

LIVES VS

FOR 55 days, the nation had hunkered down and remained home to stem the spread of COVID-19. As case numbers dropped, it was time to lift the restrictions. June 2, 2020 was the date that marked the end of Singapore's circuit breaker.

"After two months, we found that the circuit breaker was going according to plan," said Mr Ng How Yue, the Ministry of Health's (MOH) Permanent Secretary for Health Development. "The fall in case numbers was what we predicted – we thought we could open up."

This meant that students could return to school, healthcare services like dental procedures and cancer screening could resume, and factories could restart operations.

Singapore's decision to reopen also revolved around a critical issue: lives versus livelihoods. It was a delicate balancing act.

"We knew that the tighter the restrictions, the more livelihoods we affected," said Mr Chan Yeng Kit, MOH's Permanent Secretary for Health. "But the looser we are, the more lives might potentially be lost."

To the decision makers, resuming activities presented a far more formidable challenge than simply shutting everything down.

"When you lock down, everything closes – very straightforward," noted Mr Chan. "But the biggest challenge is, how do you reopen from the circuit breaker in a safe way?"

Empty tables at a food centre in Singapore. When Singapore tightened its COVID-19 restrictions from May 16 to Jun 13 due to the rise of COVID-19 cases in the community, only groups of two people outside were allowed and dining-in at eateries was prohibited.

