

APEC Project: TPT 01 2021S

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The opinions and conclusions are the views of the authors of this report.

The analysis and recommendations in this report do not necessarily represent the views of APEC member economies.

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Glossary

Term	Meaning
A-CDM	Airport – Collaborative Decision Making
APEC	Asia-Pacific Economic Cooperation
Attack rate	The percentage of susceptible population to become cases
CAA	Civil Aviation Authority
CAPSCA	Collaborative Arrangement for the Prevention and Management of Public Health Events in Civil Aviation
CART	Council Aviation Recovery Task Force
COVID-19	A contagious disease caused by the virus SARS-CoV-2
CTK	Cargo Tonne Kilometre, unit of cargo carried
Delta	A variant of COVID-19
GDP	Gross Domestic Product
HEPA	High Efficiency Particulate Air
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
MIQ	Managed Isolation and Quarantine
PCR	Polymerase Chain Reaction. A type of COVID-19 test
PHC	Polymerase chain reaction. Public Health Corridor
Quarantine	Enforced restriction of movement to prevent the spread of contagious disease.
Risk	The combination of the probability of an event and its negative consequences
SGD	Singapore Dollar
USD	United States Dollar
WHO	World Health Organization

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In addition multiple staff of the World Health Organization (WHO) generously assisted with identification of existing WHO recommendations and guidelines and relevant literature.

Executive Summary

The COVID-19 pandemic has severely disrupted cross-border travel. It has led to economies being locked down and isolated with little travel between them. As vaccination rates have increased economies have implemented requirements and procedures that include proof of vaccination, testing requirements checking for COVID-19, quarantine and isolation, and many other methods. These requirements and procedures differ from economy to economy and as a result can hinder the safe and efficient passage of aircrew.

Aircrew play a vital role by operating flights, maintaining safety and enabling air links to remain in place. They are the 'connective tissue' of airlines, aviation systems, and air connectivity. In order to operate, aircrew and their employers face the challenge of meeting divergent requirements and procedures put in place by economies to prevent and control the spread of COVID-19. If these requirements were less varied it would allow carriers to operate more freely and more efficiently.

One of the main goals of APEC is to ensure that goods, services, investment and people move easily across borders¹, so working on increasing harmonisation in the region around flight crew regulations is a key issue for APEC.

The Project proposal that was submitted and approved by The Transportation Working Group (TPTWG) stated that:

This research project will produce a report that explores why ICAO guidelines are not being implemented across APEC and what might be possible to encourage greater harmonisation in the region. Additionally, this project looks to support and facilitate the safe and efficient transportation of air freight by adopting internationally consistent risk-based measures that minimise the transmission of COVID variants and maximise the safe transportation of air freight between economies.

As the project progressed it became clear that one single set of regulations for the APEC region would not be beneficial as economies have large differences in COVID-19 capacity (the amount of COVID-19 in the community that the health care system can manage), different approaches to COVID-19 mitigation (e.g. elimination or suppression) and different initial solutions to the rapid spread of the virus in 2020. From this it became clear that rather than recommending a harmonisation of regulations, it would be more beneficial to recommend a harmonisation of process so that each economy could tailor their regulations to themselves but still allow for a more harmonious and clear set of rules for aircrew and carriers to follow.

The World Health Organisation (WHO) recommends that the "The overall health and well-being of communities should be at the forefront of considerations when deciding on and implementing international travel-related measures"². Minimum levels of air transport won't achieve these health goals for most economies. For example, the overall health and well-being of communities depends on the rapid transport and distribution of vaccines and their precursors across international borders. In addition, millions of people across APEC economies rely on rapid transportation to distribute their products and services for their economic well-being; something that only air freight can provide. It is imperative for economies

¹ APEC, "About APEC."

² WHO, "Technical Considerations for Implementing a Risk-Based Approach to International Travel in the Context of COVID-19 Interim Guidance Annex to : Policy Considerations for Implementing."

to work together to facilitate air transport with risk-based approaches. Facilitating the movement of aircrew is vital to this.

This report recommends that economies adopt a harmonised suite of processes. The aims of the recommended processes are to be protective of public health, while maximising the ability of carriers to operate air services for the benefit of member economies and their populations. The recommendations are presented in a priority order. Those listed first should be relatively easy to implement, and are expected to produce the most immediate benefits.

Recommendation 1 – Join CAPSCA

Join CAPSCA if not already a member. Joining CAPSCA is free and provides access to the latest research. This allows economies to set risk-based controls informed by the most recent and relevant information.

Recommendation 2 – Treat Aircrew Separately

Recognise that aircrew are operating in a formal risk management framework. This is consistent with the WHO guidance on a risk-based approach. It follows that aircrew are separated from the general public in terminals to avoid cross-contamination. Separation allows the application of controls that are fit for purpose and proportionate to the risk.

Recommendation 3 – Prioritise Least Invasive Border Controls

Consistent with the WHO recommendations, apply risk analysis to routinely review border controls for aircrew. When reviewing controls, ensure that controls are the least invasive required to achieve the public health objectives.

Recommendation 4 – Improve Co-ordination Between Border Control Agencies

Public health controls at borders needed to be set up very quickly and some teething issues were to be expected. Now that health controls have become a longer-term fixture there are gains to be made for all parties from improved co-ordination between health and other border agencies at ports for efficient airport operation. Tools such as A-DCM³ can help.

Recommendation 5 – Consult with Carriers

Consult with carriers about proposed changes to controls. Carriers are often able to contribute suggestions on ways to keeping the number of COVID-19 cases presented from air crew extremely low - while enabling airlines to operate more efficiently.

Recommendation 6 - Bilateral Consulting Between Economies

Consistent with the WHO recommendations, explore bilateral, multilateral and regional agreements across economies. The aim would be to facilitate the recovery of key socioeconomic activities for which international travel plays an important role, such as tourism or the movement of a cross-border workforce.

Recommendation 7 – Adopt and Apply CART Recommendations⁴

Applying the CART recommendations to aircrew border controls will help to reduce unnecessary friction in aviation operations, while preserving public health.

Recommendation 8 – Research

³ Airport-Collaborative Decision Making.

⁴ ICAO, "Updated List of Key Principles and Recommendations."

Research the effectiveness of COVID-19 border controls for aircrew and share with other economies. Use results to inform risk-based policies. Each economy has unique factors, so robust local research is essential. A relatively small investment in research could help economies to focus their border control efforts to where they are most effective.

Recommendation 9 – Roadmap

Provide a clear roadmap to all stakeholders. For instance, “when vaccination levels hit 90% then the following controls will be lifted”. This will allow carriers to increase capacity sooner, through planning ahead.

If these recommendations are followed it is expected that greater usage of IATA, ICAO and CART guidelines will naturally occur. This is expected in turn, to result in increased harmonisation of aircrew entry requirements across APEC economies.

This report recommends a suite of measures to enable foreign-based aircrew to safely cross economic borders and keep critical air freight connections open and efficient. The measures derive from ICAO / CART recommendations and are consistent with the WHO risk-based approach to pandemic response.

This approach recognises that economies require diversified approaches for managing COVID-19, and are also at varying points of the pandemic life-cycle within their communities. The suite of measures allows economies to select from a range of aligned measures as appropriate to their COVID-19 response strategy and for their stage in the pandemic lifecycle.

