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# Vaccine willingness and concerns in Australia: August 2020 to April 2021

## ANU Centre for Social Research and Methods

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## Abstract

This paper reports data collected in April 2021 on Australian's vaccine willingness and concerns, with a total sample size of 3,286 adult Australians, comparing results from responses from the same individuals in January 2021 and August 2020. The paper shows that although vaccine willingness has remained stable since January 2021, there are still key population groups within Australia who remain hesitant about getting a vaccine. Groups that have higher rates of vaccine hesitancy include women, those who spoke a language other than English; those who live in relatively disadvantaged areas; and those who live outside a capital city. We show for the first time in Australia that experiences of discrimination are associated with higher rates of vaccine hesitancy. We also show that only 3.7 per cent of Australian adults thought the process for individuals getting the vaccine was going very well. Furthermore, only one-in-five were not at all concerned about potential side effects from the COVID-19 vaccination.

## Executive summary

- This paper reports data collected in April 2021 on Australian’s vaccine willingness and concerns. The total sample size is 3,286 adult Australians, and the analysis compares responses from the same individuals in January 2021 and August 2020.
- **Around 9.3 per cent of Australian adults reported that they had received at least one vaccination dose**
  - Vaccination rates were higher for those with a higher level of education, holding constant other demographic, socioeconomic, and geographic factors.
  - Those Australians who reported higher rates of vaccine willingness in January 2021 were more likely to have been vaccinated by April 2021.
- When asked about a hypothetical safe and effective vaccine, **vaccine willingness has remained stable since January 2021**. 54.7 per cent of Australians said they definitely would get vaccinated; 28.2 per cent said they probably would; 11.1 per cent said they probably wouldn’t; and 6.0 per cent said they definitely wouldn’t;
  - There are still key population groups within Australia who remain hesitant about getting a vaccine, even when it is framed as being safe and effective. This includes **women, those who spoke a language other than English; those who live in relatively disadvantaged areas; and those who live outside a capital city**.
  - Experiences of discrimination are associated with vaccine hesitancy.
- While willingness to take a hypothetical safe and effective vaccine has remained high, **there is a large proportion of Australians who are concerned about possible side effects if they do take a vaccine**. 18.4 per cent of respondents were not at all concerned about side effects, leaving a little over eight-in-ten Australians who had at least some concerns about side effects.
  - The most commonly cited reason for being hesitant about a vaccine is concern about possible side effects (63.3 per cent). In addition, more than half of respondents who were hesitant about the vaccine said that they ‘plan to wait and see’ if it is safe. Around half of the sample cited the recent news about the Astra Zeneca vaccine and blood clotting as being key factors contributing to their concerns.
  - The least common responses were not believing that they need a vaccine (15.0 per cent), and not trusting the government (18.9 per cent).
- **Only 3.7 per cent of Australian adults thought the process for individuals getting the vaccine was going very well**. This is far less than in the US when asked a similar question. Furthermore, only one-in-five were not at all concerned about side effects from the vaccine.
  - Those who had said they would vote for a party grouping other than the Coalition were less likely to think the process was going well.
  - **Most Australians thought the vaccine process was fair**
- Unlike in the US when asked in February, **most Australians in April think that Australia should help ensure that people in developing countries have access to coronavirus vaccines**, even if it means some people in Australia need to wait longer to get vaccines.

## 1 Introduction and overview

There are concerns in a number of countries throughout the world that a large proportion of their population will choose to not get vaccinated against COVID-19. This is also the case in Australia. This paper reports on data collected in April 2021 on Australian's vaccine willingness and concerns and compares the responses from the same individuals in January 2021 and August 2020. The sample size is 3,286 adult Australians.

Compared to a number of other high-income countries<sup>1</sup> (which have had much higher rates of COVID-19 infection and mortality), Australia has been relatively slow to roll out vaccines. As this paper is being finalised (data current as of 1<sup>st</sup> of May 2021), Australia had administered 8.76 COVID-19 vaccination doses per 100 population, compared to rates of around 72.80 per 100 population in the US, 71.81 in the UK and 36.17 doses per 100 population in Canada.

When we compare Australia's vaccination rates with countries that also have lower infection and mortality rates, Australia ranks at around the middle. For example, Japan (2.76 per 100 population as of April 29<sup>th</sup>) and New Zealand (4.82 per 100 as of April 27<sup>th</sup>) both have lower vaccination rates than Australia, while Singapore has a vaccination rate of 37.84 (as of April 18<sup>th</sup>) on the other hand has also had low infection rates, but by April 18<sup>th</sup> had a vaccination rate of 37.84.

While there is less urgency from a public health perspective to rapidly vaccinate the population in Australia compared to countries with much higher infection rates, there are still ongoing costs from having an unvaccinated population. These include the inability to open the international border and relax other restrictions. There are, of course, some benefits of a slower roll-out of vaccination, as the prevalence and distribution of potential side effects become apparent from the experience in other countries.

There have been reports of a rare but potentially serious side effect for the AstraZeneca COVID-19 vaccine, which is a key vaccine in Australia's vaccination plan. On 8<sup>th</sup> April (just prior to the commencement of the survey used in this paper) the Australian Technical Advisory Group on Immunisation (ATAGI), in response to safety concerns, recommended that the Pfizer vaccine was preferred to the AstraZeneca vaccine for adults under 50 years of age due to potentially increased risk of thrombosis with thrombocytopenia (ATAGI, 2021). However, they did note that the AstraZeneca could be used in those under 50 where the benefits clearly outweigh the risks for that individuals' circumstances. On 18<sup>th</sup> April 2021, the Victorian government who previously paused administering AstraZeneca announced that they were making it available to those under the age of 50 years who choose to receive the vaccine.

In other high-income countries which are far more advanced in their vaccination programs, such as the United Kingdom and the United States, it appears that vaccine hesitancy has declined as those. This may be in part due to those who were hesitant seeing increasing numbers of their family and friends receive a COVID-19 vaccine. A January 2021 survey in the United Kingdom reported 74% were likely to get vaccinated, with 17% unsure and 9% unlikely to get vaccinated (Sherman et al., 2021). This represents a 10-percentage point increase in acceptance from a survey in July 2020 from the same sample (64% were likely to get vaccinated; Sherman et al., 2020). Perceived risk of COVID-19 to oneself, necessity of vaccination, safety of the vaccine and social norms (e.g. most people getting vaccinated) most likely influenced individuals' intentions to vaccinate in January 2021. Another survey of over 12,000 people in the United Kingdom in November 2020 also reported that safety concerns

were a key factor in persuading people that the vaccine was demonstrated to be safe (Robertson et al., 2021).

US survey research also shows how vaccine hesitancy is falling to some degree as the proportion of the population that is vaccinated increases. For example, as the number of Americans who had been vaccinated increased, the proportion of the population saying that they would probably or definitely would not get a vaccine declined from a peak of 49% in September 2020 to 30% in February 2021 (Pew 2021). On 16 April 2021, the Kaiser Family Foundation (KFF) Vaccine Monitor (Hamel & Brodie, 2021) in the United States reported results from over 11,000 interviews, finding that vaccine confidence in the U.S. has increased as more people are seeing family and friends getting vaccinated. The results showed that 32% already have at least one dose, 30% intend to get the vaccine as soon as possible and 17% will “wait and see how it is working for others”. However, there were still around 20% who report that they will not get the vaccine or will only get it if required to for work or school activities. Both Pew Research and KFF surveys report that the main concern for hesitant groups were side effects of the vaccine.

The ANU Centre for Social Research and Methods ANU COVID-19 Impact Monitoring Survey Program asked the same group of Australians about their vaccine intentions in August 2020, January 2021 and in April 2021 (Biddle et al., 2021; Edwards et al., 2021). In addition, the April 2021 survey asked a question on confidence and fairness in the vaccine rollout. The survey was conducted just after safety concerns were raised by ATAGI (13th April 2021) and when there was widespread criticism of the pace of Australia’s vaccine rollout.

The aim of this paper is to provide data on the characteristics of those who have been vaccinated and those who say they are willing to be vaccinated (compared to those who are more hesitant), as well as compare these results to data from the same group of people collected in August 2020 and January 2021. In addition, the paper provides evidence on reasons given for vaccine hesitancy, as well as views about the roll-out of COVID-19 vaccinations.

The remainder of the paper is structured as follows. In the next section, we explore Australian data on vaccination status and willingness to get vaccinated. Section 3 explores in more detail the concerns given by Australians on vaccines. In Section 4 we summarise views on vaccine policies in Australia. Section 5 provides some concluding comments. The data used in this paper is described in detail in Appendix 1 and tables of regression output are given in Appendix 2.

