

Race to 80 Our best shot at living with COVID

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Stephen Duckett is a member of the Council of RMIT University.

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Overview

Australia's 'Zero COVID' strategy has allowed us to escape the worst of the pandemic so far: our death toll has been among the world's lowest, our recession among the shortest, and we've faced fewer restrictions on our daily lives than almost anywhere else.

But we have paid a heavy price: we are shut off from the rest of the world, and we have frequently been locked down to contain outbreaks. The more infectious Delta variant is making Zero COVID even harder to maintain. Australians have supported a hard-line approach, but they are also tired and frustrated.

National Cabinet must now tread a fine line. On the one hand, we cannot abandon our Zero COVID strategy too early and risk the calamity we have so far avoided. But on the other hand, we cannot remain walled inside Fortress Australia indefinitely, cut off from the rest of the world and periodically cut off from one another.

Vaccines give us a way out. They offer individuals very strong protection from hospitalisation and death from COVID, and they offer some collective protection by significantly reducing transmission.

No magic number of vaccines will rid us of COVID forever. But we *can* vaccinate enough Australians to 'tame' COVID. This report shows that fully vaccinating 80 per cent of all Australians, and 95 per cent of the over-70s, will give us the best chance of gradually returning to normal life – with open borders and no lockdowns.

Abandoning our Zero COVID strategy before 80 per cent of Australians are vaccinated would risk a rapid surge in COVID cases that overwhelms our hospitals and imposes a high death toll. But every vaccine we administer makes Zero COVID easier to maintain by slowing the spread, reducing the likelihood that lockdowns will be required and reducing their duration when they are needed. And once we get to 80 per cent, we can shift our focus from containing COVID to 'living with COVID', focusing less on cases and more on hospitalisations and deaths.

80 per cent is an ambitious target. But Australia will have enough vaccine to reach it very quickly as more supply arrives in coming months. About 90 per cent of Australians have consistently said that they want a vaccine – the task for governments is not to convert entrenched 'anti-vaxxers', but to get shots in the arms of people who want them, and to convince those who are hesitant to get vaccinated sooner rather than later. We can reach 80 per cent vaccine coverage by the end of the year if a vaccine is approved for children under 12. Otherwise, we should aim to reach 80 per cent by the end of March 2022, by vaccinating a higher share of adults.

Accelerating the pace of the rollout will require all Australian governments to step up. They must do better at communicating the benefits of vaccination, and making vaccination as easy as possible, including by using workplaces, schools, and pop-up clinics. They should launch a national lottery. They should be prepared to mandate vaccinations for high-priority work-forces. And they should require vaccination passports for certain activities to encourage vaccination and reduce COVID spread once we reopen.

Failure is not an option. Australians shouldn't and won't accept high death tolls or indefinite restrictions. Achieving very high vaccination coverage is the only way to avoid these outcomes. Political leadership can get us there. National Cabinet must urgently adopt a plan to vaccinate 80 per cent of Australians, and a plan to return to normal.

This report sets out a plan to reach that goal. It is Australia's best shot at living with COVID.

Recommendations

Recommendation 1: National Cabinet set a goal for 80 per cent vaccination by the end of the year, or by the end of March 2022 at the latest if vaccination for children under 12 is delayed

National Cabinet should maintain its Zero COVID strategy until 80 per cent of all Australians have been fully vaccinated, including 95 per cent of Australians over 70 and others at high risk.

National Cabinet should commit now to achieve 80 per cent vaccine coverage by the end of the year. If a vaccine for children is not approved by November, National Cabinet should commit to achieve 80 per cent vaccine coverage by the end of March 2022, via higher vaccine coverage for adults.

Recommendation 2: National Cabinet set out a vaccine plan to reach the 80 per cent target

National Cabinet should set out a two-step vaccine plan to get to 80 per cent.

Starting **immediately**, the Federal Government must start to accelerate vaccinations with help from the states:

- Make it as easy as possible to get a vaccine by expanding state vaccination hubs and opening new local outlets, including at workplaces, schools, and community centres. These should be ready by October when additional doses of Pfizer are scheduled to arrive.
- 2. Launch a national communications strategy. This should include a text message campaign and tailored messages for people who are vaccine hesitant people and for specific communities.

3. Prepare to vaccinate younger children. Governments should be ready to roll out vaccinations to younger children as soon as the Therapeutic Goods Administration (TGA) grants approval. If the timing of the approval is right, children should be vaccinated at school during term time.

From **November**, when supply problems should have been fixed and vaccines should be available for all adults:

- 1. Introduce a weekly \$10 million lottery for vaccinated Australians.
- Announce that from the new year people will require proof of vaccination – a 'vaccine passport' – for interstate travel and entry to certain venues.
- **3.** Require vaccination for all aged care workers, hospital staff, disability care workers, prison workers, and teachers, to take effect in the new year.

Recommendation 3: National Cabinet commit to a reopening plan with two steps:

National Cabinet should immediately:

- Announce a two-step plan to reopen when we reach 80 per cent; and
- Reduce the need for lockdowns by improving hotel quarantine and urgently building purpose-built quarantine facilities.

The two steps of the reopening plan should be:

- 1. Step 1: once Australia achieves 80 per cent vaccine coverage:
 - Remove quarantine requirements for fully vaccinated Australian residents and some fully vaccinated visitors.
 - Avoid lockdowns and other obtrusive containment measures, but retain unobtrusive containment measures such as maskwearing and self-administered rapid antigen testing.
 - Vaccine passports should be retained to reduce spread in high-risk places.
 - If there is no vaccine for children under 12, primary schools and childcare centres will need to be subject to routine antigen testing, and may need to be closed temporarily if they experience an outbreak.
 - Continue vaccinating to reach 85 per cent.
- 2. **Step 2**: Three months after Step 1, if the higher level of 85 per cent has been reached:
 - Remove all international border restrictions for vaccinated people.
 - Remove vaccine passports.

- Maintain a COVID vaccination program, including booster shots as required.
- Prepare for any vaccine-resistant COVID variants by securing advanced supplies of future vaccines (including booster shots) and improving surge capacity in the health system.

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1 Zero COVID remains the right strategy until 80 per cent of Australians are vaccinated

COVID-19 spreads rapidly and causes high rates of serious illness and death.¹ Its spread around the world has had significant health, economic, and social costs.

Australia's approach – aiming for zero local transmission of COVID – has minimised those costs.² We have avoided a very large death toll and a prolonged recession, and we have had fewer internal restrictions than most countries in 2021 so far.

But Zero COVID is difficult to maintain. Our international border has been shut for almost 18 months, and state governments have frequently imposed lockdowns to contain outbreaks. These disruptions are painful and frustrating, especially since many of them could have been prevented by better quarantine. The slow progress of Australia's vaccine rollout has amplified this frustration. Australians have supported strong measures, but they are understandably tired and impatient.

The evidence about vaccines offers us good news: there is a way out. Zero COVID is still the 'least bad' strategy, and will remain so for at least a few more months. But if Australia can vaccinate 80 per cent of its population – including 95 per cent of vulnerable Australians³ – the Zero COVID strategy will no longer be necessary, and we can 'live with COVID' and accept cases circulating in the community. This is an ambitious target, but we should have enough vaccine supply to reach it by the end of the year, provided there is a major step up in the pace of the rollout.

1.1 Zero COVID remains the right choice for now

A Zero COVID strategy coupled with effective quarantine arrangements and contact tracing has been the best strategy to minimise the health and economic costs of COVID in Australia.

Unconstrained spread of COVID in an unvaccinated population would overwhelm Australia's health system and impose a very large death toll. About 10 million Australians are at high risk of COVID complications and would be particularly vulnerable. And reduced activity due to fear of the virus would trigger an even deeper recession than the one we had.⁴

An 'in-between' strategy with moderate restrictions designed to maintain low levels of transmission would be almost certainly fail because of the likelihood that at some point a super-spreader event would get away from contact tracers and lead to unconstrained spread. That will remain the case until very high levels of vaccine coverage are reached (see Chapter 2).

The evidence shows that our Zero COVID strategy has been the right approach. Australia's COVID death toll is among the lowest in the world (Figure 1.1 on the following page) and its recession was among the shortest (Figure 1.2).

COVID-19 is a disease, which is caused by the SARS-CoV-2 virus. About 6 per cent of people who contract COVID-19 may have continuing health problems – so-called 'long COVID': Whitaker et al (2021). We recognise the importance of further research into long COVID, which can be debilitating, but our primary focus in this report is on hospitalisations and deaths.

^{2.} Grattan Institute argued for this approach in March 2020 and September 2020: Daley (2020) and Duckett and Mackey (2020).

^{3.} Includes Australians over 70 and others at high risk of complications from a COVID infection: see Duckett and Mackey (2020).

In fact, it is likely that public pressure to 'shut everything' would become overwhelming as infections rise and hospitals struggle: Daley (2020) and Duckett and Mackey (2020).

COVID cases per million people COVID deaths per million people New Zealand New Zealand Taiwan Singapore Australia 1,305 Taiwan South Korea Australia 36 Japan South Korea Singapore Japan Malaysia Malaysia Canada Denmark Germany Canada Denmark Israel Italy Germany UK Sweden France France US Israel US UK Sweden Italy 0 50,000 100,000 1,000 2,000 0 Sources: Ritchie et al (2021).

Figure 1.1: Australia has had fewer COVID cases and deaths than most countries

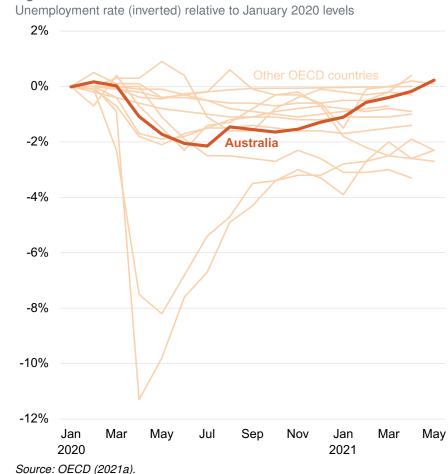


Figure 1.2: Australia had a shorter recession than most countries

Figure 1.3 shows that the share of days free from restrictions has been among the highest in Australia, even in Victoria and NSW where there have been longer lockdowns.⁵

The advantage of the 'hard-line' approach is apparent in the divergence between Victoria and several countries that recorded similar case numbers in August 2020 but opted not to lock down (Figure 1.4 on the next page). Those countries not only recorded many more cases and deaths, they also eventually entered lockdowns of their own which lasted much longer.⁶

Australia's sluggish vaccine rollout has meant that these advantages are not so apparent today, especially since Sydney is in lockdown while countries we previously outperformed have high vaccination rates and are preparing to return to normal. This has prompted calls for Australia to relax its Zero COVID stance and instead seek to 'live with' small numbers of COVID cases.⁷

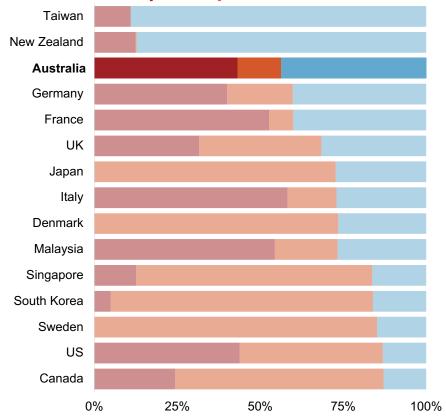
These calls are premature and reckless. With only 13 per cent of the Australian population fully vaccinated,⁸ Zero COVID remains the best choice on health and economic grounds; in fact, the more contagious Delta variant makes the case for Zero COVID even stronger, especially because Delta reduces the already-slim prospect that an 'in-between' approach of seeking to restrict community transmission to low levels through contact tracing could be successful (see Chapter 2).

And the international picture is not as rosy as images of full stadiums suggest. Some countries that have less stringent restrictions than

- 6. Cross-country comparisons are complicated by several factors, including geography, demographics, and quality of institutions: Baum (2021).
- 7. For example, see: Talbot (2021).
- 8. As at 27 July 2021: Ritchie et al (2021).

Figure 1.3: Australia has had more days free from restrictions than most countries

Days spent under government stay-at-home orders from the beginning of the pandemic to 28 July 2021



Must stay home Stay home recommended Unrestricted

Note: Restriction level reflects the strictest settings in place anywhere in the country. Source: Ritchie et al (2021).

Other countries which have achieved results comparable to or better than Australia, including New Zealand, Taiwan, and Singapore, have also pursued a hard-line approach to borders and internal restrictions: New Zealand Immigration (2021), Ho (2020) and Aspinwall (2020).

Australia now are struggling with the consequences of the virus. Japan, where only 35 per cent of the population have been vaccinated, has declared a state of emergency in Tokyo and recorded 4,000 new cases on the day of the Olympic Opening Ceremony.⁹ Singapore has returned to a partial lockdown three weeks after announcing its aspiration to live with COVID, despite 73 per cent of the population having received one dose of a vaccine.¹⁰ And the UK's 'freedom' day (July 17) has been heavily criticised by experts as hospitals approach capacity.¹¹

This report shows that Zero COVID will remain the best approach for Australia until 80 per cent of the population has been vaccinated (see Chapter 2). But it is costly to maintain, and Delta is making it even costlier.

