



Older Australians' COVID-19 vaccination likelihood and sentiment

December 2021

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Background

On January 30th 2020, the WHO declared the outbreak of the SARS-CoV-2 virus (COVID-19) a Public Health Emergency of International Concern. By end of 2020, the official death toll globally was 1,813,188 with the true number of deaths likely being at least 3 million (1).

People over age 60 are at substantially higher risk of severe illness and death from COVID-19 than younger people. Data from the United States shows that compared with those aged 18 to 29 years, people between 75 and 84 and 85 or older have 200 times and 630 times greater average death rates respectively from COVID-19 (2). Figure 1 from the AIHW provides Australian data from 2020 showing that the chance of dying after contracting COVID-19 increases after age 60 and rises very sharply from age 70 onwards. Prior to age 60, death rates remain below 1% of cases (3).

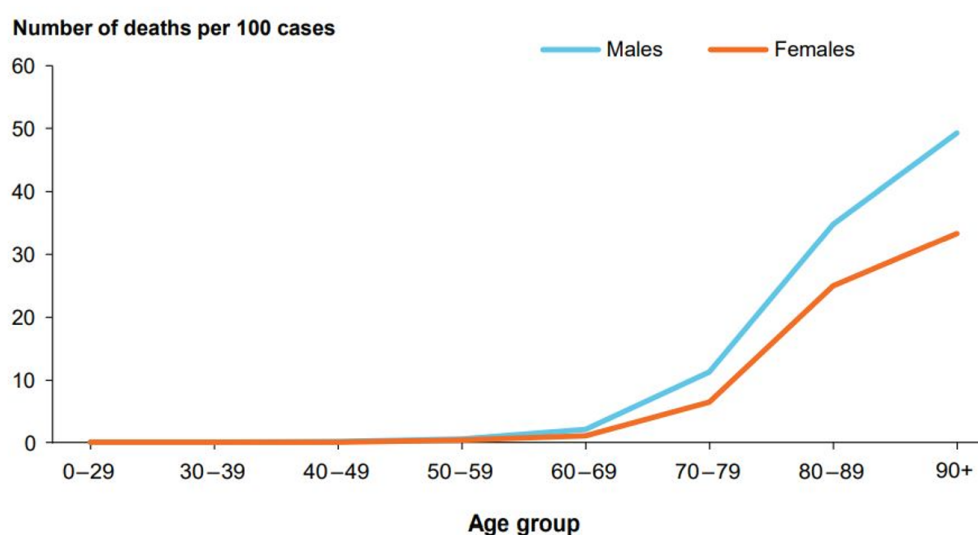


Figure 1 Death rate from COVID-19 as a function of age (4)

Compared to most countries, Australia fared well in controlling the virus due to prompt closure of international borders combined with strict state-based lockdowns, quarantine requirements, public health measures and a strong 'test, trace and isolate' system.

Ideally, these strategies eliminate the transmission of the virus in the community so people can safely resume their pre-COVID lives. New Zealand and parts of Australia were successful in reaching zero COVID cases, however, breaches of quarantine combined with the emergence of the highly virulent Delta strain meant elimination was not feasible in the long term.

Scientists had begun developing a COVID-19 vaccine in early 2020, but it seemed unlikely that a vaccine for use in the population would be available in the short term. Four years was

the quickest a vaccine had been developed previously and that was for the mumps in the 1960s. Nonetheless, by January 2021, there were more than 200 COVID-19 vaccines being developed globally and, of these, fifteen were in late stage 'Phase 3' trials¹.

The unprecedented speed of vaccine development was possible because:

- The creation of the COVID-19 vaccines built on years of previous research into related viruses and vaccine technologies.
- New global and national infrastructures and systems had recently been put in place that supported speedy vaccine development.
- Funding agencies and private philanthropists provided billions of dollars to finance multiple trials simultaneously running in parallel with vaccine manufacture.
- There were high rates of COVID-19 in the population which allowed the effectiveness of vaccines to be evaluated (5).

COVID-19 vaccination programs were being rolled out internationally by the end of December 2020. In Australia, the Pfizer–BioNTech vaccine and the Oxford-AstraZeneca vaccine were provisionally approved by February 2021, with the priority Phase 1a of the COVID-19 National Vaccination Rollout Strategy beginning on February 22nd.

Although vaccines protect the population, their effectiveness in preventing outbreaks is obviously dependent on the capacity and willingness of people to get vaccinated. 'Vaccine hesitancy' is the term used to describe when there is a *"delay in acceptance or refusal of vaccination despite availability of vaccination services"*(6) .

The reasons for vaccine hesitancy are many and varied. These include:

- The degree of trust by individuals or groups in vaccines, healthcare systems and policy makers.
- Perceptions that the disease (in this case COVID-19) poses low or no risk.
- Challenges in accessing the vaccine (7).

In February 2020, vaccine hesitancy data from the Melbourne Institute² showed that 17.3% of Australians said they were not willing to be vaccinated and 14.6% didn't know. The rate

¹ Phase 3 studies are done after a drug has already been shown to have potential benefits that outweigh the hazards of side-effects. Phase 3 trials are carried out using thousands of participants. They aim to show that the new drug is effective for the treatment of a medical condition and safe to use.

² The Vaccine Hesitancy Tracker provides has provided regular updates of vaccine hesitancy sentiment from 2020. It uses "Taking the Pulse of the Nation" data from surveys of 1200 Australians every fortnight about job security, their attitudes towards government policy, and experiences dealing with the Pandemic. The sample is stratified by age, gender and allocation to represent the Australian population (8).

for people aged 65 and over was lower with 9.8% saying they wouldn't get vaccinated and 9.6% saying they didn't know (9).

National Seniors had the opportunity to learn more about older peoples' intentions towards getting vaccinated against COVID-19 by including a question on COVID-19 vaccination likelihood in the National Seniors Social Survey conducted from mid-February until early March 2021. We were particularly interested in people's sentiments toward the vaccines and the vaccination process.

This report presents the results of that survey question. While the survey was conducted in early 2021, the issues have not gone away and in fact have come full circle. At the time of writing this report in December 2021, booster shots are being rolled out for COVID-19 and the Omicron variant is presenting a new round of challenges for vulnerable people, medical researchers and vaccination teams alike. Understanding older Australians' thought processes around COVID-19 vaccination has never been more relevant.