## 2 Vaccination status and willingness

### 2.1 Vaccination rates

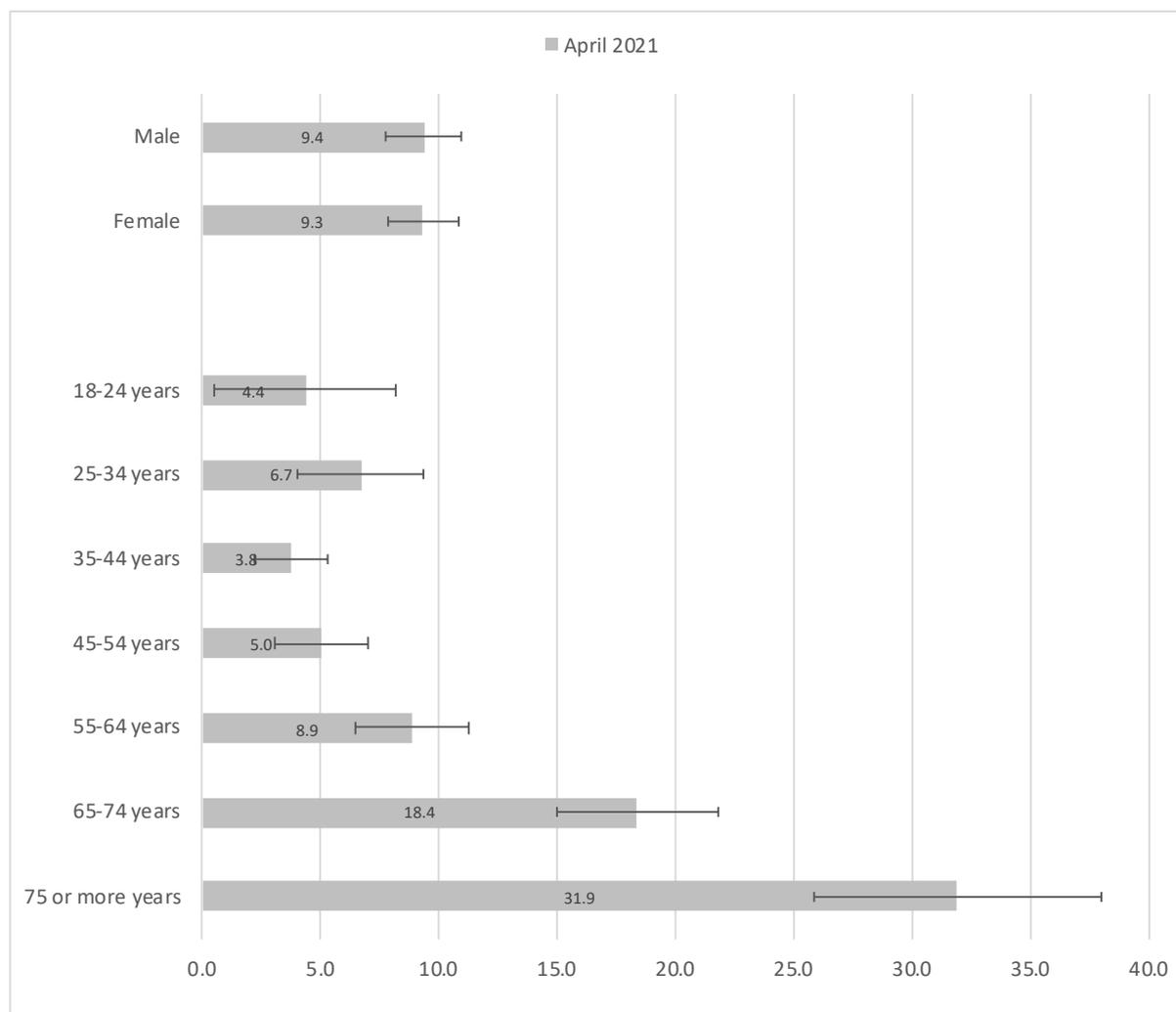
The vaccination process was in its early phases when data collection for this paper took place, with only a minority of adult Australians having been fully vaccinated or received their first dose. According to the data collected in the April 2021 ANUpoll, 9.3 per cent of Australian adults had received at least one vaccination by mid-April.

As shown in Figure 1, there was no significant difference between men and women in rates of vaccination. This is despite women having greater rates of vaccine hesitancy earlier in the pandemic (Edwards et al. 2021). There were, however, large differences in vaccination rates by age that have started to emerge. This reflects the prioritisation of elderly Australians in the initial phases of the roll-out. There were much higher rates of vaccination for older Australians

## Vaccine willingness and concerns in Australia – August 2020 to April 2021

aged 65 to 74 years (18.4 per cent) and 75 years and over (31.9 per cent) compared to younger age groups. The lowest vaccination rate is for those aged 35 to 44 years (3.8 per cent), with slightly higher rates for those aged 55 to 64 years (8.9 per cent) and those aged 25 to 34 years (6.7 per cent). The marginally higher rate for those aged 25 to 34 years compared to those aged 35 to 44 years potentially reflects the higher concentration of essential workers in the younger of these two age groups.

**Figure 1** Per cent of Australians who have been vaccinated by age and sex, April 2021



Note: The “whiskers” on the bars indicate the 95 per cent confidence intervals for the estimate.

Source: ANUpoll: April 2021

### 2.2 Vaccine willingness

Respondents to the April 2021 ANUpoll who had not been vaccinated at the time of the survey were asked about their willingness to take a vaccine if it were available to them. Specifically, they were asked ‘If a safe and effective vaccine to prevent COVID-19 were available to you now, would you...?’ with the following response percentages:

- 54.7 per cent said they definitely would;
- 28.2 per cent said they probably would;
- 11.1 per cent said they probably wouldn’t; and

## Vaccine willingness and concerns in Australia – August 2020 to April 2021

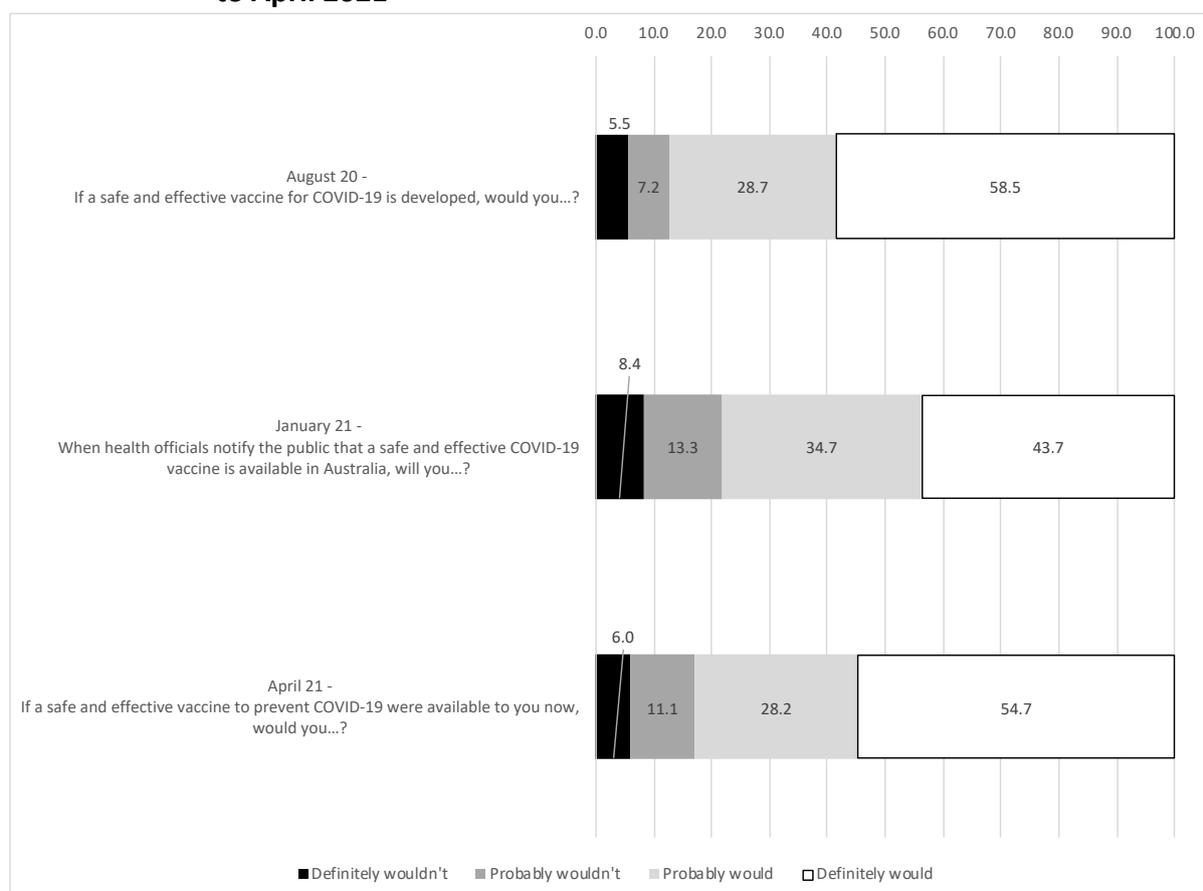
- 6.0 per cent said they definitely wouldn't.