In the medium term it is expected that all economies will return to more open borders. It is the pace of reopening and the path forward that is at stake. The main benefits of the recommended actions will be to reduce unnecessary friction at the aircrew / border interface, which acts as a drag on economic activity. The flow-on benefits include more carriers operating, more flights, lower air freight costs, more air freight moved, more local employment, and enhanced post-COVID-19 recovery of domestic economies.

1. Introduction

The COVID-19 pandemic has severely disrupted cross-border travel. It has led to economies being locked down and isolated with little travel between them. As vaccination rates have increased economies have implemented requirements and procedures that include proof of vaccination, testing requirements checking for COVID-19, quarantine and isolation, and many other methods. These requirements and procedures differ from economy to economy and as a result can hinder the safe and efficient passage of aircrew.

Aircrew play a vital role by operating flights, maintaining safety and enabling air links to remain in place. They are the 'connective tissue' of airlines, aviation systems, and air connectivity. In order to operate, aircrew and their employers face the challenge of meeting divergent requirements and procedures put in place by economies to prevent and control the spread of COVID-19. If these requirements were less varied it would allow carriers to operate more freely and more efficiently.

One of the main goals of APEC is to ensure that goods, services, investment and people move easily across borders⁵, so working on increasing harmonisation in the region around flight crew regulations is a key issue for APEC.

The Project proposal that was submitted and approved by The Transportation Working Group (TPTWG) stated that:

“This research project will produce a report that explores why ICAO guidelines are not being implemented across APEC and what might be possible to encourage greater harmonisation in the region. Additionally, this project looks to support and facilitate the safe and efficient transportation of air freight by adopting internationally consistent risk-based measures that minimise the transmission of COVID-19 variants and maximise the safe transportation of air freight between economies.”

This review began by contacting carriers that operate throughout APEC to get their input on how the ICAO guidelines are being implemented and see if they had any possible reasons that the ICAO guidelines are not being implemented across APEC. Multilateral organisations, including the WHO, ICAO and IATA, were also contacted to ensure that we had their latest guidance and understood the evidence behind their recommendations. Due to the short timeframe of the project, no health authorities or economy-based CAAs were contacted.

As the project progressed it became clear that one single set of regulations for the APEC region would not be beneficial as economies have large differences in COVID-19 capacity (the amount of COVID-19 in the community that the health care system can manage), different approaches to COVID-19 mitigation (e.g. elimination or suppression) and different initial solutions to the rapid spread of the virus in 2020. From this it became clear that rather than recommending a harmonisation of regulations, it would be more beneficial to recommend a harmonisation of process so that each economy could tailor their regulations to themselves but still allow for a more harmonious and clear set of rules for aircrew and carriers to follow.

⁵ APEC, “About APEC.”

2. Background: Public Health Risk Management

2.1. Risk Management

The COVID-19 pandemic can be regarded as a public health emergency at a global level. The WHO guidelines for Emergency and Disaster Risk Management are instructive on the principles of risk management⁶.

Risk is defined as “The combination of the probability of an event and its negative consequences”.

The international risk management standard ISO31000:2018, which will be familiar to many aviation organisations, recognises risk as a product of probability and consequences. It also allows that some consequences may be positive. Most importantly the ISO standard defines risk as:

The effect of uncertainty on objectives.

It follows that the best actions to control risks will depend on the objectives.

Viewed through the lens of COVID-19 responses, the appropriate risk controls for economies are likely to differ, depending on objectives. Risk controls may also change over time, as objectives evolve.

2.2. The WHO Guidance for International Travel During Pandemic

The WHO recommends that the “The overall health and well-being of communities should be at the forefront of considerations when deciding on and implementing international travel-related measures”⁷.

This is not a recommendation that all risk is to be avoided, which is in any case not possible. Rather, it requires that decision-makers weigh public health objectives and capacity, including vaccination rates, contact tracing and health system capacity and economic welfare of the population.

The WHO has produced recommendations for the implementation of a “risk-based approach to international travel”⁸. The recommendations are founded on risk assessment as the basis for good decision making.

The agency also recommends that COVID-19 risk assessments and border controls are routinely reviewed⁹. This can be because new solutions emerge, research may show some controls to be more effective than others. In addition, some controls simply may no longer be useful as the need becomes overtaken by other control measures, such as high vaccination rates in the domestic economy, or by events such as sustained community transmission.

⁶ WHO, “Health Emergency and Disaster Risk Management Framework.”

⁷ WHO, “Technical Considerations for Implementing a Risk-Based Approach to International Travel in the Context of COVID-19 Interim Guidance Annex to : Policy Considerations for Implementing.”

⁸ WHO, “Technical Considerations for Implementing a Risk-Based Approach to International Travel in the Context of COVID-19.”

⁹ WHO, “Considerations for a Implementing a Risk-Based Approach To International Travel in The Context of COVID-19.”

As of 2 July 2021, The WHO recommends that some forms of international travel are prioritised¹⁰. This includes humanitarian missions, travel for essential personnel, repatriations and cargo transport of essential supplies. A theme of the recommendations is that the overall health and well-being of communities should be at the forefront of considerations when deciding on and implementing international travel-related measures¹¹. Non-essential travel is also important for well-being. The selective or complete closure of international borders, at entry or exit, to non-essential international travel may adversely affect societies and economies – especially those population groups that are reliant on cross-border activities for a living, such as seasonal or temporary workers, and workers and students living abroad.¹²

The WHO also recommends that economies explore bilateral agreements, particularly with neighbouring economies and others of socioeconomic importance¹³. The goal is to facilitate the recovery of key socioeconomic activities such as tourism, where international travel plays an important role.

In summary, the WHO recommends:

- The overall health and well-being of communities should be at the forefront of considerations when deciding on and implementing international travel-related measures.
- Regulations should be based on thorough risk assessments.
- Regulations and procedures should be regularly reviewed.

Minimum levels of air transport won't achieve these health goals for most economies. For example, the overall health and well-being of communities depends on the rapid transport and distribution of vaccines and their precursors across international borders. In addition, millions of people across APEC economies rely on rapid transportation to distribute their products and services for their economic well-being; something that only air freight can provide. Therefore, it is imperative for economies to work together to facilitate air transport with safe risk-based approaches. Facilitating the movement of aircrew is a vital connective tissue in all of this.

2.3. Taxonomy of COVID-19 Border Controls

As of October 2021, APEC economies have widely differing requirements and procedures for COVID-19 border controls for aircrew.

This is not specific to APEC economies. Across the globe, economies have responded to COVID-19 by adopting a wider range of measures than observed in previous pandemics and have implemented them in highly varied ways¹⁴. A taxonomy of border controls that are applied to aircrew is presented in Table 2.1 below. Border controls also represent the dividing line between airside and landside operations at an airport.

¹⁰ WHO, "Technical Considerations for Implementing a Risk-Based Approach to International Travel in the Context of COVID-19."

¹¹ WHO.

¹² WHO, "Technical Considerations for Implementing a Risk-Based Approach to International Travel in the Context of COVID-19 Interim Guidance Annex to : Policy Considerations for Implementing."

¹³ For example, a Trans-Tasman Bubble allowing quarantine-free travel, operated intermittently between Australia and New Zealand in the first half of 2021.

