Report of Expert Witness
Dr Andrew Madry
prepared for the
Supreme Court of Queensland

Signed: 

Date: 15 August 2022

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1 INTRODUCTION

This report is provided to the Supreme Court of Queensland in response to the brief provided by N.R.Barbi Solicitors to Dr Andrew Madry on 4 July 2022, requesting his participation as an Expert Witness in Proceeding BS4140/22. Section 1.1 of this report provides a copy of the correspondence received from the Solicitors.

The educational and professional background of Dr Andrew Madry is provided in Section 2.

The subject areas specified in the brief, for which the Expert Witness is able to provide evidence, is tabulated in Section 3.

I refer to the SARS-CoV-2 disease as COVID in this document.

Two "bundles" of information have been provided. There is a "current bundle/Affidavit" for this proceeding and a "previous bundle". The "current bundle" (59 pages) contains a copy of the Direction Number 4 as well as a markup version of Direction Number 3. Then there is a draft document titled "COVID-19 Public Health Rationale Staff and Visitors in Healthcare Settings". Comments are made but this is marked Draft and so it is not known if this is relevant. The "previous bundle" is an extensive body of information in Affidavits volumes 1 to 8. It is understood that Queensland Health Directions were based on information contained in these documents.

The sections of the Health Directions, relevant to imposition of vaccination mandates, are identified in Section 4.

A review of relevant information in all the provided documents in Affidavits is in Section 5.

Section 6 provides some top-level background on statistical techniques, particularly on where results can be misleading. Simpson's paradox, is an example which will be explained. It is this reviewer's opinion that data provided by health authorities is not appropriately categorised.

Section 7 provides an analysis of Vaccine Effectiveness. First, definitions are provided (Section 7.1). Then data from the United Kingdom (UK) is assessed. The UK has been one of the best available sources of real world COVID data, albeit with data integrity issues that are noted. In Australia, COVID health data is of a poorer quality. Unhelpful categorisations appear to be intentional. Within Australia, New South Wales is the only state providing a level of detail allowing detailed analysis to be performed. Unfortunately reporting has not been consistent and when data does not conform to an established position it is often removed. An analysis of Vaccine Effectiveness, based on the NSW data, is provided. It is assumed that Queensland Health authorities would have also had access to this publicly available data at the time of issue of the Health Direction.

For this analysis I have sought information from a range of sources. Freedom of Information (FOI) requests to both Department of Health and the Therapeutic Goods Association (TGA) have provided useful information. In this reviewer's opinion is not acceptable that FOI requests, from concerned parties, are required to glean certain relevant information. Particularly in the context of mandates that affect the health of individuals. A dataset was found in a Department of Health FOI request, with infection cases data from NSW, Qld and SA. This data is analysed in Section 7.6. This uncovered serious data quality problems in Department of Health data.

Section 8 provides an analysis of severe outcomes caused by COVID. Section 8.1 reviews recent NSW data on severe COVID outcomes and the effectiveness of vaccines in preventing hospitalisation and death.

Within the Affidavits there is minimal information found relevant or supporting decisions to mandate vaccination for workers in a healthcare environment. There is some information found on early deaths in the Omicron wave in Queensland (approximately 200 deaths). I summarise this Queensland data in Section 8.2. This data highlights that the highest risk of adverse outcomes from COVID is to the elderly and those with significant comorbidities.

Section 9 reviews Vaccine Adverse Events reported to the Therapeutic Goods Administration (TGA). There is no information, provided to this reviewer, that indicates that a risk assessment was carried out relevant to the personal risk incurred by those mandated to be vaccinated. A brief review of the TGA Database of Adverse Event Notifications (DAEN) is provided in Section 9. A comparison is made of deaths reported following vaccination in the under 60's age with deaths from COVID in the same age group. Minimal attention to adverse events from vaccination is found in the Affidavit volumes.

There appears to be an overemphasis on delivering numbers of vaccines, with almost no attention to performance of vaccination in real environments in Queensland.

The critical factors that should have been considered in determination of vaccine mandates for health workers and appear to have been ignored are:

- Infection rate in the vaccinated population compared to the unvaccinated.
- Adverse events, including death, following vaccination. An unacceptable incidence of heart inflammation is evident in young, working age, people.
- A worrying signal of excess mortality, after excluding COVID deaths, is appearing from ages 60 upwards in-line with similar trends being seen overseas.

Section 11 provides a summary of this reviewer's opinions following analysis of data available.

1.1 Brief from Lawyers

The Letter of Instruction from Lawyers is provided below. I respond to my ability to respond to each specific category of evidence in Section 3. I provide my technical background and expertise in Section 2, following.

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Your Reference:

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27 June, 2022

Andrew Madry

By Email:
andrew@madry.com.au

Dear Mr Madry,

RE: APPLICATION FOR JUDICIAL REVIEW OF THE DECISION OF THE CHIEF HEALTH OFFICER OF QUEENSLAND – SUPREME COURT OF QUEENSLAND

Supreme Court of Queensland Proceeding No. BS4140/22:
DR ANDREW McINTYRE, DR LUCAS McLINDON, DR DAVID JOHNSON, ASSOCIATE PROFESSOR PETER PARRY, DR SALLY JOHNSTONE, DR CAMILO GUERRA, DR PALOMA VAN ZYL, DR ANDREW ROBERT ANGUS, DR SANDEEP GUPTA, DR ALISTAIR JOHN FRAME, DR RASHMI BAYA CABENA & DR ANTHONY POINTING **-v-** JOHN GERRARD, CHIEF HEALTH OFFICER & STATE OF QUEENSLAND

We act for the above-named applicants.

On behalf of our clients, we are considering a request to engage you for the provision of expert evidence in the proceedings in accordance with the *Uniform Civil Procedure Rules 1999* (Qld).

We confirm that you have been or will be provided with documentation upon engagement to provide expert evidence in the proceedings. Any documentation or information that you receive and/or rely upon should be referenced in your report so that there is complete transparency.

Any requested expert evidence must relate to your area of expertise based upon qualifications and area(s) of specialised knowledge and experience. The categories of evidence about which expert reports are required in this proceeding, based on the current amended application, are as follows: -

1. Efficacy of Covid – 19 Vaccine:

a. In Mitigating/Preventing:
   i. Transmission;
   ii. Infection;
   iii. Severity of Symptoms (also with regard to current vaccination rate, current point in pandemic life cycle, etc);

b. Analysis of methodology and data employed by the Decision Maker in determining vaccine efficacy;

c. Efficacy of approved Vaccines as compared to natural immunity;

d. Changes to efficacy as a consequence of high vaccination rates / natural immunity rates.

2. Safety of Covid – 19 Vaccine:

a. Prevalence of Adverse Events;
b. Severity of Adverse Events;
c. Adverse Event Reporting Deficiencies;
d. Analysis of Standard of Efficacy and Safety Testing:
   i. General;
   ii. Long-Term;
e. By Demographic, e.g. pregnant women, younger men, those with adverse reactions to earlier doses;
f. Analysis of methodology and data employed by the Decision Maker in Determining Vaccine Safety;
g. Analysis of methodology and data employed by the Therapeutic Goods Administration in Approving Vaccines for use.

3. Virulence of Covid-19:

a. True Mortality Rate;
   i. Also Analysis of methodology of recording of mortality data employed by Government;
b. By Strain - Delta, Omicron;
c. By Demographic;
d. True Propensity to Result in Hospital Admission / ICU;
e. Prevalence of Symptomatic v Asymptomatic Cases;
f. Analysis of methodology and data employed by the Decision Maker in Determining Vaccine Safety.

4. Mandate of Covid-19 Vaccines for Health Workers:

a. Effects upon Economy;
b. Operational Effects upon Health System;
c. Effect Upon Operation of Valid/Informed Consent;
d. Viable Superior or Equivalent Alternatives to Mandates to prevent the spread and/or detrimental effects of Covid 19.
e. Compatibility with Human Rights Legislation – Domestic and International.

We ask that you please consider the above categories and confirm, based on your personal qualifications and area(s) of specialised knowledge and experience, those categories for which you consider that you could competently provide expert evidence in the proceedings. Subsequently, we will, upon your engagement to provide such expert evidence, finalise your brief and allocation of categories of evidence within approximately two weeks subsequent to our review of the disclosed evidence in the proceedings.

We remind you that your duty as an expert witness is to assist the Court pursuant to rule 426 of the *Uniform Civil Procedure Rules 1999* (Qld). This duty overrides any obligation you have to any party to the proceeding or to any person who is liable for your fees or expenses.

We also confirm the contents of rule 428 of the *Uniform Civil Procedure Rules 1999 (Qld)* which provides the requirements for your report which are as follows: -

"428 Requirements for report

(1) An expert's report must be addressed to the court and signed by the expert.

(2) The report must include the following information—

(a) the expert's qualifications;
(b) all material facts, whether written or oral, on which the report is based;
(c) references to any literature or other material relied on by the expert to prepare the report;
(d) for any inspection, examination or experiment conducted, initiated, or relied on by the expert to prepare the report—
(i) a description of what was done; and
(ii) whether the inspection, examination or experiment was done by the expert or under the expert's supervision; and
(iii) the name and qualifications of any other person involved; and
(iv) the result;
(e) if there is a range of opinion on matters dealt with in the report, a summary of the range of opinion, and the reasons why the expert adopted a particular opinion;
(f) a summary of the conclusions reached by the expert;
(g) a statement about whether access to any readily ascertainable additional facts would assist the expert in reaching a more reliable conclusion.

(3) The expert must confirm, at the end of the report—

(a) the factual matters stated in the report are, as far as the expert knows, true; and
(b) the expert has made all enquiries considered appropriate; and
(c) the opinions stated in the report are genuinely held by the expert; and
(d) the report contains reference to all matters the expert considers significant; and
(e) the expert understands the expert's duty to the court and has complied with the duty."

If you have capacity to provide expert evidence in this proceeding, would you please: -

1. consider the amended application;

2. provide the following: -

   a. your fee structure;
   b. details of your qualifications, credentials, recognition and experience (both academic and clinical) generally and in relation to your unique category of expert evidence;
   c. details of the categories of expert evidence which consider that you can provide;
   d. details of your availability (both to provide a report and appear as an expert witness at the trial in Brisbane, Australia, either in person or via videolink); and
   e. details of any conflicts and potential or perceived conflicts of interest.

Any report should be addressed to the Supreme Court of Queensland.

We **attach** an indexed brief which includes the following documents, in case they are of assistance to you: -

1. "Expert Evidence Practice Note" published by the Federal Court of Australia; and

2. "Expert Evidence: The View from the Bench".

If you require any further information or documentation in order to prepare your report, please do not hesitate to contact this office.

Yours faithfully,
N R BARBI SOLICITOR PTY LTD

per: Natalie Strijland | Director
enc

Following this further correspondence, 6 July 2022, indicated an amendment as follows:

> Please note that the category which appears at 3(f) should read as follows: -
>
> *"Analysis of methodology and data employed by the Decision Maker in Determining ~~Vaccine Safety~~ the Virulence of Covid-19".*

1.2 Declaration of Witness

- I, Andrew Madry, have read and agree to be bound by the Code of Conduct.
- All analysis I have carried out I ascertain is correct as far as I can possibly determine. I have looked at analysis and data coming from multiple points of view to come to my own conclusions.
- I have made inquiries and evaluations for the relevant areas I can contribute to, based on my technical background, as specified in Section 3.
- The opinions I express in this report are genuinely held by myself.
- References are provided in this report to data, research papers and media commentary by relevant authorities. These references are provided in the body of the document as there was not time to reference as per academic paper guidelines, with all references collated in one section.
- I understand that it is my duty to the court and will comply with this duty.

2 EDUCATIONAL AND TECHNICAL BACKGROUND OF EXPERT WITNESS

I, Andrew Madry, have the following educational background:

- High School: Fort Street High 1975-1980.
- BSc (Hons Class 1) Physics (1981-1984) University of Sydney.
- PhD (1985-1988) University of Sydney.

I was a member of the Australian Army Reserve, Lance Corporal, 1981-1987.

I am a member of NSW Rural Fire Service. I received the National Emergency Medal for multiple deployments during the 2019-2020 Bushfire Season.

I have a current NV1 security clearance.

2.1 DOCTORAL STUDIES

My expertise in university undergraduate work was in experimental physics. Honours year physics thesis was in the Plasma Physics Department at the University of Sydney, developing a system to measure high energy microwaves used to heat plasma. This is relevant to nuclear fusion. A property called second harmonic in the electromagnetic signal was required to be detected and the challenge was that measuring this could be caused by an artifact in the data. I gained expertise in applying signal processing algorithms to measured data to detect features and trends. A theme of my professional career has been providing systems and analysis so as not to be fooled by data artifacts.

My doctoral thesis was on the subject of acoustics (sound propagation). This was funded by the NSW State Pollution Control Commission (SPCC), now known as EPA. Models, to predict noise propagation over long distances, were being deployed and usually led to results that bared no resemblance to reality. SPCC desired to have a better understanding of acoustic propagation mechanisms. The studies involved intensive field work and writing software for measurement and analysis systems.

The reason noise prediction is difficult is that it is impossible to know exactly the terrain and atmospheric conditions. Models that purport to know exactly all the variables, where in fact they don't, typically provide bad estimates. Robust models are required that provide estimates within valid ranges.

An example is noise predictions used to justify the 3rd runway in Sydney Airport in 1994. Models were used by consultants with incorrect assumptions leading to complaints from people outside what was the expected noise area. The cost of reparations was greater than the cost of the runway itself.

As an aside, this has been a major problem in pandemic modelling. Assumptions behind models have had no foundation and inevitably lead to rubbish results. This is generally due to a lack of understanding of the complexity in physical systems OR an agenda to come to a prespecified result. Sometimes modelling borders on the fraudulent trying to prove a desired point.

My major contributions in the doctoral work were experiments to measure specific aspects of sound propagation that were not included in models. These were changes in ground type/impedance and atmospheric turbulence. This was achieved by making measurements both in the lab and in the field with signal processing algorithms applied to measured data to detect acoustic propagation paths.

2.2 Defence Industry

Early career following university, (1988 – 1997) was initially in the telecommunications industry at the Overseas Telecommunications Commission (OTC) and Texas Instruments. This was developing signal processing algorithms for video transmission. This was the early days of video communications.

This was followed by work in the defence industry in development of sonar systems, based on my acoustics and signal processing experience. My special interest area was signal detection in noise. I was the designer of one of the few sonar systems developed in Australia and put into service in the Royal Australian Navy (RAN). This was a system for underwater sea bottom and explosive mine detection.

One aspect of the work during this time was gaining deeper understanding of detection of signal in noise. There were problems experienced with Northern Hemisphere mine hunting systems being used in Australian waters. These systems had never been tested in the Australian environment with warmer northern Australian waters and the underwater biological noise. Both were strong effects.

Detection of Signal in Noise is more than just a statistical analysis to show “statistical significance”. In real physical situations one is often restricted with limited data measured in uncontrolled environments and risk assessments have to be made. For example, detection probability of an explosive mine in the water has a different risk profile to predicting the outcome of an election, where no one will die if the result is wrong.

One effect I published on (in collaboration with RAN Officer) was the effect of biological noise in shallow warm waters where there are creatures called snapping shrimp that dramatically change the noise background. The noise is not distributed what is called “Gaussian” or “Normal” distribution. This massively changed the detection ability of systems if not taken into account.

Throughout my career as a consultant, I have continued to consult to the major defence organisations in Australia on specific projects, eg Boeing, Raytheon, Thales and the Defence Science Technology Group.

2.3 Medical Technologies

I have always had an interest in healthcare and medical technology. In 1997 I changed career to work in medical devices, specialising in the cardiology field and medical devices for treatment of abnormal heart rhythms. I managed a research project at Westmead Hospital cardiology department, for internationally renowned electrophysiologist Professor David Ross. This was in an Australian government funded Cooperative Research Centre (CRC) project (1997-99).

Application of signal processing to electrical signals measured in the heart, specifically for understanding of Ventricular and Atrial Fibrillation, became a special interest area for me.

I participated in clinical studies, both animal and human.

2.4 Consultancy

I founded consultancy Madry Technologies Pty Ltd in 1999 to provide specialist technical services in the areas of systems engineering, test and measurement, signal processing and data analysis. I have been a technical consultant for over 20 years and provided these services to a diverse range of industries, including Defence, Medical Devices, Rail, Telecommunications and Energy.

I have developed a software system for measurement and analysis of the electrical signals in the heart, called CEPAS (Cardiac Electrophysiology Analysis System). This system has been used by leading researchers in the field of Atrial Fibrillation in the US (eg Cleveland Clinic), Japan (Nihon University School of Medicine) and Australia (eg Royal Melbourne Hospital).

My services were sought out by Dr Al Waldo's group at Case Western Reserve University/Cleveland Clinic. Dr Waldo is regarded as one of the founding fathers of Cardiac Electrophysiology. I am a long-term collaborator with the group.

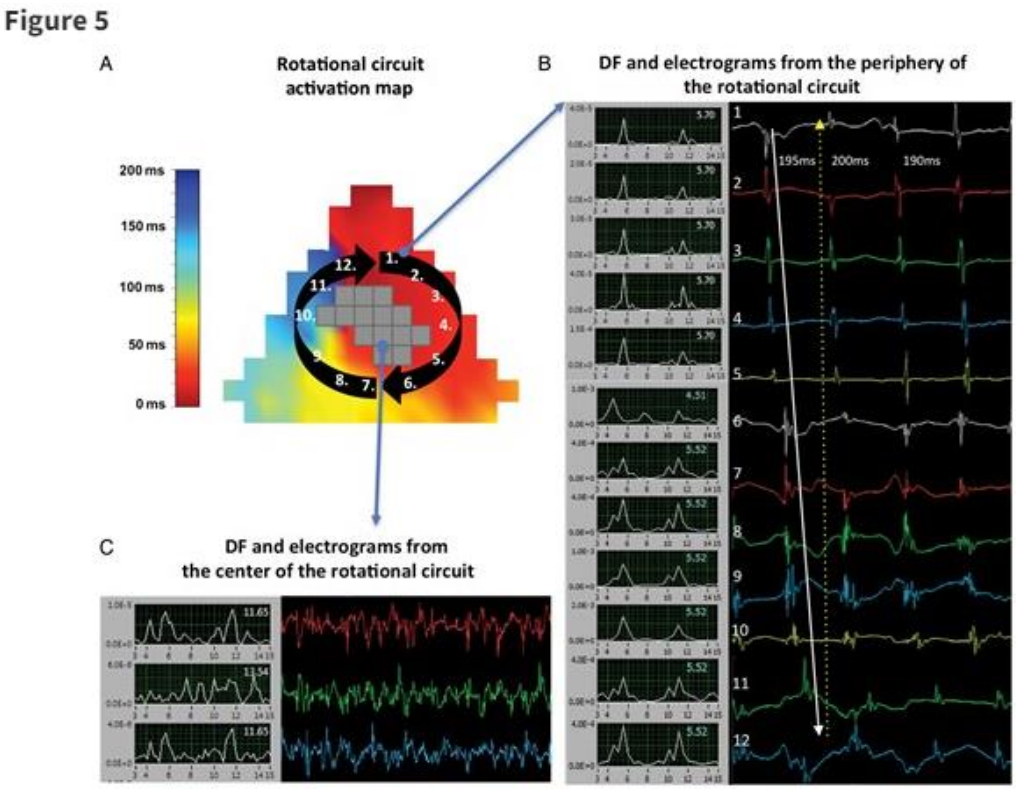
I developed a software tool to look at cardiac electrical signal data in different ways. There were problems in Atrial Fibrillation analysis. Researchers were using signal processing algorithms indiscriminately and coming up with erroneous conclusions. This led to ablation strategies that have been demonstrated to be ineffective over time.

The software tool contributed to two seminal papers on atrial fibrillation research. They are:

2013 "**Epicardial wave mapping in human long-lasting persistent atrial fibrillation: transient rotational circuits, complex wavefronts, and disorganized activity"**. *European Heart Journal*, Aug 2013. Geoffrey Lee, Saurabh Kumar, Andrew Teh, **Andrew Madry**, Steven Spence, Marco Larobina, John Goldblatt, Robin Brown, Victoria Atkinson, Simon Moten, Joseph B Morton, Prashanthan Sanders, Peter M Kistler, Jonathan M Kalman.

https://pubmed.ncbi.nlm.nih.gov/23935092/

An example of the use of the software from the paper:



Another paper referencing CEPAS software tool:

New Insights into Understanding Rotor versus Focal Activation in Patients with Persistent Atrial Fibrillation. Seungyup Lee, PhD, Celeen M. Khrestian, Jayakumar Sahadevan, MD, Alan Markowitz, MD, and Albert L. Waldo, MD, PhD (Hon).

