Forward planning
after HK's fifth wave of Omicron BA.2

March 22, 2022

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Two options in forward planning

Option 1: Maintain "Dynamic Zero COVID"

- **Community universal testing (CUT)** should be carried out when the daily number of infections is much below 1000
- **Capacity to quarantine** 5-10 close contacts and 25-100 close contacts of close contacts
- **"Long shedders"** and their contacts given that about 4.4 million have been infected
- **Challenging to reach zero cases** even with repeated CUTs – 3 rounds unlikely to be sufficient
- **Difficult to sustain zero cases** which may require increased investment in on-arrival quarantine facilities for residents and aircrew, as well as residential facilities for the staff (true "closed-loop" operations)

Option 2: Transition towards endemicity

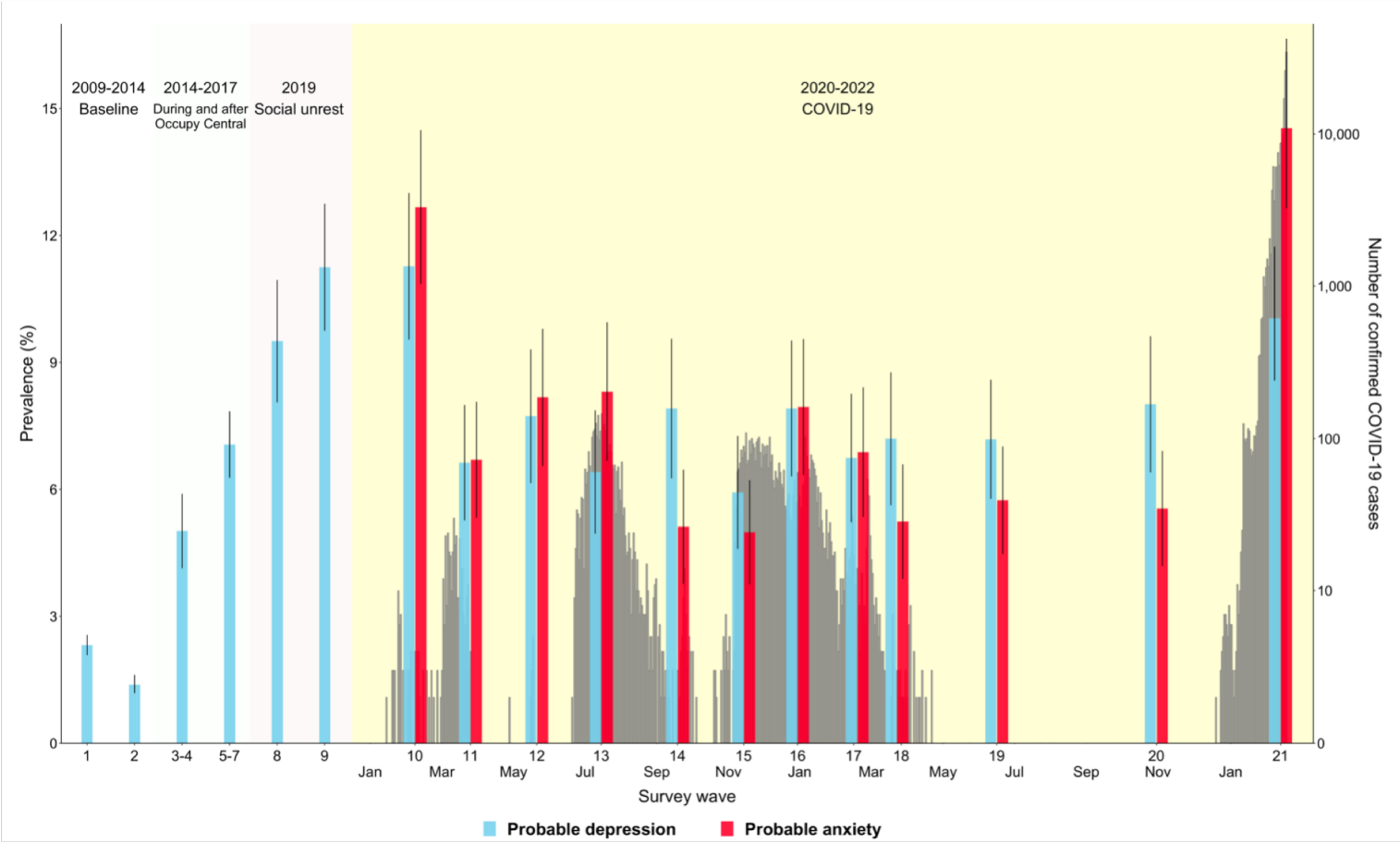
- **Public health and social measures (PHSMs)** to be "tuned" dynamically
- **Challenging to keep the number of infections, hospitalisations and deaths to a manageable level**
- **Surge capacity** of public hospitals
- **Tolerance level** of the public for major morbidity and deaths
- CUT (and CTNs or RTDs) may not be necessary, and resources could be reallocated more efficiently
- Option 2 is the necessary ultimate step, even if Option 1 is selected as the immediate step