Willingness to take a hypothetical 'safe and effective' vaccine was previously asked of the Life in Australia™ panellists in August 2020 and January 2021. Because of the changing context of vaccines in Australia throughout this time, it has been difficult to construct a question that is consistent but meaningful at each point in time. There were slightly more people in August 2020 (Figure 2) who said they would definitely (58.5 per cent) or probably (28.7 per cent) get a vaccine 'If a safe and effective vaccine for COVID-19 is developed' compared to April 2021 when people were asked about a safe and effective vaccine being available to the respondent now.

There were fewer people in January 2021 who said they would definitely (43.7 per cent) or probably (34.7 per cent) get a vaccine 'When health officials notify the public that a safe and effective COVID-19 vaccine is available in Australia' compared to the current sample.

On balance, it would appear that willingness to receive a hypothetical safe and effective vaccine has stayed quite high, despite the concerns regarding the Astra-Zeneca at the time of the survey. If anything, willingness to receive a safe and effective vaccine is higher in April 2021 than it was in January 2021, although rates are still lower than in August 2020. We will return to whether respondents feel that the currently available vaccines are indeed safe and effective in a subsequent section.

**Figure 2 Willingness to take a hypothetical safe and effective vaccine – August 2020 to April 2021**



Source: ANUpoll: August 2020, January 2021, and April 2021

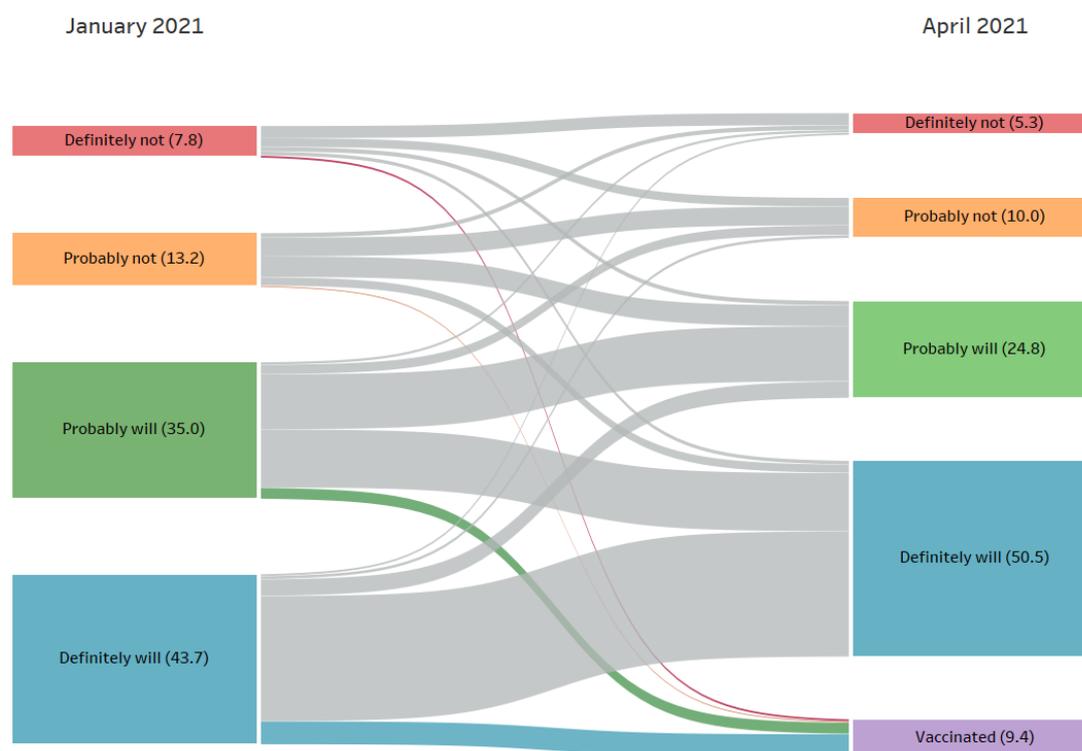
### 2.3 Changes in vaccine willingness for individuals

One of the benefits of asking about vaccine willingness in a reasonably consistent way over time is that it is possible to see whether individuals have changed their views, and in what direction. In total, there were 3,078 individuals who answered both the vaccine willingness question in January 2021 and the questions on current vaccination status/vaccine willingness in April 2021. The flows of how people responded in these two time periods are illustrated in Figure 3. Note that because the flows are based on the linked longitudinal sample, some of the percentages are slightly different from the repeated cross-sectional analysis.

Looking first at those who had been vaccinated in April 2021 (the node in the bottom right of Figure 3), it is clear that the largest proportion of people who had been vaccinated were those who had said in January 2021 that they definitely would get vaccinated (62.9 per cent of those who had been vaccinated) or probably would be vaccinated (29.7 per cent of those who had been vaccinated). There were very few people who had been vaccinated by April 2021 who in January 2021 said that they would probably not be vaccinated (1.9 per cent of all those vaccinated) or would definitely not be vaccinated (5.5 per cent of sample). This provides strong evidence that hypothetical responses to vaccine willingness questions are a good predictor of eventual vaccine behaviour.

Leaving aside those who have been vaccinated and focusing on the hypothetical vaccination responses, the most stable of the vaccine categories is the 'Definitely will' category. Of the 'Definitely will' group in January 2021 who had not been vaccinated by April 2021, 85.8 per cent still said that they definitely would be vaccinated in April 2021. At the other extreme, only 42.9 per cent of those who said they would definitely not get vaccinated in January 2021 said that they definitely would not get vaccinated when asked again in April 2021. Often those who say they would definitely not want to get vaccinated are considered vaccine 'resistant' and therefore immune to public health messaging (Dubé, Vivion & MacDonald, 2015). This finding suggests there is some prospect for those who are 'resistant' becoming more willing to receive a COVID-19 vaccine over time. In total, 29.3 per cent of Australians who hadn't received a vaccine by April 2021 had become more willing to get a vaccine between January 2021 and April 2021, compared to only 10.3 per cent of Australians who became less willing to receive a safe and effective vaccine. While people's views on the safety and efficacy of the vaccines may have changed, their willingness to receive a vaccine appears to have increased.

Figure 3 Individual-level changes in vaccine willingness between January and April 2021



Source: ANUpoll: January 2021 and April 2021

Note: The numbers in brackets are the per cent of the longitudinal sample in each time period at each node

## 2.4 Explaining vaccination rates and willingness

This section presents estimates of the factors associated with the likelihood of having been vaccinated and with vaccine willingness. As far as we are aware, the ANU COVID-19 Impact Monitoring Survey Program is the only survey available in Australia with a large enough sample of those who have been vaccinated to analyse how vaccination rates compare across key demographic, geographic, and socioeconomic groups.

### 2.4.1 Vaccination rates

A regression approach is used to estimate the factors associated with the likelihood of having been vaccinated using a binary probit model. Four models are estimated, illustrated in Table 1, Appendix 2. The first estimates the associations between being vaccinated and demographic, geographic, and socioeconomic variables (Model 1). The second model adds household income and whether the respondent was employed as explanatory variables (Model 2). The third model adds occupation in February 2020 (i.e., prior to COVID significantly impacting on Australia) (Model 3). The final model control for demographic, socioeconomic, and geographic variables (i.e. those in Model 1) and also controls for vaccine willingness as of January 2021 (Model 4).

Apart from age and educational attainment, the other demographic, geographic and socioeconomic characteristics are not significantly related to the likelihood of being vaccinated (Model 1). Those with a degree (and particularly a post-graduate degree) were more likely to have been vaccinated compared to those without any post-school qualifications.

## Vaccine willingness and concerns in Australia – August 2020 to April 2021

Controlling for these demographic, geographic, and socioeconomic variables, there was no correlation between vaccination rates and household income or pre-COVID employment status (Model 2). There are some differences in vaccination rates between occupations, with lower vaccination rates for Managers; Sales Workers; and Machinery Operators (Model 3).

Controlling for demographic, socioeconomic, and geographic variables, those who said they would probably not get vaccinated when asked in January 2021 were the least likely to have been vaccinated by April 2021, with the comparison group being those who said they definitely would get vaccinated. The other two categories (definitely wouldn't, probably would) also are estimated to have a lower probability of being vaccinated by April 2021, but the differences were not as large. This further reinforces the point made earlier that there is useful information in the vaccine willingness behaviour for future decision making, but highlights that this is not just because of the demographic, socioeconomic, and geographic variables that may be correlated with vaccine willingness.

### 2.4.2 Vaccine willingness

A regression approach is also used to estimate the characteristics that are associated with vaccine willingness (Appendix 2, Table 2) using an ordered probit model. Two models are estimated. The first model (Model 1) controls for demographic, geographic, and socioeconomic variables, and shows that vaccine willingness was higher for younger Australians and older Australians compared to those aged 25 to 44 years. Vaccine willingness was also higher for those with a degree, and in particular, a post-graduate degree. Vaccine willingness was, however, lower for women; those who spoke a language other than English; those who live in relatively disadvantaged areas; and those who live outside a capital city.

