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Who wants to get boosted? COVID-19 vaccine uptake in Australia in January 2022

ANU Centre for Social Research and Methods

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25th February 2022

Acknowledgements

The authors would like to thank a number of people who were involved in the development of the ANUpoll questionnaires, including Diane Herz, Dr Benjamin Phillips, Dr Paul Myers, Matilda Page, Diana Nguyen, Anna Lethborg and Charles Dove from the Social Research Centre, and Professor Ian McAllister from the ANU. Financial support for the ANU COVID-19 Impact Monitoring Survey Program has been provided by the Australian Institute of Health and Welfare.

The survey data is available for download through the Australian Data Archive (doi:10.26193/2MX3D0).

Abstract

In October 2021, the Australian Government commenced the rollout of COVID-19 booster vaccines, making them available to adults who had previously received two primary doses. Despite the wide availability of booster vaccines to eligible adults, take-up has remained relatively low. Using data from the tenth longitudinal COVID-19 Impact Monitoring Survey, conducted in January 2022, we examine the COVID-19 booster and primary vaccine take-up within Australia.

The results firstly show that females and younger Australians are less likely to have received the booster dose, in contrast to males and older Australians respectively. When controlling for a number of factors (including a proxy for booster eligibility), we find that younger Australians, those with lower levels of education, and those living in disadvantaged areas were less likely to have received a booster. Finally, when examining the association between booster hesitancy in January, and first-dose hesitancy in August 2021, we show that while there is a high level of consistency in first-dose and booster hesitancy, there has been some level of variation over time. In particular, males, young Australians, Aboriginal and Torres Strait Islander Australians, those born overseas, and those born in disadvantaged areas were more likely to have reduced hesitancy for booster vaccines, compared to the first-dose. At the same time, conversion was lower for who in low-income households and those who spoke a language other than English at home. This paper highlights that in order to increase the level of the Australian population vaccinated with a COVID-19 booster, policy needs to consider ways to encourage take-up of under-vaccinated groups.

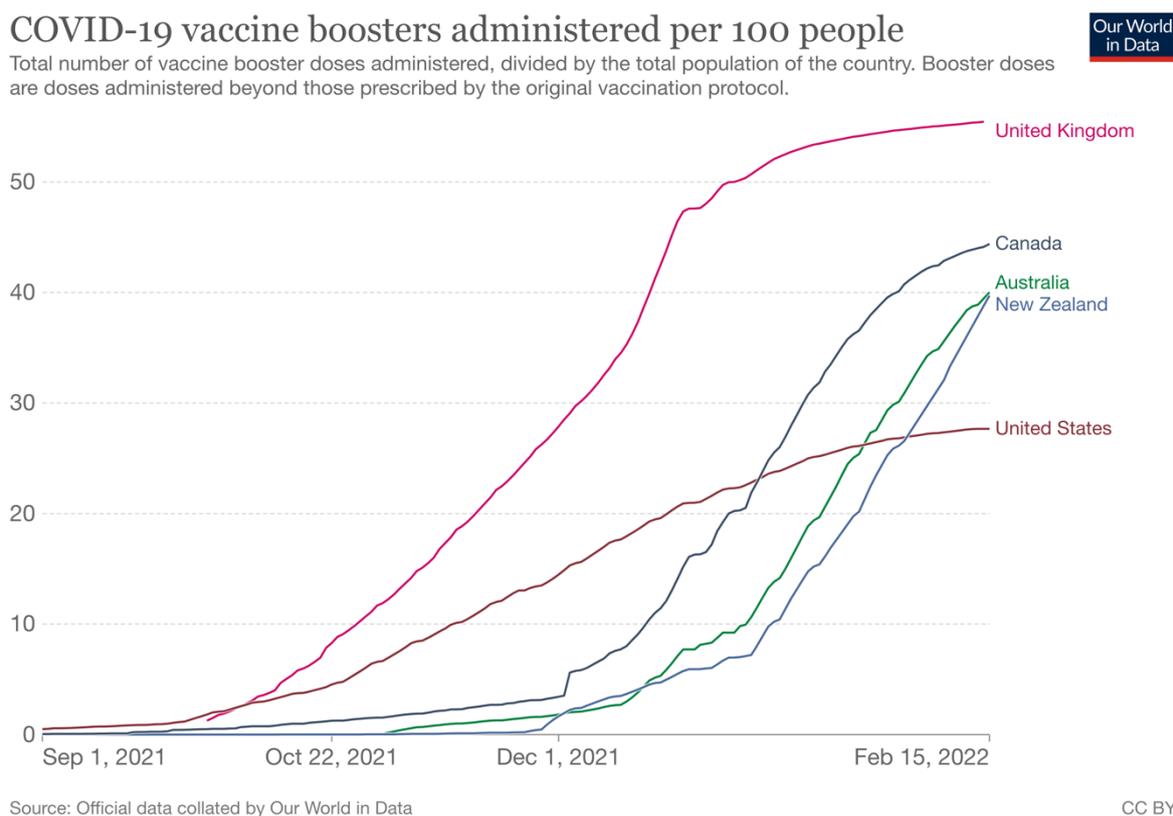
1 COVID-19 infection and vaccination in Australia

Australia's COVID-19 booster vaccine rollout has adapted considerably since it was first announced in October 2021. Severely immunocompromised adults were eligible for a third vaccine dose from 11th October¹, and from 8th November, all individuals aged 18 and over who received their second dose six or more months prior were eligible for a booster vaccine². To help reduce the spread of the Omicron variant in early 2022, the interval between a person's second dose and the booster was subsequently reduced to four months on 4th January³, and three months on 31st January⁴. Young people aged 16 and over were eligible for a booster shot three months after their second dose on 3rd February 2022⁵.