Public health and scientific considerations

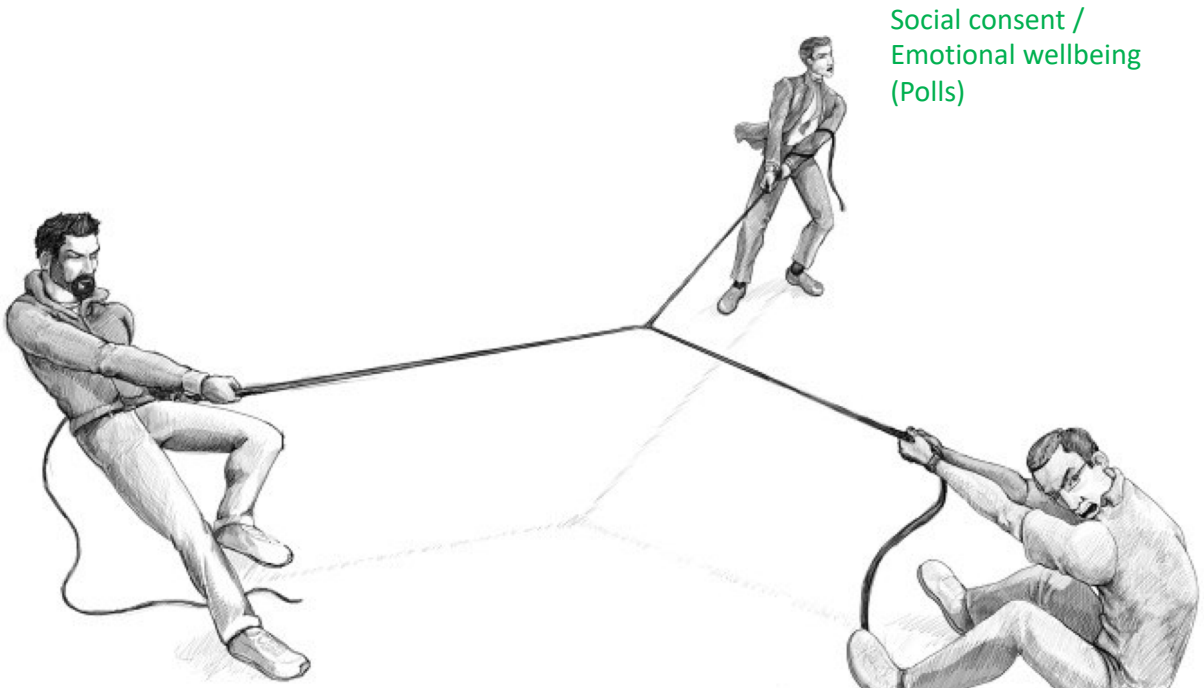
Safest strategy: a controlled transition towards endemicity sooner rather than later