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8319037/

From the paper:

> AEGs were sampled at 1,024 Hz and digitized at 24 bits. Data were transferred in real time, and stored on a laptop computer for further analysis (Cardiac Electrophysiology Analysis System [CEPAS], Madry Technologies, Sydney, Australia). We performed activation sequence mapping and phase analyses using previously recorded and analyzed data (22,23).

I have a granted Patent on a cardiac analysis method:

HEART ANALYSIS METHOD AND APPARATUS. PCT/AU2005/001526, published as WO2006037172A1. Filed 5 October 2004. Australian Patent No. 2005291846. US Patent 8,788,029 granted 2014.

Over a period of 10 years, I consulted to hearing implant company Cochlear, developing test systems for the implantable component and preparing documentation to meet medical regulatory guidelines. The test system I was involved in developing has been in use continuously till the present day, testing every Cochlear implantable device.

I have experience analysing data from clinical trials. An example is a recent project for Danish medical device firm, Cathvision, to review clinical trials data for the purpose of assessing Intellectual Property (IP).

Over the last 5 years I have been involved in the relatively new field of Data Science, including acting as chief data scientist at a small data consultancy firm, Robinson Ryan. This includes a project over two years at the National Disability Insurance Scheme (NDIS) analysing data to improve outcomes for participants.

2.4.1 Examples of Projects where Expert Advice has been Provided

When the Millennium trains were introduced in NSW (circa 2002) there were problems with interference from the new generation of electric motors and the aging signalling system such that electrical noise generated caused the signally system to stop trains as a failsafe.

https://www.smh.com.au/national/signal-failure-no-its-just-the-millennium-train-picking-up-steam-20020416-gdf7au.html

I worked with the signalling experts in the railways (CityRail at the time) to develop a measurement and analysis system for them to find an approach to deal with this. This involved understanding a new field, working with experts in the field and writing software and analysis. That system is still in use and has been used for acceptance testing of subsequent trainsets till the present.

When the National Broadband Network (NBN) was rolled out in Tasmania (the initial rollout), there were issues encountered in final acceptance of the system by the NBN. I was engaged by the prime contractor to assist closing our faults in the system. This involved performing custom analysis to identify where the faulty optical fibre joins were located in long haul cables (70km) run between major network nodes. Beside this was a massive documentation search task to find the relevant information.

2.5 SYSTEMS ENGINEERING

In addition, I am a professional in the discipline of Systems Engineering. I have the International Council of Systems Engineering (INCOSE) Associate Systems Engineering Professional (ASEP) certification. Systems Engineering is the discipline that arose from the aerospace industry in the US in the 60's, to understand, manage and develop complex systems. I recently co-presented a one-day tutorial at the International Council of Systems Engineering (INCOSE) 2022 International Symposium (Detroit, USA) on the topic of "Systems Thinking". I currently lead the Healthcare Working Group in the Systems Engineering Society of Australia (SESA). The aim of this group is to bring awareness of Systems Engineering and Systems Thinking to healthcare where the approach is not well understood.

Now practising as a data analyst, I have been following the COVID pandemic and the public health response closely.

I investigate data and problems from a systems perspective, based on a broad "practical" technical background.

3 SUBJECT AREAS OF THE REPORT

Subject 1	Can Assist?	Comments
1. Efficacy of Covid -19 Vaccine:	YES	I have experience in calculating Efficacy or Effectiveness of the treatment. Note Efficacy is the term used during the clinical trial stage. Effectiveness is relevant to real world data. See Section 7.
a. In Mitigating/Preventing:		
i.Transmission;	NA	I note that I am not aware of any valid information available on assessing transmission of COVID related to vaccination. It was not part of the manufacturer clinical trials. As far as I know there is no reasonable evidence of any measures to suggest reduction of transmission once infected.
ii.Infection;	YES	I have looked in detail at infection rate data from UK and NSW. See Section 7 of this report.
iii.Severity of Symptoms (also with regard to current vaccination rate, current point in pandemic life cycle, etc);	YES	I address severe outcomes (ie hospitalisation and death) in Section 8. However, I consider this as being of less relevance to the decisions mandating of vaccines to healthcare workers, than prevention of infection.
b. Analysis of methodology and data employed by the Decision Maker in determining vaccine efficacy;	YES	I have a good understanding of the statistical techniques used by the manufacturers to prove their products. However, I am not a statistician. I note that some very contrived methods have been employed to make results look better that reality. My understanding is that the Australian Decision makers have done only a very cursory review of data.
c. Efficacy of approved Vaccines as compared to natural immunity;	YES	I note I have not come across data in Australia where natural immunity (ie recovery from previous infection) is recorded. References are provided in this report to recent studies from Qatar on effectiveness of natural immunity (Section 7.8.2).
d. Changes to efficacy as a consequence of high vaccination rates / natural immunity rates.	YES	In Section 8.3, I provide a worldwide comparison of COVID death rates against vaccination and booster rates.

Subject 2	Can Assist?	Comments
2. Safety of Covid - 19 Vaccine:	YES	I have made a Freedom of Information Request to the TGA to obtain more data regarding

		deaths in the DAENS used to record adverse events.
a. Prevalence of Adverse Events;	YES	
b. Severity of Adverse Events;	YES	I review deaths and myocarditis adverse events in this report. There are numerous other types of adverse events following vaccination for which there has not been time to review.
c. Adverse Event Reporting Deficiencies;	YES	Deficiencies in adverse event reporting are discussed in this report (Section 9).
d. Analysis of Standard of Efficacy and Safety Testing: i. General; ii. Long-Term;	No	I have not reviewed this.
e. By Demographic, e.g. pregnant women, younger men, those with adverse reactions to earlier doses;	YES	I have reviewed myocarditis in young men in this report. I have not reviewed other adverse events.
f. Analysis of methodology and data employed by the Decision Maker in Determining Vaccine Safety;	YES	This is covered across various sections of the report.
g. Analysis of methodology and data employed by the Therapeutic Goods Administration in Approving Vaccines for use.	No	This was not reviewed.

Subject 3	**Can Assist?**	**Comments**
3. Virulence of Covid-19:	YES	Virulence takes on different definitions. I take the definition to be the severity or harmfulness of the disease.
a. True Mortality Rate; i. Also Analysis of methodology of recording of mortality data employed by Government;	YES	I am doing detailed analysis on this subject and have made special request for data from Australian Bureau of Statistics. I have a good understanding of this process.
b. By Strain - Delta, Omicron;	No	I have not carried out analysis in this area. I assume Omicron strains only as relevant at the current time.
c. By Demographic;	YES	I have carried out analysis by age group, country and vaccination proportion. See section 8.3.
d. True Propensity to Result in Hospital Admission / ICU;	YES	One of the issues here is the mis-categorisation of data that has occurred. See Section 8.
e. Prevalence of Symptomatic v Asymptomatic Cases;	No	My understanding is this is of limited relevance. The claim of asymptomatic spreading of the disease, promulgated early in the pandemic, has been

		controversial. I have seen no data on this for Australia.
f. Analysis of methodology and data employed by the Decision Maker in Determining the Virulence of Covid-19.	YES	There appears to be minimal analysis provided in Affidavits. I provide Australian data indicating the virulence of COVID.

Subject 4. Mandate of Covid-19 Vaccines for Health Workers:
a. Effects upon Economy;
b. Operational Effects upon Health System;
c. Effect Upon Operation of Valid/Informed Consent;
d. Viable Superior or Equivalent Alternatives to Mandates to prevent the spread and/or detrimental effects of Covid 19.
e. Compatibility with Human Rights Legislation - Domestic and International.

Section 4 is outside this reviewer's area of expertise.

4 REVIEW OF QUEENSLAND PUBLIC HEALTH DIRECTIONS (CURRENT BUNDLE)

Various versions of the Public Health Directions were provided in the brief. It is understood that Direction No 4 is the most recent.

Previous versions were reviewed for context. From Affidavit Vol 8 of 8, page 2232, Workers in a Healthcare Setting, Direction No 2, dated 4 Feb 2022:

> Widespread COVID-19 transmission in high risk settings where there are high numbers of vulnerable people or where the nature of the setting increases the risk of transmission can significantly increase the risk of transmission within the setting and into the community, and has the potential for significant adverse effects for vulnerable patients and clients accessing high risk settings.
>
> Mandatory vaccination can help reduce the risk of transmission and the impacts on those who access services at the high-risk setting.

It states: *"Mandatory vaccination can help reduce the risk of transmission…"*

This statement has no foundation. If vaccination does not reduce infection it is unlikely to reduce transmission. There is no information I know of that demonstrates vaccination reduces risk of transmission.

I note this language was changed in later versions of the Directions. In the following document provided:

"McIntyre Bundle of material before CHO - Healthcare Settings Direction No 4.pdf",

with title: Index of Material relied upon by first respondent (ie Dr John Gerrard, Chief Health Officer) in making the Workers in a Healthcare Setting Direction No 4.

In the section: Public Health Directions – Human Rights Assessment, Purpose of the Direction (page 40), the language shown above was changed to:

> Widespread COVID-19 transmission in health care settings can significantly impact the healthcare workforce due to a large number of exposed (or potentially exposed) workers and has the potential for significant adverse effects for vulnerable patients and clients accessing healthcare settings. Staff may not be able to attend work because they are confirmed cases or close contacts and may be directed not to attend work because they have (or potentially have) had unprotected exposure to COVID-19.
>
> The Queensland COVID-19 Vaccine Plan to Unite Families outlined the opening of Queensland's borders, and changes to domestic and international quarantine requirements when 70%, 80% and 90% of the eligible Queensland population were fully vaccinated. With increased movement of people into Queensland from interstate and overseas, the need for an available workforce within healthcare settings significantly increased. Protecting the public, staff and patients by mandating the vaccination of workers who enter, work in, or provide services in a healthcare setting is necessary.

Mandatory vaccination can help reduce the impact to the health system capacity and reduce risk of exposure to staff, patients and clients at the healthcare setting.
The Direction will prohibit workers in healthcare from entering, working in, performing duties or providing services in a healthcare setting unless they meet the mandatory COVID-19 vaccination requirements. There are limited exceptions and where these apply the unvaccinated worker must use PPE and undertake a COVID-19 test result before starting their shift.

The previous assertion, ie that vaccination can help reduce the risk of transmission, is no longer stated. The Direction now states that "transmission in healthcare settings can impact the workforce and have adverse effects for vulnerable patients". This statement seems obvious. However, it has nothing to do with justification of mandatory vaccination.

The Direction then goes on to state:

"mandatory vaccination can help reduce the impact to the health system capacity and reduce risk of exposure to staff patients and clients at the healthcare setting".

Breaking this statement down:

"reduce the impact to the health system capacity"

One implication of this statement is that vaccination will reduce number of people attending hospital, thereby minimising impact on hospital capacity. The veracity of this statement will be addressed this in report at section 8 on severe COVID outcomes. However, mandatory vaccination of healthcare workers, has nothing to do with reducing number of patients requiring healthcare. It could be construed that capacity is to be considered from the view of provision of sufficient workforce. Then this statement implies that following vaccination, healthcare workers will never catch COVID. This is clearly not the case.

The next part of the statement is:

"reduce risk of exposure to staff, patients and clients at the healthcare setting"

So, it would seem the assertion is that by mandatory vaccination of staff that there is a reduced risk of exposure of COVID-19 to fellow staff and a reduced risk of exposure of COVID-19 to patients in the healthcare settings from the mandatory vaccinated staff. The implication is that if unvaccinated staff attended the healthcare setting then this would increase risk. The assertion is then that vaccinated staff have less likelihood of being infected with COVID-19 and therefore exposing other people to it. In this report I will assess data available to verify this assertion, both in the documents provided to the Expert Witness review and from real world data in Australia.

There is no evidence in the brief provided to this witness to support this last statement, other than some research papers copied into Volume 8 of the Affidavits. Unfortunately, these research papers have been shown to have no resemblance to real world data. I will cover this in Section 5.1. It is well known that the data on Efficacy provided by manufacturers of approximately 95% efficacy was found to be incorrect midway through 2021.

This report will focus on real world data available to the reviewer.

4.1 Public Health Rationale

A draft document is included in the Current Bundle. Titled: COVID-19 Public Health Rationale Staff and Visitors in Healthcare Settings. It is not known what relevance this draft document has to determination of vaccine mandates for Healthcare workers.

The document states (p52):

> The Directions relating to the healthcare and vulnerable facilities are in place to minimise COVID-19 transmission among healthcare workers and settings, provide protection for highly at-risk workers, vulnerable patients and residents against both infection and serious disease, avoiding preventable deaths and to support the sustainability of the healthcare workforce and services.

This statement is highly problematic.

This report provides evidence (Section 7) that vaccination provides no protection against infection, in the context of Omicron. There is no evidence that vaccination reduces transmission once infected. In fact, there is a signal in real world data that vaccination increases risk of infection. This is worrying.

For those in younger ages, eg less than 50, there is an indication that the personal risk incurred by vaccination is greater than the risk from COVID (see Section 9). Mandating vaccination for "not at-risk" workers is providing no net health benefit to them. If the mandates are based on providing protection for what are called above "highly at-risk workers", assuming these are immunocompromised workers or workers with co-morbidities, it would seem better to remove these people from the at-risk environment. This is a basic principle of risk management, ie remove the hazard. I find no consideration of risk management principles anywhere in the documents provided.

Alternatively, if "highly at-risk workers" are considered to be those who work in COVID patient hospital wards and it is risk of severe outcome to those workers that is being considered then the risk benefit ratio for those workers, particularly younger workers should be evaluated.

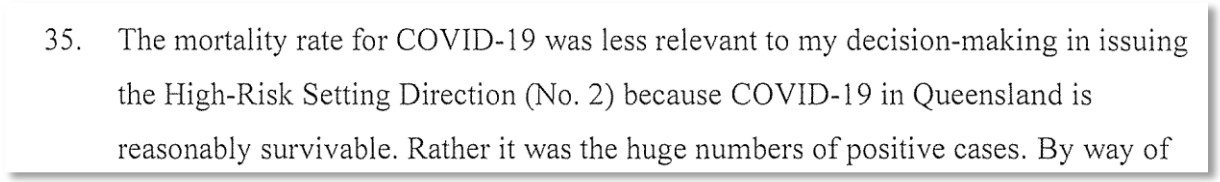
Mandating all workers to be vaccinated, where it is assumed one group will benefit, and another group incurs increased risk, would seem to be ethically unacceptable.

5 Review of Affidavit Volumes 1 to 8 (Previous Bundle)

In this section I review the contents of the Affidavits, volumes 1 to 8 provided.

5.1 Affidavit Vol 1

This contains the Affidavit of Dr Gerrard. This includes statement:



35. The mortality rate for COVID-19 was less relevant to my decision-making in issuing the High-Risk Setting Direction (No. 2) because COVID-19 in Queensland is reasonably survivable. Rather it was the huge numbers of positive cases. By way of

Dr Gerrard's main concern was the risk of spread and found mortality of COVID "less relevant" given that "COVID-19 is reasonably survivable in Queensland.

38. I was of the view that, with limited exceptions, a requirement that workers be vaccinated against COVID-19 remained a necessary measure to mitigate against the risk of the spread of COVID-19 through schools, childcare centres, prisons and detention centres, watchhouses and airports.

True copies of various articles I relied upon in respect of vaccination of staff in high-risk settings are exhibited hereto and marked ***JG-12****.*

This section JG12 should be found in Volume 8 according to page numbers

"JG-12"	Articles considered by Dr John Gerrard relating to staff vaccination in high-risk settings	2021	2256-2265

I searched for this section, which should be in Volume 8 of 8. Unfortunately, during copying pages appear to be missing. The last page of volume 8 is 2280 (a news article, cutoff). The previous page is shown as 2239, noting this is inferred as the page numbers are cut off in the scan. Therefore, I was not able to review these articles.

Another relevant section with scientific articles is:

"JG-8"	Scientific articles about the efficacy of COVID-19 vaccines	Various prior to 04.02.2022	1951-2204

This section was found. Most of the papers are legacy, from earlier phases of the pandemic, for example Pfizer trials publication. These are considered no longer relevant with respect to performance of the vaccine, in the context of the Omicron wave. They are relevant however in terms of safety of the vaccines, which would not change over time. Although dose dependence needs to be considered. See section 5.8 for discussion of the relevant scientific papers.

Dr Gerrard's CV follows.

A copy of the High-risk setting Direction No 2 follows.

The Volume contains Daily summaries. These do not provide relevant information on justification of mandates. Mainly about doses delivered.

5.2 AFFIDAVIT VOL 2

This volume contains Daily Summaries from 24 Dec 2021 up to 12 Jan 2022. Daily Summaries are understood to be for Queensland Health internal use.

In each summary after a section on Vaccination Data, with doses for different areas there is a section on adverse events. Eg p428 shows an example of very brief report adverse reactions numbers in Queensland. See Section 9.5 for examples taken from here.

5.3 AFFIDAVIT VOL 3

This consists of Daily Summaries continued, 13 Jan – 21 Jan 2022.

5.4 AFFIDAVIT VOL 4

This contains more Daily Summaries from 24 Jan to 4 Feb 2022. Example of vaccination status table from 25 Jan, p954:

VACCINATION COVERAGE (change from previous report)

Total Queensland population as at 25 January 2022
Source: Australian Government Department of Health COVID-19 Vaccine Rollout Update

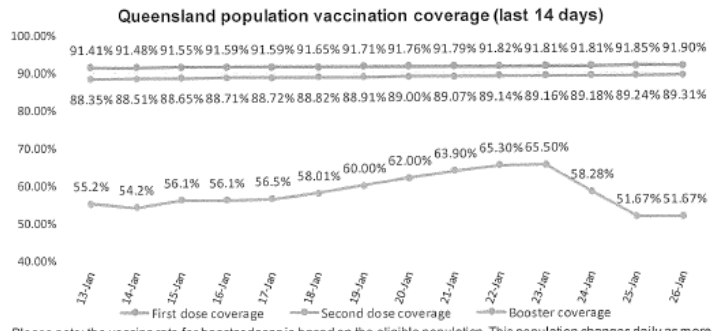
16 years+	At least 1 dose	2 doses	Booster
Percentage of eligible population vaccinated	91.90% (0.05%)^	89.31% (0.07%)	51.67% (0.00%)*
Cumulative number of people vaccinated	3,779,564 (1,904)^	3,673,207 (2,938)	1,293,877 (43,516)

* Please note: the vaccine rate for booster doses is based on the eligible population. This population changes daily as more people become eligible for their booster dose. This vaccination coverage rate may go down.
The eligibility for booster timeframe was amended to 3 months on 24 January.

12 years +	At least 1 dose	2 doses
Percentage of eligible population vaccinated	90.86% (0.06%)^	87.93% (0.07%)
Cumulative number of people vaccinated	3,982,476 (2,471)^	3,853,635 (3,186)
5-11 years	**At least 1 dose**	**2 doses**
Percentage of eligible population vaccinated	29.60% (1.43%)	NA
Cumulative number of people vaccinated	141,684 (6,811)	NA

First Nations population as at 23 January 2022 ***data updated weekly***
Source: Queensland Health CVAX Small Areas COVID-19 Coverage dashboard

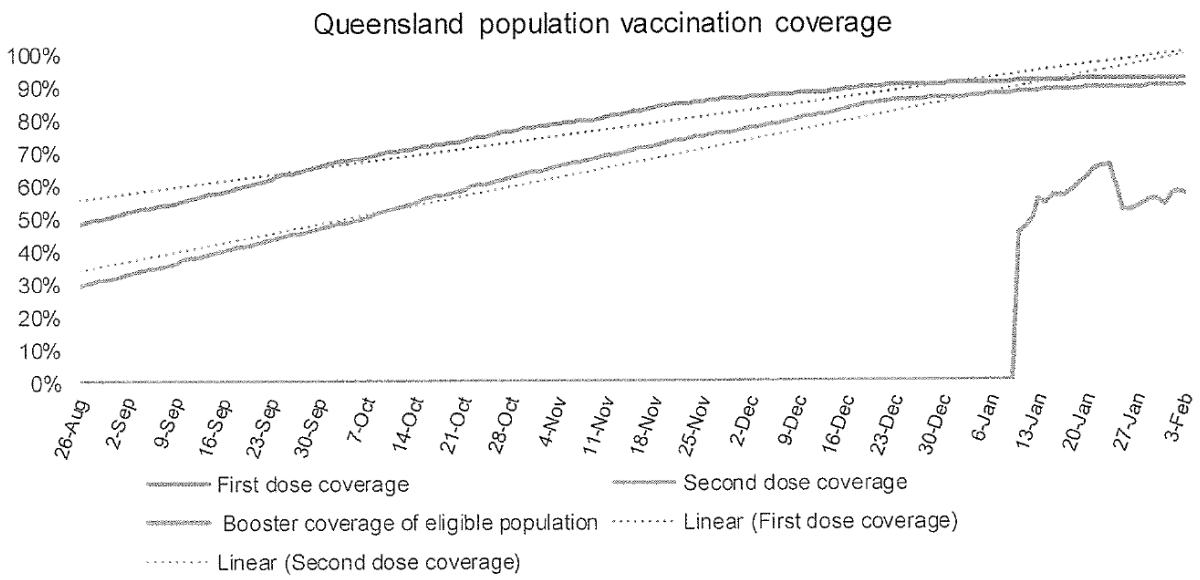
16 years+	At least 1 dose	2 doses
Percentage of eligible population vaccinated	77.59% (0.69%)	69.41% (0.73%)
Cumulative number of people vaccinated	115,829 (1,032)	104,702 (1,084)
12 years+	**At least 1 dose**	**2 doses**
Percentage of eligible population vaccinated	75.66% (0.76%)	67.67% (0.39%)
Cumulative number of people vaccinated	128,716 (1,297)	115,116 (1,266)



Please note: the vaccine rate for booster doses is based on the eligible population. This population changes daily as more people become eligible for their booster dose. This vaccination coverage rate may go down.
The eligibility for booster timeframe was amended to 3 months on 24 January.