¹⁴ Lee et al., "Managing Borders during Public Health Emergencies of International Concern: A Proposed Typology of Cross-Border Health Measures."

Table 2.1 Taxonomy of COVID-19 Border Controls by Stage of Journey¹⁵

Pre-border	At the border
<ul style="list-style-type: none"> • entry restriction • disease free or vaccination certification • testing • quarantine/isolation • entry/exit fees and surcharges 	<ul style="list-style-type: none"> • testing • quarantine/isolation • fines and penalties

2.4. Evolution of Pandemic and COVID-19 Border Controls

Restrictions on movement are a common initial response to pandemics^{16 17}. In the long-term, immunity is largely acquired at a population level. Outbreaks may continue to flare up occasionally as new variants arise or afflict cohorts of people who have not previously been exposed or vaccinated.

For COVID-19, the development of effective vaccines has enabled the process of acquiring immunity to be accelerated for those who have access to the vaccines. At the present time the uptake of vaccines is variable in some economies due to factors such as vaccine hesitancy. In some economies vaccines are not yet widely available.

Once a sufficient level of immunity against severe outcomes is acquired in the population, due to either exposure to the disease or through vaccinations, then pandemics tend to recede – for want of new hosts to infect. At this stage the rationale for border controls diminishes, and they are eventually dismantled.

So, the end state of this pandemic can be predicted with some certainty: populations will acquire immunity at a population level and the rationale for COVID-19 border controls will diminish. In the medium term it is expected that all APEC economies will no longer have such controls, at a time when each economy judges that the controls are no longer necessary.

Given that the end state can be predicted with a high level of confidence, harmonisation of COVID-19 border controls across APEC economies can be seen as a process of working towards an eventual end-state of no controls, as and when the timing suits each economy.

As economies will be at different stages in fighting the pandemic, it is not a simple matter that all economies should have the same harmonised controls. It is a finding of this report, which will be explored later, that each economy needs to select the controls that are right for the economy at that time. The appropriate controls won't necessarily be the same at any one time. This report will also explore where harmonisation between economies is good: such as applying best practice risk assessments, drawing from a suite of proven tools, sharing data, and applying processes that help economies to achieve their public health objectives while avoiding unnecessary economic pain.

¹⁵ After Lee et al.

¹⁶ Divya Ananth, Jayashree Balaraman, Veena Gonugondla, Mehwish Hussain and Kadabageri, Harnoor Kaur, Sophia Olakangil, Sofia Sepulveda Pizarro, "THE ROLE OF SOCIAL CLASSES AND CULTURE IN EFFECTIVENESS OF VARIOUS METHODS OF PLAGUE PREVENTION DURING THE BUBONIC PLAGUE."

¹⁷ Bassareo et al., "Learning from the Past in the COVID-19 Era: Rediscovery of Quarantine, Previous Pandemics, Origin of Hospitals and National Healthcare Systems, and Ethics in Medicine."

3. Guidance from International Bodies

3.1. APEC

The COVID-19 pandemic has severely disrupted cross-border travel since early 2020. As noted in the APEC Policy Support Unit's report [Passports, Tickets and Face Masks: COVID-19 and Cross-Border Mobility in the APEC Region](#):

Cross-border movement of people is essential for trade and economic activity. Apart from the obvious linkages in terms of tourism and transportation, cross-border movements of people also contribute to economic growth by enabling logistics and supply chains, investments, employment, education, and capacity building. There are strong and synergistic linkages between cross-border movement and bilateral trade and economic growth. These cross-border transportation links essential for the movement of goods and the movement of people.

In August of 2021 The Air Crew & Supply Chain Roundtable discussed and recommended several policies to help with the air crew restrictions with regard to supply chain continuity¹⁸. Included in these recommendations were the following:

- Economies should formally recognize the International Civil Aviation Organization (ICAO) Council Aviation Recovery Task Force's (CART) guidance on air crews: "In order to promote safe and sustainable international air travel, a closely coordinated international approach to the treatment of air crews, consistent with recognized public health standards, will be essential to alleviate burdens on critical transportation workers. These currently include screening, quarantine requirements, and immigration restrictions that apply to other travellers."
- APEC economies should make data-driven decision regarding crew treatment, taking into account transportation health safety protocols, data on virus transmission in aviation, and best practices for mitigation developed since the beginning of pandemic.

In order to operate, air crew and their employers face the challenge of meeting a range of diverse and divergent requirements and procedures put in place by economies to prevent/control the spread of COVID-19 (referred to by one private sector leader as a "spaghetti bowl" of requirements). Meeting these requirements and procedures over the past 20 months has proven challenging, time-consuming and, in some cases, invasive for air crew. At times, airlines have been forced to suspend services or alter networks at significant cost, specifically due to the onerous and varied crew requirements that have come from governments continually changing their response to the evolving pandemic.

COVID-19 has also been a major disruptor for marine shipping. Exporters and importers are increasingly turning to air freight to replace the lost maritime cargo capacity, thus placing further pressure on air connectivity. In addition to this, the reduction of passenger services, availability of belly cargo (cargo that is transported with a passenger aircraft) has also added to the strain of aviation supply chains. Any way in which APEC economies could harmonise or mutually recognise any requirements or procedures would have economic benefits for exporters, importers and airlines and would provide predictability for air crew, facilitating their

¹⁸ Goel, "Impacts of Air Crew Restrictions on Supply Chain Continuity."

ability to carry out their jobs not to mention maintain and increase the number of jobs within the sector.

The maintenance of supply chains for essential goods and services and the safe resumption of cross-border travel has been a constant focus of APEC since the start of the COVID-19 pandemic. The 2020 Annual Ministerial Meeting Statement¹⁹ and the 2020 Sectorial Ministerial Meeting Statement²⁰ both refer to the commitment to share and explore ways to facilitate essential movement of people across borders, without undermining the efforts to prevent the spread of the virus. The 2021 Ministers Responsible for Trade Statement directed officials to discuss how APEC can better support aircrews, facilitate business mobility across the region, and advance discussions on digital solutions to facilitate safe travel in the region.

3.2. IATA

IATA is the trade association for the world’s airlines, representing 290 airlines or 82% of total air traffic²¹. The IATA mission is to represent, lead, and serve the airline industry. It is clear that the COVID-19 pandemic is of great importance to IATA members and border restrictions to flight crew are a topic that they have researched and commented on.

An IATA press release on 4 October 2021 *Re-open Borders with Simplified Risk Management* called for an end to inconsistent COVID-19 travel restrictions that are stalling the recovery of air transport²². The IATA’s Director General, Willie Walsh stated in this press release that “Travel restrictions are a complex and confusing web of rules with very little consistency among them. And there is little evidence to support ongoing border restrictions and the economic havoc they create”. These travel restrictions were implemented to reduce the spread of COVID-19 and were implemented very quickly without the time for air crew consideration as the health departments that created them had a clear priority to save lives and suppress or eliminate the virus in their community. The press release offered a framework for the re-opening of borders focussing mainly on vaccination and testing.