Initial evidence on the effectiveness of the booster vaccines came largely from Israel, which experienced a high case-load of the more severe Delta strain in mid-2021. The research from Israel showed that from 12 days after the booster date, confirmed infection was lower in those who had received a booster by a factor of 11.3, and severe illness was lower by a factor of 19.5, compared to those who hadn't received any booster (Bar-on et al., 2021). This finding was further verified through analysis of administrative data in Israel by Barda et al. (2021). A large number of further studies have since highlighted the effectiveness of a COVID-19 booster vaccine on COVID-19-related outcomes in a range of countries throughout the world (e.g. Voysey et al., 2021; Andrews et al., 2021; Mattiuzzi & Lippi, 2022; Rosenberg et al., 2022).

Relative to a number of comparable countries, Australia has had a reasonably high rate of booster uptake (Figure 1), especially considering the slow commencement to the initial vaccine roll-out. Expressing the cumulative number of boosters administered (defined as those doses beyond that prescribed by the original vaccination protocol), amongst the main English-speaking countries, the UK has far and away the highest cumulative number given with 55.5 boosters per 100 people administered, as of mid-February. The United States, on the other hand is lagging quite far behind with 27.7 booster doses administered per 100 people. Canada, Australia and New Zealand have similar rates (between 40 and 45 doses per 100 people), with Canada appearing to be leveling off in a similar way to the UK, but Australia and New Zealand both still increasing.

Figure 1 COVID-19 vaccine boosters administered per 100 people



Translating the boosters administered into individual uptake, there were 10.3 million eligible Australians, aged 16 years and over, who had received more than two doses (as of 16th February 2022).⁶ This is almost exactly half of the population 16 years and over, though it should be kept in mind that there are many adults who still wouldn't be eligible for a booster as the time elapsed since their first dose is too short. There are still, however, a very large proportion of adult Australians who are eligible for a booster, but have not yet done so. Leaving aside those who are not eligible, for some others this may reflect a belief that they are sufficiently protected from their initial doses. The experience of the first two doses (particularly side effects) may also have made some reluctant to seek out a third dose.

Whatever the reasons for the reluctance, low booster uptake may be putting groups of the population at risk of infection, hospitalisation and even mortality. This has particularly been the case during late December to mid-February as the number of cases of COVID-19 in Australia has increased to some of the highest rates in the world, due in combination to a relaxation of a number of restrictions, and the greater level of transmission of the Omicron variant.

In January 2022, the Social Research Centre on behalf of the ANU Centre for Social Research and Methods, undertook the January 2022 wave of the ANUpoll series of surveys, which forms part of the ANU Centre for Social Research and Methods' COVID-19 Impact Monitoring survey program (the tenth survey as part of the program). Respondents are from the Life in Australia™ panel, Australia's only probability-based source of online and offline survey participants.

The January 2022 survey collected data from 3,472 Australians aged 18 years and over. The data collection occurred between the 17th and 31st of January 2022, with 61.5 per cent of the

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eventual sample completing the survey between the 18th and 20th of January. The vast majority (96.4 per cent) of interviews were completed online, with 3.6 per cent being completed over the phone. More details on the survey are available in Appendix 1. The survey data is available for download through the Australian Data Archive⁷.

Surveys have also been conducted with the same group of respondents since January and February 2020, just before the COVID-19 pandemic started in Australia. Combined, data from these surveys allows us to track how outcomes have changed for the same group of individuals from just prior to COVID-19 impacting Australia, as well as during the most impactful times for the country.

Of the January 2022 sample, 2,233 respondents (64.3 per cent) had completed the October 2021 survey, with a further 375 respondents (10.8 per cent) having completed a previous COVID-19 survey. The remaining 864 respondents (24.9 per cent) had not completed a previous survey.

Based on this wave of data collection, and linking responses to previous waves, the aim of this paper is to better understand the characteristics associated with COVID-19 booster uptake, and the relationship between booster and first-vaccine hesitancy. The structure of the remainder of the paper is as follows. Firstly, we will outline descriptive statistics on booster/third dose uptake in Australia, examining variation by age and sex. We will then examine the determinants of both booster and first-dose uptake, before assessing the relationship between booster and first-dose hesitancy.

2 Booster and vaccine uptake

Respondents in our January 2022 survey were asked 'Have you received a vaccine to prevent COVID-19' with only 4.8 per cent of adult Australians saying that they have not received at least one dose. There is also only a further 1.0 per cent of Australians who have received one dose but not two, leaving roughly 19-in-20 Australians having completed the original vaccination protocol.

Of those Australians who had received at least two doses, less than half have received a third or booster dose. Specifically, 41.5 per cent of Australians aged 18 years and over were estimated to have received a third or booster dose, compared to 52.8 per cent of adult who have received two doses only.

By now, as all adults in Australia have had a chance to obtain a COVID-19 vaccine if they would like one, there are few differences in first/second dose uptake by age and sex. In our data, there are no age groups that have a significantly different rate to any other age groups, though it should be noted that the administrative data cited earlier that has much more precise estimates for particular age ranges does find differences of a few percentage points across the age distribution, with young Australians appearing to have lower vaccination rates. We also observe this in our data with those aged 25 to 34 years having lower uptake, but this difference is not statistically significant.