The second model expands the explanatory variables to include COVID-specific variables and measures of confidence in institutions (Model 2). This model shows that there is a strong positive correlation between vaccine willingness and whether a person has been tested for COVID-19, as well as whether they have experienced anxiety and worry due to the virus. Vaccine willingness was slightly higher for those who thought it was likely that they would be infected in the next six months.

Confidence in three out of the four institutions measured (public service; State/Territory governments; and hospitals and the health system) were positively associated with greater vaccine willingness. It is interesting to note that when controlling for these three variables, confidence in the Federal Government did not have an association with vaccine willingness.

### 2.4.3 Vaccine willingness of those who speak a language other than English

One of the population groups that has consistently (in August 2020, January 2021 and April 2021) reported relatively low rates of vaccine willingness is those who speak a language other than English at home. In April 2021, 44.8 per cent of those who spoke a language other than English said that they would definitely get a safe and effective vaccine if it was available to them, compared to 58.2 per cent of those who did not speak a language other than English.

Although the sample of respondents who speak a language other than English in each wave of data collection is relatively small, when pooled across waves it is possible to build a reasonably large number of observations. In the current paper we use standard econometric techniques to estimate the coefficients in the model (whilst controlling for the clustering of standard errors due to the pooled sample). For future work we will extend this analysis using panel data techniques.

Table 3 (in Appendix 2) presents estimates for those who speak a language other than English, using the pooled sample, of the factors associated with vaccine willingness. This includes some of the additional explanatory variables included in Table 2, as well as whether a person reported having been discriminated against in the previous 12 months (as reported in October 2020). The discrimination measure asks whether the respondent has experienced discrimination in one or more of the following settings – at work, when renting or buying a house, in dealings with government, when seeking other services, or at a shop or restaurant. This measure is included as an indicator of negative experiences when interacting with government or the rest of the Australian population.

An important finding is that those who had experienced some form of discrimination were less willing (significant at the 10% significance level) to get vaccinated than those who hadn't experienced any form of discrimination (Table 3). Not only does self-reported discrimination appear to be correlated with vaccine willingness for those who speak a language other than English, it is also very prevalent. Only 33.5 per cent of those who do not speak a language other than English reported have been discriminated against when asked in October 2020, compared to 81.0 per cent of those who do speak a language other than English. Reducing discrimination is arguably an important policy aim in and of itself. However, the results presented in Table 3 suggest that there may be further potential benefits in terms of vaccine willingness, though that does assume that the relationship between the variables is a causal one.

Many of the other correlates of vaccine willingness for the general population also hold for those who speak a language other than English, including anxiety and worry, confidence in institutions (particularly State/Territory governments and hospitals/health system), sex and living in a disadvantaged area. There are, however, some other subtle differences. For those who speak a language other than English, education is important, but it is Year 12 completion rather than post-school qualifications that seem to matter the most (while the difference is not statistically significant for Year 12 completion, the coefficient is large and the p-value is 0.122, giving weak evidence for a relationship). Furthermore, compared to the general population where having a Certificate III/IV had no association with willingness (compared to those without qualifications), for those who speak a language other than English, a Certificate III/IV had a negative correlation.

Also, for the general population there was no association between Indigenous status and vaccine willingness. For our pooled sample of those who speak a language other than English, however, there was a very strong association with Indigenous Australians who speak a language other than English who identify as Indigenous being far less willing to take a vaccine than others who speak a language other than English.

A final point of comparison is the age associations. For the general population, there is a very distinct age pattern with younger and older Australians being more willing to get vaccinated. For those who speak a language other than English, however, there is no significant association (and we eventually dropped the first four age dummy variables). This may be because the sample sizes are smaller. However, it does suggest that older Australians who speak a language other than English may need a particular policy focus, rather than the general population of older Australians.

### 3 Vaccine concerns

While willingness to take a hypothetical safe and effective vaccine has remained high, there is

## Vaccine willingness and concerns in Australia – August 2020 to April 2021

a very large proportion of Australians who are concerned about possible side effects if they do take a vaccine. That is, a divergence between views on specific vaccines and a hypothetical safe and effective vaccine appears to be emerging.

In April 2021, respondents who had not already been vaccinated were asked ‘How concerned are you that you would experience a side effect from a COVID-19 vaccination?’. Just under one-in-five (18.4 per cent) respondents were not at all concerned about side effects, leaving a little over eight-in-ten Australians who had at least some concerns about side effects. About four-in-ten (39.5 per cent) of Australians were slightly concerned, one-in-five (20.3 per cent) were moderately concerned, and one-in-five (21.8 per cent) were very concerned.

While it appears that people are making a distinction between a hypothetical safe and effective vaccine and the currently available vaccines, there is still a very strong correlation between the two measures. Of those who were not at all concerned about side effects, 81.9 per cent said that they would definitely take a safe and effective vaccine if available to them. This declines substantially to 64.9 per cent of Australians who were slightly concerned, 44.4 per cent of those who were moderately concerned, and 23.1 per cent of Australians who were very concerned about side effects saying that they would definitely take a vaccine.

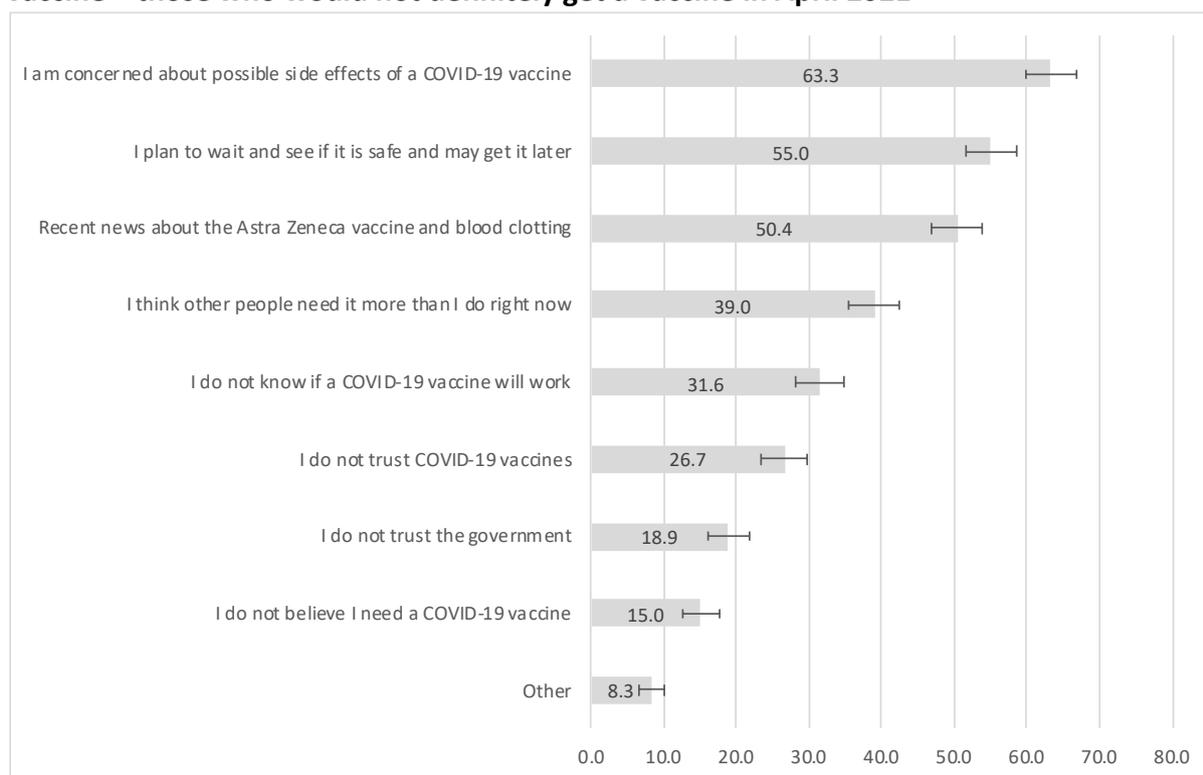
Looking in more detail at vaccine concerns, those who had not been vaccinated and who said that they would definitely or probably not take a safe and effective vaccine were asked ‘Which of the following, if any, are reasons that make you not want to get a COVID-19 vaccine?’ with eight possible response options, including an ‘Other’ category.<sup>2</sup>

The most commonly cited reason for being hesitant about a vaccine is concern about possible side effects, given by 63.3 per cent of those who answered the question. In addition, more than half of respondents who were hesitant about receiving the vaccine said that they ‘plan to wait and see’ if it is safe (55.0 per cent) with around half of this sample (50.4 per cent) citing the recent news about the Astra Zeneca vaccine and blood clotting. In total 82.1 per cent of the sample gave at least one of these three safety concerns as a reason not to get vaccinated.

Leaving aside the ‘other’ category, the least common responses were not believing that they need a vaccine (15.0 per cent), and not trusting the government (18.9 per cent). The most common reason given that does not relate to safety was that the respondent thought that others needed the vaccine more than they did. It is interesting to note that this is the only reason given which was not positively correlated with the 82.1 per cent of those who gave at least one of these three safety concerns as a reason not to get vaccinated. Specifically, of those who reported at least one of the safety measures, 36.4 per cent said they thought others needed it more, whereas amongst those who did not report at least one of the safety measures, 50.8 per cent said that others needed it more.