1.2 But maintaining Zero COVID has significant costs

Maintaining Zero COVID has been painful, both because of the hard external border closure – the strongest anywhere in the world – and intermittent lockdowns and state border closures, which have been deployed frequently in response to quarantine breaches.

Some of these costs could have been prevented. Governments should have done more to increase quarantine capacity, to enable more stranded Australians to be safely brought home.¹² And better infection control standards in quarantine hotels, together with lower-risk, purpose-built quarantine facilities outside major cities, could have made breaches far less frequent (shown in Figure 1.5 on the following page).¹³

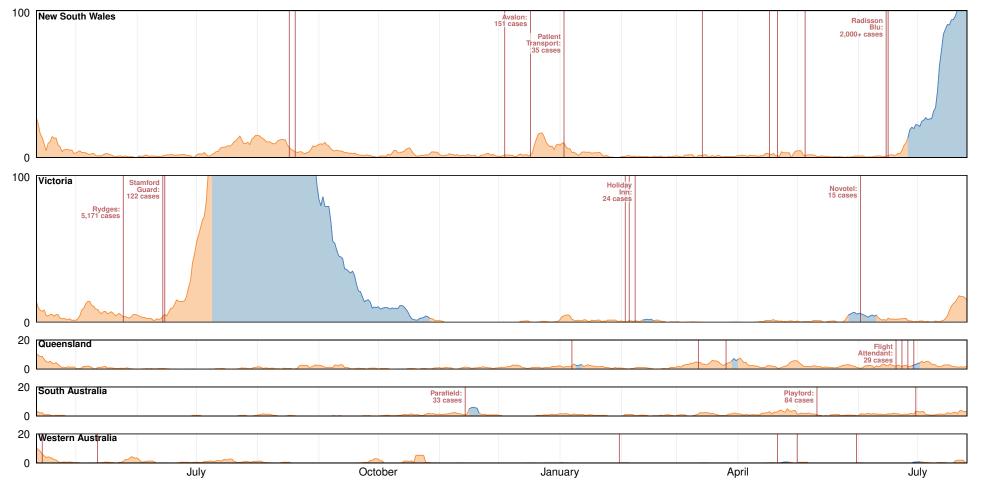
- 9. Associated Press (2021).
- 10. Barrett (2021).
- 11. Mahase (2021).
- 12. Coates and Duckett (2021).
- There have been 32 recorded instances of transmission within hotel quarantine in Australia. Of those, 19 led to community transmission, and 15 led to state or territory governments imposing lockdowns: Grattan analysis of Macali (2021a).

Figure 1.4: Australia's hard-line approach diverged from countries facing similar second waves Seven-day rolling average of new COVID cases

Unrestricted Restrictions Lockdown 100,000 10,000 United Kingdom France Italy 1,000 Canada Germany 100 Australia 10 October January April July July 2020 2020 2021 2021 2021

Notes: Restriction level reflects the strictest settings in place anywhere in the country. Australian cases include cases recorded in hotel quarantine. Sources: Ritchie et al (2021).

Figure 1.5: Outbreaks and lockdowns are becoming more frequent in Australia State by state daily cases, quarantine breaches, and stay-at-home orders



Notes: Community cases are listed in the state where the breach occurred, but in many instances some of these cases were recorded in other states. Only breaches that resulted in 10 or more local cases are labelled.

Source: Grattan analysis, and Barry (2021).

These failures should be addressed urgently (see Chapter 4). But the Delta variant is already making the job of maintaining Zero COVID harder and still more costly, which reinforces the urgent need for mass vaccination.

The economic cost of a lockdown in a major Australian city is estimated to be nearly \$1 billion a week.¹⁴ Lockdowns cause significant financial strain for those who are stood down or otherwise unable to work. Rolling lockdowns and the prospect of state border closures also create economic uncertainty, which is likely to constrain investment and threaten the viability of otherwise-profitable businesses.

COVID is likely to cause long-lasting harm to the education of many younger Australians. Lockdowns have disrupted the schooling of millions of Australian students. Despite schools' best efforts, most students are likely to have learnt less while studying remotely. And many disadvantaged students – those from the poorest 25 per cent of families and rural areas – will have fallen further behind their classmates during the COVID-19 school closures.¹⁵

Lockdowns have had numerous other significant social costs. They have disrupted funerals, caused weddings to be delayed, and prevented people from visiting loved ones, including those in hospital.

15. See: Sonnemann and Goss (2020).

There is evidence that lockdowns have been associated with a deterioration in mental health,¹⁶ and with increased rates of domestic abuse.¹⁷ And the distribution of the economic pain of lockdowns has exacerbated existing inequality, including for women and people from culturally and linguistically diverse backgrounds.¹⁸

The strict international border regime has dramatically slowed the movement of people in and out of Australia.¹⁹ In the year before the pandemic, there were 40 million movements in and out of Australia (Figure 1.6). Since the pandemic began, there have been fewer than 1 million.

These restrictions have been especially painful for Australians with family abroad,²⁰ and for 'stranded Australians' who have been unable to return home. As at May 2021, 35,128 Australians overseas had registered with the Department of Foreign Affairs and Trade expressing a desire to return home but had not yet been able to do so.²¹

The economic costs of international border closures are also substantial. Fewer international arrivals has been damaging for higher education, and for tourism businesses that rely on international rather than domestic tourists.²²

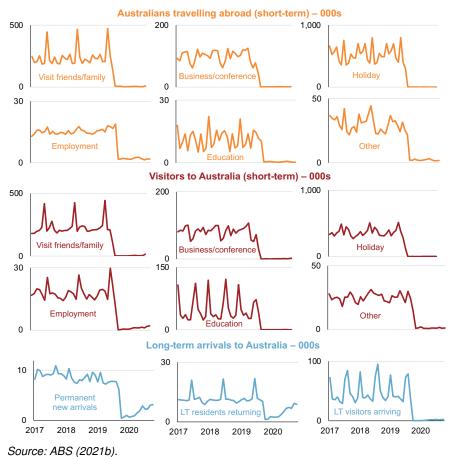
- 16. See Newby and Baldwin (2021). However, Meyerowitz-Katz et al (2021) found that the health impacts of lockdowns did not exceed the health impacts of COVID.
- 17. A survey by the Australian Institute of Criminology in July 2021 found that twothirds of women who reported physical or sexual violence during the pandemic reported that the violence had started or escalated during the pandemic: Boxall et al (2020).
- 18. Wood et al (2021); and Duckett and Mackey (2021).
- Many countries have introduced border controls in response to COVID, but only Australia has also restricted the rights of its citizens to travel abroad: Meixner (2020).
- 20. D'Souza (2021). More than one in four Australians today was born overseas, and one in two had at least one parent born overseas: ABS (2016).
- 21. Hansard (2021b).
- 22. Universities Australia expects a \$3.8 billion hit to the sector's revenue in 2020 and 2021: Universities Australia (2021).

New Zealand's quarantine system, as at April 2021, was three times more likely to lead to a breach than Australia's: Grout et al (2021a). Purpose-built quarantine and adequate infection control were both recommendations of the Halton Review into Australia's quarantine arrangements, which the Federal Government commissioned: Halton (2021).

Victoria's second lockdown appears to have been associated with a \$900 million per week contraction in normal household spending: Grattan analysis of ABS (2021a, Table 8). The Federal Treasury estimates the economic cost of one week of lockdown at \$700 million: Hansard (2021a).

The longer the border remains closed, the higher the cost. For instance, Australian exporters will find it increasingly difficult to secure new markets abroad while international travel is so heavily restricted. Prospective high-skilled migrants will be dissuaded from choosing Australia unless re-assured they could return home to see their families. Similarly, Australia will be less able to attract foreign direct investment from abroad while border restrictions remain. And we are all worse off when our ability to travel abroad for work or leisure is restricted.

The mounting economic and social costs of border closures and lockdowns reinforce the urgent need for mass vaccination of Australians. Relaxing the Zero COVID strategy before enough Australians are vaccinated would lead to severe health and economic consequences (Chapter 2). Governments need to set an appropriate vaccination target, and set out a plan to get there soon. Figure 1.6: Regular traffic in and out of Australia has ground to a halt Number of Australians returning from short-term overseas trips each month by reason for travel



2 When 80 per cent of Australians are vaccinated, life can start returning to normal

COVID vaccines are life savers. They dramatically reduce the likelihood that a person will need hospital treatment or die from COVID. Vaccines also reduce transmission. This means that mass vaccination has a collective benefit as well as a private one: vaccinated people protect themselves, and they also reduce the amount of COVID circulating in the community.

Australia can harness the potential of vaccines to make lockdowns and border closures obsolete. We can achieve this by fully vaccinating 80 per cent of the Australian population, and 95 per cent of vulnerable people, including those over 70. At that point we can start 'living with COVID': there will be COVID cases in the community, but severe cases will be rarer and hospitals will not be overwhelmed.

Getting there will require a significant step up in the pace of the vaccine rollout, and strong measures to overcome vaccine hesitancy. It will also require tolerating the costs of Zero COVID for a few more months – although every vaccine administered makes it easier to control outbreaks. But if we get the rollout right, we will have enough supply to get to 80 per cent by the end of the year or soon after.

2.1 The right level of coverage depends on vaccine effectiveness, variants, and containment measures

Vaccines work against COVID in several ways. As well as reducing the likelihood of serious illness and death from a COVID infection, they also reduce the likelihood of infection, and the likelihood that an infected person will transmit the virus to others.

But the current vaccines do not prevent infection or transmission entirely. And like all viruses, SARS-CoV-2 mutates as it spreads. These mutations vary in transmissibility and severity. Most are

Table 2.1: Variants of concern				
Variant label	Pango lineage	Detection		
Alpha	B.1.1.7	UK, September 2020		
Beta	B.1.351	South Africa, May 2020		
Gamma	P.1	Brazil, November 2020		
Delta	B.1.617.2	India, October 2020		

Note: In addition, the Eta, Iota, Kappa, and Lambda variants are 'variants of interest'. Note that a 'Pango lineage' stands for Phylogenetic Assignment of Named Global Outbreak Lineages. Source: WHO (2021).

inconsequential, but as at July 2021, four have been identified as 'variants of concern' (Table 2.1).²³

In general, the most transmissible variant will 'win out' and become the dominant strain in the world. This means that the current dominant COVID variant is likely to be more transmissible than the previous variant. The effectiveness of vaccines should be assessed against the dominant variant, which at the moment is Delta (see Table 2.2 on page 16.).

Delta spreads more aggressively than any known variant. It has quickly become the dominant variant wherever it has taken hold. We are still learning about its characteristics, including from evidence in the UK,

^{23.} WHO (2021). WHO defines a variant of concern as a SARS-CoV-2 variant that 'through a comparative assessment, has been demonstrated to be associated with one or more of the following changes at a degree of global public health significance: increase in transmissibility or detrimental change in COVID-19 epidemiology; or increase in virulence or change in clinical disease presentation; or decrease in effectiveness of public health and social measures or available diagnostics, vaccines, therapeutics'.

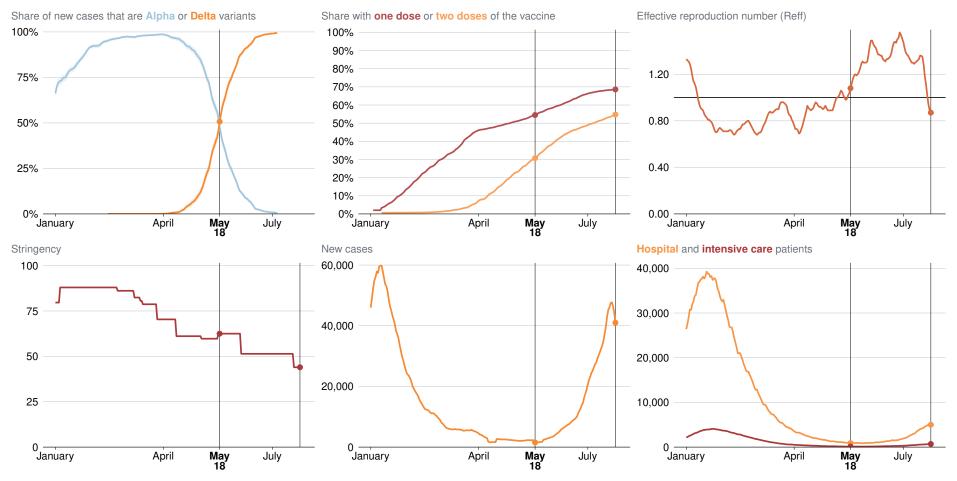


Figure 2.1: In the UK, the arrival of the Delta variant has caused COVID cases to spread rapidly once again

Source: Ritchie et al (2021) and Mullen et al (2021). See Cookson and Burn-Murdoch (2021) for details on the decline in daily case.

where it is spreading rapidly (Figure 2.1).²⁴ In Scotland in May 2021, people infected with Delta were 85 per cent more likely to require hospital treatment than otherwise-similar people infected with the Alpha variant.