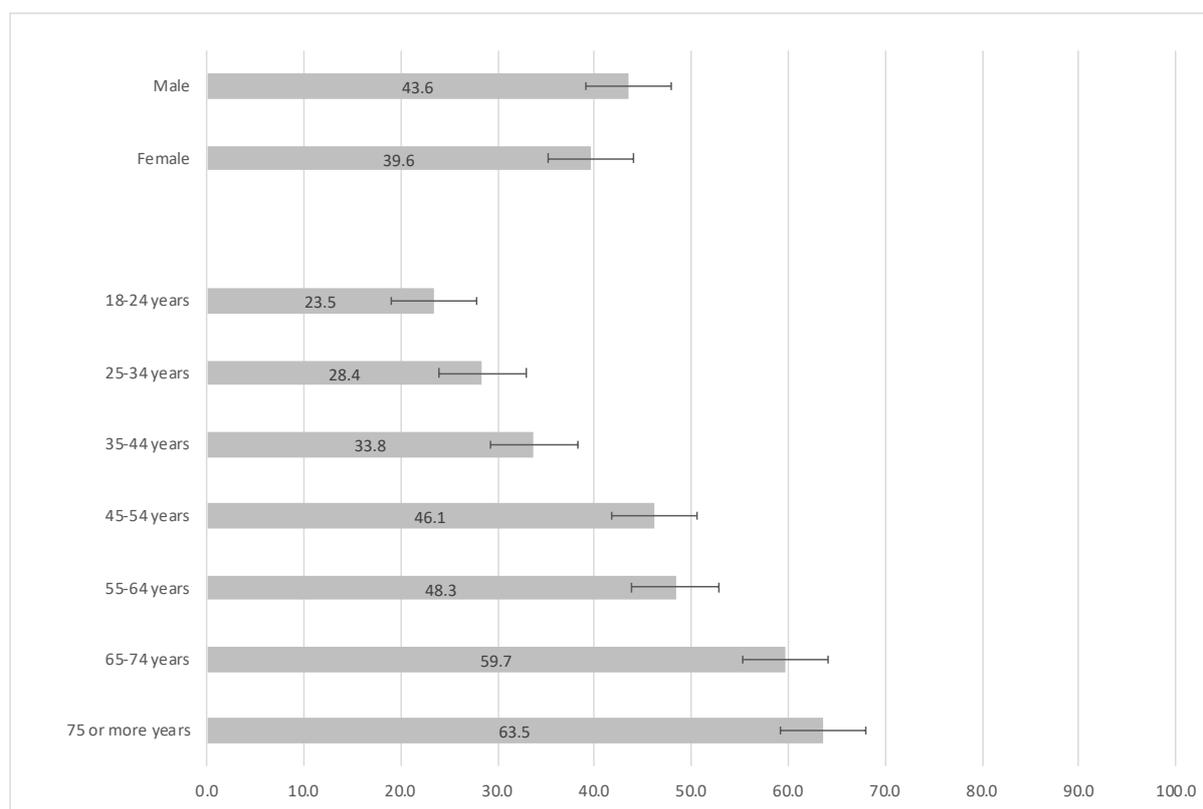
We do find, however, that there are some differences in the proportion of Australians who have received a booster/third dose (Figure 2). Females appear to be less likely to have received a booster – 39.6 per cent compared to 43.6 per cent, with the difference statistically significant at the 10 per cent level of significance (p-value = 0.057).

There are also significant differences by age. Booster/third dose uptake as a percentage for

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those aged 75 years and over (63.5 per cent) is more than two-and-a-half times that of those aged 18 to 24 years (23.5 per cent). There is a reasonably consistent age-gradient between these two upper and lower age groups with older age groups having a higher booster rate than all younger age groups (though the differences aren’t always statistically significant). It should be noted that while this may in part be due to fewer younger Australians being eligible for the COVID-19 booster, given that they were eligible for the primary doses much later in 2021 compared to older Australians, we continue to find this effect even when controlling for months since primary doses, as shown in Section 3.2.

Figure 2 Booster/third-dose vaccination rates by age and sex – January 2022.



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

Source: ANUpoll: January 2022.

3 Determinants of vaccine uptake

Although Australia in January 2022 had a high level of vaccination both compared to earlier in 2021, and relative to a number of other comparable countries, there are still a minority of Australians who have not received any COVID-19 vaccine. If these individuals are spread evenly across the population (geographically and socially), then the immunity boost from interacting with others who are vaccinated and therefore less likely to shed the virus would lead to some health benefits. Furthermore, these unvaccinated individuals would have less of a negative health impact on others, as those they interacted with would mostly be vaccinated themselves. However, if there are groups in the population with consistently low levels of vaccination, then they themselves would be at greater risk and they would be putting others at risk.

In Table 1 of Appendix 2, we analyse in detail the factors associated with vaccine uptake. Because the dependent variable takes one of two values (vaccinated versus unvaccinated) a binary probit model is estimated. Results are presented in the table as marginal effects, or the

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difference in the predicted probability of being vaccinated for an individual with that characteristic compared to the baseline characteristics, holding all else constant. In Table 2, we repeat the analysis with the probability of having been boosted as the dependent variable. The main difference between the two sets of models is that when analysing booster uptake we include an additional variable for the number of months since the respondent received their first vaccine dose.

3.1 First dose probability

In Model 1, we include a basic set of demographic, socioeconomic, and geographic variables. Controlling for other characteristics, young Australians and older Australians in our sample were more likely to have been vaccinated. Unlike in previous waves of data collection, there were no differences in vaccine uptake by Indigenous status or by broad country of birth with those born overseas in a non-English speaking country, if anything, having a higher uptake (though the difference is not statistically significant). Previous analysis from earlier in the vaccine roll-out found a lower uptake for this group.

Differences by education remain, with those who have not completed Year 12 or who have a non-degree qualification (Certificate I-IV or Diploma) having lower uptake. The largest differences in the model are, however, by household income. Those individuals who live in a household in the lowest quintile (\$213 per week to \$613) are significantly and substantially less likely to have been vaccinated than the middle quintile. Those in the top income category have a higher vaccination probability.

