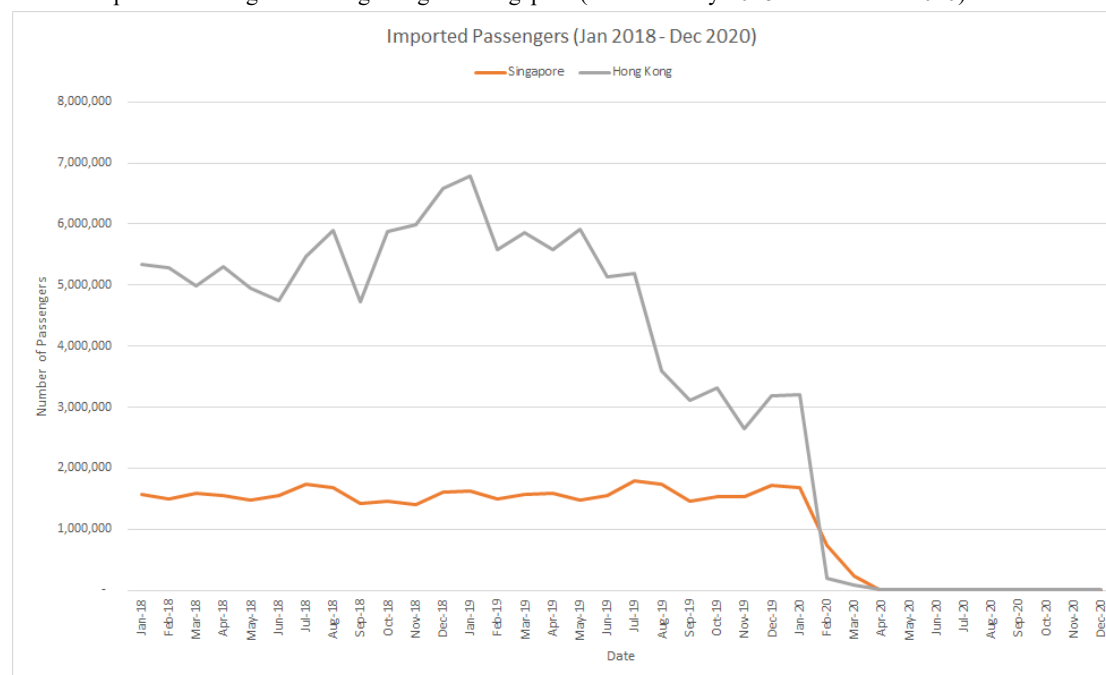


## Supplementary to “How to organize travel restrictions in the new future: lessons from the COVID-19 response in Hong Kong and Singapore”

Supplementary Figure 1: Number of Imported Passengers in Hong Kong and Singapore (From January 2018 to December 2020)