The National Seniors Social Survey (NSSS-9)

Every year, National Seniors conducts an online survey of members' behaviours and views across a range of topics relevant to older people's lives and wellbeing. Insights from the survey support advocacy campaigns to lobby government and are made publicly available to inform the broader community. In February 2021, National Seniors included a question in the NSSS-9 asking about people's likelihood of getting vaccinated once a vaccine was available. The wording of the vaccination question in the NSSS-9 was:

"Now a COVID-19 vaccination will be available and approved in Australia, how likely are you to get vaccinated against the COVID-19 virus?"

Response options were: *Very likely; Likely; Not sure; Unlikely; Very unlikely; Prefer not to say*

Of the 5,430 NSSS-9 participants, 4,498 answered the vaccination likelihood question. Of those who did not answer (n=932) higher proportions were in the youngest (50-59) and oldest age groups (80+), they had less formal education and poorer health (see [Appendix Table 1](#)). A text box accompanied the vaccination likelihood question with the heading "Please tell us more about your answer if you would like to", and 759 people provided a free-text comment. Thematic text analysis (10) was used to identify the overarching themes of the sentiments participants expressed in their comments. See the [Appendix](#) for further description of the thematic text analysis methods.

Results

Figure 2 below shows the proportion of participants in each response category. Three in four seniors said they were "Very likely" to get vaccinated against COVID-19 with a further 10% saying it was "Likely". The proportion nominating "Unlikely" was 1.9% (n=87) and "Very unlikely" was 2.9% (n=132) with 0.4% (n=19) giving a "Prefer not to say" response.

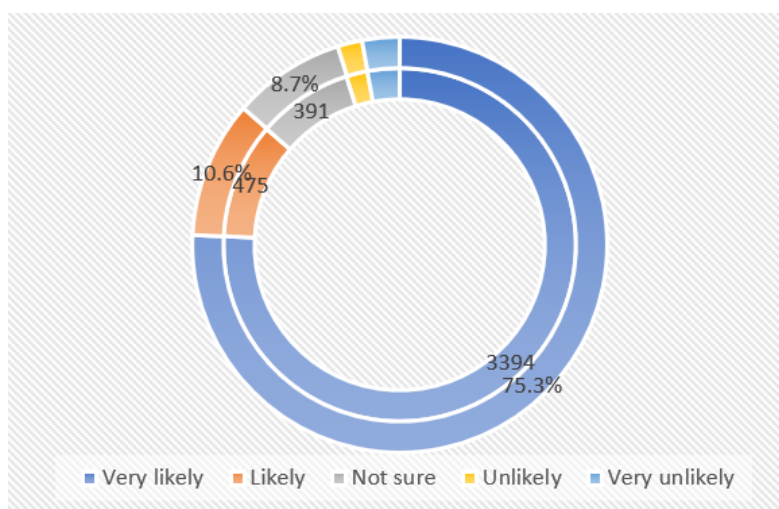


Figure 2. Likelihood of getting vaccinated against COVID-19 (n=4498)

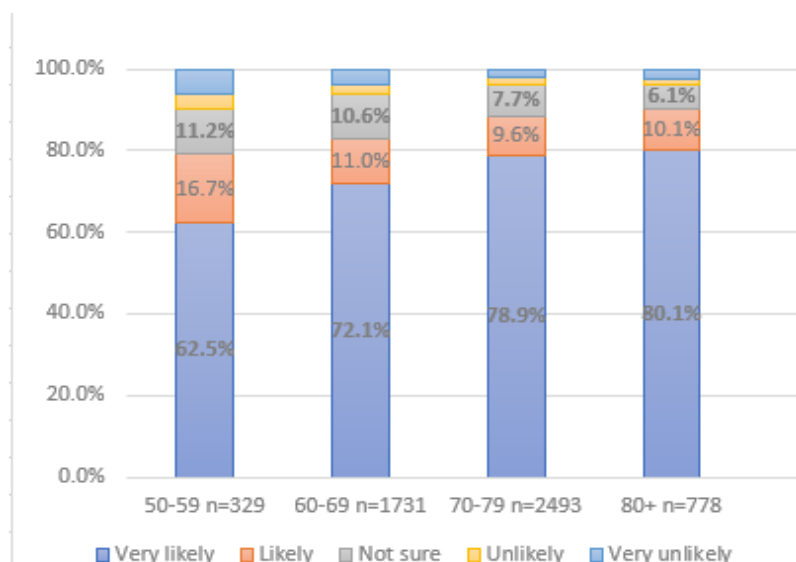


Figure 3. Likelihood of getting vaccinated according to 10-year age groups

The breakdown of likelihood responses according to age and gender showed that the likelihood of vaccination increased with age and that higher proportions of men than women indicated they were likely to get vaccinated. A higher proportion of the 759 people who provided comments said they were unsure or unlikely to get vaccinated compared to those who did not comment. These figures can be seen in [Table 2 of the Appendix](#).

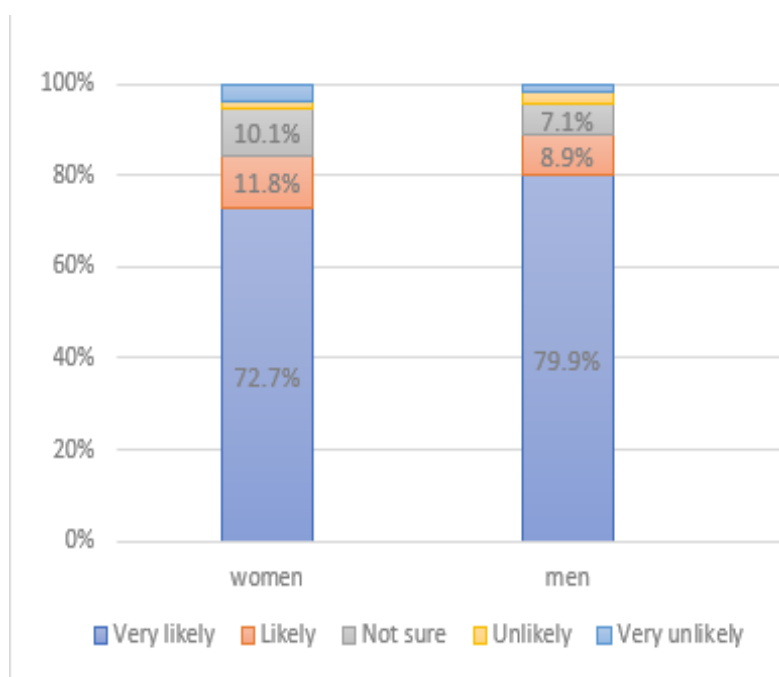


Figure 4. Likelihood of getting vaccinated according to gender*

*Note 6 people said they were non-binary or other gender and 14 preferred not to answer.

