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COVID-19 and Cross-Border Mobility in the APEC Region: Addressing Uncertainties at the Border

Final Report

APEC Policy Support Unit

November 2022

Prepared by:
Emmanuel A. San Andres, Tammy L. Hredzak, Glacer Niño Vasquez, and Katrina Mae C. Zuluaga*

Produced for:
APEC Senior Officials' Meeting
Asia-Pacific Economic Cooperation Secretariat
35 Heng Mui Keng Terrace
Singapore 119616
Tel: (65) 6891-9600 Fax: (65) 6891-9690
Email: psugroup@apec.org Website: www.apec.org

APEC#222-SE-01.16

* Senior Analyst, Consultants, and Intern, respectively, at the APEC Policy Support Unit. The views expressed in this paper are those of the author and do not necessarily represent those of APEC Member Economies.

Key Messages

- The APEC region has had some of the most stringent cross-border travel restrictions in the world including complete border closures and non-issuance of entry permits during the nascent stage of the COVID-19 pandemic. Over the course of the pandemic, some economies have started to reopen borders to reinvigorate travel and tourism. However, to mitigate public health risks, economies also introduced vaccination, testing, quarantine, and other requirements.

- The impacts of these cross-border COVID-19 measures have been massive and protracted. An APEC Policy Support Unit study estimates the economic costs of the resulting loss in cross-border mobility at USD 1.2 trillion in 2020.[1] While international travel has started to recover since 2020, as of April 2022 international visitor arrivals in APEC was only one-third of the levels seen in January 2020.

- As of this writing, seven APEC members mandate that all short-term travellers to the economy be fully vaccinated,[2] while visitors to four member economies must be fully vaccinated in order to be exempt from testing and/or quarantine requirements. Nearly all APEC members have approved at least one vaccine for use that would allow a traveller from another APEC economy to meet the vaccine recognition requirements, if any, for travel to that economy. While there are varying digital standards of COVID-19 vaccination certificates among APEC members, most economies are flexible in accepting the vaccination certificates presented by travellers within set parameters.

- In the region, 13 members have some form of a COVID-19 testing requirement, including an economy that randomly select travellers for testing on arrival and five economies that require testing only of visitors who are not fully vaccinated or have not received a vaccine booster dose. Pre-departure COVID-19 tests can pose a number of challenges for travellers including the mandated type of test, varying testing window timeframes, and the different validity periods of a negative COVID-19 test. Recovery from a previous COVID-19 infection can also result in false-positive results in COVID-19 tests, but only eight economies recognise recovery certificates for entry purposes.

- Quarantine requirements are another policy area in which there is variation among APEC members. Of the four APEC members that have a requirement to quarantine, which is often subject to other considerations such as vaccination status, most require that entrants first stay in a designated facility before spending a period in home isolation or self-monitoring. Among these economies, the overall time required to quarantine ranges from three to 10 days.

- APEC members also have a number of other entry requirements of visitors travelling for the purpose of tourism or business such as the need to submit documentation relating

[1] APEC Policy Support Unit (2021). *Passports, Tickets and Face Masks: COVID-19 and Cross-Border Mobility in the APEC Region*.

[2] Most APEC members with a vaccination requirement consider a traveller to be fully vaccinated if (1) they have received all vaccination doses of an initial protocol as specified by the vaccine manufacturer and (2) the vaccine is recognised by relevant public health authorities as meeting economy-defined or international safety and efficacy standards. Moreover, some members require a booster dose—i.e., one or more doses in addition to the initial protocol—for a traveller to be considered as fully vaccinated.

to COVID-19 border requirements in advance, digital apps that must be downloaded for use within the economy, and travel insurance mandates. These measures could be a source of uncertainty if they are not communicated clearly, and they can add to costs and confusion at the border.

- COVID-19 border policies such as quarantine and testing requirements have helped delay the peak of the pandemic,[3] buying precious time for public health authorities to prepare their response. However, they have also impacted visitor arrivals to the region. Empirical data analysis conducted by the APEC Policy Support Unit show that, on average, imposing quarantine requirements alone results in in a 54% contraction in visitor arrivals compared to the situation when quarantine was not imposed, while imposing testing requirements results in a 52% contraction. Conversely, the data shows that removing quarantine requirements is associated with a doubling (107%) of monthly visitor arrivals relative to the period when quarantine was imposed. Likewise, removing testing requirements is associated with a near-doubling (92%) of monthly arrivals, even after controlling for other factors affecting arrivals growth.

Policy Recommendations

- **Ensure widespread and equitable access to COVID-19 vaccines.** While it is not a border policy per se, widespread and equitable access to safe, effective and affordable COVID-19 vaccines is a necessary condition to a safe reopening of borders and the resumption of travel and tourism in the region. Indeed, it is the region's high vaccination rates among their residents that have enabled many economies to start loosening their COVID-19 border restrictions.

- **Implement COVID-19 border requirements that are risk- and evidence-based.** It is important to recognise that COVID-19 is foremost a public health issue and, as such, member economies' domestic policies and border measures will differ given each economy's underlying health systems, circumstances, and risk tolerance. Policies and decisions relating to the pandemic need to be premised on saving lives, preventing illness, and protecting the public health system. However, they should also not be unnecessarily burdensome to economic activity and people-to-people connectivity. Border measures need to be considered in terms of balancing their ability to control the pandemic and their impacts on cross-border travel and the broader economy.

- **Support the development of interoperable digital vaccination certificates.** There are a myriad of various paper and digital vaccination certificates issued and recognised by economies. While an inclusive and flexible approach to accepting paper and digital certificates should continue, a lack of standardisation comes with time and efficiency losses, and the time and cost spent on search, matching, and review of vaccination certificates in different formats can add up for both travellers and authorities. Any approach to digital certificate interoperability—whether through ground-up development or adaptation of existing ones—needs to ensure compatibility with existing international digital standards in order to maximise the travel and tourism market for the APEC region.

[3] Yang et al (2022) and Zhong et al. (2021).

- **Facilitate the dissemination of information on entry requirements relating to COVID-19.** Provide a one-stop source of vaccination and other border requirements in an official government website that is up-to-date. Latest information should immediately be uploaded and be in plain language and easy to follow for an ordinary traveller.

- **Propose APEC initiatives that address regional risks and continue APEC coordination work, including through relevant sub-fora, to continue cross-sectoral work on regional mobility.** Given APEC's informal, voluntary, and non-binding structure, it would be well-placed to propose APEC initiatives that address emerging risks to cross-border mobility as they occur, as well as to discuss best practices on how to increase the region's resilience to such risks in the long-term. The successful work of the Safe Passage Taskforce has also shown the benefits of a cross-sectoral APEC mechanism that coordinates discussions on regional mobility issues. APEC should continue initiatives that could enable more timely regional cooperation and coordination in the face of future risks to cross-border mobility.

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INTRODUCTION

One of the top-level priorities for Thailand's 2022 APEC hosting year is *Connect in All Dimensions,* which aims to restore regional connectivity by "resuming safe and seamless cross-border travel, reinvigorating tourism and the services sector, facilitating business mobility as well as increasing investment in health security." Senior Officials thus established the APEC Safe Passage Taskforce (SPTF) to coordinate APEC work under this priority area, focusing on the safe resumption of cross-border travel in the region.

In February 2022, on the recommendation of SPTF, Senior Officials tasked the APEC Policy Support Unit (PSU) to prepare a report that would identify and analyse key sources of uncertainty at the border for travel within the APEC region during the COVID-19 pandemic. The report would provide information on the relevant different practices in APEC economies with respect to COVID-19 border issues, and include recommendations on how to reduce these uncertainties with the aim of reinvigorating the travel and tourism sector while ensuring public health.

Indeed, reinvigorating the travel and tourism sector in a safe manner is a priority for the region and a necessity for economic growth. In its 2021 report, the PSU estimated that economic losses from the loss of cross-border mobility amounted to USD 1.2 trillion in 2020.[4] The World Travel and Tourism Council (WTTC) estimated these global losses at USD 4.5 trillion for the same year.[5]

However, 2022 is very different from 2020. Two years since the pandemic, more is known about the SARS-CoV-2 virus that causes COVID-19. Several vaccines have also been developed to protect against the effects of the virus and more people have been inoculated, enabling many economies to safely resume economic activity while managing the capacity of their healthcare systems. At the border, several economies have started relaxing restrictions placed at the start of the pandemic, and authorities have had more than a year to peruse the various health and vaccination certificates presented by travellers.

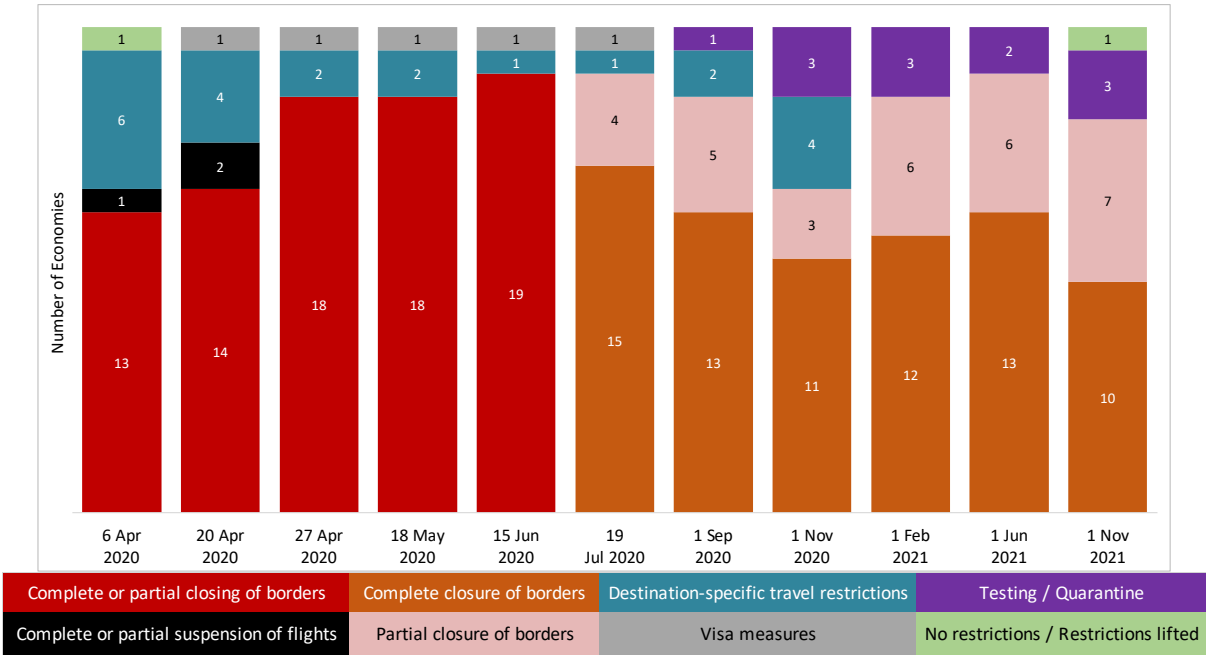
This report analyses the sources of uncertainty and likely blockages to travel for a potential tourist or business traveller, and lays out the landscape of various border policies, requirements, and certificates in relation to COVID-19. It contains four main sections: 1) an overview of uncertainties at the border and their impact on safe travel, 2) a review and analysis of uncertainties related to COVID-19 vaccination requirements and certifications at the border, 3) a review and analysis of other sources of uncertainty at the border, including quarantine and testing requirements, and 4) an analysis of opportunities for regional cooperation and some policy recommendations. Given the overarching objective of this exercise—which is to safely resume cross-border travel—this report takes a holistic view of the uncertainties related to health and vaccination requirements.

[4] APEC Policy Support Unit (2021)
[5] WTTC (2021a)

1. COVID-19 AND CROSS-BORDER TRAVEL UNCERTAINTIES

The COVID-19 pandemic has had a tremendous impact on cross-border mobility throughout the world. Border restrictions aimed at preventing the spread of COVID-19 brought international travel to a sudden halt in early 2020. When the World Health Organization (WHO) declared COVID-19 a pandemic on 11 March 2020, 85 economies worldwide already had travel restrictions in place. By 20 April 2020, all destinations had introduced travel restrictions relating to COVID-19, of which 45% had either completely or partially closed borders and 30% had completely or partially suspended flights to the economy.[6] Over one year later, on 1 June 2021, just three economies worldwide had no travel restrictions, while the borders of 63% of destinations were completely or partially closed.[7] At that time, the borders of 34 economies, comprising over half of destinations with complete border closure, had been completely closed for at least 57 weeks.

Figure 1.1. COVID-19 Border Restrictions in the APEC Region



Note: Although some destinations can apply more than one measure, the measures affecting cross-border travelers the most is used in the analysis. The reporting of "complete or partial closing of borders" was disaggregated starting from the 19 July 2020 information.
Source: United Nations World Tourism Organization (UNWTO), COVID-19 Related Travel Restrictions, First Report – Eleventh Report, available at https://www.unwto.org/covid-19-travel-restrictions.

The APEC region has had some of the most stringent cross-border travel restrictions in the world throughout the COVID-19 pandemic. As of 15 June 2020, 19 APEC members had a completely or partially closed border, while one member had applied restrictions aimed at travellers from specific economies and another member had stopped issuing all entry permits, effectively preventing cross-border travel both to the region and within the region (Figure 1.1). As the pandemic progressed, some destinations begin to open borders and introduce testing and/or quarantine requirements for short-term travellers. However, as of 1 November 2021,

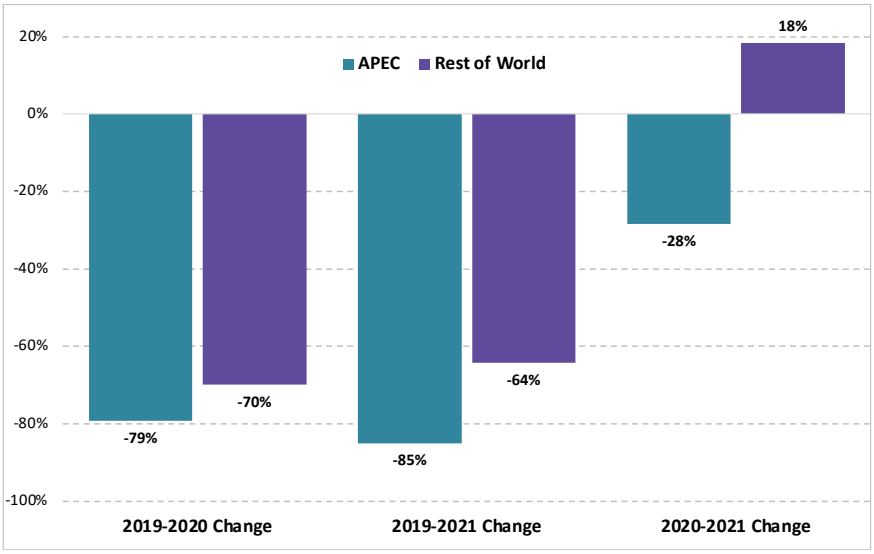
[6] UNWTO (2020).
[7] UNWTO (2021a).

nearly all APEC economies had a completely or partially closed border, while just one economy, Mexico, had lifted COVID-19 travel restrictions. Meanwhile, over half of destinations worldwide had eased restrictions and begun to require a negative COVID-19 test result, sometimes combined with quarantine measures, for entry to the economy.[8]

ECONOMIC IMPACT OF REDUCED CROSS-BORDER MOBILITY

Border restrictions have had a devastating impact on travel and tourism throughout the world, with the APEC region particularly affected. In 2020, international tourist arrivals to APEC economies were 79.1% lower than they had been in 2019, while they were 69.8% lower for the rest of the world (Figure 1.2). While the rest of the world witnessed an increase of 18.4% in tourist arrivals from 2020 to 2021, the APEC region experienced a further decline of 28.3%. Only three APEC members—Canada; Mexico; and the United States—saw an increase in tourist arrivals between 2020 and 2021. Despite the upturn in international tourist arrivals in 2021 for the rest of the world, the number of arrivals was still 64.3% lower than in 2019, while the number of arrivals in the APEC region was 85.0% lower in 2021 compared to 2019. As a result, the APEC region's share of the world's total tourist arrivals steadily fell from 32.2% in 2019 to 24.7% in 2020 to 16.6% in 2021.