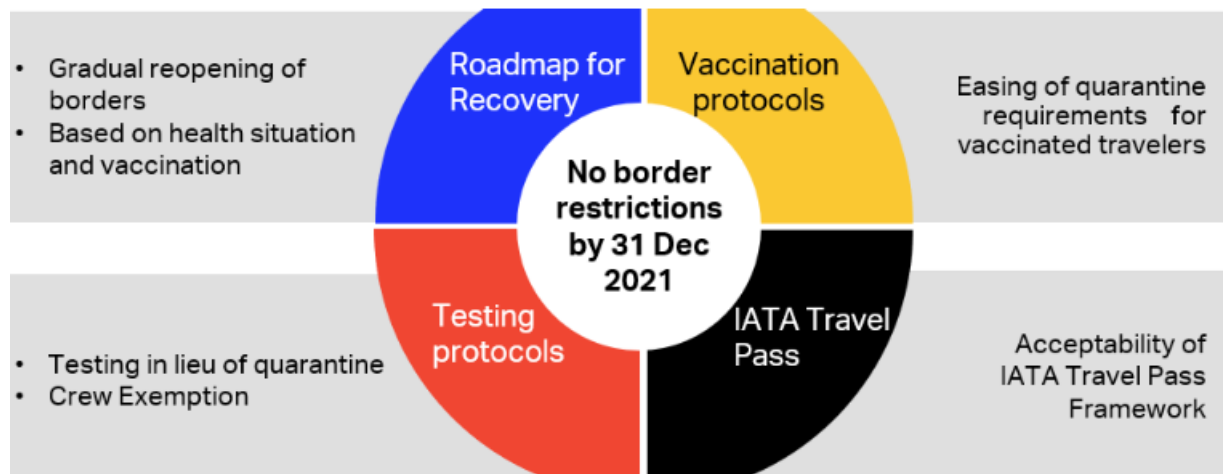


Figure 3.1 IATA areas of engagement ²³

¹⁹ APEC, “Ministers Responsible for Trade Virtual Meeting Joint Statement 2020.”

²⁰ APEC.

²¹ IATA, “IATA: About Us.”

²² IATA, “Re-Open Borders with Simplified Risk Management.”

²³ IATA, “IATA - Impacts of Air Crew Restrictions on Supply Chain Continuity.”

In August 2021, at the APEC Air Crew & Supply Chain Continuity Roundtable, IATA presented the framework shown in Figure 3.1. The IATA travel pass, which is a method of vaccination certification²⁴, is a key component of this plan.

3.3. ICAO

ICAO has released a handbook *ICAO Handbook for CAAs on the Management of Aviation Safety Risks related to COVID-19*. The Handbook is intended to support civil aviation authorities (CAAs) with the management of aviation safety risks, which fall under their responsibility, during the coronavirus disease (COVID-19) pandemic²⁵. ICAO recommends that economies should coordinate between aviation and public health authorities and establish facilitation committees comprising all relevant groups, taking into account that cross-sector collaboration is essential. The Handbook also suggests a decision-making process for what requirements and procedures to implement.



Figure 3.2 PDCA cycle for managing aviation safety risks during COVID-19 Source: ²⁶

²⁴ IATA, "IATA Travel Pass Initiative."

²⁵ ICAO, "ICAO Handbook for CAAs on The Management of Aviation Safety Risks Related to COVID-19."

²⁶ ICAO.

The Handbook recognises that different economies are often at different stages of the virus outbreak and may be pursuing different strategies to mitigation transmission. Therefore, it is vital to have regulations that reflect the stage of the outbreak and the COVID-19 strategy in each economy.

ICAO also encourages economies to become members of the Collaborative Arrangement for the Prevention and Management of Public Health Events in Civil Aviation (CAPSCA). CAPSCA is managed by ICAO with their goal to bring economies together. Combining efforts will improve preparedness, planning and response to public health events that affect the aviation sector. Most APEC economies are members of CAPSCA²⁷.

CAPSCA recommends to apply the relevant rules in *Annex 9 to the Convention on International Civil Aviation: Facilitation*, which has guidelines on the disinfection of aircraft, international certificates of vaccination or prophylaxis and Facilities required for implementation of public health and emergency medical relief²⁸.

ICAO does not recommend a particular set of border controls. This is for each economy to determine. The ICAO recommendations focus on the process of creating requirements and procedures rather than the requirements and procedures themselves.

ICAO offers guidance around regulations and procedures through the Council Aviation Recovery Taskforce (CART). CART is a taskforce of ICAO that is “aimed at providing practical, aligned guidance to governments and industry operators in order to restart the international air transport sector and recover from the impacts of COVID-19 on a coordinated global basis”²⁹. The taskforce has released a document containing 10 key principles and 20 recommendations to assist with the restart and recovery of the global aviation sector³⁰. Several recommendations have a direct impact on flight crew, such as recommendation 12 which is paraphrased below.

... In addition, States are encouraged to facilitate cross-border access to medical and training facilities, including flight simulation training devices used for flight crew (national and foreign) and Air Traffic Controllers (ATCOs) to maintain their certifications, recency of experience, and proficiency.

3.4. Implementation of ICAO and IATA Guidelines

Implementation of the ICAO guidelines varies widely between economies, and in some cases between jurisdictions in the same economy. Some inconsistency is to be expected. The ICAO guidelines recognise that it is vital to have regulations that reflect the stage of the outbreak for that economy and each economy may have different objectives.

“There is a lack of coordination and consistent COVID-19 policy, regulations and restrictions between all of these destinations. Such inconsistencies create a highly complex operating environment that makes it hard for airlines and customers to navigate with confidence.”

Carrier

²⁷ CAPSCA, Four APEC economies are not members of CAPSCA as of September, 2021 (“CAPSCA Member States (30 September 2021).”

²⁸ ICAO, *Annex 9 to Convention on International Civil Aviation: Facilitation*.

²⁹ ICAO, “CART Homepage.”

³⁰ ICAO, “Updated List of Key Principles and Recommendations.”

Carriers report that they see little evidence that the ICAO, CART, or IATA guidelines are being referred to in the design of border controls. That was to be expected at the beginning of the outbreak as the pandemic spread very quickly and health regulators were called on to immediately stand-up border controls to protect domestic populations. There were large gaps in basic knowledge of the virus at that time for critical matters, such as the main transmission pathways. As a result, simple and safe controls were implemented, irrespective of their effect on efficient travel.

In general health regulators in APEC economies focus more on policy and have less operational experience, so may initially have been less familiar with the operational constraints for international carriers. In the initial phase of response however, fewer people crossing the border was an objective of the controls, not a by-product, as it reduces risk. Strict controls and limited border crossing remain for some APEC economies which are continuing to pursue a COVID-19 elimination strategy.

The pandemic is now into its second year. Aviation-related bodies such as ICAO and IATA have reviewed the available evidence and have made a series of recommendations. However, starting from a set of controls already in place, health regulators have been slow in adopting the work of these aviation bodies. This may be partly due to provenance: each discipline looks to its own sources of reliable information. For these reasons, wherever possible, this report draws on information directly from public health authorities, such as the WHO, and frames the discussion in public health terms.

4. Levels of Risk

Research literature on the effectiveness of border controls on inward transmission of COVID-19 is relatively sparse. Existing literature is almost entirely focussed on passengers, not aircrew³¹. While it has been an objective of this paper to bring the most recent and authoritative research to bear on these important questions, there are large gaps in the knowledge base. With such a knowledge vacuum it is unsurprising that economies take diverging views on the best form of controls.

