



OXFORD COVID-19  
GOVERNMENT  
RESPONSE TRACKER



# What have we learned from tracking every government policy on COVID-19 for the past two years?

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Over the past two years, the COVID-19 pandemic has tested the capacity of every government in the world to perform its most basic function: protect the wellbeing of its people. The results vary enormously. Some of the countries with the most sophisticated health systems have seen horrific levels of death, as well as sharp economic and social impacts. At the same time, some states with few of the indicators for preparedness most academic and policy literature emphasized – for example, hospital beds, testing capacity, or access to vaccines – have performed much better across all dimensions. These differing outcomes present an enormous puzzle to researchers, policymakers, and citizens: why did some do better than others, and what does that mean for how we prepare ourselves for the future?

While we as individuals rely on our immune system to keep us healthy, it is clear that the strength of the “social immune system” of the body politic has varied remarkably across countries. Understanding how to improve our collective response is thus critical, both for exiting the current pandemic and preparing for the next one.

Understanding what works, and what does not, first requires valid measurement of what governments have and have not done. The COVID-19 pandemic has prompted an extraordinary range of policy responses from governments. These measures include efforts to control transmission through closure and containment (eg forms of social distancing or lockdown), health-focused measures like contact tracing, testing, and mask wearing, economic support policies to address the impacts of both the pandemic and responses to it, and, since 2021, policies to prioritise and incentivise vaccination.

Using data from the Oxford COVID-19 Government Response Tracker (OxCGRT), which records government policies for 186 countries and over 200 subnational jurisdictions from 1 Jan 2020 to the present, we describe the broad patterns of government responses over the first two years of the pandemic. The OxCGRT data include over 20 policy indicators in four areas of policy making:

1. Closure and containment policies;
2. Health policies;
3. Economic support;
4. Vaccination.

We also aggregate the individual indicators into different indices, normalised to range from 0 to 100, that summarize the number of intensity of government responses in place in a given area:

1. Stringency index: closure and containment policies;
2. Containment and Health Index: closure and containment policies and health policies.

For complete information about the OxCGRT data please see the project documentation.<sup>1</sup>

## What policies do we observe?

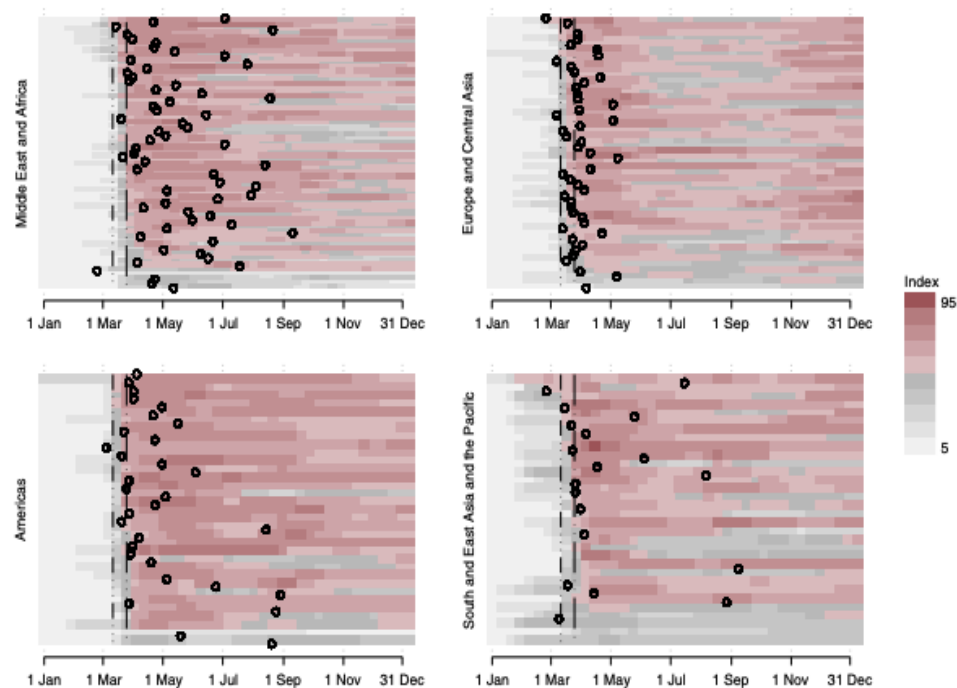
At the beginning of the pandemic, most governments applied similar policies around the same time. In Figure 1 we can see that almost every country in the world enacted relatively stringent policies around mid-to-late March 2020, as identified by the Containment and Health Index rising above 50 (going from grey to pink in Figure 1).

This occurred regardless of the actual disease progression in each country. We can also see, from the circles in Figure 1, that only a small handful of countries had experienced local community transmission leading to 10 or more deaths. Indeed, most countries did not cross this threshold of 10 deaths until later in the year. The policy response in the early phase of the pandemic was a case of ‘copycat effect’: policymakers all around the world, with little information beyond news reports coming out of China and northern Italy, quickly adopted similar sets of preventative measures.

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<sup>1</sup> Thomas Hale, Noam Angrist, Rafael Goldszmidt, Beatriz Kira, Anna Petherick, Toby Phillips, Samuel Webster, Emily Cameron-Blake, Laura Hallas, Saptarshi Majumdar, and Helen Tatlow. (2021). “A global panel database of pandemic policies (Oxford COVID-19 Government Response Tracker).” Nature Human Behaviour. See also the project website, available: <https://www.bsg.ox.ac.uk/research/research-projects/covid-19-government-response-tracker>

Figure 1. Clustering of initial government responses compared with the spread of COVID-19 in 2020