LIVELIHOODS

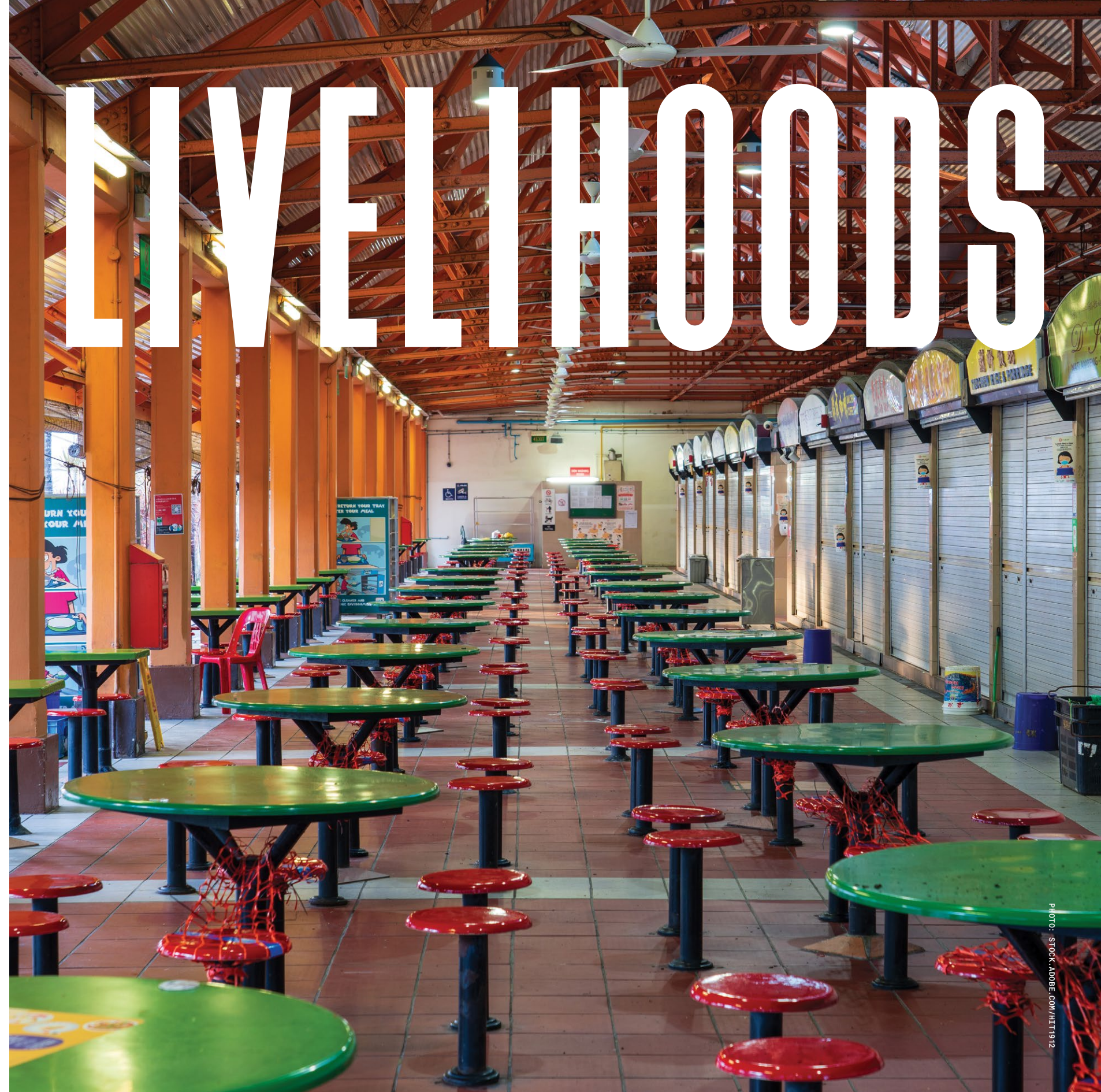




PHOTO: REUTERS/EDGAR SU

Children from St James' Church Kindergarten wearing protective face masks sanitise their hands before they attend classes. Schools were allowed to reopen in Singapore on Jun 2, 2020.

HAMMER AND DANCE

The consensus among the leaders was: reopen in phases.

This was also part of the “hammer and dance” approach conceptualised by French-Spanish engineer Tomas Pueyo. Published in March 2020, his essay garnered 15 million views within just three months.

While the “hammer” referred to the stringent steps taken to stop COVID-19 from spreading, primarily through lockdowns, the “dance” would see the relaxation of certain measures that allowed some economic activities and general life to resume.

“You cannot lock down forever,” said Professor Vernon Lee, MOH’s Senior Director of the Communicable Diseases Division. “During the dance, we will see cases rise. But you introduce a few more safe management measures, see the cases come down, and then you can relax a bit again.”

The “hammer and dance” approach was seen by governments and epidemiologists as a good way to combat the virus while balancing economic and social impacts.

“It was very appropriate,” noted Professor Leo Yee Sin, Executive Director

of the National Centre for Infectious Diseases. “Suppression is not enough – we have to quickly find other ways which give us the ability to manage and cope.”

So it was not immediately back to normal for Singapore at the end of the circuit breaker. Restaurants and hawker centres still had their seats cordoned off; eating in was not yet allowed. Department stores stayed empty, and no one could gather yet.

Singapore had entered Phase 1, which was aptly themed “safe reopening”. This calibrated approach was adapted from watching what other countries were doing.

In the West, countries like the United States were beginning to reopen fully. Restaurants and shopping malls were back in business. People could gather in large numbers again. Capacity limits were lifted for all events. In some states, mask-wearing was no longer mandated.

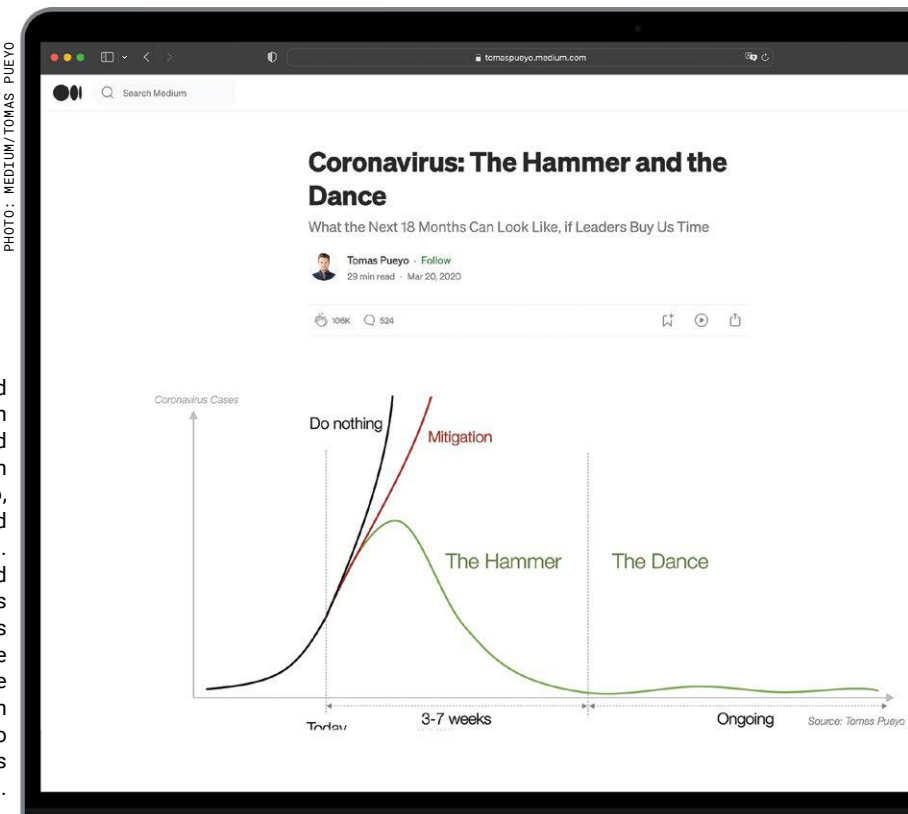
“We felt that some of them relaxed too early,” said MOH’s Director of Medical Services Professor Kenneth Mak. “Each time they relaxed, they relaxed with a big bang, by removing many of the measures at one time. And then a week or two later, with mega participation events, they started to see big surges of infection occurring.”

