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Majority acceptance of vaccination and mandates across the political spectrum in Australia

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Abstract

The Australian government has recently introduced some of the strictest vaccination mandates in the world. In light of international studies warning that public opposition to vaccination mandates could undermine public consensus about the value of vaccination, we conduct an original study of more than 1000 Australians on attitudes towards both vaccination and mandates. We find that, in contrast to similar studies in the United States and the United Kingdom, support for both vaccination and mandates is very high, with no significant opposition from any political subgroup. Apart from attitudes towards vaccination itself, there appears to be no separate attitudinal dimension that generates political opposition to vaccination mandates in Australia. This shows the importance of national political context in debates about vaccination policy.

Keywords

political culture, public health, vaccination, vaccination mandates

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Introduction

Childhood vaccination is a contentious political issue in many wealthy democracies, despite widespread acceptance of its benefits and necessity as a public health measure. The phenomenon of 'vaccine hesitancy', wherein parents worry about vaccine ingredients and safety or believe that their children might not need vaccinations because they live healthy lifestyles (Dube et al., 2013), is becoming a ubiquitous feature of life in high income countries, with a recent 67-country study finding the lowest rates of vaccine

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confidence in Europe (Larson et al., 2016). Not all parents who are vaccine hesitant reject vaccines; in fact, most of them still vaccinate. A smaller portion of hesitant parents actively refuse some or all vaccines (Leask, 2011). Australia is a typical example of a country where childhood vaccination generates a heated and polarising political discourse, even though most of the population appears to support it (Chow et al., 2017; Leask, 2015a). Because very high levels of childhood vaccination coverage are needed to sustain 'community protection' (Pickering et al., 2018) – a collective level of immunity protecting individuals who for various reasons cannot be directly protected by their own vaccination – even a small amount of opposition from parents can create risks for public health, especially where non-vaccination is regionally clustered.[1] The perceived threat from non-vaccinating parents in Australia has led to regular outbursts of scorn and outrage, with one major newspaper calling non-vaccinators 'baby killers' and referring to enclaves of low vaccination as 'risky hippie hotbeds' (Chambers, 2015; Harvey, 2015). Many non-vaccinating parents, on the other hand, see the vaccinating mainstream as a hostile and unhealthy mass that threatens their rights to make their own decisions about their families (Attwell et al., 2018a). In this environment, vaccination researchers have warned about the potential for antagonistic debates to alienate parents who may be hesitant about vaccinating (Leask, 2015a).

Australia's 'No Jab, No Pay' policy, which from 2016 made some family welfare payments contingent on full vaccination,[2] is at the forefront of a global trend towards more restrictive vaccination mandates, which have also been implemented recently in France, Italy, and various American states (Attwell et al., 2018b; Opel et al., 2017). While vaccination mandates may be potent tools for raising vaccine coverage, some researchers worry that government compulsion may cause a backlash, dividing opinions on political lines and weakening the overall pro-vaccination consensus (Beard et al., 2017; Kahan, 2014; Kahan, 2013). This article seeks to establish and explain the dimensions of public opinion towards vaccination and vaccination policy in the Australian context, paying particular attention to whether there are fissures in political consensus that could be further widened by restrictive vaccination mandates. To do so, we use original survey data of over 1000 respondents from the University of Western Australia's Values Project. This fills significant gaps in political research on vaccination policy in Australia, where so far there has been relatively little survey research on attitudes towards any aspect of vaccination, and no systematic investigation into the relationship between attitudes to vaccination and attitudes to vaccination policy. Research from the United States and the United Kingdom suggests this is an important line of enquiry because both countries display sharp drops in support for vaccine mandates compared with support for vaccination itself, and much more partisan political division in the former than the latter in the American case.

We find quite a different picture in Australia, where support for the mandatory vaccination policy is much higher and highly correlated with support for vaccination itself. There is little difference between supporters of various parties on either question, and little evidence for attitudinal divisions informed by any other major social or demographic cleavage. While we have no claims to make about the efficacy or proportionality of the Australian mandatory vaccination policy, our research indicates a highly stable consensus in opinion about vaccination in Australia, opinion that is much more accommodating towards mandatory regimes than what is found in some other liberal democracies. This highlights the importance of political context in the reception of policy responses to public health issues. While most wealthy democracies face similar problems around vaccination, different

dynamics of policy history, political culture, and political competition may create widely varying perceptions about how these problems should be addressed.

This article proceeds as follows. We first review findings from US and UK literatures on public attitudes towards vaccination and vaccination mandates, identifying areas in the Australian context that require investigation. Then, we describe the survey data we have collected and used, and the methods we have chosen to analyse it. We present the results of this analysis, with the central findings that support for both vaccination and vaccination mandates are very high, without the divergences and inconsistencies found in the United States and the United Kingdom. We conclude by discussing the implications for both politics and policy in Australia.