4.1. Transmission During Travel

Most of the studies of inflight transmission of COVID-19 have focussed on passengers and cabin crew.

A review of 19 studies of inflight transmission, published in August 2021, reported attack rates (the percentage of susceptible population to become cases³²) have ranged from 0% to 7%³³³⁴. However, the studies do note that this is for specific routes that have resulted in a spread of COVID-19 and the highest attack rates occurred in March 2020, prior to current levels of awareness and in-flight infection control, such as mask mandates. There was evidence of transmission from passengers to crew members in two articles, one in business class, the other being mostly contained to business class with 12 of the 14 passengers being in business class. The review found limited evidence of SARS-CoV-2 transmission from passengers to crew members on aircraft, outside of business class with the exception of the second case mentioned above³⁵.

Another similar review, published in October 2021³⁶, assessed 20 studies, with some overlaps with the above review. Collectively the studies in this review identified 273 index cases amongst 19,729 passengers and 180 crew members on 130 flights. 64 secondary cases were identified, of which 5 were crew members. The review concluded that transmission of SARS-CoV-2 can occur in aircraft, but is a relatively rare event.

Flights with non-zero attack rates are the most likely to be reported in the literature. When taking into account the 1.2 billion passengers and the 44 cases confirmed or possible in 2020, IATA estimates there is a one in 27 million chance of any one traveller catching the virus from any one flight³⁷. IATA comments that a possible reason for this low transmission rate is the High Efficiency Particulate Air (HEPA) filters which remove at least 99.97% of virus and bacteria³⁸ and are found on most commercial aircraft.

No infections of aircrew, other than cabin crew, were reported in the August 2021 review. The Delta variant of the virus, which arose in December 2020 is known to be more transmissible.

³¹ For example refer Russell et al., "Effect of Internationally Imported Cases on Internal Spread of COVID-19: A Mathematical Modelling Study"; Pan et al., "Risk Assessment and Evaluation of China's Policy to Prevent COVID-19 Cases Imported by Plane"; Steyn et al., "Managing the Risk of a COVID-19 Outbreak from Border Arrivals."

³² Murphy et al., "A Large National Outbreak of COVID-19 Linked to Air Travel, Ireland, Summer 2020."

³³ Kelly, Bambury, and Boland, "In-Flight Transmission of Wild-Type SARS-CoV-2 and the Outbreak Potential of Imported Clusters of COVID-19: A Review of Published Evidence."

³⁴ CDC, "In-Flight Transmission of SARS-CoV-2."

³⁵ Nguyen Cong Khanh, Pham Quang Thai¹, Ha-Linh Quach, Ngoc-Anh Hoang Thi, Phung Cong Dinh, Tran Nhu Duong, Le Thi Quynh Mai, Ngu Duy Nghia, Tran Anh Tu, La Ngoc Quang, Tran Dai Quang, Trong-Tai NguyenComments to Author , Florian Vogt, "Transmission of SARS-CoV 2 During Long-Haul Flight."

³⁶ Rosca et al., "Transmission of SARS-CoV-2 Associated with Aircraft Travel: A Systematic Review."

³⁷ Airlines.IATA, "Extremely Low Risk of Viral Transmission Inflight."

³⁸ Airlines.IATA.

Data from government managed quarantine facilities in one APEC economy, obtained for this review, shows 2 positive cases of COVID-19 identified in 22,000 aircrew (rate of 1 in 11,000)³⁹.

4.2. Onward Transmission by Aircrew

Carriers and aircrew operate in a highly regulated environment with strict controls on all aviation safety aspects of their business operations. Carriers have a need to keep their aircrew safe and have strong incentives to comply with any mandated health protection practices.

Every government operates differently, which is why there is a lack of coordination and consistent COVID-19 policy, regulations and restrictions between [economies], territories and even destinations within the same [economies]. Such inconsistencies create a highly complex operating environment that makes it hard for airlines and customers to navigate with confidence.

Carrier

The only reported case of transmission by foreign-based aircrew to domestic population was in Chinese Taipei where a pilot was responsible for spreading COVID-19 to a contact, who then spread it to the domestic population⁴⁰. While this outbreak only resulted in a cluster of four people, it was still a major news story in Chinese Taipei and was met with outrage⁴¹. In this case the pilot, while foreign, was employed by a carrier domiciled in the economy, and was operating under the border controls applying to local staff.

This report concludes that transmission by foreign-based aircrew to a domestic population is rare and is not a leading cause of COVID-19 cross-border transmission.

4.3. Effectiveness of Border Controls

The technical report supporting the July 2021 the WHO policy guidance on COVID-19 border controls⁴² draws on a September 2020 review of 36 unique research studies⁴³. The studies examined controls for COVID-19, severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS).

The review authors concluded that there is a lack of 'real-life' evidence for many of these measures. The certainty of the evidence for most travel-related control measures is very low and the true effects may be substantially different from those reported. Nevertheless, some travel-related control measures during the COVID-19 pandemic may have a positive impact on infectious disease outcomes.

Broadly, travel restrictions may limit the spread of disease across borders. Entry and exit symptom screening measures on their own are not likely to be effective in detecting a meaningful proportion of cases to prevent seeding new cases within the protected region; combined with subsequent quarantine, observation and PCR testing, the effectiveness is likely to improve.

There was insufficient evidence to draw firm conclusions about the effectiveness of travel-related quarantine on its own. Some of the included studies suggest that effects are likely to

³⁹ Period of record October 2020 to September 2021 inclusive.

⁴⁰ BBC, "Airline Fires Pilot Blamed for Taiwan's First Covid Case in Months."

⁴¹ Smith, "People Think Pilots Are Murderers Because We Brought Back the Virus': Taiwan's Covid Scapegoats."

⁴² WHO, "Technical Considerations for Implementing a Risk-Based Approach to International Travel in the Context of COVID-19 Interim Guidance."

⁴³ Burns J, Movsisyan A, Stratil JM, Coenen M, Emmert-Fees KMF, Ge"ert K, Ho"mann S and O, Laxy M, Pfadenhauer LM, von Philipsborn P, Sell K, Voss S, "Travel-Related Control Measures to Contain the COVID-19 Pandemic: A Rapid Review (Review)."

depend on factors such as the stage of the epidemic, the interconnectedness of economies, local measures undertaken to contain community transmission, and the extent of implementation and adherence.

5. Impacts of Current Border Controls

5.1. Current border requirements for aircrew

Some economies provide for less stringent border controls for aircrew who are domiciled locally. Table 5.1 illustrates the differing requirements of APEC economies for foreign-based air crew across five of the more common forms of border control. This table is based on the IATA webpage as the primary source and carriers and the Asia-pacific branch of IATA as secondary sources.

