Future Scenarios for Global Mobility in the Shadow of Pandemic

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Executive Summary

The COVID-19 pandemic has transformed international mobility, decimating tourism and business travel; cutting the lion's share of seasonal and temporary labor migration; placing refugee resettlement on hold; and halting or holding up visa processing across all streams, from international students to family unification. More than 18 months on from the first round of travel bans in January 2020, it is clear that restarting mobility is not a linear process. The development of several effective vaccines has not offered the silver bullet many hoped, especially against the backdrop of a highly uneven global vaccine rollout and questions about whether the vaccines will have the same level of efficacy against newer, more virulent variants.

More than 18 months on from the first round of travel bans in January 2020, it is clear that restarting mobility is not a linear process.

To develop a road map for opening up and clarify the choices that lie ahead, national governments and international organizations can benefit from exploring possible scenarios for what international mobility could look like two to three years hence:

► **Scenario 1: Pandemic Proofing.** In this scenario, the pandemic will become a 9/11 moment for borders and mobility, with public health decisively shaping decisions on whom to let into a country in much the same way as security considerations did in the wake of the September 11, 2001, terrorist attacks. Under this scenario, new international standards and procedures have been agreed around risk assessment, time limited emergency travel restrictions, expanded health data sharing, and consistency on testing and screening. The cornerstone of this new system is digital health cards that allow governments, airlines, and private institutions to verify an individual's COVID-19 vaccination status, although testing and quarantine requirements remain in place as an alternative pathway to travel for those who have not been vaccinated. By increasing and standardizing requirements for formal cross-border movements, the new system has created winners and losers: on one hand benefiting mobility pathways that can cope with additional layers of screening (such as refugee resettlement), but on the other hand amplifying the existing divide between "movers" and "non-movers" and creating an even more lucrative market for smugglers.

► **Scenario 2: Mobility with Friends.** In this scenario, the creation of international processes and standards is still a work in progress in 2024. As a stopgap, regions have pursued different approaches reflecting their mix of risk tolerance, needs, resources, capacity, and past pandemic experience. While some regions have swiftly standardized public-health procedures, others have struggled to maintain agreed metrics and procedures. Some travel bubbles have been ephemeral, bursting almost as soon as they are formed. The most successful have been undergirded by strong bilateral cooperation and mutual trust, allowing countries to agree on threat assessment systems that automatically trigger a set of additional travel or medical restrictions across the region. But closer cooperation within regions has led to a fragmented global picture, with ongoing disruptions especially in regions that lack capacity.

► **Scenario 3: Chaos and Fragmentation.** This scenario would see a vast amount of experimentation, yet largely at the national level, with the picture of global mobility from 2021 through 2024 stuck in a dance of two steps forward two steps back. A plethora of new tools and solutions have emerged, yet most struggle to get beyond the piloting phase. Those that do succeed are not interoperable and agreement has stalled on picking the winners, creating a fragmented landscape. Decisions about travel restrictions and health requirements are last minute and poorly communicated, leading to chaos at borders and large populations of stranded travelers and migrants. Some regions have seen a total breakdown of trust in how neighboring countries are managing the pandemic. Meanwhile, the deeply uneven vaccine rollout continues to carve stark divisions at the international level. In such a scenario, the concertina of opening and closing borders continues, especially as further variants of the virus emerge. The chill on international migration casts a long shadow: most countries maintain movement of essential health workers, certain high-skilled migrants, and returning nationals and residents; but most other migration and mobility remains stalled. Lingering quarantine and other onerous requirements continue to stifle business travel and tourism, while also fueling irregular migration by excluded groups.

► **Scenario 4: Pre-Pandemic Status Quo.** Perhaps the most unlikely scenario is a return to pre-pandemic norms around travel. For this to happen, COVID-19 would have to fizzle out in this period to the point that it no longer poses a significant threat, with almost all countries reaching herd immunity through some combination of vaccines and/or biological immunity. In this situation, governments face pressure to use international tourism as a defibrillator for sputtering economies and thus to lift all border and travel restrictions. In practice, however, a lingering lack of trust in border and mobility management continues to dampen cross-border movements beyond their official lifting, especially since even localized and readily contained outbreaks could easily trigger panic. The looming specter of another pandemic has prompted governments to carry out a full postmortem on the COVID-19 crisis, revisiting the rules around border closures and health screening standards to prevent a repeat of 2020.

While these scenarios are presented as thought experiments, in reality they may not be mutually exclusive. Regional cooperation may be a stopgap that furnishes the building blocks for the eventual development of a global system; equally, regionalism may tip back into unilateral experimentation if trust breaks down among neighboring countries. And even in the unlikely scenario that mobility snaps back to the pre-2020 status quo, governments and international organizations may nonetheless begin the process of transforming border management to secure against future pandemics.

If governments wish to restart mobility more quickly, they will need to coordinate closely with one another and think across the travel and migration continuum to develop well-thought-out measures and minimize unintended effects. The following questions merit further consideration:

► **Can vaccines unlock global mobility?** While several highly effective vaccines have emerged, they are unlikely to be a panacea for restarting cross-border movement, at least in the near term, with new, more contagious variants circulating and the efficacy of different vaccines varying, including against these variants. Deeply uneven vaccine access has made international organizations and middle- and low-income countries skeptical of using "vaccination passports" as the key to reopen mobility. And

governments pursuing this model are facing the challenge of verifying vaccine records quickly and securely, in a way that reduces fraud yet protects individual health data. The landscape is already highly fragmented, with a plethora of emerging digital solutions. An important principle will be designing new systems around the needs of all movers, including those without digital proficiency or access. A broader question is how vaccine requirements might reshape migration dynamics, especially given migrants and refugees are often systematically left out of national vaccine campaigns. Without greater vaccine equity worldwide, governments will need to maintain complementary measures, such as testing and quarantine, for the foreseeable future to avoid further entrenching the gap between "movers" and "non-movers"—but maintaining parallel systems could be costly, add more complexity for individual passengers, and further deepen the pressures on border enforcement and travel operators.

► **What role should testing and quarantine play?** While there have been huge advances in health procedures, few have been grounded in an evidence-based risk management framework. Limited international coordination often leads to duplication and complexity, with travelers facing countless tests and large costs per trip. In the first year of the pandemic, governments had a high risk threshold and therefore could tolerate or even encourage opaque, costly, and complex systems that acted as a *de facto* deterrent to international migration and travel. As they seek to open up, they will need to be more strategic, forward looking, and transparent to avoid disincentivizing travel as a whole, locking out certain groups of movers indefinitely, and/or pushing people to move irregularly. Working with like-minded countries could also help reduce unnecessary bureaucracy. Governments will need to decide whether to invest political and financial capital in an interim system based on testing and quarantine that works for today's pressures or to build an infrastructure that is more enduring and can withstand different public-health scenarios, including the end of the COVID-19 pandemic and potentially the emergence of a new viral outbreak several years hence.

► **How can health screening be better coordinated?** Whatever health procedures are put in place, fully restarting migration and mobility depends on building more predictability and transparency into the system. Governments will need to work together to develop shared risk assessment metrics for managing this pandemic and agree on steps to take when future public-health crises emerge to avoid repeating the chaos of migrants and travelers stranded amid uncoordinated border closures in 2020 and, ideally, to prevent viruses from spreading so quickly. Regional agreements have been fragile, even in areas of common governance, such as the European Union, and among countries facing a similar COVID-19 case picture, such as Australia and New Zealand. Nonetheless, regional coordination is likely to be the basis for new agreements over health standards and procedures. At the international level, the COVID-19 pandemic exposed the limitations of the International Health Regulations' ability to guide a response to a fast-emerging, cross-border threat and the challenges of ensuring compliance with measures that exist on paper. In the last year, countless coordinating initiatives and task forces led by different international bodies and UN agencies have emerged. What is lacking is a meta-coordinator to bring these disparate initiatives together and ensure that the new border health system works for all kinds of travelers and people on the move, including refugees and other vulnerable migrants. The impact of COVID-19 on mobility is a cross-cutting challenge that will require new, more nimble governance structures to address.

While the next three years may see the pandemic brought under control in some jurisdictions, a full return to pre-pandemic levels of travel, migration, and mobility is unlikely. The main priority now should be to outgrow the current picture of fragmented, frequently shifting policies in favor of transparent, equitable, and risk-proportionate rules. Building a system that is easy for people to comply with will serve both public-health and mobility objectives. In this regard, decisions will need to be taken about how to rethink mobility for the long haul—including how to manage cross-border health challenges going forward; how to communicate clearly about risk mitigation strategies; and how to strengthen international coordination and lay the groundwork to prepare for the next public-health crisis. Whatever decisions are made now should therefore take a long-sighted view, strengthening border procedures for numerous scenarios, not just the one before us.

1   Introduction

The year 2020 was a watershed moment for human migration and mobility. Between March and May 2020, almost every country and territory closed ports of entry and enacted a mix of measures banning, limiting, or attaching additional conditions to travel.[1] The COVID-19 pandemic is estimated to have halted almost three-quarters of international tourism in 2020,[2] and to have significantly reduced temporary and permanent labor migration.[3] Many countries severely curtailed opportunities for family unification and to seek asylum, and almost all halted refugee resettlement. Visa processing across all streams was placed on ice by embassy, consulate, and processing center closures. Millions of travelers, migrants, and seafarers were left stranded, often in highly vulnerable circumstances. It is uncertain how and on what timeline these different forms of human movement will recover. Some commentators have gone as far as to claim that we may be witnessing the end to the "age of migration," predicting deep and long-lasting scars across the global migration system for the foreseeable future.[4]

More than a year since cross-border movements were virtually stopped in their tracks, many mobility streams have remained frozen while some have begun to see halting and uneven reopening. Countries are experimenting with a patchwork of screening, testing, and quarantine measures to facilitate movement, but with little coordination among

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themselves—let alone agreed-upon global standards to guide these efforts. They have also struggled to quickly adapt to new scientific and public-health information. While the rollout of COVID-19 vaccinations starting in early 2021—with campaigns now underway in almost every country, territory, and area[5]—is accelerating the cautious reopening of borders, the emergence of new variants, including the B.1.1.7 or Alpha, B.1.351 or Beta, and B.1.617 or Delta strains,[6] has sparked another wave of travel restrictions. To open

1   Meghan Benton, Jeanne Batalova, Samuel Davidoff-Gore, and Timo Schmidt, *COVID-19 and the State of Global Mobility in 2020* (Geneva and Washington, DC: International Organization for Migration and Migration Policy Institute, 2021).

2   World Tourism Agency, "Tourism Back to 1990 Levels as Arrivals Fall by More than 70%" (news release, December 17, 2020).

3   Organization for Economic Cooperation and Development (OECD), *International Migration Outlook 2020* (Paris: OECD Publishing, 2020).

4   Solon Ardittis and Frank Laczko, "Introduction - Migration Policy in the Age of Immobility," *Migration Policy Practice* X, no. 2 (2020).

5   University of Oxford, "Our World in Data: Coronavirus (COVID-19 Vaccinations)," accessed June 25, 2021.

6   This report uses the recently adopted system of Greek letter names for its list of variants of concern to avoid the problem of stigmatizing regions. See World Health Organization (WHO), "WHO Announces Simple, Easy-to-Say Labels for SARS-COV-2 Variants of Interest and Concern" (news release, May 31, 2021).

up safely, governments face the challenge of building out the nascent infrastructure of health screening, risk assessment, and border processes—and potentially creating systems to standardize and verify vaccination records.

This report explores how different policy choices could shape the next few years of human mobility. It first describes what happened in year one of the pandemic—how border closures and travel restrictions affected different types of mobility, and what was learned about the role of such measures in pandemic management. It then sets out some possible scenarios for the next two to three years. Finally, it identifies policy questions that will be critical to address in the coming months and makes some tentative recommendations. The report focuses primarily on the position of and challenges facing advanced economies, where the vaccine rollout has generally moved more quickly, placing them in a position to begin thinking about opening up. However, it draws from worldwide lessons and experiences and makes global recommendations where possible.

2 Cross-Border Mobility in the First Year of the COVID-19 Pandemic

The COVID-19 crisis had an unprecedented impact on human mobility, starting in the first few months of 2020. By the end of March 2020, governments had issued 43,300 travel measures, and every country, territory, and area worldwide was subject to at least 70 travel bans.[7] In April and May, the number of international air passengers was down 92 percent relative to the same months in 2019.[8] A patchwork of fast-changing travel restrictions of various kinds emerged over the course of the year—from entry restrictions based on travelers' route or nationality to visa suspensions and new conditions for entry, including health-related requirements (e.g., mandatory quarantine, medical certificates, or health screening).[9] At the same time, countries made numerous exemptions to entry restrictions, such as for their own nationals and family members or for essential workers. Beginning in Summer 2020, some governments and regions began cautiously opening back up, shifting increasingly from blunt tools such as travel bans and border closures to more nuanced systems involving health-based entry requirements that seek to adapt to changing levels of risk.