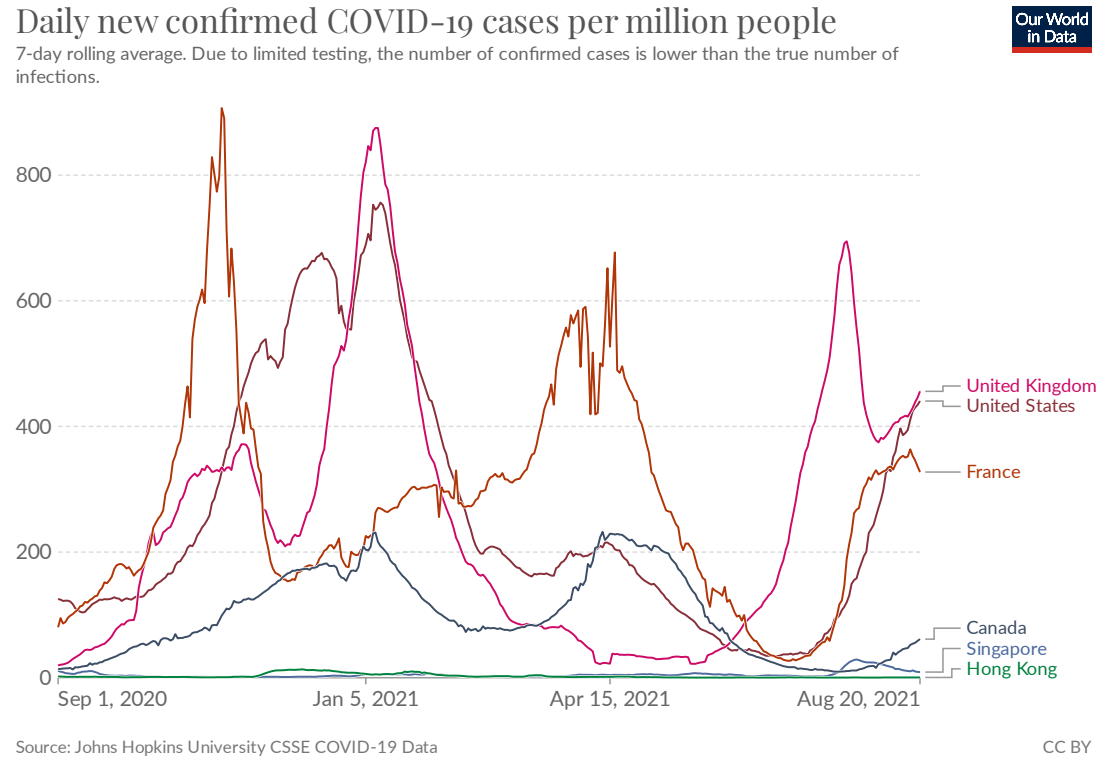


Supplementary Figure 1 shows the number of imported passengers of Hong Kong and Singapore from 2018 to 2020. Due to the outbreak of COVID-19, Hong Kong and Singapore all tightened the travel restrictions. Hence there was a significant decrease in the number of imported passengers.

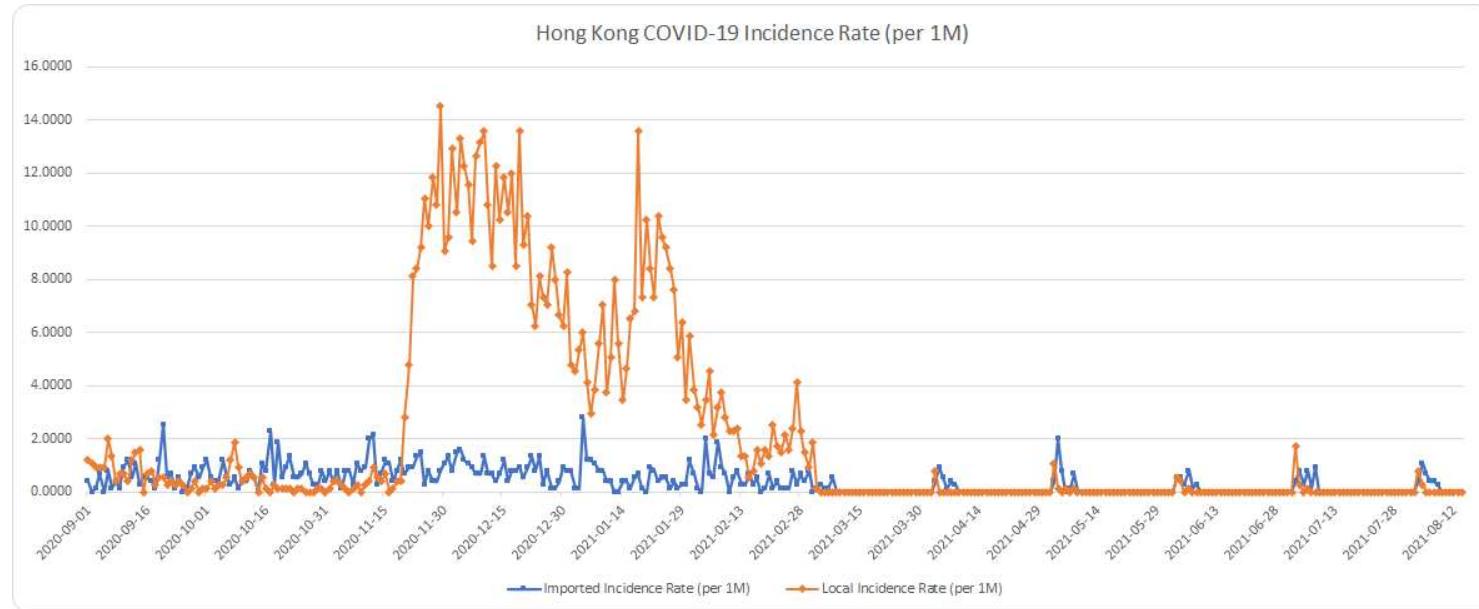
Data sources:

1. Hong Kong Immigration Department: [https://www.immd.gov.hk/hkt/message\\_from\\_us/stat\\_menu.html](https://www.immd.gov.hk/hkt/message_from_us/stat_menu.html)
2. Singapore Department of Statistics: <https://www.singstat.gov.sg/find-data/search-by-theme/industry/transport/latest-data>

**Supplementary Figure 2:** Daily new confirmed COVID-19 cases per million people of Canada, France, Hong Kong, Singapore, the United Kingdom, and the United States (1 September 2020- 20 August 2021)



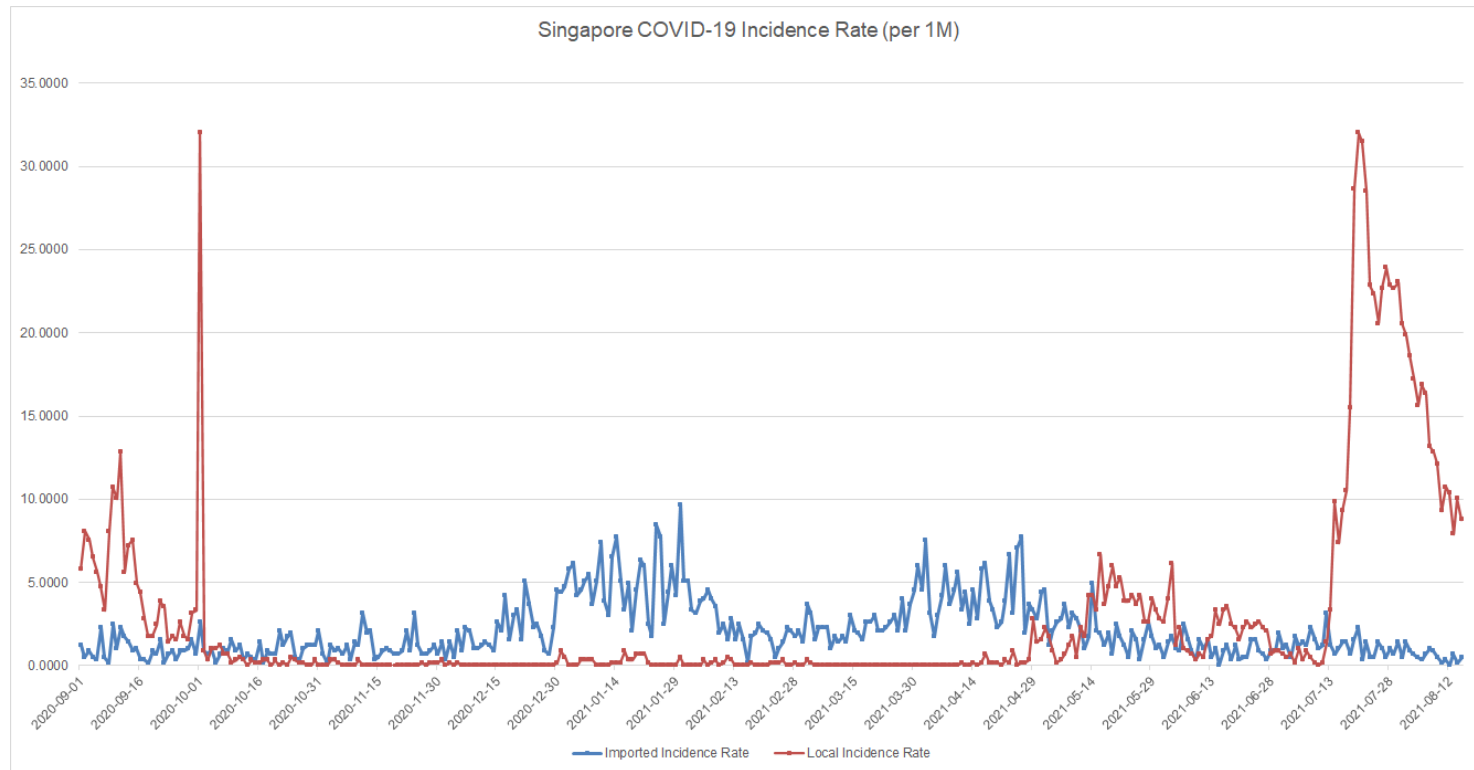
Hannah Ritchie, Edouard Mathieu, Lucas Rodés-Guirao, Cameron Appel, Charlie Giattino, Esteban Ortiz-Ospina, Joe Hasell, Bobbie Macdonald, Diana Beltekian and Max Roser (2020) - "Coronavirus Pandemic (COVID-19)". Published online at OurWorldInData.org. Retrieved from: <https://ourworldindata.org/coronavirus> [Online Resource]