Figure 1.2. International Tourist Arrivals, 2019-2021



Note: International tourist arrivals include travel for both personal purposes (e.g., holiday) as well as business and professional purposes.
Source: United Nations World Tourism Organization (UNWTO), Tourism Data Dashboard, International Tourism and COVID-19, available at https://www.unwto.org/international-tourism-and-covid-19.

The global travel and tourism sector has suffered tremendously as a result of the reduced number of international arrivals due to COVID-19 border restrictions. Based on data from the United Nations World Tourism Organization (UNWTO), total global international tourism receipts fell by 63.0% in 2020 from 2019. The APEC region experienced an even greater decline. International tourism receipts to the region dropped by 67.0% between 2019 and 2020 – from USD 611.6 billion to USD 202.1 billion. A further drop of 20.8% to USD 160.1 billion

[8] UNWTO (2021b).

occurred in 2021, causing international tourism receipts to the region to be 73.8% lower in 2021 than in the pre-pandemic year of 2019.

Such a large drop in cross-border tourism spending has had a severe impact on the global travel and tourism sector. The World Travel & Tourism Council's (WTTC) most recent *Global Economic Impact & Trends* report reveals that the direct, indirect, and induced impacts of the travel and tourism sector accounted for 10.4% of global GDP (USD 9.2 trillion) and 10.6% of global employment (334 million) in 2019 following years of strong growth.[9] However, recent gains in the sector were suddenly reversed in 2020 when it experienced losses of USD 4.5 trillion and 62 million jobs, steep drops of 49.1% and 18.5%, respectively. The report also reveals that business travel spending worldwide plummeted by 61.0% to USD 504.3 billion in 2020 from 2019, while global spending on leisure travel fell by 49.4% to USD 2.4 trillion.

The sudden economic contraction in the travel and tourism sector has had a drastic impact on the businesses that operate in the sector, 80% of which are small and medium sized enterprises (SMEs) whose limited ability to cope with economic downturns put them more at risk of permanent closure the longer mobility restrictions persist.[10] However, the economic recovery in the travel and tourism sector continues to lag behind that of other sectors. While many sectors are returning to pre-pandemic levels, most experts do not expect a full recovery of the global tourism sector until 2024 at the earliest.[11] The International Air Transport Association (IATA) also forecasts that total air passenger numbers worldwide will not recover until 2024, with domestic air travel passenger numbers fully recovering in 2023 and international air traveller passenger numbers fully recovering in 2025.[12]

Not only has the travel and tourism sector of most APEC economies been severely affected by border restrictions, but other sectors that rely on cross-border travel, such as international education, have also been greatly impacted. A recent analysis of major destination economies for international students, which included four APEC members (namely, Australia; Canada; New Zealand and the United States), found that there was a significant reduction in the issuance of new student visas—or study permits in the case of Canada—for all economies covered by the study between October 2019 and September 2020.[13] However, in the period from October 2020 to September 2021, the issuance of new study permits or student visas recovered in Canada and the United States, while Australia and New Zealand continued to experience declines with the number of new student visas issued down by 70% and 90%, respectively, over the pre-pandemic period of October 2018 to September 2019 due to those economies' more restrictive border policies.

Facilitating cross-border labour mobility is also important to ease skills shortages in economies and to prevent labour shortages in industries that often depend on migrant seasonal workers, such as agriculture. For instance, a recent analysis of the United States labour market found that there were approximately two million fewer working-age immigrants (about half of which would have been college educated) by the end of 2021 than there would have been if the pre-pandemic immigration trend had continued unchanged, resulting in labour shortages in the

[9] World Travel & Tourism Council (2021a).
[10] Ibid.
[11] World Economic Forum (2022).
[12] International Air Transport Association (2022).
[13] Hurley et al. (2021).

economy.[14] COVID-19 restrictions on cross-border mobility have also made travel for the pursuit of work less accessible overall, often exacerbating existing inequalities. Low-wage migrant workers have been particularly disadvantaged by restrictive border measures given their reduced access to resources in order to absorb the direct costs associated with requirements such as quarantine and their greater sensitivity to income losses.[15]

MEASURES TO RESUME AND REVITALISE CROSS-BORDER MOBILITY

As the COVID-19 pandemic progressed in 2020, local mobility restrictions were also introduced in many APEC economies. The WTTC reports that total domestic visitor spending fell by 45.0% in 2020 to USD 2.4 trillion from USD 4.3 trillion in 2019.[16] Policymakers therefore faced a difficult balancing act between supporting the travel and tourism sector and limiting the spread of COVID-19 in their economies. Many economies implemented policy measures such as cash payments, loan guarantees, and tax relief to businesses operating in the sector.[17] Some APEC members also introduced initiatives to support domestic spending in their travel and tourism sector. For example, Singapore issued SGD 100 digital vouchers to adult Singaporeans that could be used for eligible local attractions, hotels, and tours.[18] Chinese Taipei launched several programs offering subsidies and discounts for domestic travel such as for hotel stays and tour packages, while Japan offered subsidises for hotel stays and coupons that could be used at participating attractions, stores, and restaurants.[19]

The private sector has also made attempts to restore confidence in cross-border travel and to stimulate demand by targeting shifts in consumer preferences. The speed with which border policies can change has made travellers wary to plan far in advance with average booking windows for both flights and hotels far shorter than they had been in the pre-pandemic period.[20] In response, many major airlines and hospitality groups have made rebooking, cancellation, and refund policies more flexible to boost traveller confidence. Consumers' travel preferences have also changed due to uncertain travel restrictions with many now staying longer at destinations and also seeking opportunities to blend travel with telework. A survey found that 40% of respondents would be willing to quarantine prior to the start of their holiday if it were possible for them to also work remotely.[21] To meet this demand, several major hospitality chains began to offer hybrid models such as blended business and leisure ("bleisure") packages.

As COVID-19 vaccination campaigns got underway in many destinations in 2021, there were greater attempts by economies to resume cross-border travel. Colour-coded, tiered "traffic light" systems were one approach used by many economies worldwide, including Brunei Darussalam and the Philippines. These systems signal the risk of COVID-19 importation from other economies and are therefore usually tied to entry policies, including testing and quarantine requirements for visitors (and re-entrants) arriving from those destinations. For example, arrivals from economies on the green list may not have to quarantine, but arrivals from

[14] Peri and Zaiour (2022).
[15] Benton et al. (2021).
[16] World Travel & Tourism Council (2021a).
[17] See, for example, International Trade Centre (2020) and OECD (2020).
[18] Singapore Rediscover Vouchers webpage.
[19] Yu (2020) for Chinese Taipei's Safe Travel initiative. Japan's Go To Travel webpage. (Japan's initiative was launched in July 2020, but has been suspended since December 2020.)
[20] World Travel & Tourism Council (2021b).
[21] Booking.com (2020).

economies on the red list may either not be allowed to enter or may have to quarantine upon entry.

However, there is no one standard used for traffic light systems across the world, which can be based on various parameters in order to assess the level of importation risk from another economy. Systems are usually based on a combination of parameters, including, for example, the incidence of COVID-19, the test positivity rate, the vaccination rate, and/or the prevalence of variants of concern in the destination economy. In addition, the specific metrics applied to the parameters can also be different among the economies that implement this approach. For example, one economy may require that there is an average of fewer than 50 COVID-19 cases per 100,000 people in the previous 14-day period, while another economy may set this number at 100 if the test positivity rate is also under 3%. This can be a difficult system for travellers to monitor, in addition to the fact that the delisting of an economy from the green list can happen suddenly if the COVID-19 situation in that economy deteriorates, thereby continuing to create uncertainty for travellers.

"Travel bubbles" or "travel corridors" were another approach used by economies worldwide to restore limited cross-border mobility. These arrangements aimed to open quarantine-free business travel and/or tourism between a pair or more of economies under a unified set of requirements such as rules on vaccination and testing. However, the travel bubbles were often postponed or suspended due to COVID-19 outbreaks or concerns over new variants. The most notable example from the region is the Australia-New Zealand travel bubble, which operated from 19 April 2021 until the end of July 2021 when it was suspended.[22] Another travel bubble between Hong Kong, China and Singapore was not implemented after being postponed several times due to a resurgence of cases. Meanwhile, not many people availed of the Japan-Viet Nam business travel corridor, citing stringent rules such as the need to submit many application documents in advance.[23]

As policymakers begin to determine the best route for their economies to manage COVID-19, many APEC members have recently begun to ease travel restrictions and implement policies that encourage short-term visitors, while also aiming to protect public health. The World Health Organization recommends that vaccination not be a requirement for cross-border travel, or become the main condition for entering an economy, given the limited global access and unequal distribution of COVID-19 vaccines that can put people in many economies at a disadvantage.[24] However, vaccination has become an essential requirement for entry to many economies across the world. Currently, seven APEC members mandate that short-term travellers to the economy be fully vaccinated, while visitors to four member economies must be fully vaccinated in order to be exempt from testing and/or quarantine requirements (see Table 2.1).

As the COVID-19 pandemic enters its third year, it continues to cause uncertainty for travellers despite efforts to revitalise cross-border travel. Travel restrictions continue to be complex and diverse, comprising many detailed requirements and procedures that often vary significantly among different destinations. Travelers often face varying vaccination, testing, quarantine, and other requirements that can create both a time and cost burden, deterring individuals from engaging in cross-border travel. Entry policies can also change suddenly as economies continually assess the health risks associated with the COVID-19 pandemic, thereby continuing

[22] Freed and Jose (2021).
[23] Onishi (2021).
[24] World Health Organization (2022a).

to create uncertainty for travellers. In fact, the ability to obtain complete, accurate, and updated information can present an additional challenge when visiting an economy. The APEC Policy Support Unit's 2021 study found that many economies in the region lack a dedicated portal that consolidates and disseminates the most up-to-date travel requirements for entry to the economy.[25]

The UNWTO predicts that cross-border travel will continue to gradually recover in 2022, forecasting that total international tourist arrivals could increase between 30% and 78% over 2021.[26] This would, however, still be 50% to 63% lower than pre-pandemic levels. To facilitate greater cross-border mobility during the COVID-19 pandemic, the World Health Organization recommends an evidence-informed and risk-based approach to formulating travel policy measures, but varying capacity and tolerance for risk often results in a wide range of frequently adjusted border restrictions and travel requirements across economies.[27]

This report will present the current landscape of COVID-19 border policies in the APEC region, including vaccination requirements for entry to the economy and entry procedures such as testing and quarantine requirements among the APEC members. It will also discuss the impact of these measures and some of the challenges involved in implementing coordinated and consistent policy responses so as to reduce uncertainties relating to travel, thereby allowing economies to better support cross-border travel whilst also balancing public health priorities. The focus of this study is on those border policies relating to non-resident, short-term travel to the economy, such as for the purpose of business or tourism. The report does not cover those border policies relating to individuals entering the economy for the purpose of migration, work, or education, as well as special cases such as crew, humanitarian, or official travel.

[25] APEC Policy Support Unit (2021).
[26] UNWTO (2022).
[27] APEC Policy Support Unit (2021) and World Health Organization (2022).

2. UNCERTAINTIES OVER COVID-19 VACCINATION REQUIREMENTS

Vaccines have been seen as a key instrument in controlling the COVID-19 pandemic.[28] As such, many economies have imposed border vaccination requirements to reduce the likelihood of imported cases seeding new COVID-19 clusters. From a travellers' perspective, however, this presents at least two questions that can lead to travel uncertainty: 1) Will I be allowed entry to the economy given my vaccination status?, and 2) How can I prove my vaccination status to authorities?

This section will present the COVID-19 border policies of the APEC members relating to vaccination requirements as of early September 2022, including 1) which vaccines are recognised for the purpose of travel to the economy; 2) how an economy defines whether a traveller is considered to be fully vaccinated; and 3) which types of vaccination certificates, whether digital or otherwise, are issued and accepted. It will also examine some of the issues concerning vaccination requirements so that economies are better able to support greater cross-border travel in the region, including 1) ensuring that border policies are not discriminatory towards those residents in the region that may lack access to recognised vaccines; and 2) improving the interoperability of digital vaccination certificates to maximise efficiencies and reduce the risk of fraud.

COVID-19 VACCINATION REQUIREMENTS AT THE BORDER

COVID-19 border restrictions and vaccination requirements for short-term visitors to enter an economy vary substantially among the APEC members – from economies that do not allow any entry of short-term travellers to economies that are fully open and have no vaccination requirements (Table 2.1). The current COVID-19 border policies in the APEC region relating to entry and vaccination requirements of non-resident travellers for the purposes of tourism or business include the following: 1) entry allowed for business purposes only; 2) entry allowed and all travellers must be fully vaccinated; 3) entry allowed and travellers must be fully vaccinated in order to be exempt from testing and/or quarantine; and 4) entry allowed and travellers do not need to be vaccinated.

Table 2.1. COVID-19 Vaccination Requirements for Entry of Non-resident, Short-term Travellers to APEC Economies

Economy	Are non-resident, short-term travellers currently allowed to enter the economy?	Must these short-term travellers be fully vaccinated (with recognised vaccines)?	Is a booster dose required to be considered fully vaccinated?	Effective date or date of latest policy change
Australia	Yes	No	---	6 July 2022
Brunei Darussalam	Yes	No	Yes, if more than 3 months have passed since completion of primary course	15 September 2022

[28] De Gier et al. (2021).

Economy	Are non-resident, short-term travellers currently allowed to enter the economy?	Must these short-term travellers be fully vaccinated (with recognised vaccines)?	Is a booster dose required to be considered fully vaccinated?	Effective date or date of latest policy change
			(effective from 1 November 2022)	
Canada	Yes	No	No	1 October 2022
Chile	Yes	No, but vaccination is required to enter enclosed public spaces and use public services	No	14 April 2022
China	Yes	Yes	No	31 August 2022
Hong Kong, China	Yes	Yes	No	1 May 2022
Indonesia	Yes	Yes	No	8 June 2022
Japan	Yes	No, but valid vaccination certificate is required to be exempt from pre-departure testing requirement	Yes	11 October 2022
Korea	Yes	No	---	8 June 2022
Malaysia	Yes	Yes, to be exempt from testing and quarantine	Yes, for some vaccines and for some travellers aged 60 and older	1 April 2022
Mexico	Yes	No	---	1 January 2022
New Zealand	Yes	No	---	12 September 2022
Papua New Guinea	Yes	Yes	No	18 April 2022
Peru	Yes	Yes, to be exempt from pre-departure testing requirements; vaccination is also required to enter enclosed public spaces and use public services	Yes, to enter enclosed public spaces and use public services	12 June 2022
The Philippines	Yes	Yes	Yes, to be exempt from pre-departure testing requirements	30 May 2022
Russia	Yes	No	---	21 June 2022
Singapore	Yes	Yes	No	1 April 2022
Chinese Taipei	Yes	No (quarantine is required of all entrants)	---	12 September 2022
Thailand	Yes	Yes, to be exempt from pre-departure	No	1 July 2022

Economy	Are non-resident, short-term travellers currently allowed to enter the economy?	Must these short-term travellers be fully vaccinated (with recognised vaccines)?	Is a booster dose required to be considered fully vaccinated?	Effective date or date of latest policy change
		testing requirements		
United States	Yes	Yes	No	12 June 2022
Viet Nam	Yes	No	---	15 May 2022

Note: Shown in this table are the vaccination requirements for non-resident, short-term travellers to the economy, such as those travelling for the purpose of tourism or business. Many APEC economies will allow limited exceptions to these requirements, such as for visitors that have a medical contraindication to vaccination or for compassionate reasons. In Peru, proof of a booster dose is required to enter enclosed public spaces and use public services; however, exceptions can be made for non-resident visitors if the vaccination programme in their economy does not administer booster doses. For China, vaccines approved for use in China or included in the WHO's Emergency Use Listing are required for entry, subject to exemptions for children and other persons who meet valid conditions.
Source: Compiled by the APEC Policy Support Unit using the latest publicly available information provided though official websites of domestic government agencies, international organisations, and other news sources.