Literature review

Almost all readily accessible research on public support for mandatory vaccination hails from the United States, where state-level school entry mandates operate, but most permit religious and/or personal belief exemptions. A consistent finding in American research is that patterns of support for vaccines as a health measure are different from patterns of support for government policies that compel citizens to vaccinate their children. While support for the former is generally very high, support for the latter is usually lower, with important consequences. As one recent study notes with regard to the removal of personal belief exemptions for school entry mandates in that state, 'Although California's predominantly liberal populace generally tolerates assertive public health policies, a vocal libertarian minority ardently opposes vaccination mandates' (Mello et al., 2015). Kahan (2014) has warned that vaccination advocates should keep vaccines and mandates separate in order to avoid inflaming opposition to vaccines based in distrust of government compulsion. In a large study, he finds that positive views of vaccines are very high across political subgroups in the United States, and views of vaccines are not linked to any broader issues around the politics of science or culture. However, this high affective orientation towards vaccines 'should not be expected to translate readily into support for stricter vaccination mandates'. Attitudes towards vaccination mandates in Kahan's (2013) sample are politically polarised by broader attitudes towards government regulation, and thus Kahan urges 'extreme caution' about campaigns to reduce or eliminate exemptions to vaccination mandates, which risk polarising attitudes towards vaccination itself.

McCoy (2018) finds different social sources of support for two items in Pew surveys conducted in the United States, one asking about vaccine safety and the other asking about vaccine policy. While about 10% of respondents to a 2015 survey said they thought vaccines were unsafe, more than 30% of respondents to a 2014 survey said they did not believe parents should be required to vaccinate their children. McCoy suggests this divergence could help explain weak or contradictory results in previous studies that have failed to properly separate the two factors. A 2017 Pew study found a smaller but still significant divergence on the two questions, with 10% of respondents saying they believe the risks of vaccines outweigh the benefits, but 17% saying they believe parents should be able to make their own decisions. Republicans and Democrats in this study were equally likely to assess vaccines as safe and equally likely to support compulsory vaccinations. However, people who identify as 'conservative' were more likely to support parental choice in vaccinations, which is consistent with the findings of other studies (Funk et al., 2017).

There is relatively little research from outside the United States that explores attitudes towards vaccines and vaccination mandates in tandem. In 2013, a YouGov survey asked

a sample of 1765 British adults whether they believe the Measles, Mumps, and Rubella (MMR) vaccine is safe, and whether they would support making it compulsory. (Vaccination in the United Kingdom is currently entirely voluntary.) This survey thus focused on only one (combined) vaccine instead of a national or state-based schedule of recommended childhood vaccines. However, MMR was a pertinent vaccine on which to focus since it has retained a controversial reputation in some quarters after Andrew Wakefield linked it to autism in a now retracted study (Rao and Andrade, 2011). The divergence in respondents' answers here was even more pronounced than the one found in similar American studies. While 88% of respondents said the MMR vaccine was 'completely', 'very', or 'quite' safe compared to 6% who said it was unsafe, just 55% of respondents supported making the vaccine mandatory, compared to 28% who opposed it. But the underlying politics were very different from the United States. The largest political differences came in questions about the safety of the vaccine, with 99% of Conservative voters declaring it safe, compared to 85% of Labour voters, 84% of Liberal Democrat voters, and only 72% of UKIP voters. Meanwhile, there was little to no difference between different political groups on the question of compulsion. 57% of both Conservative and Labour voters support compulsory MMR vaccination, compared to 54% of Liberal Democrats and 48% of the anti-government UKIP voters, substantially less than other groups but nothing like the huge gap on the issue of vaccine safety (YouGov, 2013).

The much lower overall levels of support for mandatory vaccination in the United Kingdom reflect the fact that vaccination has not been mandatory there for more than a century, and introducing any measures of compulsion would be a major policy change, an imposition that equally (or nearly equally) antagonises voters across the spectrum of British politics. The relative lack of difference between the political groups (except for UKIP) suggests that, at least now, the 'libertarian' attitudinal dimension does not differentiate the major parties. The difference between Conservative and Labour voters on the issue may be an after-effect of Labour Prime Minister Tony Blair's notorious reluctance to disclose whether his own son had received the MMR vaccine in 2001.

The differences between the United States and Britain suggest that patterns of political attitudes towards vaccination do not simply repeat themselves across countries, even quite similar ones. The policy histories, political cultures, and party systems of different countries create rich political contexts that shape different patterns of support for vaccination and vaccination mandates, patterns that have important consequences for vaccination advocates and policymakers. Prior to this study, we have lacked sufficient data on these questions about Australia, whose bold, 'top-down' approach to mandatory vaccination has been met with mixed responses from vaccination, medical, and public health experts (Beard et al., 2017; Gannon, 2017). In general, there have been relatively few surveys of Australian attitudes towards any aspect of vaccination. A nationally representative survey of vaccination attitudes conducted in 2012 was the first since 2001 (Chow et al., 2017). While this survey found that 90% of parents believed vaccines to be safe and 92% were fully compliant with the national vaccine schedule, around a fifth of parents expressed concerns around features such as vaccine safety testing, the number of vaccines on the schedule, and the impact on children's immune systems. However, this survey did not include questions about attitudes towards mandatory vaccination.

