



T H E M C K E L L I N S T I T U T E

Insights Report:

Counting the cost of Australia's delayed
vaccine roll-out

April 2021

About the McKell Institute

The McKell Institute is an independent, not-for-profit research organisation dedicated to advancing practical policy solutions to contemporary issues.

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About this Report

The McKell Institute Insights Reports provide quick analysis of emerging public policy issues.

Health policy measures including lockdowns and border closures have been subject to substantial public debate over the past year. Policymakers have had to weigh to health risks and economic risks.

Vaccination represents a new policy option. The speed of vaccination roll-out determines the ongoing health risks and economic risks.

The McKell Institute does not presume that ‘herd immunity’ is reached when 65 per cent of the population is vaccinated, only that this is the most optimistic scenario that could arise.

The opinions in this paper do not necessarily represent the views of the McKell Institute’s members, affiliates, individual board members or research committee members.

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Key Findings

1. Australia will need to increase the current rate of vaccination by 11.6-15 times to meet the current targets set out in the Roadmap.
2. To meet existing Roadmap targets, Australia requires the second fastest vaccination program in the world on a per capita basis.
3. Assuming Australia's vaccination roll-out is similar to other comparable countries, the time at which 65 per cent of the population is vaccinated will be pushed out by 40-353 days.
4. A delay of this kind will increase the probable number of days under a capital city lockdown by 3.8 days to 33.9 days.
5. In turn, the economic cost associated with these lockdowns range from \$472 million and higher.
6. The table below outlines the number of additional days at risk of lockdown, and the economic cost, if Australia follows the vaccination rate of other comparable nations.

Vaccination rate	65 per cent vaccination rate achieved	Delay relative to Roadmap	Additional days at risk of lockdown	Economic cost
Israel	15/08/2021	0	0	0
USA	24/09/2021	40	3.8 days	\$472 million
UK	9/12/2021	116	11.1 days	\$1,368 million
France	15/04/2022	243	23.3 days	\$2,866 million
Canada	16/05/2022	274	26.3 days	\$3,232 million
Germany	3/08/2022	353	33.9 days	\$4,164 million

Introduction

Australia's COVID-19 vaccine roadmap is running behind schedule

In January 2021 the Prime Minister stated that the vaccine roll-out would deliver four million doses to priority cohorts by the end of March.

“We hope by the end of February- end of March, I should say, to have reached some 4 million population. That is a target. That is what we are working to.”¹ – Hon. Scott Morrison MP, Prime Minister of Australia, 7 January 2021

On 14 March the Australian COVID-19 Vaccine Roadmap (Roadmap) was amended to reach four million doses by the end of April 2021.² Under the Roadmap, the first dose is due for completion in October 2021 while the second dosage is forecast to be administered by November or December (pending various vaccine supply scenarios).

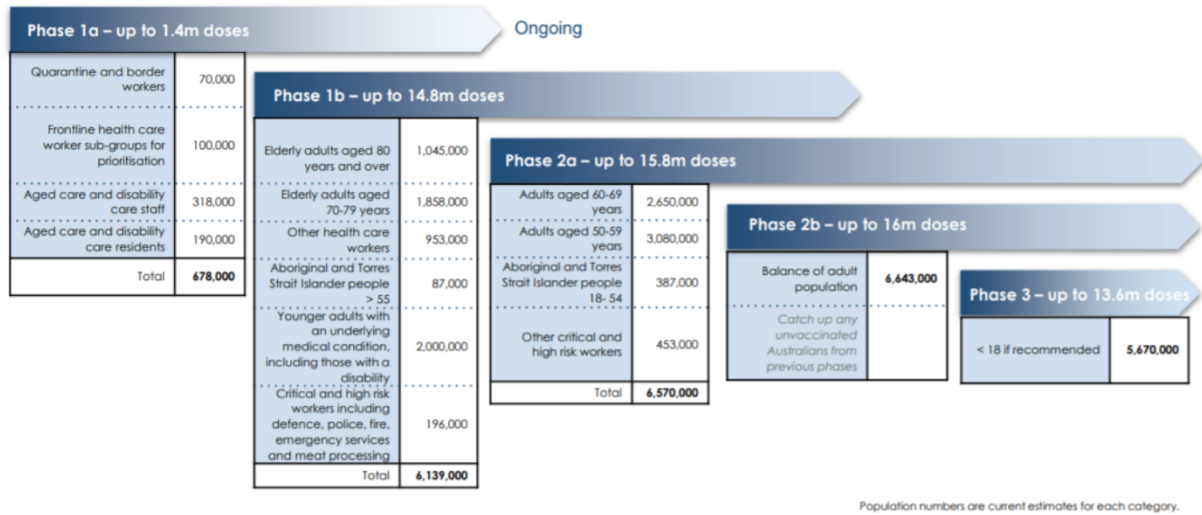
Achieving substantial immunity in the population is vital to avoid ongoing lockdowns and border closures. State Premiers have indicated that the degree of immunity will impact their decisions regarding restrictions. While experts debate the rate of vaccination required to achieve herd immunity, the lowest estimate from the World Health Organisation is 65 per cent.³ The Roadmap suggests Australia will achieve 65 per cent immunisation in mid-August 2021 at the earliest.