The AstraZeneca and Pfizer vaccines are highly effective against Delta (Table 2.2). But Delta has nevertheless caused a significant spike in COVID cases among the UK's partially vaccinated population. Cases were back to more than 50,000 a day in July, from a low of 2,000 a day in May.

Hospitalisations and deaths initially did not increase, prompting the UK Government to suggest that the link between COVID cases and COVID deaths had been broken. But hospitalisations and deaths are now starting to increase, and public health experts are concerned that the UK health system could be overwhelmed, especially now that the UK has removed all remaining restrictions.²⁵

This underscores the importance of understanding the interplay between vaccines, vaccination rates, variants, and containment measures.

2.1.1 It is unlikely that vaccines alone can prevent the spread of COVID

COVID would no longer spread exponentially if effective vaccines and high vaccine coverage could reduce transmissibility so that each infected person infected on average one other person or less. But the more transmissible the dominant variant, and the less effective vaccines are at stopping transmission, the higher the vaccine coverage required to achieve this outcome.

Table 2.2: Both the AstraZeneca and Pfizer vaccines are effective			
	One dose	Two doses	
Protection against symptomatic infection			
Reduction in likelihood of developing a symptomatic infection from the Delta variant:			
Lopez et al (2021, Table 2).			

AstraZeneca	30% (24-35%)	67% (61-72%)
Pfizer	36% (23-46%)	88% (85-90%)

Reduction in transmissibility

Reduction in secondary attack rate given infection: Harris et al (2021, Table 1).

AstraZeneca	48% (38-57%)	_
Pfizer	46% (38-53%)	-

Protection against hospitalisation

Reduction in likelihood of hospitalisation: ECDC (2021, Table 2), Nasreen et al (2021) and Stowe et al (2021).

AstraZeneca	77% (71-82%)	94% (90-99%)
Pfizer	76% (72-79%)	96% (90-99%)

Notes: 95% confidence intervals shown in parentheses. Lopez et al (2021) adjusts for 'period (calendar week), travel history, race or ethnic group, sex, age, index of multiple deprivation, clinically extremely vulnerable group, region, history of positive test, health or social care worker, and care home residence'. The Harris et al (2021) study was conducted on infections in the UK in January and February 2021, and therefore is assumed to capture the reduction in transmissibility from the Alpha variant which was the dominant variant at the time. The study was only able to capture the effect of one dose of either AstraZeneca or Pfizer. ECDC (2021, Table 2) shows the protection against 'any hospitalisation' seven days after first or second dose. This high level of protection against hospitalisation is shown in Canada: Nasreen et al (2021); and the UK: Stowe et al (2021). ECDC (2021, Table 3) also shows the limited evidence available for vaccine protection against death, which is between 98 and 99 per cent for pooled analysis of multiple vaccine types. Analysis in this report uses a 99 per cent protection against death rate for both vaccines.

^{24.} For example, see Sheikh et al (2021) for a description of the Delta 'takeover' in Scotland.

^{25.} Mahase (2021).

Figure 2.2 illustrates this. In a society where each unvaccinated person infects, on average, three others (so that the 'effective reproduction number', or R_{eff}, is 3),²⁶ vaccinating about 70 per cent of the population would be enough to prevent exponential spread.²⁷ But in a situation where each infected person infects 6 others (that is, where the R_{eff} is 6), a vaccination rate of about 90 per cent would be required.

We don't know yet what the 'starting R_{eff} ' is for Delta in Australia.²⁸ But it is likely to be at least 4. As Figure 2.2 illustrates, that suggests a vaccination rate of at least 78 per cent or higher will be required to bring the R_{eff} down below 1.

2.1.2 But vaccines can reduce the need for lockdowns

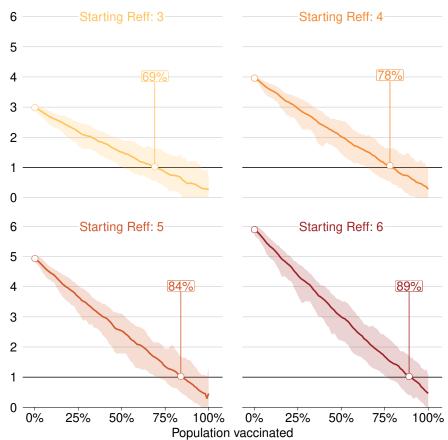
Containment measures – from the unobtrusive such as mask-wearing, to the very obtrusive such as lockdowns and border closures – also reduce the R_{eff}. Australia's lockdowns in 2020 reduced the R_{eff} of the original COVID strain from about 2.9 to less than 1. The Burnet Institute estimated that the introduction of compulsory masks during Victoria's second lockdown reduced the R_{eff} by about 23 per cent.²⁹

Because vaccines protect most vaccinated people from having to go to hospital or dying from COVID, they dramatically reduce the costs of COVID spreading.

- 27. See the Notes for Figure 2.2 and the Technical Supplement to this report.
- 28. That is, the rate of spread in Australian society before accounting for vaccinations and any COVID restrictions.
- 29. N. Scott et al (2021).

Figure 2.2: Vaccines can only prevent exponential spread if uptake is high enough

Effective reproduction number (R_{eff}) by vaccination rate



Notes: Solid lines show the mean outcomes of simulation runs. Shaded areas show 10th and 90th percentiles of simulations. See Table 2.2 and the Technical Supplement. Source: Grattan analysis.

^{26.} The R_{eff} is determined by both the basic reproduction number $- R_0$, the reproduction number without societal intervention - and measures taken by society, such as social distancing, that reduce transmission. The original strain of SARS-CoV-2 had an R_0 of about 2.9, but its R_{eff} was reduced to less than 1 during periods of lockdown.

The more Australians are vaccinated, the lower the R_{eff} , and the lower the likelihood that lengthy lockdowns will be required to contain outbreaks, or in fact that lockdowns will be required at all.

And if we vaccinate enough Australians to 'break the link' between the spread of COVID and hospitalisation and deaths altogether, we may not need to contain outbreaks at all. The costs of opening up and 'living with COVID' would be low enough that lockdowns and border closures would no longer be justified.

Identifying an 'acceptable' level of hospitalisation and death from COVID spread is an uncomfortable task for governments. But it must be done, especially because the available evidence shows vaccines alone are unlikely to prevent COVID from spreading entirely.

Once this level of vaccine coverage has been achieved, focus can shift from limiting the number of COVID cases to focusing on the number of hospitalisations and deaths from COVID, as we do with other infectious diseases.

2.2 A high level of vaccine coverage would allow Australia to safely relax restrictions

National Cabinet must target a level of vaccine coverage that allows us to open up without excessive health costs. In particular, the expected number of hospitalisations post-reopening must not exceed the capacity of the health system, because this would lead to many more deaths – from COVID and other causes. If this scenario played out, it is likely governments would be forced to re-impose restrictions, or many Australians would take voluntary precautionary measures to avoid catching the disease, which would have economic and social costs.

Australia's vaccine target should also be set on a 'no regrets' basis, such that it is unlikely that reopening will lead to rapid spread that stresses health system capacity. Reopening prematurely is a recipe for longer, more frequent lockdowns, because any restrictions imposed to curb infections at a point when hospital system capacity is already stressed would probably need to remain in place for an extended period. And returning to a Zero COVID strategy in the interim while vaccine coverage catches up would be infeasible.

But the target must also be achievable. Many Australians are tired of, and frustrated by, lockdowns and border closures. Governments need to ease the public's frustrations by outlining a way out of our current situation with an appropriate vaccine target that can be reached soon.

The remainder of this chapter demonstrates that, under plausible assumptions, fully vaccinating 80 per cent of all Australians – and 95 per cent of the over-70s and other Australians who are highly vulnerable to COVID – would avoid overwhelming the health system.³⁰ Gradually reopening after reaching this level of vaccine coverage would most likely involve minimal spread of COVID, and very few deaths.

In contrast, relaxing restrictions when 50 per cent or even 70 per cent of the Australian population is fully vaccinated is likely to lead to rapid, widespread community transmission, especially among the unvaccinated, that will overwhelm the health system and lead to many deaths.

The outcome of relaxing restrictions at 75 per cent vaccination of the population depends on the infectiousness of Delta in Australia, and there are plausible scenarios where the health system would be overwhelmed. Opening up at this point therefore would be very risky.

This does not mean that our daily lives will have to continue exactly as they are now until we reach 80 per cent. The restrictions *required* to maintain Zero COVID become less obtrusive with every person vaccinated, because every vaccine reduces the R_{eff} . As we get close

^{30.} For details on assumptions about serious illness and death from COVID infection in different age groups, see the Technical Supplement to this report.

to 80 per cent, the R_{eff} will be close to 1, increasing the prospects of containing outbreaks quickly with testing, contact tracing, and isolation, rather than with lockdowns. But the *objective* of Zero COVID should not be relaxed until we reach 80 per cent, even though it will become less strenuous to maintain.

Section 2.4 demonstrates that Australia could achieve 80 per cent vaccination coverage by the end of the year, provided vaccines are made available for children under 12, or by the end of March 2022 if not.³¹

The next section presents Grattan Institute modelling on the outcomes of opening up in various scenarios. All models are simplifications of reality, our models of COVID are subject to uncertainty about key inputs, such as the infectiousness of Delta and the effectiveness of vaccines against it – both things that we are still learning about. However, we have based the modelling on the best evidence currently available on these variables.³²

2.3 We can live with COVID if we vaccinate 80 per cent of the population and 95 per cent of the over-70s

This section explores four vaccination coverage scenarios where internal restrictions would be removed and some quarantine requirements loosened:³³

1. When **50 per cent** of the population is fully vaccinated.

- 32. For more detail on our modelling approach, see the Technical Supplement to this report. Our results are similar to the results produced by other published models, including the Burnet Institute and the University of Melbourne: Pedrana et al (2021) and Blakely et al (2021).
- $\label{eq:stability} \textbf{33. For example, no quarantine requirements for fully vaccinated Australian citizens.}$

- 2. When 70 per cent of the population is fully vaccinated.
- 3. When **75 per cent** of the population is fully vaccinated.
- 4. When 80 per cent of the population is fully vaccinated.³⁴

We modelled each scenario under three levels of transmissibility of the Delta variant in Australian society: $^{\rm 35}$

- 1. 'Low transmissibility' combines a Delta variant R_0 of 5 with unobtrusive behaviour changes³⁶ in the Australian population to produce a R_{eff} of 4 with zero vaccination.
- 2. 'Middle transmissibility' combines a Delta variant R_0 of 6 with unobtrusive behaviour changes in the Australian population to produce a R_{eff} of 5 with zero vaccination.
- 3. 'High transmissibility' combines a Delta variant R_0 of 7 with unobtrusive behaviour changes in the Australian population to produce a R_{eff} of 6 with zero vaccination.

In all scenarios, the Delta variant is modelled within the total Australian population, including children. $^{\rm 37}$

In each scenario, we assume that Australians continue to get vaccinated after reopening until we eventually reach a maximum vaccination coverage of 90 per cent.³⁸ The assumed trajectory for vaccinations is based on international trajectories, and also on

- 35. Only the most relevant outcomes are presented here. See the Technical Supplement for all outcomes.
- 36. Such as mask-wearing in high-risk settings and the availability of free, self-administered rapid antigen testing.
- 37. See the Technical Supplement for detailed methodology.
- Scenarios with no growth in vaccination rates are explored in the Technical Supplement.

Tests of the Pfizer and Moderna vaccines for children as young as 2 are in Stage II and III trials: US National Library of Medicine (2021a) and US National Library of Medicine (2021b).

^{34.} Several alternative scenarios are presented in the Technical Supplement to this report. Only the most relevant outcomes are presented here.

assumptions about supply, logistics, and vaccine hesitancy in Australia (see Section 2.4).

A summary of these results is shown in Table 2.3.

Scenario 1: Australia begins to open up with 50 per cent of the population fully vaccinated

In this scenario, the low vaccination levels cannot compete with the transmissibility of the Delta variant, even in the low transmissibility scenario, and infections rise quickly (Figure 2.3).

Each infected person passes the virus onto about 1.6 others at the beginning of the outbreak. The millions of unvaccinated Australians offer the virus plenty of opportunity to spread.

In this scenario, Australia reaches herd immunity level – the point at which the R_{eff} falls below 1 – about four months after reopening, in large part because of natural immunity due to infections. But before then new cases reach more than 120,000 per day at the peak, and more than 7 million Australians are infected.

The widespread infections mean that many unvaccinated and vaccinated people require hospital treatment, including intensive care. The healthcare system becomes overwhelmed; at the peak about 20,000 COVID patients require critical care at the same time, a level well above Australia's pre-pandemic or surge ICU capacity.