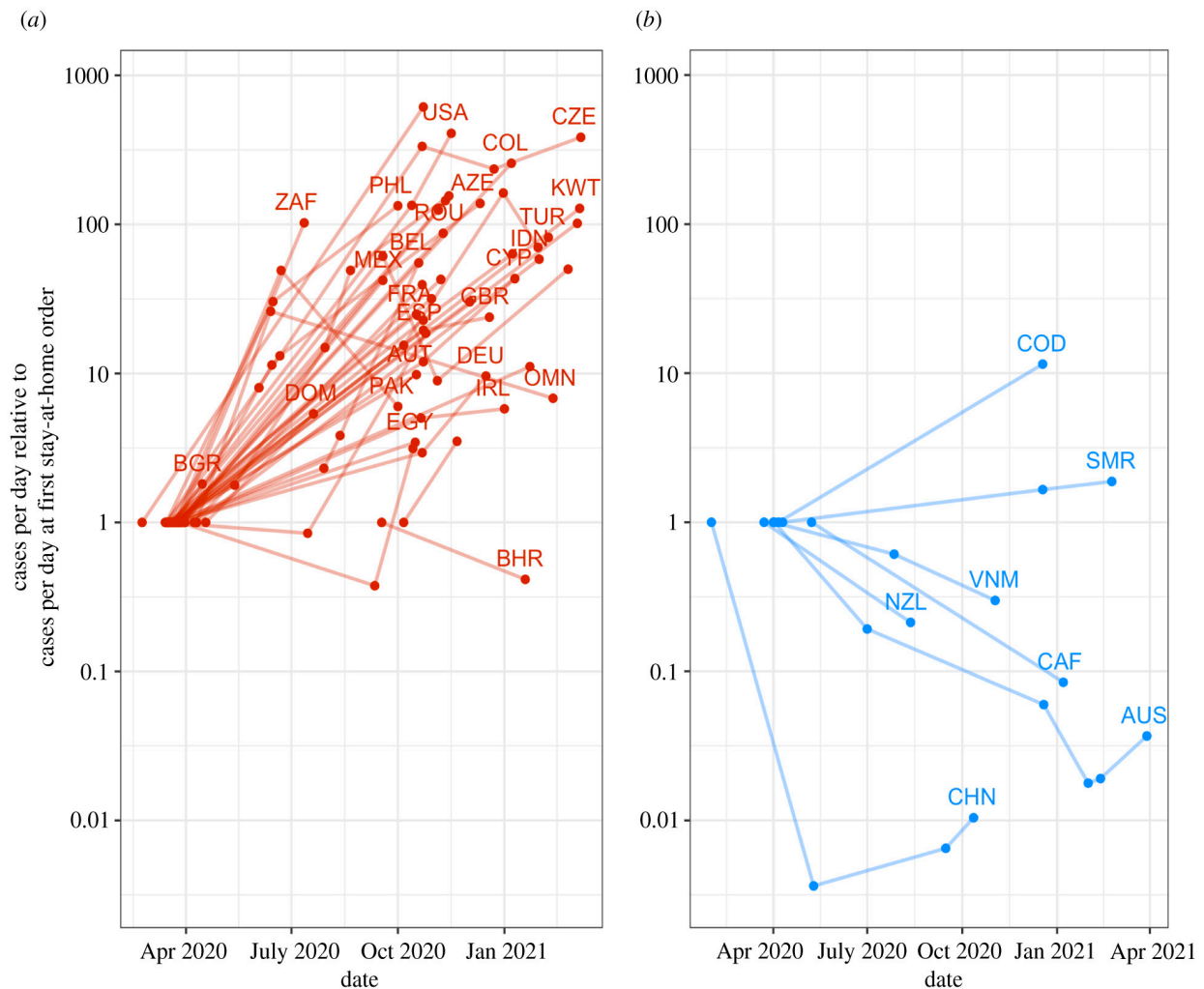


**Note:** The graph shows 183 countries (one counter per row) grouped by world region. The colour reflects the level of the Containment and Health Index (0-100) in each country. The circles mark the date that each country experienced its tenth death attributable to COVID-19. The two vertical dashed lines in March denote the two-week period directly after the WHO pandemic declaration. **Source:** Hale, T., Angrist, N., Goldszmidt, R. *et al.* (2021) 'A global panel database of pandemic policies (Oxford COVID-19 Government Response Tracker', *Nature Human Behaviour* 5, 529–538.

After the initial restrictions in March/April 2020, we observed much more variation in governments' approaches, as many countries began to ease their restrictions going into the northern hemisphere summer. A key distinction emerged between two groups of countries. So-called "zero Covid" countries sought to suppress or even eliminate COVID-19 through strict lockdowns, and then keep it at bay via stringent travel controls. When new outbreaks began, strict controls were quickly put in place to suppress them. For many of these countries we observe an increasing sensitivity to case numbers over 2020 and early-2021 (see panel b of Figure 2), where governments introduce stay-at-home orders at progressively lower and lower transmission rates. This approach was particularly common in the East Asia and Pacific region, and typically was accompanied by rigorous testing and contact tracing. Many of these countries – if not all them – eventually abandoned this approach in part due to the Omicron variant's higher transmissibility.

A second approach, more common in Europe, Africa, and the Americas, sought to reduce but not eliminate the spread of COVID-19 while attempting to maintain openness. Restrictions were ramped up and down as waves of infection occurred. In these countries, we observe a decreasing sensitivity to transmission rates – policymakers choose to "wait longer" during a wave before enacting a new stay-at-home order, resulting in subsequent stay-at-home orders being implemented at progressively higher case levels.

Figure 2. Across 2020 and the first delta wave into 2021, countries fall into two general categories regarding their choice to implement stay-at-home orders at different levels of daily confirmed COVID-19

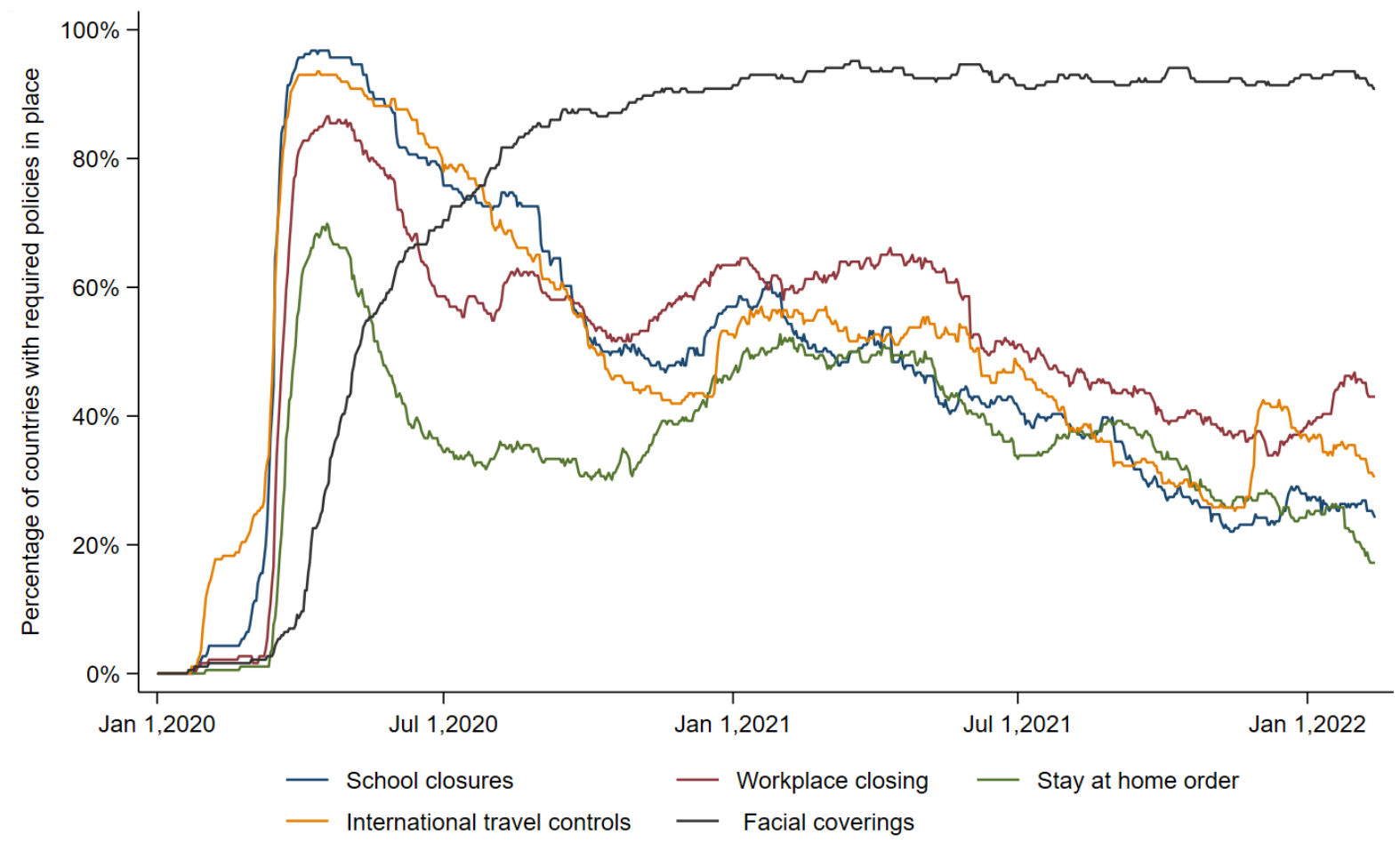


**Note:** each country is represented by a line connecting multiple dots, where each dot is the beginning of a new stay-at-home order. The position on the y-axis is the number of confirmed cases per day relative to the number of cases per day when that country implemented their first stay-at-home order. (a) Countries that have averaged more than 100 new cases reported per day since April 2020; (b) countries that have averaged 100 cases or fewer per day. Countries are only included if they implemented more than one stay-at-home order and had local community transmission (greater than 10 new cases per day) when they first implemented a stay-at-home order. **Source:** Phillips T., Zhang Y. & Petherick A. (2021) 'A year of living distantly: global trends in the use of stay-at-home orders over the first 12 months of the COVID-19 pandemic', *Royal Society Interface Focus*, 11: 20210041.

Over time, we have observed a steady decrease in the number of governments employing costly restrictions. In Figure 3 we can see a sharp rise in March 2020 (described above) where almost every country closed their schools and limited international travel, and almost as many countries closed workplaces and implemented stay-at-home orders. From there, these policies gradually declined in popularity, with occasional periods of resurgence – particularly around the major waves associated with the Delta and Omicron variants. One of the most striking patterns is the uptick of border closures and other international travel controls when each of these two major variants were discovered to be widely circulating.

In Figure 3 we also observe the rising popularity of mask-wearing requirements. This shift in policy making largely follows the changing scientific evidence about the ability for COVID-19 transmission to happen via aerosol particles in the air. Policies about facial coverings are nearly ubiquitous at the time of writing – two years into the pandemic – but they were so uncommon in the early months of 2020 that they were not even added to the OxCGR codebook until October 2020.