**Supplementary Figure 3:** Hong Kong and Singapore COVID-19 local incidence rate per million people (1 September 2020 - 20 August 2021)

Data sources:

Case details: [http://www.chp.gov.hk/files/misc/enhanced\\_sur\\_covid\\_19\\_chi.csv](http://www.chp.gov.hk/files/misc/enhanced_sur_covid_19_chi.csv)

Population count: <https://www.censtatd.gov.hk/showtablenewexcel.jsp?tableID=001&charsetID=2>



Data sources:

<https://www.moh.gov.sg/covid-19/situation-report>

<https://covidsitrep.moh.gov.sg/>

**Supplementary Table 1:** Overview of the travel restrictions taken by Hong Kong and Singapore governments from 1 September 2020 to 20 August 2021.

		<b>Hong Kong</b>	<b>Singapore</b>
<b>Quarantine</b>	Transport	Before Dec 18, 2020: No restrictions on taking public transport from the HKIA to the quarantine position. Dec 18, 2020: All travelers accommodated at designated hotels need to board the government-arranged transport.	Quarantined persons must take designated transport when seeking medical care, traveling to quarantine places, or moving to facilities.
	Visiting	Before Nov 18, 2020: No restrictions on visitors' entering the quarantine hotel room. Nov 18, 2020: Started to ban any unpermitted visiting to quarantine room. Dec 22, 2020: Prohibited the public from accessing the designated quarantine hotels.	Individuals quarantined at the designated SHN hotels shall avoid physical contact with others; no visitors could enter the hotels. Persons quarantined at their residence place shall avoid interactions with people sharing the house and keep physical distancing.
	Checking	Use electronic wristbands, location-sharing communication software, and telephone or video calls to monitor the quarantine individual's location; manual spot-checks.	People serving SHN at their place of residence need to don an electronic monitoring device; physical spot-checks.
	Quarantine Location & Duration	Before Nov 13, 2020: All inbound travelers shall conduct 14-day quarantine at home or hotel; those having a recent travel history in specified high-risk places can only quarantine at the hotel. Nov 13, 2020: Travelers who had a recent 14-day travel history outside of China need to serve 14-day quarantine at the hotel. Dec 21, 2020: Travelers who had stayed in the UK recently and were under quarantine could not leave their place of stay until the result of the test scheduled on the 19th or 20th day was ascertained. Dec 22, 2020: Implemented the Designated Quarantine Hotel Scheme. Dec 25, 2020: Travelers who had a travel history outside China in the past 21 days must undergo 21-day quarantine at the designated hotel. Apr 9, 2021: Changed the 21-day quarantine to 14-day quarantine plus 7-day self-monitoring for persons arriving from the low-risk places.	Exempted or 7-day SHN at the place of residence for travelers from low-risk regions; 14-day SHN at dedicated SHN facilities for other travelers; dynamic adjustment of quarantine location and length. Oct 27, 2020: Travelers from specified low-risk countries could serve the 14-day SHN at their place of residence. May 8, 2021: All high-risk inbound travelers are subjected to 21-day SHN at designated SHN facilities. Aug 19, 2021: Inbound travelers from 1) Category I countries: no need to serve a SHN; 2) Category II countries: must undergo a 7-day SHN at their place of choice; 3) Category III countries: must undergo a 14-day SHN at dedicated SHN facilities or their place of choice, based on the travelers' vaccination status; 4) Category IV countries: must undergo a 14-day SHN at dedicated facilities.