This was simply not tenable. “If we were going to relax those rules, it had to be paced, it had to be a gradual stepping up of the normal activities we were accustomed to doing,” he added.

It meant careful calibration. “Take a step at a time,” said Mr Chan. “Don’t do a big jump. Because if you do, rolling the measures back is going to be difficult.”

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PHOTO: MEDIUM/TOMAS PUEYO



The “hammer and dance” approach was conceptualised by French-Spanish engineer **Tomas Pueyo**, in an article published online in Mar 2020. The “hammer” referred to stringent measures taken to stop the virus from spreading, while the “dance” would see the partial relaxation of these measures to allow some activities to resume.

“THE FIRST SET OF DISCUSSIONS WERE REALLY ABOUT WHAT TO RESUME AND WHAT THE PARAMETERS WOULD BE.”

— MS ELIZABETH QUAH, FORMER GROUP DIRECTOR OF THE PLANNING DIVISION AT THE MINISTRY OF HEALTH



Three weeks into the circuit breaker, **Ms Elizabeth Quah** and her team began planning how Singapore could reopen safely. The team developed a risk-based approach to determine which activities could resume first, while weighing the economic impact against risks of infection.

FRAMEWORK TO FREEDOM

Figuring out the steps to reopening was done by the Post-Circuit Breaker Task Group, who started planning the country’s exit from the lockdown as early as three weeks into the circuit breaker.

“The first set of discussions were really about what to resume and what the parameters would be,” explained Ms Elizabeth Quah, then-Group Director of MOH’s Planning Division, who was in the Post-Circuit Breaker Task Group. She is

currently SingHealth’s Group Director of its Regional Hospital Network.

From these parameters, the group conceptualised a framework that began with the establishment of safe management measures. This included restricted group sizes for gatherings, safe distancing requirements, capacity limits for premises and zones for large events, and mandatory mask-wearing. These measures were meant to mitigate potential risk drivers – factors that would escalate the virus’ spread.

STRIKING REMINDERS



THEY WERE EVERYWHERE. Stuck onto the seats at bus stops and train stations, pasted onto the floors of hospitals and schools, the safe-distancing stickers came in all hues of bright colours – from neon green to electric yellow. ‘Keep 1 metre apart’, ‘Keep social

distance’, ‘Protect yourself and others!’ were some of the messages emblazoned on them in big bold letters. These were the signs of a country ready to reopen. But as people cautiously emerged from domestic hibernation, the round, colourful stickers peppering public

spaces were a reminder that a virus was still raging across the island. Vigilance was key – wearing masks were a public commodity found everywhere. The weary nation still had to remain wary.