Vaccine sentiments in the NSSS-9

The announcement of the vaccine rollout in Australia over January and February 2021 came after the reimposition of state-based lockdowns, the curtailing of Christmas and New Year's celebrations and continuing national and international travel restrictions. Meanwhile, vaccination programs were being implemented across Israel, the United States, Britain and parts of Europe. In these countries, rates of COVID-related hospitalisations and deaths were falling, economies were opening up and life was returning to normal. With the apparent success of vaccination overseas, it was not surprising that such a high proportion of survey participants said they were likely to get vaccinated.

Of the 759 vaccine and vaccination-related comments in the NSSS-9, 346 (45%) included pro-COVID-19-vaccination sentiments. Some degree of vaccine hesitancy was expressed in 394 (52%) comments. Pro-vaccination and vaccination hesitancy sentiments were not mutually exclusive. Some comments described feeling keen to be vaccinated but highlighted concerns (n=37). Similarly, some of the comments of those who nominated they were very likely or likely to get vaccinated described potential issues with the vaccines (n=186).

Two arguments were used to support getting vaccinated but also vaccine hesitancy or refusal. These were needing to protect the vulnerable (n=71) and connecting COVID-19 vaccination to the flu vaccination (n=36). Approximately half the comments mentioned concerns about the safety and or the efficacy of the vaccines. Concerns were driven primarily by the perceived speed of the vaccine development and rollout. Safety issues included the potential for adverse reactions and long-term effects. The efficacy of COVID-19 vaccines was questioned because vaccination didn't prevent people contracting COVID, testing and data collection were deemed inadequate, and people believed that current vaccines would not protect against new strains of the virus.

Other sources of hesitancy were about vaccination context rather than related to the vaccines explicitly (n=191). They included seeking medical approval; lack of trust, information and choice about vaccines; and believing vaccination was unnecessary. Finally, a small but ardent group expressed their outrage at the biotechnology underpinning COVID-19 vaccines (n=<20).

Figure 5 presents an interactive visual Mind Map of NSSS-9 participants' COVID-19 vaccination sentiments. Each heading in the Mind Map is hyperlinked to its corresponding comments in the document. For ease of navigation readers may toggle between Mind Map headings and the text representing each of the identified themes or topics. Clicking on the Mind Map icons in the quotes section of this document (pages 12-24) will return the reader back to the Mind Map.



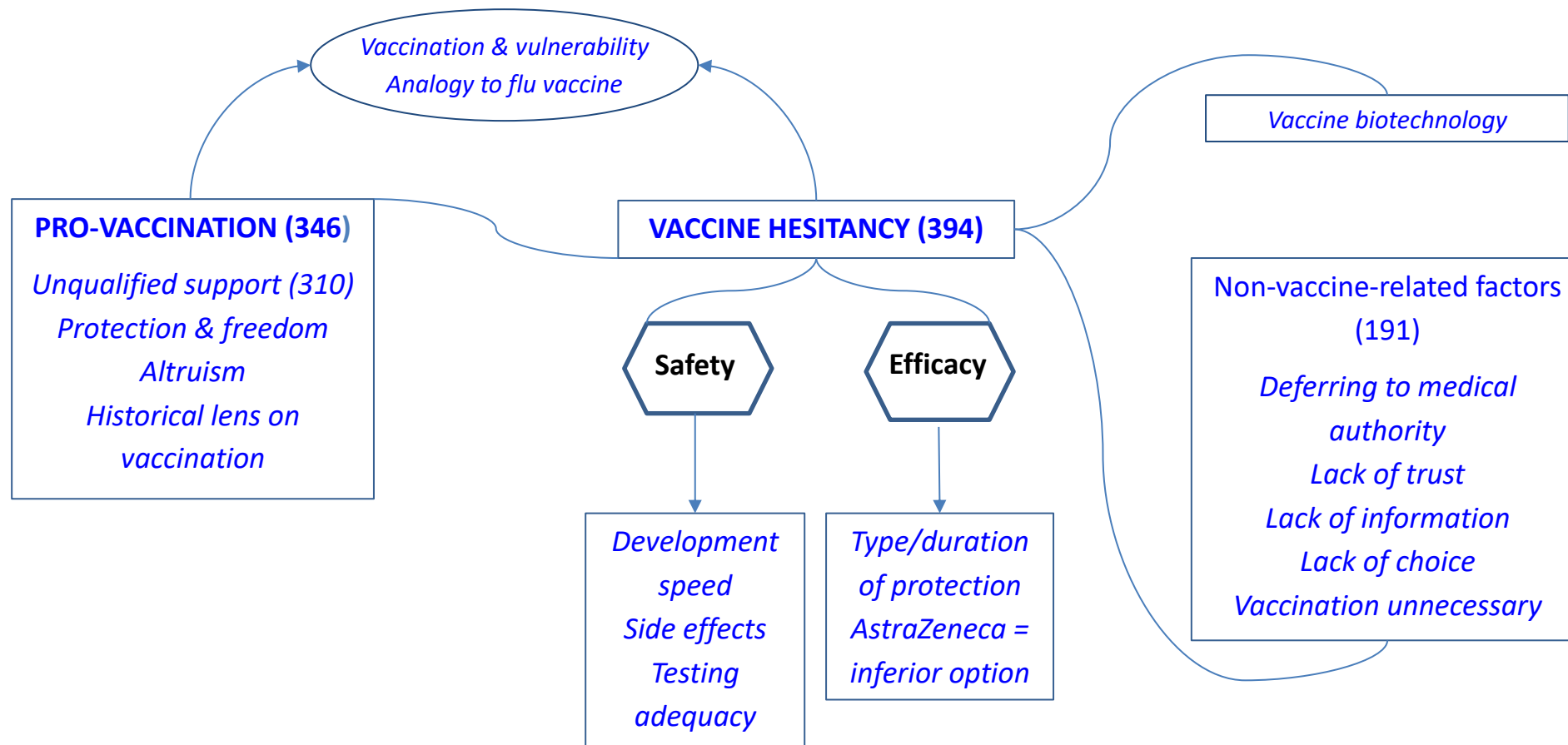


Figure 5. Mind Map of NSSS-9 participant sentiments



Pro-vaccination sentiment

Some people succinctly and unreservedly expressed their enthusiasm for being vaccinated:

"It is a must!!!!"
"My arm is ready and waiting"
"Definitely, as soon as available"
"Crazy not to"
"Can't wait to get it"
"Bring it on!"
"As soon as possible"
"Don't care if I die but don't want to die of covid"
"It's a no brainer for me."
"Waiting for someone to tell me where and when."