Table 5.1: COVID-19 border restrictions for foreign-based air-crew by economy⁴⁴

	Economy	Pre-departure PCR COVID-19 test	COVID-19 test on arrival	Quarantine or isolation	Vaccination	Restricted Entry	
More Enabling	Mexico	No	No	No	No	No	
	Brunei Darussalam	No	No	No	No	Yes	
	The Republic of the Philippines	No	No	No	No	Yes	
	United States	Yes	No	No	No	Yes	
	Peru	Yes	No	No	No	Yes	
	The Russian Federation	Yes	No	No	No	Yes	
	Chile ⁴⁵	Yes	No	Yes	No	No	
	Japan ⁴⁶	Varies	No	Varies	No	Yes	
	Republic of Korea ⁴⁷	Varies	No	Varies	No	Yes	
	Canada	Yes	Yes	No	Yes	No	
	Thailand	Yes ⁴⁸	No	Yes	No	Yes	
	Singapore	Yes	No	Varies ⁴⁹	Yes	Yes	
	New Zealand	Yes	No	Yes	Yes ⁵⁰	Yes	
	Indonesia	Yes	No	Yes	Yes	Yes	
	Malaysia ⁵¹	Varies	Varies	Yes	No	Yes	
	Viet Nam	Yes	Yes	Yes	Yes	No	Yes
	Australia	Yes	Yes	Yes	Yes	No	Yes
	Chinese Taipei	Yes	Yes	Yes	Yes	No	Yes
People's Republic of China	Yes	Yes	Yes	Yes	No	Yes	
More Restrictive	Hong Kong, China	Yes	Yes	Yes	No	Yes	
	Papua New Guinea ⁵²	Yes	Varies	Yes	Varies	Yes	

Some aircrew cannot operate to certain economies having previously operated to an economy deemed high-risk, while other economies require all crew to be vaccinated, or complete a

⁴⁴ Valid as of mid-October 2021. Primary data source: IATA, "Destination Tracker."

⁴⁵ Until 31 Oct different restrictions apply

⁴⁶ In some cases IATA and carriers report differing quarantine and pre-departure COVID-19 test requirements

⁴⁷ Required to avoid going out if not essential, IATA and carriers have differing information on pre-departure COVID-19 test requirements

⁴⁸ Only required if layover longer than 48 hours

⁴⁹ Stay-Home Notice given to aircrew for 14 days or until departure

⁵⁰ From 01 Nov 2021

⁵¹ IATA and carriers report differing information on pre-departure and on arrival COVID-19 test requirements

⁵² IATA and carriers report differing information on arrival COVID-19 test and vaccination requirements

negative PCR test prior to departure and on arrival. The differing treatment of crew between destinations adds to complexity and is difficult for carriers to manage operationally.

When creating Table 5.1, IATA destination tracker was used as the primary source. The summary was then sent to several carriers for confirmation. For two economies the carrier's understandings of the applicable controls were inconsistent. This appears to be an example of the industry struggling to keep up to date with changing border controls when carriers operate between many economies.

5.2. Impacts of Border Controls on Carriers

The impact of controls on carriers depends not just on the nature of a control, but almost as importantly, how it is administered.

Carriers advise that:

- Controls such as requiring that all aircrews are vaccinated have become routine during the pandemic.
- Restrictions on aircrew entry based on destinations in the prior 14 days are more difficult for carriers to manage as they complicate crew rostering. This requires more staff to be carried and increases costs.
- Many economies require a negative test result taken by air crews 72 hours prior to departure and these are logistically challenging for in-flight aircrew already flying in other jurisdictions, and rostering challenges are presented.
- COVID-19 tests on arrival are problematic, not just for the potential for long delays for tired aircrews on arrival, but in the manner that such tests such as PCR are administered at some ports.
- The combination of PCR tests and enforced quarantine in designated facilities creates additional difficulties for some carriers as a significant proportion of aircrew are refusing to fly to some destinations.

The differing treatment of crew between destinations is difficult to manage operationally and that this leads to some crew cannot operate to certain economies having previously operated to an economy deemed high-risk.
Carrier

A sentiment analysis was performed on the responses from carriers⁵³. The comments were categorised as either a positive comment, meaning the carrier accepted the control as being proportionate and necessary, or negative, meaning the carrier had difficulty operating with the control. The results are summarised in Table 5.2.

⁵³ Sentiment analysis is the process of turning general comments and opinions into quantifiable data which can then be analysed. Refer Medhat, Hassan, and Korashy, "Sentiment Analysis Algorithms and Applications: A Survey."

Table 5.2 Carrier Comments on COVID-19 Border Controls

Sentiment	Vaccination	Self-Isolation	Pre-Departure PCR Test	PCR Test on Arrival	Entry Restrictions	Quarantine
Positive	10	2	1	1	2	2
Negative	2	1	3	4	9	20
Proportion Positive	83%	67%	25%	20%	18%	9%

The above table illustrates that some controls are more difficult for carriers than others. In general, the less invasive the control then the more accepted it is. This information could be considered by border control agencies who are seeking to maximise economic efficiency while being protective of the health of their domestic population.

Carriers report that another impact has been additional delays due to the health authorities being unfamiliar with airport operations. There may be opportunities to better integrate health authorities into a more integrated models of decision making, such as the Airport – Collaborative Decision Making process (A-CDM)⁵⁴.

Carriers are actively reconfiguring their networks to avoid crew stopovers at the most restrictive borders. Almost all carriers can cite examples where the most restrictive ports are increasingly serviced by short-haul flights from neighbouring economies.

Carriers advise that this reconfiguring of the supply chain is being undertaken as it:

- Is easier to manage.
- Is better for the mental health and welfare of aircrew.
- Eliminates risks arising from having personnel crossing restrictive borders issues.

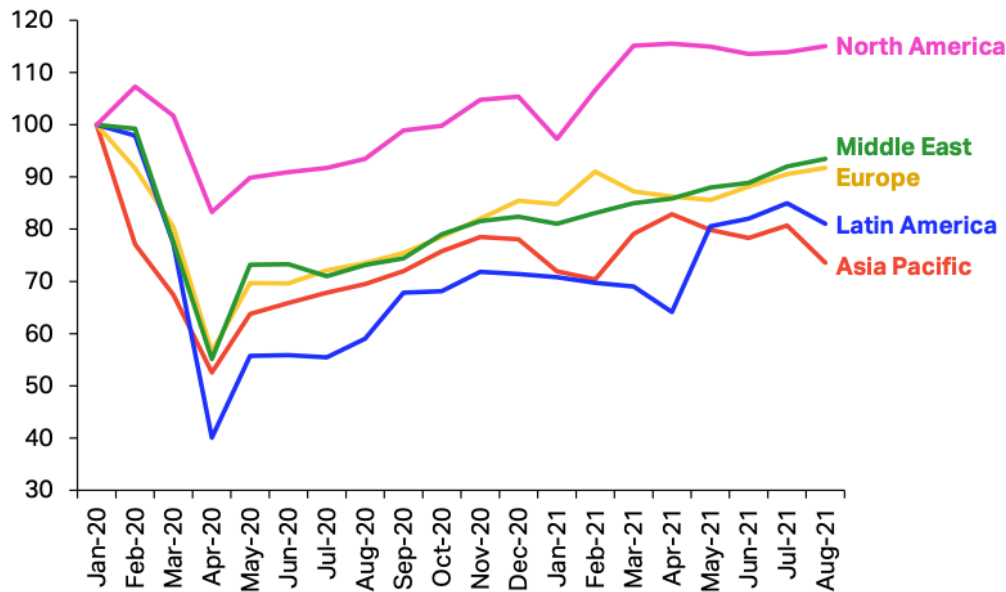
These factors combine to make flying to some destinations more difficult, which adds costs and delays to international air transportation. In some cases, domestic carriers are able to operate from restrictive ports more freely and can fill the vacuum left by foreign carriers that are forced to adopt a less efficient and more costly network configuration.