For those APEC economies in which there are mandatory vaccination requirements, there are sometimes limited exemptions. These exemptions include those for travellers with medical contraindications that prevent them from being vaccinated, or travellers who have recently recovered from a COVID-19 infection (typically within the past three months), both of which require medical proof in order for an exemption to be granted. There are also usually separate rules for children under the age of 12 or, in some economies, those under the age of 18. These travellers are typically allowed to enter the economy without having been vaccinated provided that they are traveling with a vaccinated adult(s).

The definition of fully vaccinated can also vary among APEC members. In general, individuals are required to have completed a primary vaccination course at least 14 days prior to travel in order to be considered as fully vaccinated. Although most APEC members do not currently require a booster dose for entry to the economy, there are a few economies that do require one, especially if more than six months have passed since the completion of the primary course of vaccination. As studies show that the immunity provided through many of the currently available vaccines against COVID-19 wanes over time, especially with respect to new variants, additional economies may choose to impose booster dose requirements in the future, which can depend on several factors such as their epidemiological situation.[29]

Among the APEC member economies, there are currently over 20 COVID-19 vaccines produced by different manufacturers that have been approved for use. Most APEC members also recognise vaccines for the purpose of travel to the economy even if those vaccines have not been approved for use within the economy. Figure 2.1 presents the recognition of COVID-19 vaccines between the APEC members for the purpose of cross-border travel. It illustrates whether there is a vaccine that has been approved for use within an origin economy that is also recognised for travel to a destination economy. Based on economy or WHO regulatory authority safety and efficacy standards, nearly all APEC members have approved at least one vaccine for use that would allow a traveller from another APEC economy to meet the vaccine recognition requirements for travel to that economy. Appendix A provides a list of the COVID-

[29] See, for example, Reiner (2021).

19 vaccines that are approved for use within the APEC economies and the vaccines that are also recognised for the purpose of travel to the economy.

Figure 2.1. Recognition of COVID-19 Vaccines for Cross-Border Travel

Origin \ Destination	AUS	BD	CDA	CHL	PRC	HKC	INA	JPN	ROK	MAS	MEX	NZ	PNG	PE	PHL	RUS	SGP	CT	THA	USA	VN
AUS		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
BD	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CDA	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CHL	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
PRC	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
HKC	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
INA	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
JPN	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ROK	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
MAS	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
MEX	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
NZ	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
PNG	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓
PE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓
PHL	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
RUS	✓	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓	✓		✗	✓	✓	✗	✓
SGP	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
CT	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
THA	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓
USA	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓
VN	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	

Note: Shown is whether there is at least one vaccine that has been approved for use within the origin economy that is also recognised in order to meet vaccination requirements, if any, for travel to the destination economy. A check mark within a green box for a pair of economies indicates that there is, while an "X" within a red box indicates that there is not. If an economy does not require proof of vaccination as a condition of entry, then that economy is considered to recognise all vaccines.
Source: Compiled by the APEC Policy Support Unit using the latest publicly available information provided though economy updates, official websites of domestic government agencies, international organisations, and other news sources. Note that the information within this table is subject to change pending updates to an economy's border measures.

CROSS-BORDER PROOF OF COVID-19 VACCINATION

Vaccination certificates are an important tool to not only record an individual's vaccination history, but also to prove their vaccination status when engaging in cross-border travel. All APEC members issue a certificate to vaccinated residents that can be used for cross-border travel with nearly all also using a digital standard to record and verify vaccination status (Table 2.2). There are at least four major global digital standards used by APEC members in issuing digital vaccination certificates with QR codes, which are discussed in greater detail in Box 2.1:

- EU Digital COVID Certificate (EU DCC);
- SMART Health Card (SHC);
- ICAO Visible Digital Seal for Non-Constrained Environments (VDS-NC); and
- Digital Infrastructure for Verifiable Open Credentialing (DIVOC).

Table 2.2. COVID-19 Vaccination Certificates for Cross-Border Travel in the APEC Region

Economy	Are vaccination certificates issued using a digital standard (QR code)?	Which standard is used for digital vaccination certificates?	Which vaccination certificates are accepted for non-resident travellers to enter the economy?	Must non-resident travellers to the economy submit vaccination information or certificates in advance of travel?
Australia	Yes, International COVID-19 Vaccination Certificate (ICVC)	VDS-NC	Vaccination not required	No
Brunei Darussalam	Yes BruHealth App	Not available	Vaccination not required	No
Canada	Yes COVID-19 Proof of Vaccination	SHC	All	No
Chile	Yes International Vaccination Certificate	Not available	All	Recommended
China	Yes International Travel Health Certificate (ITHC)	ITHC	All	Yes
Hong Kong, China	Yes COVID-19 Electronic Vaccination Record	Not available	All	Yes
Indonesia	Yes International COVID-19 Vaccination Certificate	DIVOC and EU DCC	All	Yes
Japan	Yes COVID-19 Vaccination Certificate	VDS-NC and SHC	All	Recommended
Korea	Yes COVID-19 Vaccination Certificate (COOV App)	PASS INFRA and EU DCC	Vaccination not required	---
Malaysia	Yes Digital Certificate for COVID-19 Vaccination	EU DCC	All	Yes
Mexico	Yes COVID-19 Vaccination Certificate	Not available	Vaccination not required	---
New Zealand	Yes	EU DCC	Vaccination not required	---

Economy	Are vaccination certificates issued using a digital standard (QR code)?	Which standard is used for digital vaccination certificates?	Which vaccination certificates are accepted for non-resident travellers to enter the economy?	Must non-resident travellers to the economy submit vaccination information or certificates in advance of travel?
	International Travel Vaccination Certificate			
Papua New Guinea	No ICV/Yellow Card	---	All	No
Peru	Yes Vaccination Certificate	Not available	All	No
The Philippines	Yes VaxCertPH (ICV/Yellow Card)	DIVOC	All	Yes
Russia	Yes Certificate of Vaccination Against COVID-19	Not available	Vaccination not required	---
Singapore	Yes Vaccination HealthCert	EU DCC	All	Optional
Chinese Taipei	Yes Digital COVID-19 Certificate	EU DCC and SHC	Vaccination not required	---
Thailand	Yes International Certificate of COVID-19 Vaccination	EU DCC	All	No
United States	No[2] COVID-19 Vaccination Record Card	SHC	All	No
Viet Nam	Yes COVID-19 Vaccination Certificate (Green Pass)	EU DCC	Vaccination not required	---

[1] The technical scheme of ITHC is consistent with international COVID-19 vaccine digital certificates. Relevant technical standards have been shared with other economies.

[2] In the United States, the official proof of vaccination is the Centers for Disease Control and Prevention (CDC) COVID-19 Vaccination Record Card, which does not contain a QR code. However, the health departments of some states have the capability to issue digital vaccination certificates with a QR code that uses the SHC standard for individuals who were vaccinated within those states.

Source: Compiled by the APEC Policy Support Unit using the latest publicly available information provided though economy updates, official websites of domestic government agencies, international organisations, and other news sources.

Box 2.1. Major Global Digital Standards applied by Several APEC Members

European Union Digital COVID Certificate (EU DCC)

The EU Digital COVID Certificate was launched on 1 July 2021 to facilitate travel in the region and to avoid the fragmentation that could occur if each EU member were to separately develop a digital vaccination certificate. In addition to the 27 EU members that use the digital standard, 45 non-EU economies have also joined the system. APEC members that use the EU Digital COVID Certificate standard include Indonesia; Korea; Malaysia; New Zealand; Singapore; Chinese Taipei; Thailand; and Viet Nam.

The Digital COVID Certificate is available in both paper and digital formats and contains a QR code with a unique digital signature of the issuing body (e.g., health authority, medical facility). Not only does the Digital COVID Certificate help to facilitate movement throughout the EU, but it can also be used for domestic purposes among the EU members, such as to provide proof of COVID-19 health status in order for holders to access events or venues as dictated by local health mandates.

In addition to providing proof of vaccination against COVID-19, the certificate can also provide proof of a negative COVID-19 test result or of recovery from COVID-19. It contains key information such as name, date of birth, date of issuance, a unique identifier, and relevant information about vaccination, testing, or recovery. In the case of vaccination certificates, this includes type of vaccine, vaccine manufacturer, number of doses, and date of vaccination. The EU Commission has developed a gateway through which all digital signatures can be verified across the EU, while the personal data of the certificate holder is stored in each issuing economy.

For the purpose of travel within the EU, the vaccination certificate is valid for nine months (270 days) following administration of the last dose of the primary vaccination course. (Currently, the 9-month validity period does not apply to booster vaccinations as it is expected protection may last longer with a booster dose than that resulting from the primary vaccination course.) Non-EU economies using the EU DCC standard can specify their own period of validity.

SMART Health Card (SHC)

SMART Health Cards, which can be in either digital or paper format, have a QR code that contains a record of an individual's COVID-19 vaccination history and/or test results. Key information such as name and date of birth of the certificate holder along with information relating to vaccinations (date, type, and location) and/or tests (date, manufacturer, and result) is stored directly within the SMART Health Card digital standard. APEC members that use the SMART Health Card standard include Canada; Japan; Chinese Taipei; and those states and medical providers in the United States that issue digital vaccination certificates.

SMART Health Cards use an open-source standard based on the technical specifications of the SMART Health Card Framework developed by The Commons Project Foundation (TCP) and can be issued by any organization such as a healthcare provider or government body. Issuers are validated and approved by the Vaccination Credential Initiative (VCI), a cross-industry coalition, to ensure that the SMART Health Cards generated by issuers contains reliable information that can be used to verify an individual's COVID-19 health status.

ICAO Visible Digital Seal for Non-Constrained Environments (VDS-NC)

The International Civil Aviation Organization's Visible Digital Seal (VDS-NC) standard builds upon the existing ICAO trust model for electronic travel documents that is already in use by more than 145 economies globally. It extends the current ICAO public key infrastructure (PKI) for digital signatures,

which ensures security and authenticity, to the QR codes used in the certificates to validate health records. Health certificates using the VDS-NC standard can be in either paper or digital format with the QR code able to store both vaccination history and test results of the holder. Key information for proof of vaccination includes the certificate holder's name, date of birth, travel document type and number along with vaccination details such as date, location, vaccine name, and batch number. APEC members that issue digital vaccination certificates using the VDS-NC standard include Australia and Japan.

Digital Infrastructure for Verifiable Open Credentialing (DIVOC)

The Digital Infrastructure for Verifiable Open Credentialing (DIVOC) standard was developed with the support of the government of India to create an end-to-end vaccination and certificate issuance system. As with the other major global standards, DIVOC uses public key infrastructure (PKI) to create digitally signed and verifiable vaccination certificates in either paper or digital form. The certificate contains key information such as holder name, date of birth, and a unique identifier as well as relevant information on the type and brand of vaccine, vaccine batch number, date and place of vaccination, and the issuing authority.

The DIVOC standard is compliant with the technical specifications developed by the World Health Organization (WHO) in its Digital Documentation of COVID-19 Certificates: Vaccination Status (DDCC:VS) guidelines. In addition to issuing digital certificates using the DIVOC standard, certificates can also be issued with QR codes using the EU DCC standard and the SHC standard, while the capability to issue certificates using the VDS-NC standard is currently being developed. APEC members that issue digital vaccination certificates using the DIVOC standard include Indonesia and the Philippines.

Source: EU Digital COVID Certificate webpage; SMART Health Card webpage; ICAO (2021a); and DIVOC webpage.

Nearly all APEC members accept the vaccination certificates issued by other economies, provided that the individual has been vaccinated with a vaccine recognised for travel to the economy. In fact, most APEC economies accept foreign vaccination certificates presented by travellers with very few requirements relating to the certificate itself. In general, foreign vaccination certificates must include the name of the traveller and at least one other personal identifier, such as date of birth, as well as the name of the vaccine used and the date of vaccination. For some economies, the name on the vaccination certificate must match that of the travel document, while other economies will allow travellers to produce an additional verification document that matches the name on the vaccination certificate. In addition, some economies require that the vaccination certificate is issued by an official body such as a government authority, while other economies will also accept those issued by an accredited vaccination provider such as a medical institution. All economies require that the vaccination certificate be in either an official language of the economy or in English, although many APEC members will also accept certified translations if the certificate does not meet the language requirements.

Most APEC members accept both paper and digital certificates presented by travellers upon entry to the economy. For some economies, a paper certificate or a printed copy from a digital record system is required, while other economies will also accept a digital screen presented by travellers that shows their vaccination record. Many APEC members require that travellers digitally submit vaccination certificates for the purpose of validation in advance of travel to the economy. Some economies, such as Indonesia, require that travellers download domestic digital COVID-19 apps and validate their vaccination certificates through the app prior to

entering the economy. Travelers to the economy can then use the app to present their vaccination record at the border and also to show proof of vaccination in order to access public transportation and other public facilities as required by local health regulations.

Figure 2.2 summarises the COVID-19 border policies relating to vaccination requirements in the APEC region and illustrates whether fully vaccinated short-term visitors are able to travel from an origin economy to a destination economy without the need for quarantine. The matrix takes into account the following aspects of COVID-19 border policies and vaccination requirements: 1) whether an economy's borders are open for short-term travellers to enter; 2) whether there is a vaccine approved for use in an origin economy that is also recognised by a destination economy; and 3) whether travellers that are fully vaccinated (using recognised vaccines) are required to quarantine upon arrival to a destination economy. With the exception of a few economies, fully vaccinated travellers in the region are able to meet the vaccination requirements of most APEC economies, thereby enabling them to travel with recognised and accepted vaccination certificates and exempting them from quarantine.

Figure 2.2. Quarantine-free Travel for Recognised Fully Vaccinated Travellers

Destination

Origin	AUS	BD	CDA	CHL	PRC	HKC	INA	JPN	ROK	MAS	MEX	NZ	PNG	PE	PHL	RUS	SGP	CT	THA	USA	VN
AUS		✓	✓	✓	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓	✓	✓
BD	✓		✓	✓	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓	✓	✓
CDA	✓	✓		✓	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓	✓	✓
CHL	✓	✓	✓		✗	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓	✓	✓
PRC	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓	✓	✓
HKC	✓	✓	✓	✓	✗		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓	✓	✓
INA	✓	✓	✓	✓	✗	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓	✓	✓
JPN	✓	✓	✓	✓	✗	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓	✓	✓
ROK	✓	✓	✓	✓	✗	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✗	✓	✓	✓
MAS	✓	✓	✓	✓	✗	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✗	✓	✓	✓
MEX	✓	✓	✓	✓	✗	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✗	✓	✓	✓
NZ	✓	✓	✓	✓	✗	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✗	✓	✓	✓
PNG	✓	✓	✓	✓	✗	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✗	✓	✓	✓
PE	✓	✓	✓	✓	✗	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✗	✓	✓	✓
PHL	✓	✓	✓	✓	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✗	✓	✓	✓
RUS	✓	✗	✓	✓	✗	✓	✓	✓	✓	✓	✓	✓	✗	✓	✓		✗	✗	✓	✗	✓
SGP	✓	✓	✓	✓	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✗	✓	✓	✓
CT	✓	✓	✓	✓	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
THA	✓	✓	✓	✓	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗		✓	✓
USA	✓	✓	✓	✓	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓		✓
VN	✓	✓	✓	✓	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓	✓	

Note: Shown is whether non-resident, short-term travel, without the need for fully vaccinated travellers to quarantine, is possible between a pair of economies due to COVID-19 border restrictions relating to entry policies and vaccination recognition requirements. For this analysis, residents of an origin economy are assumed to only have access to vaccines authorised for use in that economy. A check mark within a green box for a pair of economies indicates that short-term travel for the purpose of business or tourism (without the need for fully vaccinated travellers to quarantine) is possible from the origin economy to the destination economy. An "X" within a red box indicates that it is not possible due to COVID-19 border restrictions, or that there is no vaccine administered in the origin economy that is recognised for entry in the destination economy (cf. Figure 2.1). For Japan, all arrivals are required to show either a valid COVID-19 vaccination certificate with three doses of any vaccine listed in the WHO's Emergency Use Listing, or a certificate of negative test result from a pre-departure COVID-19 test conducted within 72 hours prior to departure from the origin economy. For Russia, all travellers

from APEC economies with a negative PCR test result done no later than 48 hours prior to arrival are allowed entry.