There are very brief reports of adverse events, eg 24 Jan and 4 Feb 2022, See Section 9.5 for review of adverse events from this volume.

From Daily Summary 4 Feb 2022, p1138 shows a graph of most recent vaccination coverage in Queensland.



5.5 AFFIDAVIT VOL 5

This volume (pages 1174-1442) contains report that is called "Fast Facts". Basically, this has the same information as the General Summary.

5.6 AFFIDAVIT VOL 6

This volume contains "Fast Facts" for 24 Jan to 4 Feb 2022.

At the end of this volume there is a section on hospital ward capacities.

From p1583 for 31 Jan, a table contains the latest detailed list of Deaths, 199 total. The first 7 are before rollout of vaccination and therefore there are 192 deaths.

Following this date, the table was not updated and deaths were specified for individual day.

1 Feb: 202 deaths since 13 Dec 2021, 10 new.

2 Feb: 218 deaths since 13 Dec 2021, 16 new.

3 Feb 227 deaths since 13 Dec 2021, 9 new.

4 Feb 240 deaths since 13 Dec 2021. 13 new.

4 Feb appears to be last report provided.

5.7 AFFIDAVIT VOL 7

In Volume 7 of 8 (which is large, pages 1731 - 1950) there is information on deaths in Qld up till 4 February 2022. This is relevant to the point 3 of the brief: virulence of covid-19 and true mortality rate and methodology of Qld Health.

From pages 1744 to 1793 there are emails with tables, where the tables are wider than the page, and therefore during the print and scan they are cut off. There is probably relevant information in these tables. It indicates that unvaccinated deaths are typically in elderly with comorbidities, where

it is likely that a decision had been made not to vaccinate because of risk to the individual based on their condition.

There is a summary table on page 1771 (attachment to email on p1770). This table is cut off and may have useful information. If possible full copies of this information should be provided.

5.8 AFFIDAVIT VOL 8

This volume provides various research papers, presumably used to make the decision. The reviewer has not had sufficient time to review all of these but has reviewed ones that should be relevant in the Omicron period.

Page 2185 is New England Journal of Medicine paper on the Pfizer study trial. It is widely acknowledged that there were many deficiencies in this trial. Peter Doshi and colleagues have published on preprint server:

Fraiman, Joseph and Erviti, Juan and Jones, Mark and Greenland, Sander and Whelan, Patrick and Kaplan, Robert M. and Doshi, Peter, Serious Adverse Events of Special Interest Following mRNA Vaccination in Randomized Trials. Available at SSRN: https://ssrn.com/abstract=4125239

From the paper:

> **Results:** Pfizer and Moderna mRNA COVID-19 vaccines were associated with an increased risk of serious adverse events of special interest, with an absolute risk increase of 10.1 and 15.1 per 10,000 vaccinated over placebo baselines of 17.6 and 42.2 (95% CI -0.4 to 20.6 and -3.6 to 33.8), respectively. Combined, the mRNA vaccines were associated with an absolute risk increase of serious adverse events of special interest of 12.5 per 10,000 (95% CI 2.1 to 22.9). The excess risk of serious adverse events of special interest surpassed the risk reduction for COVID-19 hospitalization relative to the placebo group in both Pfizer and Moderna trials (2.3 and 6.4 per 10,000 participants, respectively).
>
> **Discussion:** The excess risk of serious adverse events found in our study points to the need for formal harm-benefit analyses, particularly those that are stratified according to risk of serious COVID-19 outcomes such as hospitalization or death.

This need for formal harm-benefit analyses is critical in my opinion as a reviewer.

The Pfizer trial showed no mortality benefits. In the Vaccine arm 13 died, in the Placebo arm 12 died. In other words, more people died in the vaccine arm. Because of small number this was not statistically significant. In Section 10.4 a Danish study led by Professor Christine Stabell Benn is referenced analysing all clinical trials data for various vaccines. No mortality benefit was found for mRNA vaccines.

P2151: paper by Aggarwal and colleagues, UNSW. SARS-CoV-2 Omicron: evasion of potent humoral responses and resistance to clinical immunotherapeutics relative to viral variants of concern. This paper attempts to look at Omicron and is based on serum taken from a cohort of 200 patients. I note this is theoretical work and relies on measurement of neutralisation titres of antibodies. There appears to be no calibration against real world data. This reviewer is mainly concerned with real world effectiveness. Complex models are used. The use of measurement of antibody titres to compute vaccine effectiveness is out of my area of expertise. I do know that reported studies of this sort throughout the pandemic have been notably inaccurate. They estimate vaccine effectiveness

against symptomatic disease of 37% and boosted 74% with Pfizer BNT162b. There is no estimation of a waning effect.

represented challenges to vaccine efficacy, there are two defining features of Omicron that provide additional concerns. Firstly, as observed herein the fold evasion to humoral immunity is significantly greater with Omicron than all other VOCs. Secondly, unlike Beta and Gamma, Omicron is gaining momentum in global prevalence in areas where Delta has dominated in late 2021. Whilst boosters utilising the same Clade A Spike may increase antibody titres to Omicron, development of variant specific boosters may be more pragmatic in the longer term if Omicron persists. The latter will be very important in those groups that may have a limited titre, such as in the elderly or immunocompromised. Fortunately for the latter at risk groups, certain immunotherapeutic treatments like Sotrovimab appear to maintain potency and remain relevant for treatment in Omicron cases.

They note the ability of Omicron to evade immunity. They say while boosters with the original Wuhan spike “may” increase antibody titres, they admit that variant specific boosters are required.

My opinion is that resources should have been applied in Australia during the pandemic to perform robust observational trials or even randomised controlled trials. The cost of doing studies properly is negligible in comparison with the adverse effects of using bad data to make public health decisions.

P2273 is a Danish preprint study: SARS-CoV-2 Omicron VOC Transmission in Danish Households. They estimate the effect of vaccination status of households referenced to those with 2 doses (fully vaccinated). The study covered a period of 2 weeks in December 2021. They find it as being basically no different for unvaccinated households (Susceptibility 1.04) and better for booster vaccinated (Susceptibility 0.54). They note the duration of protection effect of boosters is unknown. Their data do “raise concerns about the longevity of the booster response”. The researchers note: “This means the current vaccines are unlikely to mitigate the spread of Omicron”. They suggest adapted improved vaccines. There are several pages (pp 2084 -2087) on the limitations of this study acknowledged by the authors.

Full analysis of these papers was not possible in the time available. They are useful contributions but all they highlight is the uncertainty of vaccine effectiveness in the context of Omicron infection. There is no understanding of length of protection from different vaccination regimes. It confirms two dose is no better than unvaccinated. Boosters have an effect of unknown duration.

I note also that apparently, they pool single dose with the unvaccinated, which in my opinion has been a problem in much analysis during the pandemic.

6 BACKGROUND ON STATISTICS AND ANALYSIS

The same data can be used to show completely different results. This is hard to understand. As a practitioner it is my job to determine the veracity of conclusions based on data.

It is important to look at data from different views. It is important that data is categorised appropriately. A few effects that can confound results are described in this section.

6.1 SIMPSON'S PARADOX

Simpson's paradox shows that different groupings of the same data can show opposite trends. This happens when aggregated data hides a conditional variable. This has been a hallmark of pandemic reporting. One number is provided, eg you are 5 times more likely to die if you don't do this. When you break down the data into sub-groups of data, that are consistent within those groups, you can get very different results.

The following example, is from a Ted talk Video, https://youtu.be/sxYrzzy3cq8

An observation was made to check a patient's survival rate from two hospitals, hospital A and hospital B. The results were as follows:

- 900 of 1000 patients in Hospital A survived.
- 800 of 1000 patients in Hospital B survived.

Which Hospital seems to be better?

Intuitively, we would believe that Hospital A is better. More patients survived. However, trends from data can be different based on how data is grouped. This is Simpson's Paradox.

Dividing the 1000 patients into two groups; based on health conditions, good and poor. The results are as follows:

Out of 1000 patients in Hospital A

- 100 were in poor health — 30 survived.
- 900 were in good health — 830 survived.

Out of 1000 patients in Hospital B

- 400 were in poor health — 210 survived.
- 600 were in good health — 590 survived.

The numbers who survived add up to the original numbers, 900 and 800.

Now do calculations of rate of survival for the different groups.

1. Survival rate for poor health.

- Hospital A— 30/100 = 30%
- Hospital B — 210/400 = 50.5%

2. Survival rate for good health.

- Hospital A — 830/900 = 92%

- Hospital B: — 590/600= 98%

Hospital B is now the better choice, for both health conditions, poor and good. This is difficult to understand when Hospital A was better based on the aggregated data, not considering the underlying health condition. It depends on the proportion in each sub-group, health poor and health good.

The reason is what is known as “lurking” or “confounding” variables. The outcome also depends on the health of the patient going into the hospital.

There are clearly different outcomes with respect to COVID for an 80-year-old woman as compared to a 25-year-old male. Say we had 2 treatments A and B to protect from a disease:

- Treatment A: 30 out of 1000 die of disease.
- Treatment B: 60 out of 1000 die of disease.

Treatment A is better, half the number of people die.

But if there are two distinct age groups, old and young

In the old group:

- Treatment A: 20 out of 1000 die of disease.
- Treatment B: 55 out of 1000 die of disease.

Treatment A is still better by factor of 2.75

In the young group:

- Treatment A: 10 out of 1000 die of disease.
- Treatment B: 5 out of 1000 die of disease.

Treatment B is better now by a factor of 2 in the young group, while it was worse in the older group.

The aggregated data tells us nothing about the effect on a particular sub-group. The result for sub-groups can be completely the opposite.

6.2 CATEGORISATION

Data needs to be provided in age groupings within which the response to an intervention is consistent. 10-year age bands is usually sufficient. 5 years is better.

Even within age groupings there are differences in the population. There are those with different health status. Take older age groups. There will be some with good robust health. There are some, say with dementia, that elect not to take an intervention, such as vaccination, because they are close to end of life. These are clearly different sub-groups.

Evidence of this is seen in data presented in this report (see Section 8.1). Where death from COVID occurs, it is never provided with appropriate categorisation. It is either provided for different age groups OR for different vaccination status. It should be provided for both simultaneously.

The response of the different sub-groups can completely change an aggregated result, particularly when the number of deaths is small compared to the total group.

COVID adverse outcomes are strongly weighted towards older ages and for those with comorbidities. Deaths with comorbidities should be split out. This has sometimes been done in NSW surveillance reports, indirectly. From Week Ending 14 May 2022.

NSW COVID-19 WEEKLY DATA OVERVIEW

Epidemiological week 19, ending 14 May 2022

www.health.nsw.gov.au/coronavirus

- Five people aged under 65 years died with COVID-19. Of these, four had received two doses of a COVID-19 vaccine and one had received three doses. All five had records of significant underlying health conditions that increase the risk of severe disease from COVID-19.
- Reported deaths were classified as COVID-19 deaths if they met the surveillance definition in the Communicable Diseases Network of Australia's COVID-19 National Guidelines for Public Heath Units. Under this definition, deaths are considered COVID-19 deaths for surveillance purposes if the person died with COVID-19, not necessarily because COVID-19 was the cause of death. Deaths may be excluded if there was a clear alternative cause of death that was unrelated to COVID-19 (e.g. major trauma).
- COVID-19 related deaths are notified to NSW Health from a range of sources, including public and private hospitals, aged care facilities, and the Coroner. Not all deaths reported by NSW Health occurred in the week in which they are reported as there is sometimes a delay between a death occurring and it being reported to NSW Health. NSW Health does not report deaths under investigation by the Coroner until the Coroner issues their findings on the cause of death.

This indicates that the small number of deaths (5) under 65 all had comorbidities. All were vaccinated. The results, for all ages is shown below.

	Admitted to hospital (but not to ICU)	Admitted to ICU	Deaths
Gender			
Female	279	19	40
Male	253	37	50
Not stated / inadequately described	38	2	0
Age group (years)			
0-9	38	3	0
10-19	19	3	0
20-29	47	2	0
30-39	47	5	0
40-49	41	3	2
50-59	41	8	2
60-69	55	10	6
70-79	91	12	20
80-89	131	12	28
90+	60	0	32

There were no people under 65, without comorbidities who died, vaccinated or unvaccinated.

7 VACCINE EFFECTIVENESS AGAINST INFECTION

Vaccine Effectiveness describes how well a vaccine stops infection. We need to be careful about use of the term "efficacy" as that term is used in the context of a formal clinical trial. "Effectiveness" is a more appropriate term to use for real world data.

In this section I investigate this from several angles.

By early January 2022 it was reported, based on real world UK data, that Vaccine Effectiveness had become negative for all age groups above 18. Negative effectiveness means that infection is more prevalent in vaccinated people. Detail on calculation of Effectiveness is provided below in Section 7.1 below.

For example, see article: https://paretos.substack.com/p/vaccine-failure-across-the-board

and a graph copied below from the article:

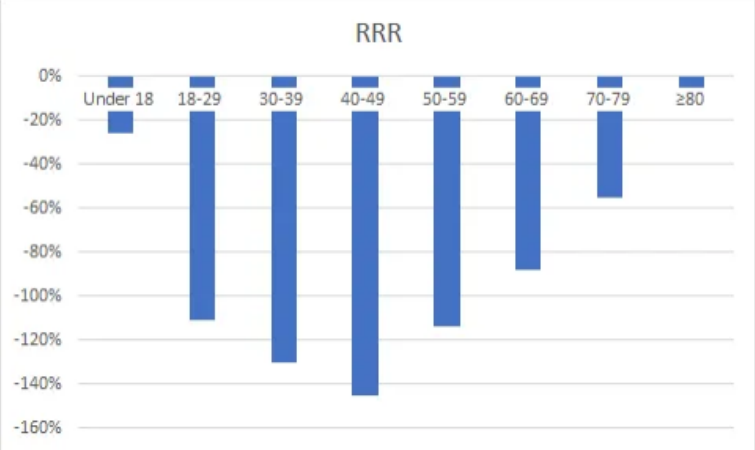


Fig.1 shows that not only does vaccination against Sars-Cov-2 infection not prevent infection but increases the risk of infection. All age groups demonstrate negative efficacy.

I downloaded the UK report from Week 1, 2022 and indeed the ratios reported in this post are correct for over 18s (I found an error in the under 18 group in graph above). Similar trends were occurring in other countries, leading to research and discussion on vaccine effectiveness in the context of the Omicron variant.

The UK has amongst the best reporting of data during the pandemic, albeit with limitations reported by researchers. See "Discrepancies and inconsistencies in UK Government datasets compromise accuracy of mortality rate comparisons between vaccinated and unvaccinated" from Professor Norman Fenton's group at Queen Mary University in the UK:
http://www.eecs.qmul.ac.uk/~norman/papers/inconsistencies_vaccine.pdf

In Australia, this data, on rate of infections in the population for different vaccination status, is not directly reported, but can be calculated. Section 7.5 and 7.6 for my analysis of NSW and Australian data.

7.1 Definition of Effectiveness

The following is taken from the CDC website:
https://www.cdc.gov/csels/dsepd/ss1978/lesson3/section6.html

Vaccine efficacy and vaccine effectiveness measure the proportionate reduction in cases among vaccinated persons. Vaccine efficacy is used when a study is carried out under ideal conditions, for example, during a clinical trial. Vaccine effectiveness is used when a study is carried out under typical field (that is, less than perfectly controlled) conditions.

Vaccine efficacy/effectiveness (VE) is measured by calculating the risk of disease among vaccinated and unvaccinated persons and determining the percentage reduction in risk of disease among vaccinated persons relative to unvaccinated persons. The greater the percentage reduction of illness in the vaccinated group, the greater the vaccine efficacy/effectiveness. The basic formula is written as:

$$\frac{\textit{Risk among } \textbf{\textit{unvaccinated}} \textit{ group} - \textit{Risk among } \textbf{\textit{vaccinated}} \textit{ group}}{\textit{Risk among } \textbf{\textit{unvaccinated}} \textit{ group}}$$

OR: *1 − risk ratio*

In the first formula, the numerator (risk among unvaccinated − risk among vaccinated) is sometimes called the risk difference or excess risk.

Vaccine efficacy/effectiveness is interpreted as the proportionate reduction in disease among the vaccinated group. So a VE of 90% indicates a 90% reduction in disease occurrence among the vaccinated group, or a 90% reduction from the number of cases you would expect if they have not been vaccinated.

The Risk Ratio or Relative Risk (RR) is a way to compare risks for two groups. For vaccines it is assumed that a vaccine reduces rate of infection. RR is the relative risk of developing the disease for vaccinated people (with intervention) compared to unvaccinated people (those with no intervention).

RR less than 1 means risk is reduced with intervention. RR equal to 1 means there is no difference in risk.

We can then state this Relative Risk as a percentage decrease (or increase) with respect to no intervention. Effectiveness expresses RR as a percentage decrease or increase from 1.

A positive Effectiveness percentage means that the intervention, in this case vaccination, improves the desired outcome, ie decrease in rate of infection.

It's also equal to the difference in rate between no intervention (unvaccinated) minus intervention (vaccinated) divided by the default rate (unvaccinated).

The effectiveness as a percentage is calculated as (1- RR) x 100%.

If RR = 1 Effectiveness is 0%.

When RR<1 the % decrease in risk = (1 - RR) x 100%. This is positive Effectiveness.

If RR>1 this is negative Effectiveness. The % increase in risk = (RR - 1) x 100%. The intervention has made things worse.

To get the risk for each group in the first place we divide the incidence of disease (eg number of infections per 100,000 population) in the no intervention group, ie unvaccinated, by the incidence in the vaccinated group (ie group with intervention).

100% effective means that no one who has the intervention gets infected. As it decreases the ratio of the rate of those vaccinated to those unvaccinated who are getting infected increases. 0% effective means that there is basically no beneficial effect. If the ratio turns around it means that the intervention is performing worse than doing nothing. -100% means that the intervention makes things twice as bad as doing nothing. It's a little bit confusing when described as a percentage, compared with thinking about numbers of cases in a population. One way the percentage limits at maximum of 100% and the other way it can go below 100%.

7.2 Promised Effectiveness of COVID Vaccines

Trials of the Pfizer vaccine promised Effectiveness of 95% and for Moderna 94.1 %. See:

https://www.health.gov.au/initiatives-and-programs/covid-19-vaccines/advice-for-providers/clinical-guidance/product-information, https://www.bmj.com/content/374/bmj.n1920

What does 95% effective mean? If we have 100 people vaccinated and 100 people unvaccinated and 1 vaccinated person gets infected (rate = 0.01) and 20 unvaccinated people get infected (rate = 0.2) then Vaccine Effectiveness (VE) is (1 – 0.01/0.2) x 100% = 95%. It also means 20 times more unvaccinated people get infected than vaccinated people.

A news article in Nature (August 2021) https://www.nature.com/articles/d41586-021-02261-8 titled: **COVID vaccines protect against Delta, but their effectiveness wanes -** Massive UK study of COVID-19 cases shows that people who are jabbed have good immunity at first, but quickly become more vulnerable to the fast-spreading Delta variant, reported on a UK study that:

Pfizer is around 92% effective at stopping people from developing a high viral load 14 days after the second dose. Nature reports the study as showing the vaccine's efficacy declined to 90% after 30 days, 85% after 60 days and 78% after 90 days. AstraZeneca's efficacy began at 69% a fortnight after the second dose, falling to 61% after 90 days.

The article goes on to say:

The study shows that vaccinated people who become infected with the Delta variant carry high peak levels of virus. When the Alpha variant was dominant in the United Kingdom, vaccinated people who became infected had much lower peak viral loads.

The implications of this aren't clear, Walker says. "Most of our tests are monthly; we can't really say very much at all about how long people are infectious for and particularly whether that's different with Delta," she says. "Anyone who thinks that if they get infected having been vaccinated, they can't transmit — that isn't likely to be true."