Figure 3. Proportion of countries using various restrictions during the COVID-19 pandemic





### What outcomes have we seen?

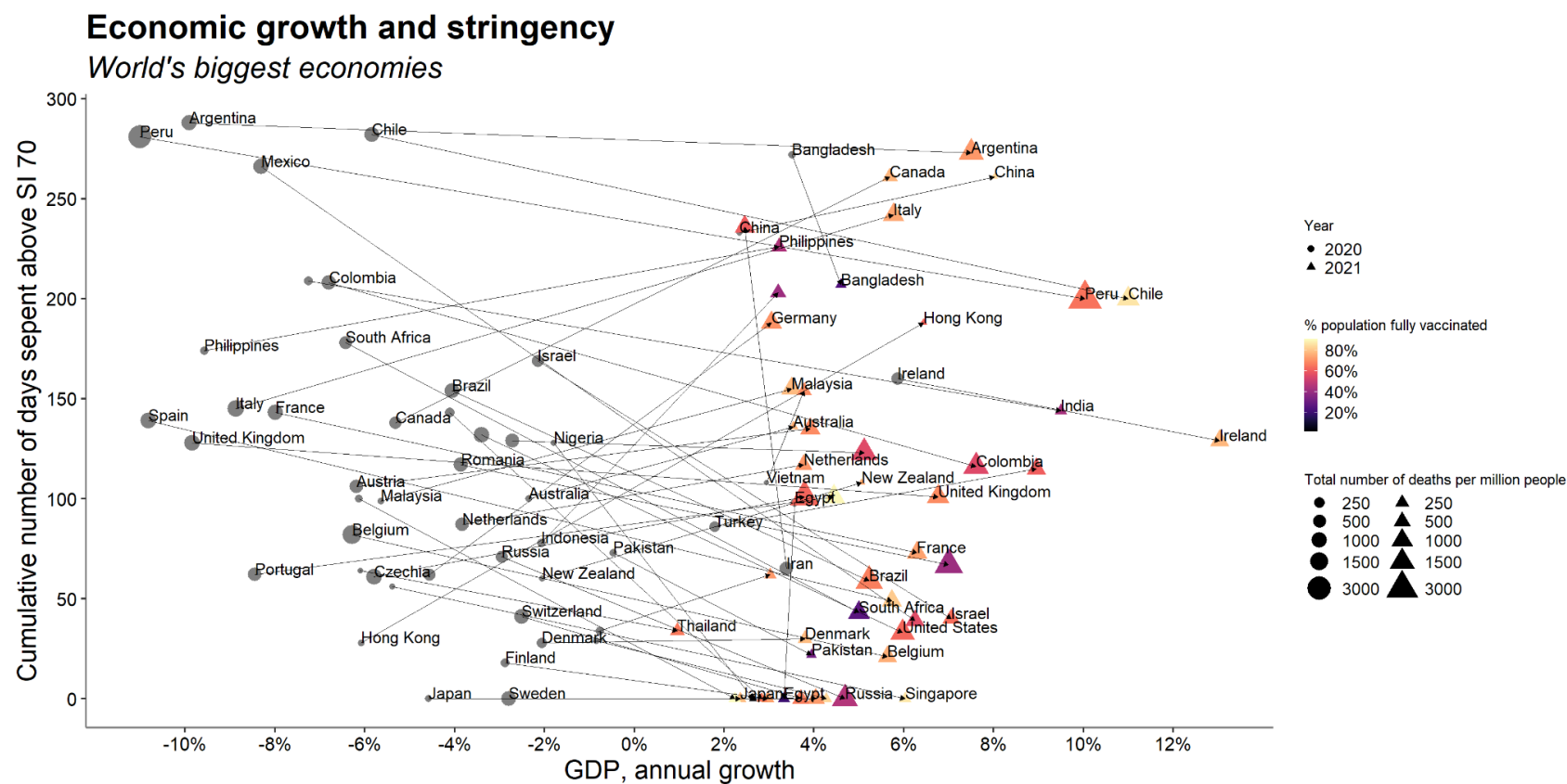
It is impossible to provide a comprehensive assessment of who has done “better” or “worse” given the multidimensional nature of the impacts of COVID-19, the different baselines countries are starting from, and variations in the quality of data around cases and deaths across countries. However, as a first approximation we can describe macro patterns in the economy and in health outcomes, and consider how those correlate with different government responses.

Figure 4 shows an overall assessment of how the 50 largest economies have performed on four dimensions over 2020 and 2021:

- The total time spent under stringent closure and containment policies (vertical axis);
- Annual GDP growth (horizontal axis);
- Cumulative deaths per million people (size of the marker);
- Percentage of the population vaccinated (colour of the marker);
- The grey points correspond to 2020 and the coloured points to 2021.

Importantly, we cannot infer causal relationships between the stringency of government responses or vaccination rates and health outcomes from crude annual averages. The effect of restrictions or vaccines on cases and deaths depends critically on the timing of when they are put in place. Indeed, most countries find themselves experiencing long periods of “lockdown” precisely because they have experienced a large surge of infections that are putting the health system at risk, so we expect a positive correlation between the two when summing across the entire year. Numerous time series analyses have shown that closure and containment policies are, on average, effective at reducing infections and deaths from COVID-19, particularly when they are deployed early, and that high levels of vaccination substantially improve health outcomes even with more infectious variants.

Figure 4. How the world's 50 largest economies have performed across four dimensions



Looking at this macro-comparison, countries that have done better appear below and to the right of countries that have done worse, and have smaller and, in 2021, more brightly coloured markers. By this measure, some of the countries that fared worst in the first year of the pandemic include Peru, Argentina, Mexico, and Chile, which all suffered significant health and economic impacts, while also remaining under strict restrictions. Countries like Japan, Finland, New Zealand, and Pakistan fared much better, seeing fewer deaths, less economic damage, and fewer days under lockdown. Many European countries are clustered toward the middle, with Spain, Italy, France, and the UK performing worse in 2020 than near-neighbours like Portugal, Germany, Denmark, or Romania.

In 2021, in turn, all countries saw an important economic rebound, though some much more than others. Overall, countries moved South East on the plot, growing economically and reducing their reliance on closure and containment policies. A number of countries, clustered at the bottom of the graph, spent no days in 2021 with Stringency Index scores above 70. Tragically, most countries also saw more deaths from COVID-19 in 2021 than in the first year of pandemic, especially driven by the more dangerous Delta variant.

Looking across regions adds further nuances to these macro comparisons. Figures 4.a, 4.b, 4.c, and 4.d compare East Asia and the Pacific, Europe and Central Asia, Latin American and the Caribbean, and Sub-Saharan Africa, respectively. These plots look at the same four indicators as Figure 4, but averaged across both 2020 and 2021.

Significant differences emerge. Overall, East Asia and Pacific countries are much more clustered in the positive south-eastern quadrant compared to other regions, and the size of their markers shows relatively few deaths per capita. Economic growth has been broadly positive, and, with a few notable outliers like China or Myanmar, governments have not found a need to rely on long periods of stringent restrictions.

Europe shows a very different picture. Economic growth across the whole two-year period is broadly positive, reflecting the huge economic support measures, fiscal and monetary, put in place to counter the effects of the pandemic. Many countries, however, have lived under long periods of stringent restrictions. Overall levels of death are very high compared to the other two regions, reflected in the size of the markers.

Latin America and the Caribbean, along with Sub-Saharan Africa, in contrast, show no clustering in any single quadrant. Economic growth is mixed in both regions, with many countries' economies shrinking over the two year period. Similarly, some countries have employed significant periods of stringent closure and containment policies, particularly in Latin America, while others have seen very little or none. Large numbers of deaths have been seen across most Latin American countries, similar to those in Europe, as well as in a few African states. However, most African countries show very little health impact compared to European or Latin American comparators. This pattern is all the more striking given the tragically small fraction of countries that show significant vaccination by the end of 2021.