In 2017, a survey of 1945 parents by the Australian Child Health (ACH) Poll found 93% preferred their children to have all the vaccines on the national schedule, and 72% supported (state-based) 'No Jab, No Play' policies that exclude children from childcare facilities if they are not fully vaccinated (Rhodes, 2017). This survey went into valuable

detail about parents' attitudes towards and fears about vaccination, finding around 30% of parents had some concerns about vaccines even if they were committed to full vaccination. However, it is limited in other ways. While the attitudes of parents are particularly important from the perspective of achieving high vaccination coverage, in democracies, parents are not the only relevant citizens when it comes to vaccination policy, and they may not be representative of broader opinion about mandates that governments must take into account. The poll also does not contain other attitudinal or political instruments that may shed light on parents' reasons for opposing vaccine mandates even if they fully vaccinate their own children. Because of the admirable complexity of this study, it is hard to compare it to other surveys in other countries that use blunter instruments to assess attitudes towards the safety of vaccines. While there appears to be a familiar divergence between personal preferences for vaccination (93%) and support for vaccine mandates (72%), the overall slice of the population that has at least some concerns about vaccine safety (30%) is similar to the size of the population that opposes vaccine mandates in the form of state-based childcare entry mandates. Unfortunately, we do not have the data available to assess whether this is substantially the same population.

Other studies find higher levels of support for mandatory vaccination in Australia. In 2017, Australian National University's (ANU's) Australian Beliefs and Attitudes Towards Science Survey found 85% of respondents agreed with the statement: 'All parents should be required to vaccinate their children', while only 12% said parents should be allowed to decide. (We note that the nature of the 'requirement' is not specified.) A report on the poll noted the difference with Pew's finding that 30% of Americans opposed mandatory vaccination (Lamberts, 2017). In 2015, a Galaxy Poll commissioned by News Corp found that 86% of respondents supported compulsory vaccination, including 92% of Liberal–National Coalition voters, 84% of Labour voters, and 61% of Greens supporters (Hansen, 2015). This poll was released and widely reported by News Corp in conjunction with a campaign to increase whooping cough vaccinations in the wake of the death of Perth baby Riley Hughes, and shortly before the government announced the removal of conscientious objector exemptions via 'No Jab, No Pay'. Despite its wide press coverage, very little information was made available about this poll, including its sample size or question wording (Leask, 2015b). The reasons for higher support for mandatory vaccination in these polls than in the ACH Poll may include (a) the use of nationally representative samples rather than just parents, (b) the use of non-specific questions about mandatory vaccination rather than descriptions of specific punitive measures, and (c) the fact that the ACH Poll asked detailed questions about vaccine safety, which may have primed the responses of parents on vaccine mandates. The absence of questions about vaccine safety, or vaccines generally, from the ANU and Galaxy polls means we have no way of assessing the extent to which attitudes about vaccination, as opposed to other factors, drive attitudes towards mandatory vaccination.

While much excellent research on attitudes towards vaccination has been done in the Australian context, the relative absence of studies comparing attitudes towards vaccination itself and mandatory vaccination leaves us with questions about the extent to which opinion in Australia diverges or converges where these issues are concerned and about what factors cause a divergence if one exists. From a political perspective, it is important for us to have a grasp of these dynamics. Vaccination advocates need to know whether to heed Kahan's warning not to conflate vaccination with vaccination mandates at the risk of causing a broader anti-vaccination backlash and whether attitudes are at risk of the kind of political polarisation which has had disastrous effects in other areas. This brings

us to a new source of data, the University of Western Australia's Values Project. The ongoing longitudinal Values Project brings together teams of international academics to examine the impacts of individual attributes on behaviours.

Data

Researchers recruited Australian adults aged 18 years and older to participate in the study through a large, well-established online panel provider. While not a random sample of the Australian population, researchers made efforts to ensure the sample included individuals representing a wide range of demographics (e.g. age, gender, location, income, political preferences, religiosity). Respondents were paid small token sum for their participation in the study.

Respondents completed a series of short surveys for the wider project. Relevant to this study, respondents disclosed personal demographics and provided answers to two specific questions regarding attitudes towards vaccination policy. Respondents reported their age (year of birth), gender (male and female, no additional options were available to respondents in the present study), whether or not they have children, level of education (on an 8-point scale, with an 'other' option), household income (on a scale of AU$5000 increments, including the option 'I would rather not say'), political preference ('if an election was held tomorrow, which party would you be most likely to vote for?'), and religiosity (on an 8-point scale from not at all religious to very religious). The first question about vaccination policy read: 'The Federal Government's "No Jab, No Pay" policy withholds certain benefits and payments from families who don't fully vaccinate their children. Do you agree with this policy?' We put this question first, so that participants would consider it on its own merits, rather than being primed in any way by the second question. We elected for specificity with regard to the policy and its consequences for non-compliance, rather than asking a general question using terms such as mandatory, compulsory, or required. This enabled us to measure attitudes towards the actual policy in place in Australia, while also drawing more general conclusions about attitudes towards mandatory vaccination. The second question asked participants if they agreed that vaccination was safe, effective, and necessary. These terms or similar terms have been used as the basis of other studies into attitudes towards vaccination (Leask et al., 2008; Larson et al., 2016), and we employed them here as a proxy to demonstrate support for vaccination as a practice, but distinct from mandatory vaccination. While safety, efficacy, and necessity have been parsed separately in the past, combining them provides a succinct opportunity for participants to reflect on the key features of vaccination as an acceptable public health intervention. Does it harm people? Does it work? Do we need it? These questions employed a 5-point Likert-type scale, from *Strongly Agree* to *Strongly Disagree*.[3] Each of these questions was cross-tabbed with each demographic variable and subject to chi-square analyses to determine differences in acceptance of vaccination and mandates across demographic groups.