While it is true that the Australian government (in partnership with the States/Territories) are allocating the vaccine to those who are identified as needing it the most, part of the rationale for the vaccine distribution is that positive externalities may come from an individual being vaccinated. That is, there would be a policy concern if people underestimate the benefit of themselves being vaccinated to others within society. This suggests a potentially quite different response for this group.

**Figure 4 Per cent of Australians who gave reasons for not wanting to get a COVID-19 vaccine – those who would not definitely get a vaccine in April 2021**



Note: The “whiskers” on the bars indicate the 95 per cent confidence intervals for the estimate.

Source: ANUpoll: April 2021

The factors associated with the reasons for being concerned about safety of a COVID-19 vaccine varied quite substantially. To analyse this we estimated two separate models for each of the eight reasons for not wanting to get the vaccine (Appendix 2, Tables 4a & 4b). That is, sixteen (probit) regression models in total. In the first of these models, we control for demographic, geographic, and socioeconomic variables only. In the second model we also include the level of vaccine hesitancy, with the base case being someone who said they would probably get the vaccine, with a separate binary variable for those who said they definitely wouldn’t get the vaccine and those who said they probably wouldn’t. Detailed results are given in Table 4a (Appendix 2), with associations summarised below.

- **Women** were more likely to say they are concerned about side effects but less likely to say that they don’t need a vaccine; and don’t trust government.
- Those **aged 25 to 34 years** were less likely to say someone else needs the vaccine;
- **Older Australians** were less concerned about the vaccine not working, and less likely to say they don’t need the vaccine;
- **Indigenous Australians** were more likely to say that they did not trust the COVID-19 vaccines (albeit with a p-value of 0.113);
- Those **born overseas in a non-English speaking country** were less concerned about side effects; the vaccine not working; less likely to say that others need it; and less likely to not trust the vaccine;
- Those who **speak a language other than English** are more concerned about side effects,

the vaccine not working, more likely to say they don't trust the vaccinations; more likely to say that they plan to wait and see if it is safe; and more likely to be concerned about the recent news about the Astra Zeneca vaccine.

- Those who **had not completed Year 12** were more likely to say that others need the vaccine more than they do.
- Those with a **post graduate degree** were more concerned about the vaccine not working;
- Those with an **undergraduate degree** more likely to say others need the vaccine more than they do; and less likely to say they did not trust the government;
- Those with a **Certificate III/IV** were more concerned about side effects and the vaccine not working; more likely to not trust the vaccine; more likely to not trust the government; and more likely to be concerned about Astra Zeneca in particular.
- Those who lived in the **most disadvantaged suburbs** were more concerned about the vaccine not working; but less likely to say that others needed the vaccine more than they do
- Those who live in the **second most disadvantaged quintile** were more likely to report waiting and seeing if it is safe;
- Those who live in a non-capital city were more concerned about the vaccine not working; more likely to say that they do not need a vaccine; and more likely to report waiting and seeing if it is safe.

In the second set of model estimates in Table 4b (Appendix 2), we include the person's level of vaccine hesitancy as an additional set of explanatory variables. The causal direction of this association is difficult to establish – does hesitancy lead to the reasons, the reasons lead to hesitancy, or some combination of both? However, leaving causality aside, the correlations are interesting themselves.

Only two of the substantive reasons given for not wanting to get a vaccine was not correlated with the extent of vaccine hesitancy (when controlling for background characteristics) – concerns about side effects and recent news about the Astra Zeneca vaccine. There is a correlation for all the other variables. Those who were more hesitant (that is they said would definitely not or probably not get a vaccine compared to probably getting the vaccine) were more likely to say that: they didn't think the vaccines would work; they thought they didn't need a vaccine; and they didn't trust the vaccines. This group were also less likely to say that: they plan to wait and see; and they think others need it first.

## 4 Views on vaccine policy

### 4.1 Satisfaction with vaccines rollout

While Australia is in the fortunate position that vaccines are not currently required to reduce a very high infection or mortality rate, that does not mean that the Australian population is content with the current state of the vaccine roll-out. To gauge the views of the Australian population, the April 2021 questionnaire randomly split respondents into two groups, with one half of the sample asked whether the process for individuals getting COVID-19 vaccines in Australia is going well and the other half asked whether it is fair. There were very different responses to these two questions

## Vaccine willingness and concerns in Australia – August 2020 to April 2021

Only 3.6 per cent of Australians thought the process for individuals getting the vaccine was going very well, with a further 32.7 per cent thinking the process was going somewhat well. This leaves almost two-thirds of adult Australians who think the process is not going well, with 42.5 per cent saying it is going not too well and 21.2 per cent saying it is not going at all well.

By comparison, 32.4 per cent of Australians thought the process was very fair, with a further 53.3 per cent thinking it was somewhat fair. This leaves only a small fraction of Australians who thought the roll-out of the vaccine was not fair, with 11.1 per cent saying it was not too fair and only 3.2 per cent saying that it was not at all fair.

Responses in Australia are very different to responses in the US, when these questions were asked in mid-February.<sup>3</sup> Americans were far more likely than Australians to think the vaccination process was going very well (13 per cent) or somewhat well (51 per cent) than in Australia. Americans were less likely to think the process was very fair (20 per cent) compared to Australians.

Looking at views on how well the vaccine process was going by using an ordered probit model and controlling for demographic, geographic, and socioeconomic variables (see Appendix 2, Table 5, Model 1), those aged 18 to 34 years and aged 75 years and over, those who speak a language other than English; those without having completed Year 12, and those who live in the two most disadvantaged quintiles of neighbourhoods were more likely to say the vaccination process was going well. There were large differences by political views (Model 2). Using voting intentions when interviewed in January 2021 (to minimise reverse causality) and controlling for demographic, geographic, and socioeconomic variables, those who had said they would vote for a party grouping other than the Coalition were less likely to think the process was going well.

If we consider simple descriptive statistics about voting intentions and the vaccine roll out, we get an understanding of the degree of dissatisfaction with the vaccine roll out even amongst Coalition voters. Specifically, only 45.3 per cent of those who said they would vote for the Coalition (when asked in January 2021) said in April 2021 that the vaccine process was going well (combining very well and somewhat well groups). This declines to 29.9 per cent of those who said they would have voted Labor, 27.0 per cent of those who said they would have voted for the Greens, 33.3 per cent of those who would have voted for an 'other' party, and 25.0 per cent of those who did not know who they would vote for. It is only amongst those who previously said they would have voted for the Coalition that had more than one-third support for the notion that the vaccine roll-out was going well, and even amongst Coalition voters support was less than 50 per cent.

Looking at views on the fairness of the vaccine rollout, we used an ordered probit model controlling for demographic, geographic, and socioeconomic variables (Appendix 2, Table 5, Model 1). Only those aged 55 to 64 years and those with an undergraduate degree were more likely to think the process was fair whereas those who lived in the most disadvantaged quintile of areas were less likely to think the process was fair. There were large differences in views of the fairness of the vaccine rollout again by political views. Those who had said they would vote for a party grouping other than the Coalition (when asked in January 2021) were less likely to think the process was fair.

Using descriptive statistics again, 89.9 per cent of those who said they would vote for the Coalition (when asked in January 2021) said in April 2021 that the vaccine process was very or somewhat fair. This declines to 83.6 per cent who said they would have voted Labor, 79.1 per

cent of those who said they would have voted for the Greens, 79.2 per cent of those who would have voted for an ‘other’ party, and 84.5 per cent of those who did not know who they would vote for.

### 4.2 Vaccine diplomacy

The April 2021 survey also asked participants about their views about providing access to coronavirus vaccines to developing countries. At the time of writing, India was suffering from very high rates of COVID-19 mortality and infections. While measured levels of infection and mortality per million people weren’t as high as some developed countries in Western Europe (for example France now or the UK in January), data from India is potentially an underestimate, and the trajectory is up rather than flat or downwards like in North America or Western Europe. Despite producing a significant amount of vaccines themselves, India also lagged behind a number of countries with relatively high infection rates in terms of vaccination rates. Aside from large developing countries such as India, Australian foreign policy recognises the responsibility it has to Asia and Pacific nations.

A random sample of 50 per cent of ANUpoll respondents were prompted as follows: ‘Thinking about **developing countries** around the world, which statement comes closer to your view, even if neither is exactly right...?’ The other half of the sample were prompted with the following: ‘Thinking about **developing countries in the Asia-Pacific region**, which statement comes closer to your view, even if neither is exactly right...?’ [bold not in the original].

Across the sample, 67.6 per cent of Australians thought that ‘Australia should help ensure that people in developing countries have access to coronavirus vaccines, even if it means some people in Australia need to wait longer to get vaccines’ with the remainder of the sample thinking that ‘Australia should ensure that there are enough coronavirus vaccines for people in Australia, even if it means people in developing countries need to wait longer to get vaccines’. There were no differences between those who were asked about developing countries around the world and those who were asked about developing countries in the Asia-Pacific region.