However, Australia's vaccine rollout is running well behind the announced schedule. Australia missed the Prime Ministers March target by 3.4 million doses, or over 80 per cent. These early delays will likely delay the completion of the Australian vaccination program as well as the point at which herd immunity is reached. These delays increase the risk of lockdowns and the economic costs that come with them.

Australia has a three phase COVID-19 vaccine strategy

Australian Governments have decided to focus the vaccine roll-out on priority cohorts. The strategy is divided into three phases, starting with quarantine and priority health workers as well as aged care and disability care residents and staff. 25.7 million people are included in the three phases of the vaccine roll-out. They will require between 51.4 million and 61.6 million doses, given the vaccines Australia is distributing require two staggered shots to achieve maximum efficacy.

Phase 1a commenced on 22 February 2021 while phase 1b commenced on 22 March 2021. Phase 2a is expected to begin in May 2021⁴ while Phase 2b is expected to start in “mid-2021”⁵.



SOURCE: COVID-19 VACCINE ROLL-OUT (14 MARCH 2021), P.5.⁶

The need to target initial phases to smaller cohorts makes for a slower ramp up rate of vaccinations. The slow delivery of vaccines in this first phase will likely delay broader roll-out. The delays will have significant implications for the easing of health policy measures such as border closures.

Australia is having trouble meeting targets

Based on publicly announced data, 670,349 doses have been administered as of the end of March 2021.⁷ To have achieved the targeted four million doses by the end of March, 105,263.2 vaccines would need to have been administered each day. The below table plots actual dosages against the number required to meet the target.

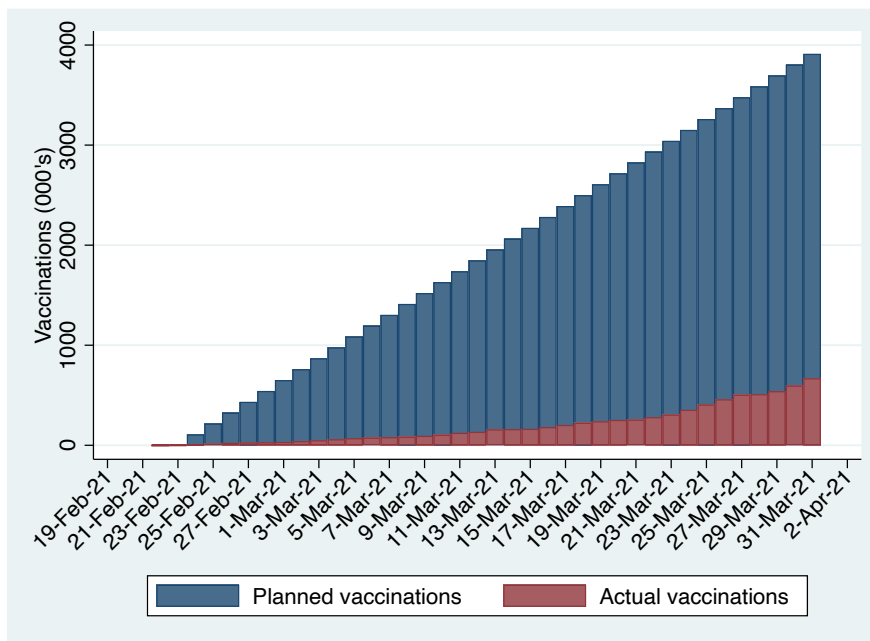


Figure 1: Target vs Actual Vaccinations, Australia

The roll-out strategy as updated in early March 2021, forecasts that the completion of the second dose will occur in November or December 2021.⁸ Therefore, the remaining 51.4 to 61.6 million doses will need to be administered in the next eight months. The required doses compared to the current rate are compared in the table below.

