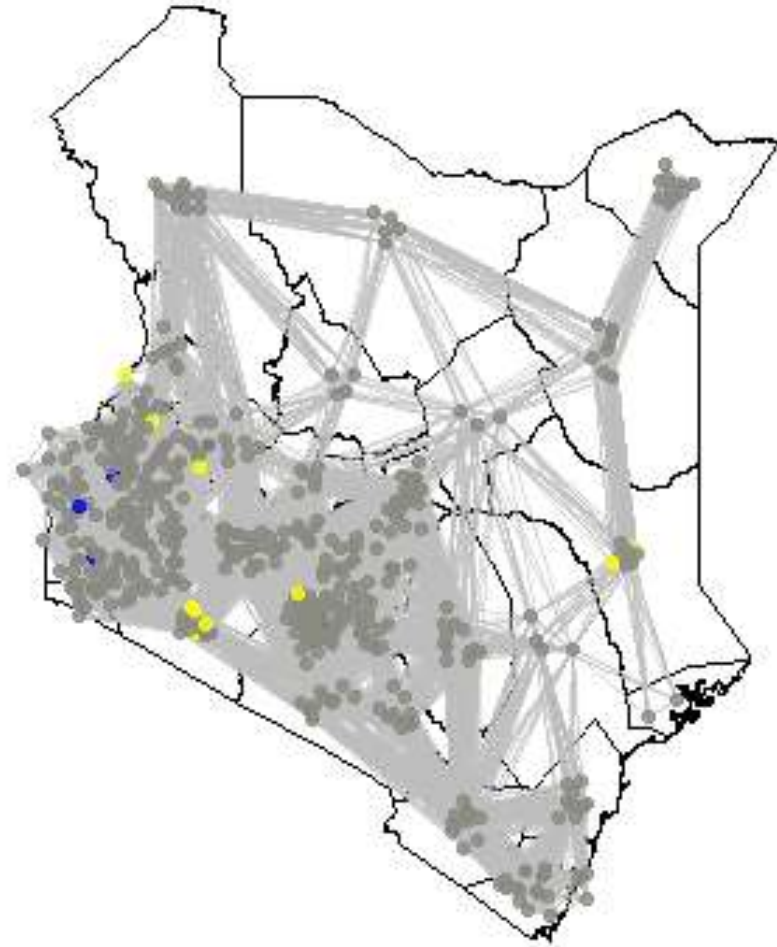
Transmission Dynamics



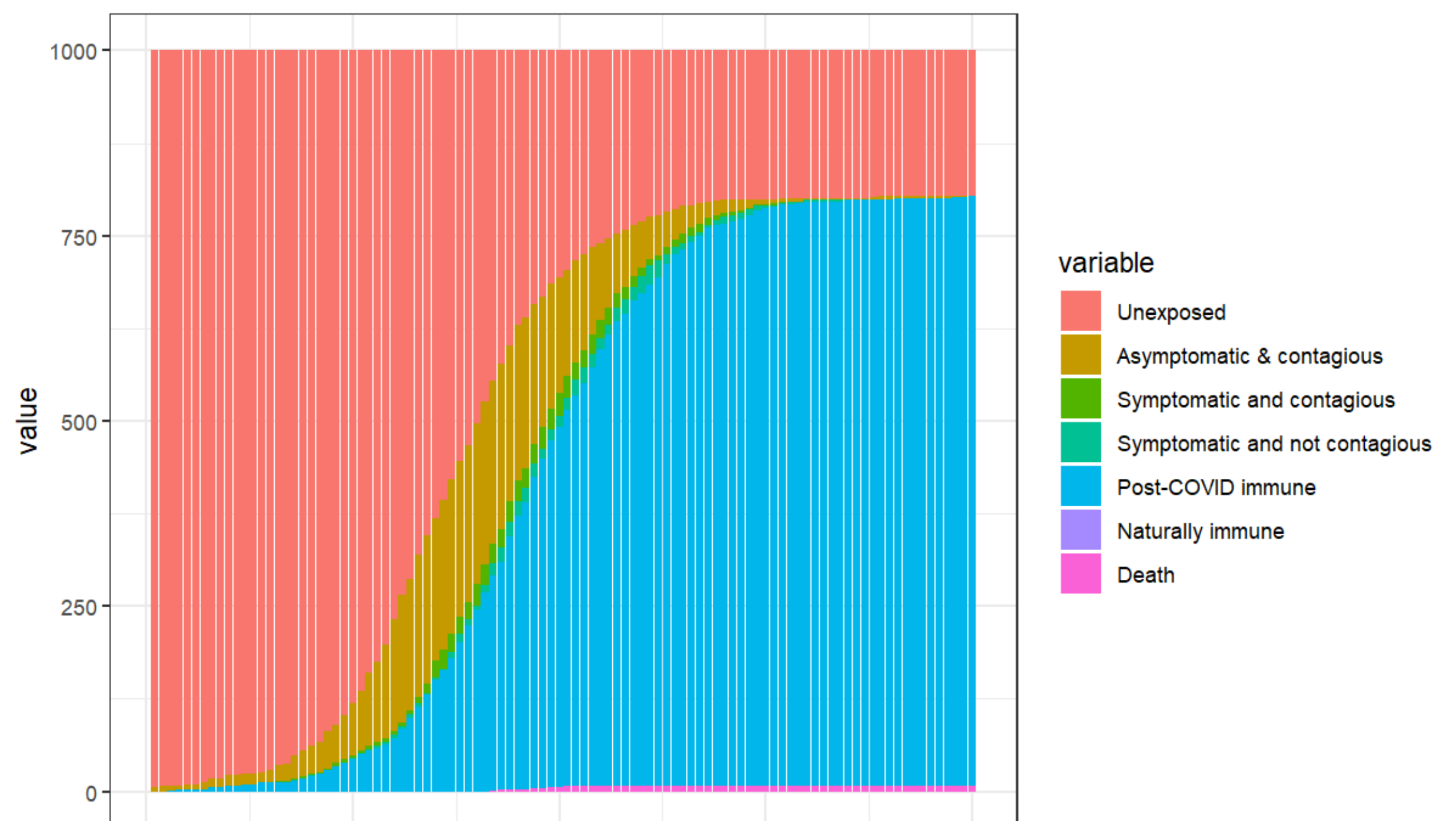
Simulation of Disease Spread Over 60 Days