These responses are essentially the reverse of those in the US when respondents there were asked a similar question in mid-February. Of those who answered the question, 31 per cent thought developing countries should be prioritised compared to 69 per cent who thought the US should ensure there are enough vaccines for people in the US first. It should be noted that at the time of the US survey (mid-February 2021) there were far higher rates of infection and mortality in the US compared to Australia.

## 5 Concluding comments

According to the Bloomberg Resilience Score of the ‘The Best and Worst Places to Be’<sup>4</sup> during the time of COVID-19, there are very few countries in the world ranked higher than Australia. Only Singapore (with a higher current vaccination rate) and New Zealand (with a lower cumulative death rate) is ranked higher than Australia. Like New Zealand, Australia’s success in keeping infections and mortality low has bought us time to vaccinate the population at a relatively slower rate. Indeed, just prior to writing this paper, but during the data collection period, a two-way travel bubble was opened up between Australia and New Zealand with quarantine-free travel possible in both directions.

This fortunate position does not, however, mean that Australia can be complacent about vaccinations. Indeed, when asked in April 2021 about how well the vaccination process was

## Vaccine willingness and concerns in Australia – August 2020 to April 2021

going, only 3.7 per cent of Australians thought the process for individuals getting the vaccine was going very well. Furthermore, only one-in-five Australians were not at all concerned about side effects from the vaccine.

Despite these concerns and fears, Australians do not appear to be becoming more hesitant at taking a hypothetical 'safe and effective' vaccine. It is more the case that a very large proportion of Australians do not think the current vaccines available to them are safe, and to a lesser extent, do not think they are effective. This paper highlights that there are particular groups who have concerns about side effects and vaccine efficacy, facilitating more nuanced public health campaigns.

To achieve herd immunity a very high percentage of the Australian population needs to be vaccinated. An important finding is that close to 60% of people who would be considered 'resistant' (those who said they definitely would not be vaccinated) in January 2021 did not hold the same view three months later. One could conclude that they are therefore not immune to public health messaging (Dubé, Vivion & MacDonald, 2015). This finding suggests that for a majority of the 'resistant' group there is some prospect of vaccination. It is also worth noting that the experience in the United States and the United Kingdom suggests that hesitancy declines as friends and relatives begin to get vaccinated in large numbers (Hamel & Brodie, 2021; Pew 2021; Robertson et al., 2021; Sherman et al., 2021); and our findings suggest that this may well occur in Australia. Over fifty per cent of people who would not get the COVID-19 vaccine "plan to wait and see if it is safe and may get it later". This finding suggests the best plan to address vaccine hesitancy could be to accelerate the vaccination roll out as quickly as possible.

While overall vaccine willingness has remained stable since January 2021, there are still key population groups within Australia who remain hesitant about getting a vaccine, even if it is framed as being safe and effective. One group that we have considered in this paper is those who speak a language other than English. One of the important findings from this paper is that those in this group who have experienced discrimination are less willing to take a vaccine than those who haven't. It is up to all Australians to reduce the level of discrimination in the country, but governments clearly have a role. Not only does discrimination have a range of health, social and economic costs, it would appear that it is negatively correlated with the one behaviour that is likely to help Australia get back to a more regular way of life and to continue to be one of 'the best places to be' – mass vaccination.

## Appendix 1 About the survey

The primary source of data for this paper is the April 2021 ANUpoll. Data collection commenced on the 12th of April 2021 with a pilot test of telephone respondents. The main data collection commenced on the 13th of April and concluded on the 26th of April. The final sample size for the survey is 3,286 respondents. 54.7 per cent of the sample had completed the survey by the 15th of April and the average interview duration was 13.9 minutes. Of those who had completed the April 2021 survey, 94.6 per cent (N=3,109) had completed the January 2021 survey.

The Social Research Centre collected data online and through Computer Assisted Telephone Interviewing (CATI) in order to ensure representation from the offline Australian population. Around 5.1 per cent of interviews were collected via CATI. The contact methodology adopted for the online Life in Australia™ members is an initial survey invitation via email and SMS (where available), followed by multiple email reminders and a reminder SMS. Telephone non-response of panel members who have not yet completed the survey commenced in the second week of fieldwork and consisted of reminder calls encouraging completion of the online survey.

The contact methodology for offline Life in Australia™ members was an initial SMS (where available), followed by an extended call-cycle over a two-week period. A reminder SMS was also sent in the second week of fieldwork.

A total of 4,002 respondents were invited to take part in the survey, leading to a wave-specific completion rate of 82.1 per cent. Taking into account recruitment to the panel, the cumulative response rate for this survey is around 7.0 per cent.

Unless otherwise stated, data in the paper is weighted to population benchmarks. For Life in Australia™, the approach for deriving weights generally consists of the following steps:

1. Compute a base weight for each respondent as the product of two weights:
  - a. Their enrolment weight, accounting for the initial chances of selection and subsequent post-stratification to key demographic benchmarks
  - b. Their response propensity weight, estimated from enrolment information available for both respondents and non-respondents to the present wave.
2. Adjust the base weights so that they satisfy the latest population benchmarks for several demographic characteristics.

The ethical aspects of this research have been approved by the ANU Human Research Ethics Committee (2014/241).

## Appendix 2      Regression tables

## Vaccine willingness and concerns in Australia – August 2020 to April 2021

**Table 1** Factors associated with having been vaccinated, April 2021

Explanatory variables	Model 1		Model 2		Model 3		Model 4	
	Coeff.	Signif.	Coeff.	Signif.	Coeff.	Signif.	Coeff.	Signif.
Employed			0.061		0.089			
Household income (natural log)			0.071		0.165	**		
Managers; Sales Workers; and Machinery Operators					-0.278	**		
Would definitely not get a vaccine when asked in January							-0.194	
Would probably not get a vaccine when asked in January							-1.009	***
Would probably get a vaccine when asked in January							-0.187	**
Female	0.090		0.109		0.130		0.102	
Aged 18 to 24 years	0.164		0.246		-0.032		0.058	
Aged 25 to 34 years	0.232		0.244	*	0.287	*	0.234	
Aged 45 to 54 years	0.141		0.073		0.088		0.014	
Aged 55 to 64 years	0.433	***	0.443	***	0.491	***	0.390	***
Aged 65 to 74 years	0.925	***	0.982	***	1.136	***	0.786	***
Aged 75 years plus	1.412	***	1.479	***	1.572	***	1.311	***
Indigenous	-0.244		-0.168		-0.148		-0.397	
Born overseas in a main English-speaking country	0.013		0.001		-0.038		0.012	
Born overseas in a non-English speaking country	-0.035		-0.009		-0.116		-0.052	
Speaks a language other than English at home	0.047		-0.002		0.242		0.115	
Has not completed Year 12 or post-school qualification	0.126		0.115		0.251		0.124	
Has a post graduate degree	0.493	***	0.453	***	0.305	*	0.404	***
Has an undergraduate degree	0.318	**	0.269	**	0.282	*	0.219	
Has a Certificate III/IV, Diploma or Associate Degree	0.125		0.071		0.135		0.101	
Lives in the most disadvantaged areas (1st quintile)	0.106		0.096		0.175		0.156	
Lives in next most disadvantaged areas (2nd quintile)	-0.037		-0.071		-0.114		-0.051	
Lives in next most advantaged areas (4th quintile)	-0.053		-0.065		-0.098		-0.028	
Lives in the most advantaged areas (5th quintile)	-0.080		-0.095		-0.077		-0.065	
Lives in a non-capital city	-0.077		-0.034		-0.090		-0.041	
Constant	-1.971	***	-2.488	***	-3.218	***	-1.766	***
Sample size	3,133		2,939		2,234		2,943	

Source: ANUpoll, April 2021 and Life in Australia™, February 2020.

Notes: Probit Regression Model. The base case individual is female; aged 35 to 44 years; non-Indigenous; born in Australia; does not speak a language other than English at home; has completed Year 12 but does not have a post-graduate degree; lives in neither an advantaged or disadvantaged suburb (third quintile); and lives in a capital city. Coefficients that are statistically significant at the 1 per cent level of significance are labelled \*\*\*; those significant at the 5 per cent level of significance are labelled \*\*, and those significant at the 10 per cent level of significance are labelled \*.