As the questions above were separated into short surveys and were completed by respondents at their convenience, not all respondents disclosed all personal demographics. In total, 1809 respondents answered the questions about their attitudes to vaccination policies. For the majority of these respondents, there were also age, gender, and postcode information. More than half of these respondents also reported some additional demographics ($n = 1037$; Tables 1, 2, and 3). A proportion of respondents within the larger sample reported all the demographics under investigation ($n = 528$) and were therefore able to be included in the subsequent regression analyses.

Table 1. Sample demographics.

Demographic	Percentage of respondents
Gender	
Male	31.1
Female	64.9
Missing	4.0
Age in years	
18–34	18.7
35–49	21.7
50–64	30.6
65+	27.8
Missing	1.3
Education	
High school	33.7
Some tertiary	35.8
Undergraduate	16.3
Postgraduate	10.1
Missing	4.1
Annual household income	
Under AU$50,000	30.6
AU$50,000–AU$99,999	19.0
Over AU$100,000	13.0
Prefer not to answer	14.0
Missing	23.7
Dependent children under 18 years of age	
Yes	14.5
No	65.0
Missing	20.5
Religiosity (0–7 scale)	
Not at all religious (0)	34.8
1–2	20.4
3–4	22.2
5–6	15.3
Very religious (7)	5.2
Missing	2.1

Analysis and discussion

The questions we are primarily interested in are, first of all, whether there is a US-style or UK-style divergence in opinions about vaccination and opinions about vaccination mandates in their local policy form; second, if there is a divergence, what demographic, social, and political variables may help account for it. First, we compare the overall distributions of answers to the two questions.

The key finding here is that support for both vaccination and the current strong legislation punishing non-vaccination is very high throughout the Australian population. Only 4% of respondents disagree that vaccines are safe, necessary, and effective, while just 9% of respondents oppose 'No Jab, No Pay'. This gap is very small compared to that seen in other countries, as is the overall level of disagreement with either vaccination or Australia's

Table 2. Do you agree that vaccinations are safe, necessary, and effective?

Response	Percentage of respondents
Strongly agree	63.1
Agree	24.5
Neither agree or disagree	8.1
Disagree	2.2
Strongly disagree	2.0

N = 1809.

Table 3. The Federal Government's 'No Jab, No Pay' policy withholds certain benefits and payments from families who do not fully vaccinate their children. Do you agree with this policy?

Response	Percentage of respondents
Strongly agree	64.1
Agree	19.6
Neither agree or disagree	7.6
Disagree	3.8
Strongly disagree	4.9

N = 1809.

vaccination mandates. There may well be a status quo bias in attitudes given that 'No Jab, No Pay' had been in effect for 2 years by the time the survey took place; whatever the reason, these data suggest Australians have a noticeably higher level of comfort with mandatory vaccination (as manifested in this specific policy) than either their British or American counterparts. This phenomenon may also be explicable on the basis of Australia's vaccine policies since 1998 linking Federal financial family entitlements to vaccine uptake, albeit with the 'conscientious objection' operating until 2016 (Ward et al., 2013). These older policies functioned as nudges (Thaler and Sunstein, 2008), orienting parents towards vaccination to receive entitlements but with an option to refuse, such that 'No Jab, No Play' did not change the experience of the vast majority of Australian parents who were already complying with the vaccination schedule (Attwell et al., 2018b).

Answers to these questions correlate at a very high level of .78. 15% of respondents had weaker levels of agreement with 'No Jab, No Pay' than with vaccination itself. However, only 2% of respondents expressed actual disagreement with 'No Jab, No Pay' while expressing agreement that vaccines are safe, necessary, and effective. Thus, there is a small divergence, but one that is probably not large enough to be politically consequential or to be a major source of concern for vaccination advocates. This adds to the overall international picture of divergence being dependent on political context at the national level.

Political views and acceptance of vaccination and mandates

What is the political context in Australia? Our data provide little evidence that attitudes towards vaccination vary between supporters or voters of different political parties in Australia ($\chi^2 = 72.75$; $p = .001$). This replicates Kahan's finding in the United States that

Table 4. Do you agree that vaccinations are safe, necessary, and effective?