But this process of reopening to international migration and travel has been nonlinear. Travel bubbles (quarantine-free agreements between countries or cities) have been created and then abandoned; borders have been opened and then quickly shut again; exemptions have been expanded and then narrowed; and health-related travel measures have been introduced only to be hastily amended. For instance, in the European Union, Member States agreed in January 2021 to consider reimposing travel restrictions for non-essential intra-EU movement,[10] and in May 2021, the European Commission called on Member States

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7   Benton, Batalova, Davidoff-Gore, and Schmidt, *COVID-19 and the State of Global Mobility in 2020*.
8   Big Data UN Global Working Group, "ICAO: Operational Impact–Operational Impact on Air Transport," accessed February 4, 2021.
9   For an overview of how these restrictions have unfolded over time in different regions, see Benton, Batalova, Davidoff-Gore, and Schmidt, *COVID-19 and the State of Global Mobility in 2020*. The report describes three main phases in 2020: mobility lockdown, where governments and authorities issued tens of thousands of travel restrictions and bans (from March to May); phased reopening, where travel bans were increasingly replaced by health measures, including predeparture COVID-19 test requirements (June to September); and new waves and mutations, where countries sought to build capacity for health screening and procedures amid concerns about spiraling cases and new variants (October to December).
10   Hanne Cokelaere, "EU Leaders Consider Restrictions for Non-Essential Travel," Politico, January 22, 2021.

to take coordinated action to limit even essential travel from India in the wake of the emergence of the Delta variant.[11] In Asia, the long-awaited Hong Kong–Singapore air travel bubble has been postponed several times by an increase in COVID-19 cases in Hong Kong, including most recently in late May 2021.[12] In Australia and New Zealand, the Trans-Tasman bubble is finally operational after a number of false starts, yet negotiations on expanding it geographically have been proceeding slowly.[13] And in sub-Saharan Africa, despite the introduction of (largely predeparture) testing requirements, a majority of land borders remain fully or partially closed and concerns about emerging variants of the virus have sparked new border restrictions.[14]

A.   *The Effects of the Pandemic on Different Kinds of Mobility*

These travel bans and restrictions have had far-reaching impacts on all forms of mobility. The Organization for Economic Cooperation and Development (OECD) estimates that permanent migration flows to OECD countries fell by half in the first six months of 2020.[15] And the United Nations Department of Economic and Social Affairs' *International Migration 2020* report indicates that the pandemic may have reduced the number of international migrants by about 2 million globally by mid-2020.[16] The human impact of such a dramatic shift in global mobility swiftly became clear. Millions of migrants were stranded in vulnerable situations,[17] unable to continue their journeys or return home and struggling to maintain livelihoods as jobs and businesses folded. In some countries, migrants have been scapegoated or even detained or forcibly expelled after losing their jobs as anti-immigrant sentiment and fears based on real or perceived links between migrants and public-health risks have risen. And displaced people living in overcrowded and unsanitary conditions have often seen such conditions worsen as outward movement has been curtailed, just as the risks of living in such conditions has grown.

The COVID-19 pandemic has added an additional layer of barriers, exacerbating existing inequalities.

Even before the pandemic began, it was clear that global mobility was highly unequal. Travelers from rich countries were more readily able to get visas and enjoy visa-free travel than migrants from poorer countries; those moving out of desperation or a lack of opportunities at home were less able to cross a border than those traveling for fun. The COVID-19 pandemic has added an additional layer of barriers, exacerbating existing inequalities. Forms of mobility involving travelers who are able to afford to overcome additional

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11   European Commission, "Coronavirus Variants: Commission Calls for Limited Essential Travel from India" (news release, May 12, 2021).

12   Ng Jing Zhi, Su Yeen Cheong, Amy Tan, and Surabhi Sahu, "New COVID-19 Waves Burst Travel Bubble Hopes, Dimming Aviation Outlook," S&P Global Platts Market Insights, May 18, 2021.

13   The bubble has operated as a one-way bubble (with quarantine-free travel allowed from New Zealand to Australia) for much of its life, and it was suspended several times because of outbreaks, including most recently in May 2021. See Reuters, "New Zealand Suspends Travel Bubble with Australia's Victoria," Reuters Rough Cuts, May 25, 2021; Sarah Swain, "New Zealand Extends Travel Bubble Pause with Victoria," 9 News, June 3, 2021. Nevertheless, there are talks of expanding to other countries, namely the Pacific Island nations, and New Zealand has opened up to the Cook Islands as of May 17, 2021. Government of New Zealand, "Travel Between the Cook Islands and New Zealand," accessed July 13, 2021.

14   Ling San Lau, Kate Hooper, and Monette Zard, *From Unilateral Response to Coordinated Action: How Can Mobility Systems in Sub-Saharan Africa Adapt to the Public-Health Challenges of COVID-19* (Washington, DC: Migration Policy Institute, 2021).

15   OECD, *International Migration Outlook 2020*.

16   United Nations Department of Economic and Social Affairs, Population Division, *International Migration 2020: Highlights* (Geneva: United Nations, 2021).

17   According to July 2020 estimates from the International Organization for Migration (IOM), at least 2.75 million migrants were stranded, however it acknowledges that this is likely a conservative estimate. See IOM, "Immediate Action Required to Address Needs, Vulnerabilities of 2.75m Stranded Migrants" (news release, September 10, 2020).

barriers and costs may therefore recover more quickly than others. The subsections that follow give an overview of how the pandemic has affected different mobility streams and the prospects for their recovery.

Tourists and Business Travelers

Large-scale international travel does not look likely to return anytime soon. Surveys in a variety of countries find a lingering distrust of air travel (even among the vaccinated),[18] and a preference for domestic over international tourism that could outlast the pandemic.[19] Meanwhile, companies have suspended the majority of domestic and especially international business travel.[20] The rise of video conferencing platforms and the normalization of remote work have raised questions about the future of business travel, especially where the benefits over online meetings are minimal relative to the costs. Travel for leisure and work also looks set to be more regionalized, with some countries revisiting the idea of forming smaller travel bubbles that allow quarantine-free travel either with or without testing and vaccination requirements.[21] Some countries suffering from the dip in tourism are looking to recruit so-called digital nomads, remote workers able to live anywhere, to plug some of the economic gaps, thus blurring the lines between tourism and migration.[22]

International Students

The question of whether to reopen universities or keep classes remote was one of the biggest controversies at the outset of the 2020–21 academic year. While many countries allowed international students to return, others restricted entry to those taking courses with an in-person element and to graduate students.[23] International students often enroll in certain universities for the access to a country or territory they offer, not just the degree—a fact cast into sharp relief by the pandemic. New enrollments of international students in U.S. universities dropped by almost half according to the Institute of International Education's annual Open Doors survey, and almost 40,000 deferred their places, with only one in five choosing to study remotely.[24] Several countries, including Canada and the United Kingdom, made visa rules for students more flexible;[25] and in July 2020, the U.S. government backtracked from requiring international students to attend in-person classes to remain in the country, in response to pressure from universities concerned about losing a major income stream.[26] Returning to pre-pandemic levels of international student mobility may thus require a guarantee of in-person education and the migration benefits it confers.

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18 See, for example, the findings of a survey conducted in 14 countries: Edelman, "2021 Edelman Trust Barometer: Spring Update - A World in Trauma" (survey findings, Edelman, 2021).

19 Ipsos, "Handling of Health Crises Impacts Overall Favorability towards Nations" (news release, August 25, 2020).

20 Global Business Travel Association, "Coronavirus Poll Results" (poll highlights, Global Business Travel Association, Alexandria, VA, January 21, 2021).

21 Helena Smith, "Post-Covid Tourism Hopes Buoyed by Deal between Greece, Cyprus and Israel," *The Guardian,* February 15, 2021.

22 Leonor Echeverría Hine, "Foro: Nómadas Digitales en la Mira," *La Nación*, February 10, 2021.

23 OECD, *International Migration Outlook 2020.*

24 Julie Baer and Mirka Martel, *Fall 2020 International Student Enrollment Snapshot* (New York: Institute of International Education, 2020).

25 For instance, Canada's Post-Graduation Work Permit Program was revised so that international students could be out of the country for up to half of their program and still remain eligible. See Government of Canada, "Flexibility in Post-Graduation Work Permit Rules to Help International Students and Canadian Post-Secondary Institutions" (news release, updated May 14, 2020).

26 Miriam Jordan and Anemona Hartocollis, "U.S. Rescinds Plan to Strip Visas from International Students in Online Classes," *New York Times*, July 8, 2020.

Seasonal and Temporary Labor

Border closures and travel restrictions have made it extremely difficult for workers to take up temporary work opportunities, from backpackers used to working holidays in Australia and New Zealand,[27] to Thai berry pickers prevented from making their usual seasonal move to Sweden, to Moroccan seasonal agricultural workers unable to transit to France or Spain despite holding visas.[28] The effects have been considerable in regions where workers move in large numbers on a seasonal basis, such as West and Central Africa, where seasonal workers make up two-thirds of intraregional migrants.[29] Countries have adapted to this block on labor migration in creative ways, including by regularizing migrant workers who are unauthorized, recruiting and training out-of-work residents, and organizing "air bridges" to bring in seasonal agricultural workers.[30] It is unclear whether short-term, low-wage labor migration programs will recover, especially in sectors where social-distancing measures sparked changes to business models or consumer behavior (e.g., retail, hospitality), or where limited labor supply catalyzed automation and mechanization (e.g., agriculture). New Zealand's government has already signaled that it will focus on equipping residents for available jobs instead of recruiting temporary migrant workers, and that it will prioritize high-skilled migration in the future.[31] Going forward, COVID-19-related travel restrictions could rework traditional labor migration corridors—creating new ones and disrupting existing ones.

Long-Term Labor Migration

After much of visa processing was put on hold in 2020, labor migration was all but suspended in many countries. The United States, under the Trump administration, was the only country to explicitly use an economic argument for restrictions,[32] although the Biden administration has since lifted restrictions on both long-term and temporary migration. Many countries have signaled their intention to deprioritize labor migration in favor of looking to out-of-work residents to fill emerging shortages, yet some are explicitly trying to offset the "fallow" migration year: Canada has set historically high targets for 2021–23 to compensate for the low level of admissions in 2020 and because it expects to find certain labor needs difficult to meet.[33] Even if countries can address issues of access to their territory, processing backlogs resulting from shutdowns are likely to make it difficult to respond quickly to fast-changing labor needs. New working practices normalized during the pandemic could make some employers reconsider whether they need to navigate immigration systems or just hire people remotely.

Return Migration

The combination of border closures, economic opportunities drying up, desire to be with family, and, in some cases, persecution or forceful expulsion has driven many migrants to try to return to their countries

27   Romeo Arahan, *Pacific Island Countries in the Era of COVID-19: Macroeconomic Impacts and Job Prospects* (Washington, DC: World Bank Group, 2020).

28   OECD, *International Migration Outlook 2020*.

29   IOM and World Food Program (WFP), *Populations at Risk: Implications of COVID-19 for Hunger, Migration and Displacement* (Geneva and Rome: IOM and WFP, 2020).

30   Melissa Eddy, "Farm Workers Airlifted into Germany Provide Solutions and Pose New Risks," *New York Times*, May 18, 2020.

31   Tess McClure, "New Zealand to Cut 'Low-Skill' Immigration and Refocus on Wealthy," *The Guardian*, May 17, 2021.

32   Muzaffar Chishti and Sarah Pierce, "The U.S. Stands Alone in Explicitly Basing Coronavirus-Linked Immigration Restrictions on Economic Grounds," *Migration Information Source*, May 29, 2020.

33   Kathleen Harris, "Federal Government Plans to Bring in More than 1.2M Immigrants in Next 3 Years," CBC, October, 30, 2020.

of origin.[34] Yet repatriation efforts have been spotty, and many have become stranded. In July 2020, the International Organization for Migration estimated that there were at least 2.75 million stranded migrants around the world.[35] Some are using the services of "reverse smugglers" to navigate border closures,[36] while others are choosing to wait it out. There is a huge question mark over what will happen when travel reopens more fully. In the last global recession, the number of migrants who ultimately returned home was lower than expected.[37] The pandemic's effects on forced and voluntary assisted returns have also been mixed. Some countries, particularly in the Gulf, ramped up immigration enforcement and returns in light of the pandemic, often exposing migrant workers to harsh, overcrowded conditions.[38] Most EU countries suspended returns during the first year of the pandemic and are now encountering added difficulties to restarting these processes,[39] including the fact that migrants can refuse to be tested for COVID-19, a condition for origin countries accepting them back.