There are 191 ICUs in Australia, with baseline activity capacity of 2,378 beds. Surveyed capacity of 175 ICUs suggest maximal surge would add an additional 4,258 beds, meaning total surge capacity of about 6,600 beds.³⁹

Table 2.3: Key scenario outcomes after 300 days

Starting R _{eff}	Peak daily cases	Peak ICU use	COVID deaths
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Scenario 1: 50 per cent vaccination coverage

4	143,930 (133,530–148,750)	20,530 (19,140–21,330)	18,470 (17,490–18,780)
5	503,040 (494,910–507,900)	60,210 (60,020–60,590)	31,440 (31,330–31,560)
6	864,650 (828,860-926,000)	94,390 (90,870-94,790)	37,800 (37,370–37,930)

Scenario 2: 70 per cent vaccination coverage

4	40 (30–60)	10 (0–20)	20 (0-30)
5	26,760 (23,650–30,360)	4,350 (3,800–4,920)	5,790 (5,290–6,230)
6	185,710 (174,840–194,950)	25,540 (24,430–26,810)	15,900 (15,480–16,090)

Scenario 3: 75 per cent vaccination coverage

4	10 (0–20)	0 (0–20)	0 (0–20)
5	1,280 (740–1,530)	160 (90–180)	320 (180–410)
6	73,090 (68,350–78,230)	8,110 (7,600–8,570)	7,590 (7,470–7,900)

Scenario 4: 80 per cent vaccination coverage

4	10 (0–10)	0 (0–0)	0 (0–10)
5	30 (20–50)	5 (0-20)	10 (0-20)
6	11,250 (1,030–12,630)	1,430 (1,300–1,580)	2,250 (1,860–2,600)

Note: Median simulation shown, with 10th and 90th percentile runs shown in parentheses. Figures in this chapter and the Technical Supplement. Source: Grattan analysis.

Litton et al (2020). However, both nursing and medical workforce shortfalls mean that this 'surge' capacity would require substantial reallocation of resources. Retraining the workforce and re-purposing facilities would mean elective surgeries are cancelled, and people who would otherwise receive care miss out.

In Scenario 1, ICU capacity is expected to be exceeded for at least two months. In addition, almost 20,000 Australians die from COVID within four months.⁴⁰

This scenario shows that fully vaccinating half of the population is not nearly enough to slow transmission and reduce hospitalisations and deaths to an 'acceptable' level.⁴¹

That means that it is not safe to 'live with COVID' with only half of Australians vaccinated – either by opening up borders or by tolerating low levels of COVID in the community. Zero COVID would be much easier to maintain in this scenario than it is now – the chance of containing outbreaks without lockdowns would be greater – but we would still need to keep zero cases as the goal.

Scenario 2: Australia begins to open up with 70 per cent of the population fully vaccinated

In the low-transmissibility version of this scenario, transmission is reduced enough to avoid serious outbreaks (Figure 2.4 on the following page). New cases never rise above 50 per day. This, combined with 95 per cent vaccine coverage in Australians over 80, results in almost no ICU admissions or deaths. And subsequent vaccinations are enough to drive the R_{eff} below 1 within a few weeks, allowing remaining restrictions on international arrivals to be removed.

But with the middle-transmissibility settings, COVID spreads far more quickly. Nearly 3 million Australians are infected before herd immunity is reached. Fatalities are relatively low for the number of cases – almost

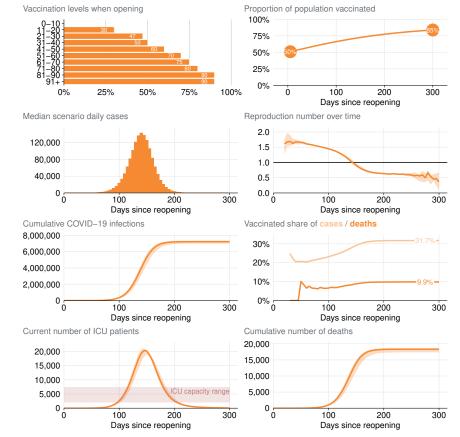
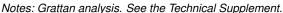


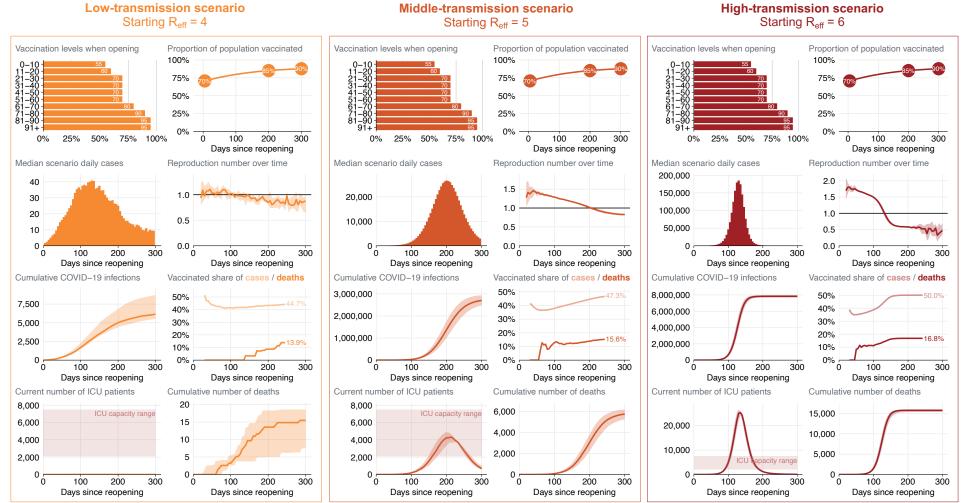
Figure 2.3: 50 per cent of the population is vaccinated, with low virus transmissibility (Starting $R_{eff} = 4$)



^{40.} We would also expect excess deaths from other causes because hospitals are overwhelmed.

The middle and high transmissibility scenarios are not presented here. These scenarios result in undesirable outcomes even faster. See the Technical Supplement.





Notes: Grattan analysis. See the Technical Supplement.

6,000 – but ICU systems become strained for several months as up to about 4,000 people require critical care at the same time.

Given the risk of exceeding health system capacity for an extended period, and the worse outcomes under the high-transmissibility settings, we do not support opening up at 70 per cent vaccination rate.

Scenario 3: Australia begins to open up with 75 per cent of the population fully vaccinated

Beginning to reopen when 75 per cent of the population is fully vaccinated does not overwhelm ICU capacity in the low and middle transmissibility scenarios (Figure 2.5).

However, if the Delta variant's R_{eff} is closer to 6, as in the hightransmissibility scenario, daily COVID infections peak at about 70,000. About one quarter of the nearly 8,000 estimated deaths occur among vaccinated Australians. The number of COVID cases requiring ICU treatment peaks at about 8,000 about six months after reopening, exceeding ICU surge capacity. COVID cases requiring ICU treatment also exceed 50 per cent of all normal ICU beds for about three months.

Given the risk of exceeding health system capacity for an extended period, we do not support opening up at a 75 per cent vaccination rate.

Scenario 4: Australia begins to open up with 80 per cent of the population fully vaccinated

Opening up when 80 per cent of the population is fully vaccinated does not overwhelm ICU capacity – even when Delta's transmissibility is assumed to be high (Figure 2.6 on page 25).

In this scenario, COVID still spreads throughout Australia, reaching more than 10,000 cases per day. But the high vaccination coverage – especially 95 per cent coverage among over-70s – means there are a

manageable number of ICU admissions. There are about 2,000 deaths from COVID in the first year.

Vaccination at 80 per cent leads to acceptable outcomes even if we vary key assumptions, such as removing restrictions on international travel faster, or assuming that vaccine coverage never exceeds 80 per cent.Several alternative scenarios for opening up at 80 per cent are presented in the Technical Supplement to this report. In most, there are some deaths, but at levels far lower than a bad flu season.⁴² In some – such as the high transmission scenario – total COVID deaths from the pandemic reach 2,000-3,000, but in all these 80 per cent scenarios ICU capacity is not exceeded.

Vaccinating 80 per cent of the population – including 95 per cent of over-70s – would allow Australia to 'live with COVID'. Opening up gradually after this point – while continuing efforts to vaccinate more Australians after opening up – would mean that almost nobody would die or go to hospital with COVID, and very few people would be infected at all. We could live with COVID with no need for lockdowns or border closures.

Key risks

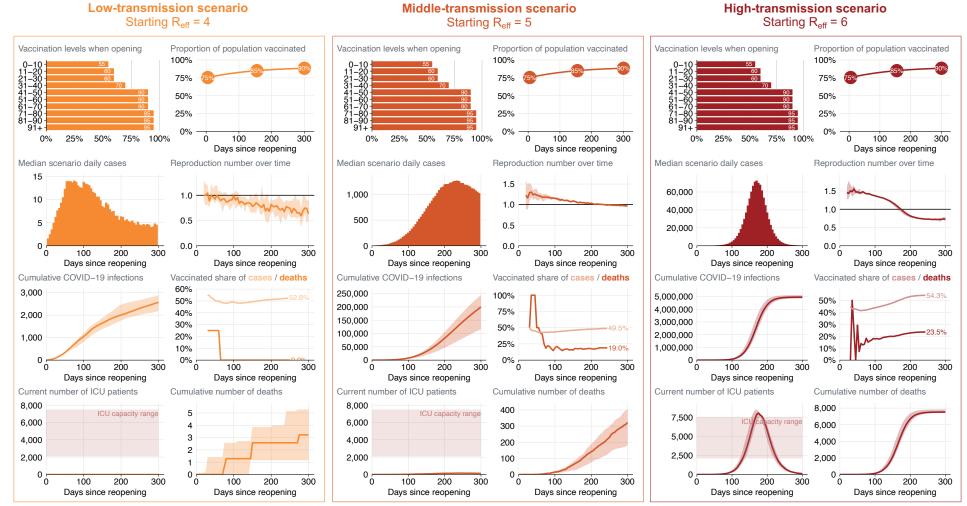
As we have learned, COVID does not offer neat certainties. Key risks that may worsen the outcomes of these scenarios include:⁴³

• The transmissibility of Delta within Australian society proves to be significantly higher than our 'high transmissibility' scenario

^{42.} Recent bad flu seasons include 2019 (1,056 recorded deaths from influenza) and 2017 (1,274): ABS (2020, Table 13). Including pneumonia the total deaths were more than 4,000 in 2019.

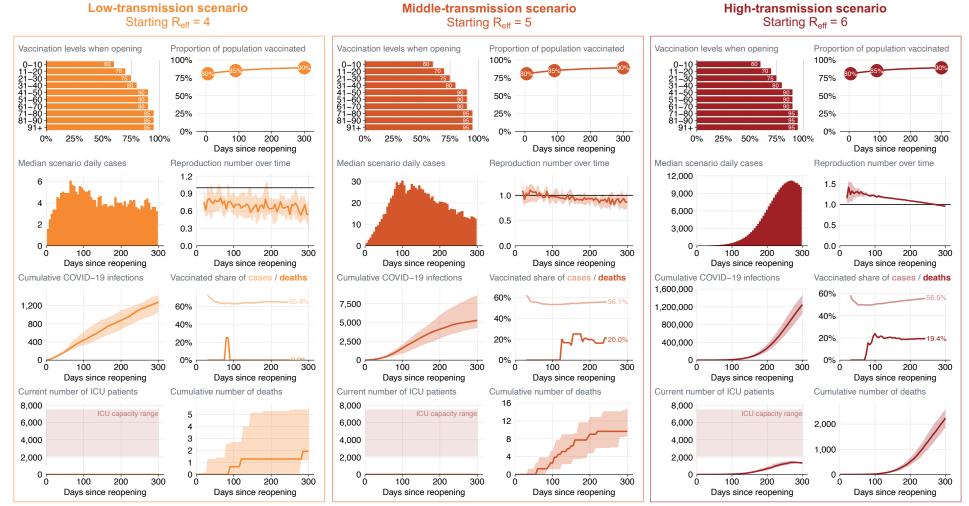
^{43.} There are also 'upside risks' that would improve the outcome of these scenarios, in particular a lower-than-expected Delta transmissibility in Australia, which may mean that a lower vaccination coverage level than 80 per cent could be sufficient to begin opening up. Governments should continue to monitor research on vaccine effectiveness, Delta, and new variants.





Notes: Grattan analysis. See the Technical Supplement.





Notes: Grattan analysis. See the Technical Supplement.

assumes. This is unlikely – the high transmissibility scenario is based on international evidence, and there is no reason to expect that Australian conditions will be significantly more favourable to the virus.

- Geographic pockets of poor vaccine coverage leave unvaccinated communities very vulnerable to severe localised outbreaks.
 Strategies to combat pockets of poor coverage are discussed in Chapter 4.
- A more deadly and more transmissible variant of the virus emerges. If this occurs, governments should model the new variant and react accordingly.
- Vaccine protection against infection wanes over time or a vaccine-resistant variant emerges. Chapter 4 identifies strategies the Federal Government should put in place to prepare for this possibility.
- Vaccines for children below 12 are not approved (see Box 1).

Of course, the biggest risk is that Australia cannot reach 80 per cent vaccination at all. But the final section of this chapter demonstrates that 80 per cent can plausibly be achieved by the end of the year, or by March 2022 if a vaccine for under-12s is delayed.

At the same time, we will learn more about the levels of vaccination coverage required to reopen as countries with higher rates of vaccination coverage relax existing restrictions.⁴⁴

If it becomes clearer in the coming months that Australia can safely reopen at a lower level of vaccination coverage, National Cabinet should reassess its strategy. But aiming for a high level of vaccination coverage now gives Australia the best chance of reopening safely in the coming months.