Source: Compiled by the APEC Policy Support Unit using the latest publicly available information provided though economy updates, official websites of domestic government agencies, international organisations, and other news sources. Note that the information within this table is subject to change pending updates to an economy's border measures.

3. OTHER COVID-19 UNCERTAINTIES AT THE BORDER

In addition to COVID-19 vaccination requirements in order to enter another economy, travellers often face a number of other border entry requirements. There are typically several necessary procedures that visitors need to complete in advance of travel, ranging from submitting documentation in advance, such as vaccination certificates and health declarations, to taking accepted types of COVID-19 tests in a timely manner. Economies may also require that visitors purchase travel insurance to cover medical expenses in the event that they become ill with COVID-19 during their stay in the economy. Upon arrival at the border, travellers may have to complete additional procedures, such as further COVID-19 tests and possible periods of quarantine or isolation.

Some COVID-19 entry requirements, particularly those relating to testing, increase traveller uncertainty as there is always the chance of testing positive even for non-symptomatic travellers. Likewise, travellers who have recently recovered from COVID-19 and are non-infectious may continue to test positive for the virus, therefore being denied boarding, especially if recovery notes are not honoured. On the other hand, requirements such as mandatory quarantines, travel insurance, app downloads, or advance information can cause uncertainty if they are not communicated clearly and add costs to travel, and therefore serve to suppress demand for travel and tourism. Table 3.1 shows the overall process and the uncertainty and costs points relating to cross-border travel.

Table 3.1. Travel Process and Uncertainty/Cost Points

Point of travel	Uncertainty or cost point	COVID-19 measure
Pre-departure and boarding	Will I be allowed to begin my travel (or return to my economy of residence)? Will I be allowed to board? What information and certificates do I need to prepare?	Pre-departure COVID-19 testing Recognition of certificates Recognition of recovery from prior COVID-19 infection
Arrival and border	Will I be allowed entry into the economy? Is my vaccination status recognised? Will my recovery from a prior COVID-19 infection be recognised?	Post-arrival testing Recognition of certificates Recognition of recovery from prior COVID-19 infection
Post-arrival	Will I be required to enter quarantine? How long will quarantine last? Where do I need to do my quarantine?	Quarantine requirements (may be subject to recognised vaccination status)

Source: Authors

This section will present and analyse the current COVID-19 border entry policies of the APEC members, including 1) whether a negative COVID-19 test is required prior to entry and/or upon arrival; 2) whether travellers need to quarantine or isolate upon arrival; and 3) whether any documentation needs to be submitted in advance of travel to the economy and whether travel insurance is required. It will also examine some of the issues concerning border entry requirements so that economies are better able to support greater cross-border travel in the region.

COVID-19 TESTING AND QUARANTINE REQUIREMENTS

COVID-19 testing and quarantine requirements for arrivals vary substantially among the APEC members – from economies that have lifted all testing and quarantine requirements to economies that require quarantine of all entrants along with the need to undergo multiple COVID-19 tests (Table 3.2). As of this writing, 13 APEC members have some form of a COVID-19 testing requirement for, including an economy that randomly select travellers for testing on arrival and five economies that require testing only of arrivals that are not fully vaccinated or have not received a vaccine booster dose. Meanwhile, four APEC members continue to maintain a policy of quarantine or isolation for arrivals, including two economies in which the requirement applies only to arrivals that are not fully vaccinated.

Table 3.2. COVID-19 Testing and Quarantine Requirements for Arrivals to APEC Economies

Economy	Are travellers required to take a COVID-19 test?	Are COVID-19 recovery certificates accepted?	Are travellers required to quarantine or isolate upon arrival?	Effective date or date of latest policy change
Australia	No	---	No	6 July 2022
Brunei Darussalam	No	---	No	15 September 2022
Canada	No	Yes	No	1 October 2022
Chile	Yes, travellers are randomly selected for testing on arrival	No	No	14 April 2022
China	Yes, prior to departure, on arrival, and daily during quarantine	No	7 days in a designated facility followed by 3 days at home	30 June 2022
Hong Kong, China	Yes, prior to departure, on arrival, and periodically after arrival	Yes	No	26 September 2022
Indonesia	Yes, on arrival if not fully vaccinated (or if required following a mandatory COVID-19 health check)	Yes	5 days in a designated facility if not fully vaccinated (COVID-19 test required to exit quarantine)	8 June 2022
Japan	Yes, pre-departure test is required if unable to present a valid vaccination certificate showing full vaccination (primary dose) and one booster dose	No	No	11 October 2022
Korea	Yes, prior to departure and within 3 days of arrival	No	No	8 June 2022
Malaysia	Yes, prior to departure and within 24 hours of arrival if not fully vaccinated	Yes	5 days at home if not fully vaccinated (COVID-19 test	1 April 2022

Economy	Are travellers required to take a COVID-19 test?	Are COVID-19 recovery certificates accepted?	Are travellers required to quarantine or isolate upon arrival?	Effective date or date of latest policy change
			required to exit quarantine)	
Mexico	No	---	No	1 January 2022
New Zealand	No	---	No	12 September 2022
Papua New Guinea	Yes, on arrival	Yes	No	18 April 2022
Peru	Yes, prior to departure if not fully vaccinated	Yes	No	12 June 2022
The Philippines	Yes, prior to departure if traveller has not received a vaccine booster dose	No	No	30 May 2022
Russia	Yes, prior to departure	No	No	21 June 2022
Singapore	No	---	No	26 April 2022
Chinese Taipei	Yes, on arrival	Yes	3 days at home followed by 4 days of self-monitoring	12 September 2022
Thailand	Yes, prior to departure if not fully vaccinated	Yes	No	1 July 2022
United States	No	---	No	12 June 2022
Viet Nam	No	---	No	15 May 2022

Note: Most APEC members have different requirements for passengers and transportation crew, with some economies classifying crew as essential personnel. This table only refers to requirements for passengers and not crew. Arrivals from Australia are exempt from Papua New Guinea's on arrival COVID-19 testing requirement.
Source: Compiled by the APEC Policy Support Unit using the latest publicly available information provided though economy updates, official websites of domestic government agencies, international organisations, and other news sources.

Globally, there has been no attempt to harmonise entry requirements relating to the types and timing of COVID-19 tests. Of the 13 APEC members that mandate some form of COVID-19 testing – including those that apply vaccination-differentiated measures and other considerations – four economies require a test prior to departure to the economy, three members test on arrival, six economies have policies that mandate both a pre-departure test and a test on arrival.

Pre-departure COVID-19 tests, in particular, can pose a number of challenges for travellers. Table 3.3 compares the two most popular COVID-19 tests; namely, the Reverse Transcription-Polymerase Chain Reaction (RT-PCR or PCR) test and the Rapid Antigen Test (RAT). All APEC members that mandate viral tests prior to departure require them to be molecular tests, such as a PCR test, although Korea and Malaysia will also accept a professionally administered RAT. In addition, nearly all APEC economies with a pre-departure testing rule require that the tests be conducted within 48 hours prior to departure, with Thailand allowing up to 72 hours. Given that the timeframe for the testing window typically starts from specimen collection (rather than from the date of the test result) and combined with the fact that it also usually takes longer to receive PCR test results, travellers may experience great uncertainty over whether they can ensure that pre-departure COVID-19 tests are completed in a timely manner. The

validity of a negative COVID-19 test may also be uncertain on arrival if there are delays, long transit times, or long-haul flights, as more than 48 hours may have already lapsed between testing and actual arrival.

Table 3.3. Comparison of COVID-19 Tests

	Reverse Transcription-Polymerase Chain Reaction (RT-PCR)	Rapid Antigen Test (RAT)
Mode	Detects SARS-CoV-2 viral sequences by nucleic acid amplification tests; requires extraction of target ribonucleic acid (RNA) sequences, incubation with a reverse transcriptase enzyme and a DNA primer, then amplification using a polymerase enzyme	Detects SARS-CoV-2 proteins on the surface of the virus (i.e., antigens) present in sample
Sensitivity	> 99.5%	> 80% (WHO standard)
Specificity	100.0%	> 97% (WHO standard)
Cost per test	USD 100-USD 200	USD 5-USD 10
Processing time	4-6 hours	15-30 minutes
Lab equipment	Special equipment required	No special equipment needed
Advantages	Gold-standard in detecting SARS-CoV-2 virus in a sample	Results are most reliable during high viral load (i.e., most infectious) phase; results are available immediately
Limitations	Results are not real-time, so viral load and infectious status may have changed between time of sample extraction and time results are obtained/examined (often 24 hours); amplification of viral sequences means higher likelihood of testing positive during post-recovery/non-infectious phase	Higher likelihood of false negative result

Source: Various online sources summarised by APEC Policy Support unit staff.

In some cases, individuals who have contracted COVID-19 may find that they continue to test positive for the virus even after they have recovered and have been deemed by medical service providers to no longer be infectious. Continuing to test positive after recovery is more likely to occur when using the highly sensitive molecular tests—such as PCR—that are typically required for entry to other economies.[30] As mentioned in Chapter 2 of this report, some economies that require travellers to be vaccinated will accept proof of recent recovery from COVID-19 in lieu of vaccination. These certificates of recovery can also aid those travellers who find themselves continuing to test positive for COVID-19 following recovery, especially if they wish to visit an economy where a negative COVID-19 test result is required for entry. Of those economies that mandate COVID-19 testing, eight will accept documentation confirming recovery, with the certificate generally needing to have been issued recently (i.e., between 7-14 days prior to departure up to around three months prior to departure).

[30] Moore (2022).

Quarantine requirements are another policy area in which there is divergence among the APEC members. Of the four APEC members that have a requirement to quarantine (which is often subject to other considerations), most require that entrants first stay in a designated facility before spending a period in home isolation or self-monitoring. Among these economies, the overall time required to quarantine ranges from three to 10 days. In fact, APEC members that continue to maintain a policy of quarantine have gradually reduced the time needed to isolate since the start of the COVID-19 pandemic. Of course, if a visitor tests positive for COVID-19 in those economies that conduct a test either on arrival or shortly after arrival, then that individual, often along with their travel companions, will need to quarantine or isolate for a period of time specified by the economy, which is usually 7 days.

OTHER COVID-19 ENTRY REQUIREMENTS

In addition to COVID-19 testing and quarantine requirements, APEC members have a number of other entry requirements of visitors travelling for the purpose of tourism or business. These measures, presented in Table 3.4, can include the need to submit documentation in advance, digital apps that must be downloaded for use within the economy, and travel insurance mandates. While these measures are not necessarily a source of uncertainty, they can add to costs and confusion at the border. Given such an array of additional procedures, travellers must thoroughly seek out information on entry policies and requirements for a destination and carefully plan in advance so as to avoid any disruption whilst engaging in cross-border travel, underscoring the importance of economies ensuring that such information is clearly communicated and easily accessible to travellers.

Table 3.4. Other COVID-19 Entry Requirements for Non-resident, Short-term Travellers to APEC Economies

Economy	Is it necessary to submit any documentation in advance of arrival?	Is it necessary to download a digital app for use within the economy?	Is COVID-19 medical/travel insurance required?	Effective date or date of latest policy change
Australia	No	No	No	6 July 2022
Brunei Darussalam	No	No	Yes	15 September 2022
Canada	No	No	No	1 October 2022
Chile	Yes (Travel Affidavit)	Recommended (Pase de Movilidad)	Yes	14 April 2022
China	Yes (Health Declaration Certificate)	No	No	30 June 2022
Hong Kong, China	Yes (online Health Declaration Form)	Yes (LeaveHomeSafe App)	No	12 August 2022
Indonesia	Yes (PeduliLindungi)	Yes (PeduliLindungi App)	No	8 June 2022
Japan	Yes (Visit Japan Web)	No	Recommended	1 November 2022
Korea	Optional	No	No	8 June 2022

Economy	Is it necessary to submit any documentation in advance of arrival?	Is it necessary to download a digital app for use within the economy?	Is COVID-19 medical/travel insurance required?	Effective date or date of latest policy change
	(Q-Code)			
Malaysia	Yes (MySejahtera App)	No	No	1 May 2022
Mexico	No	No	No	1 March 2022
New Zealand	No	No	No	20 October 2022
Papua New Guinea	No	No	No	18 April 2022
Peru	Yes (Health Affidavit)	No	No	12 June 2022
The Philippines	Yes (One Health Pass)	No	No	30 May 2022
Russia	No	Yes, if arriving from designated economies (COVID-19 Free Travel)	No	21 June 2022
Singapore	Yes (Singapore Arrival Card)	Yes (TraceTogether App)	No	1 April 2022
Chinese Taipei	Yes (Quarantine System for Entry)	No	No	15 June 2022
Thailand	No	No	No	1 July 2022
United States	No	No	No	12 June 2022
Viet Nam	No	Yes (PC-COVID App)	Yes	15 May 2022

Source: Compiled by the APEC Policy Support Unit using the latest publicly available information provided though economy updates, official websites of domestic government agencies, international organizations, and other news sources.

Cross-border travel during the COVID-19 pandemic often requires submitting documentation in advance of arrival to help facilitate entry procedures and ensure a smoother entry process. Less than half of the APEC members currently require that travellers submit documentation in advance of departure to the economy. For most of these economies, travellers must complete these advance procedures within two to three days prior to departure. Required documentation can include submitting information relating to vaccination, travel details, and/or COVID-19 test results as well as completing health declarations. Some APEC members, including Australia and Thailand, have recently lifted the requirement for travellers to complete online health declarations prior to arrival in the economy.

In some APEC economies, digital apps that prove health status are used to gain entry to enclosed spaces (e.g., hotels, restaurants, and shopping malls) and/or access to public services (e.g., trains, buses, and domestic flights). To ensure that visitors to the economy are able to access these facilities and services, it is sometimes mandatory that travellers download a digital app that can be used for this purpose while in the economy. In addition, economies may require that visitors use a contact tracing app during their stay to help minimise the spread of COVID-19. There are just four APEC members – Hong Kong, China; Indonesia; Singapore; and Viet

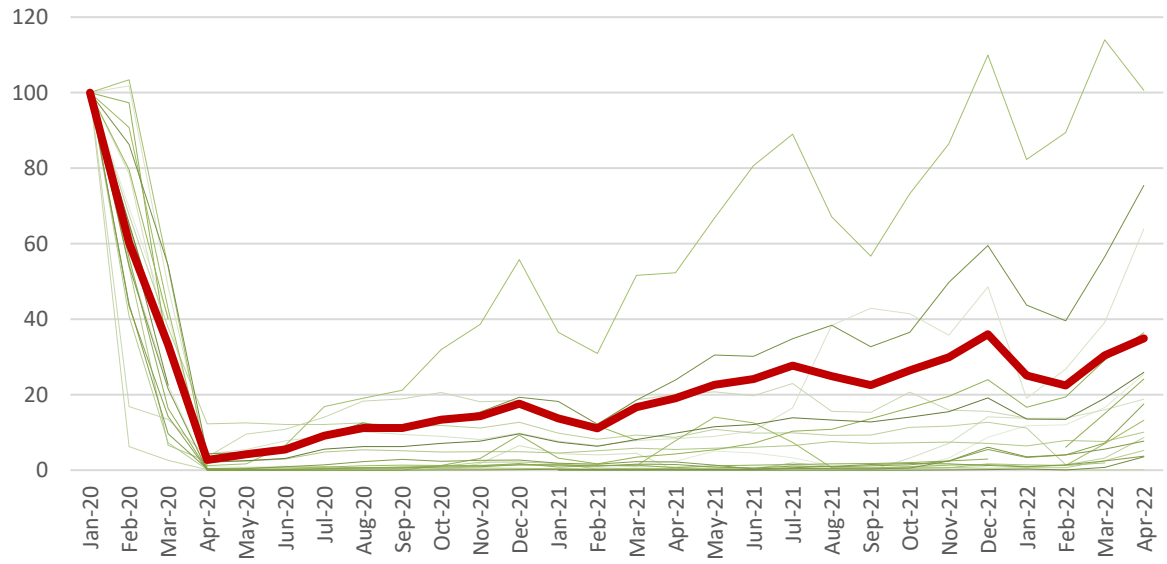
Nam – that require visitors to download a digital app for use in the economy, while it is highly recommended for visitors to Chile and contingent on origin for visitors to Russia.