Family Unification

Many countries introduced exemptions to travel restrictions for family members of nationals and residents, but disrupted visa processing has dramatically lengthened waiting times.[40] Many seasonal workers and stranded migrants are facing the prospect of being separated from their families for a prolonged period.[41] A stark example can be seen in Australia, where residents have been unable to leave (with exemptions only possible under certain conditions, such as essential business or compassionate grounds) and nonresidents are still unable to enter.[42] Meanwhile, many migrants are likely to be forced to delay plans to bring their family members to live with them because of limited economic opportunities, prolonging the human cost of separation at a difficult time.

Displacement, Asylum, and Refugee Protection

As of June 2021, refugee resettlement had started up again in many countries—at least in theory. In practice, access to flights, additional costs, and complex travel requirements are making it challenging to reactivate humanitarian protection programs. Resettlement teams describe being overloaded by having to navigate rules on travel and social distancing in both the country of processing and destination, with rules changing on an almost-daily basis, and greater difficulties meeting requirements, such as conducting in-person interviews or securing documents.[43] Travel restrictions and border closures have also contributed to shifting displacement dynamics whereby people who ordinarily would have fled abroad have instead migrated internally in search of safety in some contexts.[44] Asylum seekers have continued to arrive

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34   Camille Le Coz and Kathleen Newland, *Rewiring Migrant Returns and Reintegration after the COVID-19 Shock* (Washington, DC: Migration Policy Institute, 2021).

35   IOM, "Immediate Action Required."

36   Joshua Collins, "How COVID-19 Has Created a Crisis on the Venezuela-Colombia Border," The New Humanitarian, September 23, 2020; Mohamed Mamouni al-Alaoui, "Pandemic Sparks Reverse Migration from Spain to Morocco," The Arab Weekly, April 29, 2020.

37   Michael Fix et al., *Migration and the Global Recession* (Washington DC: Migration Policy Institute, 2009).

38   Human Rights Watch, "Saudi Arabia: Migrants Held in Inhuman, Degrading Conditions" (news release, December 15, 2020).

39   Le Coz and Newland, *Rewiring Migrant Returns and Reintegration after the COVID-19 Shock*.

40   Janice Dickson, "COVID-19 Slows Visa Processing, Leaving Many Families Separated," *The Globe and Mail*, July 7, 2020.

41   Brad Marsellos, "Meet the Stranded Pacific Island Workers Who Are Keeping Australians Fed," ABC Wide Bay, August 12, 2020.

42   Australian Government, "COVID-19 and the Border: Leaving Australia," updated July 13, 2021.

43   Comments from participants at Annual Tripartite Consultation on Resettlement Working Group on Resettlement and Complementary Pathways, breakout session on Thinking out of the Box: Turning Challenges of Remote Operations into Innovation, February 25, 2021.

44   Internal Displacement Monitoring Centre (IDMC), *Internal Displacement 2020: Mid-Year Update* (Geneva: IDMC, 2020).

throughout the pandemic but were in many cases halted by border restrictions (e.g., in the United States, the vast majority of border encounters have led to expulsions under a public-health order, under which migrants are not allowed to claim asylum[45]) or limited transportation options.

B.   *The Role of Mobility Restrictions in Managing the Pandemic*

New SARS-CoV-2 mutations and rising caseloads in many countries have rekindled debates about the relationship between international mobility and the spread of the virus, including how to use border closures more strategically and whether proof of vaccination may gradually ease the need for costly travel restrictions. But more than 18 months on from the first COVID-19-related lockdown in Wuhan, China, in January 2020, the role of restrictions on mobility in pandemic management remains unclear. While no country was able to prevent the arrival of COVID-19, the last year has seen governments employ a wide range of travel restrictions in an attempt to limit its spread, to varying levels of effect.

> *While no country was able to prevent the arrival of COVID-19, the last year has seen governments employ a wide range of travel restrictions in an attempt to limit its spread, to varying levels of effect.*

Mobility restrictions can serve a number of different objectives:

1   As part of **a containment strategy** where cases have been kept sufficiently low to trace and thus contain and where outbreaks have been swiftly managed. This strategy was mainly pursued by countries in the Asia-Pacific region, and the most successful examples drew on their geography (being remote islands, e.g., New Zealand) combined with hardline border closures (including exit bans, e.g., Australia) and/or surveillance policies (such as quarantine enforced through geolocation data).[46] The emergence of new variants of the virus has revived public debate on whether border closures seal against the arrival of such strains, but evidence suggests that these measures have largely come too late and were too leaky (i.e., accompanied by various exemptions or easily circumvented by traveling through a third country), replicating many of the issues with policies that aimed to prevent the initial arrival of the virus in Spring 2020.[47] While containment-focused approaches are credited with swiftly ending some national lockdowns, the price has been lengthy external closures. For instance, Australia is only able to process a few hundred arrivals per day, and its commitments to maintaining a "biosecure" border make it hard to see a path back to pre-pandemic tourism and migration levels.

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45   Nicole Narea, "Biden to Allow Asylum Seekers Trump Kept in Mexico to Enter US," *Vox*, February 12, 2021.

46   Despite calls in Ireland and the United Kingdom to use their geographical benefits to pursue an "elimination" or "zero COVID" strategy, most countries were not in a position to pursue such an approach because of their interconnectedness. See, for instance, Zero COVID, "The Campaign to Beat the Pandemic," accessed July 6, 2021; Ellen O'Riordon, "Zero Covid Strategy Must be Adopted to Avoid Recurring Lockdowns - Scientists," *The Irish Times*, January 27, 2021.

47   The problems of effectively targeting restrictions to prevent the virus from even entering a country are well documented— namely, that by the time the virulence of an epidemic has come to light, it may be too late to prevent the first passengers from arriving from high-case regions. Some states even pursued restrictions after they knew that new variants had been found domestically. For example, Turkey banned arrivals from Britain on the grounds that it found 15 infections of the new variant at home (all of whom were recent arrivals from the United Kingdom). *New York Times*, "32 More Countries Have Found the New Covid-19 Variant First Seen in Britain," *New York Times,* January 25, 2021; Natalia Banulescu-Bogdan, Meghan Benton, and Susan Fratzke, "Coronavirus Is Spreading across Borders, but It Is Not a Migration Problem" (commentary, MPI, Washington, DC, March 2020).

2 As **a mitigation strategy** when cases are sufficiently high that governments are trying to minimize movement, social interaction, and large gatherings of all kinds. While there is much that can be done to make travel safe, congestion at borders and airports (with thousands of people being funneled through small entry points) is the antithesis of social distancing. Moreover, restrictions on movement across international borders can be part of a raft of measures to reduce mobility of all kinds, and they are generally more politically and logistically expedient than internal mobility restrictions.[48]

3 As **a risk management strategy** where arriving passengers are considered substantially more likely to be carrying the virus than the local population. While there is some limited evidence on the effectiveness of such an approach, studies suggest that timing is critical, with the most helpful mobility restrictions occurring when cases are about to begin increasing exponentially.[49] It is also possible that pandemic risk management, in future, may make greater use of the power of delay (which many studies agree that travel restrictions can offer).[50] Even if it is not possible to totally prevent the arrival of a new virus or variant, rapid response systems that develop appropriate tests and therapeutics in days, as has been proposed by the G7 100 Days Mission, could make time a precious resource for reducing harm.[51]

4 As **a signaling strategy** used by a government to show the public that they are doing something. Public confidence is a vital tool in pandemic management, especially when many domestic policies rely on considerable personal sacrifice for compliance. But the political popularity of border closures has been one of the paradoxes of the pandemic, as even when community transmission is sufficiently high that incoming travelers are comparatively less likely to be carrying the virus, pressure on governments to impose stringent requirements on arrivals has been intense.[52] It is worth noting that these goals are not mutually exclusive—the Australia/New Zealand containment approach has been politicized into signaling, because of the crisis of public trust that arises whenever any cases are identified.

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48 While internal mobility, like cross-border mobility, is an aggravator of community spread, checks on inter-regional mobility within a country require an extremely heavy-handed use of police or security forces and are perceived as authoritarian exercises of power that could only be tolerated in extreme and highly limited circumstances. (For instance, most of the internal mobility restrictions at the height of the first wave of the pandemic were short lived. In Italy, for example, by late May 2020, citizens were granted freedom of movement within their own region.) See Colin Dwyer, "Italy Plans to Lift Some Coronavirus Travel Restrictions Early Next Month," National Public Radio, May 16, 2020. By contrast, stringent controls at external borders are often seen as both politically desirable and more easily administered.

49 A study by the London School of Hygiene and Tropical Medicine concluded that without travel restrictions, travelers would have accounted for more than 10 percent of infections in 102 of 136 countries in May 2020, and that such restrictions can be helpful when countries are at the level of few or no cases, or where countries are at a tipping point in their R rate (meaning the number of people that one infected person will pass a virus on to, on average). The implications of both are that targeted, time-limited restrictions can work but that there is no argument for semi-permanently reducing cross-border movement. See Timothy W. Russell et al., "Effect of Internationally Imported Cases on Internal Spread of COVID-19: A Mathematical Modelling Study," *The Lancet* 6, no. 1 (2021).

50 Most of the evidence points to travel restrictions working only to delay the arrival of a disease outbreak, rather than to prevent it from arriving entirely. For instance, a study of travel restrictions from Wuhan to and from other parts of mainland China found that even under an optimistic scenario where travel was reduced by 90 percent, it would only delay arrival of the epidemic by two weeks. See Matteo Chinazzi et al., "The Effect of Travel Restrictions on the Spread of the 2019 Novel Coronavirus (COVID-19) Outbreak," *Science* 368, no. 6489 (2020). Similarly, a Center for Global Development study, which looked at past pandemics and their implications for COVID-19, concluded that general restrictions on travel can only delay the spread of pandemics. See Michael Clemens and Thomas Ginn, "Global Mobility and the Threat of Pandemics: Evidence from Three Centuries" (working paper 560, Center for Global Development, Washington, DC, December 2020).

51 G7, *100 Days Mission to Respond to Future Pandemic Threats: Reducing the Impact of Future Pandemics by Making Diagnostics, Therapeutics and Vaccines Available within 100 Days* (N.p.: G7 Summit, 2021).

52 For instance, when the United Kingdom chose not to impose border closures or a quarantine period at the height of its first peak, in Spring 2020, after taking advice from its Scientific Advisory Group for Emergencies, which argued that the risk posed by arriving travelers would be less than the risk inherent in the local population, it was described as the No. 1 concern reported to members of parliament by their constituents. Ultimately, the government decided to introduce quarantine requirements against the advice of its scientists.

Three further considerations are worth noting. First, a large gulf opened up over the first year of the pandemic between the recommendations of international organizations, including most prominently the World Health Organization (WHO), and the practices of countries. The WHO has had a long-standing position against travel bans and border closures, which it sees as stigmatizing, highly costly (in the sense of preventing the circulation of medical personnel and supplies), and a potential distraction from other, more practical measures such as social distancing and hand washing. But this policy was forged in the wake of the plague outbreak in the 1990s, when international travel was substantially lower, and while the International Health Regulations were revised in 2005, following the 2002–04 SARS outbreak, this line endured.[53] From a litigation angle, governments face more risk if they fail to close down borders and their actions lead to deaths than if they fail to restrict domestic economic activity and it has public-health consequences as the latter is a harder dynamic to trace. And pursuing policies even if they are not strictly "evidence based" may still be politically rational, especially in a context of uncertainty, since (1) scientific knowledge is emerging quicker than policies can readily respond, and (2) the most powerful weapon is compliance with social-distancing measures, which can be easily undermined by a loss of public trust.[54]

At at each stage, governments must balance public-health risks against other considerations, not just economic but also legal and ethical.