Such changes are ultimately reflected in freight costs, either directly through higher charges for air cargo, or indirectly through the effects of reduced competition.

5.3. Impact on Air Cargo

While COVID-19 had a major impact on air transportation around the globe, recovery of air cargo volumes in the Asia-Pacific region has lagged other regions (Figure 5.1). A major reason is that the recovery in passenger transportation in the APEC region has also been low.

⁵⁴ IATA, "AIRPORT – COLLABORATIVE DECISION MAKING (A-CDM)."



Source: IATA Monthly Statistics

Figure 5.1 Seasonally Adjusted Air Cargo Tonne Kilometres⁵⁵

Around half of air cargo is traditionally transported in the bellies of wide-body jets⁵⁶, being surplus space from carrying passengers and baggage. When passenger revenues are sufficient to pay for the service the extra space for cargo can be regarded as essentially “free”⁵⁷. This has helped to lower air cargo prices over the years.

For example, in normal times Singapore Airlines operates nonstop flights to most APEC economies and to many economies beyond. The 2021 Annual Report of Singapore Airlines reported that Singapore Airlines has reduced the number of destinations from 135 down to 67 (50% reduction). Much of the world’s freight is moved in the holds of passenger aircraft⁵⁸. It follows that exporters in 68 cities, many within APEC, will have fewer opportunities to get their goods and services to market.

Cargo pricing has also changed. Both governments and carriers have innovated to increase freight capacity. Some governments have supported on-going freight services through direct funding. However, transportation systems that are optimised for the movement of freight and passengers together, will necessarily be less efficient when the same systems are used to move only freight. Accordingly, costs to carriers are increased.

Cost increases are reflected in increases in freight charges. This is illustrated by two examples from the public record:

- Public reporting to shareholders by Cathay Pacific discloses a 130% increase in revenue per cargo tonne-kilometre (CTK) between 2019 and 2021⁵⁹.
- Singapore Airlines has seen an increase of revenues from 16.4 cents (SGD) to 32.3 cents (SGD) per CTK – an increase of 97%⁶⁰.

⁵⁵ Jan 2020 = 100

⁵⁶ Flexport, “A Perfect Storm: How the Impact of COVID-19 Has Driven Airfreight to Historic Levels.”

⁵⁷ Eaton, “The Crazy Economics of Air Freight.”

⁵⁸ Aircargo News, “No Bellyache for Freighters, the Backbone of Air Cargo.”

⁵⁹ The Cathay Pacific and Limited, “Interim Report 2019.” reported 1.19 HK\$ as average cargo revenue per tonne kilometre. The Cathay Pacific and Limited, “INTERIM REPORT 2021.” reported 2.74 HK\$, being a 130% increase.

⁶⁰ Singapore Airlines, “Annual Report FY2020/2021.”

Carriers are looking to resume passenger services as the pandemic passes. This takes planning and time as there are many facets to coordinate (Box 1).

Box 1 Restoring air services

Most carriers are trying to keep as many aircrew engaged as is possible, so that they can more quickly ramp up services, when the pandemic passes. However, there is only so much that can be achieved. Services have been curtailed, aircraft have been put into storage in desert locations, and some aircrew and many ground staff have been furloughed or have retired.

Aircrew are a particular challenge as their qualifications expire and they need special training to regain currency. A component of training is usually in simulators, but the simulators may be located in another APEC economy. Lack of access for foreign-based aircrew to simulators is detrimental to both carriers and the simulator host economy, which loses out on the economic benefits associated with training foreign-based aircrew.

Restoring services needs careful planning; aircraft need to be serviced and retrieved from storage, brought up to operational conditions, pilots need retraining, ground staff have to be recruited and trained and the services have to be sold. This all takes months to arrange.

The structure of the freight market will change somewhat when passenger services fully resume, as many carriers have taken the opportunity to retire older wide-body aircraft in lieu of more fuel-efficient, narrow-body models. Narrow body aircraft have a smaller underbelly hold capacity, so there is correspondingly less surplus space for cargo.

A risk for APEC economies is that aircraft restored to service and new aircraft will be allocated to routes outside of the APEC region, where the combination of cargo and passenger revenue is more attractive.

5.4. Economic Effects

Air cargo is an important enabler of economic activity. Globally airlines transport over 52 million metric tons of goods a year, representing more than 35% of global trade by value but less than 1% of world trade by volume.⁶¹ Air cargo is very important economically in the APEC region (Box 2).

Box 2 Economic state before COVID-19

In 2020 the Air Transport Action Group, an industry organisation, reported on the contribution of aviation to APEC economies under pre-Covid-19 conditions⁶². The region carried 2.7 billion passengers (59% of global air traffic), through 473 airlines servicing 1,924 airports with 19,805 aircraft. Aviation is an enabler of economic activity:

Supporting USD \$2.2 trillion in economic activity (4.3% of economic activity).

Contributing USD \$ 615 billion directly to the GDP of member economies.

Supporting 40.1 million jobs (2.7% of all employment).

Directly employing 2.4 million people.

Reconfiguring of supply chains in response to restrictive border controls, has the effect of transferring economic activity such as expenditures on accommodation, to ports in

⁶¹ IATA, "Cargo."

⁶² Air Transport Action Group, "Aviation Benefits Beyond Borders."

neighbouring economies. Where neighbouring economies are both APEC members there is less direct net loss of economic activity across the region.

COVID-19 border controls for aircrew that are unnecessarily onerous, or which change without warning, are more difficult and more costly for carriers to comply with. This is likely to result in fewer flights and higher freight costs to and from some destinations. This all imposes drag on the economy, holding back some of domestic economic activity that would otherwise have occurred.

6. Discussion

Public health controls should be evidence-led. The WHO recommends the following considerations when designing the COVID-19 border controls:

Table 6.1 Matters to Consider when Establishing and Managing COVID-19 Border Controls⁶³

Based on thorough risk assessments conducted systematically and routinely
The overall health and well-being of communities should be at the forefront of considerations
Prioritized for essential purposes.
Explore bilateral, multilateral and regional agreement

The optimal suite of COVID-19 border controls for each economy will depend on factors such as:

- The current COVID-19 control public health objectives (e.g., elimination versus suppression).
- Levels of stress on domestic healthcare systems.
- Levels of vaccination of domestic population, including vulnerable groups.
- Prevalence of COVID-19 community transmission in the domestic population.
- Economic reliance on travel (e.g. cargo, tourism).

Each of these factors will differ between economies and will change as the pandemic progresses. It follows that no single set of harmonised border controls can be suitable for all APEC economies at any point in time.

In some jurisdictions, governments and their key border control agencies have engaged in meaningful and collaborative dialogue on the development of plans to safely re-open borders. Such discussions are welcome.

Ultimately, how and when borders are opened is a matter for government. Our role is to provide information and advice that supports well-informed decision making that results in health requirements being upheld and a framework being implemented that is operationally viable, can be scaled up easily and is sustainable.

Carrier

An issue uncovered by this report is that there is little or no research on the levels of inward transmission from aircrew into domestic populations. This has resulted in aircrew being treated in a similar or same manner to members of the travelling public. Such programmes often take no account of the regular testing regimes that aircrew are already subject to, discount the training of aircrew, and treat all aircrew alike, even when their risk profiles are dissimilar.