2.4 We can reach 80 per cent by the end of the year, or by March 2022 at the latest

Australia's vaccine rollout to date has been the second slowest in the OECD, ahead of only New Zealand (see Figure 2.7),⁴⁵ mainly because the Federal Government failed to secure adequate supply. The Government bet the house on only four vaccines.⁴⁶ Only two of these have been secured, and one of them – AstraZeneca – was not recommended by ATAGI (the Australian Technical Advisory Group on Immunisation) as the preferred vaccine for people under 60 nationwide for several months, although ATAGI recently urged adults who live in Greater Sydney to consider getting AstraZeneca.⁴⁷ The Government expects to effectively shelve AstraZeneca from October.⁴⁸ The other – Pfizer – was not ordered in sufficient quantities.⁴⁹

The result is that, at time of publishing, only 14 per cent of Australians have been fully vaccinated. From this position, the prospect of 80 per cent may seem remote.

But more vaccines are on the way. From October, the Government expects to receive 2 million doses of Pfizer per week, and 500,000 doses of Moderna per week, subject to provisional approval from the TGA (see Figure 3.1). By the end of the year, there should be

^{44.} Many countries across North America and Europe that have sustained high rates of natural COVID infections will require lower levels of vaccination coverage to achieve herd immunity since a substantial portion of their populations have already caught COVID and developed some natural immunity to the disease.

^{45.} Ritchie et al (2021).

^{46.} Department of Health (2021a).

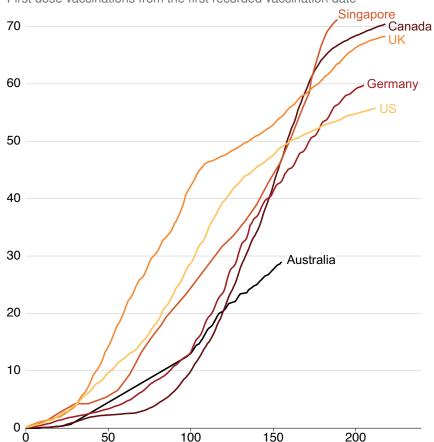
^{47.} ATAGI (2021).

^{48.} Evershed (2021a).

^{49.} The other two vaccines the Government originally bet on were the University of Queensland vaccine, which was abandoned at clinical trials, and Novavax, which is still not available in Australia. The Government subsequently secured an agreement for a fifth vaccine, Moderna: Department of Health (2021a).

more than enough supply to vaccinate the remaining unvaccinated Australians, even with just Pfizer

Figure 2.7: Other developed countries have outpaced Australia on vaccine coverage



First dose vaccinations from the first recorded vaccination date

Note: Although this shows first dose coverage only, first doses are indicative of second dose coverage.

Source: Ritchie et al (2021).

Children have a very low risk of serious illness from COVID,^a but they can transmit the virus.^b If children are unvaccinated while COVID is present, super-spreading is very likely to happen in schools.^c This means that vaccinating children must be part of Australia's strategy.

The Pfizer vaccine has been approved for people over 12 years old, but there is not yet a vaccine for children under 12. Pfizer has reached Phase II and III trials for children as young as 2, and the US expects to grant emergency authorisation as early as September.^d

Given this uncertainty, this report considers two plausible trajectories to reach 80 per cent – one with children under 12, which can be achieved by the end of the year; and one without, which can be achieved by the end of March 2022, with higher coverage for adults.

If Pfizer is not approved in children under 12 before March, we recommend retaining routine testing and temporary closures in the event of positive cases for primary schools and childcare centres to avoid super-spreader events.

- a. Cases of long COVID in children also appear to be rare, but they do occur: Lewis (2021).
- b. Grijalva et al (2020).
- c. Super-spreading in schools has become a major problem in England, where all schools were recently shut a week early for summer holidays: Hall (2021).
- d. Schumaker (2021).

and Moderna (more than 40 million doses combined are scheduled to be allocated in July and December).⁵⁰

And there is international precedent for rapid take-up of vaccines once supply is adequate. Figure 2.8 shows the progress of the vaccine rollout in England by age cohort. England is on track to reach 80 per cent. It has already administered a first dose to more than 90 per cent of over-50s, and vaccination rates are still increasing rapidly for 18-29 year-olds, who have only recently become eligible.

The situation in England and in many countries with more advanced vaccine rollouts is different to Australia's situation. They have had more supply, and managed their rollouts better. And they have had many more deaths from COVID, which may have encouraged their populations to get vaccinated when they could.

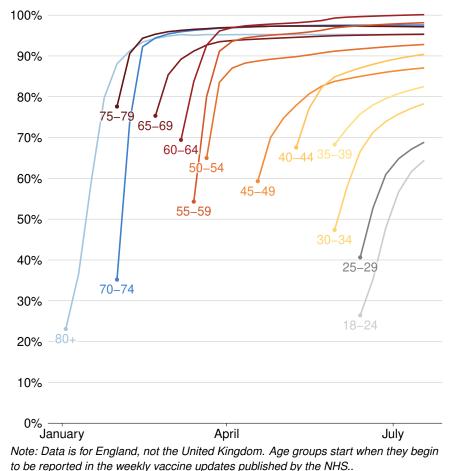
Surveys shows Australians are more vaccine hesitant than people in many other countries, including the UK, Germany, and Canada.⁵¹ But the Australian surveys were taken in an environment of very low COVID spread, and therefore the perceived need to protect oneself is lower. And only about 10 per cent of Australians say they are unwilling to get a COVID vaccine. The remainder say they want one, although a third say they intend to get vaccinated, but not straight away (Figure 2.9 on the following page).

So far, the Federal Government has done little to target this hesitant group – the 'moveable middle'.⁵² But there is no reason to doubt

- Lacey (2021) and Shelburne (2021). Note that hesitancy is defined as those who 'delay in acceptance or refusal of vaccination *despite availability of vaccination services*', and is influenced by complacency, convenience, and confidence: MacDonald (2015), although convenience is also arguably an uptake barrier: Bedford et al (2018).
- 52. The terminology was taken from Barli et al (2021).

Figure 2.8: England is on track to reach 80 per cent, and has already reached over 90 per cent for the over-50s

Percentage of people in England who have received at least one dose of a vaccine



Source: NHS Weekly Vaccine Update.

More doses of Moderna (about another 18 million) and Novavax (51 million) are likely to arrive in 2022. Another 60 million Pfizer doses have also been secured for 2022: Morrison (2021a).

that, with the right approach, most or all of this group who plan to get vaccinated eventually can be convinced to get vaccinated now. Shifting this group should be enough to reach 80 per cent without needing to convince the group of entrenched 'anti-vaxxers'.⁵³

Australia should have enough supply to reach 80 per cent vaccination coverage by the end of the year (see Figure 2.10). If vaccines for children under 12 are not approved in time (see Box 1), we should be able to get to 80 per cent coverage by the end of March 2022, with higher rates for adults (see Figure 2.11).

2.5 National Cabinet needs to produce a plan to get to 80 per cent, and a plan to reopen when we do

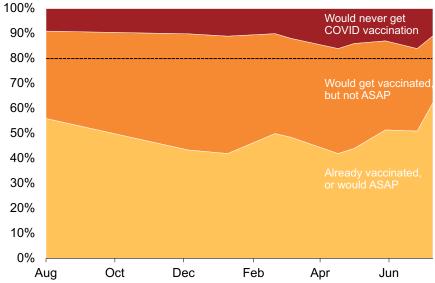
We need to vaccinate 80 per cent of the Australian population before we can open up with the confidence that our hospital system will not be overwhelmed and deaths will be low.

We have the means to get there by the end of the year, or soon after. And we have the public willingness to get there – about 90 per cent of Australians say they plan to get vaccinated.

But we won't get there without political leadership. National Cabinet needs to agree on a plan to achieve 80 per cent vaccine coverage by the end of the year, or by the end of March 2022 if we are delayed by an absence of vaccines for children under 12. And it needs to agree on a plan to get Australia back to normal after that. The final two chapters outline what these plans should contain.

Figure 2.9: About 90 per cent of Australian adults want a COVID vaccination

Respondents were asked about their intentions to get vaccinated, Aug 2020 to July 2021

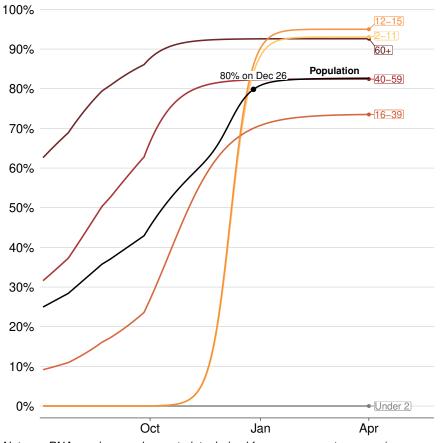


Notes: Based on a representative sample of 1,000+ Australians aged 18+. The dotted line shows the 80 per cent population target for vaccination. Source: Essential Report (2021a).

^{53.} If a vaccine is not approved for children under 12, coverage rates will need to be about 90 per cent for adults aged 16-to-39, and above 90 per cent for other age groups (Figure 2.11 on the next page). This would require converting a small proportion of those who currently say they do not intend to get a vaccine. Chapter 3 discusses measures that should be used if required.

Figure 2.10: Australia can reach 80 per cent vaccinated by the end of the year

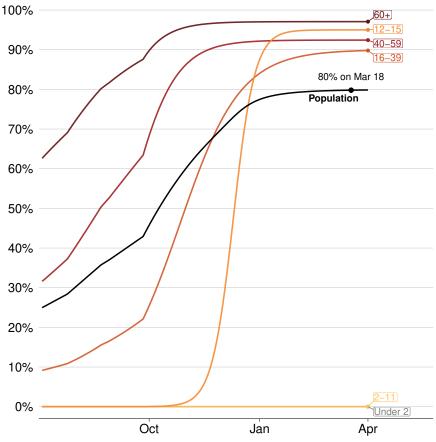
Plausible full vaccination rates by age for the Australian population



Notes: mRNA vaccine supply constraints derived from government sources (see Evershed (2021b) and Figure 3.1). Demand curves use a logistic curve modelled on UK and Canadian age-based vaccination rates (see Figure 2.8). Source: Grattan analysis.

Figure 2.11: If under-12s cannot be vaccinated, the timeline for getting to 80 per cent should be pushed back to March 2022

Plausible high vaccination rates by age for the Australian population, where children under 12 are not eligible for vaccination



Notes: mRNA vaccine supply constraints derived from government sources (see Evershed (ibid) and Figure 3.1). 2022 supply allocations assume the same rate as supply in October to December 2021. Demand curves use a logistic curve modelled on UK and Canadian age-based vaccination rates (see Figure 2.8).

Source: Grattan analysis.

3 A plan to vaccinate 80 per cent of Australians by the end of the year

National Cabinet has agreed to develop a plan to reopen Australia once we reach an appropriate level of vaccine coverage. But the level of vaccine coverage we need – at least 80 per cent – is high. It will not happen without big changes from both the federal and state governments to accelerate the vaccine rollout. For any reopening plan to be meaningful, National Cabinet also needs a vaccine plan.

Governments' first task is to make it as easy as possible for the Australians who want a vaccine now to get one. Its next task is to shift the remaining Australians who say they intend to get vaccinated, but not straight away. Succeeding at these tasks will get us to 80 per cent.

Failure is not an option. Governments must be clear that vaccinations are our ticket out of lockdowns and border closures, and they must be willing to do everything within reason to get there by the end of the year, or by the end of next March if child vaccinations are delayed.

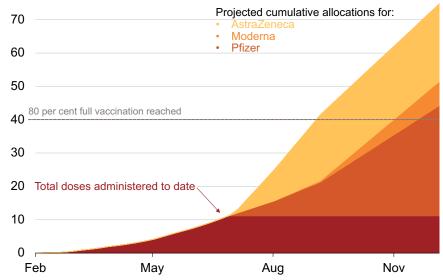
3.1 The Government must make it as easy as possible for anyone who wants a vaccine to get one

The Federal Government must be ready to ensure that a vaccine is easy to get for everyone who wants one when the supply of Pfizer and Moderna is scheduled to ramp up in October (Figure 3.1).⁵⁴

Some measures can be introduced immediately, such as expanding vaccination hubs, adding more outlets, and providing transport vouchers for people who want help to get to a hub or outlet. Others measures, such as on-site vaccinations at workplaces, should be established when there is enough supply for all.

Figure 3.1: With Pfizer and Moderna supplies scheduled to ramp up, Australia will have more than enough vaccines to meet the 80 per cent target by the end of the year

Millions of vaccine doses cumulatively administered and allocated nationally, as at 25 July 2021



Notes: August to December allocations based on lower-estimate allocation targets. Sources: Macali (2021b), Department of Health (2021b) and Evershed (2021b).

^{54.} Of course, there is a risk that Pfizer and Moderna will not be delivered on schedule, which could delay opening-up targets.