Second, the goals of border closures and travel restrictions are often not clearly articulated and may evolve throughout the trajectory of a pandemic. For instance, there is very limited evidence or understanding thus far on how uneven vaccine rollouts could shape the incentives for and effectiveness of limits on cross-border mobility. On the one hand, having a critical mass of a country's population vaccinated reduces the risk that incoming travelers pose; on the other, it could place more countries in a position where they can see a route to eliminating the virus. A situation in which many advanced economies are close to reaching herd immunity while the virus is circulating actively in low- and middle-income countries, and potentially mutating in ways that raise questions about whether the current set of vaccines will have the same level of efficacy against them, could create further incentives to protect against the possibility of incoming travelers carrying the virus, even if this stifles travel and tourism for the foreseeable future. Moreover, at each stage, governments must balance public-health risks against other considerations, not just economic but also legal and ethical, such as their obligation to enable residents to reunite with family members. Governments have already had to confront the limits of travel restrictions (for example, the necessity of creating exemptions to general travel bans to allow the movement of returning nationals and residents), making it hard in practice for most countries to pursue a containment strategy.[55]

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53 The International Health Regulations (first adopted in 1969) were revised in 2005, following the 2002-04 SARS outbreak, in part to include a focus on managing public-health risks at points of entry. Nonetheless, the WHO cautioned against travel restrictions in subsequent epidemics, including Swine Flu (when some countries nonetheless imposed travel or landing bans from certain countries) and Ebola (when several airlines canceled flights to Guinea, Liberia, and Sierra Leona), and this line was not swiftly reviewed in light of the major threat from asymptomatic and presymptomatic spread posed by COVID-19. See Jennifer Nuzzo, "Border Restrictions: Not an Effective Means of Preventing the Spread of Swine Flu" (H1N1 Influenza Issue Brief, Center for Biosecurity of UPMC, April 28, 2009); Nicole Cohen et al. "Travel and Border Health Measures to Prevent the International Spread of Ebola," *Centers for Disease Control and Preventions Morbidity and Mortality Weekly Report* 65, no. 3 (July 8, 2016): 57–67. In the most recent guidance, the WHO accepts that proportionate mobility restrictions may be necessary to prevent the export of variants or avoid pressures on health-care systems. See WHO, "Policy Considerations for Implementing a Risk-Based Approach to International Travel in the Context of COVID-19" (guidance document, WHO, Geneva, July 2, 2021).

54 If publics think that international travelers are a prominent source of new infections, then opening up fully to international travel could both undermine trust in government's handling of the situation and threaten both economic and public-health goals, by making some people less likely to engage in economic activity and others less likely to adhere to guidance when they do so.

55 The exception here is, of course, countries that have prevented outward or inward movement, except in a highly controlled way, for instance through government-chartered repatriation and stringent quarantine requirements.

Finally, borders also delineate political jurisdiction and designate the line between different approaches to managing the pandemic. For instance, without border checks, governments need extraordinary confidence in their neighbors' public-health response, testing levels, and data reporting, which has proved a tall order even within the Schengen area.[56]

C.   Good News on the Horizon, or More Bumps in the Road?

2021 began on a note of cautious optimism, following the rollout in many countries of the first tranche of viable vaccines, but this is now being tempered by some gathering dark clouds. Several countries are seeing rising caseloads and hospitalizations, especially related to more virulent strains. India's devastating experience has been perhaps the most prominent, but there have been huge pressures on health-care systems in Peru and Brazil, and the virus is now surging in Africa with an exponential rise in cases in countries such as Uganda and the Democratic Republic of the Congo, places with under-resourced and overstretched health systems and a nascent vaccine rollout.

The vaccine rollout has also been deeply unequal. Despite the vaccines' impressive efficacy rates, the supply of doses is unable to meet the vast scale of need, and demand seem likely to outstrip supply for the foreseeable future. In rich countries that bought up a large portion of the vaccine stock, such as the United States, insufficient public demand is taking over as the main challenge.[57] As more doses become available and the members of the public most eager to receive them have already been vaccinated, governments are increasingly having to contend with the challenges of reaching those who are off the grid or in underserved communities, lacking in digital proficiency, and facing barriers to health-care access (such as a lack of insurance or legal immigration status) as well as the vaccine hesitant.[58]

And even with vaccination campaigns picking up in many countries, some uncertainty remains. There are still lingering question marks over the effectiveness of vaccines, how long they confer immunity, whether the vaccinated are still able to transmit the virus, and the degree to which vaccines are protective against emerging variants of concern.[59] In some countries, the next challenge may be rolling out booster shots for the first cohort of vaccinated adults, even while other places are still struggling with the infrastructure needed for Round 1. As a result, many countries have chosen to maintain social-distancing and travel restrictions, even for the vaccinated. Despite light-speed progress on vaccination development, which has confounded all predictions, international progress on reopening travel has been more limited and coordination remains largely stalled. All of this makes decisions on mobility more important than ever.

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56   Meghan Benton and Demetrios G. Papademetriou, "COVID-19 Is Becoming a '9/11 Moment' for Borders and Health," *Health Affairs* 40, no. 7 (July 2021).

57   Low- and middle-income countries are beginning to face the same tradeoffs that advanced economies had to contend with earlier in 2021, such as whether to inoculate those at greater risk of hospitalization or death, or those who are most exposed (such as essential workers, for whom social distancing or sheltering is impossible); and whether to focus on giving priority groups the full two doses or partially vaccinating twice as many people (with lengthier gaps between the first and second dose).

58   For instance, the United Kingdom has faced criticism for requiring those vaccinated to have a National Health Service (NHS) number, which would exclude many immigrants—including those working within the NHS. See Aamna Mohdin, Rob Davies, and Diane Taylor, "Foreign NHS Workers Could Be Denied COVID Vaccine in England," *The Guardian*, January 22, 2021.

59   For a summary of the latest evidence on whether fully vaccinated people can transmit the virus, see U.S. Centers for Disease Control and Prevention, "Science Brief: COVID-19 Vaccines and Vaccination," updated May 27, 2021.

3   Scenarios for the Next Three Years

Policy choices and technical developments in the coming months and years could lead to dramatically different mobility landscapes. This section outlines four scenarios that could emerge by 2024 as an exercise to guide long-term thinking at a time of significant unknowns. Among the variables shaping these different scenarios are: policymakers' risk tolerance (weighing the benefits of economic reopening against risks to public health), the efficacy of vaccinations and therapeutics versus the progression and mutations of the virus, and the extent to which nations are willing to come together to make serious investments in public-health infrastructure at and between borders.

Scenario 1. Pandemic Proofing: A 9/11 Moment for Border Management and Health

By 2024, all governments and international bodies have embraced an entirely new paradigm in border management, with new procedures, technologies, and international standards—replicating in many ways the security-focused transformation that took place in the early 2000s following the terrorist attacks of September 11, 2001. In short, the COVID-19 crisis has become a 9/11 moment for border management and health. While agreement over some elements of this emerging infrastructure remains a long way off, in part because of the still-ongoing vaccine rollout in many regions, the process is underway for a complete overhaul of the International Health Regulations to encompass standards on vaccination verification, risk assessment, time-limited emergency travel restrictions, and an expansion of data sharing. These steps are laying the groundwork for a transformation in the way that people move across borders, whether for tourism, business, work, or love. But while this new system has helped get the world moving again, it has come at a steep price—namely, greater inequalities in the global mobility system, growth in irregular migration, and diversion of attention from solving bigger-ticket migration challenges.

Advanced economies that were leading on vaccination coverage by mid-2021 led this transformation, making the case that an entirely new health-related border infrastructure was a necessary cost for returning to pre-pandemic levels of mobility. One of the initial sticking points was that new processes and procedures came with a massive social and economic price tag—and one not always associated with a short-term, direct public-health payoff, especially in countries where COVID-19's "sting" had been taken out by large-scale vaccination. Rich countries, along with airlines and other private-sector and civil-society actors, have had to foot the cost of bringing countries with more limited border enforcement capacity along with them. Ultimately, it was an economic rather than a public-health argument that won over many sceptics: rich countries found they had deep pockets when it came to restarting travel and tourism.

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Along with international partners, national governments spent much of the later part of 2021 and early 2022 hashing out details over testing, data sharing, and shared risk management and reaching agreement on common standards for verifying vaccination records.[60] It took till 2023 for the WHO to determine that enough adults had access to the vaccine worldwide to be able to update the International Health Regulations to allow for requirements that passengers furnish a COVID-19 vaccination certificate to travel.[61] Yet concerns about accessibility and equity remain. The emergence of new vaccines with variable levels of effectiveness, especially in relation to new variants, has prompted some Cold War-style diplomacy over vaccines, with both China and Russia donating millions of vaccines as a form of political influence, and frictions with the West for preventing uptake of viable but less prestigious vaccines by suggesting they will not be recognized in vaccine passports. Unresolved political and legal issues remain under review, such as how to deal with visitors who arrive without a vaccination record (whether they can be required to be vaccinated or take a test, and whose responsibility they are if they refuse).

Hence, most countries are pursuing a multi-layered approach of requiring multiple tests or a single test in combination with a vaccination record. Industry partners, including airlines and airports, have invested heavily in what is being called the "net and line" approach to case identification—identifying as many people as possible through low-cost diagnostic interventions such as sniffer dogs.[62] Almost all countries now employ standardized antigen arrival tests, alongside additional screening measures, such as self-declared symptom and exposure declarations. Airports are now being designed with social distancing in mind, including larger terminals and reconfigured security areas, biometric facial recognition and self-screening technology to minimize contact, and staggered boarding policies.[63] Cross-border contact tracing helps contain localized outbreaks, building on the European Commission's "interoperability gateway," which links national contact tracing and warning apps.[64]

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60 There has been some progress towards a shared risk mitigation framework, for instance in the form of the International Civil Aviation Organization (ICAO) manual on testing and cross-border risk management, which is trying to improve risk mitigation strategies. See ICAO, *Manual on Testing and Cross-Border Risk Management Measures*, 2nd ed. (Montreal: ICAO, 2021).

61 Currently, yellow fever is the only disease in the International Health Regulations (Annex 7) for which countries can mandate proof of vaccination for international travel (the WHO also issues temporary recommendations allowing certain countries to require proof of polio vaccination for international travelers under the authority of the Polio International Health Regulations Emergency Committee). The WHO has formed a Smart Vaccination Certificate consortium, which aims to develop standards related to interoperability, governance, and design for a personal digital vaccination certificate. See WHO, "World Health Organization Open Call for Nomination of Experts to Contribute to the Smart Vaccination Certificate Technical Specifications and Standards," updated December 2, 2020. Alexandra Phelan, an expert on legal and policy issues related to infectious diseases, provides two potential scenarios to require vaccine certificates for international travelers; in the shorter term, certificates could be included in updated WHO recommendations for the COVID-19 public-health emergency, and in the longer term, Member States could request "standing recommendations" or the revision of Annex 7 of the International Health Regulations. See WHO, "Interim Position Paper: Considerations Regarding Proof of COVID-19 Vaccination for International Travellers" (interim position paper, WHO, Geneva, February 2021); Alexandra L. Phelan, "COVID-19 Immunity Passports and Vaccination Certificates: Scientific, Equitable, and Legal Challenges," *The Lancet* 395, no. 10237 (2020): 1595–98.

62 Esmaeil Eskandari, "Sniffer Dogs as a Screening/Diagnostic Tool for COVID-19: A Proof of Concept Study," *BMC Infectious Diseases* 21, no. 1 (March 5, 2021): 243. A German veterinary clinic has trained dogs to detect COVID-19 with 94-percent accuracy. See Reuters, "German Sniffer Dogs Detect COVID-19 with 94% Accuracy," Reuters, February 3, 2021.

63 Suzanne Rowan Kelleher, "The Future of Airport Design after COVID-19, According to an Airport Architect," *Forbes*, June 18, 2020; Laith Abou-Ragheb, "How Is COVID-19 Changing Airports?" World Economic Forum, September 24, 2020. Both the WHO and IOM have produced guidance on how to design points of entry to reduce congestion, manage passenger flow, protect staff, and improve ventilation. See IOM "Points of Entry: Activities at Points of Entry in the Context of COVID-19" (fact sheet, January 2021); WHO, "Technical Considerations for Implementing a Risk-Based Approach to International Travel in the Context of COVID-19" (interim guidance, WHO, Geneva, July 2, 2021).

64 European Commission, "Coronavirus: EU Interoperability Gateway Goes Live, First Contact Tracing and Warning Apps Linked to the System" (press release, October 19, 2020).

By increasing requirements for formal cross-border movements, the new system has amplified the existing divide between "movers" and "non-movers." Certain passports were already a ticket to being able to move freely before the pandemic, but citizenship and health access now govern mobility more than ever, making it extremely hard for people of certain nationalities to travel freely, even as short-term visitors. Many of the new health-based travel requirements, such as multiple tests and hotel quarantines,[65] are costly and put mobility out of reach for the lion's share of the world population. Moreover, regions with less sophisticated technology and point-of-entry infrastructure have found it difficult to adjust, despite additional international resources for capacity-building. Long queues and additional costs have pushed many travelers to instead use informal land crossings in places where borders are relatively porous.