PHOTO: REUTERS/EDGAR SU

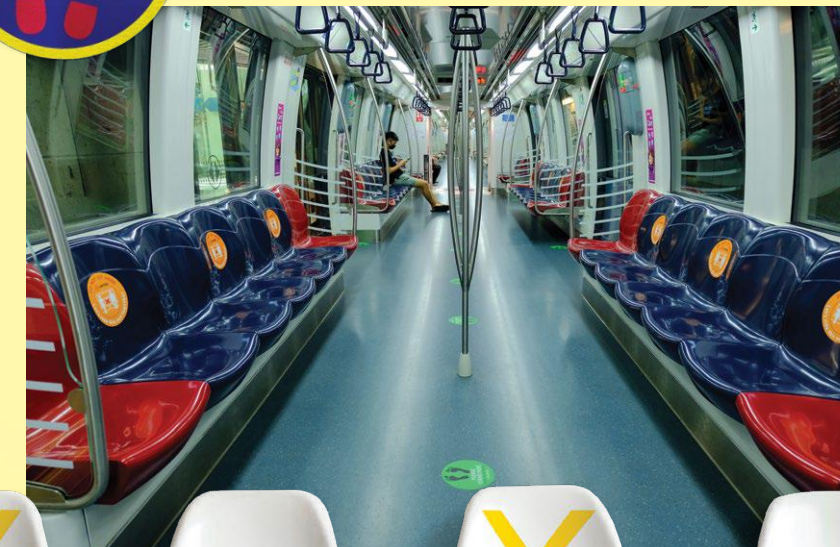


PHOTO: DREAMSTIME.COM/KANDI STOCK



PHOTO: NATIONAL LIBRARY BOARD, SINGAPORE. COVID-19 COLLECTION/GRACE CHAN

Even as restrictions slowly eased after the circuit breaker was lifted, safe-distancing stickers continued to pepper public spaces, from MRT seats to parks and to the floors of malls, a reminder that vigilance was still very much necessary.



WHILE THERE WAS AN
EAGERNESS FOR SINGAPORE TO
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APPROACHED WITH CAUTION.

This framework formed the foundation of Singapore’s reopening strategy, providing a step-by-step approach on how activities should resume across many different sectors – safely.

While there was an eagerness for Singapore to resume business as usual, reopening had to be approached with caution so as not to cause a rapid escalation of cases.

“It’s very straightforward. We were very clear that unless we could curb the number of cases, we would risk re-entering another circuit breaker,” said Ms Quah.

“Everyone, all the economic and social agencies, as much as they wanted their

activities to resume, was clear they wanted to do so safely.”

Similarly, Deputy Prime Minister Mr Lawrence Wong, co-chair of the Multi-Ministry Taskforce (MTF), said at a press conference in May 2020: “We have to do this in a very careful and calibrated manner, because we do not want to risk a flaring up of the virus again...We do not want to sacrifice the efforts that all of us have put in over the past few weeks in controlling the outbreak.”

But the Post-Circuit Breaker Task Group had a selection headache: which activities were safe enough to resume first? This was where complex formulae would come in.



PHOTO: AFP VIA GETTY IMAGES/ROSLAN RAHMAN

People observe safe distancing rules at a hawker centre in Singapore on Jun 19, 2020 (left), as Phase 2 begins and restrictions to prevent the spread of the COVID-19 novel coronavirus are eased. A long line of people queue to enter Northpoint City shopping mall on Jun 28, 2020, waiting to pass through safe entry stations, where they will have their temperature scanned (bottom).



PHOTO: DREAMSTIME.COM/KANDLSTOCK

TAKING CALCULATED RISKS

In Phase 1, the priority was to start with activities with the lowest risk first, so most business-to-business activities, like factory operations, could resume.

“Those were deemed to be of lower risk because you’ve got relatively fewer interactions with people,” explained Ms Quah. Customer-oriented services, such as retail and social activities, on the other hand, would have to wait.

Her team conceptualised a risk-based approach and “budget”, which enabled them to gauge the trade-offs between risks of infection and increasing overall activity levels.

This risk modelling prioritised which activities could resume, with a balance between the economic and social as both were needed to boost the resilience of the country and its citizens.



PHOTO: THE STRAITS TIMES © SPH MEDIA LIMITED

“It helped us reopen in a way that was more controlled, and allowed us to calibrate and prioritise sectors,” said Mr Chan, who gave some examples of the trade-offs.

For instance, the Singapore Tourism Board (STB) would push for the cruise sector to sail again. But the Ministry of

Trade and Industry, which oversees the STB and other agencies, had to decide if other sectors should take precedence before tourism.

“Is the construction industry more important, or shipbuilding, or electronics? Because if you can’t open everything at the same time, what will we open first?”

Without the risk scorecard and budget, “everyone will say their sector is important, everyone will want to reopen”, Mr Chan added.