As the COVID-19 pandemic progressed and cross-border travel started to resume, many destinations around the world begin to require that short-term visitors to the economy purchase travel insurance that will cover medical expenses relating to COVID-19 in the event that they become ill while visiting. There are currently just three APEC members that require short-term visitors to have proof of travel medical insurance: Brunei Darussalam; Chile; and Viet Nam. Several APEC members, including Indonesia; Malaysia; the Philippines; and Thailand, recently removed the requirement that visitors to the economy provide proof of medical insurance that includes treatment for COVID-19.

IMPACT OF COVID-19 BORDER MEASURES

The stringent border closures imposed in response to COVID-19 led to a near-halt in visitor arrivals (i.e., short-term, non-resident entry) in APEC. As can be seen in Figure 3.1, relative to January 2020 levels visitor arrivals dropped by almost 98% in April 2020 and has slowly been recovering since then. While visitor arrivals in some APEC economies have recovered faster—most notably Mexico where foreign visitor arrivals are at pre-pandemic levels—on average, as of April 2022, visitors to the APEC region have returned to about one-third of the levels last seen in January 2020. Visitor arrivals in the three North American APEC member economies—Canada; Mexico; and the United States—have recovered the fastest. On the other hand, APEC members in East and Southeast Asia are recovering the slowest, with seven economies recording visitor arrivals in April 2022 at 10% or less relative to their January 2020 levels.

Figure 3.1. Cross-border Visitor Arrivals in APEC, January 2020-April 2022 (January 2020 = 100)

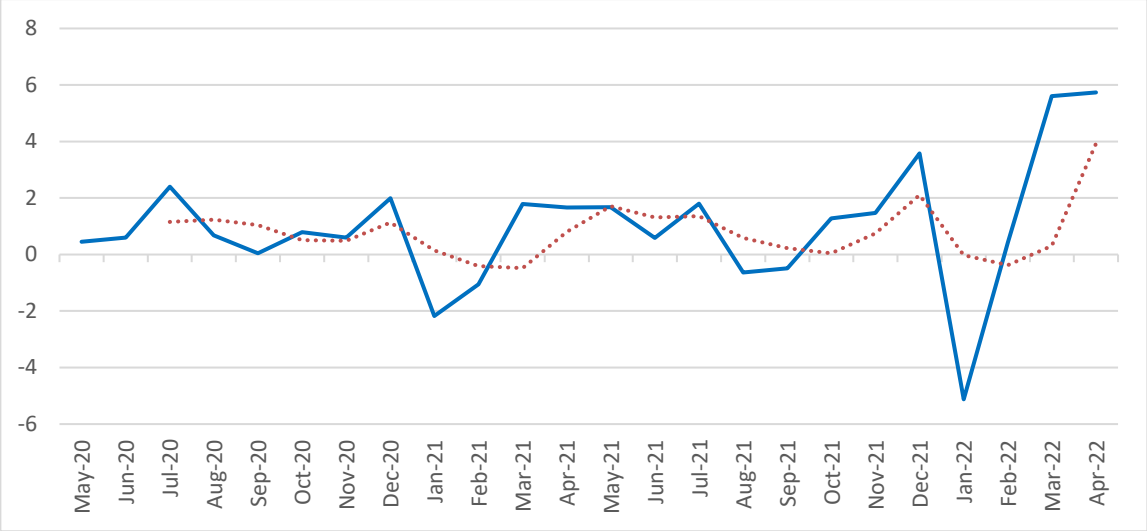


Note: Chart shows monthly arrivals indexed to January 2020 levels for APEC economies. Red line shows the APEC average weighted according to 2019 total arrivals.
Source: Economy sources and APEC Policy Support Unit staff calculations.

After double-digit contractions in March and April 2020, average visitor arrivals growth in APEC remained sluggish for much of the next year and a half (Figure 3.2). Month-on-month

arrivals growth did not go past 2% between May 2020 and November 2021, before picking up to 3.5% in December 2021. However, after the seasonal dip in January and February, cross-border arrivals surged past 5% in March and April 2022 at around the same time many APEC economies started relaxing border measures on quarantine and testing requirements. Looking at the three-month moving average to smooth out monthly variations (dotted line in Figure 3.2), one can see that the average growth posted in February-April 2022 surpassed any three-month period since May 2020.

Figure 3.2. Cross-border Visitor Arrivals Growth Rate in APEC, May 2020-April 2022



Note: Chart shows month-on-month average arrivals growth in APEC. Dotted line shows three-month moving average.
Source: Economy sources and APEC Policy Support Unit staff calculations.

In order to test the impact of COVID-19 policies on visitor arrivals, monthly arrivals data gathered from official economy sources are plotted against the presence or absence of COVID-19 policies. Binary variables are generated on a monthly basis for the implementation of COVID-19 policies. For example, the binary variable takes a value of 1 if the economy imposes quarantine requirements on all inbound travellers and a value of 0 if it does not. Statistical relationships between monthly visitor arrivals and the imposition/relaxation of various COVID-19 policies are then analysed through linear regressions while controlling for factors such as reverse causality, heteroscedasticity (i.e., non-constant variance over the sample), as well as unmeasured idiosyncrasies that are economy-specific (e.g., cultural attractions), time-specific (e.g., discovery of a new COVID-19 variant), or an interaction between the two (e.g., an economy hosting an international event). For the analysis, we test the following COVID-19 border measures: quarantine, testing, vaccination recognition, vaccination certificates, recovery certificates, and providing advance information (as a proxy for pre-arrival documentation requirements).

Table 3.5 shows the results of the statistical analysis. Policies relating to quarantine and testing requirements are significant in all the regressions and have the highest magnitude of coefficients. These robust results indicate that imposing—or relaxing—testing and quarantine requirements have the strongest impact on monthly arrivals growth. Based on the results of the most conservative statistical model (i.e., model (1)), removing quarantine requirements alone is associated with a doubling (107%) of monthly visitor arrivals relative to the period when quarantine was imposed (Figure 3.3). Likewise, removing testing requirements is associated

with a near-doubling (92%) of monthly arrivals, even after controlling for other factors affecting arrivals growth.

The other policy measures tested—such as vaccination certificates, recovery certificates, or providing advance information—do not have statistically significant correlations with monthly arrivals. A possible explanation for this is that while these policies can add cost or paperwork, they do not have a significant impact on uncertainty of travel. On the other hand, it is interesting to note that the requirement for being fully vaccinated to avail of facilitated border policies (i.e., testing- or quarantine-free entry) has a positive and significant coefficient in one of the regression models.[31] While this is not a robust finding, it does indicate that the average traveller is willing to fulfil vaccination requirements if this will reduce travel uncertainty.

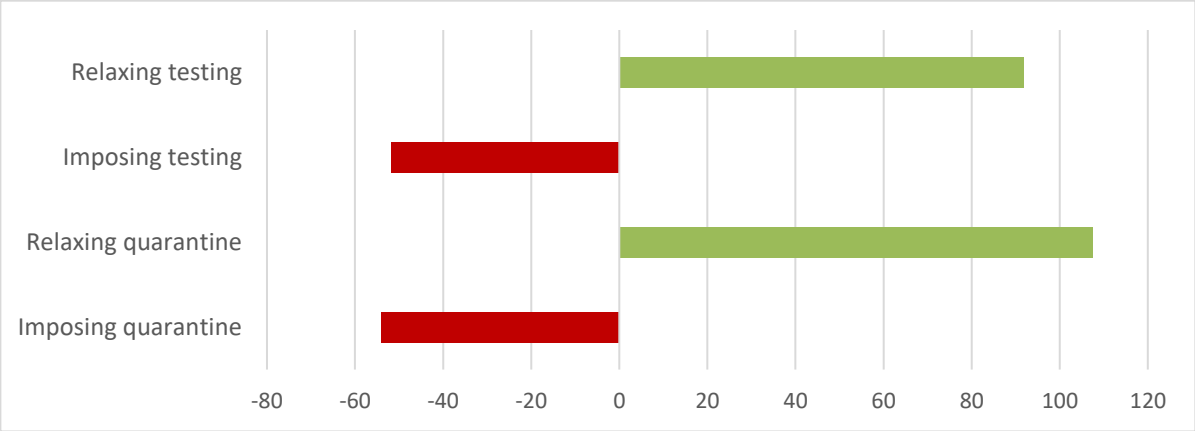
Table 3.5. Impact of COVID-19 Border Policies on Monthly Arrivals

	Dependent variable: log of monthly visitor arrivals		
	(1)	(2)	(3)
Previous month arrivals (in log)	0.654***		
	(0.0484)		
Is there a vaccine recognised for	-0.125	-0.163	-0.163
entry? (=1 if no)	(0.216)	(0.697)	(0.354)
Is full vaccination required for	0.393***	-0.0714	-0.0714
facilitated entry? (=1 if yes)	(0.109)	(1.490)	(0.536)
Is a booster shot required for	-0.375	-0.124	-0.124
facilitated entry? (=1 if yes)	(0.491)	(1.154)	(0.598)
Are vax certificates of all APEC	0.373	-0.103	-0.103
economies recognised? (=1 if no)	(0.569)	(0.255)	(0.545)
Should travellers provide advance	-1.106	-0.165	-0.165
vaccination information? (=1 if yes)	(0.687)	(1.347)	(0.633)
Are COVID-19 tests required for all	-0.690**	-2.172**	-2.172***
travellers? (=1 if yes)	(0.276)	(1.021)	(0.612)
Are recovery certificates for prior	0.346	0.583	0.583
infection accepted? (=1 if no)	(0.311)	(0.770)	(0.674)
Are all travellers required to	-0.753***	-2.916**	-2.916***
quarantine on arrival? (=1 if yes)	(0.215)	(1.126)	(0.668)
Do travellers need to provide other	0.340	0.607	0.607
information in advance? (=1 if yes)	(0.349)	(0.626)	(0.521)
Constant	3.224***	12.77***	14.25***
	(0.929)	(0.910)	(0.957)
Observations	513	561	561
R-squared		0.386	0.668
Number of economies	21	21	21

Notes: Regression (1) uses Arellano-Bond estimation to control for reverse causality; (2) uses fixed-effects panel OLS; (3) uses pooled OLS. All regressions use robust standard errors and control for economy- and time-specific idiosyncrasies. *** = significant at p<0.01, ** = significant at p<0.05, and * = significant at p<0.1. Economy and time dummy variables are suppressed for brevity. Technical notes are in Appendix B.
Source: Economy sources and APEC Policy Support Unit staff calculations.

[31] Interestingly, this result only appears in regression model (1), which is the Arellano-Bond model that controls for reverse causality, among others, and could therefore be thought of as the most rigorous and conservative of the three models.

Figure 3.3. Impact of Testing and Quarantine on Visitor Arrivals in APEC (in %)



Note: Chart presents impacts of imposing or relaxing quarantine or testing requirements in percentage terms relative to the previous policy environment, all else equal. Hence, "relaxing testing" shows the impact of removing testing requirements assuming that testing requirements are currently in place, while "imposing testing" assumes the opposite (mathematically, it is a discrete switch in the dummy variable from 1 to 0 or from 0 to 1, respectively). Chart figures are calculated from the coefficients and standard errors for testing and quarantine variables in model (1) of Table 3.5. See Appendix B for technical notes on analysing coefficients of dummy variables with a log-linearised dependent variable.
Source: Economy sources and APEC Policy Support Unit staff calculations.

4. CONCLUSION AND RECOMMENDATIONS

The gradual reopening of borders, along with pent-up demand, point to significant potential for the revitalisation of the travel and tourism sector. Even as COVID-19 border policies are shifting, travellers are willing to trawl through various websites and requirements to travel again, but with safety and security in mind. Nevertheless, there is significant scope for regional cooperation and policy coordination that could make the travel experience as frictionless as possible, while ensuring public health considerations. In relation to vaccines, we discuss two areas of cooperation that could contribute to the resumption of travel and tourism: vaccination requirements and interoperability of vaccination certificates.

OPPORTUNITIES FOR REGIONAL COOPERATION

Facilitating Inclusive Travel amid COVID-19

Policy differences in COVID-19 testing and quarantine requirements generally reflect an economy's assessment of the risk of case importation, which in turn often depends on the economy's ability to detect (e.g., testing facilities and contact tracing) and to manage (e.g., isolation and heath care facilities) those cases. A review of studies conducted by IATA suggest that destinations with a high prevalence of COVID-19 face less of an impact from case importation, while destinations with less incidence of the virus have an incentive to implement quarantines and administer multiple tests.[32] However, the time and cost incurred by travellers in order to complete these entry procedures adds a substantial burden to short-term travel. This is especially true if travellers face testing and/or quarantine requirements not only upon entry to the destination economy, but also upon return to the origin economy.

Indeed, COVID-19 testing requirements and quarantine measures can create a major disincentive for individuals to engage in cross-border travel. Payment for the more expensive PCR tests required by many APEC economies prior to departure – and usually the COVID-19 tests administered on arrival – is borne by the traveller. According to a survey conducted by IATA last year, while 86% of respondents were willing to be tested for travel purposes, 70% also felt that the financial cost of testing was a significant barrier to travel.[33] Nevertheless, many APEC members continue to maintain a COVID-19 testing requirement, with most of those economies mandating pre-departure tests. Although studies have found that testing on arrival is most effective in reducing case importation, this can pose logistical challenges for in-airport testing in many economies.[34]

Complying with quarantine can also be prohibitively expensive, with travellers often needing to spend these periods in managed facilities at their own expense, which can disproportionately impact lower income earners. Additionally, there is a large opportunity cost to staying in quarantine, particularly for those individuals who are unable to work during the confinement period. In another survey conducted by IATA in early 2021, 84% of travellers said that they would not travel if they were required to quarantine at their destination.[35] Most economies

[32] International Air Transport Association (2021b).
[33] International Air Transport Association (2021c).
[34] International Air Transport Association (2021b).
[35] International Air Transport Association (2021a).

globally have removed the need to quarantine as vaccination of domestic populations has progressed and the arrival of even more highly transmissible COVID-19 variants such as Omicron has proven to be more difficult to contain even with quarantine. Indeed, over the course of the COVID-19 pandemic, APEC members have gradually lifted or reduced the time needed to quarantine upon arrival.

In addition, the need for travellers to seek out complete and accurate information on entry policies and to then comply with the requirements also adds a time burden to cross-border travel. Mandates for travellers to have medical insurance coverage for COVID-19 can also add an additional financial burden. A study in Korea found that there were several determinants of the willingness to purchase travel insurance, including travellers' perception of COVID-19 risk at the destination.[36] APEC members have in fact gradually lifted some of these requirements, with several having recently removed the need for travel medical insurance. However, many economies continue to require that travellers submit documentation in advance of arrival.

Since the costs to comply with various entry requirements can be excessive on top of other travel expenditures, restrictive border policies create a considerable barrier to increasing cross-border mobility in the region. Furthermore, the large time and cost burden incurred by travellers due to restrictive border policies, as well as the ability to comply with the numerous requirements, can have an unequal impact on different groups of people, hindering the accessibility of travel and raising concern about growing inequities in cross-border travel.