One way to interpret the marginal effect is that someone with the base-case characteristics is estimated to have a 0.040 chance of **not** being vaccinated. Holding constant all other characteristics, this rises to 0.155 for someone in the lowest income group, almost four times the proportion of people unvaccinated. While the vast majority of those in the low-income group are vaccinated, there are sufficient numbers of unvaccinated to have serious concerns regarding their health and wellbeing outcomes.

Controlling for household income, those who live in the most disadvantaged areas have a slightly higher vaccine uptake. There were no differences for the other groups. In terms of socioeconomic status, it is individual or household characteristics which are most relevant. Jurisdiction also matters though, with those who live in states/territories that were not as directly impacted by the Delta-wave in mid 2021 less likely to have been vaccinated.

In the second model in Table 1, we control for the source of information regarding COVID-19 that the respondent used. There were six potential sources, with respondents able to answer that they used multiple sources of information. We use responses from October 2021 to control to a certain extent for reverse causality, though it is of course quite possible that people seek out a certain source of information because it reinforces their own existing vaccination status (motivated reasoning). This does mean, however, that the sample size is much smaller than for Model 1 and is restricted to the longitudinal sample. The base case individual gets information from 'Official government sources (e.g. Federal or State Government websites, Chief Medical Officers)' only, with a variable for those who do not use any of the sources of information, as well as one each for the five other sources of information.

Those who do not obtain any information about COVID-19 have a substantially lower probability than the base case. This group is by definition going to be very hard to reach and may be opting out of COVID-19 information. However, it does highlight that even two years into the pandemic, it is important for governments and the community to keep reaching out

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to those who may be otherwise resistant.

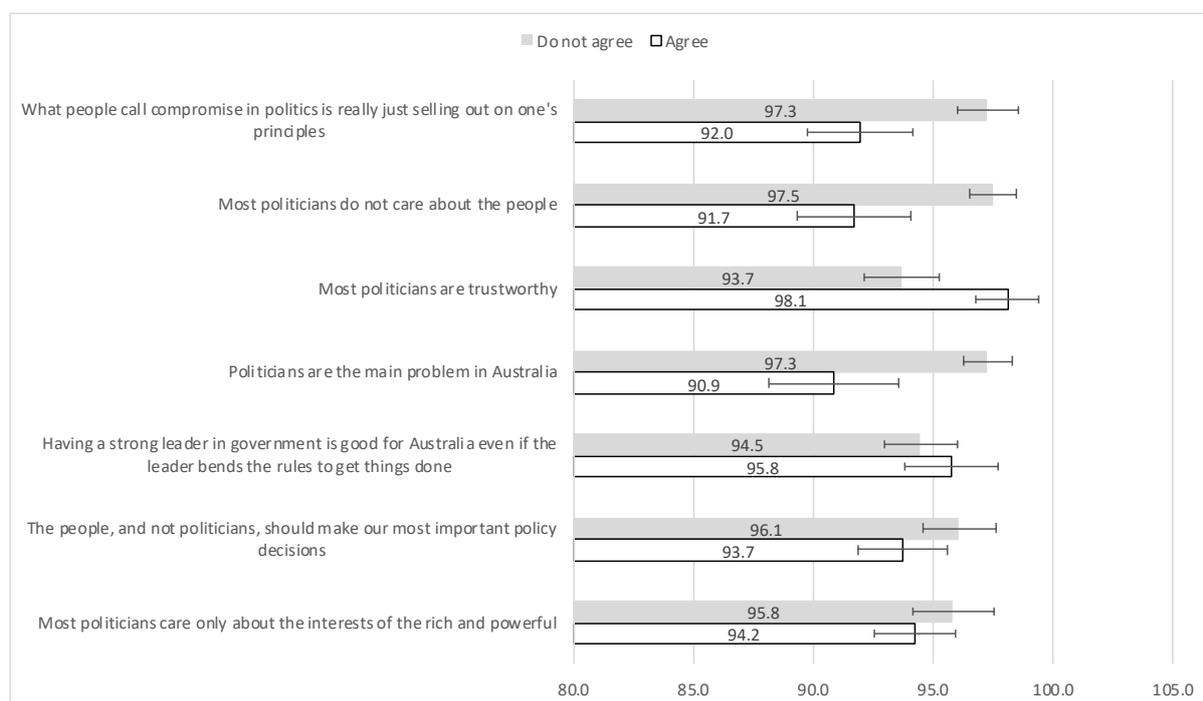
Those who listen to professional advice are more likely to have been vaccinated, highlighting the ongoing role of health professionals in supporting vaccination. By contrast, those who receive their information from family and friends, and particularly from social media, are less likely to have been vaccinated. While it is not possible to draw causal links, these results highlight the ongoing risk of these informal sources for those who are still yet to have been vaccinated.

In the third and final model, we include a variable that captures support for what could broadly be classified as populist attitudes. Once again, these questions were asked in October 2021 and therefore we are restricted to the longitudinal sample. The populism index is based on seven questions⁸ with values for 1 if the person strongly disagrees with the statement and 5 if the person strongly agrees (apart from one question that is reverse coded). The minimum potential value for the additive index is therefore 7, indicating a low level of populist attitudes, with a maximum value of 35, indicating a high level of populist attitudes. Mean value for those in the longitudinal sample is 22.3 with a standard deviation of 5.7.

Results from the analysis suggest that those who are more likely to support populist-related views are significantly less likely to have been vaccinated than those who don't. Specifically, compared to the base case with the mean value, a one-standard deviation increase in the additive populism index is associated with a 0.027 decrease in the probability of having been vaccinated.