Response	ALP	Liberal	Green	PHON	National	Independent/ other	Not sure
Strongly agree	65.9	73.4	58.5	64.8	76.9	62.9	60.2
Agree	25.7	18.7	28.3	23.1	19.2	18.6	23.4
Neither	5.1	5.0	9.4	5.5	3.9	8.6	14.1
Disagree	1.9	1.4	3.8	3.3	0	5.7	0.8
Strongly disagree	1.4	1.4	0	3.3	0	4.3	1.6

$\chi^2 = 72.75$; $p = .001$. Australian Labor Party (ALP) = 214; Liberal = 139; Green = 53; Pauline Hanson's One Nation (PHON) = 91; National = 26; independent/other = 70; not sure = 128 (Total $n = 721$).

Table 5. The Federal Government's 'No Jab, No Pay' policy withholds certain benefits and payments from families who do not fully vaccinate their children. Do you agree with this policy?

Response	ALP	Liberal	Green	PHON	National	Independent/ other	Not sure
Strongly agree	64.5	74.8	54.7	72.5	80.8	61.4	60.2
Agree	20.6	16.6	26.4	14.3	15.4	15.7	19.5
Neither	6.1	3.6	7.6	4.4	3.9	7.1	13.3
Disagree	3.3	0.7	9.4	1.1	0	8.6	4.7
Strongly disagree	5.6	4.3	1.9	7.7	0	7.1	2.3

$\chi^2 = 84.21$; $p < .001$. Australian Labor Party (ALP) = 214; Liberal = 139; Green = 53; Pauline Hanson's One Nation (PHON) = 91; National = 26; independent/other = 70; not sure = 128 (Total $n = 721$).

vaccination safety has not become a partisan issue. Tables 4 and 5 use the Values Project's question: 'if an election was held tomorrow, which party would you be most likely to vote for?'

Voters of the biggest parties (especially the Coalition parties) are slightly more likely than voters of smaller parties to accept vaccination, but in all categories, overall agreement with vaccines is above 80%. Differences between parties are slightly more pronounced on the question of whether respondents support 'No Jab, No Pay' ($\chi^2 = 84.21$; $p < .001$). The strongest supporters are voters for the Liberal and National Parties, which initiated the legislation. Nonetheless, it is clear from these data that the policy is overwhelmingly popular among all categories of voters, with only voters for independents and 'other' parties dropping below 80% agreement (around 77%). Unlike in the United States and to some degree the United Kingdom, there does not appear to be substantial right-wing opposition to mandatory vaccination. Even though One Nation leader Pauline Hanson has been openly sceptical of vaccines and once described 'No Jab, No Pay' as 'a dictatorship' (Koziol, 2017), 87% of One Nation voters support No Jab No Pay (although they also have the highest levels of strong disagreement at 8%).

Greens are more reluctant than other groups to offer strong support for 'No Jab, No Pay'; this corresponds to lower levels of strong agreement that vaccines are safe, necessary, and effective, although for both questions, overall agreement is still above 80%. This lesser enthusiasm among Greens, even within a context of general acceptance, may

Table 6. Do you agree that vaccinations are safe, necessary, and effective?

Response	Respondents with children under 18 years of age	Respondents without children under 18 years of age
Strongly agree	60.7	65.0
Agree	24.7	23.4
Neither agree or disagree	8.7	7.3
Disagree	2.7	2.4
Strongly disagree	3.3	1.9

$\chi^2 = 11.98$; $p = .017$. Respondents with children under 18 years of age: $n = 150$; respondents without children under 18 years of age: $n = 674$ (total $n = 824$).

reflect progressives' scepticism of 'Big Pharma' (Berezow and Campbell, 2012), a reluctance to enact punitive measures through the welfare system, and a greater affiliation with 'natural' lifestyle choices that are often, though not universally, associated with vaccine rejection (Attwell and Smith, 2017). However, we should also note the relatively small size of the Greens sample (53 respondents; 7%) which should make us cautious about any inferences.

Given the relatively high levels of consensus in our sample – fewer than 10% of respondents disagree with either proposition – it is likely to be difficult to account for any attitudinal variance that does exist. Nevertheless, some investigation is warranted.

Parenthood and acceptance of vaccination and mandates

While our overall data suggest that acceptance of the safety, efficacy, and necessity of vaccination is very high, we would be worried if scepticism of vaccination were more highly concentrated among parents with young children. It is therefore important to examine our data more closely to see whether acceptance of vaccines and mandates is equally high across consequential subgroups.

In Table 6, we see some small differences in respondents with and without children under the age of 18 years ($\chi^2 = 11.98$; $p = .017$). A smaller number of parents with children strongly agree with the safety and efficacy of vaccines (60.7%, as opposed to 65% for people without children. Overall agreement in both groups is 85% and 88%, respectively. This difference is too small, given our sample sizes (only 150 parents with children), to infer a disparity that could have public health consequences. When examining support for 'No Jab, No Pay' (Table 7) while we see some evidence of difference ($\chi^2 = 12.05$; $p = .017$), overall levels of agreement and disagreement are very similar between groups. Again, the small sample size of parents with children means we should be cautious in interpreting these numbers, but they do suggest that Australian policymakers do not face resistance from a constituency of parents demanding choice in vaccinations.