		<p>May 7, 2021: Add an additional 7-day self-monitoring period for persons arriving from the Group A1 and A2 specified places.</p> <p>May 12, 2021: Shortened the quarantine periods for persons who have not stayed in Group A1 and A2, and who have fully vaccinated by replacing the last 7-day quarantine with 7-day self-monitoring.</p> <p>June 30, 2021: Further shortened the quarantine periods to 7 days plus 7-day self-monitoring for persons who come from Group B and Group C specified places and who have fully vaccinated and obtained positive result proof of a recognized serology antibody test.</p> <p>Aug 17, 2021: Updated the quarantine duration requirements for each group. Persons arriving from the Group A specified places must undergo 21-day quarantine plus 7-day self-monitoring. Persons from the Group B specified places must undergo 21-day quarantine; if vaccinated, they only need to conduct 14-day quarantine plus 7-day self-monitoring. Persons from the Group C specified places must undergo 14-day quarantine plus 7-day self-monitoring; if vaccinated, they only need to conduct 7-day quarantine plus 7-day self-monitoring.</p>	
<b>Contact Tracing</b>		<p>Authorized officers were empowered to require relevant individuals to provide information necessary for contact tracing.</p> <p>Sep 18, 2020: Announced that an internal contact tracing information system to facilitate manual tracing was under development.</p> <p>Nov 11, 2020: Digital response: Launched COVID-19 exposure notification mobile app – LeaveHomeSafe that recorded venue check-in data and notified users if necessary.</p>	<p>Utilized manpower, including police and digital footprints such as credit card activities, to achieve bidirectional contact tracing.</p> <p>Digital response: SafeEntry recorded personal identification information and venue check-in data; TraceTogether program operated through the mobile phone app or the token.</p> <p>Sep 10, 2020: Introduced Self-Check service and SMS service for self-health monitoring.</p>
<b>Risk Classification</b>	Risk Assessment	<p>Categorized relevant specified places into three groups: Group A (extremely high-risk), Group B (very high-risk), and Group C (medium to high-risk) places; implemented different risk-based requirements for boarding and quarantine; lists were revised regularly.</p>	<p>Adopt a risk-managed approach based on the assessed risk of importation and onward transmission in the community; maintain and update the lists of lower-risk regions and higher-risk regions.</p>

		<p>Apr 9, 2021: Added Group D specified places (low-risk) to the list.</p> <p>Apr 14, 2021: Adjusted the grouping to: Group A1 (extremely high-risk), Group A2 (very high-risk), Group B (high-risk), Group C (medium-risk), and Group D (low-risk).</p> <p>Aug 9, 2021: Combined Group A1 and A2 into Group A; Combined existing Group B and Group C into new Group B; Renamed existing Group D as Group C.</p> <p>Aug 20, 2021: Adjusted vaccination record requirements. The valid vaccination records for persons from the Group B and C must be issued by relevant authorities or institutions where the vaccines were administered. For persons from the Group A, they must hold recognized vaccination records, which are specified by the Hong Kong government.</p>	<p>The border restrictions are considered region-by-region.</p> <p>Aug 19, 2021: Changed the country/region classifications for border measures into four categories (Category I/II/III/IV) and applied differentiated quarantine and testing arrangements for each category.</p>
	Travel Ban	<p>Entries were denied for non-Hong Kong residents if they were: flying from overseas countries and regions; or coming from the Mainland, Macao, and Taiwan but having travelled overseas in the past 14 days.</p> <p>Dec 25, 2020: Denied entry of all persons who have stayed in the UK or South Africa for more than 2 hours during the past 21 days.</p> <p>Denied entry of all persons who have stayed in the Group A specified places for more than 2 hours during the past 21 days.</p> <p>Apr 1, 2021: Announced arranging designated flights from the UK to Hong Kong for Hong Kong residents who have stayed in Group A specified places 21 days before boarding.</p> <p>Apr 9, 2021: Began to allow the entry of non-Hong Kong residents who have only stayed in the Group D specified places during the 21-day relevant period.</p> <p>Apr 14, 2021: Denied the entry of all persons who have stayed in the Group A1 specified places for over 2 hours during the 21-day relevant period.</p> <p>June 30, 2021: Began to allow the entry of non-Hong Kong residents who have only stayed in Group B and Group C specified places and who have fully vaccinated.</p>	<p>Not allow entry of short-term visitors except those coming in under the RGL, with ATP or special approval.</p> <p>Oct 19, 2020: Lifted visa suspension; resumed issuing new visas.</p> <p>Dec 22, 2020: Denied entry and transition of all long-term pass holders and short-term visitors who recently traveled to the UK (14 days).</p> <p>Jan 1, 2021: Entry and transition denied for long-term pass holders and short-term visitors with a travel history to South Africa in the past 14 days.</p>