- **SARS-CoV-2 will remain endemic and continue to circulate** in the human population worldwide in the foreseeable future
- **"Hybrid immunity",** i.e., a combination of active immunity from natural infection/recovery and passive immunity through vaccination, **gives the best protection against (re-)infection by a new strain, hospitalisation and death**
- 60% of the HK population already infected thus become immune to Omicron BA.2
- For 40% remainder of the population, it would **probably be safer to be exposed to an Omicron infection** (which is a relatively milder strain, compared to Delta or other predecessors) than **an unknown emerging VOC that might be more transmissible + more severe + more immune escape**

Mental health of HKers under stringent PHSMs and Interminable cycles of “suppress and lift”



3-way tug of war in outbreak control



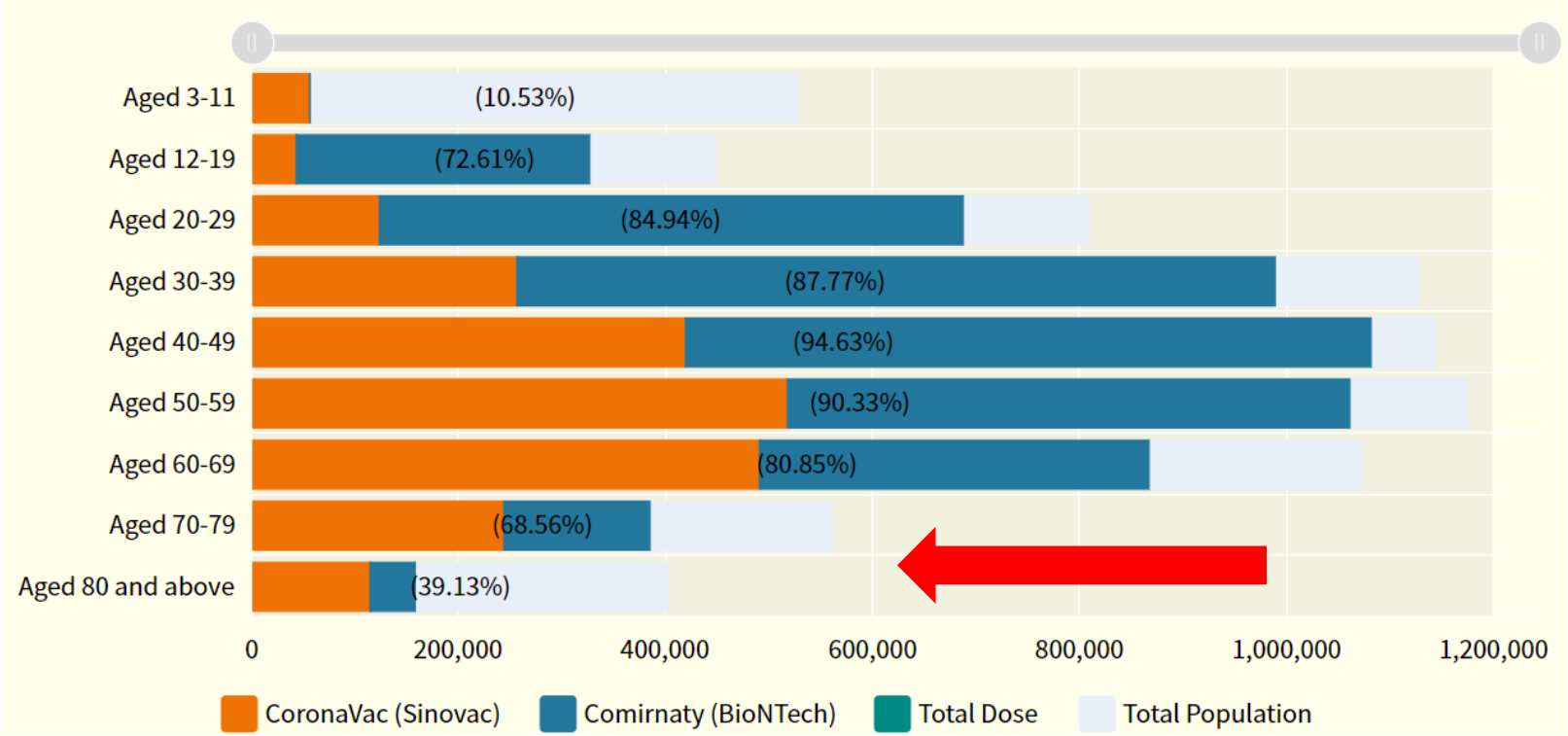
Social consent /
Emotional wellbeing
(Polls)