Day: 1

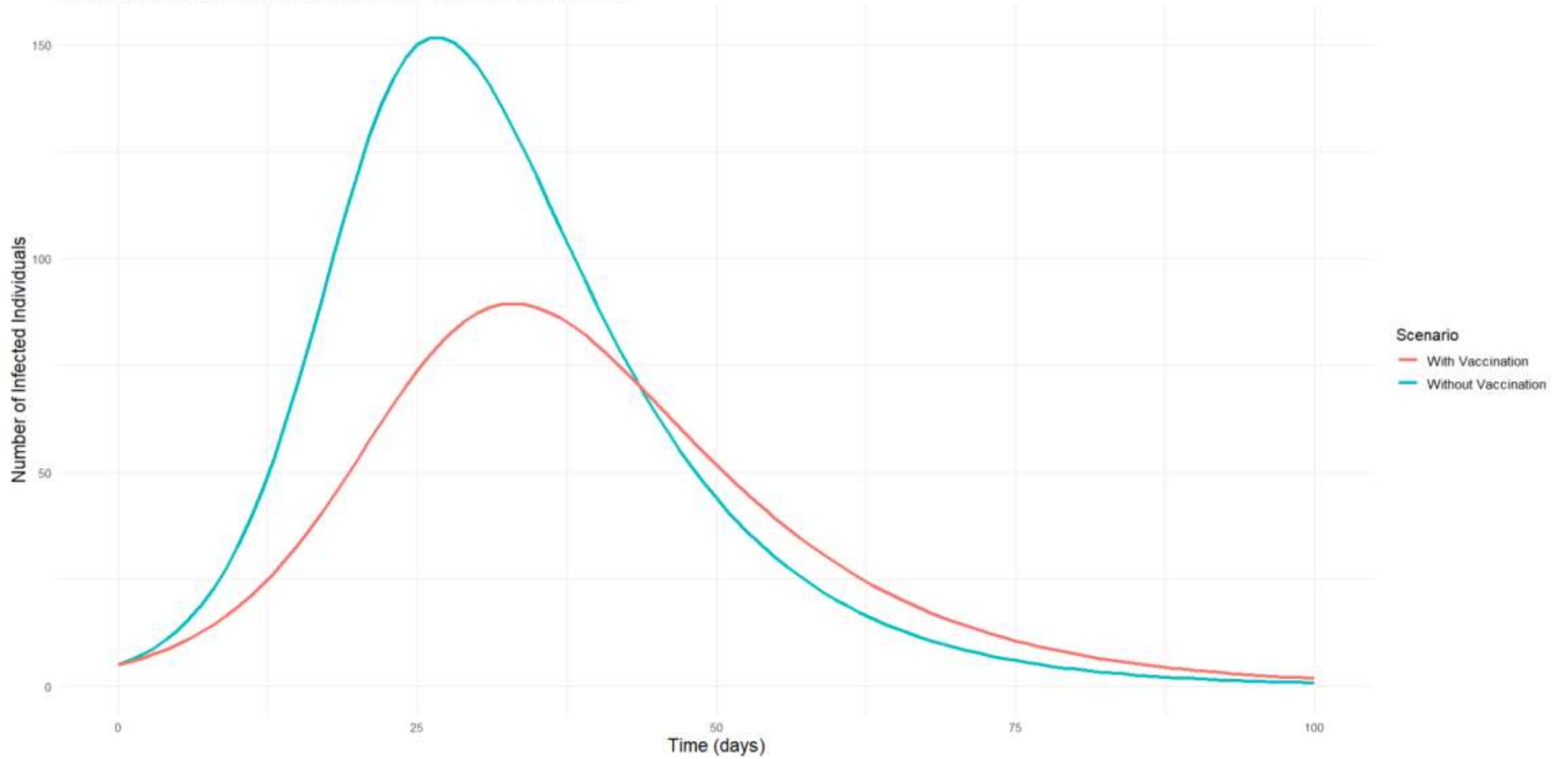
Transmission Dynamics



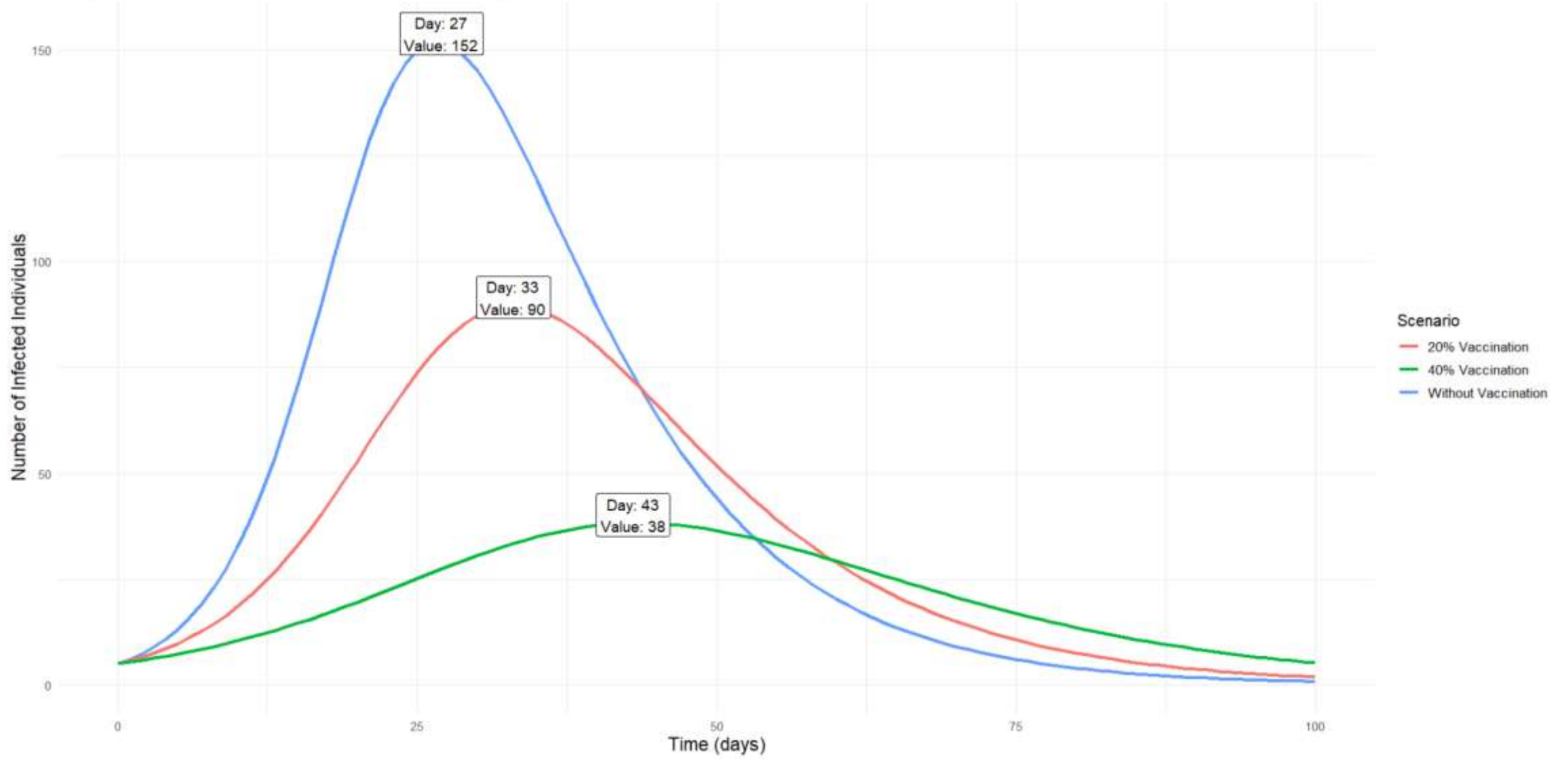
- Unexposed
- Asymptomatic Contagious
- Symptomatic Contagious
- Symptomatic Not Contagious
- Post-COVID Immune
- Naturally Immune
- Death