	Rate to complete vaccine roll-out by November 2021		
	Max	Min	Current Rate
Doses required by November	61,600,000	51,400,000	670,349
Weekly	1,767,000	1,474,000	127,000
Monthly	7,700,000	6,425,000	517,000

To meet the Roadmap targets, vaccination rates must increase by 11.6 to 15 times the current rate.

Projecting our rate of vaccination

Minimum 65-70 per cent vaccine coverage required for population immunity

The World Health Organisation has indicated that vaccine coverage of 65-70 per cent is necessary to reach population immunity.⁹ This point of 'herd immunity' is vital to avoiding future lockdowns and border closures. While we may assume that fewer outbreaks will result in fewer restrictions, Australian leaders have indicated that lockdowns are likely to continue until a high percentage of the population is vaccinated.^{10 11}

We have made the assumption that lockdowns and border closures will continue at least until we achieve the lowest estimates of herd immunity (65 per cent vaccine coverage). Therefore, the point at which Australia reaches herd immunity will have a dramatic effect on likelihood of lockdowns and border closures in the event of an outbreak.

Projecting when Australia will 65 per cent vaccination coverage

Israel has the highest vaccination rate per 100 people of any population in the world- having vaccinated approximately 60 per cent of the population.¹² They are followed by the UK. The rate of vaccination roll-out contained in Australia's Roadmap would make Australia vaccination program the second quickest in the world, if it were to be achieved.

Given the number of doses required to achieve full vaccination we assume that 65 per cent vaccination is achieved when the roll-out delivers 130 vaccinations per 100 people. This is of course a best-case scenario as there is a lag of several weeks between the first and second dose.

Yet to date it is clear that not only is Australia not meeting its own targets, it is falling well behind the programs in other nations, rendering the currently available forecasts included in the roadmap unrealistic.

Crucially, the slow start in Australia's covid-19 vaccination program has meant that key milestones will be pushed back. Relative to the government-announced Roadmap, Figure 3 below outlines the vaccination rates achieved by comparable countries from Australia's February 22 start date.