Health Protection
(Rt → HA surge capacity → Deaths/QoL)

Economic Preservation
(GDP; Employment)

Ex ante prerequisites for triggering the transition to endemicity

Coverage of at least 2 vaccine doses exceeding 90% amongst the 70+ age group, especially those in RCHEs



COVID-19 vaccine effectiveness in Hong Kong

	One dose		Two doses		Three doses	
	BNT162b2	**CoronaVac**	**BNT162b2**	**CoronaVac**	**BNT162b2**	**CoronaVac**
VE against mild/moderate disease						
20-60 years	37.4 (0.7, 60.6)	2.1 (-53.3, 37.5)	31.0 (1.6, 51.7)	17.9 (-18.0, 42.9)	71.5 (54.5, 82.1)	42.3 (11.4, 62.4)
≥60 years	None[a]	None[a]	None[a]	None[a]	71.6 (43.5, 85.7)	50.7 (12.9, 72.1)
VE against severe/fatal disease						
20-60 years	85.0 (69.1, 92.7)	60.9 (40.6, 74.3)	95.2 (92.9, 96.8)	91.7 (87.8, 94.4)	98.5 (95.9, 99.4)	98.5 (95.2, 99.5)
≥60 years	65.6 (52.4, 75.0)	40.4 (25.9, 52.1)	89.6 (86.2, 92.2)	72.2 (65.5, 77.6)	98.0 (95.9, 99.0)	97.9 (96.1, 98.9)
VE against mortality						
20-60 years	93.7 (74.2, 98.5)	65.4 (38.6, 79.4)	96.4 (93.6, 98.0)	94.0 (89.6, 96.5)	99.4 (95.6, 99.9)	-[b] -
≥60 years	73.0 (60.9, 81.4)	51.2 (38.4, 61.3)	92.3 (89.3, 94.4)	77.4 (71.5, 82.0)	98.1 (95.6, 99.1)	98.3 (96.4, 99.2)

[a] No evidence of protection based on a negative or very small positive point estimate and wide confidence intervals.

[b] Insufficient outcomes to estimate

COVID-19 vaccine effectiveness in Hong Kong

This table shows “relative vaccine effectiveness” for 3 doses versus two doses i.e. the additional benefit of the third dose in addition to two doses already received

	Relative VE of three doses vs two doses of same vaccine technology (%)	
	BNT162b2	**CoronaVac**
Mild disease		
20-60 years	58.6% (34.4%, 73.9%)	29.7% (-7.7%, 54.1%)
≥60 years	63.8% (26.7%, 82.1%)	57.0% (23.4%, 75.9%)
Severe/fatal disease		
20-60 years	68.3% (9.8%, 88.9%)	81.8% (40.6%, 94.4%)
≥60 years	80.8% (59.5%, 90.9%)	92.5% (85.9%, 96.1%)
Mortality		
20-60 years	83.1% (-28.6%, 97.8%)	-
≥60 years	74.9% (40.7%, 89.4%)	92.6% (83.8%, 96.6%)

[a] No evidence of protection based on a negative or very small positive point estimate and wide confidence intervals.