As mentioned in Chapter 1, the time and cost burden of various COVID-19 entry requirements exacerbates existing inequalities in the opportunity of people to travel not only for tourism but also to seek economic opportunities. In addition, some COVID-19 border policies could be implemented in a way that further exacerbates existing inequalities. During the course of the pandemic, several APEC economies implemented entry requirements that distinguished measures by travel document or residency permit types even if public health risk did not delineate along such measures. For example, in early 2020 when COVID-19 was first reported in Wuhan City in Hubei Province, China, several economies imposed entry bans on travellers with travel documents issued in Hubei Province regardless of actual travel history to either the province or the city.[37] In principle, two travellers with the same travel history and itinerary will have similar public health risk profiles and therefore should be subject to the same risk mitigation policies; the SARS-CoV-2 virus does not distinguish by travel document or residency type. It is important that economies implement COVID-19 entry measures based on public health factors and apply them equitably across all entrants in order to not create or exacerbate discrimination against vulnerable groups such as foreign workers or migrants.

Although restrictive entry policies are gradually being lifted throughout much of the region and cross-border travel is resuming, uncertainty surrounding the course of the pandemic and its potential impact on travel continues to deter some travellers. As was seen when the Omicron variant was first detected,[38] entry policies can change suddenly as economies continually assess the health risks associated with the COVID-19 pandemic, thereby making it difficult for travellers to plan far in advance with a sense of certainty. As such, the ability of travellers to obtain complete and accurate information is an important factor to boost and support cross-border travel. In this regard, all APEC members are encouraged to develop a one-stop portal to disseminate up-to-date information on their economy's COVID-19 entry policies. Even

[36] Choe et al. (2022).
[37] *Deloitte* (2020).
[38] *CNN* (2021).

those economies that have lifted all COVID-19 border restrictions should have a portal that conveys this information to travellers.

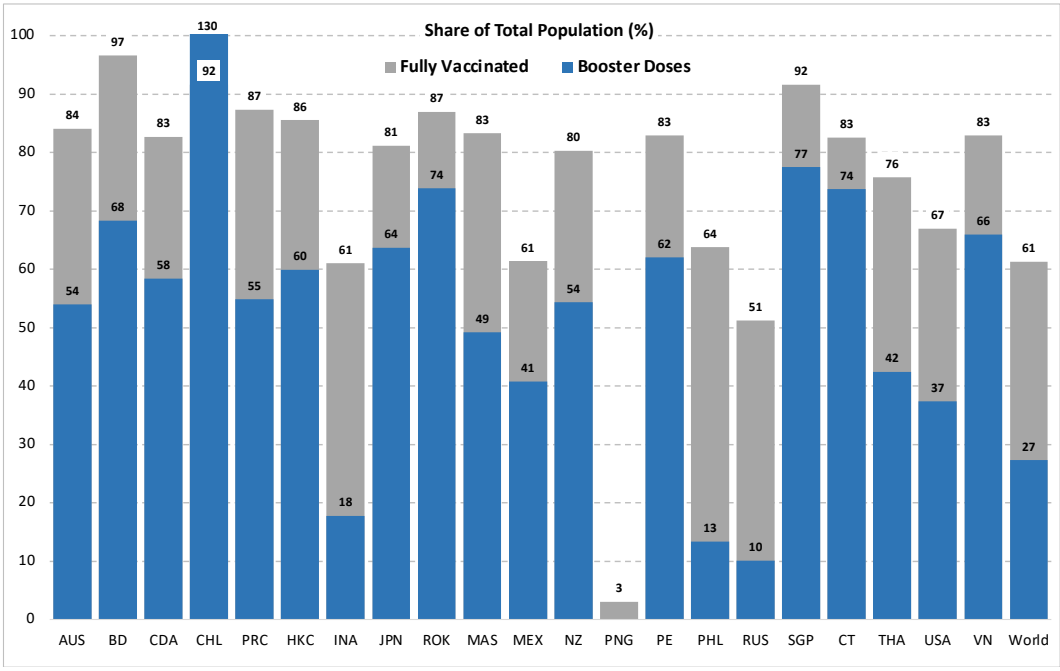
Cooperation on Vaccination Requirements

Vaccination requirements are mainly imposed for public health considerations, but they can also have an impact on the size of the destination economy's travel and tourism market. Most APEC economies have relied on both the World Health Organization's Emergency Use Listing (EUL) processes and their own regulatory agencies to review vaccine safety and efficacy data in order to grant approval for domestic use as well as vaccination recognition for visitors. While quarantine-free entry for fully vaccinated visitors continues to expand in the APEC region, several issues relating to the recognition of vaccines and vaccination requirements can arise for travellers. One is that even though a vaccine has been approved for use by an economy, it may not be widely available throughout that economy. This can become an important consideration if the initial vaccination campaign of an economy used a vaccine that is not recognised by many other economies for the purpose of entry.

Additionally, it is important to emphasise that even though an economy may accept the vaccination certificates of other economies, the vaccine used must be one that is also recognised by that economy. In this instance, an individual may have received a vaccine that has been approved for use in their economy, but which is not widely recognised for entry to other economies. For example, if a resident of Canada has been vaccinated with the Covifenz vaccine manufactured by Medicago – a vaccine approved for use within that economy – then that individual may find it difficult to enter other economies with mandatory vaccination requirements (or to enter without the need for quarantine) since that vaccine is not widely recognised throughout the APEC region. It is also worth remembering the situation in early- to mid-2021 when many economies—particularly developing economies—were scrambling to get access to limited vaccines and had to utilise whatever vaccine was available to them to control the pandemic. Thus, in many cases, individuals had no or extremely limited choice in what vaccines they can utilise to protect themselves.

Another obstacle can arise if the destination economy requires a booster dose of a recognised vaccine. Several APEC members do indeed require that travellers have received a booster dose if more than six months have passed since the primary course of vaccination was completed. However, given the global demand for COVID-19 vaccines, residents in many APEC economies cannot simply receive a vaccination upon request, but instead must follow an eligibility system coordinated by the economy. As a result, it may be difficult for residents of some APEC economies to receive a booster dose in a timely manner as members may implement booster dose campaigns according to different schedules.

Figure 4.1. COVID-19 Vaccination Rates in APEC Economies, July 2022



Note: Data shown were accessed on 10 July 2022 and are the latest data available at that time. Booster doses are all doses administered beyond those prescribed by the original vaccination protocol. In Chile, the number of fully vaccinated people per 100 people is 92, while the number of booster doses administered per 100 people is 130, indicating that a high number of residents have received more than one booster dose. (Data on booster doses are not available for Papua New Guinea.)
Source: Our World in Data, COVID-19 dataset, available at https://ourworldindata.org/covid-vaccinations.

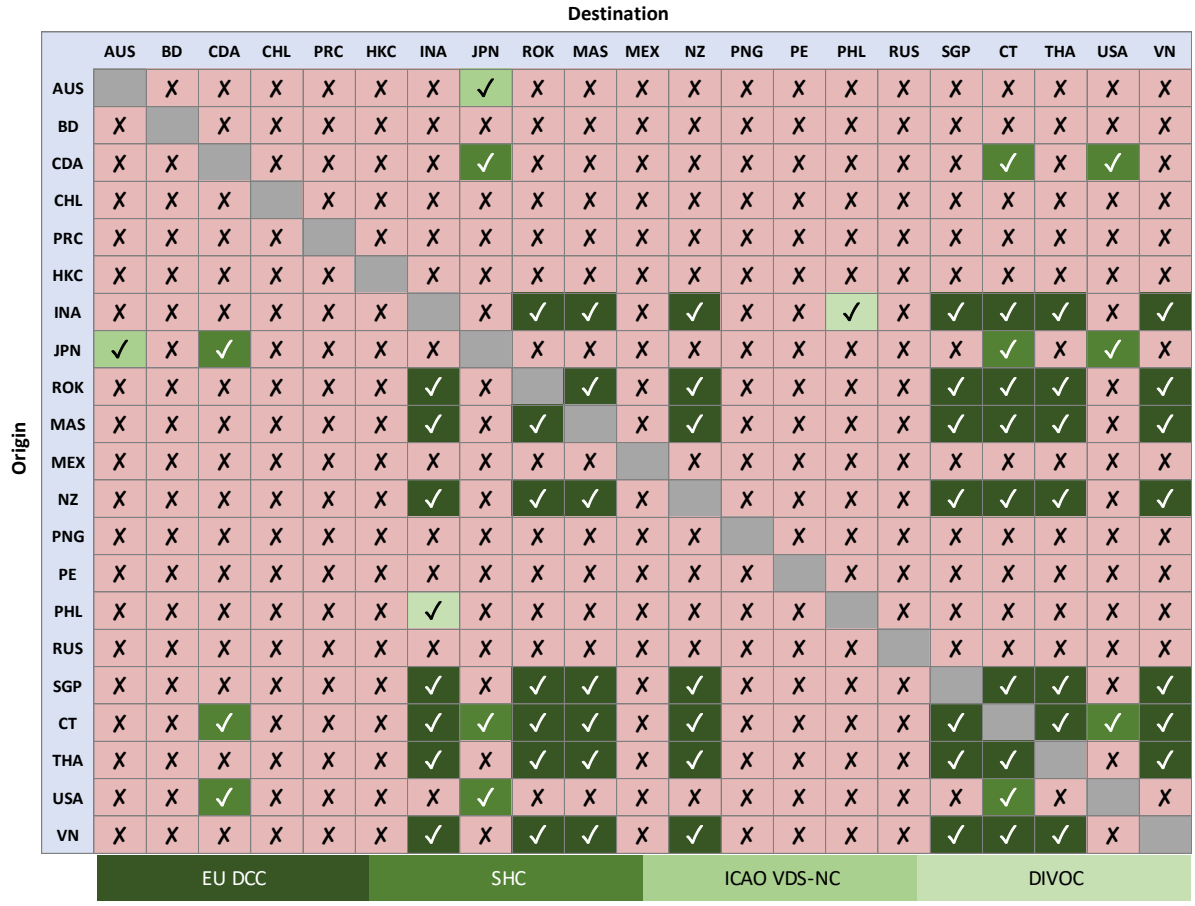
Vaccination rates, especially those for booster doses, vary significantly across the APEC region (Figure 4.1). Global imbalances in the share of people vaccinated in an economy due to either lack of access to vaccines, lack of an efficient distribution system, or lack of uptake among the general population can present a hindrance to increasing cross-border travel in the region given the vaccination requirements of most APEC economies. While the border policies of some members do indeed allow for entry of unvaccinated or partially vaccinated travellers, vaccination is required in order to be exempt from quarantine in most APEC economies. Therefore, increasing vaccination rates including booster doses, as well as regional cooperation on vaccination requirements, are imperative to improving cross-border mobility throughout the region.

Interoperability of Digital COVID-19 Vaccination Certificates

APEC members have had significant success in introducing digital COVID-19 vaccination certificates, with nearly all having developed one that can be used for cross-border travel. A key attribute of these digital applications is that they can provide secure verification that the certificate is authentic and the information contained is valid, thereby reducing fraud. However, there is no unifying technical specifications standard used throughout the region, reducing the interoperability of the digital vaccination certificates developed by the APEC members (Figure 4.2). Greater interoperability of digital health certificates in the region will enable members to maximise efficiencies at the border (i.e., reduce processing time and costs) and reduce fraud

since officials will be able to quickly and accurately verify the vaccination status of travellers from other economies by simply scanning the digital vaccination certificate's QR code.

Figure 4.2. Shared Digital Standards of COVID-19 Vaccination Certificates



Note: Shown is whether the digital vaccination certificate issued in an origin economy uses the same technical specifications standard as the digital vaccination certificate issued in a destination economy. It is based on information shown in Table 2.2, which is not available for many APEC members. A check mark within a green box for a pair of economies indicates that vaccination certificates are issued using the same digital standard (with the shade of green indicating the type of standard used), while an "X" within a red box indicates that the vaccination certificates issued by an economy pair do not share the same digital standard. Data for the United States is only for those states that issue digital vaccination certificates.
Source: Compiled by the APEC Policy Support Unit using the latest publicly available information provided though economy updates, official websites of domestic government agencies, international organisations, and other news sources.

Another benefit to improving the interoperability of digital COVID-19 vaccination certificates is that it can enable holders to use the certificate when local regulations require proof of health status for accessing services or entry into establishments. Many localities worldwide currently use digital "vaccine passports" that provide proof of health status to enable access to transportation services, public facilities, or large events, including Chile; Indonesia; and Singapore. As such, although travellers are able to cross borders using a vaccination certificate, they may face challenges when trying to use that same certificate to provide proof of health status to access public transportation or visit local venues within the destination economy.

Therefore, improving the interoperability of digital vaccination certificates could also enable these applications to be used by travellers to meet local health requirements. This would be

similar to how the EU Digital COVID Certificate not only helps to facilitate cross-border travel in the region, but also enables holders to use it in local settings when health verification is required (also known as the "Green Pass"). Greater interoperability of vaccination certificates will not only reduce travel barriers for visitors to the economy, but will also reduce them for their own residents to travel to other economies.

Several international organisations and groups are currently working to improve the use and interoperability of the various global standards of digital COVID-19 health certifications. For instance, ICAO and the European Union are making efforts to ensure compatibility between VDS-NC and the EU Digital COVID Certificate.[39] The G20 economies are also working to develop a harmonised interoperable framework for digital COVID-19 certificates. Led by Indonesia under the 2022 G20 Presidency, the initiative is to integrate a universal verification portal based on WHO standards into existing systems in order to electronically validate the digital COVID-19 vaccination certificates issued by other economies regardless of the digital standard used in the certificate.[40]

SUMMARY OF RECOMMENDATIONS

As several APEC members transition to more open border policy frameworks in line with domestic policy and public health risk appetite, key measures that can help ease existing cross-border travel barriers and support greater short-term travel in the region include the following:

Ensure widespread and equitable access to COVID-19 vaccines. While it is not a border policy per se, widespread and equitable access to COVID-19 vaccines is a necessary condition to a safe reopening of borders and the resumption of travel and tourism in the region. Indeed, it is the region's high vaccination rates that have enabled many economies to start loosening their COVID-19 border restrictions. For the destination economy, widespread and equitable vaccination ensures that the local population has sufficient protection from the virus not only domestically but also from clusters that may be seeded from imported cases. For the origin economy, a high vaccination rate will not only protect the population but will also reduce the risk of harmful COVID-19 variants emanating from the economy, making other economies more likely to relax border restrictions in a sustained manner. Widespread and equitable access to COVID-19 vaccines will ensure a sustainable and safe reopening of borders and the resumption of travel and tourism in the numbers needed for the sector's recovery.

Implement COVID-19 border requirements that are risk- and evidence-based. It is important to recognise that COVID-19 is foremost a public health issue, with public health and safety being the top concern. Policies and decisions relating to the pandemic need to be premised on saving lives, preventing illness, and protecting public health. Hence, border policies on vaccination requirements need to be based on the best public health evidence available. A key enabler of this is to encourage the voluntary sharing of scientific and public health data on vaccines that is transparent, scientific, and peer-reviewed. For example, vaccine manufacturers seeking recognition whether domestically or overseas need to ensure that clinical evidence on the efficacy of their vaccines is shared openly and in a timely manner and made available for scientific peer review. Likewise, economies considering recognition of vaccines whether for domestic use or for entry of travellers should primarily consider the scientific evidence and public health benefits associated with the vaccine.

[39] ICAO (2021b).
[40] *The Jakarta Post* (2022).

Policies on testing and quarantine requirements for travellers also need to be based on a public health risk-based approach that minimises the likelihood of travel-linked importation and transmission of the virus without placing excessive burden on travellers and the domestic economy. Two years into the pandemic, there have been a lot of studies and empirical evidence on what border measures work—and what do not—in mitigating COVID-19 risk.[41] There is also empirical evidence on the impacts of COVID-19 border measures on arrivals: another way of interpreting Figure 3.3 is that imposing quarantine requirements results in a 54% contraction in visitor arrivals compared to the situation when quarantine was not imposed, while imposing testing requirements results in a 52% contraction. Thus, imposing quarantine and testing requirements at the border needs to be considered in terms of their proven ability to control the pandemic in relation to their proven negative impacts on cross-border travel and the broader economy.