Inevitably, there were big risks that the MOH team had to take, especially when inaction would have far more serious consequences. For instance,

◀ The Post-Circuit Breaker Task Group allowed construction work to resume, despite the fact that it would involve hundreds of workers in close proximity. Construction was considered a key sector to Singapore’s economy and important construction projects like the building of new MRT lines and Build-to-Order (BTO) flats could not be delayed without long-term implications.

the construction sector had to resume, despite the fact that it would involve hundreds of workers being in close proximity.

Besides being a key driver of Singapore’s economy, construction projects could not sit idle for too long because of safety concerns. Some projects, like the building of new MRT lines, were also critical.

“Construction was a key sector – there were long-term implications of that short-term decision in allowing workers to return to construction sites despite the risks. We took the risk by taking precautions such as imposing mandatory routine testing for the workers,” said Ms Marilyn Song, who was part of the MTF secretariat team that also helped to chart Singapore’s reopening plan.

For example, the delays of Build-to-Order public housing projects not only affected thousands of families, but also created a backlog of unconstructed flats that left construction companies scrambling to keep up.

But barely three weeks after Phase 1 began, the country decided to take an even bigger risk. The trickle of activity soon turned into a stream.

THE MAGIC FORMULA THAT CAME IN USEFUL

MATHEMATICS WAS EMPLOYED in deciding which activities should reopen first, with a formula designed to calculate risk levels of various activities.

The formula looked to ensure one thing: that the effective reproduction rate – or R_t – of the virus could not exceed one. If it did, this meant that cases were increasing.

To ensure this did not happen, Ms Elizabeth Quah and her Post-Circuit Breaker Task Group conceptualised an index with a scoring system. Used to tabulate the total number of activities that could resume at any one time, this score could not exceed 100.

“We worked through the various activities, which would make up this ‘100’,” explained Ms Quah, the former Group Director of MOH’s Planning Division. This would also allow for the budgeting of certain activities, or the extent to which certain parameters, such as group sizes, should be adjusted.

Using this index, the group conducted various simulations for certain activities, helping them determine which were safe to reopen, which could reopen with additional precautions in place, and which to keep closed for longer. This kept the potential number of cases per week

within acceptable limits.

When it came to implementing the formula, various public agencies compiled a list of roughly 50 activities that ranged from organising weddings to holding MICE (meetings, incentives, conferences and exhibitions) events.

A risk score was then generated for each activity, going by certain metrics such as the type of environment, the number of people and likely number of interactions between them, and whether masks should be worn during the activity.

With the numerical results from this formula, Ms Quah and her group could then rank the activities according to their risk levels. The safest ones could reopen first whilst others could reopen with additional safety measures. This novel scorecard did not just make a local impact – it also garnered academic attention after being published in Oxford Academic’s Journal of Travel Medicine in 2021.

“Once we get the baseline risk... then we can see how much of the risk budget is left for the other activities,” explained Ms Quah.

“And once you know how to mitigate the risk, then you know how many other activities you can allow to take place.”

At the start of Phase 2, weddings and funerals could host only 20 people at any one time (right), while congregational services at all places of worship were allowed to resume only in groups of up to 50 people (bottom left). Later on, the Kong Meng San Phor Kark See Monastery became one of 12 religious organisations allowed to accommodate up to 100 people at a time for congregational and other worship services from Aug 7, 2020 onwards (bottom right).

HIGHLY-ANTICIPATED MOVE INTO PHASE 2

On June 19, 2020, Singapore stepped into Phase 2 of its reopening. People could meet again in up to groups of five. Retail stores and malls could raise their shutters. Food could be served at dine-in eateries once more.

But signs that the pandemic was far from over were everywhere – posters requesting people to mask up and safe-distancing stickers were found in even more areas. Prime Minister Lee Hsien Loong also offered a friendly reminder on his Instagram page: “Please don’t go overboard celebrating.”

Allowing the resumption of social activities was also intended to serve as a morale booster for a nation worn down by weeks of the circuit breaker. For instance, the Government allowed places of worship to resume congregational services for up to 50 people – despite significant risks of COVID-19 spreading.

It was a decision that was made after

intense debates within the Homefront Crisis Executive Group and among the Permanent Secretaries of the various ministries, revealed Ms Song. While some were wary that a repeat of the earlier church clusters would emerge again, others thought that it would serve to lift spirits.