Vaccination for protection and freedom

Compared to most of the world, in Australia, COVID-19 had caused relatively low rates of infection, hospitalisations and deaths, nonetheless, protecting individuals and the broader community were primary motivations for vaccination. The comments below express strong ideological belief in vaccination being for the good of all:

"Vaccination is for the greater good, not just the safety of the individual"
"I believe I would not only be protecting myself but also the community around me and I am of the view that this is the correct attitude to take"
"I want to have the Covid-19 vaccine as I believe it is my duty as an Australian citizen to do this for the greater good of my country and to protect the vulnerable of which I am one."
"No question about it: the Community MUST act in the interest of ALL. Personal beliefs in this type of situation are not acceptable for me."

Vaccination was also perceived as the gateway to the return of a normal life, with freedom to travel being given a high priority:

"Essential requirement if we are to return to an acceptable degree of normality in our daily lives and communities."
"being locked up for 12 months with my physical issues anything that my give me back a little better life I will try"
"if a COVID vaccination allows me to travel and stops me affecting other people's lives, then I'm all for it."
"I want to travel internationally again and I believe that the vaccine will be mandated for international travel so this is the only reason I would consider getting it."

"I can't wait for the vaccine!! Getting it has to be the start of a return to some kind of normalcy, being able to travel again, rejoin my choir, start swimming again, etc. In other words, begin living again."

Altruistic motives

The initial vaccine rollout was to be implemented according to priority groups that included older people aged 70 plus. Some participants were altruistic in their sentiments and thought there were others more needy than older people and should be prioritised:

"younger people especially those with families /breadwinners should have priority. How long do those over eighty expect to live and we are not productive only alive to keep the medical profession busy and aged care givers employed, I admit a very big on going employment field"

"I actually think that the 30 - 50 age group should get the vaccine ahead of the aged population as they usually have a family [and are] working which helps keeps the economy going, the effects of 'long' Covid-19 on them will have a long term health/economic outcome for the state"

"if we can keep the virus out of Australia, I am willing to wait whilst poorer countries can make a dint in their appalling statistics."

"However, I would be happiest if my vaccine dose was given to a person my age living in poverty in a third world country and once they have received the required doses then I can get vaccinated. Actions speak louder than money."

The historical lens: recalling the success of other vaccination programs

Historically, vaccines have contributed to increasing life expectancy from the 18th century onwards. Participants who supported vaccination against COVID-19 drew on their own or family members' experiences of contracting infectious diseases that were later controlled by vaccinating the population including smallpox, diphtheria, tuberculosis, polio, German measles and mumps. Many of these diseases previously caused death, or at the very least long-term disability:

"My brother was paralyzed by polio, 1 year before the Salk vaccine became available. He was 16 and paralyzed from the neck down til he died at 42. "

"My sister and I were both affected by Polio, we were infected prior to the vaccine being available. My sister was paralysed but my lung, respiratory muscle, lung, throat muscles and Hypothalamus in the brain were affected. We both suffer with the post-polio syndrome."

“Ever since the days of polio and before and since, vaccinations have worked to reduce or even stop the spread of disease. Do not be stubborn, just get the jab. Save yourselves and consider others.”

“Vaccination has proven successful on many complaints over a long period of time. And I am in the age bracket where one cannot afford unnecessary health problems”

“Studies have shown that there may possibly be long term consequences from COVID. As a child I contracted polio before there were vaccines and now I suffer the consequences of that disease with post-polio syndrome.”

Some comments in favour of vaccinating against COVID-19 highlighted that the good health enjoyed by most Australians is taken for granted by younger generations; they have not experienced the devastation caused by infectious disease outbreaks that are now controlled through large-scale vaccination programs:

“Since my childhood I have been vaccinated against many diseases and this one is even more vital. So many younger people haven't seen people who suffered smallpox, polio, scarlet fever, mumps, german measles, tuberculosis and more, as I have and make assumptions from the wrong information.”

“Most of those aged over 70 remember young school friends in 50s with polio. German measles. Chicken pox. Scarlet fever and as young adults attending TB scanning Vans in carparks Compulsory. Then vaccines saved us from debilitating virus as above. So I'm all for covid vac. The younger generation born 1990 onwards just don't get it. Perhaps a few Videos showing kids from 1900s blind from measles, Adult males with painful testicles infertile probs from mumps. Polio disabled twisted limbs. Or in full time breathing lung machine might get the reality check to them.”



Vaccine hesitancy: Concerns about COVID-19 vaccine safety and efficacy

Safety and efficacy concerns were the primary drivers of vaccine hesitancy. Fifty-six percent of commenters who nominated that they were very likely or likely to get vaccinated expressed some reservations about various aspects of the vaccines:

“Want the vaccination but only if it's safe and I can have it! “

“We will have vax But we won't accept astrazenica!”

“I will get vaccinated but I wonder about the effectiveness of the vaccine/risk of reaction considering that it has been a rushed process.”

Worry about comparative speed of COVID-19 vaccine development

Comments were strongly critical that vaccine development and rollout had been rushed. Comparisons were drawn between the speed of the COVID vaccines' development compared to the typical process for other vaccines:

"considering how long it took and the in-depth testing done for Polio, smallpox, Tetanus, Whooping cough, measles, diphtheria, etc not enough has been done for this and the first recipients are being used as Guinea pigs. there is no certainty it will work 100% protection is not guaranteed, no idea of side effects and no idea of any effects on 2nd generation. Look what happened to babies whose Mum's took thalidomide."

"But don't think they have tested long enough, compared to other vaccines that take years to develop and get approval for."

"I would expect to see 8-10 years of additional work. A vaccination manufactured by conventional processes I can believe but the speed of development needs more time to prove them."