Expand state hubs

The Federal Government is relying on primary care clinics, such as General Practices (GPs), to administer the bulk of the vaccines. About 5,000 GP clinics are expected to administer between 300 and 500 doses a week over the next six months. This may be feasible given that GP clinics can administer about 100 to 300 doses a day.⁵⁵

Engaging GPs in the program is essential and strengthens holistic care. About 55 per cent of people who had not been vaccinated as at June 2021 reported that they would prefer to receive their vaccine from a GP.⁵⁶ But it would be unwise to rely too heavily on GPs – we must make getting a vaccine very easy, which means giving people lots of options.

State-run facilities, many of which were set up for mass vaccinations and can manage very large numbers, are relegated to additional capacity in the Federal Government's plan. They are expected to administer between about 500,000 to 700,000 Pfizer and AstraZeneca doses a week nationally between August and December – ranging from one fifth to one quarter of doses available.⁵⁷ This is a shift away from practice so far, where primary care and state facilities were doing about 50/50 in June 2021.⁵⁸

The Government will almost certainly run into resource and logistical constraints if it is to at least double July 2021 vaccination rates from October 2021. GP clinics may well face supply, capacity, or workforce problems, as they did earlier this year. State-run facilities should therefore continue to be an essential part of the vaccination rollout plan, drawing on student nurses and doctors if needed.

State-run facilities are more efficient. They can deliver about 500-to-1,400 doses every eight hours; about two-to-five times more than GPs.⁵⁹ They are an easier option for people without a regular GP, they offer walk-in vaccinations, and they are highly visible.

To galvanise the population, states should establish 24-hour vaccination blitzes, with specific 24-hour vaccination targets. Stadiums should be used for mass vaccinations.

Offer vaccines in as many places as possible

Convenience is important. The hours of operation of vaccination sites should be increased, and new local outlets should be opened, particularly at pharmacies (perhaps using trainee pharmacists). Pharmacies are convenient and accessible, so these outlets should be ramped up immediately.⁶⁰ A broader range of healthcare providers, such as Aboriginal Community Controlled Health Organisations, should provide vaccinations across different communities.⁶¹

States should also be given enough supply to bring vaccines to people, when all adults are eligible, by providing pop-up vaccination sites at major sports events, workplace hubs, universities, major public transport stations, housing commission estates, regional town centres, religious centres,⁶² and schools.⁶³

61. Seale et al (2020).

63. Australia has effective infrastructure to run state-based school vaccination programs. Schools already host on-site immunisation clinics; these could be expanded to include COVID vaccinations.

^{55.} Hanly et al (2021).

^{56.} ABS (2021c).

^{57.} Department of Health (2021b).

Note that Pfizer doses are being allocated at about 50/50 to GPs and state hubs in August and September, and about 60/40 from October.

^{59.} Hanly et al (2021).

^{60.} At 22 July, only 120 pharmacies were being used to administer vaccinations, yet about 4,000 community pharmacies nation-wide had been trained and approved to give COVID vaccinations: Hunt (2021) and Wherrett et al (2021).

^{62.} For example, mosques are already being used as pop-up vaccination sites in western Sydney: The Pulse (2021).

States should also consider running mobile⁶⁴ and home-visits vaccination programs,⁶⁵ to target under-vaccinated geographic areas, or specific eligible groups who may find it hard to make time to get vaccinated (such as single parents).

Offer transport vouchers for getting vaccinated

Governments should seek to lower any financial barriers people may face in getting vaccinated. They should immediately provide vouchers for free transport to and from vaccination, either via public transport or taxi/ride share.⁶⁶

Encourage workplaces to promote vaccination for their employees

Employer-supported schemes would increase vaccination rates, particularly among people who are unsure or find it inconvenient.

Once more vaccines are available, the Government should provide large workplaces with COVID vaccines for their workers, as it does with flu vaccines.⁶⁷ Employers could assist Australia's vaccination efforts

- 66. For example, in the US, Uber collaborated with the government to provide free fares to and from vaccination sites: Uber (2021).
- 67. Government could supply vaccines to healthcare providers that enter contracts with major businesses to rollout the vaccine. A US study found that on-site vaccination was persuasive to 32 per cent of people who were waiting to see if they would get vaccinated: Hamel et al (2021).

by giving employees additional sick leave or bonus leave if they get vaccinated,⁶⁸ and allowing people to get vaccinated during work time.⁶⁹

3.2 Governments need to do better at selling the benefits of vaccination

Once supply issues are fixed, governments should go hard to encourage people to get vaccinated (Table 3.1). A national communications strategy should be guided by evidence about the reasons people are hesitant to get vaccinated, and should include tailored messages for different demographics, especially culturally and linguistically diverse populations.

Government should appeal to the good-will of the Australian people to protect the community, and clearly make the case for why vaccinating at least 80 per cent of the population is so critical and beneficial. The Australian population has demonstrated strong support for public health measures before, especially during the lockdowns. Campaigns to increase vaccinations should reinforce this sense of community solidarity. And as more people are vaccinated, the more accepted getting vaccinated will become.

This comprehensive communications campaign should be based on the best evidence, and rolled out as vaccine supply ramps up.⁷⁰

^{64.} The Royal Borough of Kensington and Chelsea (2021).

^{65.} New York is offering home-based vaccinations for anyone who requests it: City of New York (2021). US evidence shows that these strategies are effective: The Community Guide (2016).

^{68.} A US survey found that nearly half of employed adults who were 'waiting and seeing' said they would get vaccinated if they got extra time off – and this was persuasive to 30 per cent of all hesitant people: Hamel et al (ibid). Note that the US has different employment laws/entitlements to Australia, so the effect might be bigger in the US. See also Seale et al (2020).

^{69.} In the US, this was found to be even more persuasive than monetary compensation: Hamel et al (2021) and Shaffer and Arkes (2009).

^{70.} Brunson et al (2021) recommend communication should be tailored, adapted over time, respond to adverse events quickly and transparently, use trusted messengers, not over-reassure, and acknowledge uncertainty. See also Leask et al (2021) and WHO (2020).

Governments should focus on encouraging people who are unsure about getting vaccinated, rather than the small number who are completely unwilling.⁷¹ A July 2021 survey found about 12 per cent of people said they were not at all likely to get vaccinated.⁷²

Vaccine hesitancy already appears to be declining in Australia, perhaps due to the recent recurrence of lockdowns in major capital cities. The proportion of people who say they are unsure about getting vaccinated has fallen from 29 per cent in May 2021 to 21 per cent in July 2021 (see Figure 3.2).⁷³ And hesitancy is very low among older Australians – only 4 per cent of people over 70 say they will not get vaccinated if it is recommended to them (Figure 3.3).⁷⁴

Governments need to convey consistent and evidence-based messages that build public trust and confidence. Governments should develop a well-targeted communications strategy that seeks to convert vaccine intention into action.

- 72. Resolve Strategic (2021). This is consistent with a 19 July Essential Poll that found 11 per cent said they would definitely not get vaccinated: Essential Report (2021b); and an ABS poll in June 2021 that found 11 per cent said they disagreed or strongly disagreed to vaccination if it was recommended to them: ABS (2021c). But the proportion of people totally against vaccination may be even smaller. An April 2021 ANU poll found 5.3 per cent of respondents were definitely not willing to get a hypothetical safe and effective vaccine: Biddle et al (2021). And this figure decreased between January 2021 and April 2021.
- 73. This is supported by other survey data. The Essential Poll in July 2021 reported a record low of 11 per cent saying they would not get vaccinated, and an upward trend in the proportion of people intending to get vaccinated: Essential Report (2021a).
- 74. But note that a June 2021 ABS survey showed that 26 per cent of people over 70 who had not had a vaccine yet wanted a different vaccine than what was available to them: ABS (2021c).

Addressing safety

The biggest reason for hesitation is concerns about safety (Figure 3.4). Many of these concerns are specific to AstraZeneca, probably because of shifting advice and poor messaging. In April, an ANU survey found that half of those who were hesitant were hesitant because of AstraZeneca.⁷⁵ A July poll found that 36 per cent of respondents were not willing to get AstraZeneca but were willing to get Pfizer.⁷⁶ A June survey found that preference for Pfizer over AstraZeneca was 54 per cent among people over 55 who were willing to get vaccinated, but had not been yet.⁷⁷

Many of these concerns should be overcome when Pfizer and Moderna replace AstraZeneca, provided communication is more effective than it was for AstraZeneca. Any concerns about Pfizer and Moderna should be addressed early, conveying information about how such mRNA vaccines work and their effectiveness, not only in clinical trials but in real-world settings (for example, in the US and UK). Half of hesitant people report that demonstration of effectiveness would persuade them to get vaccinated (Figure 3.5).⁷⁸

Addressing a lack of urgency

The second biggest reason for hesitancy is perceived lack of urgency. About 15-to-20 per cent of hesitant people in June said they felt no rush because international borders were closed and the risk of catching COVID was low (see Figure 3.4). A rise in COVID cases will convince more people to get vaccinated, as they see the sense of urgency in

76. Essential Report (2021c). Note that 5 per cent preferred AstraZeneca over Pfizer.

78. OECD (2021b) and Kreps et al (2021).

^{71.} But note, according to an ANU survey, nearly 60 per cent of those who in January 2021 said they would 'definitely not' get vaccinated did not hold the same view in April 2021: Biddle et al (2021).

^{75.} Biddle et al (2021).

^{77.} Lim and Nguyen (2021a). And about 30 per cent of those 55 years and over who had already been vaccinated preferred Pfizer.

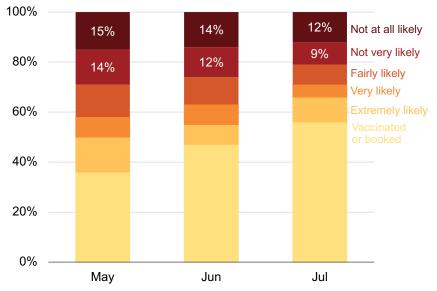
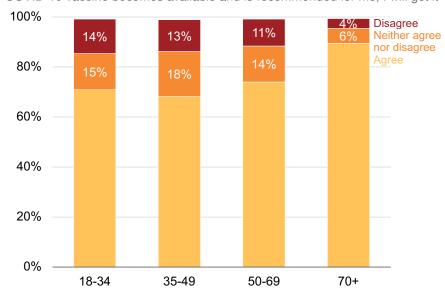


Figure 3.2: Vaccine hesitancy appears to be on a downward trend Percent of respondents on their intentions to get vaccinated, May-July 2021

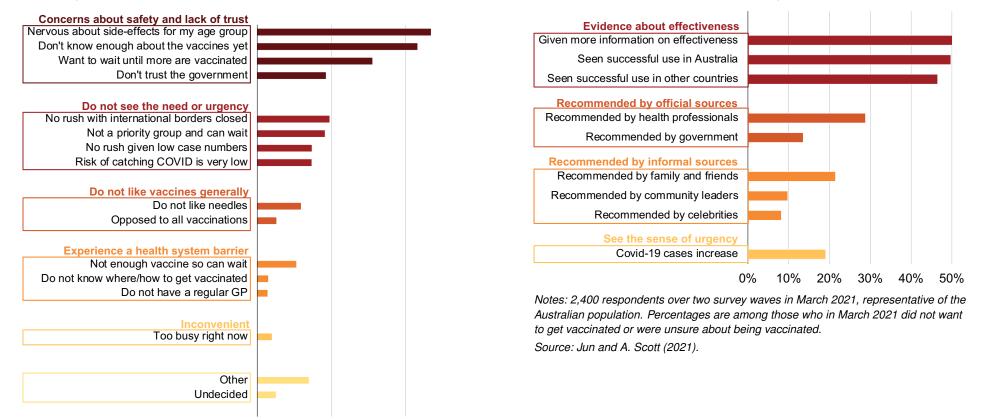
Notes: Based on a representative sample of 1,600 Australians aged 18+. 'Vaccinated or booked' include those who have received one dose. Source: Resolve Strategic (2021).

Figure 3.3: Vaccine hesitancy is very low among the over-70s Respondents were asked in June to respond to this statement: When a COVID-19 vaccine becomes available and is recommended for me, I will get it



Note: Based on a representative sample of a panel of 3,414 Australians aged 18+, surveyed 11-20 June 2021. Source: ABS (2021c). Figure 3.4: Concerns about safety and lack of trust are the key barriers to vaccine uptake

Of the 26 per cent of respondents who indicated vaccine hesitancy in June 2021, they cited:



Note: 1,600 survey respondents, nationally representative for people aged 18+. Source: Resolve Strategic (2021).

0%

20%

40%

Figure 3.5: Evidence of effectiveness is the most persuasive for overcoming hesitancy

Surveyed respondents in March 2021 who said they were unwilling or unsure about vaccination where asked what would persuade them

protecting themselves against the risk.⁷⁹ By the end of July – about one month into the Sydney lockdown – NSW had a record low in reported hesitancy, dropping by 20 per cent over two months to a mere 15 per cent in July.⁸⁰

More people are likely to consider getting vaccinated as urgent once there is a clear government plan for opening borders, especially if the plan to remove restrictions begins with preferential arrangements for vaccinated people.