Rising restrictions have also increased the reliance of some migrants on smugglers—including for return migration for those stranded since the onset of the pandemic or where there are limited alternatives. Just as the amplified focus on security did after 9/11, additional formal migration and mobility requirements have pushed out "mom and pop" shops in favor of more sophisticated smuggling operations and intermediaries able to adapt to these rising requirements—including through fraudulent documentation. Risky crossings of the Mediterranean have escalated, with spikes in arrivals in the Canary Islands and Malta, activating the same policy debates in the European Union that predated the pandemic. This new reality is proving destabilizing to governments ill prepared for a sudden influx of irregular movement, with some opening ports of entry only to find a border "crisis" awaiting them as the kinetic energy of people rendered immobile for a year or more is unleashed.

Meanwhile, some formal migration routes have been expanded following the introduction of the new border infrastructure. Midway through 2021, several countries, including Finland and Germany, began to use the refugee resettlement pathway as a form of pilot for health requirements later rolled out to all travelers. Some countries, such as Canada and Australia, have seen the additional regulatory framework around the movement of people as oil in the system, allowing the safe revival of refugee resettlement and labor mobility, and even setting targets to make up for lost time. Similarly, some countries have seen the pandemic as pressing the reset button on labor migration, allowing them to design systems from scratch that focus on bringing in immigrants able to aid with the economic recovery, namely by attaching greater value to high levels of education or entrepreneurial skills. The fast-moving nature of labor demands has also contributed to growing calls for smarter systems for assessing labor shortages in real time (rather than several months or years out of date), and for labor migration systems that can be frequently and easily finetuned.

Scenario 2. Mobility with Friends: Travel Bubbles and Regional Accords

An alternative scenario is that by 2024, COVID-19 has catalyzed more robust regional coordination and mobility, with many regions seeking to open up to their trusted neighbors while "hardening" external borders. Without agreement among international organizations on the endpoint for the post-COVID-19 border and travel system, and in the absence of leadership from any one country, regional coordination has been the most prominent, dynamic force in driving new procedures around public health. But it has

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65   One example is Canada's mandated hotel quarantine and testing system, which could cost travelers USD 1,500. See Sophia Harris, "Why $2,000 for a Hotel Quarantine? Your Questions about Ottawa's New Travel Rules Answered," CBC, February 7, 2021.

been somewhat scattered and uneven. Some travel bubbles have been as ephemeral as their namesakes, bursting almost as soon as they are formed. More long-lasting examples are based on harmonized regional guidelines that create clear responsibilities across the whole of government, including around domestic pandemic responses as well as tourism, labor mobility, and even international education.

Drivers of this regionalization have been sluggish international coordination combined with an extremely uneven geographical picture on COVID-19 cases, hospitalization rates, and vaccination progress. By the end of 2021, many advanced economies found themselves in the same position as Australia and New Zealand in 2020: sufficiently low numbers of cases to be able to track them effectively and contain outbreaks, yet still a long way off from herd immunity (when incoming travelers would pose minimal threat). Instead, they looked to travel bubbles as a way to open up mobility in a safe, limited way—especially where they could draw on existing bilateral relationships to do so. Several regions have now replicated the European Commission's "traffic light" coding system,[66] some with a much more prescriptive set of "automatic stabilizers"—features of regional mobility systems that automatically trigger a set of additional travel or medical restrictions across the region without direct intervention by partner governments. This situation has made it much easier for analysts, officials, employers, and individual travelers themselves to predict what the travel and mobility system will look like several months down the road, as clear warning signs exist for when countries are headed for greater domestic and cross-border lockdown.

Regional coordination has not been without its challenges, but governments have begun to learn from the teething problems of 2020. Some have realized that the components of effective travel bubbles relate not just to raw caseloads or a history of strong political ties, but also to broader agreement over how to manage the pandemic, mutual trust in how metrics are collected

> *Regional coordination has not been without its challenges, but governments have begun to learn from the teething problems of 2020.*

and reported (including testing, caseloads, and vaccination rates), and coordination among a broader set of stakeholders, from tourist organizations to networks of cities and universities.[67] Some countries have designed coordination largely around vaccination certificates, agreeing bilateral or regional guidelines for recognizing and verifying vaccination records.[68] Others have embedded agreements on travel bubbles in broader bilateral deals over migration and mobility, for instance the U.S.-Mexico accord offering legalization to certain unauthorized immigrants and expanded opportunities for circular mobility, including through temporary worker programs that encourage investments in education and skills training in countries or origin, and greater flexibility (including at the state and local level) in the United States to adapt labor

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66   The traffic light system seeks to develop a common approach to how Member States respond to different levels of threat. See European Commission, "A Common Approach to Travel Measures in the EU," accessed July 12, 2021.

67   For a discussion of the trajectory of many attempted bubbles in 2020, see Benton, Batalova, Davidoff-Gore, and Schmidt, *COVID-19 and the State of Global Mobility in 2020*. Lessons from past experience include that longstanding political ties and/or economic considerations have tended to drive the creation of travel bubbles, but asymmetrical public-health situations have been what has "burst" them (as in the Baltic case, for instance). Second, travel bubbles have proved much harder than anticipated to get off the ground. Even neighboring countries with relatively low cases (Australia and New Zealand; Singapore and Hong Kong) have found their plans disrupted by an outbreak in one country. And third, travel bubbles have required mutual trust in relation to what data metrics and methodology are used to count caseload, as well as the broader public-health approach.

68   A sign of change in this direction is the EU COVID-19 Digital Green Pass for EU citizens to demonstrate their vaccination, testing, or virus-recovery history with the goal of being able to move freely within Europe. See European Commission, "EU Digital COVID Certificate Factsheet" (fact sheet, June 1, 2021).

migration policies to the ebb and flow of demand.[69] Others have created city-to-city or subnational (often city- or province-to-partner country) bubbles to maintain two-way movement even in the face of localized outbreaks elsewhere in partner countries—but these have sometimes triggered public backlash.

In some cases, the diffusion of innovation within different industries, international forums, and regions that was a driver of regionalization has brought challenges. While there has been a bounty of innovation over issues such as digital health records, the sector has been extremely fragmented, with numerous digital tools cropping up to "solve" different social challenges. Many private and social entrepreneurs have formed promising partnerships with specific countries, but without the backing of an international organization such as the WHO they have lacked the credibility to move partnerships beyond the pilot phase. Such fragmentation has also hindered the success of "modular" approaches where regions have added on partnerships with third parties in bubbles or regional coordination systems of their own, a strategy often known as "bubble-merging" or "buddying up." For instance, officials in Australia and New Zealand have been collaborating with the Malaysia–Singapore bubble in efforts to create a Trans-Malay megabubble.[70] But a lack of common standards and interoperability between different piloted digital innovations has made it difficult for travel bubbles to easily expand or merge.

Labor migration is—on the whole—regional, selective, largely temporary, and muted. Demand for labor migration has largely fallen, especially in sectors that remain wracked by the virus: hospitality, tourism, and services.[71] In 2020, much was made of the way the virus revealed the "essential" nature of many immigrant workers, but in fact the shortages that emerged were fairly specific to sectors such as agriculture and horticulture, and health and social care. Meanwhile, lingering question marks over the effectiveness of vaccines in preventing transmission prompted another wave of large multinationals announcing a (semi-) permanent shift to a remote work model as employees showed a reticence to return to offices in crowded major cities. In some countries, this shift has helped fuel a revival of those midsized cities that, as increasing numbers of middle-class families and people working remotely relocate to them, identify a need for immigrants to help rebuild infrastructure around an extended pandemic. Emerging sectors such as green energy and telehealth continue to grow, creating demand for specialist skills that can only be brought in from abroad. But overall, as many companies shift to view remote work as their default and business travel remains muted, there is less demand for physical presence and thus for higher-wage labor migration. Meanwhile, some countries have chosen to shift their focus to temporary and seasonal workers who pose less risk in dynamic labor markets, a shift that Steven Vertovec has described as "Singapore Futures."[72]

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69   This imagined example is inspired by the 2001 agreement between Presidents Bush and Fox, who had just committed to pursuing a landmark immigration accord that would have covered legalization of unauthorized Mexican immigrants, as well as temporary and seasonal labor mobility, when the attacks of September 11, 2001, happened. MPI's Regional Migration Study Group called in 2013 for a return to such regional discussions, including through more explicit recognition of the value of circularity across the U.S.-Mexico border, including by "recreating the migration rhythm between the United States and Mexico" that predated the hardening of the border. The 2013 report also described how 9/11 derailed a more systemic approach to regional integration and precipitated a myopic focus on security at the expense of all else, with all of the associated side effects, something which may act as a warning in this current moment. See Demetrios G. Papademetriou, Doris Meissner, and Eleonor Sohnen, *Thinking Regionally to Compete Globally: Leveraging Migration & Human Capital in the U.S., Mexico, and Central America* (Washington, DC: MPI, 2013).

70   While this example is pure fantasy, Australia is considering expanding its travel bubble to the Pacific Islands and Taiwan.

71   Konstantinos Pouliakas and Jiri Branka, "EU Jobs at Highest Risk of COVID-19 Social Distancing: Is the Pandemic Exacerbating the Labour Market Divide?" (Cedefop Working Paper No. 1, European Centre for the Development of Vocational Training, Luxembourg, May 2020).

72   Steven Vertovec, "Low-Skilled Migrants after COVID-19: Singapore Futures?" Centre on Migration, Policy, and Society (COMPAS) Coronavirus and Mobility Forum, April 21, 2020.

Scenario 3. Chaos and Fragmentation

By 2024, a chaotic, fragmented picture has emerged with most countries pursuing their own approach to border health procedures. Huge pressure on the private sector to innovate, coordinate, and pay for new tools has led to hundreds of competing initiatives that procurement professionals within government have struggled to keep up with. Some of these tools have had limited attention to digital security and privacy issues, creating high-profile scandals and a crisis of public trust in how data is being managed. A lack of political agreement on risk management has meant countries have been unable to coordinate, even at a regional level, and many regional or even bilateral agreements have broken down.

An extremely slow vaccine rollout, with a breakdown of international coordination over global vaccine procurement, has led to the collapse of health services in many middle- and lower-income countries that have been left behind by vaccination efforts. Meanwhile, evidence that vaccines are less effective against certain variants has meant that many countries are caught in a concertina motion of opening up and then closing back down as new variants emerge

Adding to this cocktail of public-health challenges, the lack of political coordination has been the final nail in the coffin for international mobility.

and cases once again begin to spiral. Travel restrictions have become part of a raft of "last chance saloon" measures as pressure grows to embrace the most drastic measures possible. For advanced economies, further border closures have been justified on the basis of the need for a global reset, pausing all forms of human interaction and mobility as part of a desperate strategy to halt the spread. For low-income countries, by contrast, border closures have largely been enacted to prevent further pressure on extremely strained or collapsed health systems. Adding to this cocktail of public-health challenges, the lack of political coordination has been the final nail in the coffin for international mobility, with countries still resorting to kneejerk and unilateral decision-making on how to use border closures to respond to rising caseloads.

A diverging picture in different countries and a highly uneven vaccine rollout has exacerbated this situation. Most advanced economies in the West have introduced vaccine passports but layered these on top of existing restrictions, creating an extremely complicated and complex system that few businesses or travelers are willing to navigate. Moving across borders legally often entails hundreds of dollars in fees, and quarantine requirements are frequently introduced and then removed with limited notice, making it impossible to plan ahead. In response to rising political pressure, numerous countries now have hotel quarantine regimes that impose very low caps on the numbers of travelers who can enter a country at one time, but countries are learning how hard it is to replicate New Zealand's situation without its specific geography. Meanwhile, some Southeast Asian and Australasian countries have been unable to see an exit path from their hardline travel policies, especially since their publics have been more reticent to get vaccinated without seeing an immediate need and because of declining faith in the vaccines' protective coverage. Many African countries, facing crippling challenges to their health services, have imposed total border closures to prevent further pressure on these systems. In some places, cities and regions have reached a level of herd immunity that has made them more nervous about allowing in people who have had much less exposure and thus could easily become sick, resulting in costs for their health systems.

Most countries continue to allow the movement of essential health workers, certain high-skilled migrants, and returning nationals and residents but subject new arrivals to mandatory hotel quarantine (often at their own cost). However, a spate of programs have also been designed to adjust to a different labor supply reality: legalization of unauthorized immigrants, trying to hire local workers, internal mobility programs, and subsidies for automation and mechanization in agriculture. With spiraling unemployment, many countries are seeking to avoid a backlash among existing residents, especially those who already perceive newcomers and visible minorities as competition. Several pragmatic countries are looking to their out-of-work residents, including migrants and refugees already in the country, to help meet labor needs by expanding credential recognition or regularization programs.[73] Others have rolled out an increasingly complex raft of exceptions, adding additional complexity and bureaucratic checks to immigrant selection systems. The net result is that cross-border movement has slowed to a trickle. Large numbers of stranded migrants now live in semi-permanent refugee situations, while those on the move seeking protection have been locked in transit. All told, the number of displaced people worldwide has grown dramatically, just as their opportunities to move on from their current, precarious situation has shrunk.