By mid-2021 it was clear that the vaccines, developed for the original Wuhan strain of the virus, had effectiveness that waned rapidly and that infection with later strains was expected. Also, it became apparent that vaccinated people who get infected are just as likely to transmit the disease.

7.3 Example Calculation of Real-World Vaccine Effectiveness

Weekly reports from UKHSA (UK Health and Security Agency) are found on this web page:

https://www.gov.uk/government/publications/covid-19-vaccine-weekly-surveillance-reports

Taking an example from the UK report for Week 1 of 2022. This report provides data for the previous 4 weeks, ie weeks from week 49 to week 52, 2021 (inclusive of weeks 49 and 52). Take as an example the 40-49 year age group. See first three columns, screen captured below, for age group and infection cases.

Table 13. Unadjusted rates of COVID-19 infection, hospitalisation and death in vaccinated and unvaccinated populations.
Please note that the following table should be read in conjunction with pages 34 to 37 of this report, and the footnotes provided on page 42.

	Cases reported by specimen date between week 49 and week 52 2021		Cases presenting to emergency care (within 28 days of a positive test) resulting in overnight inpatient admission, by specimen date between week 49 and week 52 2021		Death within 28 days of positive COVID-19 test by date of death between week 49 and week 52 2021		Death within 60 days of positive COVID-19 test by date of death between week 49 and week 52 2021	
	[see information on population bases and unadjusted rates in footnotes 1 and 2 below this table]							
	Unadjusted rates among persons vaccinated with 2 doses (per 100,000)[1,2]	Unadjusted rates among persons not vaccinated (per 100,000)[1,2]	Unadjusted rates among persons vaccinated with 2 doses (per 100,000)[2]	Unadjusted rates among persons not vaccinated (per 100,000)[2]	Unadjusted rates among persons vaccinated with 2 doses (per 100,000)[2]	Unadjusted rates among persons not vaccinated (per 100,000)[2]	Unadjusted rates among persons vaccinated with 2 doses (per 100,000)[2]	Unadjusted rates among persons not vaccinated (per 100,000)[2]
Under 18	1,827.4	2,961.6	2.0	7.6	0.2	0.0	0.2	0.1
18 to 29	7,221.4	3,240.8	6.3	12.7	0.1	0.5	0.1	0.5
30 to 39	6,383.9	2,686.6	7.1	19.4	0.2	1.3	0.4	1.6
40 to 49	5,393.8	2,147.2	8.6	33.5	0.7	3.5	0.9	4.7
50 to 59	3,738.4	1,721.9	10.2	58.8	1.6	10.1	2.2	12.9
60 to 69	2,266.3	1,194.3	13.0	91.4	4.8	27.0	6.2	32.0
70 to 79	1,347.6	862.0	20.5	143.4	9.0	67.4	13.1	75.6
80 or over	1,055.0	981.5	55.0	260.3	40.3	228.8	52.8	240.9

Infection rates 40-49:

- Vaccinated are 5393 cases per 100,000
- Unvaccinated are 2147 cases per 100,000

Risk Ratio = 5393 / 2147 = 2.5

Effectiveness = (1 – 2.5) x 100 = **-150%**

Another way to look at this (flipping the risk numerator and denominator) is that unvaccinated have a 60% **decrease** in risk from infection compared to vaccinated, based on this UK data.

This was in contrast to the public health messaging on the effectiveness of vaccines referring back to the original promised effectiveness (see Section 7.2).

The UKHSA report tries to explain this by saying unvaccinated must have caught COVID in weeks before. Therefore, they had temporary natural immunity, thereby reducing infection numbers in the unvaccinated. This was unfounded. There was no evidence provided for this.

7.4 Vaccine Effectiveness from UK Data

The reason the Effectiveness measure is important to verify, is because governments and companies have used Vaccine Passports to limit access of unvaccinated persons to various services, in the interest of protecting society. The premise was that vaccinated persons have much lower risk of being infected and therefore transmitting the virus. As stated in Section 7.2 the Nature article made

clear that people infected with later strains of the virus "carry high peak levels of virus". So being vaccinated and infected is just as much risk to society as being unvaccinated and infected.

There are numerous disclaimers to the UKHAS report's tables providing the raw data:

"Comparing case rates among vaccinated and unvaccinated populations should not be used to estimate vaccine effectiveness against COVID-19 infections. Vaccine effectiveness has been formally estimated from a number of different sources... going on to reference various manufacturer's trials.

I note that trial results, sponsored by manufacturers, are always significantly better than what is found in real life. There are various other disclaimers to the results in the UK reports. They include:

- *People who are fully vaccinated may be more health conscious and therefore more likely to get tested.*
- *People who are fully vaccinated and people who are unvaccinated may behave differently, particularly with regard to social interactions and therefore may have differing levels of exposure to COVID-19.*
- *People who have never been vaccinated are more likely to have caught COVID-19 in the weeks or months before the period of the cases covered in the report. This gives them some natural immunity to the virus for a few months and may have contributed to a lower case rate in the past few weeks.*

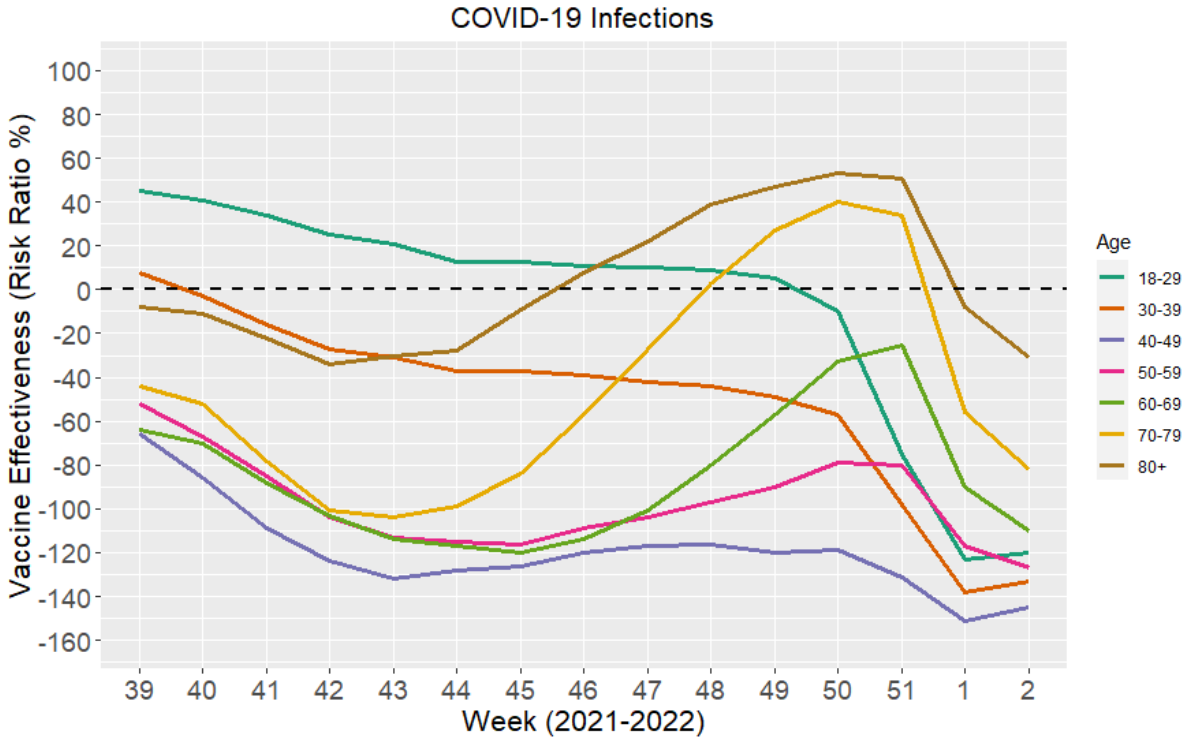
These caveats appear to be nonsense. A full review of these caveats is outside the scope of this report.

This reviewer's understanding is that in the UK the restrictions on the unvaccinated, apart from travel overseas, were not severe. This was unlike in Australia where unvaccinated were restricted access, for a period, to all but non-essential services like food.

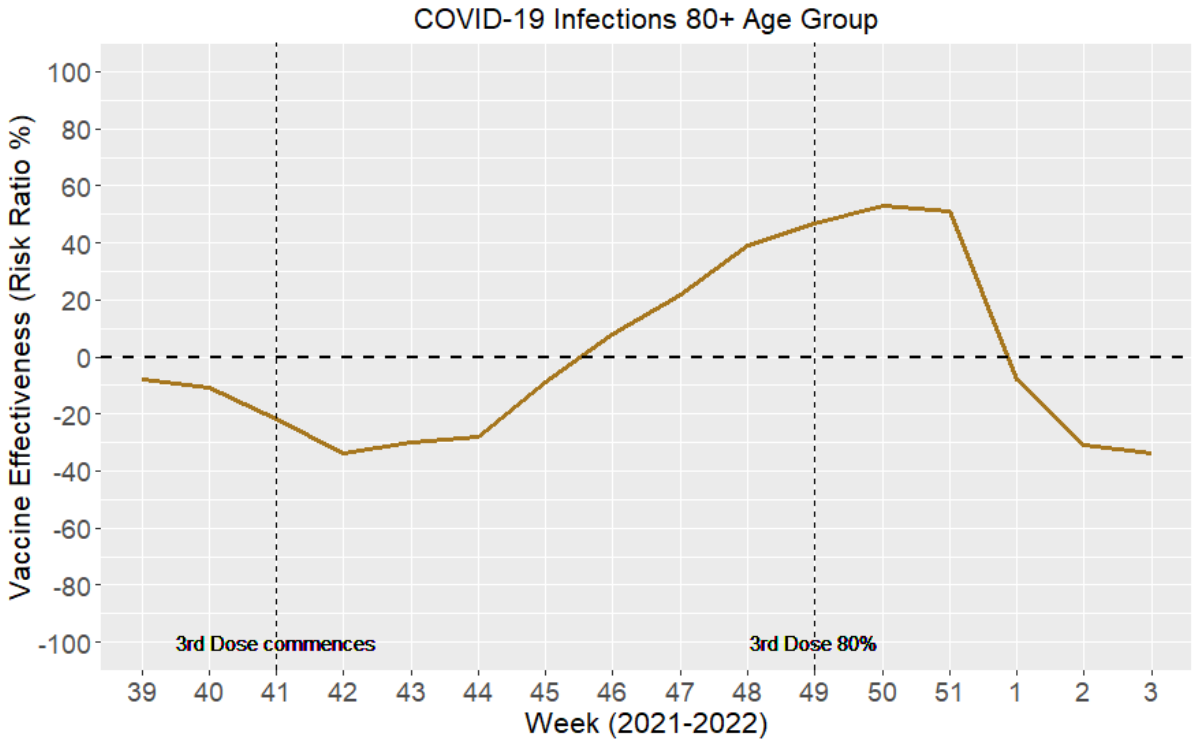
I investigate what was happening leading up to Week 1 in 2022 in the UK data.

I downloaded UK reports from Week 39 in 2021 onwards. Each of the reports cover multiple weeks of actual reported data. Report Week 39 is stated as data between Week 35 and 38. That is the start of September till 26 Sep 2021. Week 2 report 2022, is for data from Week 50 2021 to Week 1 2022.

I plot the Vaccine Effectiveness from reports for Week 39 in 2021 till Week 2 2022. Noting the week shown on the axis is the week of report. I plot Effectiveness from ages 18 up. Taking a slice at Week 1 you can see the Negative Effectiveness occur for all ages. Below the dashed line means infection rate is higher in vaccinated compared to unvaccinated, ie Negative Effectiveness.



There are many features in this graph to consider. In particular the significant fluctuation over time. It is understood that the rollout of the third booster dose started in September 2021 in the UK for the 80+ age group. The end of September is actual Weeks 38-39. Booster Effectiveness should appear in this age group by the time of reports from Week 39 (which covers weeks 35-38) to Week 42 (covering weeks 38-41). Boosters were then progressively rolled out for other age groups. The 80+ age group third dose coverage reached 80% for that age group by Week 46. Reports for Weeks 47 - 50 include data for actual week 46.



So, at the first weeks shown on this graph, on the left, effects of boosters will start being seen. 80-year-olds are starting to be boosted. We see some remaining waning then leveling off. Effectiveness starts increasing by time of Week 42 report. By the time the 80-year-old population is 80% boosted the Effectiveness has reached back to +50%.

It appears that the introduction of the booster improves effectiveness. However, this is short lived, falling again rapidly after the majority of the population are boosted and the onset of Omicron. I note that the graph above for 80+ includes Week 3 data where the UK reports only provide infections for 3 doses only coverage in an attempt to show better Effectiveness.

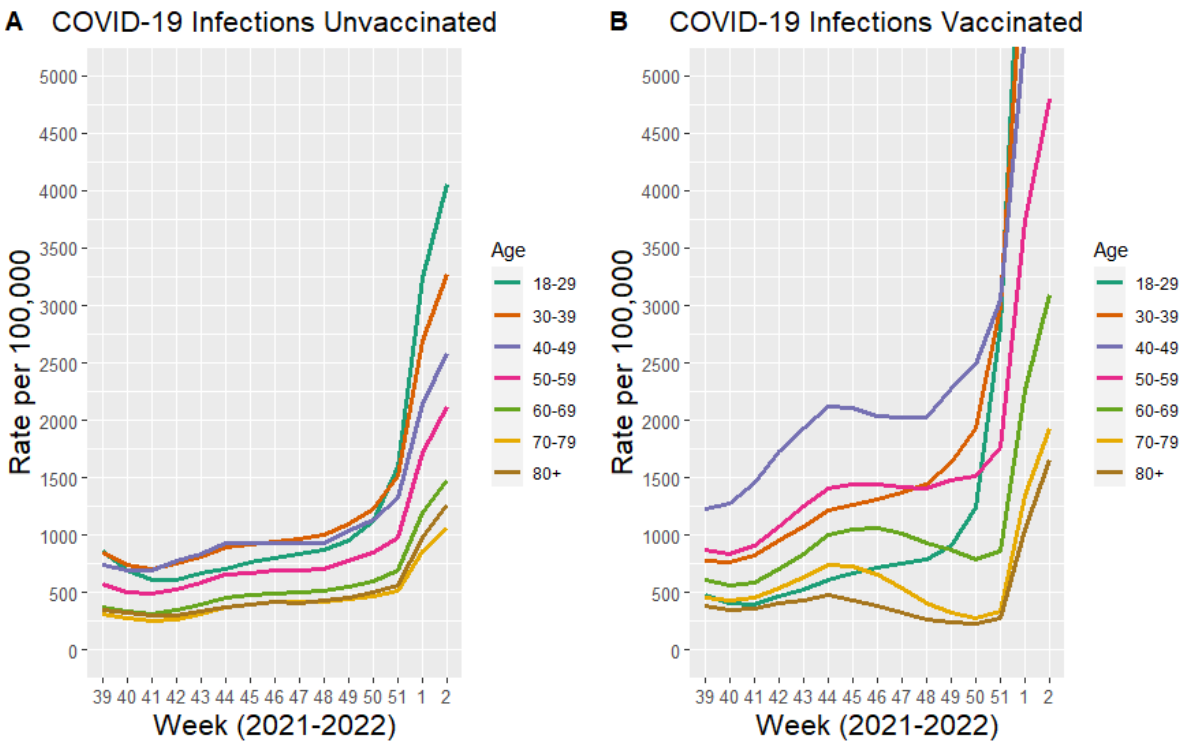
Similar trends are seen for other age groups looking at the first graph for all ages. That trend is:

- Effectiveness Waning
- Negative Effectiveness for most age groups,
- Leveling off and a slow increase, presumably due to boosting.
- Improving Effectiveness after rollout of boosters – not always reaching back to zero however.
- Very rapidly falling off - over a period of weeks

The rapid waning will be partly due to the known waning of Boosters. It is also possibly due to the onset of Omicron variant, making vaccines even less effective.

Even if all the disclaimers in the UK reports were valid, such that the rate of infection for unvaccinated people should be higher, these temporal variations in the data would remain. From mid-December we can see the effect of the Omicron variant leading to a significant change. There is a rapid drop in effectiveness across all age groups.

It is instructive to look at the underlying absolute rates of infection for the unvaccinated and vaccinated. See the side-by-side graphs below for unvaccinated and vaccinated:



The unvaccinated rate per 100,000 is on the left and the vaccinated rate on the right. Rates for some age groups on the right have gone above the y axis limit set for these graphs. The unvaccinated rate trends steadily. The Omicron onset can be seen at the end of 2021 with rapid increase of infection rate from Week 51, remembering that the data for a Week, shown on x axis, is the report week number covering the previous 4 weeks of data. On the other hand, the vaccinated rate (noting this is for those with at least 2 doses) goes up and down before the onset of Omicron. Presumably this is due to waning effects of the vaccination and temporary improvements after boosters. For some age groups the rate of infection doesn't get back to where it was previously.

As I went through the reports, and trends became apparent, it is clear that editorial influence was applied in the UK reports, as public criticism occurred. At Week 42, when Vaccine Effectiveness appeared to be negative for all age groups above 30, there was apparently outrage expressed by an eminent statistician, Dr David Spiegelhalter, that the UK Health Security Agency had "*put out absurd statistics showing case rates higher in vaxxed than non-vaxxed … feeding conspiracy theorists worldwide*". See the article (previously referenced) by Professor Norman Fenton:

http://www.eecs.qmul.ac.uk/~norman/papers/inconsistencies_vaccine.pdf.

It is worth noting that this Negative Effectiveness for all ages actually occurred a few weeks earlier (Week 40) and it probably took a few weeks for the trend to become obvious.

It's interesting to go through the reports and see where more and more disclaimers are provided when numbers do not follow the accepted narrative. At Week 43 (the week after outrage was expressed) graphs that had been included in the report highlighting case rates of vaccinated versus unvaccinated for that week were removed.

At Week 47 the format of the infections table was changed, and the unvaccinated rate numbers are greyed out as if something must be wrong with them (assuming they are too low). A week later additional disclaimers (some shown earlier in this article) are added to the table as to why the numbers must be wrong.

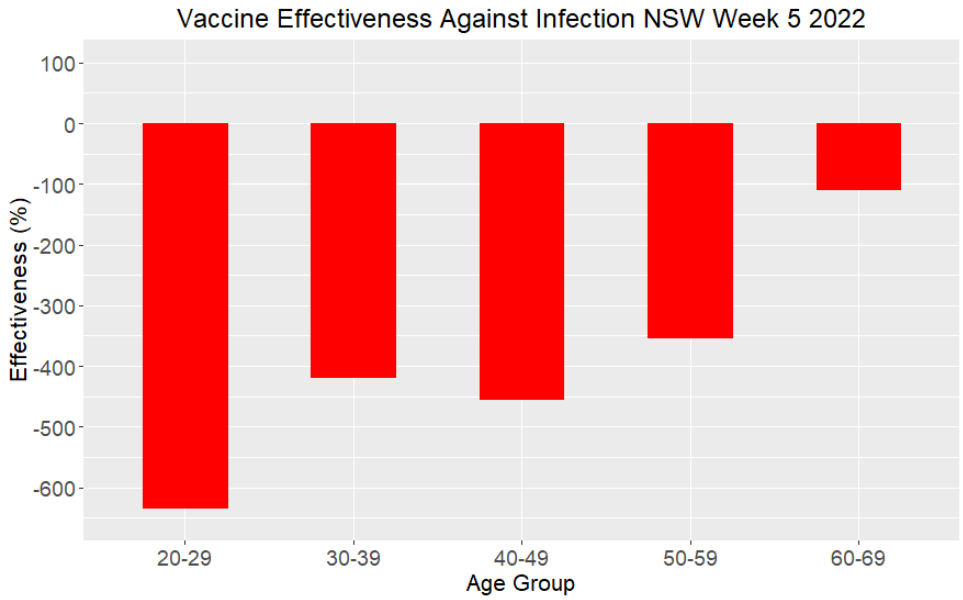
In report for Week 3, 2022 (data not shown in most of the graphs here) there was a change in the reporting, where the vaccinated rate is changed from at least 2 doses to 3 doses only. This manages to drop the infection rate for some age groups. For older age groups where the effect of the third dose has possibly worn off there is minimal change (see the 80+ graph above). It may be possible to estimate numbers for 2 dose and 3 dose separately but this has not been attempted.

It is known that the Effectiveness of boosters waned rapidly in the later UK data.

This reviewer notes that it is frustrating for the analyst to deal with reports where there appears to be external interference and changes in the categorisations.