**Table 2** Factors associated with vaccine willingness, April 2021, those who have not been vaccinated

Explanatory variables	Model 1		Model 2	
	Coeff.	Signif.	Coeff.	Signif.
Thinks it likely to get infected in next 6 months			0.177	**
Has been tested for COVID-19			0.193	***
Anxious or worried due to COVID-19			0.411	***
Confident in the Federal Government			0.028	
Confident in public service			0.137	**
Confident in State/Territory government			0.242	***
Confident in hospitals and the health system			0.296	***
Female	-0.217	***	-0.301	***
Aged 18 to 24 years	0.451	***	0.421	***
Aged 25 to 34 years	0.033		0.037	
Aged 45 to 54 years	0.093		0.175	**
Aged 55 to 64 years	0.355	***	0.484	***
Aged 65 to 74 years	0.584	***	0.734	***
Aged 75 years plus	0.624	***	0.783	***
Indigenous	-0.130		-0.153	
Born overseas in a main English-speaking country	-0.015		-0.066	
Born overseas in a non-English speaking country	-0.059		-0.077	
Speaks a language other than English at home	-0.302	***	-0.303	***
Has not completed Year 12 or post-school qualification	-0.210	**	-0.125	
Has a post graduate degree	0.403	***	0.383	***
Has an undergraduate degree	0.331	***	0.292	***
Has a Certificate III/IV, Diploma or Associate Degree	-0.021		-0.002	
Lives in the most disadvantaged areas (1st quintile)	-0.196	**	-0.180	*
Lives in next most disadvantaged areas (2nd quintile)	-0.153	*	-0.144	
Lives in next most advantaged areas (4th quintile)	-0.114		-0.109	
Lives in the most advantaged areas (5th quintile)	-0.111		-0.152	
Lives in a non-capital city	-0.190	***	-0.169	**
Cut-point 1	-1.725	***	-1.020	***
Cut-point 2	-1.091	***	-0.339	***
Cut-point 3	-0.209	***	0.582	***
Sample size	2,756		2,734	

Source: ANUpoll, April 2021

Notes: Probit Regression Model. The base case individual is female; aged 35 to 44 years; non-Indigenous; born in Australia; does not speak a language other than English at home; has completed Year 12 but does not have a post-graduate degree; lives in neither an advantaged or disadvantaged suburb (third quintile); and lives in a capital city. Coefficients that are statistically significant at the 1 per cent level of significance are labelled \*\*\*; those significant at the 5 per cent level of significance are labelled \*\*, and those significant at the 10 per cent level of significance are labelled \*.

**Table 3** Factors associated with vaccine willingness, August 2020, January 2021, and April 2021, those who speak a language other than English

Explanatory variables	Model 1	
	Coeff.	Signif.
August 2020	0.122	
January 2021	-0.440	***
Discriminated against (October 2020)	-0.247	*
Anxious or worried due to COVID-19	0.604	***
Confident in the Federal Government	0.042	
Confident in public service	-0.084	
Confident in State/Territory government	0.342	***
Confident in hospitals and the health system	0.206	
Female	-0.192	*
Aged 65 to 74 years	0.202	
Aged 75 years plus	0.118	
Indigenous	-0.928	***
Born overseas in a main English-speaking country	0.269	
Born overseas in a non-English speaking country	0.070	
Has not completed Year 12 or post-school qualification	-0.495	
Has a post graduate degree	0.209	
Has an undergraduate degree	0.014	
Has a Certificate III/IV, Diploma or Associate Degree	-0.448	***
Lives in the most disadvantaged areas (1st quintile)	-0.222	
Lives in next most disadvantaged areas (2nd quintile)	-0.050	
Lives in next most advantaged areas (4th quintile)	-0.200	
Lives in the most advantaged areas (5th quintile)	0.187	
Lives in a non-capital city	-0.039	
Cut-point 1	-1.453	***
Cut-point 2	-0.768	***
Cut-point 3	0.514	***
Sample size	1,152	

Source: ANUpoll, April 2021

Notes: Probit Regression Model. The base case individual is female; aged 18 to 64 years; non-Indigenous; born in Australia; does not speak a language other than English at home; has completed Year 12 but does not have a post-graduate degree; lives in neither an advantaged or disadvantaged suburb (third quintile); and lives in a capital city. Coefficients that are statistically significant at the 1 per cent level of significance are labelled \*\*\*; those significant at the 5 per cent level of significance are labelled \*\*, and those significant at the 10 per cent level of significance are labelled \*.

**Table 4a** Factors associated with reasons against being vaccinated, April 2021 (Model 1)

Explanatory variables	I am concerned about possible side effects of a COVID-19 vaccine		I do not know if a COVID-19 vaccine will work		I do not believe I need a COVID-19 vaccine		I plan to wait and see if it is safe and may get it later	
	Coeff.	Signif.	Coeff.	Signif.	Coeff.	Signif.	Coeff.	Signif.
Female	0.272	***	0.000		-0.304	***	0.119	
Aged 18 to 24 years	0.161		-0.226		-0.227		0.048	
Aged 25 to 34 years	-0.001		-0.001		-0.053		-0.126	
Aged 45 to 54 years	0.176		-0.149		-0.064		-0.216	
Aged 55 to 64 years	0.288	**	0.026		-0.101		-0.173	
Aged 65 to 74 years	-0.113		-0.415	**	-0.312		-0.064	
Aged 75 years plus	-0.214		-0.396	*	-0.072		0.003	
Indigenous	0.140		0.039		-0.006		-0.103	
Born overseas in a main English-speaking country	0.159		0.239		-0.199		-0.013	
Born overseas in a non-English speaking country	-0.355	**	-0.468	***	-0.259		-0.183	
Speaks a language other than English at home	0.454	***	0.632	***	0.201		0.354	**
Has not completed Year 12 or post-school qualification	0.165		0.195		0.182		-0.098	
Has a post graduate degree	0.146		0.409	**	-0.065		0.155	
Has an undergraduate degree	0.062		0.002		0.051		-0.017	
Has a Certificate III/IV, Diploma or Associate Degree	0.267	*	0.366	**	0.265		-0.008	
Lives in the most disadvantaged areas (1st quintile)	0.034		0.281	*	0.194		0.104	
Lives in next most disadvantaged areas (2nd quintile)	0.092		0.233		0.142		0.274	*
Lives in next most advantaged areas (4th quintile)	0.083		0.248		0.171		0.090	
Lives in the most advantaged areas (5th quintile)	0.133		0.067		-0.023		0.184	
Lives in a non-capital city	0.058		0.217	*	0.375	***	0.229	**
Constant	-0.182		-0.937	***	-1.138	***	-0.098	
Sample size	1,133		1,133		1,133		1,133	

## Vaccine willingness and concerns in Australia – August 2020 to April 2021

Explanatory variables	I think other people need it more than I do right now		I do not trust COVID-19 vaccines		I do not trust the government		Recent news about the Astra Zeneca vaccine and blood clotting	
	Coeff.	Signif.	Coeff.	Signif.	Coeff.	Signif.	Coeff.	Signif.
Female	-0.040		0.004		-0.308	***	0.157	
Aged 18 to 24 years	0.346		-0.281		-0.068		-0.138	
Aged 25 to 34 years	-0.290	**	-0.074		0.167		-0.094	
Aged 45 to 54 years	-0.194		-0.110		-0.009		0.100	
Aged 55 to 64 years	-0.303	**	-0.060		0.211		0.096	
Aged 65 to 74 years	-0.190		-0.250		-0.035		0.095	
Aged 75 years plus	-0.291		-0.150		0.052		0.066	
Indigenous	-0.160		0.482		-0.075		0.234	
Born overseas in a main English-speaking country	0.169		-0.005		-0.076		0.149	
Born overseas in a non-English speaking country	-0.404	**	-0.456	***	-0.309	*	-0.232	
Speaks a language other than English at home	0.068		0.463	***	-0.036		0.422	***
Has not completed Year 12 or post-school qualification	0.302	*	0.182		0.283		0.121	
Has a post graduate degree	0.285		0.006		-0.025		0.257	
Has an undergraduate degree	0.272	*	-0.051		-0.347	*	0.154	
Has a Certificate III/IV, Diploma or Associate Degree	0.184		0.358	**	0.391	**	0.412	***
Lives in the most disadvantaged areas (1st quintile)	-0.545	***	0.083		-0.044		-0.039	
Lives in next most disadvantaged areas (2nd quintile)	-0.158		0.217		-0.070		0.153	
Lives in next most advantaged areas (4th quintile)	-0.283	*	-0.064		-0.019		0.033	
Lives in the most advantaged areas (5th quintile)	-0.019		-0.058		-0.110		0.016	
Lives in a non-capital city	0.093		0.070		0.049		0.036	
Constant	-0.085		-0.797	***	-0.859	***	-0.445	**
Sample size	1,133		1,133		1,133		1,133	

Source: ANUpoll, April 2021.

Notes: Probit Regression Model. The base case individual is female; aged 35 to 44 years; non-Indigenous; born in Australia; does not speak a language other than English at home; has completed Year 12 but does not have a post-graduate degree; lives in neither an advantaged or disadvantaged suburb (third quintile); and lives in a capital city. Coefficients that are statistically significant at the 1 per cent level of significance are labelled \*\*\*; those significant at the 5 per cent level of significance are labelled \*\*, and those significant at the 10 per cent level of significance are labelled \*.