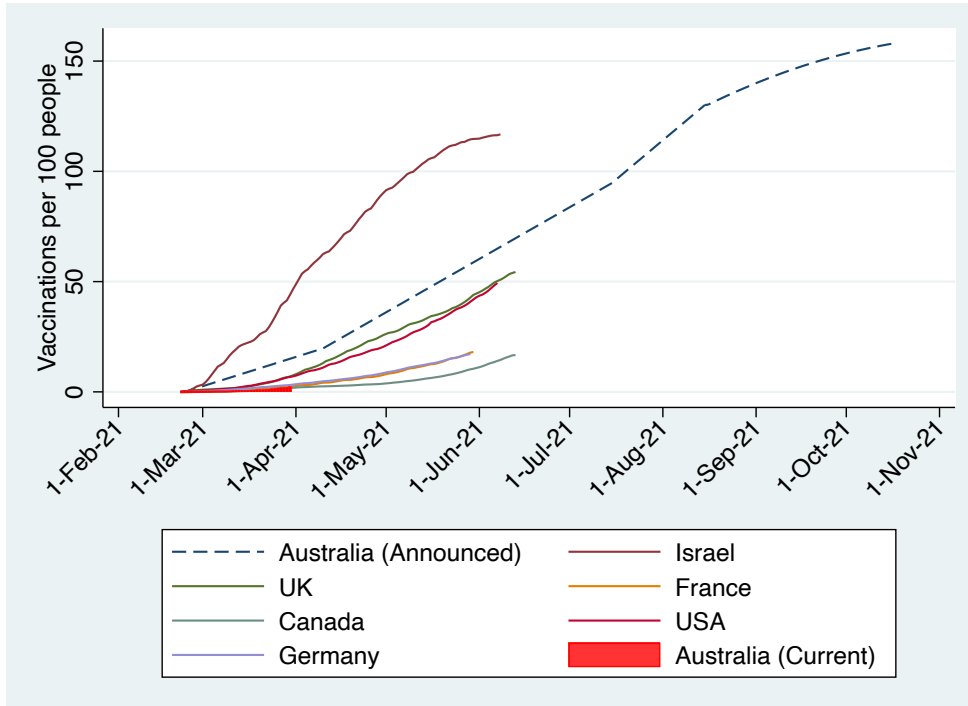


Figure 2: Australian projected vaccinations vs current vaccinations

Figure 4 includes two simulations have been computed from April 2021. The first shows that if Australia can match the vaccination rate of world-leader Israel, then the current vaccination delay will be recovered by May 2021. From there Australia will be able to meet its Roadmap targets.

However, even if Australia is to perform at the average rate of vaccination contained in the Government’s Roadmap, then it will be two and a half months behind its target by November 2021.

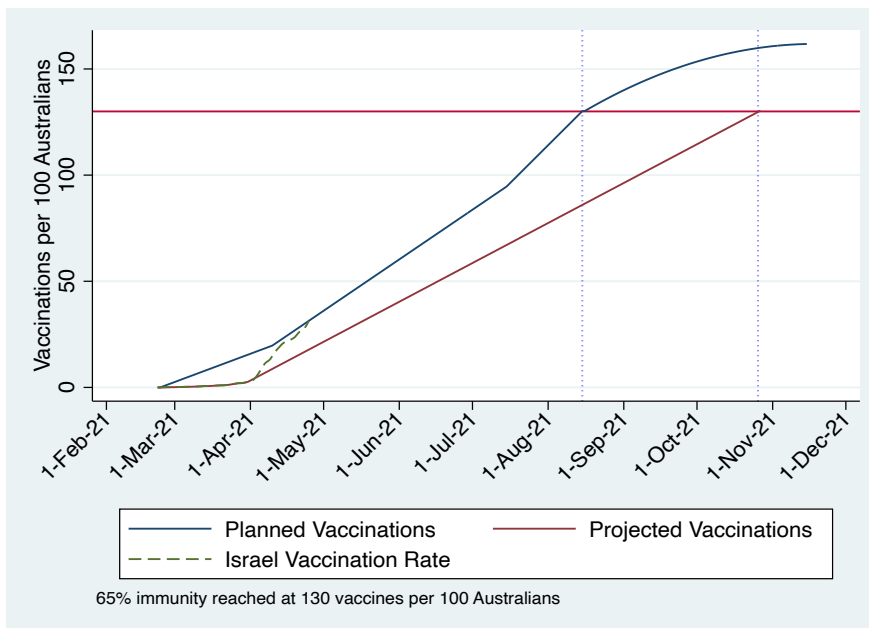


Figure 3: Delay to herd immunity in Australia

Given Australia’s failure to meet targets to date, Figure 5 projects Australia’s vaccination roll-out if it were to match the UK, Canada, Germany, Israel, France and the USA.