Figure 4.a. Overall performance across four dimensions: East Asia and the Pacific

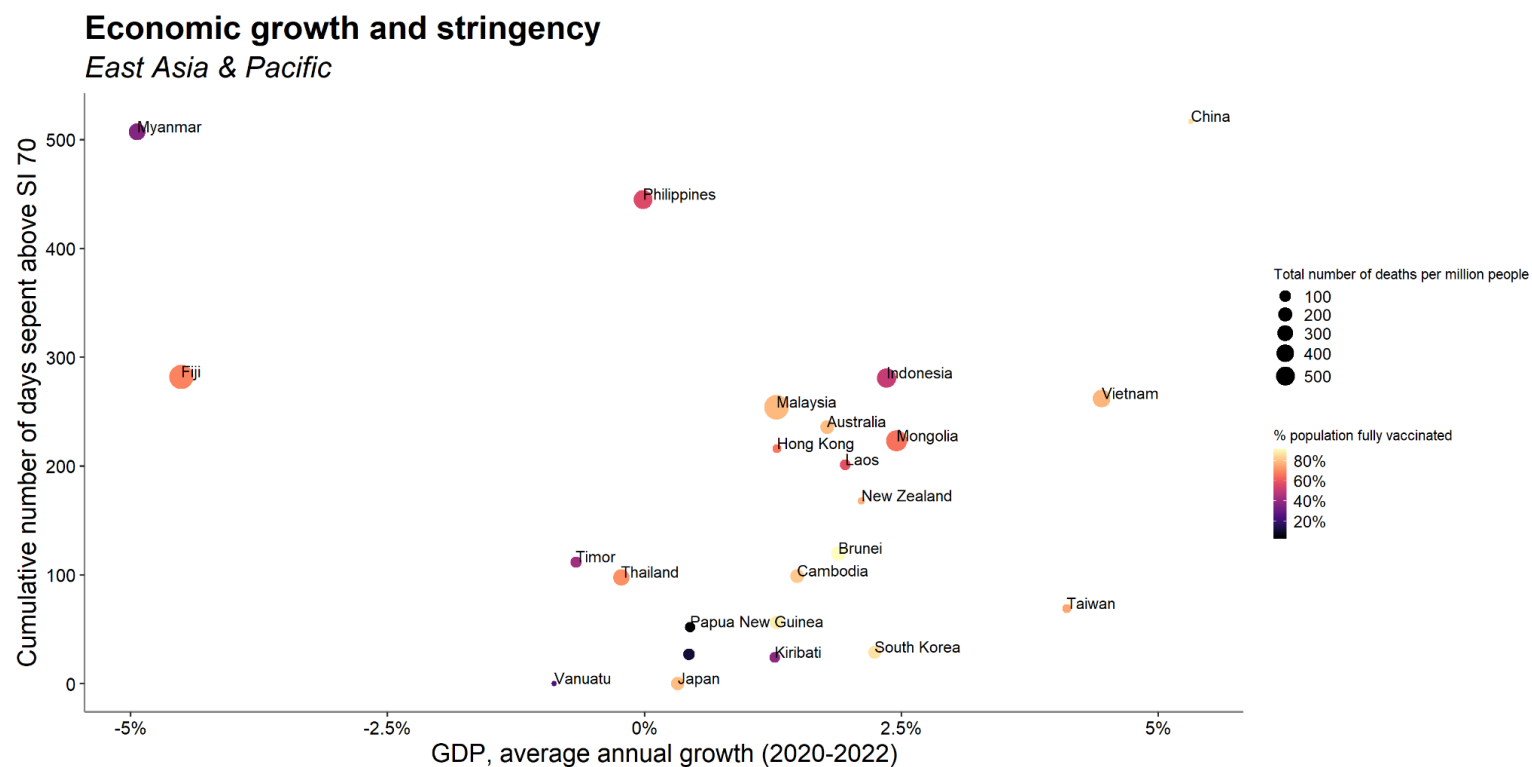


Figure 4.b. Overall performance across four dimensions: Europe and Central Asia

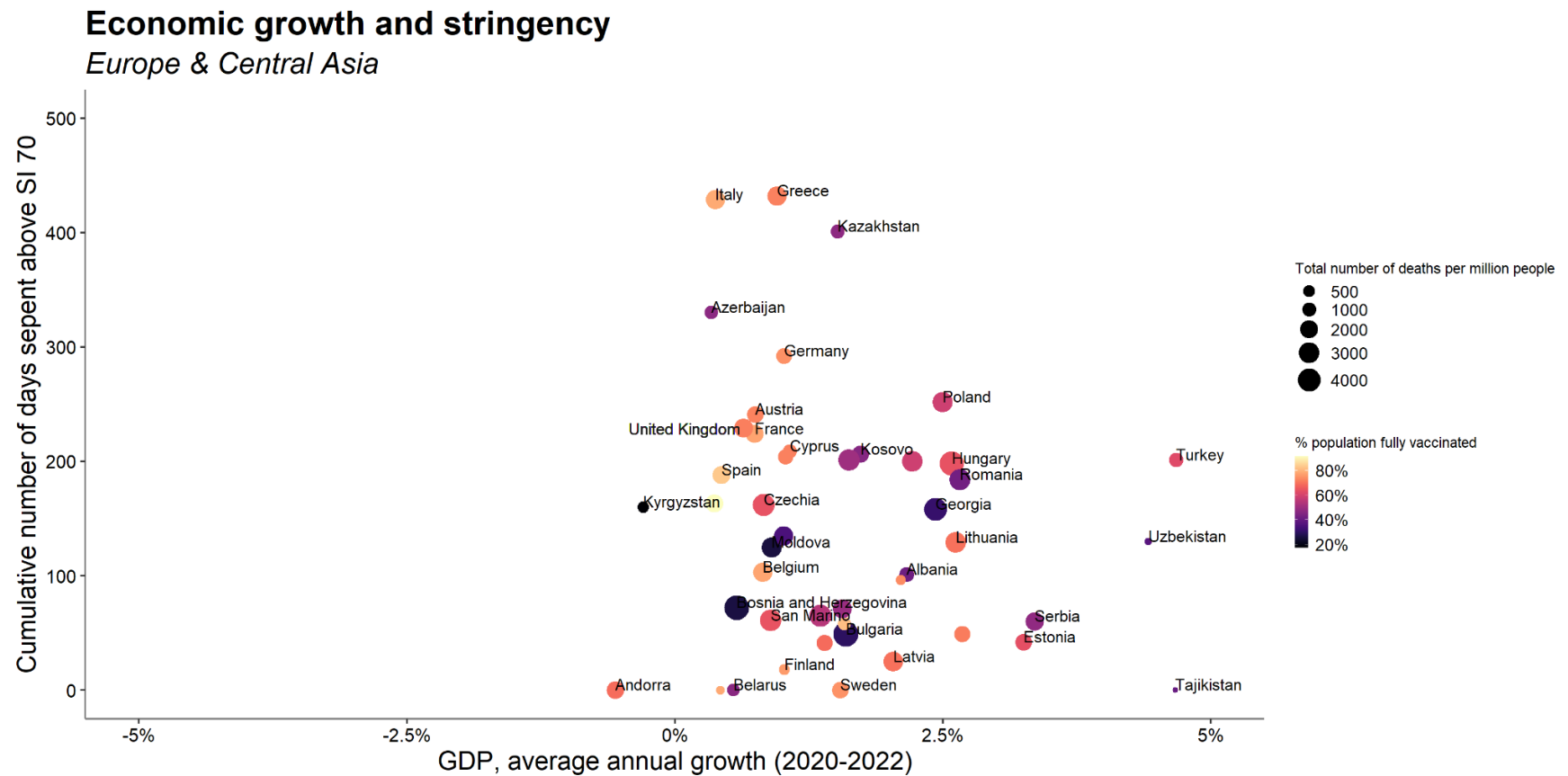


Figure 4.c. Overall performance across four dimensions: Latin America and the Caribbean