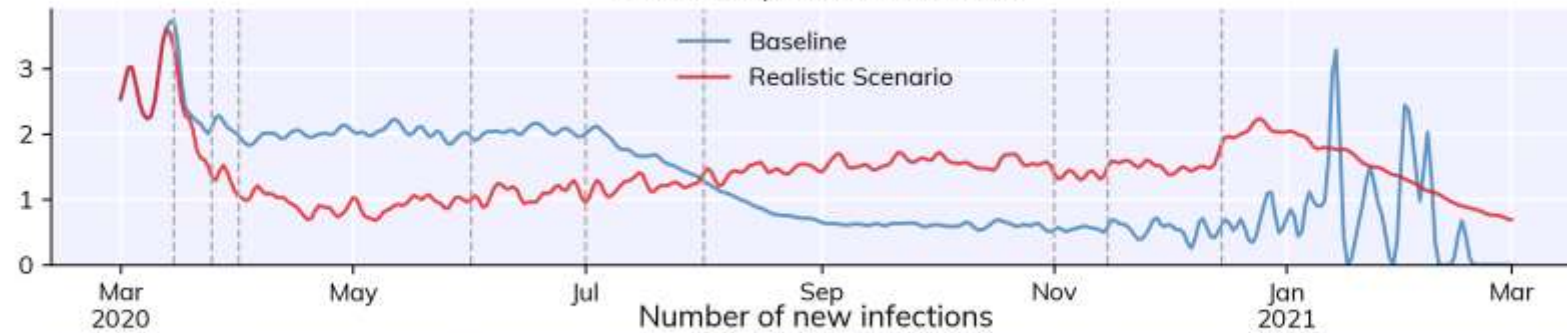
Impact of Vaccination Intervention on Disease Spread



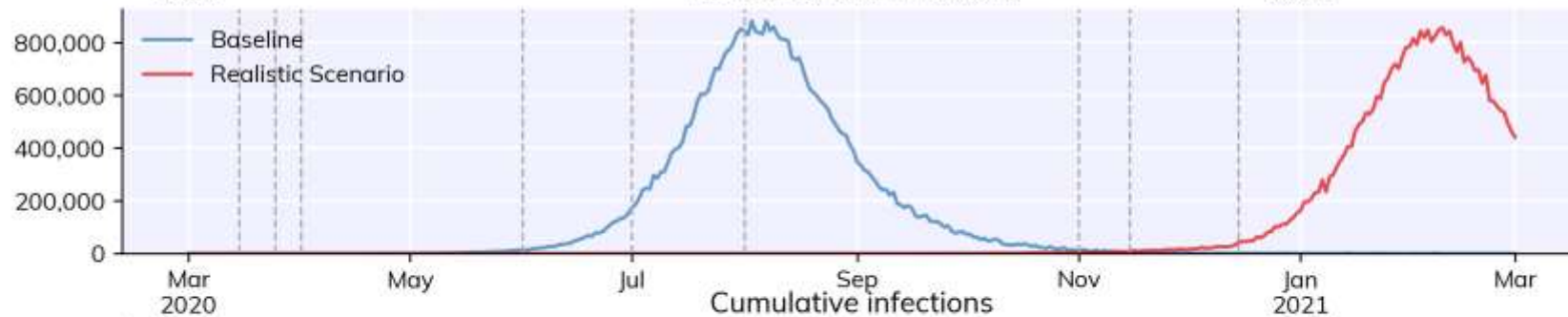
Impact of Vaccination Rates on Disease Spread