Repeated, invasive testing and being accommodated in quarantine facilities takes a toll on aircrew and is not sustainable over the medium to long term. Carriers are already configuring their operations to avoid crossing borders where controls are the most intrusive.

⁶³ WHO, "Technical Considerations for Implementing a Risk-Based Approach to International Travel in the Context of COVID-19."

The evidence to date is that the likelihood of onward transmission from foreign-based aircrew has been very low. However, stringent controls have been in place in many economies, and the Delta variant of COVID-19 is known to be much more transmissible. This lends support to retaining some controls where economies are still actively pursuing an elimination strategy. Research and new technologies could help such economies to optimise their border controls.

Other economies are notionally pursuing an elimination strategy, but the levels of community transmission are such that the disease is now endemic in the population. Maintaining strict border controls in such an environment reduces air cargo availability and increases costs to exporters of high value goods. Given that COVID-19 will be already impacting the economy, reducing unnecessary friction elsewhere, including at the border, should be a priority. Having less friction at the border also requires other economic instruments do less work, reducing economic distortions. These considerations do of course have to be balanced with the risk of introducing new chains of transmission and the ability of the health system to cope.

As recommended by the WHO, risk management needs to be a foundation for decision making. If community transmission is prevalent in the domestic economy, then inward transmission from travellers may not be the principal threat and could be managed with a less invasive set of controls. For example, if aircrew are already vaccinated, pre-departure testing may only be relevant for economies pursuing eliminate strategies.

This study has also uncovered opportunities. For instance, carriers advise that when they are consulted in advance on changes to border controls they are able to help regulators to design controls that are both more effective and easier to implement. These have often been taken onboard by officials, and helped to maintain critical air freight links while keeping the number of COVID-19 cases presented from air crew extremely low.

There are a number of limitations to this study. Firstly, the timeframe was relatively short. This constrained the number of carriers that were able to be contacted and respond within the data collection period. Secondly little reliable research was found in relation to onward transmission by aircrew. The lack of research prevented this study from making definitive conclusions on the efficacy of particular types of border control. Thirdly, no border controls agencies were directly contacted in the course of this study, again due to time constraints. This hampered this study's ability to understand why ICAO guidelines are seldom cited in communications with carriers. Fourthly, communication with public health officials was limited to those of the World Health Organisation, so economy-level considerations may not be fully understood. Fifthly the lack of citation of ICAO guidelines to carriers has been interpreted as an absence of application. This assumption is untested and may not be valid in all instances.

Some of these limitations also point towards opportunities, where improved sharing of knowledge development, and co-operation can lead to border controls that can both meet public health objectives and allow air cargo operate more freely.

7. Recommendations

It is a finding of this review that harmonisation of controls is neither feasible, nor desirable. However, there are opportunities for improvement through the harmonisation of processes and through greater collaboration.

Accordingly, this report recommends a suite of aligned processes that economies can select from a range as appropriate to their COVID-19 response strategy and for their stage in the pandemic lifecycle.

The aims of the recommended processes are to be protective of public health, in accordance with the WHO risk-based guidelines, while maximising the ability of carriers to operate air services for the benefit of member economies and their populations.

In addition to meeting public health objectives, the recommended processes for the design and implementation of COVID-19 border controls are presented below. The recommendations are presented in a priority order. Those listed first should be relatively easy to implement, and are expected to produce the most immediate benefits.

Recommendation 1 – Join CAPSCA

Join CAPSCA if not already a member. Joining CAPSCA is free and provides access to the latest research. This allows economies to set risk-based controls informed by the most recent and relevant information.

Recommendation 2 - Treat Aircrew Separately

Recognise that aircrew are operating in a formal risk management framework. This is consistent with the WHO guidance on a risk-based approach. It follows that aircrew are separated from the general public in terminals to avoid cross-contamination. Separation allows the application of controls that are fit for purpose and proportionate to the risk.

Recommendation 3 – Prioritise Least Invasive Border Controls

Consistent with the WHO recommendations, apply risk analysis to routinely review border controls for aircrew. When reviewing controls, ensure that controls are the least invasive required to achieve the public health objectives.

Recommendation 4 – Improve Co-ordination Between Border Control Agencies

Public health controls at borders needed to be set up very quickly and some teething issues were to be expected. Now that health controls have become a longer-term fixture there are gains to be made for all parties from improved co-ordination between health and other border agencies at ports for efficient airport operation. Tools such as A-DCM⁶⁴ can help.

Recommendation 5 – Consult with Carriers

Consult with carriers about proposed changes to controls. Carriers are often able to contribute suggestions on ways to keeping the number of COVID-19 cases presented from air crew extremely low - while enabling airlines to operate more efficiently.

⁶⁴ Airport-Collaborative Decision Making.

Recommendation 6 - Bilateral Consulting Between Economies

Consistent with the WHO recommendations, explore bilateral, multilateral and regional agreements across economies. The aim would be to facilitate the recovery of key socioeconomic activities for which international travel plays an important role, such as tourism or the movement of a cross-border workforce.

Recommendation 7 – Adopt and Apply CART Recommendations⁶⁵

Applying the CART recommendations to aircrew border controls will help to reduce unnecessary friction in aviation operations, while preserving public health.

Recommendation 8 – Research

Research the effectiveness of COVID-19 border controls for aircrew and share with other economies. Use results to inform risk-based policies. Each economy has unique factors, so robust local research is essential. A relatively small investment in research could help economies to focus their border control efforts to where they are most effective.

Recommendation 9 – Roadmap

Provide a clear roadmap to all stakeholders. For instance, “when vaccination levels hit 90 % then the following controls will be lifted”. This will allow carriers to increase capacity sooner, through planning ahead.

The main benefits of these recommendations will be to reduce unnecessary friction at the aircrew / border interface. While some effects are inevitable with the additional health controls necessary to protect populations, unnecessary friction acts as a drag on economic activity.

If these recommendations are followed it is expected that greater usage of IATA, ICAO and CART guidelines will naturally occur. This is expected in turn, to result in increased harmonisation of aircrew entry requirements across APEC economies.

The flow-on benefits include more carriers operating, more flights, lower air freight costs, more air freight moved, more local employment, and enhanced post- COVID-19 recovery of domestic economies.

⁶⁵ ICAO, “Updated List of Key Principles and Recommendations.”

8. Conclusions

Given a divergence of COVID-19 management objectives between economies and health system capacities, a divergence in border controls is appropriate and is expected to remain for some time.

Eventually it is expected that the pandemic will pass and all economies will eventually return to more open borders. It is the pace of reopening and the path forward that is at stake.

While harmonisation of controls is neither feasible, nor desirable, there are opportunities for collective improvement through the harmonisation of processes.

This report recommends a suite of measures to enable foreign-based aircrew to safely cross economy borders and keep critical air freight connections open and efficient. The measures all derive from ICAO / CART recommendations and are consistent with the WHO risk-based approach to pandemic response. The recommendations are based on effective and efficient processes observed by airlines operating in the economies today.

This approach recognises that economies have diversified approaches for managing Covid-19, and are also at varying points of the pandemic life-cycle of in their communities. The suite of measures allows economies to select from a range of aligned measures as appropriate to their COVID-19 response strategy and for their stage in the pandemic lifecycle.

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