Age and acceptance of vaccination and mandates

Examining our respondents by age, we again see very little difference between age groups. The youngest respondents are slightly more likely neither to agree nor disagree about vaccination's necessity, safety, and efficacy than the older groups, although almost none disagree at all, and they have the highest rates of strong agreement ($\chi^2 = 16.68$; $p = .034$). Table 8 suggests that there is no reason to believe parents of young children will

Table 7. The Federal Government's 'No Jab, No Pay' policy withholds certain benefits and payments from families who do not fully vaccinate their children. Do you agree with this policy?

Response	Respondents with children under 18 years of age	Respondents without children under 18 years of age
Strongly agree	64.0	65.9
Agree	18.7	19.0
Neither agree or disagree	8.7	6.1
Disagree	1.3	3.7
Strongly disagree	7.3	5.3

$\chi^2 = 12.05$; $p = .017$. Respondents with children under 18 years of age: $n = 150$; respondents without children under 18 years of age: $n = 674$ (total $n = 824$).

Table 8. Do you agree that vaccinations are safe, necessary, and effective?

Response	Age 18–33 years	Age 34–53 years	Age 54+ years
Strongly agree	66.0	61.0	63.3
Agree	19.4	23.7	25.7
Neither agree or disagree	13.6	9.4	5.6
Disagree	1.0	2.3	2.9
Strongly disagree	0.0	3.6	2.6

$\chi^2 = 16.68$; $p = .034$. Age 18–33 years: $n = 103$; age 34–53 years: $n = 308$; age 54+ years: $n = 626$ (total $n = 1037$).

Table 9. The Federal Government's 'No Jab, No Pay' policy withholds certain benefits and payments from families who do not fully vaccinate their children. Do you agree with this policy?

Response	Age 18–33 years	Age 34–53 years	Age 54+ years
Strongly agree	59.2	64.0	64.1
Agree	19.4	17.9	21.1
Neither agree or disagree	12.6	8.8	5.4
Disagree	6.8	2.6	3.2
Strongly disagree	1.9	6.8	6.2

$\chi^2 = 16.89$; $p = .031$. Age 18–33 years: $n = 103$; age 34–53 years: $n = 308$; age 54+ years: $n = 626$ (total $n = 1037$).

be more likely than others to be sceptical of vaccines. Table 9 shows that younger people are slightly less agreeable towards 'No Jab, No Pay' ($\chi^2 = 16.89$; $p = .031$), but the differences are trivial, the small sample size of young people inhibits inference, and the largest pockets of strong disagreement seem to be in the older age groups.

Education level and acceptance of vaccination and mandates

Information deficit models of vaccine hesitancy suggest that those with lower levels of education should be more likely to reject vaccination, either because of a lack of substantive information about the risks and benefits of vaccine or because of less access to

Table 10. Do you agree that vaccinations are safe, necessary, and effective?

Response	High school only	TAFE/diploma	University degree
Strongly agree	62.9	63.1	62.8
Agree	24.9	23.5	25.2
Neither agree or disagree	8.3	7.8	6.2
Disagree	1.7	4.0	1.5
Strongly disagree	2.3	1.6	4.4

$\chi^2 = 11.56$; $p = .172$. High school only: $n = 350$; technical and further education (TAFE)/diploma: $n = 371$; university degree: $n = 274$ (total $n = 995$).

Table 11. The Federal Government's 'No Jab, No Pay' policy withholds certain benefits and payments from families who do not fully vaccinate their children. Do you agree with this policy?

Response	High school only	TAFE/diploma	University degree
Strongly agree	62.9	64.7	63.1
Agree	21.1	18.9	19.7
Neither agree or disagree	8.3	6.5	6.9
Disagree	4.0	2.2	3.7
Strongly disagree	3.7	7.8	6.6

$\chi^2 = 8.79$; $p = .361$. High school only: $n = 350$; technical and further education (TAFE)/diploma: $n = 371$; university degree: $n = 274$ (total $n = 995$).

resources to make sense of conflicting information about vaccination. A 2014 review of literature on vaccine hesitancy refers to information deficit as a 'traditional assumption' but notes that it is now much less favoured than other models (Yaqub et al., 2014). Our data support this move away from information deficit assumptions, as Table 10 shows. There is no statistical difference between any of the levels of education ($\chi^2 = 11.56$; $p = .172$), and no further differences show up if these categories are disaggregated into finer-grained levels (tables available upon request). Table 11 shows similarly negligible differences between educational categories on the question of 'No Jab, No Pay' ($\chi^2 = 8.79$; $p = .361$).