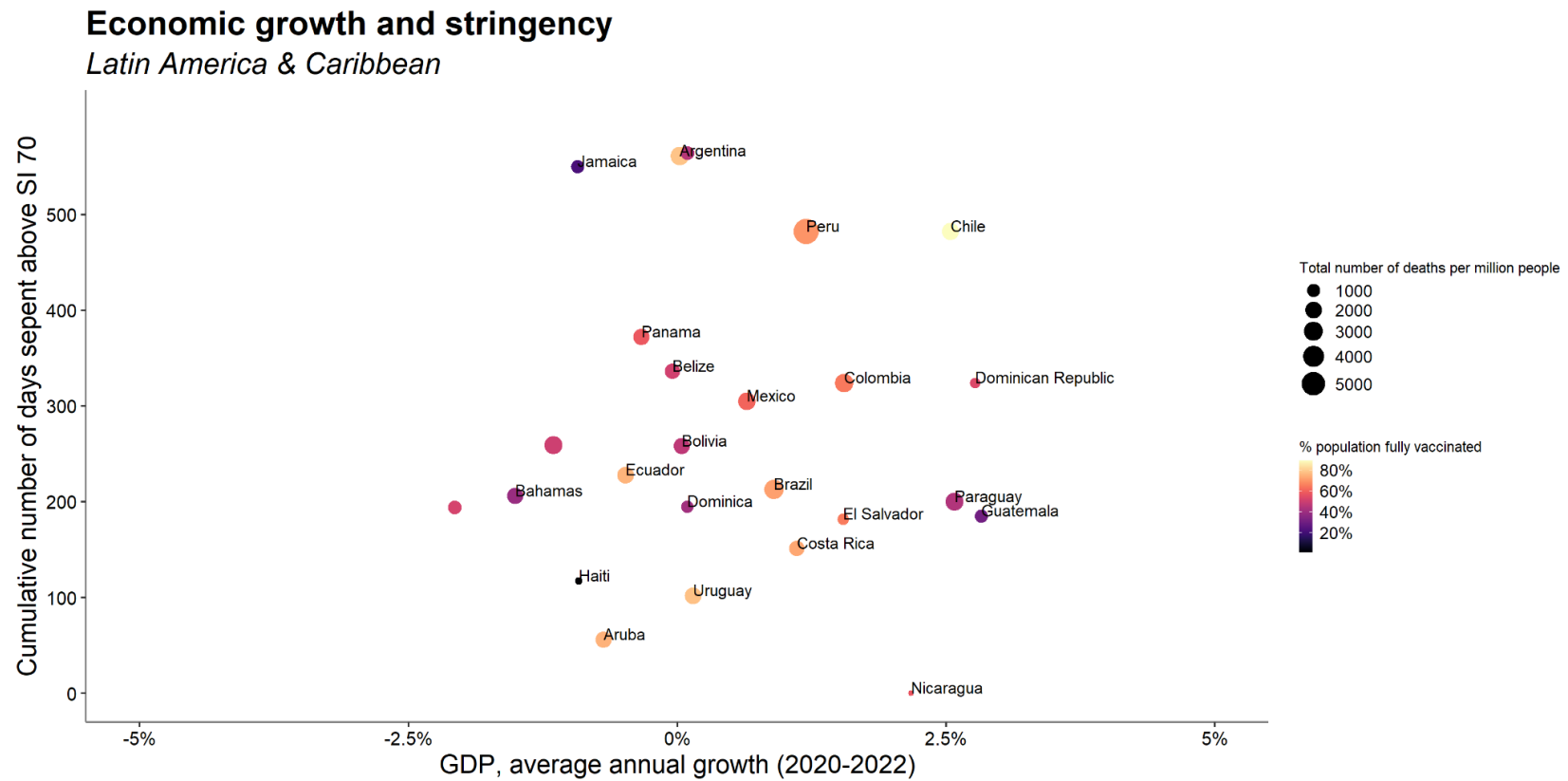
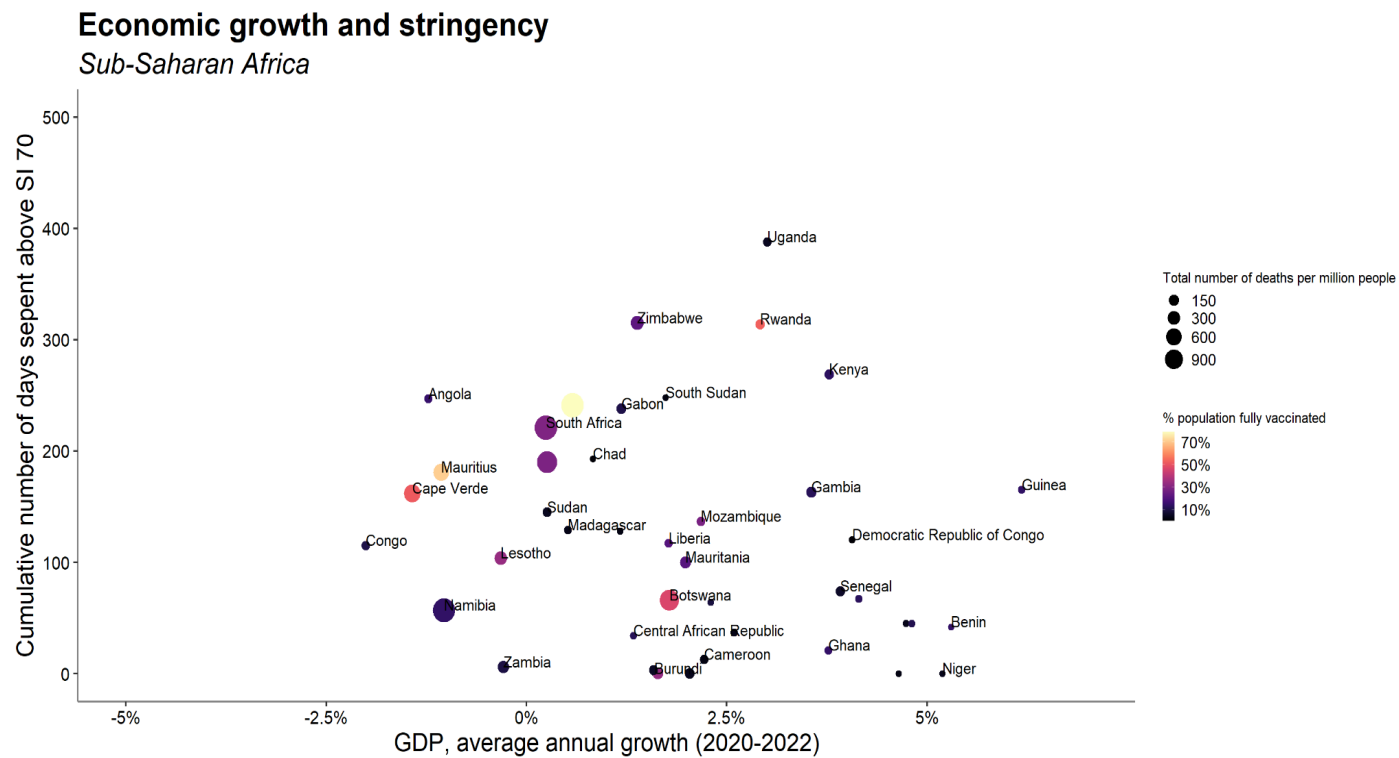


Figure 4.d. Overall performance across four dimensions: Sub-Saharan Africa



Overall, these macro patterns show the starkly different ways in which countries have experienced the last two years.





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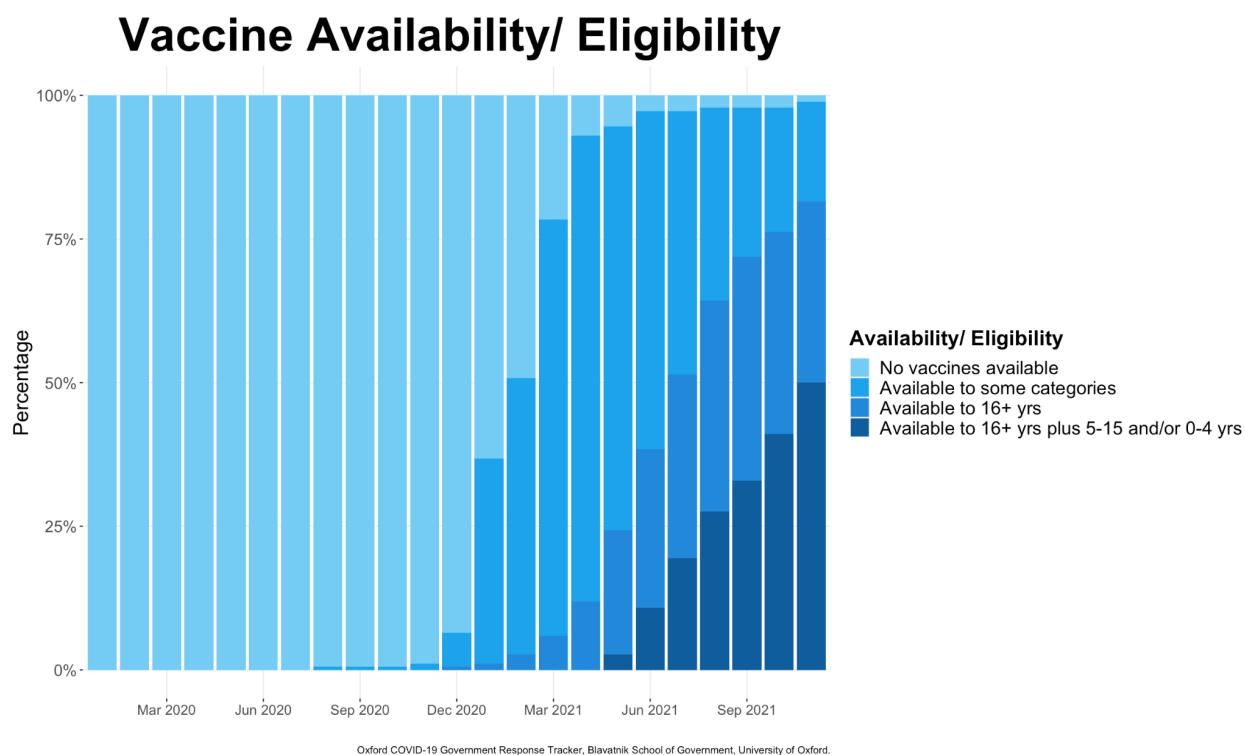
## Vaccine rollout

In the second year of the pandemic, vaccines have become an increasingly important layer of defence against COVID-19, following the remarkably fast development and, at least for some countries, deployment of effective vaccines. However, stark inequalities in vaccination remain.