[b] Insufficient outcomes to estimate

Ex ante prerequisites for triggering the transition to endemicity

Sufficient supply and liberal use of Paxlovid for all infected 60+ age group, those with serious chronic conditions or immunocompromised, and those who live in homes for the aged or disabled

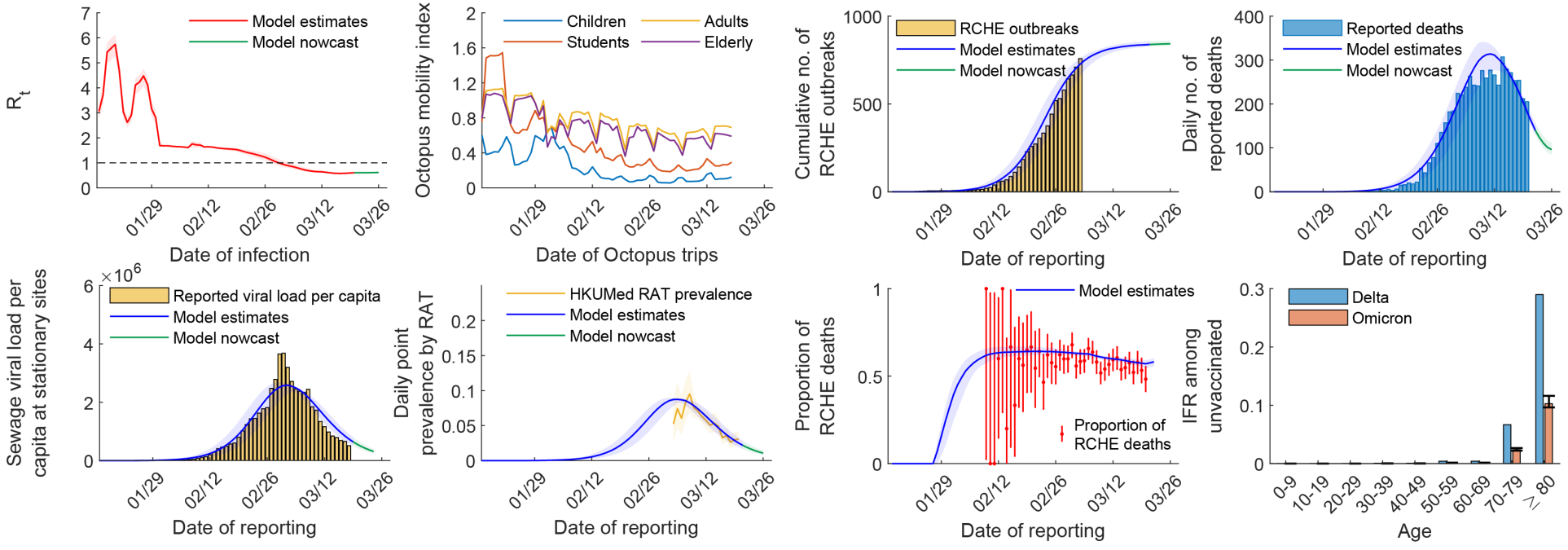
Modelling out potential consequences of Option 2

Tuning PHSMs: a controlled transition towards endemicity

1) **PHSMs are *de facto* progressively relaxed to Level 3 and Level 2 on March 13 and April 20** respectively, not because of policy decisions but changing population risk perception and behaviour.
2) **Resumption of face-to-face classes on April 21** which we assume to increase transmission by 15%.
3) **Government to relax PHSMs to Level 1 on April 21 and proceed to fully relax on June 1**
4) **Lifting of the 9-country travel ban and relaxation of on-arrival quarantine to 7 days** are pessimistically assumed to result in importation of 100, 500, 1000 infections on April 1, April 21 and June 1 into the community (i.e., not detected thus isolated at the border or during quarantine).