Religiosity and acceptance of vaccination and mandates

The Values Project asked respondents 'how religious would you say you are?' on a scale from 0 (*not at all religious*) to 7 (*very religious*). Respondents are concentrated at the lower end of the scale. In order to look more manageably at the relationship between religiosity and acceptance of vaccination, we collapse this into three categories, with all respondents in the Category 0 as 1 (34.8% of the sample), Categories 1 through 3 as 2 (28.7% of the sample), and Categories 4 and above as 3 (36.5% of the sample). There are reasons to believe that more religious individuals may be less accepting of vaccination as they may be more sceptical of scientific consensus in general, and more trusting of others in their religious community (rather than medical professionals) as sources of advice. According to Table 12, more religious individuals on the whole are slightly less accepting of vaccination than less religious individuals ($\chi^2 = 18.46$; $p = .018$), although the overall

Table 12. Do you agree that vaccinations are safe, necessary, and effective?

Response	Not at all religious	Not very religious	Religious
Strongly agree	63.4	66.8	59.3
Agree	25.5	25.5	22.8
Neither agree or disagree	6.9	4.0	10.9
Disagree	2.2	2.4	2.9
Strongly disagree	1.9	1.3	4.2

$\chi^2 = 18.46$; $p = .018$. Not at all religious: $n = 361$; not very religious: $n = 298$; religious: $n = 378$ (total $n = 1037$).

Table 13. The Federal Government's 'No Jab, No Pay' policy withholds certain benefits and payments from families who do not fully vaccinate their children. Do you agree with this policy?

Response	Not at all religious	Not very religious	Religious
Strongly agree	64.8	70.5	56.9
Agree	19.4	19.1	21.1
Neither agree or disagree	8.0	3.0	9.5
Disagree	3.3	3.4	3.4
Strongly disagree	4.4	4.0	9.0

$\chi^2 = 25.38$; $p = .001$. Not at all religious: $n = 361$; not very religious: $n = 298$; religious: $n = 378$ (total $n = 1037$).

picture is still one of overwhelming support for vaccination among all categories. There are slightly more pronounced, although still fairly muted, religious differences on the question of 'No Jab, No Pay' ($\chi^2 = 25.38$; $p = .001$), shown in Table 13. While 85.2% of 'not at all religious' and 89.6% of 'not very religious' respondents support 'No Jab, No Pay', the more devout third of the sample registers 78% agreement and 12% disagreement. This difference is not surprising given the religious tradition of conscientious objection that was traditionally honoured by Australian vaccination regimes. Elements of Catholic and other religious social teachings would also probably mount objections to the punishment of welfare recipients as a mechanism for public health.

Regression analyses

These tabulations may overlook the confounding effects that these variables have on each other, so in order to test them more rigorously, we conduct a multivariate regression analysis with the ordinal question about the safety and necessity of vaccinations as the dependent variable (a 5-point scale increasing in scepticism). Independent variables are age (by year), gender (1 = *male* , 2 = *female*), the binary variable of dependent children (1) or no dependent children (0) under 18 years of age, an 8-point scale of level of education (with 'other' removed), a scale of household income increasing in AU$5000 increments (with 'I would rather not say' removed), and an 8-point scale of religiosity. The estimation method is ordinary least squares (OLS), and results are in Table 14.

This table suggests some demographic variables have significant effects on acceptance of vaccines, but that these effects are very small and their explanatory power is extremely limited (as indicated by the very low R-squared score of this model, which only explains around 3% of variance). Older people are significantly more likely to believe in the safety

Table 14. Dependent variable is 5-point answer to 'Do you agree that vaccinations are safe, necessary and effective?', increasing in disagreement.

Variable	β (*SE*)	*p* value
Age	−.009 (.003)	.011
Gender	−.018 (.081)	.828
Children under 18	−.042 (.116)	.716
Level of education	.036 (.024)	.138
Household income	−.010 (.004)	.013
Religiosity	.033 (.017)	.059
Constant	1.980 (.299)	.000

$n = 528$; $R^2 = .029$; unstandardised β coefficient; SE = standard error.

Table 15. Dependent variable is 5-point answer to question about No Jab No Pay, increasing in disagreement.

Variable	β (*SE*)	*p* value
Age	−.010 (.004)	.020
Gender	−.048 (.098)	.628
Children under 18 years	−.140 (.141)	.321
Level of education	.024 (.029)	.415
Household income	−.012 (.005)	.009
Religiosity	.043 (.021)	.040
Constant	2.242 (.364)	.000

$n = 528$; $R^2 = .027$; unstandardised β coefficient; SE = standard error.

and efficacy of vaccination, although the substantive effect is tiny (the difference between the oldest and youngest respondents in our dataset would amount to less than .1 on a 5-point scale). Household income has a similarly significant but tiny effect. Religiosity makes respondents significantly less likely to accept vaccines if we use a *p* value of .10 rather than .05, but the difference between the most and least religious on the 5-point scale is just .27. Gender, child status and education make no difference at all. Overall, analysis of demographic variables gives us relatively little insight into why most people favour vaccination and some do not.

Finally, we conduct a similar OLS analysis with the same independent variables, but using the 'No Jab, No Pay' question as the dependent variable. The results are in Table 15.