Organized crime has flourished in the gaps left by international mobility systems. A hugely asymmetrical economic recovery, especially as pharmacological advances ripple across the globe at different rates, has catalyzed a wave of South-North migration among people held back for three years by uncertainty, health concerns, and travel restrictions. Yet a new wave of border closures has disrupted their movement in manifold ways. Huge backlogs in demand for access to protection in high-income countries (for instance, at the U.S. southern border) have made it difficult for governments to turn the tap back on to territorial asylum. Pushbacks of asylum seekers and other migrants across the Aegean and Mediterranean have become commonplace and accepted by European governments and publics. Most countries of first asylum are formally closed to newcomers, leading to a surge in irregular crossings by people who have no access to legal status or formal protection after they arrive. People on the move are even more dependent on the services of smugglers, who in turn have begun taking more dangerous routes and offering new services (for instance, providing forged vaccination records), passing the costs on to individual migrants. Unlike Scenario 1, where migrants using smugglers are mostly those who find it hard to fulfil rising health-related travel requirements, the customer profile in Scenario 3 also includes affluent people from advanced economies. Smugglers, in turn, are offering luxury services alongside their more standard operations.

The only note of optimism is that a period of lower mobility has brought a modest, yet helpful, reprieve for countries with buckling health systems: less outward mobility of health-care workers. COVID-19 has prompted a vicious arms race for in-demand health-care workers, but while even the most closed countries have exemptions for health-care professionals, few health workers want to move in the present context. The pandemic is stemming workforce losses in critical sectors and offering governments in low- and middle-income countries a "pause" to reflect on measures to retain these workers in the medium term.

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73   For instance, Spain's subsidies for seasonal workers that allow unemployed workers to continue receiving their benefits while they work on farms. See Tom Fairless and Paul Hannon, "Europe's Economic Recipe for the Pandemic: Keep Workers in Their Jobs," *Wall Street Journal*, March 24, 2020. In Peru, President Vizcarra signed a decree exempting qualified foreign nurses and doctors from needing to validate their degrees with the country's medical council. See BBC, "Coronavirus: Peru Allows Venezuela Medics amid Pandemic," BBC, August 4, 2020.

Scenario 4. A Return to the Pre-Pandemic Status Quo

Under this scenario, COVID-19 has dramatically subsided by 2022, enabling all countries to fully open up some time in 2023. Despite divergent pandemic management strategies, almost every country has reached herd immunity through some mix of infection or vaccination, and the virus has largely fizzled out, with outbreaks rare and cases manageable. This improving picture has brought an intense appetite among governments and members of the public to return to pre-pandemic levels of economic activity and mobility. As a result, many countries have decided that it is time to open up travel and international mobility, and indeed to pour energy and resources into attracting international tourists and migrants to jumpstart economic recovery. Given the diminishing risks posed by the virus, most regions have decided that the benefits of testing and other health screening measures do not outweigh their considerable costs—both direct and indirect (for instance, undermining the goal of bringing in the largest numbers of tourists and visitors possible). An additional factor has been global competition: as some countries have opened up, others have sought to compete by offering even fewer obstacles to international visitors.

> *International travelers remain a little reticent and the global tourism industry has not yet recovered. Cross-border travel is muted.*

Despite the official "open" sign in most countries, governments continue to promote mask-wearing and social distancing during travel, guided by the advice of public-health officials attuned to reducing the risk of another epidemic. Individual behavior has also not yet reset to pre-pandemic patterns. International travelers remain a little reticent and the global tourism industry has not yet recovered. Cross-border travel is muted, and high congestion in airports remains a rarity, which has prolonged discussion of difficult questions about the risks of large-scale gatherings of people in international travel. Public trust in most governments is extremely low, with record low approval ratings following the reveal of the full extent of the pandemic's economic damage. Against this backdrop, outbreaks, however small, often still trigger calls for border closures. Meanwhile, stigmatization of migrants and refugees is rampant in many countries as far-right populist parties continue to find ways to connect the damage wrought by COVID-19 to the "threat" posed by newcomers.

The fledging recovery has also prompted a postmortem on the COVID-19 pandemic, with many analysts and politicians asking questions about what will happen when the next pandemic arises. Several working groups at the regional and international level are addressing the question of how to shut down in future pandemics, including when to trigger border responses, and a wealth of new studies on the relationship between disease spread and cross-border mobility is aiding the development of a new pandemic evidence base. But without the incentive to pursue coordination on issues such as digital health records or updating the International Health Regulations, discussions have stalled.

With the return to mobility has come the opportunity to take stock of the lasting effects of the 2020–21 pandemic. The impact on remittances has been patchy and uneven, yet much worse than early analyses

projected as many migrants' emergency stores ran out by early 2021.[74] Estimates predict that it will take time for the restarting of cross-border mobility to be reflected in remittance levels. Many bricks-and-mortar money transfer operations went out of business by 2022, and the market is shifting to adapt to primarily digital forms of money transfer, which has had adverse effects for those with limited digital access or skills.

4 Policy Considerations

There is no clear path to return to the pre-pandemic status quo, as described above. The best that can be hoped for is international, if not regional, agreement on how to manage varying levels of threat, react swiftly to new outbreaks, and effectively "clear" safe passengers—whether though proof of vaccination, testing, or quarantine. Governments, international organizations, and private-sector partners, such as the airline industry, will need to work together to avoid the scenario where a chaotic and constantly changing patchwork of requirements dampens movements of all kinds for the foreseeable future.

There are some major milestones and potential policy levers that could speed a faster return to some degree of normality: (1) greater international and regional coordination on risk mitigation in cross-border pandemic management; (2) a set of international standards on vaccine records and verification systems; and (3) constant innovation and progress in the fields of vaccination, contact tracing, testing, and therapeutic treatments; and (4) smart systems for constantly recalibrating risk that make clear what strategic goals mobility restrictions are serving (and are based on state-of-the-art evidence on how to achieve these goals). This section explores a number of questions that policymakers will have to contend with.

A. *What Wraparound Systems Need to Accompany Vaccines?*

The pathway to ending the pandemic has, of course, arrived with the emergence of several highly effective vaccines. But these are not offering a silver bullet for opening up borders. Initially, many governments took the view that having a critical mass of their population vaccinated would obviate the need for health-related travel restrictions, but advanced economies with high vaccination rates are increasingly converging on the "vaccine passport" model as their desired approach for future mobility.

The EU Digital COVID Certificate, which began to be rolled out in June 2021 and formally went into effect on July 1, will provide an important test case for the health passport model.[75] In addition to vaccination, the certificate also covers proof of testing and recovery. After several European countries including Denmark, Estonia, France, and Norway piloted various health passports, 29 European countries are now using the EU

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74   Initially the World Bank projected a 28-percent drop, but actual recorded remittance flow showed just a 1.6-percent drop below the 2019 total. However, the picture varied widely from region to region, with some regions, such as Latin America and the Caribbean, sending a larger volume of remittances compared to the previous year, and some, such as sub-Saharan Africa, registering a much larger drop. See the World Bank, "Defying Predictions, Remittance Flows Remain Strong during COVID-19 Crisis" (news release, May 12, 2021).

75   EU Member States are required to begin issuing certificates within six weeks of July 1, 2021, the day that the certificate's regulation goes into effect. See Tammy Lovell, "European Union vaccine passports issued in 17 countries," Healthcare IT News, June 21, 2021.

version (including all of the aforementioned countries).[76] The International Air Transport Association's Travel Pass is also about to go live, following several rounds of testing.[77] Yet regions with much lower vaccination coverage, such as Africa, have already signaled their opposition to such an approach, at least while they are still grappling for vaccines, as they are worried about being locked out of the reopening of international mobility.[78] The initial phase of the global vaccine rollout also complicates matters for countries committed to an elimination strategy, especially since they may be struggling to encourage vaccine uptake since their residents do not see as pressing a need to get vaccinated.[79]

Meanwhile, the response from international organizations has been mixed. The WHO is formally against vaccine requirements, at least while vaccine access is uneven,[80] yet it is leading a Smart Vaccination Certificate Working Group to establish standards and a "trust framework" for a digital vaccine certificate— suggesting they see this as a likely eventual outcome of the pandemic, if not an inevitability.[81] Evidence that different vaccines have varying levels of efficacy against the virus's variants has strengthened the case for clear international standards. Already, the European Union has come under criticism for only accepting certain versions of AstraZeneca and thus locking out many vaccine recipients from low- and middle-income countries.[82]

Still, this idea has a lot of appeal: it massively reduces the risk that incoming passengers are carrying COVID-19, and thus may import unknown and riskier variants, and it helps generate incentives for people to get vaccinated. But implementation is likely to be difficult. The first issue is verifying vaccination status. The paper-based Yellow Fever Card, touted as a possible blueprint, is so ill trusted that travelers carrying it

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76   Denmark has begun using its digital "Coronpas" (also available in paper) for vaccine status, proof of recovery, or test results to open up domestically. See Adrienne Murray, "Coronapas: The Passport Helping Denmark Open up after Covid," BBC News, April 21, 2021. In late April, France became the first EU Member State to start testing a digital health travel certificate as part of the EU-wide initiative with the TousAntiCovid app. See Jon Henley, "France Is First EU Member State to Start Testing Digital Covid Travel Certificate," *The Guardian*, April 20, 2021. Estonia launched its own digital vaccine passport in late April. See Silver Tambur, "Estonia Introduces a Digital Vaccine Passport," Estonian World, April 30, 2021. In early May, Norway announced it will use its own digital vaccine passports for domestic purposes and international travel, with the hope that it will be launched at the same time or earlier than the European Union's Digital Green Pass. See David Nikel, "Norway Announces Covid-19 Vaccine Passports to Ease Travel Restrictions," *Forbes*, May 6, 2021. As of early July 2021, 29 European countries were issuing the EU Digital COVID Certificate: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, and Switzerland. See Fragomen, "Many EU Member States Are Issuing Digital COVID Certificates," updated July 7, 2021.
77   Reuters, "Global Airline Body Says 'Travel Pass' App to Go Live in Weeks," Reuters, June 10, 2021.
78   In early April 2021, the head of the Africa Centers for Disease Control and Prevention stated that vaccine passports are "inappropriate" while poor countries are still trying to gain access to vaccines, particularly as only 2 percent of vaccine doses administered globally have been in Africa. See Associated Press, "Africa CDC Says Vaccine Passports 'Inappropriate' for Now," Associated Press, April 8, 2021. In its seventh emergency COVID-19 committee meeting, the WHO stated that they encouraged states to "acknowledge the potential for requirements of proof of vaccination to deepen inequities and promote differential freedom of movement." See WHO, "Statement on the Seventh Meeting of the International Health Regulations (2005) Emergency Committee Regarding the Coronavirus Disease (COVID-19) Pandemic" (news release, April 19, 2021).
79   For example, in Hong Kong, a telephone survey of 1,200 residents found that only about one-quarter of unvaccinated people planned to get vaccinated in the next six months, citing fear of lethal side effects and lack of trust in the government's recommendations. Since the survey was taken, several incentive programs were launched in late May, contributing to higher demand, but as of mid-June 2021, still only about 16 percent of residents had been fully vaccinated. See Zen Soo, "Get a Jab, Win a Condo: Hong Kong Tries Vaccine Incentives," Associated Press, June 17, 2021.
80   WHO, "Interim Position Paper."
81   WHO, "Smart Vaccination Certificate Working Group," accessed July 8, 2021.
82   As of July 2, 2021, the European Commission stated that it was looking into avenues to establish a coordinated approach to accept the Indian version of AstraZeneca's vaccine, Covishield, but that it will take time. See Reuters, "EU Working to Allow Acceptance of AstraZeneca's India Vaccine Jab, Commission Says," Reuters, July 2, 2021; Paul Adepoju and Elaine Ruth Fletcher, "Most COVAX Vaccine Recipients Excluded from New EU COVID 'Green Pass' - Thanks to Unapproved AstraZeneca Jab," Health Policy Watch, June 25, 2021.

are often required to be vaccinated again on arrival. Fakes of paper COVID-19 vaccine records are already circulating in multiple countries, including Afghanistan, Bangladesh, Brazil, and France.[83] But a more trusted system (e.g., a QR code or app) requires more sophisticated technology not available to all travelers or at all ports of entry, posing a tradeoff between access and security. A plethora of initiatives have emerged, many from philanthropy and the private sector, such as the CommonPass,[84] the International Air Transport Association's Travel Pass, and the COVID-19 Credentials Initiative.[85] But the landscape is so fragmented that it will take time for trusted solutions to emerge, and countries may choose solutions that are not ultimately compatible with those of their neighbors. Airlines may be happy with apps that verify a traveler's COVID-19 status against data stored locally or accessed through blockchain technology, but governments want to be able to share a trusted vaccination record with other countries. And verifying a credential is much easier in countries with vaccine registries, such as Australia and Denmark, than in places where records are stored locally and certification is primarily paper base. It is thus hard to see one-size-fits-all solutions.