Figure 3 below shows that not all populist related attitudes have the same association with vaccine uptake. There are three statements where those who agree with the statement do not have a significantly different vaccination rate at the 5 per cent level of significance than those who do not agree (which includes the neutral category): Having a strong leader in government is good for Australia even if the leader bends the rules to get things done; The people, and not politicians, should make our most important policy decisions; and Most politicians care only about the interests of the rich and powerful. The other four statements all have a large and strong association: What people call compromise in politics is really just selling out on one's principles; Most politicians do not care about the people; Most politicians are trustworthy; and Politicians are the main problem in Australia.

Figure 3 Vaccine uptake (in January 2022) by views on statements related to populism in October 2021



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

Source: ANUpoll: October 2021 and January 2022.

3.2 Booster probability

At the current point in time, policy related to first dose vaccination has been very much focused on the small per cent of Australians who have had every opportunity to be vaccinated, but have either chosen not to, or have been unable to. It would be problematic to ignore this group and not listen to their reasons or concerns, but ultimately the general Australian population has very wide vaccine coverage. Policy related to booster or third dose probability is, however, in quite a different situation. As discussed earlier, and evidenced through administrative data, there are still a large proportion of Australians who have not received a booster dose, with many of these individuals likely to have waning immunity from their first two doses.

In Table 2, we replicate the models from the previous sub-section, focusing on the probability of having received a booster or third dose, conditional on having received at least two doses. The explanatory variables are the same as in the previous analysis, with the exception of controlling for the number of months that it had been by January 2022 since the person received their first dose. This variable is used as a proxy for eligibility, which we are not able to measure directly in the data, and is positive and statistically significant in each of the three models.

Even controlling for the number of months since first dose, young Australians (aged 18 to 24 years) are less likely to have received a booster dose. Older Australians, on the other hand, and particularly those aged 65 years and over, are much more likely to have received a booster/third dose.

Although the difference is not quite statistically significant (the p-value is 0.108), there is some evidence that Aboriginal and Torres Strait Islander Australians are less likely to have received a booster dose than the non-Indigenous population. There were no differences, however, by

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broad country of birth and whether or not a person speaks a language other than English at home.

Education has a strong association with booster/third dose uptake. Those who have not completed Year 12 are significantly less likely to have received a booster/third dose compared to those who have completed Year 12, and those who have a post-graduate degree are significantly more likely to have had a third dose than those who have no post-school qualifications. One of the more interesting findings from the analysis is that there is a very flat income gradient. Those in the top income quintile have a higher probability than the rest of the distribution, but there are no other differences.

Area-level characteristics also have quite a different association. There are large differences by the socioeconomic characteristics of the area (more advantaged areas tend to have higher uptake), but there are no demonstrable differences by broad jurisdiction.

The results presented in Table 2, when compared to those in Table 1, suggest that there are somewhat different determinants of booster/third dose uptake than there are for first dose uptake. This is true whether we look at current first dose uptake, or when we look at previous analysis (August or October 2021) when first dose vaccination was much lower. Putting this another way, it is not necessarily going to be the case that the groups that were willing to get their first and second dose will be likely to get their booster/third dose.

We also find quite different findings in Models 2 and 3 of Table 2 compared to the analysis discussed previously. When analysing booster uptake, those who do not utilise any sources of information for COVID-19 have far and away the lowest probability of booster uptake. There are, however, no differences for the other sources of information, apart from those who get their information from radio and tv compared to official sources only. It would appear, at least from this data, that low booster/third dose uptake is due to a lack of information, rather than misinformation (which appeared to be the case with first dose uptake).

There also does not appear to be a strong relationship with the populism index and the probability of third dose/booster. This suggests, at least to a certain extent, that low rates of booster uptake are not due to active resistance to government policy/recommendations, but rather because people either do not have that much information about the need for boosters/third dose or because they have made a judgement that it is not necessary for them.

4 Relationship between booster and first dose hesitancy

In the January 2022 survey, respondents who had not yet received a booster or third dose but had received their first or second dose were asked 'If a COVID-19 booster vaccine was recommended, would you...?', with four possible response options. A very high proportion of the sample (65.4 per cent) said that they definitely would get the booster. This is a little lower than when the same category of respondents were asked in October 2021 (71.9 per cent) showing that those who remain without having received a booster or third dose are a little more hesitant than previously.

A further 23.1 per cent said that they probably would get the vaccine leaving only 3.9 per cent who said they definitely wouldn't and 7.6 per cent who said they probably wouldn't. These latter two percentages have increased since October 2021 from 1.3 per cent who said they definitely wouldn't and 4.7 per cent who said they probably wouldn't. Combined, we can conclude that many of those who were willing to get a booster/third dose when asked previously have already received one and that those who remain without a booster/third dose

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are from the more hesitant group.

In Figure 4 we look even further back in time and compare the current booster uptake and willingness with the first dose uptake and willingness in August 2021. At that point in time, 57.3 per cent of our weighted sample had received at least one COVID-19 vaccination with 2.6 per cent saying that they definitely would not get a vaccine when eligible, 3.7 per cent saying they probably would not, 11.6 per cent saying they probably would, and 24.9 per cent saying they definitely would. Linking the August 2021 and January 2022 data longitudinally (at the individual level) Figure 4 gives the per cent of each of these August 2021 sub-groups by their January 2022 vaccination status.