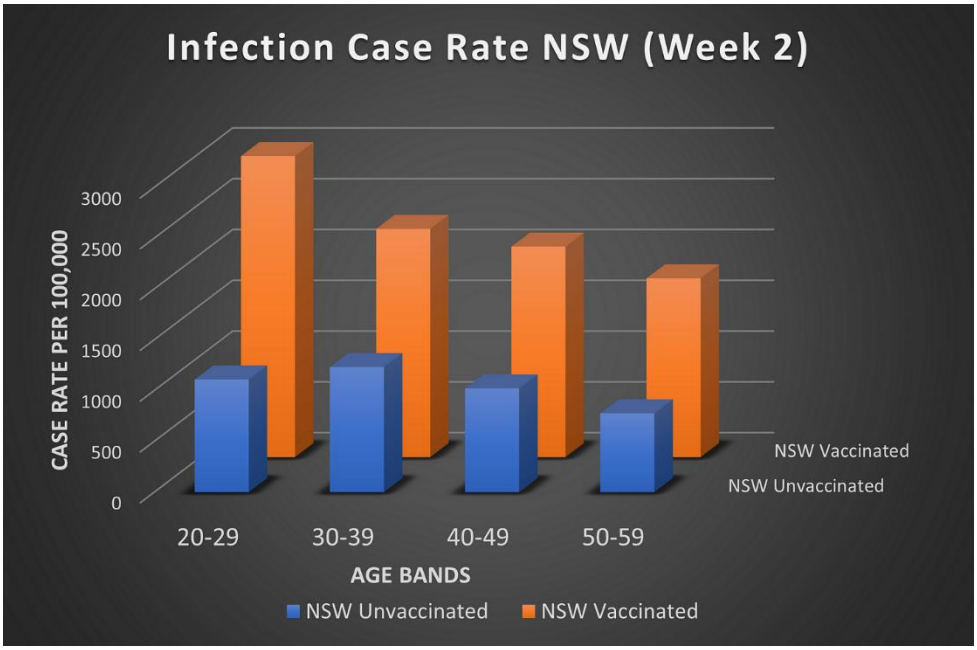
7.5 Vaccine Effectiveness from NSW Data

In this section I review relevant data available from NSW Health to assess Vaccine Effectiveness in the Australian context. The graph below shows the Vaccine Effectiveness for Week 5 2022 (Epidemiological Week 5, ending 5 Feb 2022):



The graph shows negative Effectiveness for all ages shown (people of working age). Week 5 is after severe lockdowns had ended in NSW. It shows a trend of higher rates of infection in younger age groups. That trend was also seen in the UK data.

To put negative Effectiveness in context, another way to understand the data above is to look at the raw case rates. Taking data from another week (Week 2) in NSW:

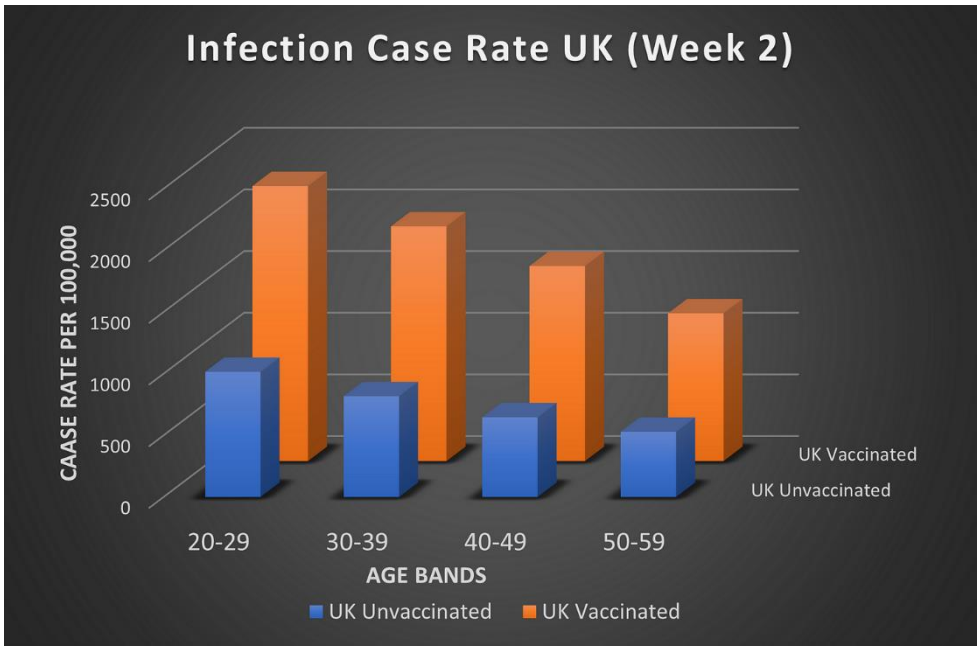


The above graph shows the rate (per week) of infections on the vertical axis with unvaccinated cases shown in blue and vaccinated cases shown in orange. These rates take into account the different proportions of the population for each vaccination status.

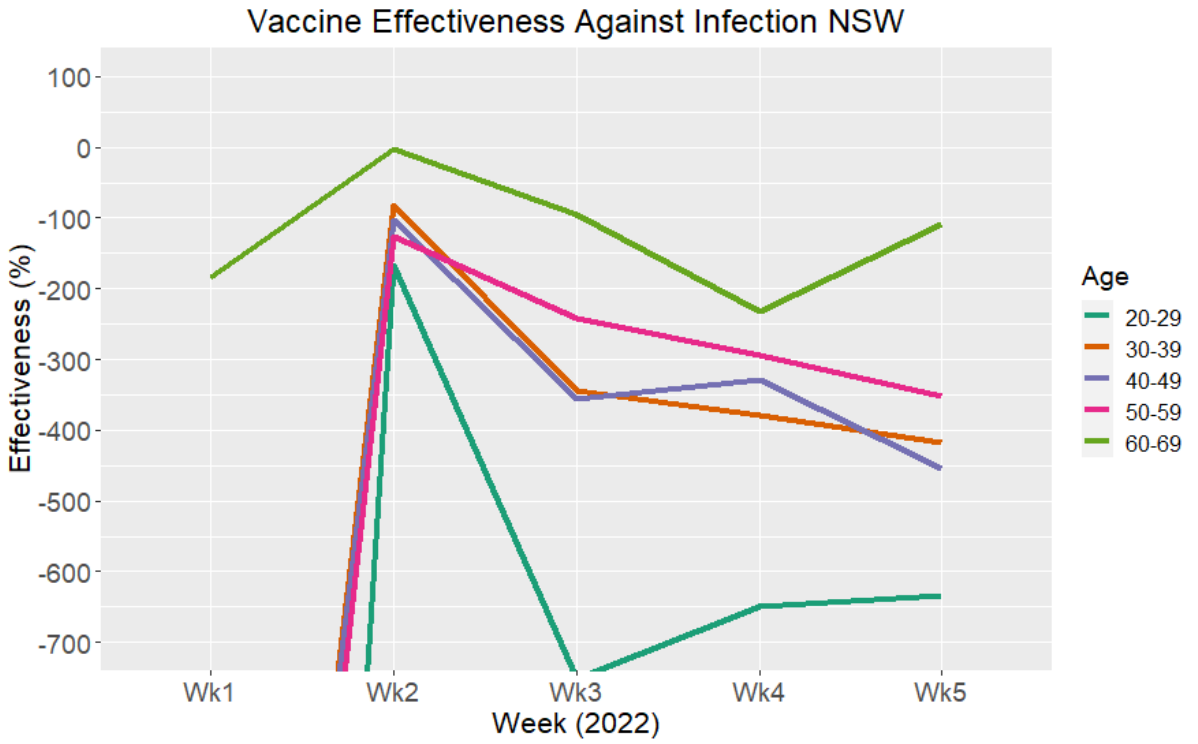
It is clear that vaccination does not reduce likelihood of infection with Omicron.

In fact, it appears to make infection more likely.

The NSW data above is consistent with that from other countries. A comparison with the UK data I used in Section 7.4 shows a very similar trend:



I looked at how Effectiveness changed, over the period for which I could calculate it, for the NSW data:



Effectiveness went through the floor in Week 1 of 2022. I clipped the scale in the graph above on the Y axis intentionally, as values for Week 1 are below -1000%. This reporting week (ending 8 Jan 2022) covers the Christmas, New Year holiday period. Those infections would have come from contacts the week before and during the week of Christmas. In Australia it was Summer and traditionally the time for work Christmas parties and family get-togethers. After 15th December 2021 in NSW many of the harsh restrictions were lifted and the unvaccinated could go to restaurants and shops, etc. Vaccinated people may have thought they had immunity and infection could have spread through so called “super spreader” events. So, data for this holiday period week may be biased. Vaccinated numbers could also be inflated by people getting tested in droves that week, required in order to travel interstate, and the false positives from PCR testing affecting the result. The PCR testing regime broke down in Australia on that week.

Negative Effectiveness was also seen in data from Denmark, Canada and other countries. The real-world data is implying that there is an infection enhancement effect from vaccination.

7.5.1 Analysis Method

The NSW Surveillance reports are confusing. Besides reporting, they try to drive a narrative, as I noted was done in the UK reports.

I believe, as an analyst, the narrative should be separated from data in the reports.

Data is often unhelpfully aggregated. There are examples where totals for unvaccinated people include cases for age groups where vaccination is not approved. When numbers go beyond certain values resolution is lost eg values like >95%, <1% are reported. Figures you need are sometimes only provided in a graphic. However, with patience, it is possible to draw out relevant numbers, and taking into account known uncertainties, we can make reasonable estimates. For completeness I detail the method used.

NSW weekly surveillance reports are found here:

https://www.health.nsw.gov.au/Infectious/covid-19/Pages/weekly-reports.aspx

A summary of data available in the weeks analysed, around January 2022, is shown in the table below:

NSW Week	Comment
Week 52 (ending 1 Jan)	First weekly report showing infection cases broken down by vaccination status. Cumulative numbers are provided from 26 Nov 2021 – 8 Jan Uses categories: Fully vaccinated and Un-vaccinated. Assume that partially vaccinated are not shown
Week 1 (ending 8 Jan)	Uses categories Two effective doses and No effective doses No effective dose does not include 1 effective dose
Week 2 (ending 15 Jan)	Uses categories: Three or more effective doses Two effective doses and Less than two effective doses (which combines 1 and no effective dose). Report notes that the number who have had 3 effective doses is relatively small (although Australia wide it was approximately 50%).
Week 3 (ending 22 Jan)	Uses same categories as described for Week 2
Week 4 (ending 29 Jan)	Uses same categories as described for Week 2
Week 5 (ending 5 Feb)	Uses same categories as described for Week 2

By Week 1 it was clear that 2 dose was worse than no dose, with respect to infection rate. Therefore 3 dose was subsequently broken out as a separate category, because presumably it should be better. There is a difficulty to analyse the three-dose data. Data on percentage of population with 3 doses, in different age groups, is not provided anywhere. 3 dose percentage is only provided on a population basis over Australia.

In the opinion of this reviewer this is either laziness or intentional.

From Week 2 onwards the category less than two effective doses is used. This therefore combines no dose and 1 effective dose. 1 dose should be a completely separate categorisation in the opinion of this reviewer. This joining of categories appears to be deceptive. The 1 dose group are likely people who have had a severe adverse reaction to the first vaccination (see analysis in Section 7.6). This group should always be treated separately. There is absolutely no reason to think that the response of 1 dose people is the same as no dose.

The focus in the NSW reports is on cumulative data, although the Surveillance Report does give a weekly number of deaths compared to the previous week. A table from the Week 4, 2022 report is shown below:

Table 6. Proportion of cases with a severe outcome (ICU and/or death) amongst all cases, by age, time of infection, and vaccination status, NSW, 26 November 2021 to 29 January 2022

Age-group (years)	Three or more effective doses		Two effective doses		Less than two effective doses	
0-9	-	-	-	-	<1%	(18 / 72,950)
10-19	0%	(0 / 356)	<1%	(9 / 65,508)	<1%	(6 / 20,440)
20-29	<1%	(1 / 5,029)	<1%	(30 / 144,439)	<1%	(8 / 3,028)
30-39	<1%	(4 / 5,651)	<1%	(38 / 104,783)	1%	(13 / 2,475)
40-49	<1%	(4 / 7,834)	<1%	(44 / 76,690)	1%	(14 / 1,395)
50-59	<1%	(9 / 6,207)	<1%	(73 / 60,730)	3%	(26 / 813)
60-69	<1%	(9 / 4,233)	<1%	(152 / 36,830)	7%	(41 / 581)
70-79	1%	(21 / 2,979)	2%	(253 / 16,442)	10%	(41 / 424)
80-89	2%	(26 / 1,415)	4%	(253 / 6,257)	25%	(74 / 294)
90+	3%	(19 / 588)	8%	(122 / 1,549)	33%	(45 / 136)
Total	<1%	(93 / 34,292)	<1%	(974 / 513,228)	<1%	(286 / 102,536)

* Note: Less than two effective doses combines those with one and no effective dose. The table excludes cases with an unknown vaccination status.

This table gives us the numbers of infection cases for people in 10-year age bands against vaccination status. This information has not always been provided in Surveillance Reports. It appeared in the reports in Week 52 in 2021 (ie the week ending 1 Jan 2022) as described in the table above. The reports also appear to be released to the public for data about 3 weeks behind current time. So, a decision to change reporting structure is probably based on data known several weeks in advance.

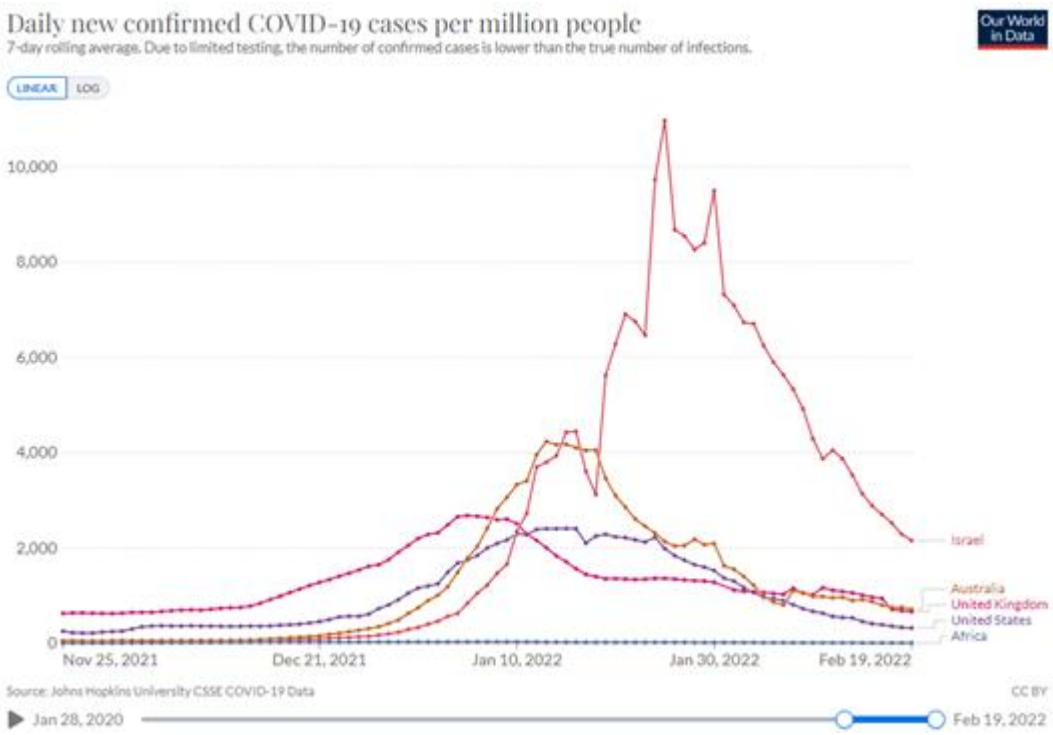
The intention of the table, as described in the text of the surveillance report, is to show that the ratios of “severe outcome” (defined as ICU or death) to number of infection cases, is smaller for the vaccinated versus unvaccinated. The numbers are cumulative starting from 26 November 2021, which was approximately the start of the Omicron variant infection in Australia.

We can look at the cumulative numbers but, as I found with the UK data, it is useful to track how data changes with time. From Week 52, 2021 to Week 5, 2022 the weekly number can be obtained by subtraction of the successive accumulated numbers (for Weeks 1 to 5).

Note that for the UK data analysed, each week reported was an aggregate over 4 weeks. This method for the NSW data obtains data for single weeks. So we expect differences due to the smoothing in the UK data.

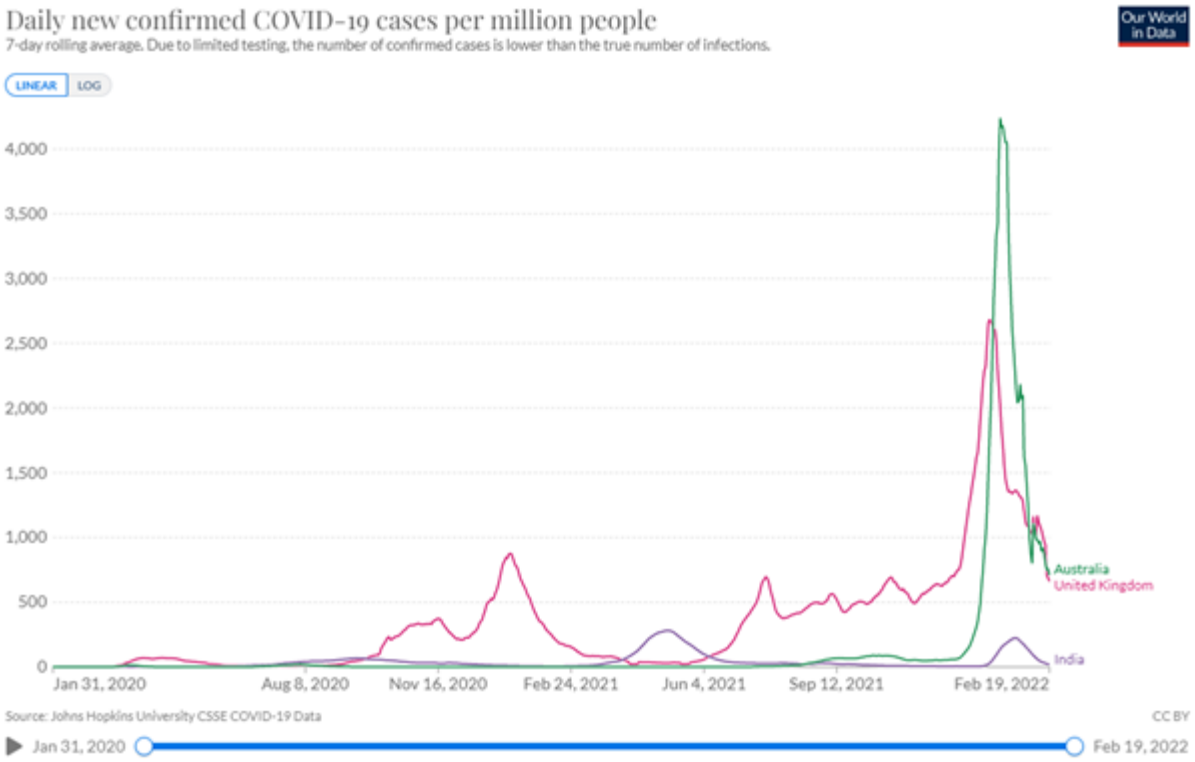
Again we are interested in the rate of infection between groups with different vaccination status for different ages.

It is worth first comparing daily cases in Australia with the UK and a few other countries to make sure they make sense. See the graph below from the Our World in Data site https://ourworldindata.org/covid-deaths for the period of interest (25 Nov 2021 to 19 Feb 2022). I add USA, UK, Africa and Israel for reference.



Note the Y axis is in daily cases per million and a 7-day average is applied to smooth it. In Australia (orange line above), at the first Omicron peak in early January, daily cases per million were approximately 4000. Converting daily to per week and rate to per 100,000 - this gives a case rate of approximately 2800. The UK peak is a bit over half of that value. We expect the rate of infections in the UK and other countries to be less since they would have people with natural immunity in the population from previous waves of infection. Countries like Australia and New Zealand with hard lockdowns had minimal natural immunity in the population. In contrast, Israel, on the other hand, who suffered previous infection waves has a significantly higher rate of infection. Israel was in an advanced stage of boosting.

An important point about the situation in Australia, when comparing it to other countries, is to acknowledge the hard international border plus severe restrictions over the previous two years. Australia also went through two Winters with almost no cases of seasonal flu. There was a relatively low number of cases of COVID preceding the onset of Omicron. So, the majority of people in Australia would not have any natural immunity from previous infection. In my analysis of UK data, I noted the UK reports suggested that unvaccinated case numbers were influenced by fact that they may have had previous infection therefore reducing those numbers. So, this will not be the case in Australia. See the graph below, which starts from the beginning of the pandemic. There are relatively low number of cases in Australia preceding Omicron compared to other countries. India and the UK are shown this time for reference.