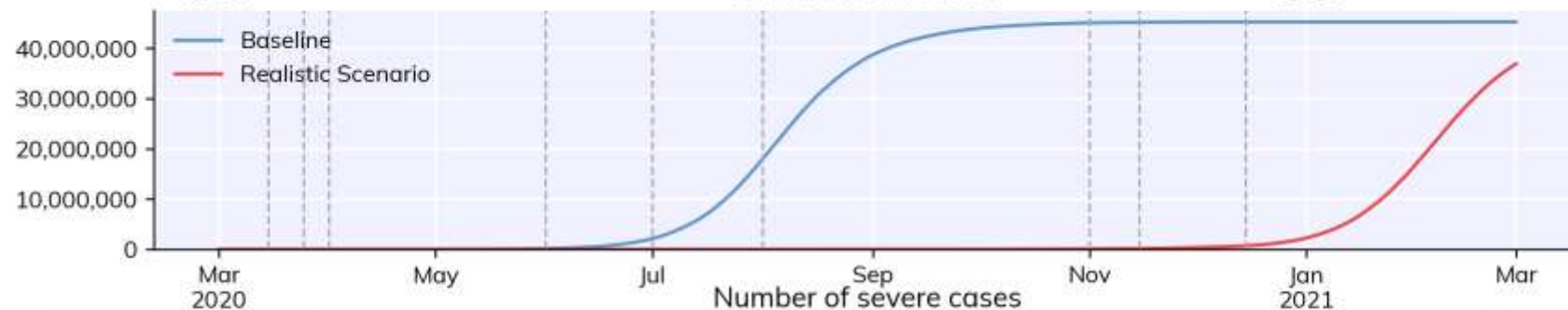
Effective reproduction number



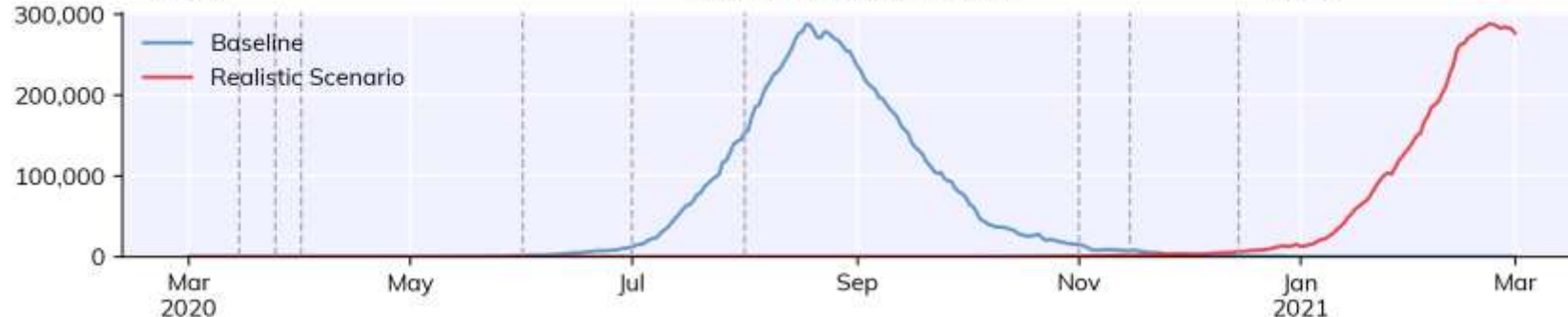
Number of new infections



Cumulative infections



Number of severe cases



Way forward

While our model is a great starting point for simulating a demographic network, it has some limitations:

- Simplistic age distribution
- Static household size
- Limited spatial consideration
- Homogeneous work and school environments
- Limited social interaction dynamics
- Simplistic agent attributes
- Assumptions about work and school assignment

Summary

Generated a demographic network of agents, assign them to households, schools, and workplaces
Constructed a social network based on these assignments and spatial proximity.
Simulated the transmission dynamics in this networks using contacts

Acknowledgement



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