Targeting hesitant groups and choosing the right messengers

Ad campaigns should be targeted to more hesitant demographics. This means using different communications channels to target younger people, women, people who speak languages other than English, and people who live beyond the inner city – all of whom are more likely to be hesitant.⁸¹

And the messenger matters. The Government should use trusted, independent voices to encourage people to get vaccinated, because only about 15 per cent of people reporting hesitancy say that recommendations by government would persuade them (see Figure 3.5).⁸² Trusted figures include:

- Independent public health experts and trusted non-government organisations, to speak to media, use social media, and hold public events.⁸³
- 79. About 80 per cent of people vaccinated as at June 2021 said that it was to prevent them from contracting or experiencing severe symptoms of COVID: ABS (2021c).
- 80. Only 8 per cent of people said they would not get vaccinated, and 7 per cent said they were were unsure: Melbourne Institute (2021).
- 81. Resolve Strategic (2021); Biddle et al (2021); and ABS (2021c).
- 82. See recommendations on community engagement and trusted voices here: Brunson et al (2021).
- Public health experts were seen as the most trusted spokespeople in the H1N1 crisis: US study Quinn et al (2013). Also see Siegrist and Zingg (2014).

- Community leaders and influencers, including leaders of culturally and linguistically diverse communities, to promote vaccination to their local networks.⁸⁴
- Health professionals, to promote vaccination during their health consultations.⁸⁵

Messages from different sources must be consistent, which requires guidance and coordination on all levels, from National Cabinet through to healthcare workers.⁸⁶

Peers can also be very effective messengers. GPs and staff at vaccination sites should distribute vaccination stickers or badges and encourage people to share their vaccinations on social media, to build peer expectations that getting vaccinated is the right thing to do. Experience in the UK and US suggests this is particularly persuasive for younger people.⁸⁷

A text message campaign

Nudges can help to persuade people who are delaying getting vaccinated or find it inconvenient.⁸⁸ A text message campaign – sent

- 84. While recommendations by community leaders and celebrities are not seen as highly persuasive (Figure 3.5), they are important to reach different communities, particularly younger people, who reported celebrities and family and friends were more likely to sway them. This is where influencers via social media should be used. See tested communications strategies here: Seale et al (2021).
- 85. Thomson et al (2018). Health professionals are highly trusted, and recommendations made by them were seen as persuasive by more than 30 per cent of people who reported being hesitant (Figure 3.5). GPs should be encouraging their patients to get vaccinated: The Community Guide (2015a).
- 86. Brunson et al (2021) and Seale et al (2020).
- A US survey found that young people were 50 per cent more likely to intend to get vaccinated if at least half of their close friends were vaccinated: Hamel et al (2021).
- 88. There is evidence that nudges are highly effective, especially when people agree with the outcome: Brocas (2021). See also The Community Guide (2015b).

to all Australian adults, encouraging them to get vaccinated and telling them how – would be an effective nudge.⁸⁹ Reminders could also include telephone calls, letters, and emails.

3.3 When vaccines are available to all adults, the Government should ramp up incentives

If the Government has developed an effective communications strategy and made it as easy as possible for people to get vaccinated, vaccinations should accelerate in October when the extra supply of Pfizer and Moderna is scheduled to arrive and eligibility can be expanded to all adults.

Surveys show that about 90 per cent of adult Australians intend to get vaccinated. So it is likely that, once supply is available, most Australians will flock to get vaccinated, relieved that they can at last protect themselves and others.

Australians have shown enormous solidarity in the pandemic to date, making sacrifices to protect themselves and others. Government should appeal to this sense of solidarity once again, emphasising that mass vaccination has both a private and collective benefit.

The Government should launch a national weekly lottery in November, to make vaccination more appealing for those slow on the uptake. But from November, governments should be willing to use stronger measures, beginning in January 2022, to ensure we get to 80 per cent and beyond as quickly as possible.

A national lottery

Some US states have introduced lotteries to encourage vaccination. Preliminary evidence suggests lotteries are likely to be more effective than direct cash payments.⁹⁰ Lotteries have been associated with an uptick in vaccinations in Ohio, although this evidence is contested.⁹¹

We recommend a weekly national \$10 million lottery in Australia with ten \$1 million prizes each week. The first draw should be on Melbourne Cup Day – November 2.⁹² Every vaccinated Australian would be in the draw each week (as well as people with a medical exemption to vaccination). People with one jab would have one chance each week; people who were fully vaccinated would have doubled their chances.

Proof of vaccination for travel and activities

In conjunction with opening borders, governments should require proof of full vaccination – 'vaccine passports' – for domestic flights, attendance at major events, in major public venues, and in hospitality and entertainment settings.⁹³ A survey found nearly three quarters of Australians support the idea of imposing these requirements.⁹⁴

- 91. Brehm et al (2021) found in their working paper that the lotteries increased vaccination rates by up to 80,000 two weeks after the announcement, at a cost of \$85 per starting dose. However, Walkey et al (2021) reported in a research letter that no effect could be found, because the announcement coincided with adolescents becoming eligible for vaccination.
- 92. States could also run lotteries with the draw being from the state's electoral roll, with winners being required to show they had been vaccinated at least one day before the draw to collect the prize.
- 93. This should be a National Cabinet-led, not a private-led initiative.
- 94. Smith et al (2021). Support was higher among older Australians, major party voters, and higher-income earners.

^{89.} Randomised control trials in the US on COVID vaccination uptake found that text message nudges substantially increased vaccination rates – by up to 26 per cent – although these are early results: Dai et al (2021). Nudges appeared to work well for different demographics – including young and old. Follow-up reminder texts increased uptake by another 16 per cent. Text messages have also been tried in the UK: NHS (2021a).

Kim (2021). Note that this paper is a July 2021 pre-print and not yet peer reviewed. A June Melbourne Institute survey found that a cash payment was persuasive to only 10 per cent of people unwilling or unsure about vaccination: Lim and Nguyen (2021a).

A July 2021 survey showed that proof of vaccination to enter hospitality settings, entertainment, and other public places would be persuasive to at least 20 per cent of people who are unsure about getting vaccinated or unwilling to get vaccinated (see Figure 3.6).⁹⁵ Vaccine passports for restaurants, and overseas and inter-state travel were the most persuasive.

This evidence suggests vaccine passports may help to push vaccination coverage to 80 per cent and higher. But the main benefit of vaccine passports will be as a public health measure once 80 per cent is reached and COVID is present in the community, because they will keep those who are most likely to spread COVID away from locations where 'super spreading' is most likely to occur (See Chapter 4).

Governments would need to ensure that vaccination status can be easily and reliably verified – including an option for a physical card for people who do not have a smartphone – and that people who are unable to be vaccinated for medical reasons can acquire a proof of exemption. Australian governments should consider whether to exempt unvaccinated people from the vaccine passport restrictions if they can show proof of natural immunity from having had COVID, or show proof of a very recent negative test for COVID. Such exemptions have been granted in other jurisdictions.⁹⁶

The Federal Government has already flagged preferential arrangements for vaccinated people to travel overseas.⁹⁷ Prioritising fully vaccinated Australians to travel overseas as a first step to opening borders would have strong social benefits, especially because it would allow more people to visit their families. It should also encourage vaccine uptake (see Chapter 4). However, there is some evidence that Table 3.1: Governments should use better communications, nudges, and incentives, phased-in over time, to boost vaccination rates quickly

Timing	Recommendations
1. Phase-in rapidly as supply increases	 Make getting vaccinated as easy as possible Text message nudges Transport vouchers On-site vaccinations for large workplaces Encourage workplace sick or bonus leave Expanded pop-up vaccination sites at universities, sports events, major public transport hubs, community centres, housing commission estates, and schools Launch a national, targeted campaign on the benefits of getting vaccinated
2. From November, when supply issues should be fixed	 A weekly lottery for vaccinated people Mandatory vaccination for certain workers* Require vaccine passports for airline flights and for entry to hospitality, entertainment, and other public places, to take effect in the new year.

Note: Mandatory requirements should already be introduced for selected workers, e.g., frontline quarantine workers.

^{95.} Lim and Nguyen (2021b).

^{96.} For example, in the EU: European Commission (2021). Australia already has the infrastructure for digital certificates: Walsh (2021).

^{97.} Morrison (2021b).

international travel incentives may not be very compelling for hesitant people.⁹⁸

3.4 Mandatory vaccination of some workers to protect the vulnerable

There is no doubt that mandatory vaccination for employees can be effective. Mandatory schemes for flu vaccinations have increased uptake substantially.⁹⁹ Employers can and do make vaccination a condition of employment. In Australia, some healthcare workers are already required to have proof of vaccination against a number of preventable diseases. In NSW, for example, health staff are required to demonstrate they are vaccinated against a range of diseases, and flu vaccines are also mandatory for people working in intensive care wards.¹⁰⁰

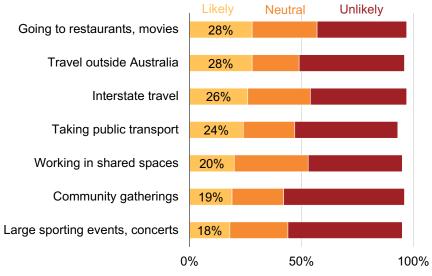
In March 2021, an Australian aged care provider (TLC Healthcare) introduced mandatory vaccination for all its staff. By the end of April, all workers where fully vaccinated (of 1,800 staff, eight opted to cease their employment).

Further mandatory vaccination should be contemplated only after supply and distribution problems have been resolved – it would be unethical, for example, to penalise a worker in a rural aged care facility if there was no place within reasonable proximity for them to get vaccinated.

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Figure 3.6: Vaccine passports are likely to persuade at least 20 per cent of people who are unwilling or unsure about vaccination

The 23 per cent of respondents who were unsure or unwilling about vaccination were asked: How likely are you to be vaccinated if a ban was in place for unvaccinated people for the activities listed?



Notes: 1,200 respondents over 18 years, representative of the Australian population. Survey was taken from 5-to-9 July 2021. The gap to 100 per cent are those that responded with 'don't know'. Note that 'community gatherings' include religious gatherings.

Source: Lim and Nguyen (2021b).

A Melbourne Institute survey found that people who are unwilling to be vaccinated are much less interested in opening international borders for vaccinated travellers: Jun and A. Scott (2021).

^{99.} Seale (2021). For example, a US study on hospital staff showed that flu vaccine uptake increased from 44 per cent to 62 per cent with positive incentives, and went up to 85 per cent when it was effectively mandated: Quan et al (2012). See also Black et al (2017) and Omer et al (2019).

^{100.} Seale (2021).

Mandatory vaccination poses ethical challenges because it interferes with people's autonomy to make decisions about their own bodies.¹⁰¹ If applied too broadly, mandating could be counter-productive, driving up vaccine refusal by encouraging anti-vaxxers, as people become suspicious and fearful.

While Australian population vaccination rates are low, state governments should mandate vaccination for frontline quarantine workers, including those responsible for driving arriving passengers and crew to quarantine facilities.¹⁰² Beyond that, mandatory vaccination should be imposed only where a risk assessment finds risks of harm are high and capacity to avoid risk is low. This would apply to people who are:

- Consistently in contact with people vulnerable to COVID (e.g., older people, people with a disability, people in hospitals); or
- Consistently in a setting where people they are in contact with cannot choose to avoid the risk (e.g., prisoners, school students).

Mandatory vaccination is legitimate only if reasonable steps have already been taken to build vaccination rates in the relevant group voluntarily, including by making the vaccine easy to get. These steps include free transport if vaccination is not provided on site or locally; ensuring people are entitled to sick leave if they suffer side-effects; communicating the safety and efficacy of the vaccine; and providing support for people who want it as they weigh-up their decision.¹⁰³

Once all these steps have been taken, National Cabinet should, if vaccination rates are not tracking to reach 100 per cent among these

workers by November 2021, extend mandatory vaccination to all aged care workers, hospital staff, disability care workers, prison workers, and teachers, to begin in the new year.¹⁰⁴

3.5 Children should be vaccinated at school as soon as possible

Vaccinating children is an important component of Australia's vaccination program (see Box 1). The TGA has approved the Pfizer vaccine for use in 12-to-16 year-olds. Approval for children under 12 awaits clinical trial results.¹⁰⁵

Once vaccines are available for children, they should be distributed through schools. Australia already has effective infrastructure to run state-based school vaccination programs. Utilising this capacity would enable a high proportion of children to be vaccinated very quickly.

As explained in Section 2.4, the question of when children under 12 can be vaccinated is the key factor that will determine whether 80 per cent can be reached by the end of this year or by the end of March next year. The Government will be in a position to make a call on this by November – if a vaccine for children under 12 has still not received provisional approval by then, it will not be feasible to vaccinate children under 12 by the end of Term 4, and the timeline for 80 per cent will need to be pushed back to the end of March.

^{101.} Bhatt and Subrahmanyam (2021).

^{102.} This was recommended by the Australian Health Protection Principal Committee, and endorsed in National Cabinet on 28 June, but is yet to be fully implemented: Morrison (2021c) and Borys (2021).

^{103.} These are recommended in Seale (2021). A large UK study found that messaging about personal safety was the most persuasive at changing the minds of people unwilling to get vaccinated: Freeman et al (2021).

^{104.} National Cabinet has already mandated vaccination for all residential aged care workers – first dose by September: Morrison (2021c). Mandating vaccinations for these groups of workers will largely need to be implemented by state governments. Appropriate medical exemptions should also apply.