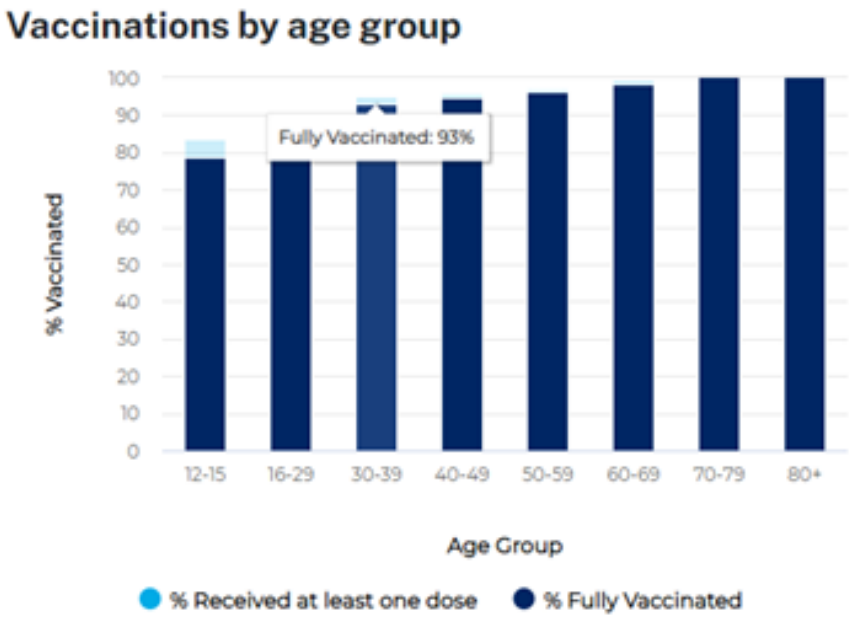


As described above a fundamental problem with the NSW data, as seen in the sample table from NSW Surveillance report above, is the combining of those who had one dose with no dose. This is based on the definition that those who have not had the two doses are not “fully vaccinated”. Those with one dose, now we are well into the pandemic, are clearly a distinct group and need to be separated out in any analysis. This has been shown in Professor Fenton’s work and others. The primary reason people have only one dose can only be because they have had an adverse reaction to the initial vaccination. It is hard to find any other reason, particularly in countries with severe mandates such as Australia. The measures in Australia mean that anyone who has chosen to have the initial dose, and not had an adverse effect, will go on to have the second. Otherwise, they will lose their job and not be able to do other activities. It won’t be because they are lazy.

I note that there remains, in all age groups, typically at least 1% who have only received one dose. This is concerning. If people have an adverse reaction to the first dose, reasons could include pre-existing health conditions. It could be a specific reaction to the spike protein generated by the vaccine itself. If so, one presumes they will also react badly to COVID itself. The number of people in total with one dose only is large. I look at various age groups in detail in analysis in Section 7.6.

The aim is to get an estimate of the rate of infection for people with different vaccination status. Populations could be found for each of the age groups in NSW based on a 2020 census (in 5-year age bands). I cross checked these numbers with others, inferred in the NSW reports, to be confident they are consistent. This is important so I am using approximately the correct denominator for the rate calculation. However, if this is in error, there will be the same relative error in each vaccination group.

We need to know the percentage of population in each vaccination status within each age band. As far as I could tell this information is not made available directly by government. There are graphs provided on web pages. See for example from 22 Feb, 2022:



If you roll the mouse over the interactive bars on some graphs on web pages you can see the actual numbers. For the example above, for the 30-39 age group, 2 dose and one dose, are 93% and 94.9% respectively (ie almost 2% with one dose only and 5% unvaccinated). Above 95% the graph only shows >95% so you can't read off it directly.

However, so long as there are a few percent of unvaccinated we can still make valid estimates. The population of the 30-39 age group in NSW is approximately 120,000. 5% is 6000 people. For ages above 60 it was difficult to make accurate estimates, due to the small number of unvaccinated. So I will focus on the 4 age groups between 20 to 60 years. These are the working age years in any case.

Collated data on vaccination rates can be found on this site: https://covidbaseau.com/vaccinations/ from which it is understood that data is obtained from:

https://www.health.gov.au/initiatives-and-programs/covid-19-vaccines/numbers-statistics

daily. Numbers for states are in the jurisdictional breakdown:

https://www.health.gov.au/resources/collections/covid-19-vaccination-daily-jurisdictional-breakdown

A challenge with the data in Australia is that some data is provided on web pages and updated daily, so unless you recorded it each day, history is not available. Various sources like the codebaseau.com site have captured this data.

It is assumed that the "fully vaccinated" in the graph above includes 2 or 3 doses. For Australia overall 3 dose coverage was approximately 50% in January 2022. But the 3-dose coverage for the state and age bands is not provided. So, I assume we are combining 2 and 3 dose.

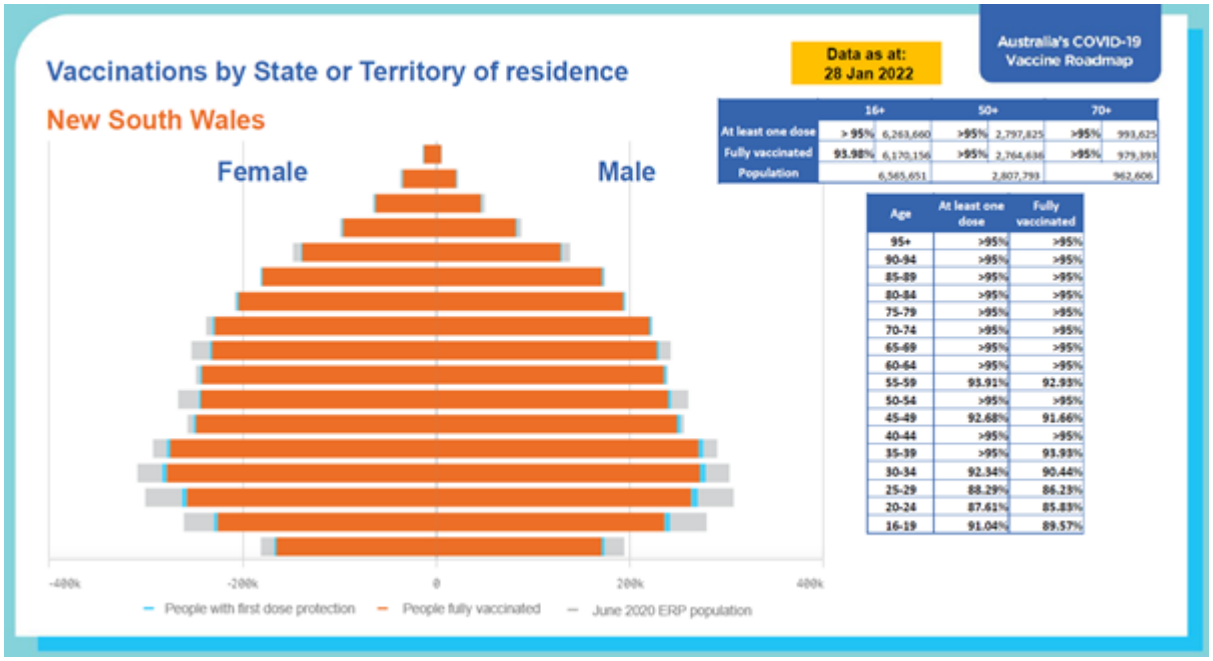
Vaccine information rolled out on a daily basis is mainly about cumulative number of doses rather than providing useful breakdowns. You can find a daily rollout update here:

https://www.health.gov.au/resources/collections/covid-19-vaccination-daily-rollout-update

They are sets of slides:

https://www.health.gov.au/initiatives-and-programs/covid-19-vaccines/numbers-statistics

updated each day. The only dataset available from the government site covers the whole of Australia and has no state, age and status breakdowns. However, the jurisdictional slide pack contains a graph for each state that we can use. See example below.



	16+		50+		70+	
At least one dose	>95%	6,263,660	>95%	2,797,825	>95%	993,625
Fully vaccinated	93.98%	6,170,156	>95%	2,764,636	>95%	979,393
Population		6,565,651		2,807,793		962,606

Age	At least one dose	Fully vaccinated
95+	>95%	>95%
90-94	>95%	>95%
85-89	>95%	>95%
80-84	>95%	>95%
75-79	>95%	>95%
70-74	>95%	>95%
65-69	>95%	>95%
60-64	>95%	>95%
55-59	93.91%	92.93%
50-54	>95%	>95%
45-49	92.68%	91.66%
40-44	>95%	>95%
35-39	>95%	93.93%
30-34	92.34%	90.44%
25-29	88.29%	86.23%
20-24	87.61%	85.83%
16-19	91.04%	89.57%

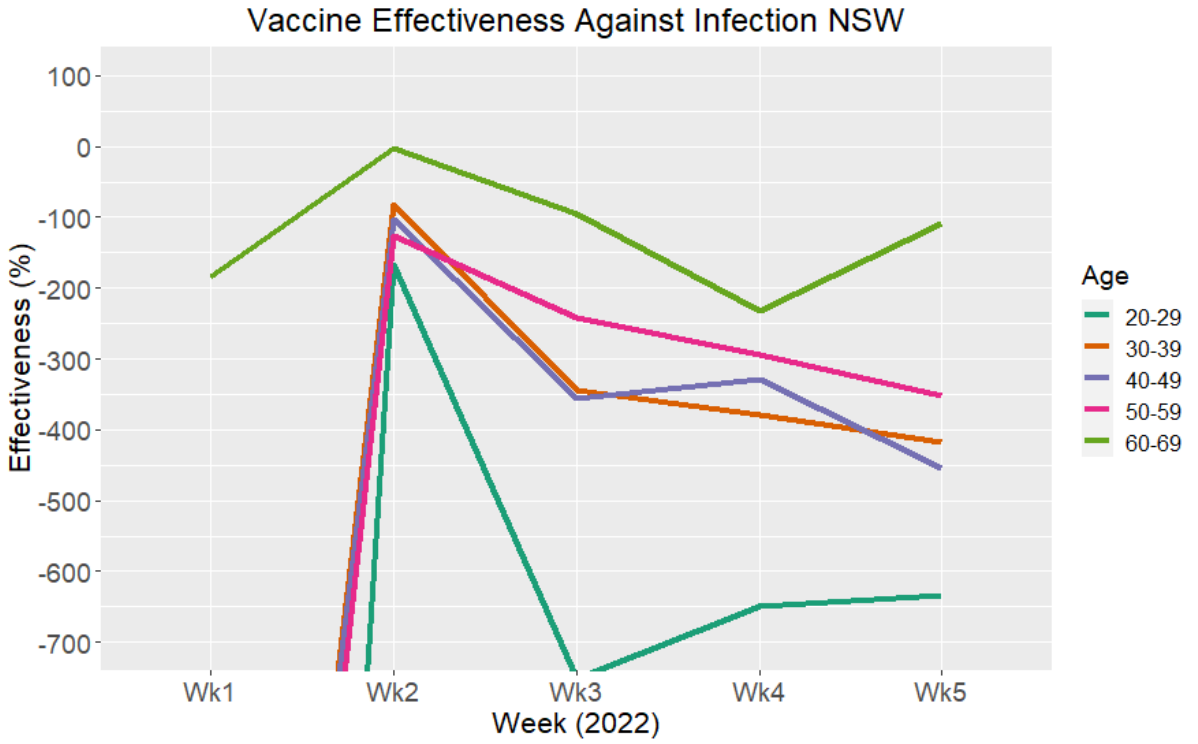
The table and horizontal bar chart has the data we need. Data is shown separately for male and female in the graph and so we can add these. Percentages are shown in a table on the right of the slide for 5-year age bands, so we could average these to get a 10-year age band but unfortunately above 95% they didn't see the need to show the actual number. Also strictly averaging the rates is not correct. The way I decided to do it when above 95% was to read off the graph the actual numbers of persons according to the scale. To make reading off the graph as accurate as possible I did a screen shot, zoomed it up, and used the cursor in image editor software to read off the nearest pixel for each of the bars. I found I could pick the nearest pixel. When comparing the population values I found I could estimate to within +/-500 of population from Census data. So that gave me confidence in the method. Then combine data for the 5-year age bands. Add male and female. The percentages I calculated agreed to within 0.5% of numbers in the table above for 5-year age bands (where it was less than 95%).

There is no indication of 3 dose. It is assumed fully vaccinated means 2 or 3 doses.

I also took the graphs from reports for the start of the period of the data in the table to compare and worked out the same percentages. They moved less than a percent over the period. I therefore took percentages at the end of the period for working out rates as this would underestimate any benefits of not being vaccinated, ie so the unvaccinated group is at its smallest.

So, using the percentages for each vaccination status and the populations for the age group, combine this with the number of cases provided in the surveillance reports, we can calculate Vaccine Effectiveness in the population.

We have the cumulative values over the period 26 Nov 2021 to 5 Feb 2022 and from that we can work out weekly values for Weeks 1 to 5. The following graph of Vaccine Effectiveness was shown previously:



Negative Effectiveness is observed.

7.5.2 Case Rates

For comparison of actual case rates, I produced the same 3D bar graph, as shown at the beginning of this section, for the UK data I analysed in Section 7.4. I note that I checked that the rates were consistent. The UK data reports over a 4-week period. For example, for Week 2 report it says it is for between week 50 and week 1. I wanted to be sure what "between" meant, ie is it inclusive of the end weeks? I checked various other rates to be convinced it is in fact the 4-week period. I adjusted values so that they show a rate for one week, as I have calculated for NSW data. This is another annoyance with analysing these COVID reports, ie the vagueness of definitions.

Looking at the graph for case rates for the UK shows a similar structure to what is found for the NSW data.

Infection rate is higher in all age bands for the vaccinated. There appears to be a decrease in effectiveness for younger age groups.

This is as if there is some compromising of the natural immunity in young healthy people.

7.6 Vaccine Effectiveness Across Three Australian States

I searched for other Australian data on infections and vaccination status. There are Freedom of Information Requests found on Australian Government Department of Health and Aged Care website, https://www.health.gov.au/resources/foi-disclosure-log

The following table was sourced from Freedom of Information Request FOI 3597 "Documents containing information on deaths due to COVID-19", Filename foi-3597-release-documents-covid-19-related-deaths.pdf. Table shown on page 10 of 11, Document 13.

Table 9: Confirmed cases aged 12 years and over by vaccination status and highest level of illness severity, NSW, SA and QLD, 15 December 2021 to 13 January 2022 ("Current Omicron wave") ^*

Data source: NINDSS extracted 28 January 2022

Vaccination status	Not severe (no hospital or death)	Hospitalised (no ICU or death)	ICU (but no death)	COVID-19 related death	Total cases
Cases aged 12 to 49					
Fully vaccinated	312,688 (98.9%)	3,395 (1.1%)	54 (0.02%)	9 (<0.01%)	316,146
Partially vaccinated	10,269 (98.6%)	143 (1.4%)	4 (0.04%)	0 (0.00%)	10,416
No effective vaccination**	12, 002 (97.8%)	247 (2.0%)	17 (0.14%)	6 (0.05%)	12,272
Unknown	*92,276 (98.7%)*	*1,198 (1.3%)*	*456 (0.05%)*	*2 (<0.01%)*	*93,522*
Total	427,235 (98.8%)	4,983 (1.2%)	121 (0.03%)	17 (<0.01%)	432,356
Cases aged 50 and over					
Fully vaccinated	94,285 (95.8%)	3,627 (3.7%)	212 (0.2%)	348 (0.35%)	98,472
Partially vaccinated	1,526 (92.9%)	88 (5.4%)	9 (0.6%)	20 (1.22%)	1,643
No effective vaccination**	2,881 (88.4%)	245 (7.8%)	23 (0.7%)	94 (2.90%)	3,243
Unknown	18,184 (95.3%)	787 (4.1%)	94 (0.5%)	25 (0.13%)	19,090
Total	116,878 (95.5%)	4,747 (3.9%)	338 (0.28%)	487 (0.04%)	122,448

** Includes cases without a vaccination and cases with symptom onset within 21 days of a single dose of a two dose regimen

*Note this information should be interpreted with caution as hospitalisation and ICU status in NINDSS may be incomplete and the definitions used by states are not consistent. There is also potential for severe cases to be overrepresented among confirmed case numbers, as severe cases are more likely to receive a PCR test.

Vaccination status is more likely to be known for severe cases

Only cases from NSW, SA and Qld are included as the proportion with unknown vaccination status in these jurisdictions is <25%.

This table shows infection cases for two age groups, ages 12-49 and 50 and over. I have already noted limitations of such wide age groups but given the sparsity of data available it is worth checking this data for vaccine effectiveness against infection.

Only states NSW, Qld and SA are included. From the note to the table this is based on lower number of "unknown" vaccination status in these states. One would presume that unknown status would most likely apply to some level of vaccinated status, as there is nothing to check for unvaccinated. However, this assumption may not be completely correct. Perhaps unknowns are randomly distributed in the same proportion of the population of vaccination status. The alternative that unvaccinated people are purporting to be vaccinated, seems unlikely.

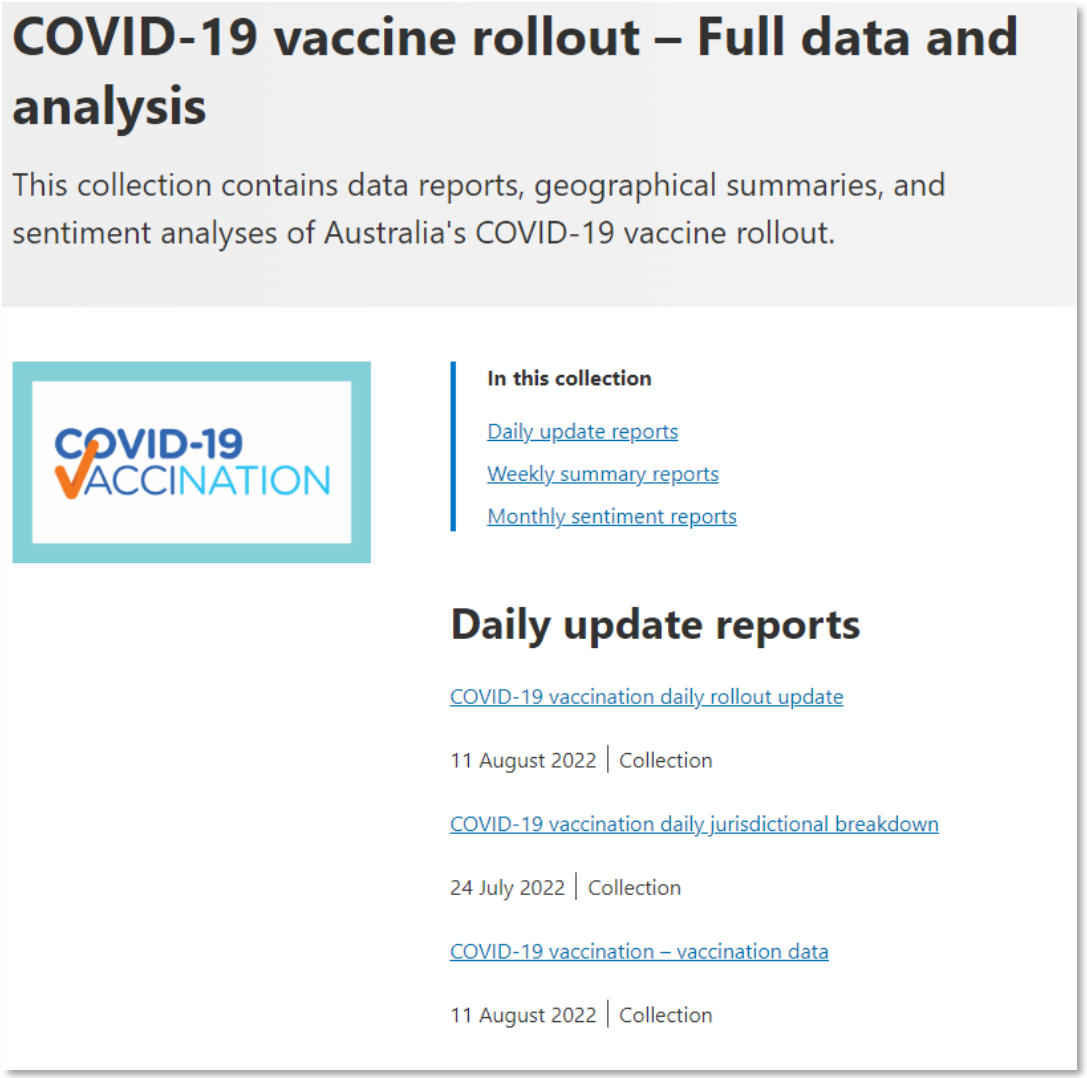
To work out vaccination effectiveness we need the percentage of population in each vaccination status. This is complicated, because the cases in the table are for three states. I went to the

government data for vaccination status to get the proportions for these states. A daily update is found here, with top level information:

https://www.health.gov.au/initiatives-and-programs/covid-19-vaccines/numbers-statistics

A page linking to various presentations and data is found here. See screenshot below.

https://www.health.gov.au/resources/collections/covid-19-vaccine-rollout-full-data-and-analysis



The page links to datasets for each day here:

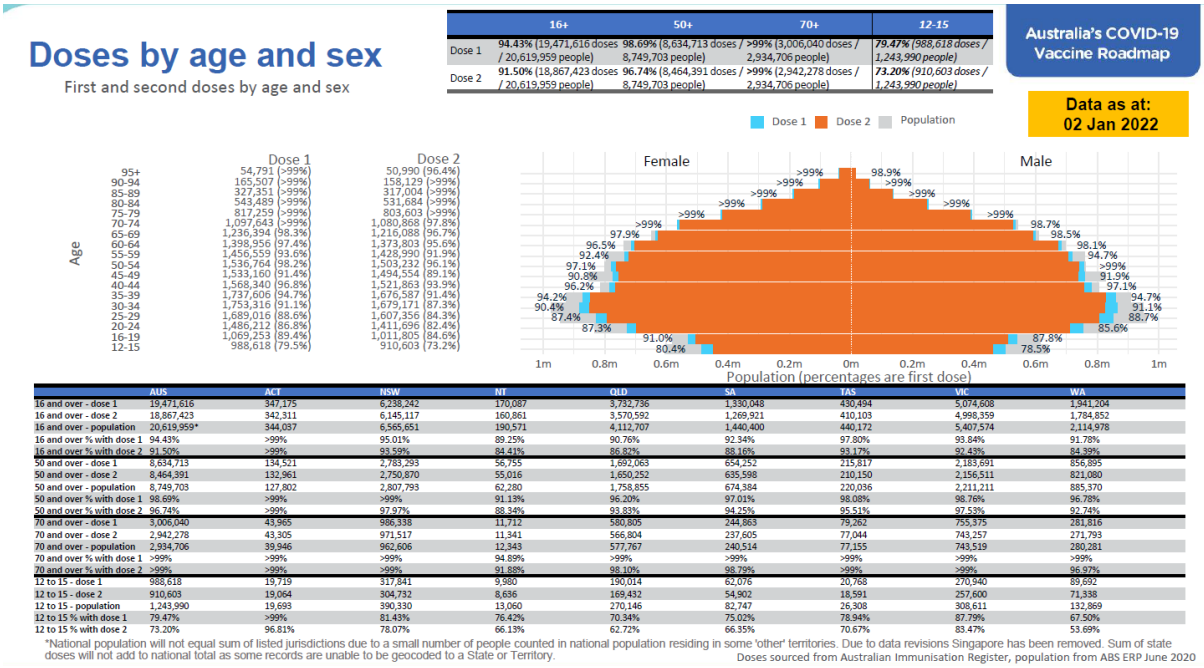
https://www.health.gov.au/resources/publications/covid-19-vaccination-vaccination-data-11-august-2022

I have used a dataset collated by the ABC (public broadcaster) collating this data.