One of the biggest concerns with digital versions is data privacy, and especially the shift that could occur in governments' surveillance powers if they have health data at their disposal to make decisions about whether someone can enter the country.[86] Data privacy advocates worry about the linking together of multiple databases to create a 360-degree view of individuals.[87] Already, researchers have developed a model that predicts a patient's chance of testing positive for COVID-19 based on gender, race, and drug and vaccination history.[88] If linked together with other aspects of automated immigration systems, such as routine visa processing where personal details such as employment status and financial solvency are already collected, this could further bake discrimination into the system. Another risk is leaks: A canary in the coalmine may be a security leak in Jamaica that came to light in early 2021, in which immigration records and COVID-19 test results were exposed.[89] Digital records also raise questions about digital exclusion, especially among people who lack digital proficiency or access (or who, for instance, share access to a

Digital records also raise questions about digital exclusion, especially among people who lack digital proficiency or access ... and those who are reluctant to share information.

83   Benjamin Katz, "Fake Covid-19 Certificates Hit Airlines, Which Now Have to Police Them," *Wall Street Journal*, April 13, 2021.

84   The CommonPass is an initiative of The Commons Project Foundation and the World Economic Forum to create a digital health platform for users to access lab results and vaccination records and consent to allow authorities to validate their status against entry requirements without revealing other personal health data. See Commons Project Foundation, "CommonPass," accessed July 12, 2021.

85   The COVID-19 Credentials Initiative is led by the Linux Foundation Public Health to create both standards and a verifiable credential system that preserves user privacy. See Linux Foundation Public Health, "COVID-19 Credentials Initiative," accessed July 12, 2021.

86   Many concerns have been raised about whether the pandemic could usher in new powers of digital surveillance, especially against the backdrop of the rising use of technology and data surveillance at borders. For instance, South Korea has enforced quarantine by using GPS location tracking; see Max S. Kim, "South Korea Is Watching Quarantined Citizens with a Smartphone App," *MIT Technology Review*, March 6, 2020. China has asked people to scan QR codes to access public spaces; see Paul Mozur, Raymond Zhong, and Aaron Krolik, "In Coronavirus Fight, China Gives Citizens a Color Code, with Red Flags," *New York Times*, March 1, 2020 (updated Jan 28, 2021). And Taiwan has used its digital health records system linked to border entry and exit data to identify COVID-19 risks through analysis of patients' travel history, high-risk occupations, contact history, and clustering at mass gatherings; see Ezekiel J. Emanuel, Cathy Zhang, and Aaron Glickman, "Learning from Taiwan about Responding to COVID-19— And Using Electronic Health Records," Stat, June 30, 2020.

87   These same concerns have been raised over EU plans for a "digital identity wallet," which would store identification forms and official documents, such as bank accounts, diplomas, and driver licenses. See Elena Sanchez Nicolas, "First Glimpse of EU's New 'Digital Identity Wallet,'" EU Observer, June 4, 2021.

88   Jessica Kent, "Predictive Analytics Model Forecasts COVID-19 Risk, Outcomes," Health IT Analytics, June 16, 2020.

89   Zack Whittaker, "Jamaica's Immigration Website Exposed Thousands of Travelers' Data," Tech Crunch, February 17, 2021.

smartphone within households) and those who are reluctant to share information (for instance, because they are part of a group that has been subject to state persecution, such as refugees).[90]

A broader issue is how any new system will begin to shape or constrain mobility pathways for the whole spectrum of people on the move. Mandatory requirements, at least for the foreseeable future, will favor residents of affluent countries that have staked a claim to most of the world's vaccines. They could also leave out people who cannot be vaccinated (or are unwilling to be; a more difficult ethical challenge but an equivalent public-health one). In particular, there is emerging evidence that migrants are being excluded from vaccination coverage, or at least that their eligibility for vaccination is intentionally not being publicized for political reasons.[91] The current system risks being designed largely for smartphone-wielding business passengers and tourists traveling by air. To understand where possible frictions could emerge, the architects of these systems will have to consult widely and ensure they design around the needs of "extreme" rather than average users. This is an important best practice when it comes to public-sector service design, but it may be forgotten in a debate being led by private-sector partners.

Relatedly, there are important considerations regarding the demands placed on those implementing new systems. With airline processing and border enforcement already buckling under the weight of fast-changing regulations and complex requirements, sometimes to the detriment of social distancing,[92] the complexity of creating a two-tier system for vaccinated and unvaccinated passengers is a consideration, at least for the foreseeable future. Even in those countries with highly developed border architecture, introducing a new regime has brought chaos and large queues; in regions with more limited border capacity, the lighter touch the new processes are, the more likely they are to be complied with. Onerous requirements for both border officials and travelers at porous land borders in Africa and South America, for example, are unlikely to be met if it is easy to circumvent them by crossing the border irregularly.

Vaccine requirements are likely to form the cornerstone of the emerging mobility system. But their purpose is context specific, and thus the standard of proof required may vary as the pandemic draws on. For countries with high levels of community transmission, it may be enough to require a declaration that someone has been fully vaccinated and enforce such declarations through spot checks and fines, while countries seeking an elimination strategy may need to stamp out all possibilities of fraud and false claims through international data checks. Moreover, in some countries, including the United States, vaccine passports are politically divisive, making federal action difficult. All this may make international coordination more challenging.

To avoid entrenching deep inequalities, any governments introducing vaccination requirements will need to consider complementary or combination options that (1) offer alternatives to unvaccinated entrants (such as the opportunity to be tested and/or quarantine) and (2) offer nondigital alternatives for those who lack smartphone access—at least for the next few years, and even if this means accepting some potential for fraud.

90   For example, the UN High Commissioner for Refugees (UNHCR) collected personal information from Rohingya refugees in Bangladesh, and the Bangladeshi government subsequently shared this data with Myanmar, the country they had left. In some cases, UNHCR did not collect the refugees' informed consent to share the data with Myanmar. See Human Rights Watch, "UN Shared Rohingya Data without Informed Consent," Human Rights Watch, June 15, 2021.

91   IOM, "Migrant Inclusion in COVID-19 Vaccination Campaigns" (fact sheet, May 17, 2021).

92   John-Paul Ford Rojas, "COVID: Heathrow Immigration Queue 'Bottlenecks' Raise Safety Fears Says Union," Sky News, May 20, 2021.

B.   *What Should the Interim System Look Like?*

With the possibility of more virulent strains of the virus circulating for the next few years at least, countries will need to develop border health systems that facilitate cross-border mobility while furthering their particular COVID-19 management goals. Since a system based on vaccine records alone will be insufficient (as described above), governments will have to strengthen existing regimes based largely on testing and quarantine.[93]

In Summer 2020, a flurry of medical travel restrictions were introduced, from predeparture COVID-19 testing to mandated quarantine upon arrival. Many countries now have predeparture testing requirements, hundreds of airports are offering PCR testing, and airlines and airports are increasingly offering rapid tests and at-home saliva tests. Testing can play a large role in getting the world moving again while vaccines are still being rolled out. As a sign of this, Germany is adapting to its slow vaccine rollout by expanding rapid antigen testing that is now being used to access all kinds of social activities.[94] But with limited coordination between countries on how to offer these services, the landscape is patchy and *ad hoc*. Airlines are facing significant burdens, between having to navigate complex legal requirements in different countries and record information from different types of tests.

Testing can play a large role in getting the world moving again while vaccines are still being rolled out.

Testing and quarantine also carry large costs for passengers, and thus constrain mobility. At the restrictive end: hotel quarantine, which has been employed by countries including Australia, Canada, China, South Korea, and the United Kingdom to varying degrees can carry a huge price tag for the traveler, as can the requirement that travelers take multiple tests. But even self-isolation at home is costly, with few able to afford to take time out of work to quarantine. Thus far, these interventions have been employed in an *ad hoc* and maximalist way—in other words, governments did not mind, or even actively encouraged, such interventions to act as a deterrent to international travel, often layering multiple test and quarantine requirements despite diminishing marginal returns to public health. For instance, until early July 2021 Canada had a mandatory 14-day quarantine (including partially in a hotel) with no exemptions for those vaccinated against, testing negative for, or recovered from COVID-19.[95] In December 2020, the United Kingdom began experimenting with a "test to release" policy whereby travelers can take a test on Day 5 after arrival to exit quarantine, yet this did not free travelers from the regular testing schedule on top of this (one predeparture test and two after arrival), and the large costs favor wealthier travelers.[96]

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93   According to the most recent WHO guidance, governments should "offer alternatives to travel for individuals who are unvaccinated or do not have proof of past infection," including in the form of PCR or antigen tests. See WHO, "Policy Considerations for Implementing a Risk-Based Approach."

94   Christopher F. Schuetze and Melissa Eddy, "Germany Makes Rapid Virus Tests a Key to Everyday Freedoms," *New York Times*, June 9, 2021.

95   As of July 5, 2021, fully vaccinated Canadian citizens and permanent residents were exempt from the federal quarantine requirement and testing on their 8th day after arrival. See Government of Canada, "Government of Canada's First Phase to Easing Border Measures for Travellers Entering Canada" (news release, June 21, 2021); Dan Bilefsky and Vjosa Isai, "Canada Eases Its Hotel-Quarantine Rule for Vaccinated Citizens Flying in from Abroad," *New York Times,* June 21, 2021; Government of Canada, "Mandatory Quarantine or Isolation," accessed June 8, 2021.

96   Government of the United Kingdom, "Coronavirus (COVID-19): Test to Release for International Travel," updated May 17, 2021.

As the pandemic begins to wane, at least in advanced economies, and countries begin to think seriously about ways to restart mobility safely, they will need to adopt lighter touch interventions where possible, reduce duplication and excess, and make compliance with the system cheaper, easier, and less burdensome. For instance, they could consider optimal combinations of testing and quarantine to cross a desired risk threshold;[97] add more countries to quarantine-free lists; or tailor requirements to specific groups, for instance by including additional categories such as visiting nationals or reuniting family members on exemption lists currently reserved largely for essential workers. A mobility system that works with higher volumes of migrants and travelers may rely more heavily on self-compliance (either with quarantine measures or furnishing proof of vaccination and testing, for instance) and thus require rules that are proportionate, well publicized, and easy to follow.

New procedures, if they are going to be maintained, take time to adjust to and resources to build capacity. Pressures can be especially acute in countries that already have limited border resources or technology capabilities. Governments face the question of whether to invest in interim systems or develop new border health processes that can withstand many different public-health scenarios—including the long tail end of the COVID-19 pandemic. Greater transparency and harmonization over health procedures could allow for systems that can be more readily calibrated to rising and falling levels of risk, instead of maintaining a policy of deterring movement for all but the most persistent or wealthy.

C.   How Could Health Screening Be Better Coordinated?

Unilateral decision-making about travel restrictions and medical requirements has had financial, human, and public health costs. Complex systems have deterred the movement of even low-risk travelers— especially when such systems lead to duplication, bottlenecks, or requirements that are impossible to fulfil. Without processes for governments to agree on when and under what conditions to place restrictions on travel (and limited compliance with the International Health Regulations), decisions have often been last minute, ill communicated, and poorly coordinated with neighboring countries. This has led to people stranded, inadvertently created new challenges (such as a rush on border checkpoints as travel regulations change), and pushed some travelers to add an additional third-country stop or two-week visit to their travel plans to circumvent travel bans.[98] Borders have two sides, and as countries seek to open up, they will need partners on the other side to do so as well; for instance, even though many EU countries have opened up quarantine-free travel for visitors from the United States, this currently excludes temporary immigrants (including those from Europe, who are most eager to visit home), while the United States has not yet adjusted its rules to allow them to return after their trip.[99]

Borders have two sides, and as countries seek to open up, they will need partners on the other side to do so as well.

