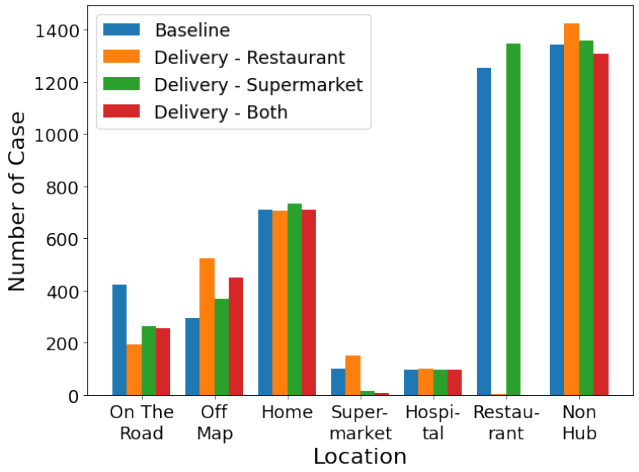

Figure 10: Infection by location for the baseline against the three delivery strategies (restaurants, supermarkets, and both). The three delivery strategies have slightly reduced infections "on the road" and slightly higher infections "off-map".

6 CONCLUSION

In this paper, we develop a pandemic simulator and explore three different interventions to reduce the spread of the virus. We observed that our lockdown intervention was very similar to a real intervention in Kagoshima, Japan [1], which also had a similar trend of new cases per day. We also noted that most interventions targeting places where people gather, such as restaurants and supermarkets, reduce the total number of infections. At the same time, the PCR testing might create a cluster in the testing center due to the increased flow of people, which also is similar to the infection cluster at vaccination center case in Malaysia [12]. These results suggest that simulator can provide insights on how the disease spread, helping decision-makers design public policies.

Our simulator has some limitations. Some data about the simulated area was incomplete. This project would benefit greatly from integrating more detailed demographics, job distribution, mobility, and missing or incomplete information about buildings. Due to time and processing power limitations, we had to limit the number of simulated days and agents in the simulation. This lower number of agents resulted in a lower population density in the simulated area. Consequently, this lower population density resulted in a slower spread of infection due to the lower interaction between agents. Finally, some features that have not been implemented at the time of writing are: transportation methods (all agents only walk), the chance of death, and different compliance levels to the interventions.

This work's natural progression is to incorporate real movement data generated from data collected by phone carriers into the simulation. Another interesting future research is to explore the interaction between natural disasters and epidemics where a cluster of infections might form in evacuation centers.

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