Overall, we have seen government policies toward vaccination shift from prioritisation, to encouragement, to incentivisation, and, in some cases, to mandates.

As Figure 5 shows, a small number of countries began to make vaccines available to at least one category of their priority groups by the end of 2020. By February 2021 nearly 50% of countries were offering COVID-19 vaccines to at least one priority group, and by April nearly all were. However, the shift from priority lists to universal availability of COVID-19 vaccines has occurred in much less uniform fashion. Some countries began to provide vaccines to all those over the age of 16/18yrs (dependent on vaccine type) by March 2021, while others struggled to reach universal availability before the end of 2021. In some countries where significant vaccine hesitancy prevented available doses from being utilised, the move to universal availability was much quicker, often within three months of launching a vaccination campaign.

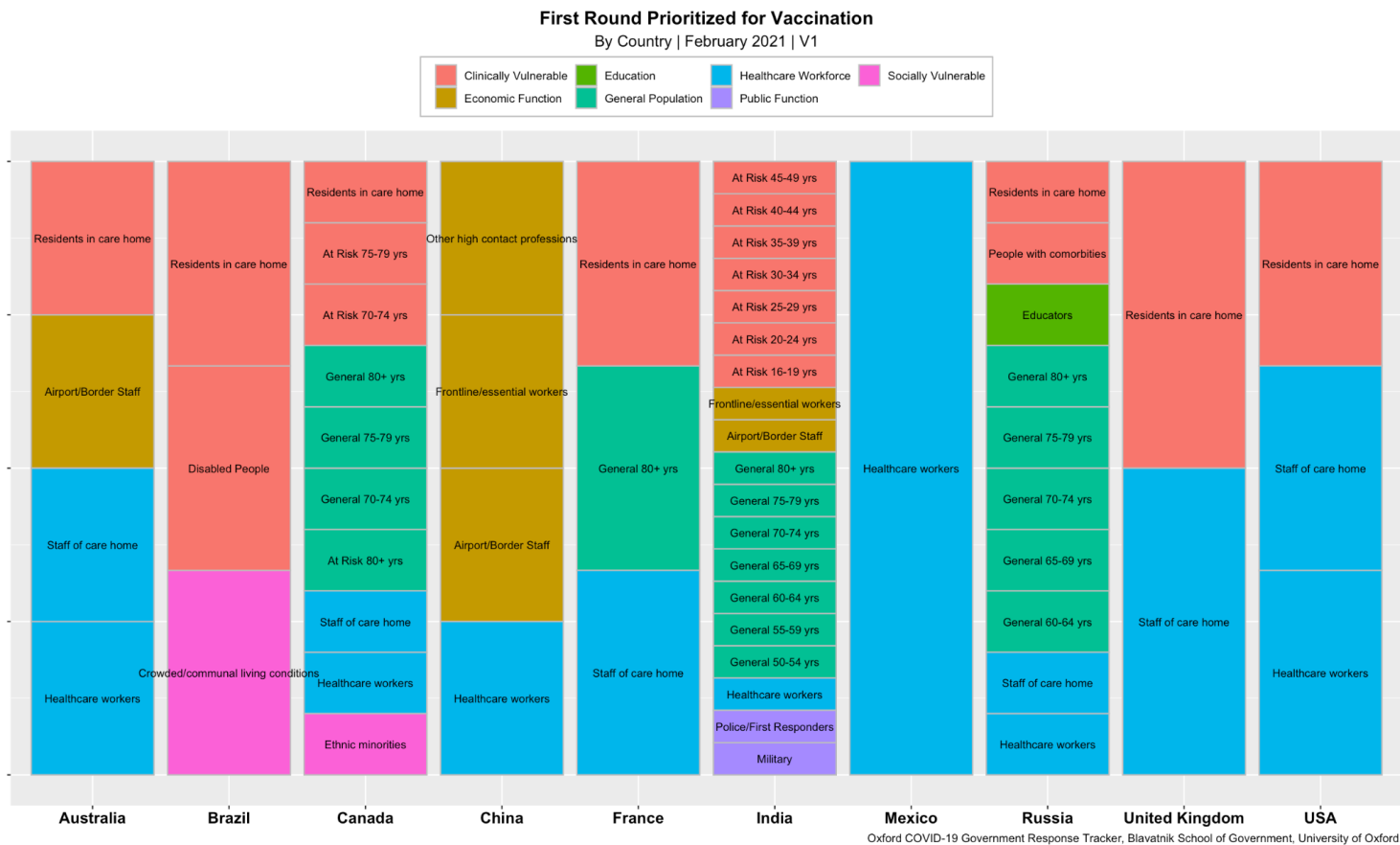
Figure 5. Percentage of countries with differing levels of vaccination availability from January 2020 to November 2021



While the WHO has approved 2 COVID-19 vaccines for use in children (Pfizer, 5yrs+; Moderna, 12yrs+),<sup>2</sup> individual countries have taken their time with the rollout of these vaccines to their resident children with just over half of all countries making them available. In some cases, the distribution to children is hampered by access to vaccines, while others are simply taking extreme caution.

<sup>2</sup> <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/covid-19-vaccines/advice>

Figure 6. Categorises the groups prioritised for the first round of vaccinations by a sample of countries (February 2021)



Looking at how countries chose to prioritise scarce vaccines in 2021 shows interesting differences as well. For example, frontline healthcare staff were prioritised by countries including Australia, France, the United Kingdom, the USA, and Mexico. Clinically vulnerable populations – notably the residents of elderly long term care facilities – were also prioritised by these countries, indicating a vaccination plan intended to protect against disease and death. China prioritised frontline workers, border staff, and high contact professions as first priority, appearing to favour economic protections over reductions in disease and death. Less commonly prioritised and vulnerable groups such as disabled people in Brazil, and ethnic minorities and indigenous populations in Canada were also selected for initial vaccination.

**Figure 7. Illustrates the percentage of countries that chose to prioritise certain groups for vaccination (February 2021)**