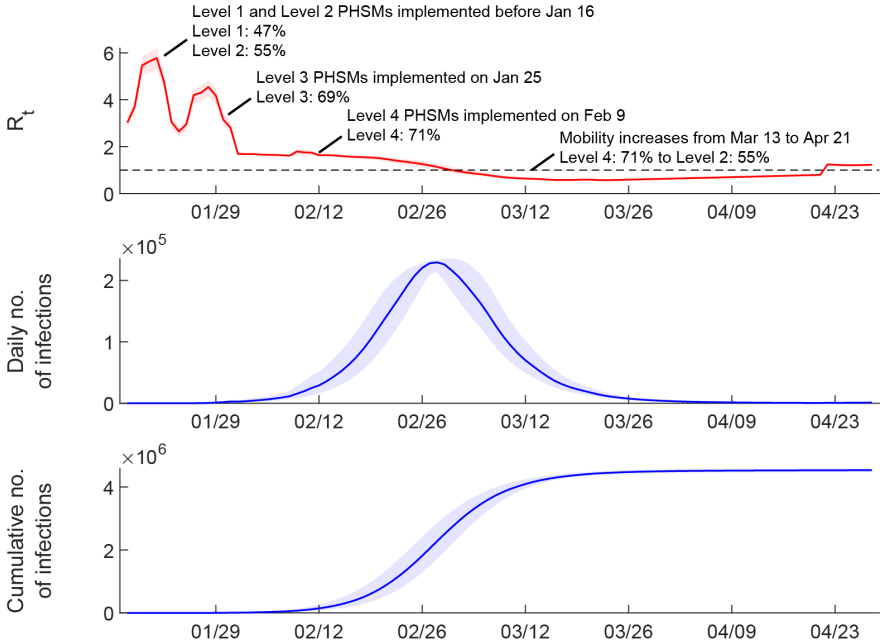
Modelling situation awareness of the fifth wave

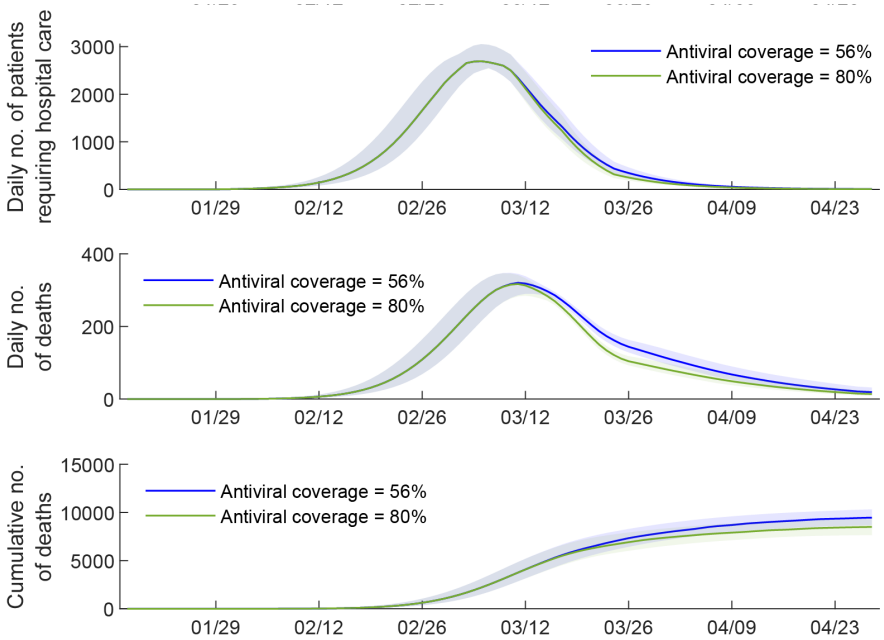
- Our model estimates that 4.4 million (CrI: 4.3 – 4.5 million) have already been infected by March 20.
- We anticipate that the number of infections, thus reported cases, will start dropping more significantly over the next few weeks, falling below 1,000 by mid to late April.
- We predict the epidemic size of the fifth wave by April 21 to be around 4.5 million (CrI: 4.4 – 4.6) infections and 8,383 (CrI: 7,588 – 9,241) deaths if antiviral supply is sufficient and liberally deployed