"Not enough research has been done Most drugs have to undergo 20 years of research before they released to the public. 4 months is far far far too soon"

Worry about side-effects of the COVID-19 vaccine

The potential for detrimental side effects was the dominant concern about the vaccines' safety. Because development time was perceived as too short, people feared that the testing and evaluation processes had been inadequate. Some argued that the full range of side effects across diverse groups of people were not yet known. Also, the short testing period meant that there was no assessment of long-term side effects or potential effects on chronic health conditions:

"I am not confident that the vaccine has had sufficient and extensive testing under many different conditions and circumstances before being released"

"Don't know if enough research has been done for people with severe and unknown allergies"

"Side effects on the elderly who take numerous combinations of medications I believe has not been tested enough in the short time frames so far"

"I am concerned about the lack of longitudinal studies about the long term affects the vaccine MAY have on different people. Side effects relating to those with ongoing health issues. Those on fixed medication. The body's ability to [react] to the vaccine types. They are different in their approach in how they work."

"My concern what is the long term side effects going to be. They say no side effects now but yeah what about in the future this has not been discussed"

"I am greatly concerned about this vaccine, especially the speed at which it has been developed & the lack of testing done on it. I have very little confidence in those who are

telling us it is safe, if I ever agree to have the vaccine it will be many years down the track when all the issues have been sorted"

Worry about inadequate rigour in COVID-19 vaccine testing

There was also a small group who strongly criticised the lack of rigour in vaccine testing. They believed that animal studies and trial data for the COVID-19 vaccines were either missing or inadequate and these were essential as important preliminary steps to demonstrate safety of any new drug or vaccine. For this group, the COVID vaccines were still in the experimental stage of development:

"It isn't a vaccine in my opinion. It is an experimental drug, and we are being used as guinea pigs to see if it works, rather than animals."

"The vaccines sound very suspect as to appropriate trialling with enough trial participants"

"Very concerned at the rapid rate it is developed with limited research and years of trials. It appears that the research and trial is happening using all the people around the world who have currently received the vaccine."

"Too early and still guinea pig stage"

"The WHO approved the vaccine for emergency use only. It has not been thoroughly tested.

The people receiving the vaccine now are the guinea pigs. COVID 19 is a distraction."

"I'm opting to remain in the "control group" while Pfizer and others roll out the human trials. Because the usual animal trials have been skipped the effectiveness of this initiative will not be known for at least another two years and pathogenic priming is a real possibility as it was with the SARS vaccine which was abandoned."

Questioning the type and duration of protection offered by COVID-19 vaccines

Speed of vaccination development also led to concerns about how effective the vaccines were against COVID-19. There was uncertainty about how long the vaccine lasted for, what type of protection it afforded and whether it would be useful against new strains of COVID:

"I would note that we are not entirely sure yet that any of these vaccines will work, or how well they will work if they do, or even the nature of whether or not they will simply prevent the disease or also prevent transmission of the disease amongst the community... "

"I'm not against vaccinations, but I'm not sure whether there has been enough testing of the various vaccines as to their effectiveness. The experts are still not sure about many aspects of the vaccines, like how long will they be effective, are older people going to have a reaction or even death as a result of being vaccinated.?"

"have concerns about effectiveness if the virus mutates"

"Unsure about the effectiveness overall especially against the variants, and the developments have been very rushed."

“The vaccine does not prevent getting the virus or passing on to anyone else. It is a licence to print money for the drug companies. Just saw an interview of the spokeswoman for AstraZeneca in Australia. [...] She has no answer that the vaccine will not create herd immunity. She has no answer that vaccinated people will still get the virus and still pass on to others. She has no answer why it is not suitable for children under 18.”

AstraZeneca an inferior option

Also driving efficacy concerns were reports of international data comparing the effectiveness of the Pfizer and AstraZeneca vaccines. The media reported the Pfizer vaccine as being 95% effective compared to AstraZeneca being only 60-70%, yet AstraZeneca was the vaccine most Australians were likely to receive or have access to due to it being locally manufactured in Melbourne:

“The Astra Zeneca vaccine is second class and hardly worth having especially for older people.”

“I would be much more likely if I was confident that the vaccine being provided had the highest level of effective protection. Being told that something that has tested to be 65% effective will provide protection does not inspire me to rush out for it.”

“Concern is that the AstroZeneca vaccine with lower efficacy will be the only option for at least 60% of Australians. This is being regarded as a second-tier response in terms of protection against COVID-19. It is perceived as a second-world response.”

“It is time for Australia to abandon the Astra-Zeneca vaccine, as already enacted by South Africa. Particularly for elderly people who are the most vulnerable it is vital that the whole population be vaccinated with the most effective vaccine available.”

“I’m concerned about the efficacy of the AstraZeneca, vaccine especially for my age group. I get the over 65s flu shot which is stronger, so why not for Covid. The AstraZeneca one is now being questioned for use at all, so why doesn’t Morrison discuss this? Which one is he getting? Pfizer? I just read a report saying we should be considering Novavax and BioNTEck plus Pfizer. If the population doesn’t have confidence in the AstraZeneca, it might undermine its uptake.”



Vaccine hesitancy: Non-vaccine-related factors

There were additional reasons given for hesitancy about getting a COVID-19 vaccination that were not about the vaccine itself. These were:

- Deferring to medical authority: needing endorsement or advice from medical practitioners.
- Lack of trust: in Government and in pharmaceutical companies.
- Lack of choice in the available COVID-19 vaccines.

- Lack of information about COVID-19 vaccines.
- COVID-19 vaccination not considered a priority or unnecessary.

Deferring to medical authority

Seniors frequently have one or more health conditions or chronic diseases and need to rely on GPs and other medical professionals for advice and management of their health. The Government had released a statement in January 2021 confirming that GP practices would be the key to successfully delivering the vaccine to priority groups including people 70 years and over. The plan was to include approximately 1,000 GP distribution points across Australia³. Participants' comments confirmed the critical role of medical professionals in guiding and influencing older people's decisions about vaccination:

"I was unsure, however since discussing it with my doctor, I am happy to go ahead."

"I have reservations about it, but having spoken with Drs and specialist who treat me I will be having it."

"I will get vaccinated after consulting with my doctor."

"Have followed medical advice all my life. They know better than I do."

"My GPs are amazing and will check with them and will follow their advice."

"My Oncologist only last week insisted I accept it when available."

"I am in the vulnerable age group, but I feel I need to seek more information from my doctor as to possible side effects and the efficacy of the vaccine before I get vaccinated."

A small group were keen to be vaccinated but also worried it wouldn't be safe because of their individual medical conditions. This was particularly the case for those with allergies, possibly due to the early reports of anaphylactic reactions from the Pfizer vaccine. In these circumstances, they turned to trusted GPs for advice and direction:

"I have marked "Not sure" because I am an allergy sufferer. I will need to discuss with my GP regarding any possible risks associated with the vaccine. Generally, I am very positive about being vaccinated."