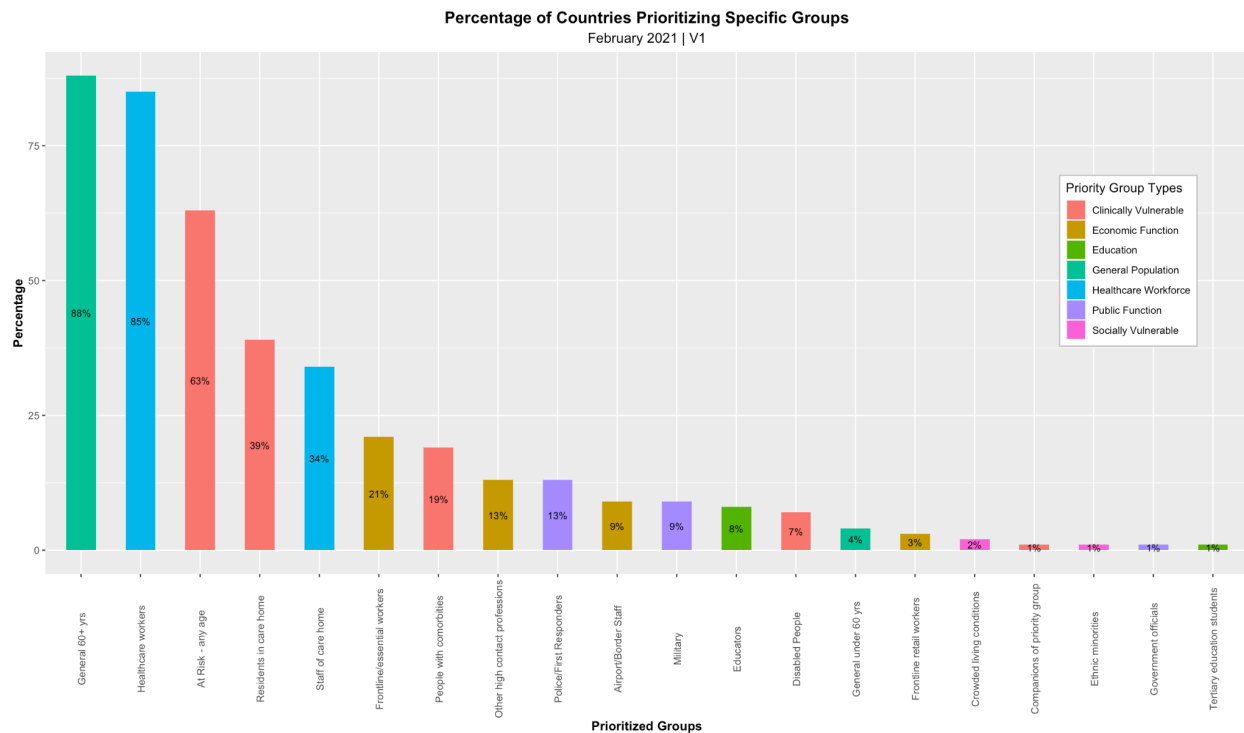
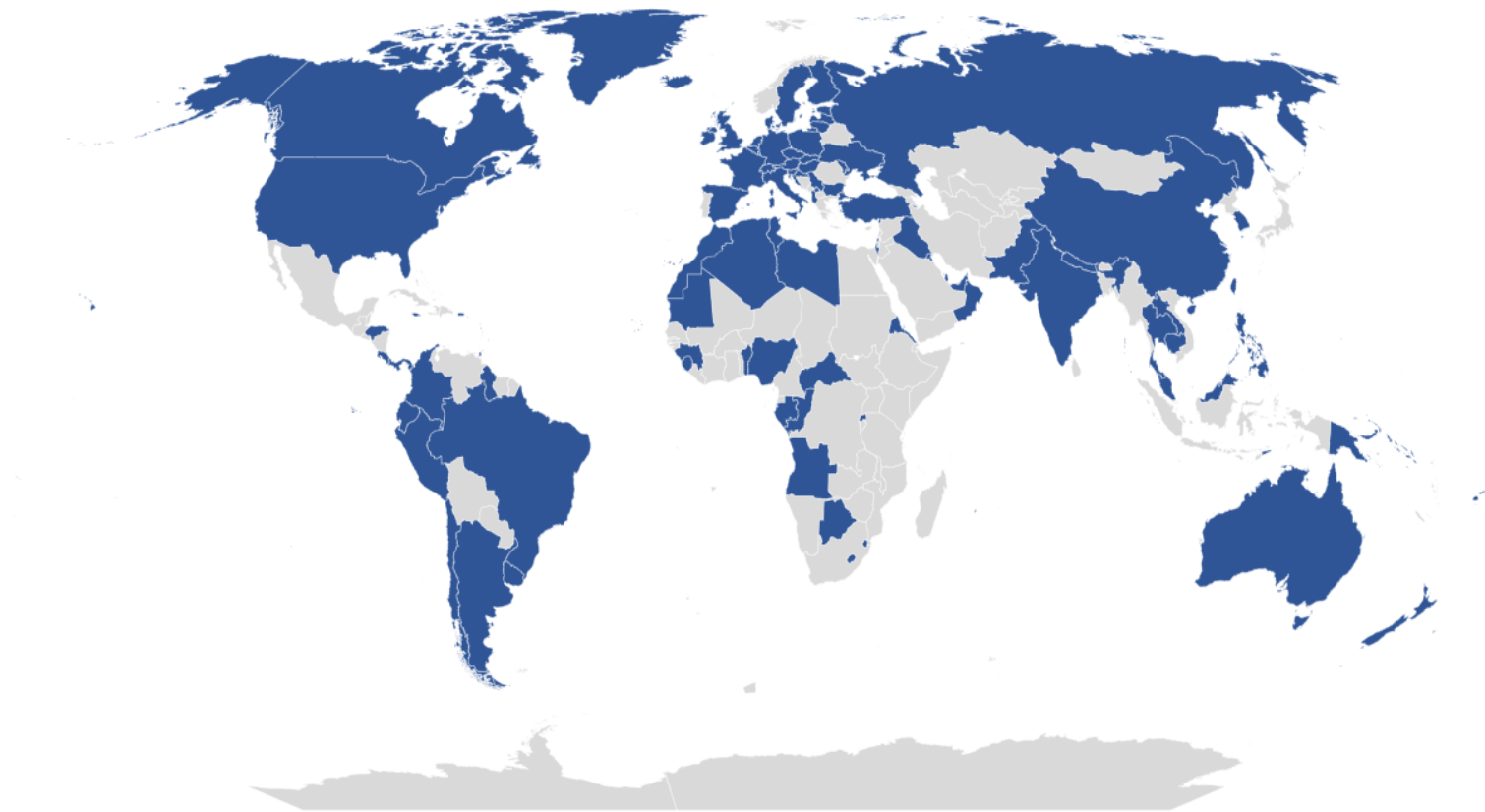


Figure 7 highlights how healthcare workers were by far the most commonly prioritised group, with 85% of 109 countries including them in their initial prioritisation in February 2021. The next most prioritised groups were both residents and staff of elderly care homes, reflecting the vulnerability of these facilities to the virus, and their potential significance in reducing disease and death.

Finally, as countries began to struggle to get a sufficient share of the population vaccinated, they increasingly applied two kinds of policy incentives.

First, they began to differentiate restrictions based on people's vaccination status (see Figure 8). These policies focused on restricting access to public life based on vaccination status. Restrictions such as access to shops, public transport and schools would vary between vaccinated and unvaccinated people. For example, Israel introduced their 'Green Pass' in March 2021, enabling greater freedoms for those who had received two COVID-19 vaccinations. On 2 March 2022, 107 countries have (or had) these types of differentiated restrictions and policies, which shows the prevalence of this kind of approach.



However, though many countries have differentiated policies to some degree, the stringency of restrictions for the non-vaccinated varies widely. In some cases, the values on the Stringency Index (SI) for vaccinated and non-vaccinated are very similar, and in others very different. Overall, in the 107 countries with differentiated policies, the average difference in the Stringency Index for vaccinated and non-vaccinated people is 8.33. We observe the most variation between vaccinated and non-vaccinated in policies related to workplace closures (C2), public events (C3), public transport (C6), and internal movement (C7).

In most countries with differentiated policies, only a few domains are affected. Among the 110 countries with differentiated policies on 19 February 2022, an average of 2.4 out of 10 policy indicators were differentiated for vaccinated and non-vaccinated people. Forty countries had only one policy domain with differentiation, while only 14 had five or more. Overall, 14 countries have had a difference in the Stringency Index for vaccinated and non-vaccinated of over 30 points at some point in time since January 2022<sup>3</sup>.

In some places non-vaccinated people face substantial restrictions. The example of Austria<sup>4</sup> is particularly notable, where authorities introduced a stay-at-home order for non-vaccinated people in November 2021. France<sup>5</sup> has the largest difference in Stringency Index value between vaccinated and non-vaccinated people, with a difference of 51.85 points- as differentiated policies apply to multiple areas of public life. A vaccine pass is required to access inter-regional travel and long-distance public transport, and to visit venues including cinemas, theatres, bars, and some stores. In Germany<sup>6</sup>, too, there has been a difference of 50 points in Stringency Index value. Their vaccine pass rules limit access rights based on vaccination, recovery, or PCR test status, for access to cultural and leisure facilities, retail, buses and trains, and long-term care facilities. Armed police in Uganda<sup>7</sup> are reported to have removed unvaccinated bus travellers to vaccinate them before continuing, highlighting stringent approaches to enforcement for those without vaccination evidence.

<sup>3</sup> Algeria, Canada, Ecuador, Fiji, France, Germany, Hungary, Italy, Lithuania, Morocco, Oman, Turkey, Ukraine, United States (data downloaded 18 March 2022).