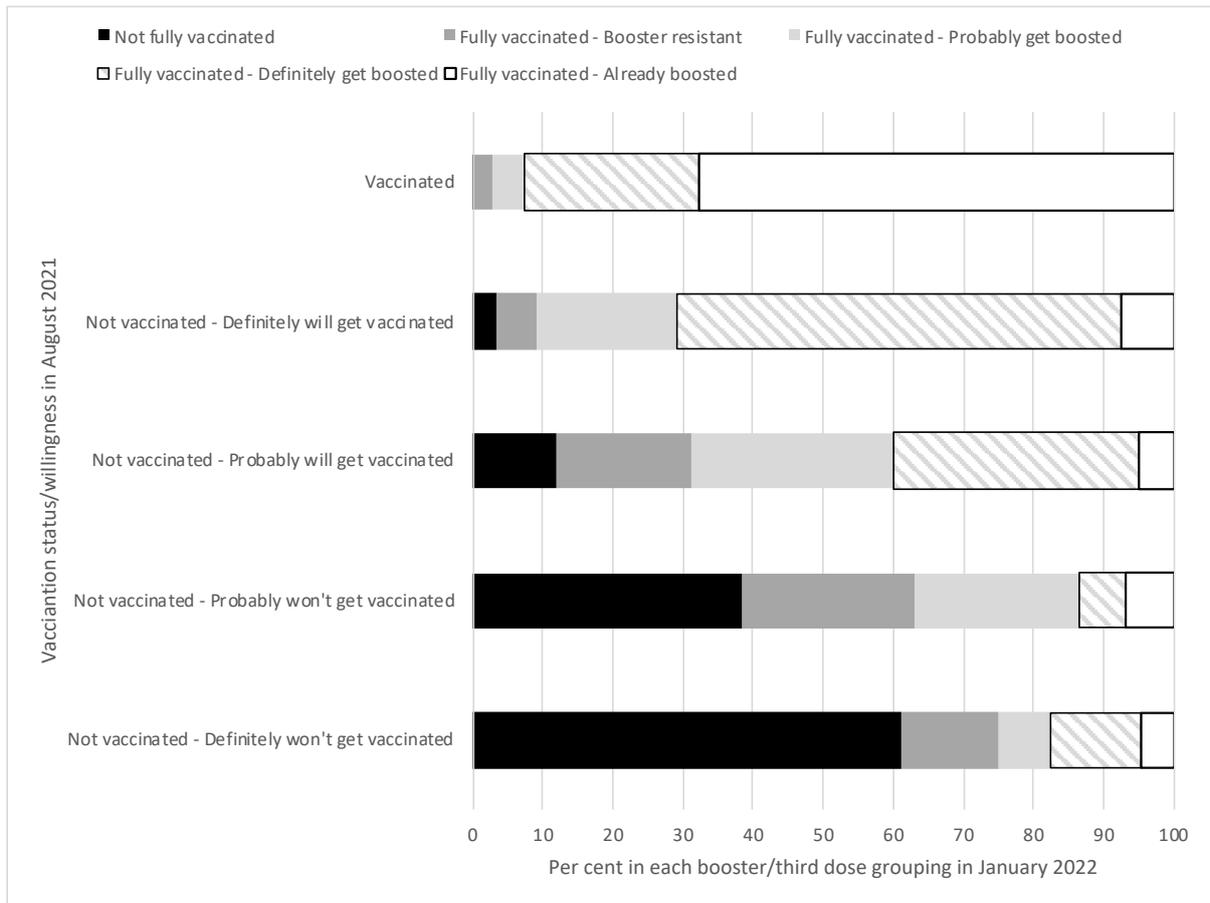
The first bar in Figure 4 shows that (by definition) there were essentially no people who were vaccinated in August 2021 but not vaccinated in January 2022. Of this group, 67.6 per cent had received their booster or third dose, which, although high, is far from the full 100 per cent of that sample that you would expect if all those who were eligible opted to do so. An additional 25.1 per cent said that they would definitely get boosted if eligible, which given it was at least 5 months since the August survey, implies that they either do not think they are eligible or have not found the time to organise their booster/third dose.

The second bar is for those who in August 2021 were not vaccinated but said that they definitely would get vaccinated when eligible. For this group, only a small percentage (7.4 per cent) have received their booster/third dose with the vast majority (63.6 per cent) having now received their second dose and saying that they definitely will receive their booster/third dose when eligible. A further 19.9 per cent say that they will probably get boosted, which combined shows a high ongoing willingness for this group. There is a small proportion of those who were highly willing to get vaccinated in August 2021 but are now hesitant to get a booster/third dose in January 2022 (5.5 per cent when we combine the definitely and probably not groups) and an even smaller group (3.6 per cent) who have yet to receive their original vaccine schedule.

The next two groups are those who were mildly hesitant in August 2021 (probably won't or probably will get vaccinated). Amongst these two groups, there remains a significant minority who are not fully vaccinated (38.3 and 11.9 per cent respectively) with low rates of booster uptake and moderate rates of booster hesitancy.

The final bar in Figure 4 is for those who said that they definitely wouldn't get a COVID-19 vaccine. This previous hesitancy has translated to a certain extent into lack of vaccination, with 61.0 per cent not having received their first two scheduled doses. There were, however, some who have now become less hesitant and who have either received their booster/third dose (4.7 per cent) or who say that they definitely or probably will get a booster/third dose when eligible (12.9 and 7.4 per cent respectively). 14.1 per cent are still hesitant towards their booster/third dose though, despite having received their first two doses.

Figure 4 Booster/third dose uptake and willingness in January 2022 by first dose uptake and willingness in August 2021



Source: ANUpoll: August 2021 and January 2022.

Combined, there are a number of key points from the results presented in Figure 4. First, there is a strong overlap between what a respondent says with regards to first dose uptake/willingness and what they end up doing with first/second dose, booster/third dose and their related reported willingness. People are somewhat consistent with their views through time.

