Supplementary Material:

Individual-based modeling reveals that the COVID-19 isolation period can be shortened by community vaccination

Chayanin Sararat$^{1,2}$, Jidchanok Wangkanai$^{1,2}$, Chaiwat Wilasang$^{1,2}$, Tanakorn Chantanasaro$^{1,2}$, and Charin Modchang$^{1,2,3,4,*}$

$^1$Biophysics Group, Department of Physics, Faculty of Science, Mahidol University, Bangkok 10400, Thailand.

$^2$Center for Disease Modeling, Faculty of Science, Mahidol University, Bangkok 10400, Thailand.

$^3$Centre of Excellence in Mathematics, MHESI, Bangkok 10400, Thailand.

$^4$Thailand Center of Excellence in Physics, Ministry of Higher Education, Science, Research and Innovation, 328 Si Ayutthaya Road, Bangkok 10400, Thailand.

* Corresponding author

E-mail: charin.mod@mahidol.edu
Table S1. The post-isolation secondary infection probabilities across different scenarios.

| Parameters | Probability of secondary transmission (%) | Probability of a successful outbreak (%) | Figures |
|------------|------------------------------------------|------------------------------------------|---------|
| VC         | R | TtoQ (days) | $e_s$ (%) | $e_l$ (%) | IP 0d | IP 3d | IP 7d | IP 14d | IP 0d | IP 3d | IP 7d | IP 14d |         |
| 0%         | 5.08 | 6.8 | 0.79 | 24.55 | 23.07 | 16.33 | 6.23 | 0.37 | 13.53 | 8.53 | 2.77 | 0.17 |         | Fig. 3 |
| 1.6        | 6.8 | 0.79 | 24.55 | - | - | - | 0.17 | 0.17 | 0.07 | 0.00 |         | Fig. 7 |
| 3.2        | 6.8 | 0.79 | 24.55 | - | - | - | 5.83 | 4.20 | 1.03 | 0.07 |         | Fig. 7 |
| 5.08       | 6.8 | 0.79 | 24.55 | - | - | - | 8.97 | 5.50 | 1.50 | 0.10 |         | Fig. 6 |
| 0%         | 0.5 | 24.55 | 20.70 | 15.60 | 5.03 | 0.23 | 11.60 | 6.97 | 2.00 | 0.13 |         | Fig. 4 |
| 1.6        | 0.6 | 24.55 | 20.60 | 14.97 | 5.93 | 0.47 | 11.20 | 6.57 | 2.27 | 0.30 |         | Fig. 4 |
| 3.2        | 0.79 | 24.55 | 21.93 | 15.37 | 5.30 | 0.27 | 12.30 | 6.97 | 2.43 | 0.13 | Figs. 3,4,6,7 |
| 5.08       | 0.9 | 24.55 | 22.60 | 15.13 | 5.67 | 0.27 | 10.83 | 6.93 | 2.00 | 0.13 |         | Fig. 4 |
| 0%         | 8 | 0.79 | 24.55 | - | - | - | 11.00 | 7.30 | 2.07 | 0.17 |         | Fig. 6 |
| 1.6        | 5.08 | 6.8 | 0.79 | 24.55 | 19.33 | 13.33 | 3.90 | 0.47 | 7.37 | 5.37 | 1.40 | 0.10 |         | Fig. 3 |
| 3.2        | 6.8 | 0.79 | 24.55 | - | - | - | 0.00 | 0.00 | 0.00 | 0.00 |         | Fig. 7 |
| 5.08       | 3 | 0.79 | 24.55 | - | - | - | 0.67 | 0.43 | 0.03 | 0.00 |         | Fig. 7 |
| 0%         | 5 | 0.79 | 24.55 | - | - | - | 2.23 | 1.47 | 0.23 | 0.00 |         | Fig. 6 |
| 1.6        | 0 | 20.40 | 13.33 | 4.73 | 0.23 | 10.90 | 5.87 | 2.20 | 0.00 |         | Fig. 5 |
| 3.2        | 5 | 19.80 | 14.10 | 4.77 | 0.37 | 10.03 | 5.50 | 2.03 | 0.17 |         | Fig. 5 |
| 5.08       | 10 | 19.57 | 13.40 | 4.67 | 0.17 | 9.30 | 5.93 | 2.03 | 0.03 |         | Fig. 5 |
| 0%         | 24.55 | 17.43 | 12.23 | 4.10 | 0.07 | 7.70 | 4.20 | 1.27 | 0.07 | Figs. 4,5 |
| 1.6        | 40 | 17.20 | 11.00 | 3.60 | 0.13 | 6.27 | 2.93 | 1.07 | 0.07 |         | Fig. 5 |
| 3.2        | 0.5 | 24.55 | 16.90 | 11.73 | 3.07 | 0.27 | 7.00 | 4.03 | 0.97 | 0.07 |         | Fig. 4 |
| 5.08       | 0.79 | 24.55 | 15.50 | 10.60 | 3.60 | 0.27 | 3.07 | 1.53 | 0.70 | 0.07 | Figs. 3,4,6,7 |
| 0%         | 0 | 16.00 | 11.00 | 3.37 | 0.13 | 1.90 | 0.70 | 0.17 | 0.00 |         | Fig. 5 |
| 1.6        | 5 | 17.03 | 10.93 | 3.57 | 0.10 | 1.87 | 1.13 | 0.20 | 0.03 |         | Fig. 5 |
| 3.2        | 10 | 15.10 | 11.63 | 3.87 | 0.33 | 1.43 | 0.93 | 0.27 | 0.00 |         | Fig. 5 |
| 5.08       | 24.55 | 14.83 | 10.17 | 3.53 | 0.10 | 1.30 | 0.93 | 0.20 | 0.00 | Figs. 4,5 |
| 0%         | 40 | 12.37 | 8.80 | 2.67 | 0.07 | 0.53 | 0.43 | 0.03 | 0.00 |         | Fig. 45 |
| 1.6        | 0.9 | 24.55 | - | - | - | 3.83 | 2.07 | 0.60 | 0.00 |         | Fig. 6 |
| 3.2        | 0.5 | 24.55 | 14.47 | 8.93 | 3.20 | 0.20 | 3.87 | 2.47 | 0.80 | 0.03 |         | Fig. 4 |
| 5.08       | 0.6 | 24.55 | 13.07 | 8.23 | 2.43 | 0.20 | 1.47 | 0.53 | 0.17 | 0.00 |         | Fig. 4 |
| 0%         | 0.79 | 24.55 | 8.53 | 6.03 | 1.47 | 0.13 | 0.00 | 0.00 | 0.00 | 0.00 | Figs. 3,4 |
| 1.6        | 0.9 | 24.55 | 5.03 | 3.47 | 0.50 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 |         | Fig. 4 |

VC = Vaccine coverage,
TtoQ = Time delay from infection to the isolation,
IP = Isolation period.