Forecasting the remaining fifth wave until April 21

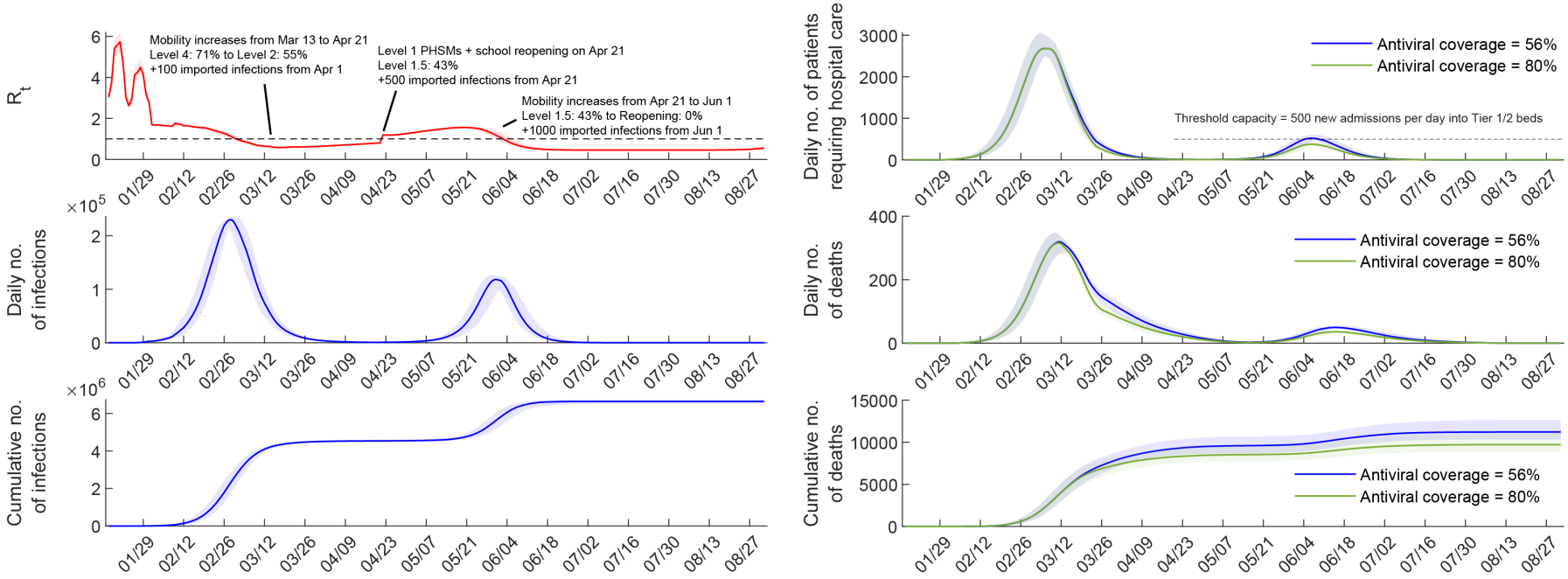
- R_t is reduced by 71% under Level 4 PHSMs and remains below 1 as long as PHSMs do not drop below Level 2, which reduces R_t by 55%.
- The cumulative number of infections by April 21 is 4,529,420 (4,471,960 – 4,581,210).
- The cumulative numbers of deaths by April 21 are 9,305 (8,527 – 10,121) and 8,383 (7,588 – 9,241) when antiviral coverages are 56% and 80%, respectively.





Anticipating the sixth wave when PHSMs gradually relax

- During the sixth wave, R_t peaks at 1.56 on May 19, and the daily number of patients who require hospital care peaks at 521 (442 – 605) and 377 (321 – 443) on June 7 if antiviral coverage is 56% and 80%, respectively.
- The cumulative number of infections by June 30 is 6,685,420 (6,496,410 – 6,734,650).
- The cumulative number of deaths by June 30 is 10,882 (10,030 – 12,082) and 9,476 (8,641 – 10,558) if antiviral coverage is 56% and 80%, respectively.



Anticipating the sixth wave when PHSMs gradually relax

- Full relaxation of PHSMs on June 1 will lead to the sixth wave which is expected to last for 2 months with an additional 2.21 million infections and 1,540 deaths by August 15.
- Full reopening of international travel will have little marginal impact on the disease transmission during the sixth if all arrivals are required to be fully vaccinated and test-negative upon boarding.