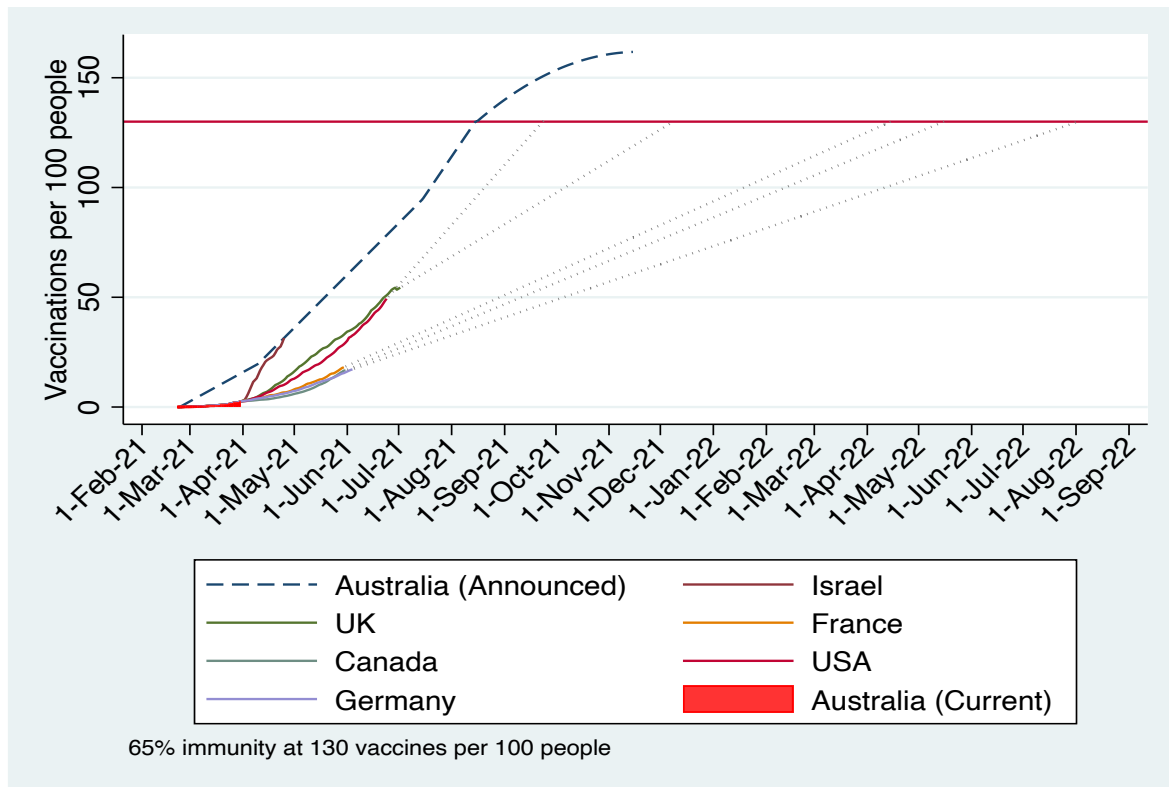


Figure 4: Australia simulated on international vaccination growth paths

If Australia were to follow the timeline of vaccinations in the countries modelled in Figure 5, Australia will delay vaccinating 65 per cent of the population by anywhere up to 353 days.

Vaccination rate	65 per cent vaccination rate achieved	Delay relative to Roadmap
Israel	15/08/2021	0
USA	24/09/2021	40
UK	9/12/2021	116
France	15/04/2022	243
Canada	16/05/2022	274
Germany	3/08/2022	353

Counting the cost of the delay

Probability of lockdowns using past decisions as a guide

It is difficult to predict the chance of a further lockdown given the multitude of factors health experts must consider, and the changing attitudes and risk appetite of political leaders. We have looked to past instances of lockdowns as a guide and made allowance for a decline in likelihood as a result of the vaccine among frontline workers.

Between 1 October 2020 and 31 March 2021 (after the second wave) there were 25 days when a capital city was either wholly or in partial lockdown. There were a further 53 days where cities were under “severe restrictions”. Out of 182 days, that’s a total 13.7 per cent of days involving a capital city lockdown. In the absence of a vaccination program the probability of a capital city lockdown occurring is estimated as 0.137.

However, the lockdowns have been primarily a result of periodic breakouts. The chance of these breakouts will decline as the vaccination program prioritises healthcare and quarantine workers.

A recent 21 March 2021 study from the Institute of Health and Wellbeing at the University of Glasgow found that:

“Among household members of vaccinated healthcare workers there was a 30% reduction in documented cases from day 14 post vaccination with similar, albeit not statistically significant, reductions in hospitalisation.”¹³

Note that the study participants received both the Astra Zeneca and the Pfizer vaccine while Australian health workers will receive the Pfizer vaccine only. Early reports suggest that the Pfizer vaccine may be more effective against transmission. Ultimately the Centre for Disease Control and Prevention in the USA has indicated that, “further investigations are ongoing to assess the impact of COVID-19 vaccination on transmission.”¹⁴

Using available data, the probability of a capital city lockdown therefore declines by approximately 30 per cent to 0.0959 assuming all frontline workers are vaccinated. We know that these workers are in phase 1b, the rollout of which is ongoing, meaning not all workers are fully vaccinated during the entirety of this period.