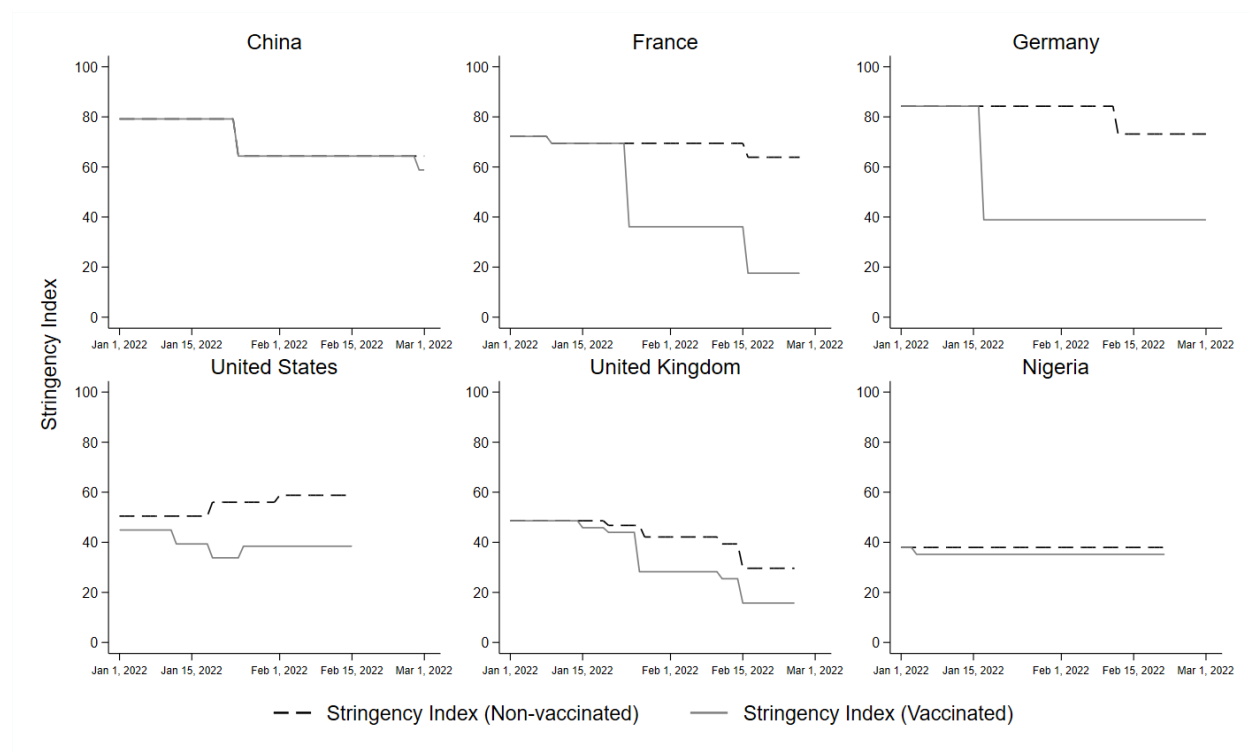
<sup>4</sup> <https://www.bbc.co.uk/news/world-europe-59283128>

<sup>5</sup> <https://web.archive.org/web/20220210095345/https://www.gouvernement.fr/info-coronavirus/pass-vaccinal>

<sup>6</sup> <https://web.archive.org/web/20220126181506/https://www.bundesregierung.de/breg-de/themen/coronavirus/corona-regeln-und-einschränkungen-1734724>

<sup>7</sup> <https://www.wsj.com/articles/in-some-african-nations-armed-police-enforce-covid-19-vaccinations-11646056306>

**Figure 9. Difference in Stringency Index between vaccinated and non-vaccinated people in six countries**

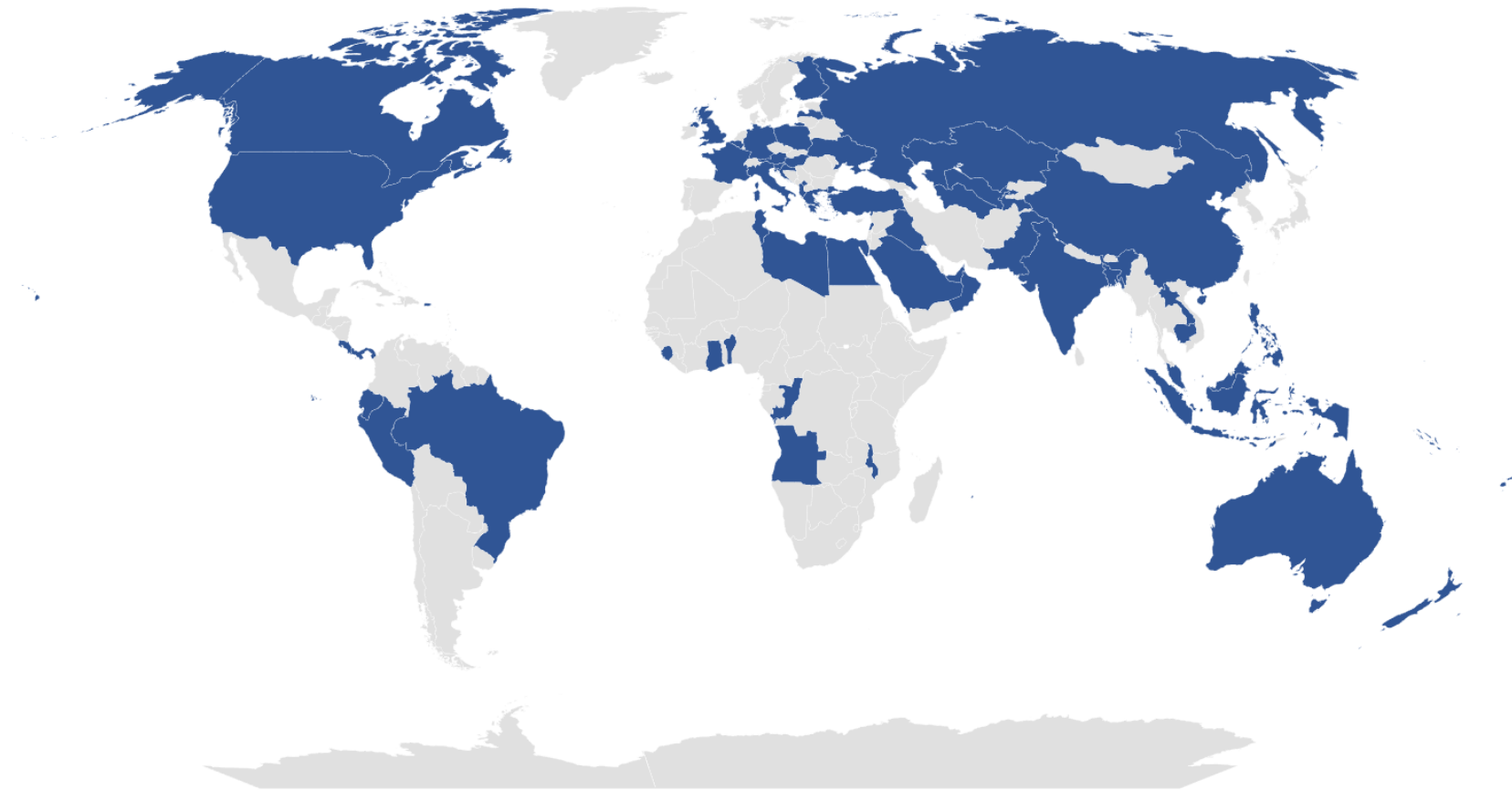


The second policy incentive governments have introduced is mandating that certain categories of people, or sometimes whole populations, get vaccinated. 62 countries (in our dataset) have employed such policies to date (see Figure 10).



Figure 10. Countries with vaccine mandates

Countries/Regions that have/had mandatory vaccinations by cateogry



The breadth of vaccine mandates varies widely. Countries including Indonesia, Tajikistan and Turkmenistan have very wide-reaching mandates, having made vaccination mandatory for the entire adult population. Ecuador has mandated vaccination for all those over the age of 5, and Puerto Rico requires those over 5 to be vaccinated to attend school. Costa Rica mandates all children between 3 and 18 years be vaccinated. In the majority of places mandating vaccination – such as Poland, Pakistan, New Zealand, and Saudi Arabia – these policies tend to be targeted to selected groups based on occupation or clinical risk, with the most commonly mandated categories being government officials and public sector workers, healthcare workers, and teachers.