Lifting public morale was as important as Singapore’s desire to sustain economic growth. “Allowing people to return provided a psychological boost. We had to take the risk, with the necessary precautions such as adopting more effective contact tracing tools like TraceTogether,” she added.

This was also why barber shops were allowed to reopen even before Phase 1 had kicked in. Mr Chan himself had pushed hard for them to resume business.

“I argued that it was an essential service from the point of view of psychosocial resilience,” he recalled. “If you’re untidy, unkempt, your personal confidence will actually be affected.”



PHOTOS: THE STRAITS TIMES © SPH MEDIA LIMITED

WHY WERE WEDDINGS AND WAKES ALLOWED?

THEY HAD THE POTENTIAL to be super spreader events. They could have upended Singapore’s calibrated COVID-19 strategy. But weddings and funerals were still allowed to continue throughout the pandemic.

When Phase 2 started, up to 20 people were allowed to attend these activities – a time when social gatherings only permitted a maximum of five people.

Having these mass gatherings, although incongruent with Singapore’s ‘safety-first’ approach, was all about citizen well-being. Social interaction was the antidote to isolation.

“The psychosocial resilience of people is important,” explained Mr Chan Yeng Kit, Permanent Secretary for Health. “If the people give up, we’ll have lost the battle.”

But allowing these social occasions was a huge gamble, with other countries witnessing spikes in COVID-19 cases following such events.

“These are two occasions where it’s very hard to impose safe management measures,” shared Mr Chan. “If it’s a funeral, people will be grieving. They will hug each other – you can’t stop that.”

This was where the risk budget helped to mitigate the threat. Allowing weddings and wakes to proceed, albeit with certain restrictions like no mixing between tables, meant that certain other activities could not. To keep to the budget, there had to be compromises.

“For these activities, we worked out how we could best mitigate the risk so that we could allow more activities overall to take place.”

TEST, TEST AND TEST

To deal with the inevitability of rising cases as Singapore further opened up, surveillance and early detection capabilities were ramped up. This would hinge on one key tool: testing.

In June 2020, the massive Float @ Marina Bay, usually associated with National Day Parades, was transformed into a place of testing. It was among the first Regional Screening Centres set up across the island to support daily testing,

with more than 30 centres planned by the year's end.

These centres were part of a national testing strategy that had been announced on June 8, 2020 to conduct active surveillance testing on targeted groups, help detect cases early and reduce the risk of large COVID-19 clusters from developing. Now, as the country progressively began to exit the circuit breaker, the strategy would serve a new purpose: to allow for a safer reopening.

One of the first Regional Screening Centres was set up at The Float @ Marina Bay to support ambitious daily testing goals. These centres were part of a national testing strategy to conduct active surveillance testing on targeted groups to detect cases early and reduce the risk of large COVID-19 clusters.



PHOTO: HEALTH PROMOTION BOARD

HOW PRE-SCHOOL TESTING GAVE SINGAPORE CONFIDENCE TO REOPEN



PHOTO: AFP VIA GETTY IMAGES/ROSLAN RAHMAN

Children wearing face masks gather around a table inside their classroom as schools reopened in Singapore on Jun 2, 2020, as the city-state eased its partial lockdown.

WHEN THE DECISION was made to lock down Singapore's migrant worker dormitories in April 2020, no one knew exactly how effective it would be in preventing the spread of COVID-19 outside of the dormitories.

Success was confirmed from an unlikely source: pre-schools. In May 2020, it was decided that all teaching and non-teaching staff at pre-schools would be tested for COVID-19 to ensure the safe reopening of schools.

"We were tasked very quickly to ramp up testing of pre-school teachers and to sieve out whoever was COVID-positive," shared Mr Zee Yoong Kang, who led the Testing Operations Task Group.

Within a single week, over 30,000 teachers, principals, cleaners and cooks, among others, were swabbed and tested.

The results were a pleasant surprise. "Hardly any one of them was COVID-positive...this was the first time we actually had a good sample size of Singapore residents outside the dorms," said Mr Zee.

"We realised that however bad the situations were in the dorms, we had managed to successfully seal off the dorm outbreak. The rest of society had a very different set of numbers."

"Pre-school testing became one of the most important data points that indicated COVID was actually under control in the rest of Singapore," he noted.

Workers in critical economic sectors, from the marine and process industries to even slaughterhouses, were routinely screened at these centres, up to twice weekly.