The table below calculates the probability number of additional days in lockdown as a result of the various projections.

Vaccination rate	65 per cent vaccination rate achieved	Delay relative to Roadmap	Additional days at risk of lockdown
Israel	15/08/2021	0	0
USA	24/09/2021	40	3.8 days
UK	9/12/2021	116	11.1 days
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Delays in achieving 65 per cent vaccination coverage will have an economic cost

The delay in achieving herd immunity increases the risk of lockdowns and border closures. These policies in turn have economic costs.

Reported costs of economic lockdowns vary wildly. Treasurer Josh Frydenberg has said that a national lockdown will cost \$4 billion per week.¹⁵ We assume that further restrictions will be localised and will be a result of limited outbreaks.

Victorian Treasury officials calculated that the September 2020 quarter lockdown cost the Victorian economy \$100 million per day. Meanwhile KPMG have calculated that the Northern Beaches restrictions reduced economic output by \$3.2 billion¹⁶ or \$267 million a day in NSW.¹⁷ The three-day Brisbane lockdown in January 2021 reportedly cost hospitality venues alone an average of \$33 million per day.¹⁸

Based on reported figures, the average daily cost of the lockdown in Sydney, Brisbane and Melbourne is \$123 million. This is a conservative figure considering that the Brisbane cost is limited to a single industry.

Assuming the probability of a lockdown and the average economic cost of a lockdown, the risk-adjusted economic cost of delay under each scenario is outlined in the table below.

Vaccination rate	65 per cent vaccination rate achieved	Delay relative to Roadmap	Additional days at risk of lockdown	Economic cost
Israel	15/08/2021	0	0	0
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- ¹ Press Conference - Australian Parliament House | Prime Minister of Australia, 2021
- ² COVID-19 Vaccine Roll-Out, Australia's COVID-19 Vaccine Roadmap, www.health.gov.au. March 14th 2021.
- ³ Ludwig Burger, K., 2021. *Analysis: Can first COVID-19 vaccines bring herd immunity? Experts have doubts.* [online] U.S.
- ⁴ Community pharmacy COVID-19 vaccine rollout from Phase 2A (May 2021 onwards) , Australia's COVID-19 Vaccine Roadmap, www.health.gov.au
- ⁵ COVID-19 Vaccine Eligibility Checker, Australian Government Department of Health
- ⁶ [When Will I Get a COVID-19 Vaccine, Australian Government Department of Health](#)
- ⁷ COVIDLive, Vaccinations, Daily Doses Administered covidlive.com.au
- ⁸ [When Will I Get a COVID-19 Vaccine, Australian Government Department of Health](#)
- ⁹ Ludwig Burger, K., 2021. *Analysis: Can first COVID-19 vaccines bring herd immunity? Experts have doubts.*
- ¹⁰ Koziol, M., 2021. *What will it take to inoculate us against lockdowns?*. [online] The Sydney Morning Herald.
- ¹¹ The Guardian. 2021. *Queensland Covid: states slam borders shut as Brisbane enters snap three-day lockdown.* [online]
- ¹² Our World in Data. 2021. *Coronavirus (COVID-19) Vaccinations - Statistics and Research.* [online]
- ¹³ Shah, A., et al. 2021. Effect of vaccination on transmission of COVID-19: An observational study in healthcare workers and their households.
- ¹⁴ Centers for Disease Control and Prevention. 2021. *Coronavirus Disease 2019 (COVID-19).* [online]
- ¹⁵ The Guardian. 2021. *Australia's coronavirus lockdown to cost \$4bn a week in reduced economic activity – treasurer.*
- ¹⁶ The Australian, 2021. *Coronavirus Avalon Outbreak Inflicted 32bn Hit*
- ¹⁷ Economist, U., 2021. *KPMG: COVID outbreak to wipe 0.7% off Q4 GDP - MacroBusiness.* [online] Macrobusiness.com.au.
- ¹⁸ The Guardian. 2021. *'Pulling the rug out': 27,000 Brisbane businesses face snap lockdown without jobkeeper.* [online]