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97   For instance, modelling of various strategies of combined testing and quarantine indicate that five days of quarantine followed by a test would be effective at reducing transmission potential by 88 percent. See Sam Clifford et al., "Strategies to Reduce the Risk of SARS-CoV-2 Re-Introduction from International Travellers," Centre for Mathematical Modelling of Infectious Diseases Repository, updated July 28, 2020.
98   Célia Belin, "It's Time to Reopen to Europe—And Not Just for Tourists," Brookings Institution, Order from Chaos Blog, May 21, 2021.
99   Belin, "It's Time to Reopen to Europe."

While 2020 saw dozens of different models of regional coordination introduced, common themes have been the slow speed of getting them off the ground and how easily they can collapse. The Caribbean Community (CARICOM) and Baltic bubbles both burst as a result of mistrust in how neighbors were handling the pandemic,[100] and the launch of both the Trans-Tasman and Hong Kong–Singapore bubbles has been delayed many times over by outbreaks.[101] There are several promising models that go beyond "bubbles," including the African Union/UN Economic Commission for Africa continental guidelines on trade and transport facilitation for people, goods, and services, and an Economic Community of West African States (ECOWAS) document committing to harmonizing efforts along a phased approach (although it made no commitments to a common risk assessment strategy).[102] But even the most sophisticated model, the European Union's "traffic light" risk assessment system, designed to avoid a repeat of the unilateral border closures of Spring 2020, was threatened by Member States reimposing closures as the Alpha variant began circulating more widely; in February 2021, the European Commission issued a warning to six Member States (Belgium, Denmark, Finland, Germany, Hungary, and Sweden) to lift tightened border restrictions imposed in response to new variants, claiming they impeded free movement in the bloc.[103]

Meanwhile, at the international level, multiple actors have been coordinating different pieces of the puzzle. For instance, the WHO is reviewing the 2005 International Health Regulations to assess their functioning during the COVID-19 response, including how they supported information-sharing in the early phases of the pandemic and the WHO's mandate to respond, and also taking a leading role in discussions on mechanisms for collaboration and coordination for future outbreaks.[104] The Smart Vaccination Certificate Consortium Working Group is reviewing preconditions and standards for a digital vaccination certificate established by the WHO.[105] The International Civil Aviation Organization has been working with key aviation partners on a risk framework for air travel.[106] The Global Tourism Crisis Committee, established by the World Tourism Organization, is focusing on coordinating efforts to restart tourism.[107] And the World Customs Organization

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100 Like the European Union, CARICOM had a system for categorizing regions into no cases, low, medium, high, and very high risk, but a lack of uniformity in regulation and a rise in cases has led some countries to abandon this approach, reimposing their own testing and quarantine requirements. See Jamaica Gleaner, "Blowout of CARICOM COVID-19 Travel Bubble - Regional Heads Squabble over Country Classification," *Jamaica Gleaner,* November 25, 2020.

101 While the two-way Trans-Tasman bubble was opened in April 2021, it has been paused several times due to outbreaks. The launch of the Hong Kong–Singapore bubble has been postponed twice and its start date remains unclear. See Sophie Jeong, "Australia Opens Quarantine-Free Travel Bubble with New Zealand," CNN, April 19, 2021; SBS News, "New Zealand Pauses Trans-Tasman Travel Bubble with Australia over Sydney COVID-19 Outbreak," SBS News, June 26, 2021; Denise Tsang and Dewey Sim, "Travel Bubble Trouble: Hong Kong, Singapore Talks Hobbled by Disagreements over Covid-19 Antibody Tests, Vaccination Rules," *South China Morning Post*, July 13, 2021.

102 See UN Economic Commission for Africa, *Facilitating Cross-Border Trade through a Coordinated African Response to COVID-19* (Addis Ababa: UN Economic Commission for Africa, 2020); Economic Community of West African States (ECOWAS), "Ecowas Guidelines for the Harmonization and Facilitation of Cross Border Trade & Transport in the ECOWAS Region on the COVID-19 Pandemic and Related Post-Recovery Actions," June 2020.

103 Daniel Boffey, "EU Tells Six Countries to Lift Covid Border Restrictions," *The Guardian*, February 23, 2021.

104 The Review Committee met 12 times in 2020, three times publicly, and subgroups on preparedness, alert, and response have met weekly. See WHO, "Statement to the Resumed 73rd World Health Assembly by the Chair of the Review Committee on the Functioning of the International Health Regulations (2005) during the COVID-19 Response" (statement, November 9, 2020). Additionally, the WHO is launching an early warning system with the German government to gather intelligence on COVID-19 and future pandemics. See United Nations, "Early-Warning 'Pandemic Hub' Plan Unveiled by WHO's Tedros and Germany's Merkel," UN News, May 5, 2021.

105 WHO, "Review Committee on the Functioning of the International Health Regulations (2005) during the COVID-19 Response," accessed February 16, 2021.

106 ICAO, *Manual on Testing and Cross-Border Risk Management Measures*.

107 World Tourism Organization, "Portugal Hosts UNWTO Crisis Committee on Harmonization of Cross-Border Travel Procedures," updated December 10, 2020.

and International Road Transport Union are trying to coordinate cross-border trade.[108] The landscape is missing a meta-coordinator to bring together these disparate actors working on their own patches.

Ultimately, a "successful" return to mobility may be in the eye of the beholder. For instance, while the travel and tourism industry see quarantine requirements as anathema to their sector's revival, public-health experts distrust a system based on testing alone because of the risk of false negatives. Those who hold the government purse strings may consider it important to prioritize tourism above all else, while migration experts will worry about the unintended consequences of designing systems today that in a few years' time could swell the ranks of irregular migrants, further erode territorial asylum, and distort the global migration system by imposing health requirements that are difficult for many to meet.[109] "Success" may also look different to different countries as they move along their COVID-19 trajectory, and they may have different goals depending on the impact of both biological immunity and vaccination rollouts.

Governing at the nexus between public health and mobility is thus likely to be a major challenge in the coming years. The pandemic has shown that governments will need to sharpen their procurement skills to develop new ways of working with disparate partners; explore new models of cross-agency work to unite public-health, security, and migration goals; and learn how to make policy that both appeases anxious publics yet draws on a strong evidence base in the heat of crisis.

5   Conclusion

The scenarios outlined in this report set out different possible outcomes for travel and mobility in the years ahead. Even in the unlikely Scenario 4 (A Return to the Pre-Pandemic Status Quo), a lack of public trust in safe travel and in how governments are handling cross-border movements could continue to dampen mobility for the foreseeable future. Whatever happens, governments will need to build systems to respond quickly and effectively to future epidemics. It therefore seems clear that international mobility will have to navigate a seismic shift in approaches to border management under all plausible future scenarios.

Considerable progress has been made towards Scenario 1 (Pandemic Proofing), ranging from intensifying discussions around vaccine passports to the increasing availability of rapid testing. But without international agreement on standards for vaccine efficacy, mutual trust in the health screenings and other procedures being employed at borders, and interoperable systems for recognizing health records, regions could pursue their own approaches, triggering Scenario 2 (Mobility with Friends). Regional coordination could be a step on the way to global agreement, and a source of innovation to test different models, hence these scenarios are not mutually exclusive. But it could also shape the

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108 World Customs Organization and International Road Transport Union, "Joint WCO-IRU Statement on Responding to the Impacts of COVID-19 on Cross-Border Transport" (statement, May 12, 2020).

109 An example of this differing perspective is that the post-9/11 response is described in some quarters as laying the groundwork for a more coordinated, organized system of air travel, and in others as a tipping point after which migration was "securitized." See Marie McAuliffe, "Immobility as the Ultimate 'Migration Disrupter': An Initial Analysis of COVID-19 Impacts through the Prism of Securitization" (Migration Research Series No. 64, IOM, Geneva, 2020).

contours of future migration, especially if regions begin to build partnerships that go beyond public health and borders and encompass labor migration, education, and economic development and that bring in a variety of stakeholders, including employers, universities and other education providers, and the tourism sector.

Care should be taken to avoid Scenario 3 (Chaos and Fragmentation) at all costs. Last-minute and poorly coordinated travel bans could continue to have a devastating effect, leaving millions of migrants and travelers stranded in extremely difficult situations[110] and families separated. Burdensome health requirements and travel restrictions could create incentives to circumvent restrictions, forge documents, or ignore quarantine requirements. And a patchwork of fast-changing policies could throw gravel in the wheels of mobility for the foreseeable future, constraining all forms of migration, from labor mobility to refugee resettlement, as well as placing many forms of movement out of reach for all but the most affluent, and potentially fueling more irregular movement as a result.

The path forward is likely to be determined by how governments weigh the choice between blunt tools, such as bans on travel from entire countries, and more precise measures, such as testing, that offer more targeted surveillance and responses but also present significant tradeoffs in terms of privacy and cost. Advocates have signaled their concerns about public health becoming the new security frontier, with little thought given to the ethical implications of collecting and sharing these data. But to avoid Scenario 3, some tradeoffs will have to be made.

Some of the key priorities for the coming months will include:

▶ **Designing transparent, equitable, and risk-proportionate systems.** The existing web of rapidly shifting policies and procedures was tolerated by governments and their partners in the first year of the pandemic as it had a de facto deterrent effect on international mobility. As governments look to open up safely, they will need to cooperate with one another to ensure that rules and requirements are proportionate, equitable, well publicized, and easy to follow. In doing so, they will need to consider how requirements affect different groups. The emergent border health system is being designed around affluent, smartphone-wielding tourists and business travelers. Little attention has been paid to the needs of certain groups, such as separated families, temporary immigrants, and people without digital access. To avoid unintended consequences, including incentivizing irregular movement, governments will need to be more intentional in the way they design systems, including by consulting users of diverse backgrounds. Self-compliance—creating rules that people understand and can follow without facing undue burdens—is a more valuable tool than any shiny new app.

▶ **Treating cross-border health considerations as part of a comprehensive national strategy.** For the first few months of the pandemic, several countries put most of their eggs in the travel-restrictions basket, which acted as a diversion from other sorely needed domestic strategies. As is now becoming clear, the effectiveness of travel restrictions is highly context specific, linked both to what stage countries are at in their pandemic trajectory and whether they are using travel measures as risk management or to pursue an elimination strategy, for instance. Entry bans and health-based travel

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110 For an analysis of data IOM has collected on the impact of border closures and travel restrictions on migrants in different regions, see Benton, Batalova, Davidoff-Gore, and Schmidt, *COVID-19 and the State of Global Mobility in 2020*.

requirements should only be employed as part of a well-thought-out pandemic management strategy and, as countries seek to open up, be grounded in a solid cost-benefit analysis rather than employed to send a political signal.

► **Communicating smartly about risk management.** Governments moved quickly to impose travel restrictions in the early months of the pandemic, but border closures and travel restrictions ultimately only delayed, rather than prevented, the virus's arrival. In addition, new evidence suggests that mobility restrictions serve their purpose only in a narrow set of circumstances. Nonetheless, mobility measures have proved extremely popular with the public as a clear signal that governments are acting decisively to address the threat of COVID-19. Governments will need to work out how to bridge this gap. They will need to communicate clearly to their constituents about the risk tolerance inherent to assumptions behind different policy decisions, what mitigation measures they are putting in place, and what tradeoffs need to be made on the pathway to reopening mobility.

► **Strengthening international coordination.** In the first months of the pandemic, unilateral actions to close borders or impose travel restrictions produced chaotic scenes at some borders and left many migrants stranded. This underscored the importance of coordination to roll out new measures and mitigate potential tradeoffs. Ensuring that the systems being put in place (e.g., on vaccine records) are compatible and meet common standards will eventually require coordination at the global level, but reaching consensus takes time. As an interim step, regional coordination can be an important vehicle both for harmonizing requirements between neighboring countries to restart mobility and for testing new approaches.

COVID-19 has been a wake-up call for governments on the importance of having clear and well-thought-out systems to adapt to the outbreak and spread of disease. But despite universal desire to avoid a repeat of the chaotic border shutdowns seen at the onset of the pandemic, few countries are thinking ahead to how best to build systems capable of withstanding the next public-health crisis and ensuring that it does not lead to the same level of uncoordinated closure. The COVID-19 pandemic has illustrated the importance of investing in preventive strategies such as vaccine development, genome sequencing, and modeling to assess the pandemic potential of different infectious diseases. Equally important is strengthening pandemic preparedness within governments through better cross-agency coordination, foresight skills, and rapid response systems across different regions. Many of the systems put in place over the last year will outlive this crisis, and they will inform how governments respond to future infectious disease outbreaks. If carefully managed, current efforts at regional and international coordination around screening, testing, vaccines, and digital health records could lay the groundwork for a more robust and swift response to the next pandemic.

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