"Testing was a key enabler for the reopening – we didn't have vaccines yet," noted MTF's Ms Song. "After the circuit breaker, the numbers did go up. We expected that. But we mandated routine testing to catch these cases before they became clusters – especially at the work sites."

Spearheading Singapore's testing

efforts was the Health Promotion Board (HPB), which had set up the Testing Operations Task Group (TOTG) to implement the national testing strategy and coordinate testing efforts between different sectors. TOTG would also be responsible to ramp up testing capabilities and pilot new methods.

"When TOTG first started, it was to support the reopening of the economy as Singapore was coming out of the circuit breaker," said HPB's Chief Operating Officer Mr Koh Peng Keng, who was also TOTG's Group Director.

With experience in handling large-scale programmes like the National Steps Challenge, HPB was well suited to handle mass testing efforts.

"We just shifted that knowledge from handling mass events to handling big numbers for COVID," added former HPB Chief Executive Officer Mr Zee Yoong Kang, who led the TOTG alongside Mr Koh.

But even with all of HPB's know-how, it was still a formidable task. In April 2020, Singapore was equipped to conduct 2,000 tests a day. HPB's job was to increase this number to 60,000, revealed Mr Zee.

“There were manpower challenges, facilities challenges, testing capacity challenges and logistics challenges,” he said. “Each of these aspects were major feats that we had to pull off.”

For instance, efforts to ramp up manpower saw the recruitment of 5,000 swabbers. A large part of the initial recruits came from the Singapore Healthcare Corps – a group of volunteers recruited from healthcare workers. But very quickly other recruits had to be roped in from suspended sectors like aviation and hospitality. The likes of air crew and hotel

staff swapped their suits and dresses for personal protective equipment (PPE).

“Over the longer run, we shouldn’t use doctors and nurses to do swabbing,” explained Mr Zee, noting that they were needed to do other tasks in pandemic control. “They can supervise swabbing and ensure clinical standards, but lay swabbers quickly became very skilled at their work due to the huge volume of swabs they had to do.”

These swabbing novices, freshly parachuted into the medical world, would undergo comprehensive

training. “We don’t leave anything to chance – every month you’re put through a technical evaluation,” said Mr Koh.

At the same time, HPB was also working with labs to make sure that samples were quickly turned around – some within eight hours, as compared to the typical 12 to 24 hours needed for a Polymerase Chain Reaction (PCR) test.

Singapore was soon testing at a rate that was among one of the highest in the world. By September 2020, the country was conducting about 27,000 tests a day.



PHOTO: EDWIN KOO



PHOTO: NATIONAL UNIVERSITY HEALTH SYSTEM



PHOTO: THE STRAITS TIMES © SPH MEDIA LIMITED

▲ Crowds passing through the underpass connecting Wisma Atria and Takashimaya on Dec 19, 2020. Malls across the island were teeming with shoppers after Prime Minister Lee Hsien Loong announced that the highly anticipated Phase 3 would begin on Dec 28, 2020.

◀ The Singapore Healthcare Corps supported the healthcare workforce in the fight against COVID-19 (far left). These volunteers received training in wearing personal protective equipment (PPE) and masks properly, and how to perform nasopharyngeal swabs, before being deployed to support healthcare operations or roles in community care. Cabin crew from then-grounded airlines like Singapore Airlines, SilkAir and FlyScoot being trained as Care Ambassadors for hospitals (left).

READY FOR PHASE 3

Singapore’s cautious and calibrated approach was paying off. After reopening, cases were dipping – from the hundreds to double digits, before whittling down to single digits.

On October 13, 2020, the country reached a major milestone: zero local cases of infection for the first time since March 2020. By the end of November, all COVID-19 clusters had been closed.

The highly anticipated Phase 3 was an early Christmas present, delivered by PM Lee on December 14, 2020 – nearly a year since Singapore saw its first COVID-19 case.

“With everyone’s full support, our enhanced safeguards worked and we could gradually ease our restrictions, and we can be proud of how far we have come,” announced PM Lee. “Because of your efforts, we are now ready to progress to the next phase.”

Phase 3 was to begin in two weeks. Groups of five could now become eight, malls and worship services could increase their capacity limits, and live performances could resume – music to the ears of many.

As the country looked forward to a new year, MOH was pinning its hopes on a new strategy: vaccination.