<b>Exemption</b>	Maritime Workers	Suspended crew change arrangement for vessels without cargo operation; crews from vessels coming for cargo operation shall not go ashore; incoming crew arriving by flights shall present a negative result of the COVID-19 test conducted within 48 hours; point-to-point transfer between the airport and vessels required.	Shore-based personnel in the maritime sector must take precautionary measures, including avoiding contact with crews as much as possible, conducting a rostered routine testing, and conducting COVID-19 tests every 14 days.  Jan 2, 2021: Tightened COVID-19 safe management measures, including implementing a tighter rostered routing testing regime and testing relevant personnel for COVID-19 every 7 days.
	Aircrews	Nov 22, 2020: Aircrews who travel to very high-risk places in the past 14 days shall: provide negative result of COVID-19 test done within 48 hours before boarding; take a COVID-19 test upon arrival; take point-to-point transportation; submit the specimen bottle at the 12th day upon arrival.  Other aircrews shall: conduct an on-arrival COVID-19 test; undergo home quarantine until receiving the negative on-arrival test result; not take public transport; submit the specimen bottle at the 12th day upon arrival.	Aircrews of Singapore-based airlines are exempted from serving SHN if taking stringent precautions.  Dec 30, 2020: Increased RT-PCR test frequency for the aircrews; required those who had laid over high-risk destinations to take COVID-19 PCR tests on arrival and the 3rd and 7th day following their returns; aircrews shall remain self-isolate until receiving a negative result from the 7-day test.
<b>COVID-19 Test</b>	Pre-departure	Before Dec 25, 2020: Persons who have stayed in the specified extremely high-risk and very high-risk places on the day of boarding/arrival at Hong Kong or during the 14 days before that day shall provide a negative COVID-19 nucleic acid test result conducted within 72 hours before the scheduled time of flight departure.  Dec 25, 2020: Extended the 14-day requirement to 21 days.  June 26, 2021: Specified that the pre-departure test must be a PCR-based nucleic acid test.  Aug 7, 2021: Offered a self-paid ART service at HKIA for Group B regions.	Before Nov 17, 2020: Travelers who are not SCs or PRs and have a recent travel history from specified countries must provide a negative COVID-19 PCR test result; requirement updated following the list of specified countries.  Nov 17, 2020: Travelers who are not SCs or PRs, except those from lower-risk regions, must provide a negative result of the COVID-19 RT-PCR test that was taken within 3 days before departure. This also applies to travelers under the RGL scheme.  May 30, 2021: All travelers entering or transit through Singapore need to present a negative PCR test certificates within 72 hours, except for those who had stayed in low-risk countries for 21 days before arriving.  Aug 19, 2021: Inbound travelers from the Category III and IV places should take a pre-departure test within 72 hours. Vaccinated travelers under the Vaccinated Travel Lane must undergo a pre-departure PCR test within 48 hours.



	At the Border	<p>All Maritime boundary closed.</p> <p>All inbound travelers who arrive via HKIA must undergo a COVID-19 test.</p> <p>Before Dec 15, 2020: Travelers shall self-collect a deep throat saliva sample for the COVID-19 test upon arrival at the airport; travelers should wait in the TSCC until receiving a negative result.</p> <p>Dec 15, 2020: Sample collection method switched to the combined nasal and throat swab collected by dedicated staff.</p>	<p>Travelers from specified low-risk countries could choose to have a COVID-19 test to substitute the SHN; travelers from specified countries should have a COVID-19 test at the border; travelers entering via the ATP and the RGL were required to undergo a COVID-19 PCR test at the Changi Airport upon arrival.</p> <p>Dec 14, 2020: Only inbound travelers aged 6 and below could be exempted from on-arrival testing.</p> <p>Dec 23, 2020: On-arrival COVID-19 PCR test required for SCs and PRs returning from the UK.</p> <p>Jan 3, 2021: On-arrival COVID-19 PCR test required for SCs and PRs returning from South Africa.</p> <p>May 4, 2021: High-risk inbound travelers are subjected to PCR test upon arrival.</p> <p>Aug 19, 2021: All inbound travelers need to undergo an on-arrival PCR or/and ART.</p>
	Before Quarantine Ends	<p>Before Dec 2, 2020: Travelers must submit a self-collected deep throat saliva sample on the 12-th day of quarantine for virus testing.</p> <p>Dec 2, 2020: Required foreign travelers to undergo an additional COVID-19 test on the 19-th or 20-th day following their arrival.</p> <p>Dec 25, 2020: Inbound travelers must take 2 tests on the 12-th and 19-th day of quarantine.</p> <p>May 13, 2021: Required an additional compulsory test on the 3rd day of the arrival. The number of compulsory tests the travelers subject to during the quarantine was respectively increased to 2 (for 7-day quarantine), 3 (for 14-day quarantine), and 4 (for 21-day quarantine).</p> <p>Aug 9, 2021: Increased the number of compulsory testing for persons whose quarantine periods are shortened.</p> <p>Aug 17, 2021: The number of compulsory tests the travelers subject to during the quarantine was respectively increased to 4 (for 14-day quarantine) and 6 (for 21-day quarantine).</p>	<p>Scheduled a COVID-19 test for all inbound travelers serving SHN before the end of their quarantine periods.</p> <p>Dec 14, 2020: Only inbound travelers aged 6 and below could be exempted from end-of-SHN testing.</p> <p>May 4, 2021: High-risk inbound travelers are subjected to a PCR test before the end of the quarantine.</p> <p>Aug 19, 2021: Travelers from the Category II/III/IV places must undergo a SHN exist PCR test at the last day of their quarantine. In addition, travelers from the Category III/IV must undergo ART self-swab tests at the 3rd, 7th, and 11th day of their arrival.</p>