The collection of presentations for each day is found here:

https://www.health.gov.au/resources/collections/covid-19-vaccination-daily-rollout-update

Example below is for the 3 Jan 2022 update, for data as at 2 Jan 2022. This shows vaccinate doses and percentages for all states.



Doses by age and sex

First and second doses by age and sex

	16+	50+	70+	12-15
Dose 1	**94.43%** (19,471,616 doses / 20,619,959 people)	**98.69%** (8,634,713 doses / 8,749,703 people)	**>99%** (3,006,040 doses / 2,934,706 people)	***79.47%** (988,618 doses / 1,243,990 people)*
Dose 2	**91.50%** (18,867,423 doses / 20,619,959 people)	**96.74%** (8,464,391 doses / 8,749,703 people)	**>99%** (2,942,278 doses / 2,934,706 people)	***73.20%** (910,603 doses / 1,243,990 people)*

Australia's COVID-19 Vaccine Roadmap

Data as at: 02 Jan 2022

Dose 1 Dose 2 Population

Age	Dose 1	Dose 2
95+	54,791 (>99%)	50,990 (96.4%)
90-94	165,507 (>99%)	158,129 (>99%)
85-89	327,351 (>99%)	317,004 (>99%)
80-84	543,489 (>99%)	531,684 (>99%)
75-79	817,259 (>99%)	803,603 (>99%)
70-74	1,097,643 (>99%)	1,080,868 (97.8%)
65-69	1,236,394 (98.3%)	1,216,088 (96.7%)
60-64	1,398,956 (97.4%)	1,373,803 (95.6%)
55-59	1,456,559 (93.6%)	1,428,990 (91.9%)
50-54	1,536,764 (98.2%)	1,503,232 (96.1%)
45-49	1,533,160 (91.4%)	1,494,554 (89.1%)
40-44	1,568,340 (96.8%)	1,521,863 (93.9%)
35-39	1,737,606 (94.7%)	1,676,587 (91.4%)
30-34	1,753,316 (91.1%)	1,679,171 (87.3%)
25-29	1,689,016 (88.6%)	1,607,356 (84.3%)
20-24	1,486,212 (86.8%)	1,411,696 (82.4%)
16-19	1,069,253 (89.4%)	1,011,805 (84.6%)
12-15	988,618 (79.5%)	910,603 (73.2%)

Female Male

Population (percentages are first dose)

	AUS	ACT	NSW	NT	QLD	SA	TAS	VIC	WA
16 and over - dose 1	19,471,616	347,175	6,238,242	170,087	3,732,736	1,330,048	430,494	5,074,608	1,941,204
16 and over - dose 2	18,867,423	342,311	6,145,117	160,861	3,570,592	1,269,921	410,103	4,998,359	1,784,852
16 and over - population	20,619,959*	344,087	6,569,651	190,571	4,112,707	1,440,400	440,172	5,407,574	2,114,978
16 and over % with dose 1	94.43%	>99%	95.01%	89.25%	90.76%	92.34%	97.80%	93.84%	91.78%
16 and over % with dose 2	91.50%	>99%	93.59%	84.41%	86.82%	88.16%	93.17%	92.43%	84.39%
50 and over - dose 1	8,634,713	134,521	2,783,293	56,755	1,692,063	654,252	215,817	2,183,691	856,895
50 and over - dose 2	8,464,391	132,961	2,750,870	55,016	1,650,252	635,598	210,150	2,156,511	821,080
50 and over - population	8,749,703	127,802	2,807,793	62,280	1,758,855	674,384	220,036	2,211,211	885,370
50 and over % with dose 1	98.69%	>99%	>99%	91.13%	96.20%	97.01%	98.08%	98.76%	96.78%
50 and over % with dose 2	96.74%	>99%	97.97%	88.34%	93.83%	94.25%	95.51%	97.53%	92.74%
70 and over - dose 1	3,006,040	43,965	986,338	11,712	580,805	244,863	79,262	755,375	281,816
70 and over - dose 2	2,942,278	43,305	971,517	11,341	566,804	237,605	77,044	743,257	271,793
70 and over - population	2,934,706	39,946	962,606	12,343	577,767	240,514	77,155	743,519	280,281
70 and over % with dose 1	>99%	>99%	>99%	94.89%	>99%	>99%	>99%	>99%	>99%
70 and over % with dose 2	>99%	>99%	>99%	91.88%	98.10%	98.79%	>99%	>99%	96.97%
12 to 15 - dose 1	988,618	19,719	317,841	9,980	190,014	62,076	20,768	270,940	89,692
12 to 15 - dose 2	910,603	19,064	304,732	8,636	169,432	54,902	18,591	257,600	71,338
12 to 15 - population	1,243,990	19,693	390,330	13,060	270,146	82,747	26,308	308,611	132,869
12 to 15 % with dose 1	79.47%	>99%	81.43%	76.42%	70.34%	75.02%	78.94%	87.79%	67.50%
12 to 15 % with dose 2	73.20%	96.81%	78.07%	66.13%	62.72%	66.35%	70.67%	83.47%	53.69%

*National population will not equal sum of listed jurisdictions due to a small number of people counted in national population residing in some 'other' territories. Due to data revisions Singapore has been removed. Sum of state doses will not add to national total as some records are unable to be geocoded to a State or Territory.

Doses sourced from Australian Immunisation Register, population from ABS ERP June 2020

I used this data, roughly the midpoint for the period of the infections table, which allows me to work out proportions for each of the states NSW, Qld and SA, for Dose 1 and Dose 2. From the population of Dose 1 the No dose can be worked out as the difference between Dose 1 and the total population.

I note that I found a number of data quality problems with this data. I will go into detail about this as it is very relevant.

Of concern in the graphic above is the text:

> "Due to data revisions **Singapore has been removed**"

This looks like some sort of copy paste error. Or perhaps some app from Singapore has been used to generate this?

For 2 Jan 2022, for Australia, the 70 and over population is 2,934,706. Dose 1 is 3,006,040, and dose 2 is 2,942,278. Both are greater than the population! We also know that in all age groups there 1% or more of people who get one shot and do not go on to get the second shot. This is most likely because of adverse reaction.

In the note at the bottom of the page it says "Doses are sourced from Australian Immunisation Register". It is possible the number of doses is an overestimate. Perhaps doses are being counted more than once?

This reviewer is aware of issues such as this from working at the National Disability Scheme in the period that the program was transitioning from the States to a National system. People who move between states can get counted twice.

The note also states: "Population from ABS ERP June 2020". ERP stands is abbreviation for Estimated Resident Populations (ERP). This population will therefore be an underestimate. The latest estimate available from the ABS is for Jun 30, 2021 and will be more accurate. Looking Australian population information on the ABS website:

https://www.abs.gov.au/statistics/people/population/national-state-and-territory-population

and specific releases

https://www.abs.gov.au/statistics/people/population/national-state-and-territory-population/sep-2020#data-download

File 3101059.xlsx provides population of Australia for single years of age 0,1,…,100+ over year range 1970 to 2021 as at June 30.

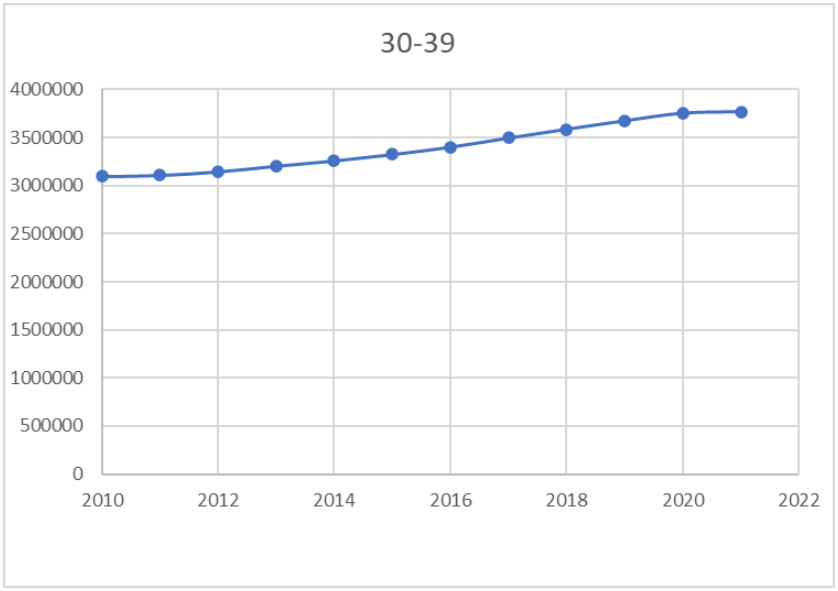
3101.0 National, state and territory population **TABLE 59**. Estimated Resident Population By Single Year Of Age, Australia

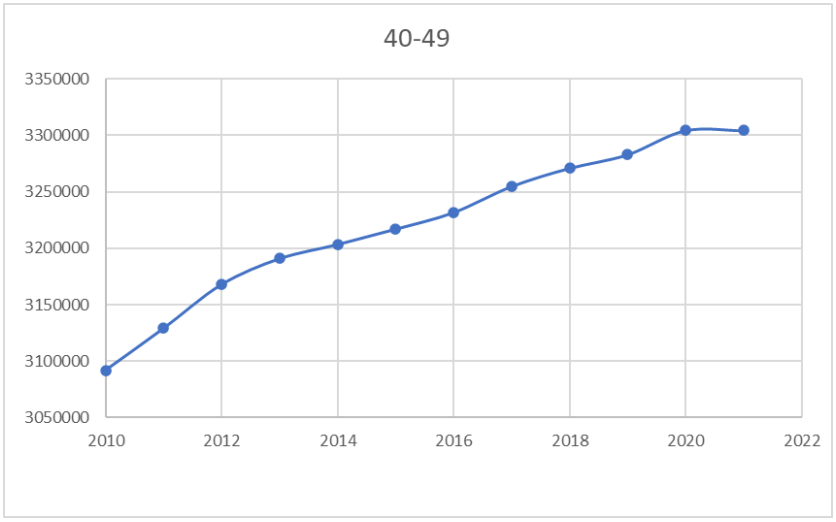
Files are also available at State level eg file 3101051.xlsx

3101.0 National, state and territory population **TABLE 51**. Estimated Resident Population By Single Year Of Age, New South Wales

The Australian Bureau of Statistics is very competent organisation in this reviewer's experience. Record keeping is good. So estimates of population are expected to be accurate.

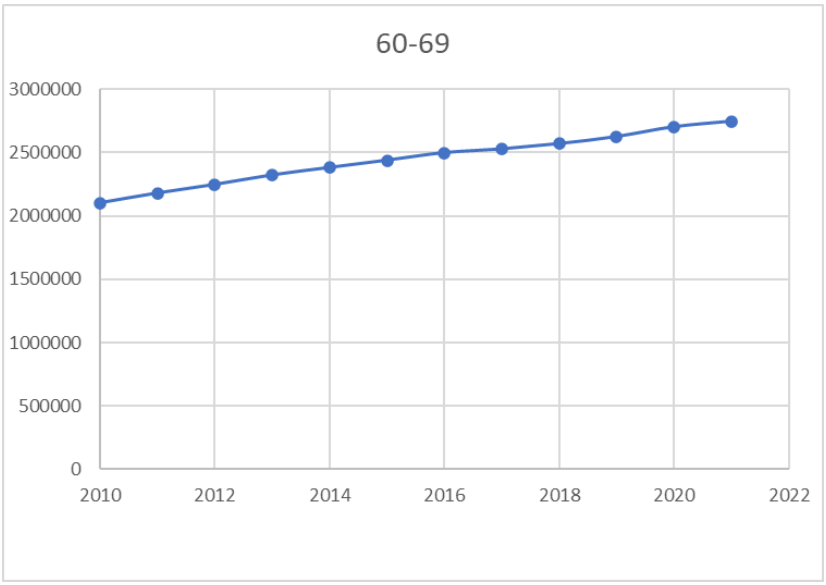
I took ABS national population data to see how it trends over time. See below for 4 different age groups. Y axis is Population, x axis year.

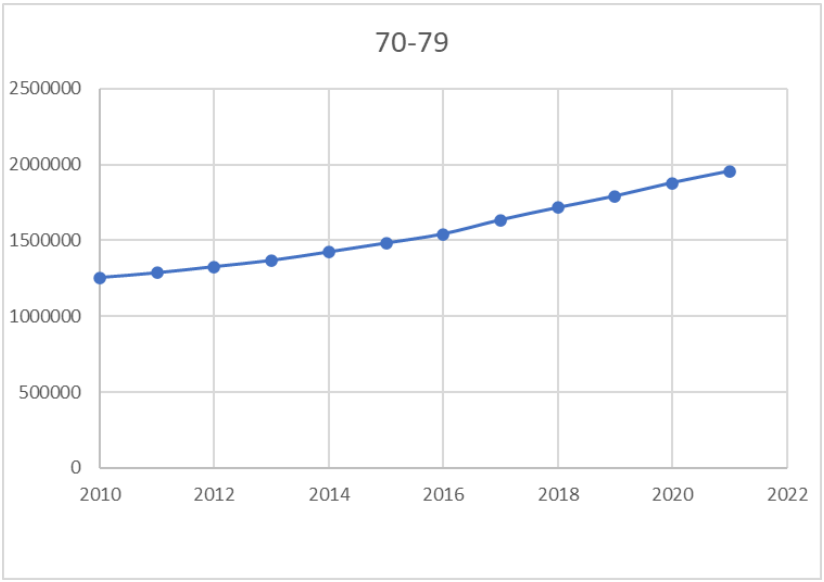




For ages 40-44 2020 population is 1621445; 2021 population is 1654500; ie 2% population increase

For ages 45-49 2020 population is 1682976; 2021 population is 1650035; ie 2% population decrease

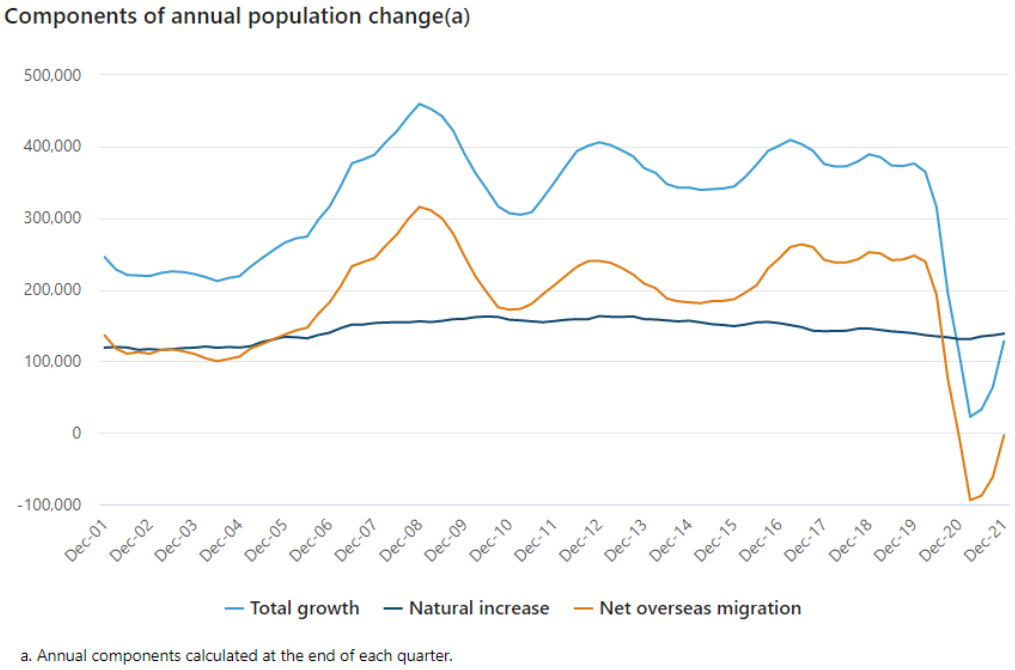




For the younger age groups shown, 30-39 and 40-49, the population flattened out in 2021, probably contributed to by a net overseas migration. But the older age groups still increase as the Australian population ages. Clearly for January 2022 the population is an underestimate if 2020 is used. For the 70-79 year age group I found population increased by 4% from 2020 to 2021.

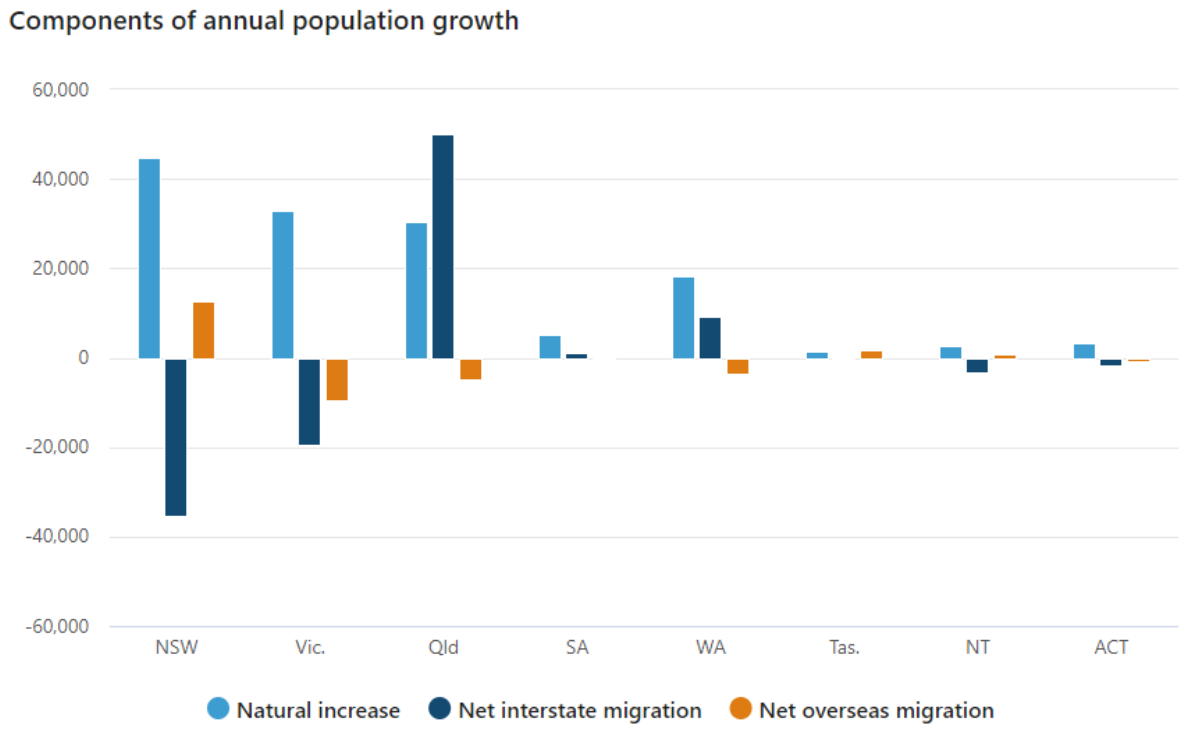
From the latest ABS report, December 2021:
https://www.abs.gov.au/statistics/people/population/national-state-and-territory-population/latest-release

The graph below shows population trend over all ages.



a. Annual components calculated at the end of each quarter.