Support the development of interoperable digital vaccination certificates. There are a myriad of various paper and digital vaccination certificates issued and recognised by economies. The good news is that this situation does not seem to be a major impediment to travel. In most cases, authorities in the APEC region are willing to accept the digital or paper vaccination certificates that are issued to travellers. However, the format of international vaccination certificates that are issued often differs between each origin-destination pair of economies. This lack of standardisation comes with time and efficiency losses. Travellers will have to ensure that their vaccination certificate meets the requirements for vaccination certificates accepted in the destination economy. Likewise, authorities will have to match each arriving passenger's presented certificate with a list of acceptable certificates issued in the origin economy to ensure that the certificate is not fraudulent. The time and cost spent on search, matching, and review of vaccination certificates in different formats can add up for both travellers and authorities.

Fortunately, several APEC economies have already developed digital vaccination certificates based on existing internationally recognised digital standards. This means that APEC members can learn from the experiences of other economies on the pros and cons of the various global standards used in digital vaccination certificates. Any approach to interoperability—whether through ground-up development or adaptation of existing ones—needs to ensure compatibility with existing international digital standards. This will open up optimal benefits of interoperability with APEC and non-APEC economies and maximise the travel and tourism market for the APEC region.

Facilitate the dissemination of information on entry requirements relating to COVID-19. Information on COVID-19 testing, quarantine, and vaccination requirements for cross-border entry in English is available for many economies. For most economies, sources are official government websites; however, for other economies information in English had to be obtained from travel agencies, airlines, or international organisations. Based on a review of various government websites and COVID-19 travel portals, a few recommendations could be considered in facilitating information dissemination on COVID-19 requirements:

- Provide a one-stop source of COVID-19 border requirements in an official government website that is up-to-date. While information from airlines, travel agencies, and other international organisations are helpful, they may not provide the same level of confidence in travellers who are making travel plans. Travellers are more likely to visit

[41] For example, see APEC Policy Support Unit (2021), Yang et al. (2022) and Zhong et al. (2021).

and trust official government websites for travel advisories. Information on official websites should also be available in various languages to cater to visitors.

- New or revised information should immediately be uploaded, and irrelevant or obsolete information should immediately be removed from the website (or clearly labelled as obsolete). Retaining old or obsolete requirements can be a source of confusion for travellers.
- Changes in entry requirements should be communicated immediately and, if new restrictions or requirements are being implemented, with reasonable and sufficient time for compliance for travellers who are abroad or in transit. Relaxation or lifting of entry requirements also need to be communicated clearly to avoid confusion.
- Information should be in plain language (i.e., not jargon or legalese) and easy to follow for an ordinary traveller. Facsimiles of administrative circulars or memoranda are not easy to follow and can cause confusion. Infographics and step-by-step guides are preferable.
- Given the current situation of vaccination certificates (i.e., varied formats, some of which may not be digitally verifiable), there could be confusion and uncertainty on what travellers need to present to authorities as proof of vaccination. Thus, information on what certificates authorities expect to see should be provided as clearly as possible. This information should ideally be provided according to the travellers' place of residence (or place where vaccination was obtained), and, where possible, facsimiles of acceptable certificates could be provided.

Propose APEC initiatives that address regional risks and continue APEC coordination work, including through relevant sub-fora, to continue cross-sectoral work on regional mobility. The COVID-19 pandemic was an unprecedented event that shocked most economies in early 2020. Precisely because it was unprecedented in scale, economies were not sure how to respond efficiently and in a coordinated manner. Two years since then, what is clear is that more regional cooperation and coordination would be helpful in a similar situation. It is also clear that regional mobility issues are cross-sectoral, involving several ministries such as border and public health authorities as well as transportation, tourism, and technology. More coordination between economies and agencies at the beginning of the pandemic could have reduced confusion and enabled a more efficient set of border policies. Instead of each economy implementing entry policies in silo, this could have been done in cooperation and coordination with regional partners. Information exchange, reciprocal arrangements, and policy harmonisation—all with the aim of facilitating entry while ensuring public health safety—could have taken place at the start rather than months or years into the crisis. Even as the world is still grappling with COVID-19, new global health emergencies—such as monkeypox—are emerging.[42] APEC needs to anticipate and prepare for the next crisis.

Given APEC's informal, voluntary, and non-binding structure, it is well-placed to continue to propose initiatives that provide an opportunity for economies to discuss and coordinate a regional response to emerging risks to cross-border mobility as they occur, as well as to discuss policies on how to increase the region's resilience to such risks in the long-term. These initiatives could draw on existing expertise from APEC fora on health, digital economy, business mobility, human resources, tourism, transportation, trade, and others such as ABAC and relevant international organisations as necessary, to provide cross-sectoral and global insights to any border measure being contemplated.

[42] World Health Organization (2022b).

The successful work of the Safe Passage Taskforce has also shown the benefit of a cross-sectoral APEC mechanism that coordinates discussions on regional mobility issues. APEC should continue initiatives that could enable more timely regional cooperation and coordination in the face of risks to cross-border mobility. This mechanism needs to be flexible, ready, and able to exchange information and coordinate quickly—as fast as the regional situation is unfolding.

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Information Sources for Vaccination and Entry Requirements:

Economy	Source
Australia	Department of Home Affairs https://www.homeaffairs.gov.au/covid19
Brunei Darussalam	Prime Minister's Office https://www.pmo.gov.bn/EPG/Perjalanan.aspx
Canada	Government of Canada https://travel.gc.ca/travel-covid/travel-restrictions/covid-vaccinated-travellers-entering-canada
Chile	Ministry of Economy, Development and Tourism https://www.chile.travel/en/traveltochileplan/
China	China Highlights https://www.chinahighlights.com/travelguide/china-travel-reopen-restrictions.htm
Hong Kong, China	Government of the Hong Kong Special Administrative Region https://www.coronavirus.gov.hk/eng/inbound-travel.html
Indonesia	Ministry of Tourism https://www.indonesia.travel/gb/en/news
Japan	Ministry of Health, Labour and Welfare https://www.mhlw.go.jp/stf/covid-19/bordercontrol.html Ministry of Foreign Affairs https://www.mofa.go.jp/ca/fna/page4e_001053.html
Korea	Korea Tourism Organization https://english.visitkorea.or.kr/enu/AKR/FU_EN_15.jsp
Malaysia	Government of Malaysia https://mysafetravel.gov.my
Mexico	Embassy of Mexico to Switzerland https://embamex.sre.gob.mx/suiza/index.php/turismo/covid-19/english IATA COVID-19 Travel Regulations Map https://www.iatatravelcentre.com/world.php
New Zealand	New Zealand Government https://covid19.govt.nz/international-travel/travel-to-new-zealand/
Papua New Guinea	Tourism Promotion Authority https://www.papuanewguinea.travel/travel-advice-update Air Niugini https://www.airniugini.com.pg/travel-advice/
Peru	Ministry of Foreign Trade and Tourism https://www.peru.travel/en/covid Government of Peru https://www.gob.pe/institucion/embajada-del-peru-en-irlanda/campañas/5558-covid-19-requirements-to-travel-to-peru
The Philippines	Department of Tourism https://visitor.tourism.gov.ph/
Russia	Aeroflot https://www.aeroflot.ru/jp-en/covid-19
Singapore	Immigration & Checkpoints Authority https://safetravel.ica.gov.sg/arriving/overview
Chinese Taipei	Central Epidemic Command Center https://www.cdc.gov.tw/En/Bulletin/List/7tUXjTBf6paRvrhEl-mrPg
Thailand	Tourism Authority of Thailand https://www.tatnews.org/category/thailand-visitor-info/
United States	Department of State

Economy	Source
	https://travel.state.gov/content/travel/en/international-travel/emergencies/covid-19-faqs-for-travel-to-the-us-information.html
Viet Nam	National Administration of Tourism https://vietnam.travel/things-to-do/information-travellers-novel-coronavirus-vietnam

APPENDIX A. COVID-19 VACCINES APPROVED AND RECOGNISED BY APEC ECONOMIES

Economy	Vaccines approved for use within the economy	Vaccines recognised for the purpose of travel to the economy	Effective date or date of latest policy change
Australia	• Comirnaty (Pfizer-BioNTech) • Vaxzevria (Oxford-AstraZeneca) • Spikevax (Moderna or Takeda) • Janssen COVID-19 Vaccine (Johnson & Johnson) • Nuvaxovid (Biocelect on behalf of Novavax)	Australia has lifted all vaccination requirements for travellers to enter the economy; as such, Australia effectively recognises all COVID-19 vaccines for the purpose of travel to the economy.	6 July 2022
Brunei Darussalam	• Covilo (Sinopharm) • Vaxzevria (Oxford-AstraZeneca) • Spikevax (Moderna) • Comirnaty (Pfizer-BioNTech)	In addition to the vaccines approved for domestic use, Brunei Darussalam also recognises all COVID-19 vaccines listed in the World Health Organization (WHO) Emergency Use Listing (EUL) to include the following: • Covishield (AstraZeneca - Serum Institute of India) • Janssen COVID-19 Vaccine (Johnson & Johnson) • CoronaVac (Sinovac) • Covaxin (Bharat Biotech) • Nuvaxovid (Novavax) • Covovax (Novavax - Serum Institute of India) • Convidecia (CanSino)	15 June 2022
Canada	• Spikevax (Moderna) • Comirnaty (Pfizer-BioNTech) • Vaxzevria (Oxford-AstraZeneca) • Janssen COVID-19 Vaccine (Johnson & Johnson) • Nuvaxovid (Novavax) • Covifenz (Medicago)	• Canada has lifted vaccine requirements for all travellers entering Canada. All travellers arriving in Canada will no longer have to be vaccinated against COVID-19 to enter.	1 October 2022
Chile	• Comirnaty (Pfizer-BioNTech) • Vaxzevria (Oxford-AstraZeneca) • Janssen COVID-19 Vaccine (Johnson & Johnson) • CoronaVac (Sinovac) • Convidecia (CanSino) • Sputnik V (Gamaleya Research Institute)	Chile has lifted all vaccination requirements for travellers to enter the economy; as such, Chile effectively recognises all COVID-19 vaccines for the purpose of travel to the economy. However, in order to access enclosed spaces and use public services within Chile (including hotels, restaurants, buses, etc.), travellers must obtain the Pase de Movilidad (Mobility Pass), for	14 April 2022

Economy	Vaccines approved for use within the economy	Vaccines recognised for the purpose of travel to the economy	Effective date or date of latest policy change
		which validation of vaccination proof is mandatory. In addition to the vaccines approved for domestic use, Chile also recognises all COVID-19 vaccines listed in the World Health Organization (WHO) Emergency Use Listing (EUL) and those approved by the United States Food and Drug Administration (FDA) and the European Medicines Agency (EMA) for the purpose of validation of vaccination proof to include the following: • Spikevax (Moderna) • Covishield (AstraZeneca - Serum Institute of India) • Covilo (Sinopharm) • Covaxin (Bharat Biotech) • Nuvaxovid (Novavax) • Covovax (Novavax - Serum Institute of India)	
China	• Covilo (Sinopharm) • CoronaVac (Sinovac) • Convidecia (CanSino) • Zifivax (Anhui Zhifei Longcom) • KCONVAC (Minhai Biotechnology Co)	In addition to the vaccines approved for domestic use, China also recognises all COVID-19 vaccines listed in the World Health Organization (WHO) Emergency Use Listing (EUL) to include the following: • Covishield (AstraZeneca - Serum Institute of India) • Vaxzevria (Oxford-AstraZeneca) • Janssen COVID-19 Vaccine (Johnson & Johnson) • Covaxin (Bharat Biotech) • Nuvaxovid (Novavax) • Covovax (Novavax - Serum Institute of India) • Comirnaty (Pfizer-BioNTech) • Spikevax (Moderna)	30 June 2022
Hong Kong, China	• CoronaVac (Sinovac) • Comirnaty (Fosun Pharma-BioNTech; Pfizer-BioNTech)	In addition to the COVID-19 vaccines approved for domestic use, the following vaccines are also recognised: • Spikevax (Moderna) • Janssen COVID-19 Vaccine (Johnson & Johnson) • Vaxzevria (Oxford-AstraZeneca) • Covishield (AstraZeneca - Serum Institute of India) • Covaxin (Bharat Biotech) • Sputnik V (Gamaleya Research Institute)	12 August 2022

Economy	Vaccines approved for use within the economy	Vaccines recognised for the purpose of travel to the economy	Effective date or date of latest policy change
		• Covilo (Sinopharm) • Convidecia (CanSino) • Zifivax (Anhui Zhifei Longcom) • Nuvaxovid (Novavax) • Covovax (Novavax - Serum Institute of India)	
Indonesia	• Comirnaty (Pfizer-BioNTech) • Spikevax (Moderna) • Vaxzevria (Oxford-AstraZeneca) • Covovax (Novavax - Serum Institute of India) • CoronaVac (Sinovac) • Covilo (Sinopharm) • Janssen COVID-19 Vaccine (Johnson & Johnson) • Sputnik V (Gamaleya Research Institute) • Convidecia (CanSino) • Zifivax (Anhui Zhifei Longcom) • KCONVAC (Minhai Biotechnology Co)	Indonesia recognises all vaccines administered to international travellers.	8 June 2022
Japan	• Comirnaty (Pfizer) • Spikevax (Moderna/Takeda) • Vaxzevria (Oxford-AstraZeneca) • Nuvaxovid (Novavax/Takeda) • JCOVDEN (Janssen)	Japan recognises all COVID-19 vaccines listed in the World Health Organization (WHO) Emergency Use Listing (EUL) to include the following: • Comirnaty (Fosun Pharma-BioNTech) • Covishield (AstraZeneca - Serum Institute of India) • Covovax (Novavax - Serum Institute of India) • Covaxin (Bharat Biotech) • Covilo (Sinopharm) • CoronaVac (Sinovac) • Convidecia (CanSino) The third booster dose must also use one of these vaccines. One dose of the JCOVDEN and Convidecia are considered equivalent to two doses.	11 October 2022
Korea	• Comirnaty (Pfizer-BioNTech) • Spikevax (Moderna) • Vaxzevria (Oxford-AstraZeneca) • Janssen COVID-19 Vaccine (Johnson & Johnson)	Korea has lifted all vaccination requirements for travellers to enter the economy; as such, Korea effectively recognises all COVID-19 vaccines for the purpose of travel to the economy.	8 June 2022