	After the Quarantine	<p>Apr 9, 2021: Required travelers from the Group D places to undergo after-quarantine compulsory testing on the 19th day of their arrival.</p> <p>May 7, 2021: Arranged an additional compulsory testing on the 16th day of the arrival for the travelers from the Group D places; Required persons from Group A1 and A2 places to undergo compulsory testing on the 26th day of their arrival.</p> <p>May 12, 2021: Announced the arrangements of after-quarantine compulsory testing for fully-vaccinated persons from specified places: Required those from Group D places to conduct a test on the 12th day of their arrival and those from Group B and C to conduct tests on the 16th and 19th day of the arrival.</p> <p>Aug 17, 2021: Updated the after-quarantine compulsory testing arrangements. Persons from Group A must undergo compulsory testing in a community testing center on the 26th day of arrival. Persons (from Group B) who are fully vaccinated and have a recognized vaccination record must undergo compulsory testing on the 16th and 19th days of their arrival, where the last test must be conducted in a community testing center. The same requirement applies to persons from Group C without valid vaccination record; those from Group C with recognized vaccination records must undergo test on the 9th, 12th, 16th, and 19th days of their arrival, where the last must be conducted in a community testing center.</p>	<p>Aug 19, 2021: Vaccinated travelers under the Vaccinated Travel Lane must undergo two PCR tests on the 3rd and 7th day of their arrival.</p>
<b>Penalty for breaching the regulations</b>		<p>Violators of quarantine orders were subject to a fine of HKD 25000 and a maximum imprisonment of 6 months.</p> <p>Persons who failed to comply with the testing notice will be fined HKD 5000 and issued with another testing notice;</p> <p>Failure to comply with the requirement to provide the information or give false or misleading information to authorized officers lead to a fine of HKD 10000 and imprisonment for 6 months.</p> <p>The government implemented the tightened flight-specific and place-specific flight suspension mechanism, and regularly adjusted the suspension criteria based on the evolving</p>	<p>Violators of SHN would be fined up to SGD 10000, jailed for up to 6 months, or both.</p> <p>Persons found to produce a false or forged COVID-19 test certificate would affect future ability to obtain or sponsor immigration facilities</p>

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ART= Antigen Rapid Test. ATP=Air Travel Pass. DFTS=Digital Fencing Tracking System. HKIA=Hong Kong International Airport. HKD=Hong Kong Dollar. PCR= Polymerase Chain Reaction. PR=Permanent Resident. RGL= Reciprocal Green Lane. SC=Singapore Citizen. SHN=Stay-Home Notice. SGD=Singapore Dollar. TSCC=Temporary Specimen Collection Centre. UK=United Kingdom.

#### Data sources:

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2. Singapore Maritime and Port Authority, [https://www.mpa.gov.sg/web/portal/home/maritime-singapore/what-maritime-singapore-offers/covid-19\\_for\\_maritime\\_community](https://www.mpa.gov.sg/web/portal/home/maritime-singapore/what-maritime-singapore-offers/covid-19_for_maritime_community).
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