^{105.} TGA (2021). Pfizer intends to submit an emergency authorisation for children under 12 in September in the US, and Pfizer and Moderna are conducting Phase 2 and Phase 3 clinical trials respectively. See US National Library of Medicine (2021a) and US National Library of Medicine (2021b).

4 A staged plan to get back to normal

The Federal Government has flagged its intention to return Australia to normal in four phases once enough Australians are vaccinated, although it has yet to agree on details with National Cabinet, and is yet to link the phases to specific targets or dates.¹⁰⁶

National Cabinet should commit to details as soon as possible, to anchor the public's expectations for the future and to underline the importance of vaccination. The reopening plan should align with the vaccine plan outlined in Chapter 3, including the goal of reaching 80 per cent by either the end of the year or by the end of March 2022, depending on vaccinations for children.

Crucially, Australia cannot relax the Zero COVID strategy before we reach this goal. Accelerating the rollout in the interim should make the need for lockdowns less frequent, by reducing the transmissibility of COVID in the community. But as Chapter 2 showed, doing away with the Zero COVID strategy and opening up with vaccination coverage below 80 per cent would create the risk of very undesirable health outcomes.

A phased reopening once we reach 80 per cent is sensible. As the scenarios presented in Chapter 2 showed, the expected number of COVID cases, hospital admissions, and deaths is lower under a gradual reopening than under an 'all at once' reopening. A gradual reopening also allows time for the public to adjust to COVID in the community, and for additional Australians to get vaccinated once the risk of COVID infection becomes very real.

But Australia should move through the phases as quickly as possible. We recommend a reopening plan with two steps instead of four phases:

Step 1: By the end of the year (or by the end of March 2022 if child vaccination is delayed).

Subject to reaching 80 per cent vaccination coverage (and 95 per cent for over-70s), begin opening up by:

- Removing border restrictions for vaccinated Australians and other high-priority vaccinated visitors;
- Retaining only unobtrusive population-wide measures such as mask-wearing – for containment;
- Retaining vaccine passports; and
- Continuing the vaccination program, with boosters where needed.

Step 2: By the end of March 2022 (or by the end of June 2022 if child vaccination is delayed).

Subject to reaching 85 per cent vaccination coverage (and 95 per cent for over-70s), return almost fully to normal by:

- Removing all border restrictions for vaccinated people, while retaining quarantine in purpose-built facilities at own expense for unvaccinated people for at least the rest of 2022;
- Retaining unobtrusive containment measures only if needed;
- Removing vaccine passports;
- Preparing contingency plans for potential future scenarios; and
- Continuing vaccinations and boosters where needed.

The Zero COVID strategy must remain in place until Step 1. Given that Step 1 is five to eight months away, governments should take small

^{106.} Morrison (2021b).

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steps immediately to reduce the prospects of lockdowns and state border closures. These should include improving infection control in hotel quarantine, and urgently building purpose-built quarantine facilities.

4.1 Improving quarantine immediately to reduce the risk of outbreaks prior to reopening

The numerous failures in hotel quarantine to date (Section 1.2) show that hotels are clearly not appropriate settings for quarantine, especially with the virulent Delta variant.

But we will have to continue to rely on hotel quarantine for several months at least, so states and territories should agree on national standards for better management and risk reduction in these settings.¹⁰⁷ A range of measures should be adopted to reduce the risk of leakages out of hotel quarantine. These include, for example, a ventilation standard at all hotels to reduce the risk of aerosol spread, and negative air pressure in all rooms.¹⁰⁸ If particular hotels cannot meet these requirements, they should be upgraded to meet them, or not be used for quarantine.

To begin to reduce our reliance on hotel quarantine, the Federal Government should urgently identify Commonwealth-owned sites for purpose-built quarantine facilities, similar to the Howard Springs facility in the NT.¹⁰⁹ Even if such facilities cannot be set up before the end of the year, they will form an important part of a phased reopening of borders. They could be used to quarantine travellers coming from higher-risk countries, with hotel quarantine reserved for people

from lower-risk countries who cannot self-quarantine. Purpose-built quarantine facilities will also be useful for managing more virulent future strains or future pandemics.

National Cabinet has announced its intention to trial home quarantine for vaccinated Australian residents, and the results of these trials should help to determine whether the risk of breaches is higher, lower, or the same under this model. But this step should not be conflated with the idea of 'living with COVID' in the community. If there are breaches from home quarantine, a response to return to zero transmission of COVID in the community will still be required.

4.2 Step 1: Moving towards normal

If the vaccine plan is successful and Australia reaches 80 per cent vaccination coverage by the end of the year, or by the end of March next year if child vaccination is delayed, we should take a significant step towards going back to normal in 2022.

International border restrictions could be relaxed for fully vaccinated Australian residents.

Bilateral bubble agreements could be struck to allow fully vaccinated visitors from other countries with high vaccination rates and low COVID cases to enter Australia without quarantining, similar to the arrangements currently in place with New Zealand.¹¹⁰

The quarantine system could be used to allow entry for a limited number of unvaccinated people, especially Australians who are unable to be vaccinated in the country they have been residing, or whose vaccination status cannot be determined.

^{107.} Halton (2020).

^{108.} Cheng et al (2021), Glossop. Consultancy (2021), Clinical Excellence Commission (2021), Grout et al (2021b) and Hyde et al (2021). Measures should also be taken now to improve ventilation in public places through, for example, changes to building codes.

^{109.} Coates and Duckett (2021).

^{110.} See for example country risk-based profiling in Yang et al (2021).

Public health measures will still be needed

Once borders are opened, there will still be a chance that the virus will spread, even with 80 per cent of the population vaccinated. But this will not result in overwhelming the health system.

Some unobtrusive internal containment measures can be retained to reduce this spread. In particular, mask-wearing should be retained in high-risk locations such as public transport and large shopping centres. Mask-wearing is an easy and effective way to reduce the transmissibility of COVID.

Temperature testing and rapid COVID antigen tests could be used to screen for entry into high-risk locations such as major indoor events. Antigen tests can be self-administered, so testing kits could be made available for free to allow anyone who feels sick to test themselves at home.¹¹¹ These tests are slightly less accurate than PCR (swab) tests, so people who take an antigen test should follow up with a swab test. Payments should be available to workers with no paid sick leave, so they can stay in isolation if they test positive to COVID.

These measures should be retained, because they can help to contain the spread at minimal cost.

Some settings are more prone to faster spread – so-called 'superspreader' events. The risk of wider spread can be reduced if all those attending such events are vaccinated.

'Vaccine passports' are a good way of mitigating the risk of super-spreader events. They ensure that those who are most likely to spread COVID are not present in places where COVID is most likely to spread. Vaccine passports should not be retained indefinitely, but they should be retained while 'herd immunity' has not yet been reached – that is, while COVID can spread. If they are retained, it is much less likely that the high-transmissibility scenario presented in Figure 2.6 on page 25 will occur.

In addition, if children under 12 have not yet been able to be vaccinated, some restrictions would need to be retained for primary schools and childcare centres. Rapid testing should be used routinely in schools and childcare to screen for cases, and schools and childcare centres where any cases were detected would have to be temporarily shut. These measures would need to be retained unless or until under-12s can be vaccinated.

But apart from this, more burdensome restrictions should not be imposed unless absolutely necessary, such as if COVID is spreading rapidly in a pocket of the community with low vaccination rates.

Contact tracing and isolation of unvaccinated people should continue to be used.¹¹² But contact tracing and isolation should not be necessary as a matter of course. Business and government should suspend the use of QR check-in systems given the privacy implications, but the infrastructure should be retained in case it is needed again in future (see Section 4.3.1).

COVID restrictions on business operations, such as density or capacity constraints in hospitality and entertainment venues, should not be retained once we begin to open up. And lockdowns and other types of strict stay-at-home orders should be things of the past.

The vaccination program must also continue at pace into 2022, with the goal of increasing population coverage to 85 per cent as soon as possible. The Federal Government must ensure sufficient supply, including of booster shots that are likely to be needed.¹¹³ The

^{111.} This already happens elsewhere, including in the UK: NHS (2021b).

^{112.} Isolation and tracing should be retained for school children until a vaccine is available for that age group.

^{113.} Lawton (2021).

Government's recent acquisition of 85 million doses of Pfizer for 2022 and 2023 is a good start.¹¹⁴

4.3 Step 2: Getting back to normal

The final step could be taken when 85 per cent of the population is vaccinated, which should be achievable three months after the first step. If we achieve such a high rate of vaccinations, there would be no policy rationale for any remaining border restrictions for vaccinated entrants. For at least the remainder of 2022, it would be sensible to require quarantine at own expense for unvaccinated entrants, although vaccine passports that restrict unvaccinated Australians could be removed.¹¹⁵

At that level of vaccinations, case numbers would be at an acceptably low level. The link between cases and hospitalisations and deaths would have been severed – cases would no longer be a sign of failure, and would no longer need to be the focus of daily media.

Instead, we could and would focus on tracking hospitalisations and deaths. This would require a comprehensive national surveillance system that reports real-time rates for hospitalisations and deaths.¹¹⁶

4.3.1 Preparing for possible COVID futures

New variants will continue to emerge for as long as COVID circulates in the world. Vaccine-resistant variants may emerge. Australia will need to be prepared for these threats.

- 115. Enforcing this for unvaccinated entrants would require a reliable international system to assess vaccination status, such as the IATA (International Air Transport Association) Travel Pass system.
- 116. A surveillance plan at national level was also recommended in the review of Australia's health sector response to pandemic (H1N1) 2009 (recommendation 8): Department of Health and Ageing (2011).

Open borders means new variants are almost certain to end up in Australia. The Federal Government should continue to monitor new variants emerging overseas, and respond with tightened borders where necessary.¹¹⁷ And it must also monitor for new variants that make it into Australia.

The health system will need safeguards and surge capacity

The ability to boost the health system's capacity¹¹⁸ quickly in a crisis will become increasingly important. Not only are the risks of pandemics potentially increasing,¹¹⁹ but there are increased health risks from droughts, heatwaves, bushfires, floods, and other natural disasters, exacerbated by climate change.¹²⁰

Australia's response system will need to be ready to surge. This should be informed by a comprehensive independent evaluation. It should be underpinned by renewed comprehensive national and state-level pandemic plans, continually updated in light of emerging evidence about COVID and other threats. Plans should include:

- Risk-based profiling of high-risk countries, and travel measures to respond to new threats.
- Purpose-built quarantine facilities across the country, similar to the Howard Springs facility in the NT.
- Contact tracing and testing capabilities ready to ramp up.¹²¹

- 118. Or to prioritise necessary activity: see Duckett et al (2015).
- 119. Madhav et al (2017).
- 120. CSIRO and Bureau of Meteorology (2018). See also Duckett et al (2020, section 1.6).
- 121. Preiss (2020).

^{114.} Morrison (2021a). Australia may also receive some Novavax, but it is unclear when this will arrive. See Department of Health (2021a).

^{117.} A preliminary study suggests some vaccines (in this case CoronaVac) may be less effective against the new Lambda variant: Acevedo et al (2021).

• Planning for hospital surge capacity, including resources and workforce needs.

It should not be the responsibility of state health departments to continue to manage these issues alone, and disparately. A new and well-funded national body should be created, sitting under the current Australian Health Principal Protection Committee, to do the job. Its role could be strengthened by a national public health partnership agreement, signed by the states and the Federal Government. This would then feed advice up to the National Cabinet.

Australia must have an ongoing COVID vaccination program, and should secure supply

Australia will need to establish a long-term vaccination program for COVID. Vaccination coverage will have to be retained at very high levels, which may require annual vaccinations or booster shots for current or new strains.¹²² The UK is planning to provide booster shots from September this year for vulnerable people.¹²³ Preliminary evidence shows that mixing and matching vaccines may provide a stronger immune response.¹²⁴

Australia's long-term COVID vaccination program should be incorporated into Australia's broader national immunisation programs. There should be ongoing public health communications and monitoring, and vaccines should be easily available at GPs, pharmacies, workplaces, and other centres.

Australia will also need to continue to procure more vaccines as they come on the market, and are updated to better protect against new variants. Australia should immediately procure more vaccines to send to our neighbouring and developing countries that have insufficient supply. Not only is this the right thing to do, but vaccinating the world is the only way to manage this global pandemic, and reduce the risk of new variants emerging. About 3.9 billion doses have been administered globally, but only 1.1 per cent of these have been administered in low-income countries with large populations.¹²⁵

To shore up vaccine supply to prepare Australia for any future variants, the Federal Government should urgently develop mRNA manufacturing capacity.¹²⁶ The Federal Government allocated funding in the 2021 Budget for large-scale manufacturing of mRNA drugs in Australia, and Monash University has received approval to prepare for production, although the timelines are not yet clear.

^{122.} Preliminary studies shows that Pfizer could be used as a booster shot: Liu et al (2021).

^{123.} UK Government (2021).

^{124.} Callaway (2021) and Liu et al (2021).

^{125.} Ritchie et al (2021).

^{126.} See for example the Victorian Government announcement: Andrews (2021).

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