I certainly want to get the vaccine for myself and to stop passing covid onto others but as I have a bad lung disease I have to check with my GP to make sure I do not have adverse side effects.

"I am allergic to many medications and I'll need to discuss this with my GP. I would definitely like to have the vaccination if possible."

"I have a few medicinal allergies and am unsure if the vaccine will be safe for me. If however my doctor confirms it is okay for me to receive the vaccine, I would gladly have it."

³ <https://www.health.gov.au/ministers/the-hon-greg-hunt-mp/media/gps-key-role-in-covid-19-vaccination-rollout>

“Absolutely I would like to be vaccinated. But I do have a heart condition and need the advice of my GP before I would proceed”

Lack of trust: in Government and in pharmaceutical companies

Although people trusted the advice and direction of medical professionals, cynicism and distrust were evident when it came to Government and large pharmaceutical companies. Government messaging was motivated by self-interest with overall incompetence also being an issue. The perceived lack of accountability by vaccine manufacturers undermined trust in the vaccines' safety:

“I am not impressed with the government's information which amounts to "trust us and get it".Other incidents like the recent Queensland aged care home debacle confirm my worst fears about government mismanagement and entrench my distrust.”

“We have been lied to by our state and federal health authorities so much so that I simply do not trust anything they say now. They have turned Covid into a political football and their constant fear mongering and exaggerated responses and sheer incompetence are breathtaking.”

“I have reservations about how the vaccinations are being administered and about the trite messages that all the Gooberments (and their sycophants) are trying to spread about vaccination... it is all just political spin!”

“Having three auto immune diseases and the company not putting their selves up for reprisal is a bit of a worry to me.”

“I recognise that the Pfizer and Mercola experiments are not legally vaccines according to USA definitions. This causes me to be very sceptical, and especially because legal compensation cases against these companies are disallowed by law. Where is liability to be accountable?”

“Why most western governments have provided indemnity to vaccine manufacturers if they consider the vaccines to be so safe. Why the Australian federal govt has refused to follow the example of 30 other countries and provide a 'no fault' compensation scheme for those who suffer serious side effects from the vaccine?”

Lack of information about COVID-19 vaccines

Although many felt they could or should defer to medical advice about whether to get vaccinated, comments showed people took upon themselves the responsibility of assessing the safety and efficacy of the two vaccine options. This group was clearly frustrated by the lack of relevant and useful information available to support their vaccine decision making:

“Government and media are not providing information nec'y for more discerning Australians to make an informed decision.”

“I don't think enough data is available to make it safe”

"There is much on the internet but views different to the prevalent narrative are actively discouraged."

"I am not impressed with the government's information which amounts to "trust us and get it"."

"I don't know enough to make a valid comment. I do not believe we have been provided with enough tangible information to hold a concrete decision, it still feels a risk."

"I think the science is still a bit vague on this and older people need to know more about the different types of vaccines before they commit to which type is the best for them."

"Openly reporting the full facts and openly encouraging full and frank discussion is the best way to encourage the greater population to become involved."

"Undecided as I feel that not enough information has been given"

The lack of clear information about possible side effects meant some participants took a 'wait and see what happens to others' approach to getting vaccinated:

"Prefer to wait and see if there any negative side effects. Whilst seeing the need to have a vaccine ASAP it has all been fast tracked, due to the severity of the illness, so I'll wait a while before making a firm decision. There still seems to be a lot to learn about this virus."

"Would like to wait a little while. A little uneasy about this. Looking at the bungles already made. Just hope we can wait a little while to see any side effects, especially from our age group."

"I'll wait until sufficient number of people have taken it and wait for the side effects to manifest."

"Selfishly, I'll wait until the results of many other people having it show up first."

"Will wait to see effectiveness and any side effects that may occur after vaccines have been in use. Not sure the companies nor govts are informing the public of all results. Not sure anyone really knows long term effects etc"

"I will wait some time before I do to see how it affects other people my age."

Lack of choice about COVID-19 vaccines

Lack of vaccine choice, especially when the available vaccine was perceived as inferior, was highlighted as a significant concern:

"I would prefer the Pfizer and not the AstraZeneca. Pfizer is 95% effective."

"Would appreciate being able to choose or pay to choose which vaccine I get."

"We should be buying the best."

"I am keen to get vaccinated but want to get the best."

"I think there should be a choice of which vaccine to use. I may wait to be vaccinated until I can have the vaccine I want."

"Would like choice to get more highly effective vaccine."

"We want a choice of vaccine with efficiency results that best supports future international travel"

Vaccination not a priority or unnecessary

A small portion of people linked their vaccination choice to their perceived level of risk of getting COVID-19. Risk was evaluated according to health, lifestyle, or geographical factors or general recognition of being low risk. This group believed vaccination wasn't needed, or certainly not needed immediately:

"As I'm in good health - I'd delay as long as possible."

"Still thinking about it. I am in excellent health and not in a risk group. I also live in an area that has zero community transmission."

"I live in a rural area and there has been no Covid19 here."

"In Darwin we have had no community outbreaks of the virus."

"I feel very safe in Adelaide. Our lifestyle healthy, outdoors. I trust the system to make the right decisions to guard and manage the community in the event of future outbreaks. I am happy to wait my turn as I do not consider myself to be particularly vulnerable."

"We have a very good grip on Covid-19 transmission in this country & there is no need for those not in a high-risk group to be impatient."

Others took a non-interventionist stance. COVID-19 was either not considered serious enough to warrant vaccination, or there were other better ways of managing the virus:

"I know that nature has solved plagues for thousands of years. Natural antibodies are cheap and easy. Suggestion they are not reliable seems silly. This was not a serious illness."

"I am not in a risk group and don't believe this to be worse risk than many other diseases out there that I also don't get a vaccine for. If I was obese, or had asthma etc, I may think differently"

"prefer the body immunity to work it out with all the assistance one can give it---like building up your immune system"



A subgroup of comments showed that similar arguments were sometimes used to justify vaccination against COVID-19 and to question its wisdom. COVID-19 vaccination was seen by some as a source of protection for the vulnerable but by others as a source of harm. Analogies were also drawn between COVID-19 vaccination and vaccination against influenza. On these grounds it was justified by some and considered a risk by others. Relatively small groups of participants applied these two sets of arguments, but they show how people may make similar assumptions but have divergent views due to personal experience, knowledge or fears.