The second point though is that this consistency isn't complete. On the positive side, there are a minority of people who were hesitant about their first dose in mid-2021 but have now received their first two doses and have either received their booster/third dose or are willing to do so. Although the sample sizes are small (only 84 individuals in our linked sample), preliminary analysis suggests that within the hesitant group in August 2021 (those who said they probably wouldn't or definitely wouldn't get vaccinated) there is greater conversion for males, young Australians, Aboriginal and Torres Strait Islander Australians, those born overseas and those in disadvantaged areas. These changes may reflect some policy success. There is less conversion, however, for those who were in low-income households or who spoke a language other than English at home, pointing to some ongoing policy challenges.

There is also conversion in the opposite direction. Of those who had been vaccinated in August 2021, those born overseas in an English-speaking country, those who spoke a language other than English at home, and those who lived in regional parts of New South Wales and Victoria were less likely to have received their third/dose booster by January 2022. This presents a clear

ongoing policy challenge to ensure full vaccination for these groups.

5 Concluding comments

While this paper was being written, there have been a number of weeks of protests in Canberra focusing on the vaccination and broader COVID-related policies of the Federal, as well as State/Territory governments.⁹ Most of these protestors were from outside of Canberra and many were not anti-vaccination per se, but rather protesting against the perceived or expected requirement of Australians to have received the COVID-19 vaccine in order to work in certain industries or to participate in certain activities. This highlights that while vaccine uptake is high across the country, there are still a substantial number of people who have resisted getting vaccinated themselves or for their family, or who do not feel that vaccination should be a requirement legislated by government.

Those who have not been vaccinated are concentrated amongst certain groups in the country. Four overlapping groups that we have identified as having low vaccination rates are those with low levels of education; in households with low income; those who receive their information about COVID-19 from friends, family or social media; and those who are in support of views related to populism. Given the recently released data from the ABS which shows that deaths from COVID-19 are also concentrated amongst those in disadvantaged areas¹⁰ (an imperfect proxy for some of the characteristics in our analysis), our analysis highlights the continued need to reach out to those groups with low vaccination rates in new and evidence-based ways, to take their concerns seriously, and to reduce ongoing barriers for these groups.

Our analysis also suggests that there are lower rates of booster/third dose uptake than would ideally be the case, given the data discussed earlier in the paper on the impact of waning immunity and the inadequacy of two vaccine doses for protection. Even amongst those who in our longitudinal survey had been vaccinated as of August last year (and are therefore eligible for a booster/third dose), around two-in-five respondents were yet to have received the additional protection.

Conditional on the length of time since a person received their first dose, there are some groups in the population who were less likely to have received a booster/third dose. This includes young Australians, Aboriginal and Torres Strait Islander Australians, those with low education, and those who live in a disadvantaged area. It would appear also that those who are disengaged from any form of information regarding COVID-19 are far and away the least likely to have received a booster/third dose. It would appear from our analysis that it is lack of information, rather than active resistance that is (at this stage) driving low booster/third dose coverage.

Ultimately, what the analysis in this paper highlights is that despite success at the broad national level in terms of the vaccine roll-out there are still groups who are under-vaccinated, and that there is no guarantee that the first/second dose success will be replicated with booster/third dose. COVID-19 vaccination policy in Australia still has a lot of work to do.

Appendix 1 About the survey

Data collection for the January 2022 ANUpoll commenced on the 17th of January 2022 with a pilot test of telephone respondents. The main data collection commenced on the 18th of January and concluded on the 31st of January. The final sample size for the survey is 3,472 respondents. 61.9 per cent of the sample had completed the survey by the 20th of January and the average interview duration was 21.5 minutes.

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 3.2 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 4,199 respondents were invited to take part in the survey, leading to a wave-specific completion rate of 82.7 per cent. Taking into account recruitment to the panel, the cumulative response rate for this survey is around 7.0 per cent. Of those who had completed the January 2022 survey, 2,233 respondents (64.3 per cent) had completed the October 2021 survey

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 (2021/430).

Appendix 2 Regression Tables

Table 1 Factors associated with having had at least one vaccine dose, marginal effects January 2022

Explanatory variables	Model 1		Model 2		Model 3	
	M.Effect	Signif.	M.Effect	Signif.	M.Effect	Signif.
Populism index					-0.027	***
Does not get COVID-19 information from any sources			-0.592	***		
Professional advice			0.033	***		
Family or friends			-0.037	*		
Newspapers and magazine			0.015			
Radio and TV			0.009			
Social media			-0.059	***		
Female	0.010		0.018		0.005	
Aged 18 to 24 years	0.033	**	0.031		0.007	
Aged 25 to 34 years	0.005		-0.013		-0.016	
Aged 45 to 54 years	0.010		-0.032		-0.007	
Aged 55 to 64 years	0.013		-0.023		-0.004	
Aged 65 to 74 years	0.033	***	0.010		0.010	
Aged 75 years plus	0.031	***	-0.013		0.004	
Indigenous	-0.025		-0.048		-0.011	
Born overseas in a main English-speaking country	-0.002		0.013		0.005	
Born overseas in a non-English speaking country	0.016		0.035	*	0.011	
Speaks a language other than English at home	-0.007		-0.046		-0.018	
Has not completed Year 12 or post-school qualification	-0.039	*	-0.020		0.018	
Has a post graduate degree	-0.014		-0.018		-0.005	
Has an undergraduate degree	-0.019		-0.032		-0.010	
Has a Certificate III/IV, Diploma or Associate Degree	-0.035	*	-0.024		-0.013	
Lives in the most disadvantaged areas (1st quintile)	0.026	***	0.048	***	0.015	***
Lives in next most disadvantaged areas (2nd quintile)	0.013		0.020		0.005	
Lives in next most advantaged areas (4th quintile)	0.016		0.034	**	0.011	*
Lives in the most advantaged areas (5th quintile)	0.015		0.036	**	0.011	
Lives in capital city other than Sydney/Melbourne/Canberra	-0.030	**	-0.015		-0.014	
Lives in non-capital city in NSW/Victoria	-0.035	*	-0.021		-0.016	
Lives in non-capital city in NSW/Victoria	-0.023		-0.021		-0.015	
Lives in lowest income quintile	-0.115	***	-0.104	**	-0.079	***
Lives in second income quintile	-0.037	*	-0.010		-0.019	
Lives in fourth income quintile	0.012		0.022		0.000	
Lives in fifth income quintile	0.024	**	0.028		0.007	
Probability of base case	0.960		0.947		0.982	
Sample size	3,140		1,990		1,984	