Economy	Vaccines approved for use within the economy	Vaccines recognised for the purpose of travel to the economy	Effective date or date of latest policy change
	• Nuvaxovid (Novavax)		
Malaysia	• Comirnaty (Pfizer-BioNTech) • CoronaVac (Sinovac) • Vaxzevria (Oxford-AstraZeneca) • Convidecia (CanSino) • Janssen COVID-19 Vaccine (Johnson & Johnson) • Covilo (Sinopharm) • Spikevax (Moderna) • Covaxin (Bharat Biotech)	In addition to the vaccines approved for domestic use, Malaysia also recognises all COVID-19 vaccines listed in the World Health Organization (WHO) Emergency Use Listing (EUL), as well as those approved by regulatory authorities in other economies, to include at least the following: • Covishield (AstraZeneca - Serum Institute of India) • Nuvaxovid (Novavax) • Covovax (Novavax - Serum Institute of India) • Sputnik V (Gamaleya Research Institute) • Sputnik Light (Gamaleya Research Institute) To be considered fully vaccinated, a booster dose is required of all individuals vaccinated with either Sinovac or Sinopharm and of individuals aged 60 years and above vaccinated with any other recognised vaccine.	1 April 2022
Mexico	• Comirnaty (Pfizer-BioNTech) • Vaxzevria (Oxford-AstraZeneca) • Covishield (AstraZeneca - Serum Institute of India) • Sputnik V (Gamaleya Research Institute) • CoronaVac (Sinovac) • Covilo (Sinopharm) • Convidecia (CanSino) • Covaxin (Bharat Biotech) • Janssen COVID-19 Vaccine (Johnson & Johnson) • Spikevax (Moderna) • Abdala (Center for Genetic Engineering and Biotechnology)	Mexico has lifted all vaccination requirements for travellers to enter the economy; as such, Mexico effectively recognises all COVID-19 vaccines for the purpose of travel to the economy.	1 January 2022
New Zealand	• Comirnaty (Pfizer-BioNTech) • Vaxzevria (Oxford-AstraZeneca) • Nuvaxovid (Novavax) • Janssen COVID-19 Vaccine (Johnson & Johnson)	New Zealand has lifted all vaccination requirements for travellers to enter the economy; as such, New Zealand effectively recognises all COVID-19 vaccines for the purpose of travel to the economy.	12 September 2022
Papua New Guinea	• Vaxzevria (Oxford-AstraZeneca) • Janssen COVID-19 Vaccine (Johnson & Johnson)	In addition to the vaccines approved for domestic use, Papua New Guinea also recognises all COVID-19 vaccines listed in the	18 April 2022

Economy	Vaccines approved for use within the economy	Vaccines recognised for the purpose of travel to the economy	Effective date or date of latest policy change
	• Covilo (Sinopharm)	World Health Organization (WHO) Emergency Use Listing (EUL) to include the following: • Covishield (AstraZeneca - Serum Institute of India) • Comirnaty (Pfizer-BioNTech) • Spikevax (Moderna) • CoronaVac (Sinovac) • Covaxin (Bharat Biotech) • Nuvaxovid (Novavax) • Covovax (Novavax - Serum Institute of India) • Convidecia (CanSino)	
Peru	• Comirnaty (Pfizer-BioNTech) • Covilo (Sinopharm) • Vaxzevria (Oxford-AstraZeneca) • Janssen COVID-19 Vaccine (Johnson & Johnson) • Spikevax (Moderna)	Peru has lifted all vaccination requirements for travellers to enter the economy; as such, Peru effectively recognises all COVID-19 vaccines for the purpose of travel to the economy. However, in order to access enclosed spaces and use public services within Peru (including restaurants, museums, trains, etc.), it is mandatory to show proof of vaccination. For this purpose, Peru recognises all vaccines administered to non-resident travellers.	12 June 2022
The Philippines	• Comirnaty (Pfizer-BioNTech) • Vaxzevria (Oxford-AstraZeneca) • CoronaVac (Sinovac) • Sputnik V (Gamaleya Research Institute) • Sputnik Light (Gamaleya Research Institute) • Janssen COVID-19 Vaccine (Johnson & Johnson) • Covaxin (Bharat Biotech) • Spikevax (Moderna) • Covilo (Sinopharm) • Covovax (Novavax - Serum Institute of India)	In addition to the vaccines approved for domestic use, the Philippines also recognises all COVID-19 vaccines listed in the World Health Organization (WHO) Emergency Use Listing (EUL) to include the following: • Covishield (AstraZeneca - Serum Institute of India) • Nuvaxovid (Novavax) • Convidecia (CanSino)	30 May 2022
Russia	• Sputnik V (Gamaleya Research Institute) • Sputnik Light (Gamaleya Research Institute) • Sputnik M (Gamaleya Research Institute) • Gam-COVID-Vac-Lio (Gamaleya Research Institute)	Russia only recognises vaccination certificates issued by economies with a special agreement with the Russian government. As of this writing, such agreements have been signed with three non-APEC economies. Travellers unable to present a recognised vaccination certificate will need to present	21 June 2022

Economy	Vaccines approved for use within the economy	Vaccines recognised for the purpose of travel to the economy	Effective date or date of latest policy change
	• EpiVacCorona (Vector State Research Center of Virology and Biotechnology) • AURORA-CoV (Vector State Research Center of Virology and Biotechnology) • CoviVac (Chumakov Centre) • Salnavac (Generium) • Convidecia (CanSino) • Convacell (The Saint Petersburg Scientific Research Institute of Vaccines and Serums of the FMBA of Russia)	negative PCR test results taken no more than 48 hours prior to arrival.	
Singapore	• Comirnaty (Pfizer-BioNTech) • Spikevax (Moderna) • CoronaVac (Sinovac) • Nuvaxovid (Novavax)	In addition to the vaccines approved for domestic use, Singapore also recognises all COVID-19 vaccines listed in the World Health Organization (WHO) Emergency Use Listing (EUL) to include the following: • Vaxzevria (Oxford-AstraZeneca) • Covishield (AstraZeneca - Serum Institute of India) • Janssen COVID-19 Vaccine (Johnson & Johnson) • Covilo (Sinopharm) • Covaxin (Bharat Biotech) • Nuvaxovid (Novavax) • Covovax (Novavax - Serum Institute of India) • Convidecia (CanSino)	1 April 2022
Chinese Taipei	• Comirnaty (Pfizer-BioNTech) • Spikevax (Moderna) • Vaxzevria (Oxford-AstraZeneca) • Nuvaxovid (Novavax) • MVC COVID-19 Vaccine (Medigen)	Since quarantine is required of all entrants to Chinese Taipei, vaccination is not required; as such, Chinese Taipei effectively recognises all COVID-19 vaccines for the purpose of travel to the economy.	15 June 2022

Economy	Vaccines approved for use within the economy	Vaccines recognised for the purpose of travel to the economy	Effective date or date of latest policy change
Thailand	• Vaxzevria (Oxford-AstraZeneca) • CoronaVac (Sinovac) • Janssen COVID-19 Vaccine (Johnson & Johnson) • Comirnaty (Pfizer-BioNTech) • Spikevax (Moderna) • Covilo (Sinopharm) • Covovax (Novavax - Serum Institute of India)	In addition to the COVID-19 vaccines approved for domestic use, the following vaccines are also recognised: • Covishield (AstraZeneca - Serum Institute of India) • Covaxin (Bharat Biotech) • Sputnik V (Gamaleya Research Institute) • Sputnik Light (Gamaleya Research Institute) • Nuvaxovid (Novavax) • MVC-COV1901 (Medigen) • TURKOVAC / ERUCOV-VAC • Convidecia (CanSino)	1 July 2022
United States	• Comirnaty (Pfizer-BioNTech) • Spikevax (Moderna) • Janssen COVID-19 Vaccine (Johnson & Johnson) • Nuvaxovid (Novavax)	In addition to the COVID-19 vaccines approved for domestic use, the following vaccines are also recognised: • Vaxzevria (Oxford-AstraZeneca) • Covishield (AstraZeneca - Serum Institute of India) • Covaxin (Bharat Biotech) • Covilo (Sinopharm) • CoronaVac (Sinovac) • Convidecia (CanSino) • Covovax (Novavax - Serum Institute of India) • Nuvaxovid (Novavax) • Covifenz (Medicago)	14 July 2022
Viet Nam	• Vaxzevria (Oxford-AstraZeneca) • Sputnik V (Gamaleya Research Institute) • Covilo (Sinopharm) • Comirnaty (Pfizer-BioNTech) • Spikevax (Moderna) • Abdala (Center for Genetic Engineering and Biotechnology) • Janssen COVID-19 Vaccine (Johnson & Johnson) • Covaxin (Bharat Biotech)	Viet Nam has lifted all vaccination requirements for travellers to enter the economy; as such, Viet Nam effectively recognises all COVID-19 vaccines for the purpose of travel to the economy.	15 May 2022

Source: Compiled by the APEC Policy Support Unit using the latest publicly available information provided though economy updates, official websites of domestic government agencies, international organisations, and other news sources.

APPENDIX B. TECHNICAL NOTES FOR TABLE 3.5

To test the impact of cross-border COVID-19 policies on monthly arrivals in APEC, we estimate the following model:

$$\begin{aligned}\ln(arrivals_{it}) = {} & \beta_0 + \beta_1 vaxrecog_{it} + \beta_2 fullvax_{it} + \beta_3 boost_{it} + \beta_4 allvaxrecog_{it} + \beta_5 advinfo_{it} \\ & + \beta_6 test_{it} + \beta_7 recovcert_{it} + \beta_8 quarantine_{it} + \beta_9 otherinfo_{it} + \boldsymbol{economy_i'\omega_i} \\ & + \boldsymbol{month_t'\mu_t} + \boldsymbol{interact_{it}'\mu_t\omega_i} + \varepsilon_{it}\end{aligned}$$

where $\ln(arrivals_{it})$ is the logarithmic-transformed number of monthly arrivals in APEC member-economy $i = 1, 2, \ldots, 21$ during month $t = 1, 2, \ldots, 30$, $vaxrecog_{it}$ is a binary variable equal to one if there is no vaccine recognised for entry in APEC economy i during month t; $fullvax_{it}$ is a dummy variable equal to one if full vaccination is required for facilitated entry; $boost_{it}$ is a binary variable equal to one if a booster shot is required for facilitated entry; $allvaxrecog_{it}$ is a binary variable equal to one if not all vaccination certificates from APEC economies are recognised; $advinfo_{it}$ is a binary variable equal to one if travellers should provide advance vaccination information; $test_{it}$ is a binary variable equal to one if COVID-19 tests are required for all travellers (random selection of passengers for testing is coded as one); $recovcert_{it}$ is a binary variable equal to one if recovery certificates for prior infection are not accepted; $quarantine_{it}$ is a binary variable equal to one if all travellers are required to quarantine on arrival; $otherinfo_{it}$ is a binary variable equal to one if travellers need to provide other information in advance; $\boldsymbol{\omega_i}$ is a vector of economy-specific fixed effects; $\boldsymbol{\mu_t}$ is a vector of time fixed effects; and ε_{it} are idiosyncrasies that vary across economy i and month t.

The addition of the vector of economy-specific fixed effects, $\boldsymbol{\omega_i}$, is important to account for unobserved time-invariant differences that vary across economies that do not vary through time. This considers the possibility that there may be differences among APEC economies in terms of cultural visibility, social norms, and institutions; i.e., visitor arrivals could recover more quickly in some economies because of having popular locations or efficient airports. Likewise, the addition of the vector time fixed effects, $\boldsymbol{\mu_t}$, is important to account for unobserved differences that vary through time but do not vary across economies. This considers the possibility that there may be differences through time in terms of events that occur at the global or international scale; i.e., global increase in travel confidence due to vaccine development in late 2020 as well as the global decline in travel confidence due to viral mutations in mid-2021 and early 2022. Finally, the interaction vector $\boldsymbol{\mu_t\omega_i}$ accounts for differences affecting visitor arrivals that are economy- and time-specific, such as an economy hosting an international sports event or the occurrence of natural disasters.

A critical assumption in the classical linear regression model is homoscedasticity or the assumption of constant variance. The violation of this assumption, termed heteroscedasticity, affects the variance-covariance matrix or the standard errors, and therefore, could result in less reliable inferential parametric tests. Heteroscedasticity is more common in data structures in cross-sectional and longitudinal formats such as the one used for this analysis. Accordingly, to address heteroscedasticity in our panel dataset, heteroscedasticity-robust standard errors are employed in all estimation strategies.

The regression model specified above aims to tease out the impact of COVID-19 cross-border policies on monthly arrivals (i.e., arrivals as a function of border measures); however, it is also possible that monthly arrivals could shape COVID-19 border policies or the possibility of reverse causality. For example, economies might be more willing to ease COVID-19 border measures because of an anticipated increase in visitor arrivals (i.e., border measures as a function of arrivals). Reverse causality could lead to an

overestimation of the impacts of border policies on arrivals. To address this, we use the Arellano-Bond estimation strategy and use the lag of monthly arrivals (i.e., ln($arrivals_{it-1}$)) as an instrument to control for reverse causality.

Table B.1 shows the regression results after running cross-border monthly arrivals in APEC against the COVID-19 border policies implemented from January 2020 to June 2022 in the region. Column 3 shows the results using pooled Ordinary Least Squares (OLS) with robust standard errors and controlling for economy- and time-specific idiosyncrasies. Column 2 shows the results using fixed effects panel OLS with robust panel standard errors and controlling for economy- and time-specific idiosyncrasies. Column 1 shows the results using Arellano-Bond estimation strategy to control for reverse causality as well as robust panel standard errors and idiosyncratic controls.

Table B.1. Econometric regression results

	Dependent variable: $arrivals_{it}$		
	Arellano-Bond	Panel OLS, f.e.	Pooled OLS
	(1)	(2)	(3)
ln($arrivals_{it-1}$)	0.654***		
	(0.0484)		
$vaxrecog_{it}$	-0.125	-0.163	-0.163
	(0.216)	(0.697)	(0.354)
$fullvax_{it}$	0.393***	-0.0714	-0.0714
	(0.109)	(1.490)	(0.536)
$boost_{it}$	-0.375	-0.124	-0.124
	(0.491)	(1.154)	(0.598)
$allvaxrecog_{it}$	0.373	-0.103	-0.103
	(0.569)	(0.255)	(0.545)
$advinfo_{it}$	-1.106	-0.165	-0.165
	(0.687)	(1.347)	(0.633)
$test_{it}$	-0.690**	-2.172**	-2.172***
	(0.276)	(1.021)	(0.612)
$recovcert_{it}$	0.346	0.583	0.583
	(0.311)	(0.770)	(0.674)
$quarantine_{it}$	-0.753***	-2.916**	-2.916***
	(0.215)	(1.126)	(0.668)
$otherinfo_{it}$	0.340	0.607	0.607
	(0.349)	(0.626)	(0.521)
Constant	3.224***	12.77***	14.25***
	(0.929)	(0.910)	(0.957)
Observations	513	561	561
R-squared		0.386	0.668
Number of economies	21	21	21

Notes: All regressions use robust standard errors and control for economy- and time-specific idiosyncrasies. *** = significant at p<0.01, ** = significant at p<0.05, and * = significant at p<0.1. Economy and time dummy variables are suppressed for brevity.
Source: Economy sources and APEC Policy Support Unit staff calculations.

The above results show that quarantine and testing requirements are negatively and significantly associated with visitor arrivals. This finding is consistent and robust across different estimation strategies. All three columns illustrate that both the need for COVID-19 test and the requirement of quarantine on arrival significantly restrict cross-border travel in the region.

Given the log specification of the dependent variable and the discrete nature of the dummy variables as regressors, interpretation of the estimated coefficients in Table B.1 can be complicated. Specifically, interpretation of impacts of switching from one policy mode to another (i.e., implementation vs. lifting of COVID-19 measures) is expected to be asymmetric. To analyse the results, we use the methodology prescribed by Kennedy (1981): for simplicity, suppose our linear regression model is $\ln(Y) = a + bD$ where *Y* is a continuous variable and *D* is a dummy variable with values 0 or 1. Suppose further that b^* is the post-regression estimated value of *b* and its estimated standard error is $s(b^*)$. Then, the impact on *Y* of *D* switching from 0 to 1 is given by $G_{0\to1} = 100\left[\exp\left(b^* - \frac{1}{2}s(b^*)^2\right) - 1\right]$. Conversely, the impact on *Y* of *D* switching from 1 to 0 is given by $G_{1\to0} = 100\left[\exp\left(-b^* - \frac{1}{2}s(b^*)^2\right) - 1\right]$. Values of *G*(.) are in percentage terms.

To illustrate, consider the model (1) estimated coefficient for $quarantine_{it}$, b^* = -0.753 and standard error $s(b^*)$ = 0.215 in Table B.1. The impact on visitor arrivals of imposing quarantine on all travellers (i.e., *D* switching from 0 to 1) is given by $G_{0\to1}$ = -54.0, or a contraction of 54% from the pre-quarantine level. Likewise, the impact on visitor arrivals of lifting quarantine requirements (i.e., *D* switching from 1 to 0) is given by $G_{1\to0}$ = 107.5, or an increase of 107% from the quarantine level.