COVID-19 vaccination protects the vulnerable and harms the vulnerable

By mid-February 2021 when the NSSS-9 was conducted, there was international evidence that increasing age and underlying health conditions greatly increased the risk of serious illness or death from COVID-19 (11). In Australia, most COVID deaths had occurred in residential care where advanced age and infirmity meant residents had little hope of recovery if they caught the virus. People were acutely aware of their own and others' vulnerability due to age and health issues, so for this group, vaccination was the key to staying safe from the virus:

"I will seek out vaccination because of my age but also a desire to protect my respiratory system."

"I think all Seniors should be having this for their own safety and that of others."

"May help protect family & friends I mix with. Especially any with illness."

"My mother is 90, I am 64 i need to protect both of us as best as I can and vaccinating is the least I can do."

"I am in a dangerous age group for it, so anything I can to avoid getting it is good. And if I have the vaccine and it works I also make other people I come into contact with safer as well. Win Win."

The importance of vaccination for those assisting the vulnerable was also mentioned. This sentiment aligned with the national rollout strategy of including health care, aged care and disability care workers in the first phase of vaccination:

"as a St John volunteer ambulance officer (VAO) in WA we will be a part of the roll out. For us to continue volunteering it would seem the sensible thing to do. Many other volunteer organisations eg Meals on Wheels, gardening support would surely have to look at this as well. Protecting their volunteers as well as the people they assist."

"I work as a volunteer with Aged Care residents so believe it is crucial to protect them by having this vaccine myself"

"I intend to continue to visit friends in Aged Care facilities and will do whatever I need to in order to continue to have face to face access to these friends."

Most comments addressing vulnerability supported vaccination against COVID-19. But being vulnerable, either due to older age or underlying medical conditions, was also a reason for caution. This group were wary about the safety of the vaccine given their circumstances and worried that there was not enough known about its effects in vulnerable groups:

"Not naturally opposed to vaccination. Just wary of the effects on old people (i'm 82, wife 87)"

"Due to other ongoing medical issues I am unsure if the COVID-19 vaccine will be safe for me"

"are older people going to have a reaction or even death as a result of being vaccinated.?"

"Being an older person with allergies - decide to wait and see how it turns out"

"it would be dangerous for me. I live with a strain of lupis."

"As a person with an Autoimmune disease I am waiting to see if it is medically approved. As yet I cannot find an answer. No tests have yet been done on that. If I am able then yes I would have the injection. I just do not want to make my health problem worse."

"At my age and medical problems. I'm dammed if I do and I'm dammed if I don't."

Analogies between the COVID-19 vaccination and the flu shot

Annual flu vaccinations are a routine part of health care for many seniors. Flu vaccinations have been freely available to those 65 years and over since 1997 through the National Immunisation Program. For a small group, experiences with the flu vaccine were used to explain their likelihood of getting vaccinated against COVID-19:

"Always had the flu' shots & it makes sense to have this too!"

"As I also have a yearly influenza vaccine I realise this is also likely to be needed with any COVID vaccinations too. It would be a small price to pay to prevent more unnecessary deaths and disruption to lives and livelihoods."

"Like the flu vaccine, COVID-19 is essential for the health of older people"

"I expect COVID-19 immunisations to become an annual matter as for flu shots."

People also generalised their flu vaccine intolerance or negative experience to explain why they were unlikely to get vaccinated against COVID-19, with the assumption that flu and COVID-19 vaccines work in similar ways or will cause similar reactions:

"I have a reaction to the flu shot so I am not going to get the covid needle"

"Have had serious over-reaction to shots e.g. flu shots previously: medically advised not to have flu shots. Need to understand how/if that could be relevant with COVID-19 vaccine. As I am highly allergic to the bases of many injections including flu vaccine etc and don't have any desire to spend weeks in ICU after having the injection (as I've done in the past, some of that time on life support)"

"I had a strong negative reaction to the last flu shot I had (2018) - I got the flu and was wiped out for 10 days"

"I don't have flu vaccine because of bad reactions."

"I have a reaction to Flu Vaccinations therefore do not have them and have never had any type of Flu in my career."



Vaccine biotechnology

Amongst people who nominated that they were very unlikely to get vaccinated, there was a small group (<20) whose sentiments did not sit within the categories highlighted above.

Concerns expressed by this group were more extreme and focused on biological and ethical threats posed by the newly developed vaccines. Although these are minority views, they are strongly expressed and so contribute to the overall picture of vaccine sentiments.

“The latest is that this vaccine contains the bio of an aborted fetus - I've checked this out - it is true. How sure are we that this is not going to 'alter' our own DNA?”

“Some affect DNA / RNA and have nanotechnology - a risk in my opinion”

“I recently researched the vaccines and actually what is in the vaccines. Read the information yourselves and tell me we should be sticking that in our arm!”

“Pitzer is made from using DNA from Moths, Astro is made from DNA from Chimps. I will not put DNA from another species in my body”

“the current "vaccine" is not a vaccine according to the definition of vaccines - 1. It is made from biological entries ie virus, bacteria and gives immunity, 2. it means that the receiver cannot transmit the virus/bacteria. The "vaccine" offered is gene therapy and merely ameliorates the symptoms. that's all.”

“Doctors in Europe were online saying that they will not advise their patients to have this vaccine, as it has the potential to render females sterile etc. The vaccine has artificial DNA in it.”



Summary and Discussion

When the Australian Government launched the COVID-19 vaccination rollout program in February 2021, 86% of NSSF-9 participants indicated they were likely or very likely to get the vaccine. Participants had the option of providing a free text response about their vaccination likelihood and 759 people contributed. Comments were analysed to provide a backdrop of older people's sentiments and perspectives on COVID-19 vaccination as we now head into a new vaccination phase.

We found forty-five percent expressed pro-vaccination sentiments around the themes of:

- Protection and freedom: Vaccination is the only way to keep people safe as they live their lives.
- Altruism: Others should be prioritised over older people to receive the vaccine.
- Endorsement of vaccination because of its historical success in preventing death and disability from communicable disease.

On the other hand, 52% of comments expressed some degree of hesitancy about getting vaccinated against COVID-19. Hesitancy was primarily driven by safety and efficacy concerns about the vaccines. These included:

- Perceived speed of vaccine development.
- Harmful side-effects (short and long-term).
- Adequacy of vaccine testing.
- The type and duration of protection offered by vaccination.
- Effectiveness of the Oxford-AstraZeneca compared to the Pfizer–BioNTech vaccine.