Vaccine willingness and concerns in Australia – August 2020 to April 2021

Table 4b Factors associated with reasons against being vaccinated, April 2021 (Model 2)

Explanatory variables	I am concerned about possible side effects of a COVID-19 vaccine		I do not know if a COVID-19 vaccine will work		I do not believe I need a COVID-19 vaccine		I plan to wait and see if it is safe and may get it later	
	Coeff.	Signif.	Coeff.	Signif.	Coeff.	Signif.	Coeff.	Signif.
Definitely wouldn't get vaccinated	-0.069		0.442	***	1.585	***	-1.004	***
Probably wouldn't get vaccinated	0.168		0.398	***	0.989	***	0.140	
Female	0.272	***	0.007		-0.317	**	0.110	
Aged 18 to 24 years	0.169		-0.154		0.031		0.005	
Aged 25 to 34 years	-0.008		-0.027		-0.136		-0.114	
Aged 45 to 54 years	0.185		-0.159		-0.104		-0.183	
Aged 55 to 64 years	0.294	**	0.027		-0.137		-0.170	
Aged 65 to 74 years	-0.096		-0.386	**	-0.251		-0.054	
Aged 75 years plus	-0.191		-0.316		0.171		0.004	
Indigenous	0.149		-0.032		-0.294		0.005	
Born overseas in a main English-speaking country	0.161		0.260	*	-0.191		-0.026	
Born overseas in a non-English speaking country	-0.352	**	-0.450	***	-0.237		-0.202	
Speaks a language other than English at home	0.451	***	0.620	***	0.210		0.371	**
Has not completed Year 12 or post-school qualification	0.164		0.185		0.172		-0.087	
Has a post graduate degree	0.157		0.482	**	0.208		0.116	
Has an undergraduate degree	0.067		0.028		0.115		-0.022	
Has a Certificate III/IV, Diploma or Associate Degree	0.277	*	0.360	**	0.231		0.046	
Lives in the most disadvantaged areas (1st quintile)	0.024		0.266	*	0.218		0.099	
Lives in next most disadvantaged areas (2nd quintile)	0.093		0.236		0.159		0.309	**
Lives in next most advantaged areas (4th quintile)	0.079		0.252		0.205		0.074	
Lives in the most advantaged areas (5th quintile)	0.151		0.059		-0.092		0.273	*
Lives in a non-capital city	0.051		0.191	*	0.366	***	0.255	**
Constant	-0.222		-1.105	***	-1.790	***	-0.059	
Sample size	1,133		1,133		1,133		1,133	

## Vaccine willingness and concerns in Australia – August 2020 to April 2021

Explanatory variables	I think other people need it more than I do right now		I do not trust COVID-19 vaccines		I do not trust the government		Recent news about the Astra Zeneca vaccine and blood clotting	
	Coeff.	Signif.	Coeff.	Signif.	Coeff.	Signif.	Coeff.	Signif.
Definitely wouldn't get vaccinated	-0.867	***	1.287	***	0.924	***	-0.110	
Probably wouldn't get vaccinated	-0.331	***	0.694	***	0.379	***	-0.179	
Female	-0.058		0.025		-0.312	***	0.155	
Aged 18 to 24 years	0.275		-0.140		0.035		-0.163	
Aged 25 to 34 years	-0.277	*	-0.149		0.145		-0.085	
Aged 45 to 54 years	-0.183		-0.160		-0.052		0.096	
Aged 55 to 64 years	-0.298	**	-0.084		0.221		0.093	
Aged 65 to 74 years	-0.227		-0.210		0.011		0.075	
Aged 75 years plus	-0.376	*	0.010		0.152		0.035	
Indigenous	-0.051		0.339		-0.258		0.259	
Born overseas in a main English-speaking country	0.158		0.043		-0.042		0.146	
Born overseas in a non-English speaking country	-0.459	***	-0.447	***	-0.289		-0.242	
Speaks a language other than English at home	0.099		0.466	***	-0.075		0.433	***
Has not completed Year 12 or post-school qualification	0.336	**	0.166		0.246		0.127	
Has a post graduate degree	0.223		0.180		0.068		0.236	
Has an undergraduate degree	0.252	*	0.008		-0.337	*	0.146	
Has a Certificate III/IV, Diploma or Associate Degree	0.230		0.351	**	0.340	**	0.414	***
Lives in the most disadvantaged areas (1st quintile)	-0.548	***	0.061		-0.040		-0.031	
Lives in next most disadvantaged areas (2nd quintile)	-0.153		0.224		-0.059		0.155	
Lives in next most advantaged areas (4th quintile)	-0.289	*	-0.063		-0.007		0.036	
Lives in the most advantaged areas (5th quintile)	0.023		-0.118		-0.176		0.013	
Lives in a non-capital city	0.133		0.011		0.002		0.050	
Constant	0.075		-1.185	***	-1.070	***	-0.388	**
Sample size	1,133		1,133		1,133		1,133	

Source: ANUpoll, April 2021.

Notes: Probit Regression Model. The base case individual is female; aged 35 to 44 years; non-Indigenous; born in Australia; does not speak a language other than English at home; has completed Year 12 but does not have a post-graduate degree; lives in neither an advantaged or disadvantaged suburb (third quintile); and lives in a capital city. Coefficients that are statistically significant at the 1 per cent level of significance are labelled \*\*\*; those significant at the 5 per cent level of significance are labelled \*\*, and those significant at the 10 per cent level of significance are labelled \*.

## Vaccine willingness and concerns in Australia – August 2020 to April 2021

**Table 5 Factors associated with views on vaccine policy, April 2021**

Explanatory variables	Vaccine process is going well				Vaccine process is fair			
	Model 1		Model 2		Model 1		Model 2	
	Coeff.	Signif.	Coeff.	Signif.	Coeff.	Signif.	Coeff.	Signif.
Would have voted Labor in January 2021			-0.548	***			-0.314	***
Would have voted Greens in January 2021			-0.574	***			-0.390	***
Would have voted for 'other' party in January 2021			-0.260	*			-0.603	***
Did not know who to vote for in January 2021			-0.463	***			-0.351	*
Female	0.077		0.118		-0.048		-0.073	
Aged 18 to 24 years	0.458	**	0.618	***	-0.132		-0.119	
Aged 25 to 34 years	0.233	*	0.277	**	-0.149		-0.159	
Aged 45 to 54 years	-0.080		-0.096		0.068		-0.006	
Aged 55 to 64 years	-0.037		-0.116		0.314	***	0.230	*
Aged 65 to 74 years	0.119		0.023		-0.013		-0.113	
Aged 75 years plus	0.289	**	0.191		-0.160		-0.258	
Indigenous	-0.020		-0.084		-0.359		-0.253	
Born overseas in a main English-speaking country	-0.014		-0.048		0.000		-0.009	
Born overseas in a non-English speaking country	0.054		0.064		-0.077		-0.079	
Speaks a language other than English at home	0.263	**	0.147		-0.154		-0.198	
Has not completed Year 12 or post-school qualification	0.280	**	0.241	*	0.086		0.081	
Has a post graduate degree	-0.046		-0.005		-0.046		-0.059	
Has an undergraduate degree	-0.049		-0.046		0.253	**	0.268	**
Has a Certificate III/IV, Diploma or Associate Degree	0.111		0.062		-0.066		-0.078	
Lives in the most disadvantaged areas (1st quintile)	0.321	***	0.354	***	-0.186	*	-0.220	*
Lives in next most disadvantaged areas (2nd quintile)	0.225	*	0.211	*	-0.127		-0.141	
Lives in next most advantaged areas (4th quintile)	0.040		-0.013		-0.078		-0.098	
Lives in the most advantaged areas (5th quintile)	0.013		-0.028		0.011		-0.027	
Lives in a non-capital city	0.032		0.008		-0.040		-0.020	
Cut-point 1	-0.439	***	-0.813	***	-2.045	***	-2.380	***
Cut-point 2	0.751	***	0.406	***	-1.236	***	-1.548	***
Cut-point 3	2.255	***	1.917	***	0.338	***	0.047	***
Sample size	1,550		1,469		1,538		1,457	

Source: ANUpoll, January and April 2021.

Notes: Probit Regression Model. The base case individual is female; aged 35 to 44 years; non-Indigenous; born in Australia; does not speak a language other than English at home; has completed Year 12 but does not have a post-graduate degree; lives in neither an advantaged or disadvantaged suburb (third quintile); and lives in a capital city. Coefficients that are statistically significant at the 1 per cent level of significance are labelled \*\*\*; those significant at the 5 per cent level of significance are labelled \*\*, and those significant at the 10 per cent level of significance are labelled \*

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## Endnotes

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<sup>1</sup> Source: <https://ourworldindata.org/covid-vaccinations>

<sup>2</sup> The first seven of these response categories were randomised.

<sup>3</sup> [https://www.pewresearch.org/science/wp-content/uploads/sites/16/2021/03/PS\\_2021.03.05\\_covid-19-vaccines\\_TOPLINE.pdf](https://www.pewresearch.org/science/wp-content/uploads/sites/16/2021/03/PS_2021.03.05_covid-19-vaccines_TOPLINE.pdf)

<sup>4</sup> <https://www.bloomberg.com/graphics/covid-resilience-ranking/>