Again, we see a few statistically significant but very small results, mirroring the results in Table 14. This suggests two important things. First, there is very little (in our data) driving attitudes towards vaccination mandates apart from attitudes towards vaccination itself. Second, because of the general invariance in the Australian public's views on both subjects, we have relatively little leverage to explain the variance that does exist. Richer explanations of non-vaccinating Australians require specific studies of those individuals, rather than nationally representative samples. However, our sample is useful for shedding light on the lack of large scale or party political resistance to Australia's increasingly strict vaccination laws. Not only is belief in the safety and efficacy of vaccination extremely high in Australia, there do not appear to be other dimensional attitudes creating additional resistance to vaccination compulsion. The most likely candidate for a source of

anti-mandate sentiment is religiosity, but, as Table 15 shows, the religiosity coefficient (.042) is only slightly larger than the same coefficient on the vaccination question and only amounts to a difference of .34 between the least and most religious on a 5-point scale.

Conclusion

Mass childhood vaccination programmes have been widely successful in saving the lives of children and adults from preventable disease but have not been free from controversy and doubt. Some governments, seeking to protect or maintain high coverage rates or address pockets of low coverage within larger units of governance, are utilising vaccine mandates in various forms to try and address parental rejection of vaccines. In Australia, such a policy change has arisen in part from attention to areas in which vaccine refusers cluster and disease risks increase. An Australian media poll conducted in 2015 found differences in party political support for 'compulsory vaccination' that would support Kahan's (2014) notion of a (worrying) 'cultural cleavage' around vaccination. Our study, implemented over a year after 'No Jab, No Pay' was introduced and directly describing and naming the policy, found very little party political distinction, or distinction on other cultural grounds. Disagreement with vaccine mandates in the form of the 'No Jab, No Pay' policy may have been slightly more pronounced among Greens and One Nation voters and religious folk, but it was notable that even among these demographics, overall support for the policy was extremely high.

Our study also found that *only* negative beliefs regarding vaccination correlated meaningfully with disdain towards mandatory vaccination, and then only in a small number of individuals. This was a significant difference from US studies, where partisan or values-based preoccupations with individual liberty drove a significant number of individuals supportive of vaccination to reject vaccine mandates. It also differed from the United Kingdom, where large numbers of individuals across the political spectrum oppose vaccine mandates despite supporting vaccines. Why is Australia different, with almost no separation between the two questions? One explanation lies in the longevity of national vaccination mandates in Australia, which in various forms have existed for more than 20 years prior to the recent removal of conscientious objections. This may be an example of path dependence in public policy, where policies generate political 'feedback' that entrench them through acceptance in public attitudes (Pierson, 2000). However, additional explanations are necessary since American states also have long histories of vaccine mandates for school entry, yet the removal of personal belief exemptions in California generated considerably more resistance than the removal of equivalent choice provisions in Australia. This likely reflects an Australian political culture less resistant to regulation by the state and less fearful of 'big government'. In almost all Australian states and territories, cyclists must wear helmets or face fines, and all smokers' choice of cigarettes are obscured by the world's first plain packaging laws. The discourse of 'mutual obligation', employed by the centre-right Liberal party for over two decades, has also accustomed Australians to conditionality of benefits and entitlements (Mendes, 2007). Requirements for welfare recipients to be actively looking for work, abstinent from drugs, and complying with school attendance, accompanied by continued expansion of cashless welfare programmes, conditioned Australians sufficiently that the extension of 'mutual obligation' to 'jabs' in exchange for more middle-class welfare 'pay' did not cause significant ructions on either side of politics. Our findings suggest that, contrary to Kahan's fears

around 'cultural cleavage', Australians are not dividing meaningfully on party political lines when it comes to attitudes towards vaccination *or* parents' freedom of choice to reject vaccines. Uniformly, high support for both vaccination and 'No Jab, No Pay' suggests that the popular policy is likely to remain in place despite critiques from some public health and vaccination experts. It also suggests that while the issue of vaccination will continue to divide the small number of Australians who eschew it from the vast majority who embrace it – with both sides invoking cultural tropes elevating their own position against the other (Attwell et al., 2018a; Chambers, 2015) – this does not risk opening a wider chasm of libertarianism versus communitarianism, as expressed through party politics.

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Notes

1. Australia's rate of complete vaccination coverage for children aged 1 year is 93.8% according to the most recent report of the National Health Performance Authority, covering the years 2015–2016. This high rate of coverage is nonetheless below the 95% required to secure community protection against certain diseases. Some postcodes have far lower coverage rates; the Bellingen area of NSW has estimated 70%–75% coverage, the CBD and Docklands areas of Melbourne have estimated coverage of 75%–80%, and Sydney CBD has estimated coverage of 80%–85%.
2. This policy removed the capacity of parents to lodge a Conscientious Objection form signed by a medical professional and still attain entitlements otherwise linked to children being fully vaccinated. Those who were eligible to receive Family Tax Benefit supplements and Childcare Benefits and Rebates (the latter not means tested) had to have their children fully vaccinated or fall into a far narrower class of exemptions, including medical exemptions (Klapdor and Grove, 2015).
3. We note that conflating safety, effectiveness, and necessity in this way did not allow individuals to register their disagreement with just one of the aspects of vaccination in their response. However, the conflation helped us to capture the participant's general sentiment.

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