Source: ANUpoll, October 2021 and January 2022

Notes: Probit Regression Models. The base case individual is male; 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); lives in Sydney, Melbourne or Canberra; and lives in a household in the middle quintile of the income distribution. 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 *.

Who wants to get boosted? Australian's vaccine uptake in January 2022

Table 2 Factors associated with having had a booster/third dose, for those with at least two doses, marginal effects January 2022

Explanatory variables	Model 1		Model 2		Model 3	
	M.Effect	Signif.	M.Effect	Signif.	M.Effect	Signif.
Populism index					-0.014	
Does not get COVID-19 information from any sources			-0.136	**		
Professional advice			0.022			
Family or friends			-0.028			
Newspapers and magazine			0.033			
Radio and TV			0.057	**		
Social media			0.012			
Number of months since first dose	0.051	***	0.036	***	0.045	***
Female	0.023		0.005		0.006	
Aged 18 to 24 years	-0.077	*	-0.031		-0.059	
Aged 25 to 34 years	-0.031		-0.023		-0.040	
Aged 45 to 54 years	0.101	***	0.050		0.061	
Aged 55 to 64 years	0.121	***	0.062	*	0.086	**
Aged 65 to 74 years	0.231	***	0.147	***	0.185	***
Aged 75 years plus	0.289	***	0.218	***	0.268	***
Indigenous	-0.104		-0.064		-0.084	
Born overseas in a main English-speaking country	-0.026		0.006		0.001	
Born overseas in a non-English speaking country	-0.008		0.001		0.006	
Speaks a language other than English at home	0.046		-0.010		-0.011	
Has not completed Year 12 or post-school qualification	-0.059	*	-0.003		-0.010	
Has a post graduate degree	0.100	**	0.146	***	0.169	***
Has an undergraduate degree	0.042		0.082	**	0.090	**
Has a Certificate III/IV, Diploma or Associate Degree	-0.005		0.046		0.050	
Lives in the most disadvantaged areas (1st quintile)	0.011		0.017		0.013	
Lives in next most disadvantaged areas (2nd quintile)	0.064	*	0.033		0.039	
Lives in next most advantaged areas (4th quintile)	0.080	**	0.068	**	0.076	*
Lives in the most advantaged areas (5th quintile)	0.074	**	0.051		0.063	
Lives in capital city other than Sydney/Melbourne/Canberra	0.013		0.021		0.024	
Lives in non-capital city in NSW/Victoria	0.020		0.011		0.018	
Lives in non-capital city in NSW/Victoria	0.000		0.022		0.027	
Lives in lowest income quintile	-0.002		0.030		0.026	
Lives in second income quintile	0.003		-0.002		-0.011	
Lives in fourth income quintile	0.003		0.013		0.011	
Lives in fifth income quintile	0.074	**	0.073	**	0.074	*
Probability of base case	0.247		0.154		0.233	
Sample size	2,966		1,879		1,872	

Source: ANUpoll, October 2021 and January 2022

Notes: Probit Regression Models. The base case individual is male; 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); lives in Sydney, Melbourne or Canberra; and lives in a household in the middle quintile of the income distribution. 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

¹ <https://www.health.gov.au/ministers/the-hon-greg-hunt-mp/media/booster-shot-for-severely-immunocompromised-australians>

² <https://www.health.gov.au/ministers/the-hon-greg-hunt-mp/media/start-of-covid-19-booster-vaccination-program>

³ <https://www.health.gov.au/ministers/the-hon-greg-hunt-mp/media/interval-between-primary-course-of-covid-19-vaccination-and-booster-dose-further-reduced>

⁴ <https://www.health.gov.au/ministers/the-hon-greg-hunt-mp/media/four-million-additional-australians-eligible-for-their-booster-dose>

⁵ <https://www.health.gov.au/ministers/the-hon-greg-hunt-mp/media/eligible-australian-kids-16-can-now-get-a-booster>

⁶ <https://www.health.gov.au/sites/default/files/documents/2022/02/covid-19-vaccine-rollout-update-16-february-2022.pdf>

⁷ doi:10.26193/2MX3D0

⁸ Respondents are first asked 'Please tell me the extent to which you agree or disagree with the following statements...?' with the following statements given:

- What people call compromise in politics is really just selling out on one's principles
- Most politicians do not care about the people
- Most politicians are trustworthy (reverse coded)
- Politicians are the main problem in Australia
- Having a strong leader in government is good for Australia even if the leader bends the rules to get things done
- The people, and not politicians, should make our most important policy decisions
- Most politicians care only about the interests of the rich and powerful

⁹ <https://www.abc.net.au/news/2022-02-12/thousands-of-protesters-against-mandatory-vaccination/100825478>

¹⁰ <https://www.abs.gov.au/articles/covid-19-mortality-australia>