Other sources of hesitancy stemmed from factors related to making the decision to get vaccinated including:

- Deferring to medical authority.
- Lack of trust: in Government, in health authorities, in pharmaceutical companies.
- Lack of available and reliable information.
- Lack of choice in available vaccine.
- Belief that vaccination was unnecessary due to COVID-19 not being a serious disease or being at low risk of contracting it.

We also found that pro-vaccination sentiments sometimes co-existed with vaccination hesitancy. For example, some people provided comments describing themselves as keen to be vaccinated but also expressing fears or concerns about the vaccines. Similarly, some of those who ticked the very likely or likely option to get vaccinated also commented on potential issues with the vaccines.

After a slow start, Australia progressed from having the worst vaccination rate of all 38 member countries of the OECD⁴ in June 2021 (4.7%) (12) to a vaccination rate of 87.9% of people 16 and over. In the case of senior Australians, 94% of those aged 60-plus and greater than 95% of those aged 70-plus have now had two doses of a COVID vaccine⁵.

The uptake of Australia's COVID-19 vaccination program is restoring freedom of movement and social interaction even in areas where community transmission is still occurring. Vaccination undoubtedly has saved lives, particularly the lives of those over 60 who are much more vulnerable to developing severe illness or dying from the virus. The complexity of some of the sentiments recorded here, however, indicate there is no room for complacency. The themes from the text comments of NSSS-9 participants show that even when people indicated they were likely or very likely to get vaccinated, they had an array of concerns and issues about the available COVID-19 vaccines, and with making vaccination-related decisions.

Many older Australians are now eligible for booster shots against COVID-19 because they were in the priority groups to be vaccinated under Government's Vaccine Rollout Program. One of the drivers of vaccine hesitancy in the NSSS-9 was the sense of being at low risk from the virus. Thanks to high vaccination rates, COVID-19 and its devastating effects have been less of a threat than in the early months of the pandemic, but this could potentially jeopardise booster uptake. High vaccination rates have been shown to contribute to subsequent vaccine hesitancy because the virus is no longer visible in the community which leads to complacency about the need to get vaccinated (13).

Vaccination-related decisions are challenging for all age groups in the face of rapidly changing advice, circumstances and perceived risks. Fortunately, there are some preferred sources of advice for many older Australians. Sentiments expressed by NSSS-9 participants indicated that for many people, vaccine hesitancy can be most effectively addressed by trusted GPs and other health care professionals. Providing better support to GPs so they can smoothly and efficiently deliver future vaccines early-on in any vaccine program would likely alleviate many seniors' concerns.

Although nearly all seniors are now vaccinated against the virus, there is no guarantee that new or modified vaccines will be readily accepted. Like the initial COVID-19 vaccines, they are likely to be developed and rolled out relatively quickly. Many of the same issues that led to hesitancy previously such as fear of side-effects, misinformation and lack of trust in Government authority are still potential sources of hesitancy about newer vaccines. Some of

⁴ Organisation for Economic Co-operation and Development

⁵ <https://www.abc.net.au/news/2021-03-02/charting-australias-covid-vaccine-rollout/13197518>

these concerns are likely to be accentuated by the political debates that will inevitably accompany the current election campaign. Understanding the drivers of vaccine hesitancy for older Australians therefore remains important to the success of any vaccination program.

For any future COVID-19 vaccine rollouts, Government and health authorities need to develop effective and ideally bipartisan communication strategies, systems and infrastructure that address seniors' experiences and concerns. This will help ensure timely, efficient and effective uptake of COVID-19 vaccines by older Australians.

Appendix

Tables and figures

Table 1. Selected characteristics of responders compared to non-responders to the COVID-19 vaccination question in the NSSS-9.

Characteristic	Answered vaccination likelihood question		Did not answer vaccination likelihood question	
	number	percent	number	percent
Age group**				
50-59	257	5.8	72	8.1
60-69	1436	32.3	295	33.4
70-79	2130	47.9	363	41.1
80+	624	14.0	154	17.4
Gender (binary)				
women	2479	55.4	501	55.8
men	1994	44.6	397	44.2
Education level**				
Up to year-10	764	17.8	195	23.7
Year-12 or diploma	1778	41.3	360	43.8
Tertiary degree or higher	1761	40.9	266	32.4
Health*				
Excellent/good	3396	76.0	604	71.8
Fair	892	19.5	202	24.0
Poor/very poor	183	4.1	35	4.2
Partnered				
Yes	2671	61.1	549	62.7
No	1702	38.9	327	37.3

Chi-Square tests of difference between groups (answered vs not answered vaccination question)

** significant at $p < .05$; **significant at $p < .001$

Note: 6 people said they were non-binary or other gender and 14 preferred not to answer the gender question.

Table 2. Comparing vaccination likelihood between NSSS-9 participants who provided comments and those who did not.

Likelihood of getting vaccinated against COVID-19	Provided comment		Did not provide comment	
	Number	Percent	Number	Percent
Very Likely	413	54.8	2981	80.0
Likely	97	12.9	378	10.1
Not sure	140	18.6	251	6.74
Unlikely	46	6.1	41	1.1
Very unlikely	58	7.7	74	2.0
TOTAL	754	100	3725	100

ChiSquare =307.63; p<0.001

Note: There were 5 people who provided a text comment but did not answer the question on likelihood of getting vaccinated. The 19 people who selected the 'prefer not say' option for the likelihood question were excluded. Due to rounding, percentages do not add up to 10.

Methodology for text analysis of vaccination comments from the NSSS-9

We analysed text comments using the thematic analysis framework described by Braun and Clarke (10). One National Seniors Research Officer analysed all the comments and produced the thematic Mind Map. Two other research officers also read the comments to identify themes independently. To ensure our themes were comprehensive and consistent, we discussed any discrepancies and agreed on a consensus thematic approach. The initial thematic Mind Map was amended accordingly. Themes were identified through inductive analysis, i.e. data were coded without reference to an explicit pre-existing theoretical framework, aside from associating some themes with a pro-vaccination and some with an anti-vaccination stance. Themes were represented in part by common ideas expressed by relatively large numbers of people but also by groups of sentiments expressed by fewer people but that contributed to explaining the diversity and complexity of the data. The researchers acknowledge the influence of their pre-existing theoretical knowledge and understandings on the themes identified. Quotes from survey participants were selected to illustrate the themes identified. Sometimes this entailed reproducing only part of a person's comment if the rest was not relevant or related to a completely different theme. Minor typos, obviously missing punctuation and spelling errors were corrected for readability but phrasing and/or grammatical idiosyncrasies were retained.

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