So, the flattening out at younger age groups is likely due to overseas migration (negative) from December 2020. With regards to individual States in Australia the components of population growth are shown below for the year ending 31 December 2021:



People are clearly leaving NSW and Victoria to move to Queensland.

I check recent Department of Health vaccination data by jurisdiction (ie State). Relevant table is copied below for 7 August 2022 (note format has changed).

Doses by age and jurisdiction

Data as at: 07 Aug 2022 Updated weekly

Australia's COVID-19 Vaccine Program

	AUS	ACT	NSW	NT	QLD	SA	TAS	VIC	WA
5 to 11 - dose 1	1,187,517	31,679	356,123	13,005	205,165	83,088	28,225	323,122	138,992
5 to 11 - dose 2	924,632	27,766	285,092	8,842	153,570	65,411	23,368	251,317	104,540
5 to 11 - population	2,276,638	39,789	716,460	24,750	478,731	148,816	45,033	578,499	244,154
5 to 11 % with dose 1	52.16%	79.62%	49.71%	52.55%	42.86%	55.83%	62.68%	55.86%	56.93%
5 to 11 % with dose 2	40.61%	69.78%	39.79%	35.73%	32.08%	43.95%	51.89%	43.44%	42.82%
12 to 15 - dose 1	1,044,009	20,144	321,174	10,674	204,239	67,839	22,632	272,805	115,029
12 to 15 - dose 2	987,198	19,597	306,849	9,600	190,451	64,076	21,512	260,601	106,416
12 to 15 – population	1,243,990	19,693	390,330	13,060	270,146	82,747	26,308	308,611	132,869
12 to 15 % with dose 1	83.92%	>99%	82.28%	81.73%	75.60%	81.98%	86.03%	88.40%	86.57%
12 to 15 % with dose 2	79.36%	>99%	78.61%	73.51%	70.50%	77.44%	81.77%	84.44%	80.09%
16 and over – dose 1	20,172,509	354,561	6,360,601	173,848	3,886,791	1,383,010	446,805	5,189,136	2,106,240
16 and over – dose 2	19,827,584	348,609	6,258,902	169,132	3,822,175	1,353,331	437,796	5,108,129	2,074,547
16 and over – dose 3	14,131,708	278,119	4,322,745	132,474	2,459,276	1,015,103	323,139	3,755,109	1,718,609
16 and over – population	20,619,959	344,037	6,565,651	190,571	4,112,707	1,440,400	440,172	5,407,574	2,114,978
16 and over % with dose 1	97.83%	>99%	96.88%	91.22%	94.51%	96.02%	>99%	95.96%	>99%
16 and over % with dose 2	96.16%	>99%	95.33%	88.75%	92.94%	93.96%	>99%	94.46%	98.09%
16 and over % with dose 3	68.53%	80.84%	65.84%	69.51%	59.80%	70.47%	73.41%	69.44%	81.26%
30 and over – dose 1	15,780,603	274,161	5,003,146	128,366	3,038,242	1,100,978	355,019	4,053,867	1,649,787
30 and over – dose 2	15,550,416	270,181	4,933,457	125,750	2,996,299	1,082,240	349,258	3,998,534	1,628,697
30 and over – dose 3	11,975,473	228,052	3,700,858	104,015	2,144,330	869,747	279,400	3,140,935	1,414,435
30 and over – dose 4	4,255,050	85,687	1,366,178	18,780	835,153	337,245	114,110	1,047,041	428,428
30 and over – population	15,805,337	258,148	5,042,108	140,343	3,148,826	1,126,262	349,703	4,096,873	1,639,833
30 and over % with dose 1	>99%	>99%	>99%	91.47%	96.49%	97.76%	>99%	98.95%	>99%
30 and over % with dose 2	98.39%	>99%	97.85%	89.60%	95.16%	96.09%	>99%	97.60%	>99%
30 and over % with dose 3	75.77%	88.34%	73.40%	74.11%	68.10%	77.22%	79.90%	76.67%	86.25%
30 and over % with dose 4	26.92%	33.19%	27.10%	13.38%	26.52%	29.94%	32.63%	25.56%	26.13%
65 and over – dose 1	4,463,911	65,350	1,446,459	20,688	866,044	356,933	117,275	1,113,825	435,969
65 and over – dose 2	4,404,179	64,348	1,427,232	20,350	855,982	352,420	115,961	1,098,222	431,115
65 and over – dose 3	3,976,931	60,021	1,276,523	18,105	773,535	324,264	107,342	984,383	402,480
65 and over – dose 4	2,719,943	45,985	868,689	9,811	547,443	228,486	76,743	654,718	272,160
65 and over – population	4,192,882	57,745	1,366,640	20,994	831,881	338,903	110,799	1,057,498	407,530
65 and over % with dose 1	>99%	>99%	>99%	98.54%	>99%	>99%	>99%	>99%	>99%
65 and over % with dose 2	>99%	>99%	>99%	96.93%	>99%	>99%	>99%	>99%	>99%
65 and over % with dose 3	94.85%	>99%	93.41%	86.24%	92.99%	95.68%	96.88%	93.09%	98.76%
65 and over % with dose 4	64.87%	79.63%	63.56%	46.73%	65.81%	67.42%	69.26%	61.91%	66.78%

It has the same problem with dose counts greater than the population. This becomes most apparent at older ages when the proportion of vaccinated is close to 100%. The tables show >99% for any value that is greater than 99%. Presumably this is so as not to look ridiculous with percentages greater than 100%.

Also, another issue is that age groupings have changed, eg 65 and over, previously 50 and over was provided.

For 7 August 2022:

65 and over 1 dose	4,463,911	>99%
65 and over 2 dose	4,404,179	>99%
65 and over 3 dose	3,976,931	94.85%
65 and over 4 dose	2,719,943	64.87%
65 and over Population	4,192,882	

Therefore, the percentage of unvaccinated, which is calculated as the difference of those with 1 dose and the total population is actually larger than data suggests. By how much?

Estimation of the percentage of unvaccinated has also been a problem in the UK. Professor Norman Fenton has covered this in his work. See references:

http://dx.doi.org/10.13140/RG.2.2.28055.09124

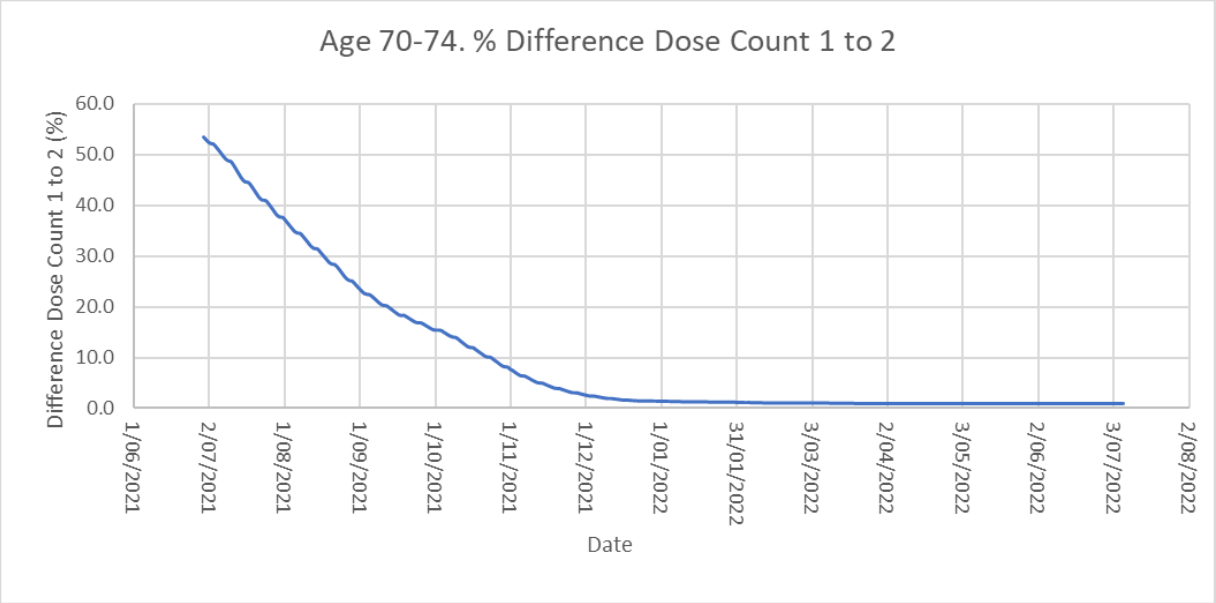
http://dx.doi.org/10.13140/RG.2.2.12472.42248

This recent blog post is also relevant:

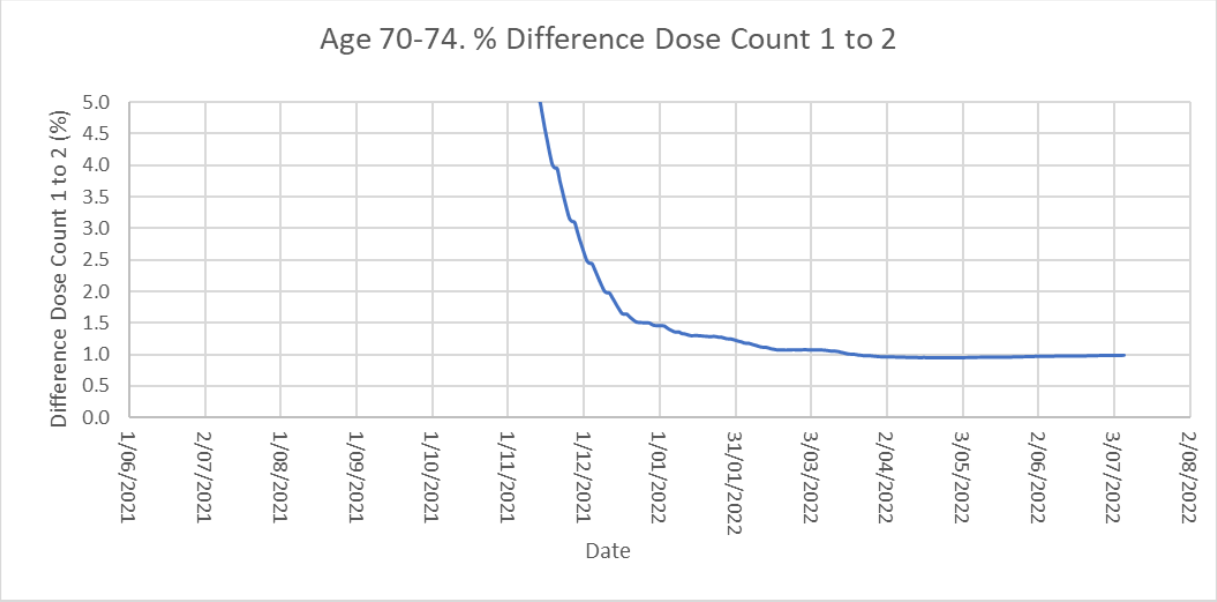
https://www.normanfenton.com/post/simple-evidence-showing-the-ons-data-on-mortality-by-vaccine-status-is-systemically-flawed

We also know that there is a gap in number of people who take 1 dose only and 2 dose. This gap converges to a fixed value. We see this in the vaccination percentage curves as they flatten out. I took one age group 70-74. Dose count from the ABC data download (collated from Department of

Health figures), showing the difference as a percentage of the population (assuming June 2021 population).



Zooming in on the y axis, the line on graph bottoms out to 1.0%.

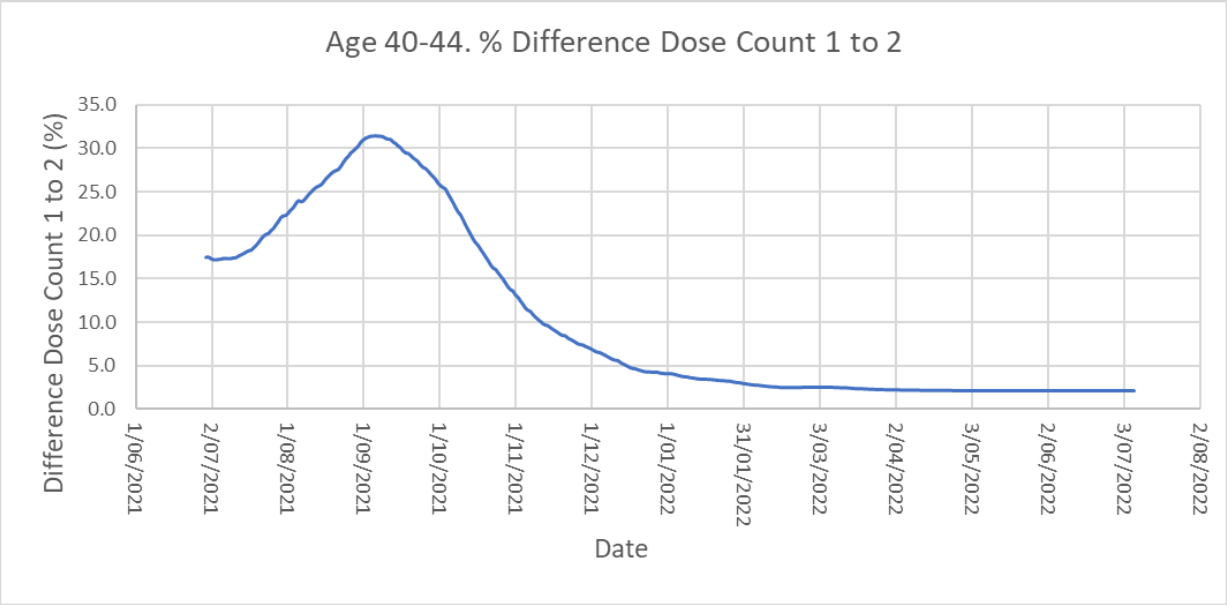


The line starts leveling out mid-December 2021, when most in the age group have completed the 2-dose regime. Then there are stragglers completing the 2nd dose, from December till March. By March 2022 the line has flattened out. From then on, the vast majority who are going to get vaccinated have done so.

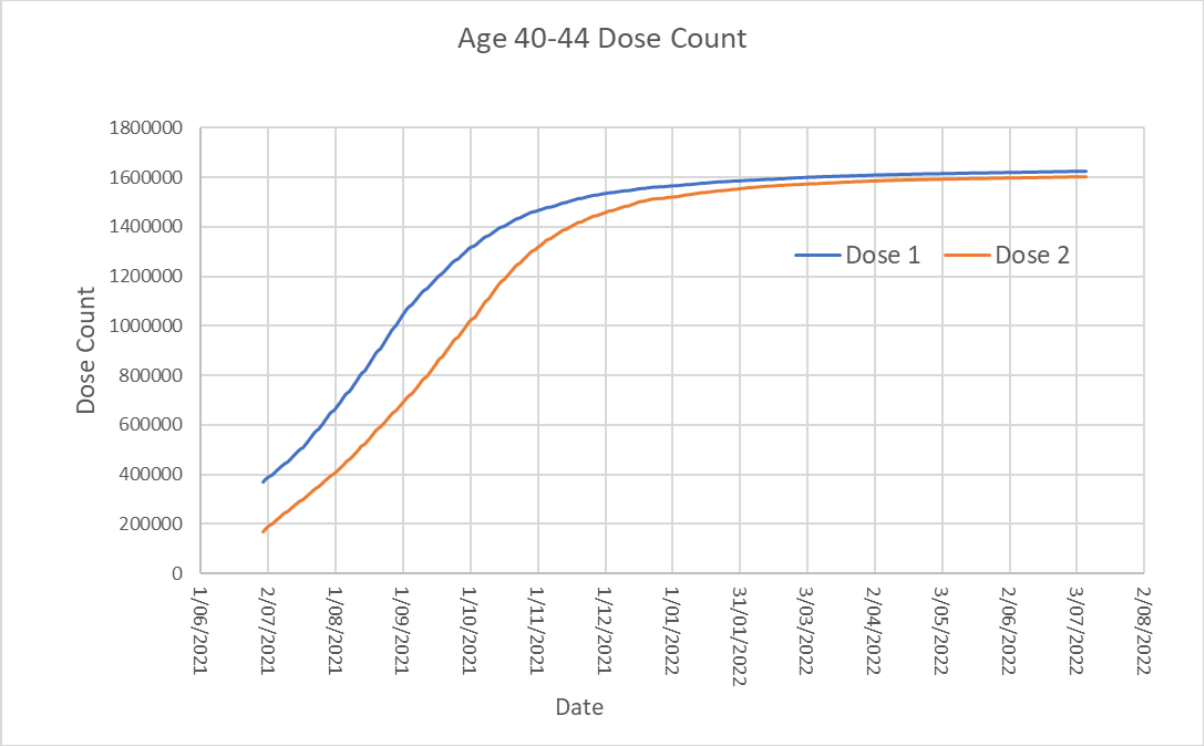
The 1% left can only be those who have had an adverse reaction such that they cannot take a second. People who get one shot are unlikely to get a second a long time later, just to catch up. It is inconceivable that people are just not bothered to get a second, given the restrictions imposed in Australia. However, in this age group many people have retired. Some 70 year olds may still be working.

In the context of mandates in Australia, people have lost their jobs if working for large corporations or government, if they do not complete vaccination. People of working age (18-65), who have received one shot and do not go on to get second, are most likely to not have taken the second because of a severe adverse reaction. At older ages there is probably less pressure to get a second shot if there was adverse reaction at the first.

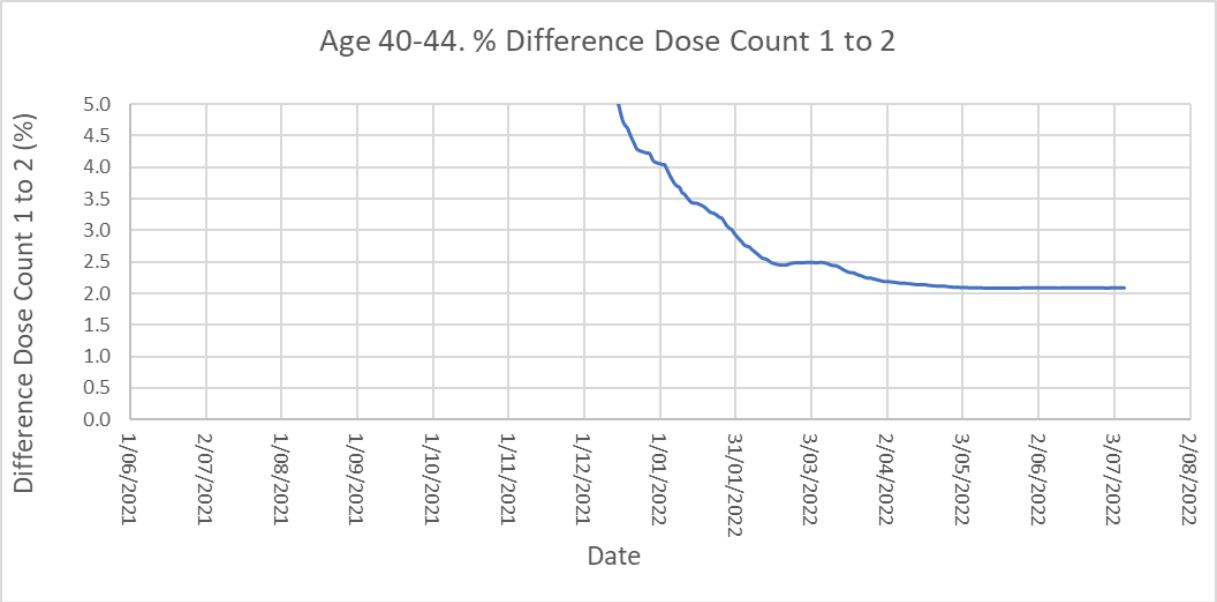
Looking now at Ages 40-44. The graph is the difference in dose counts as a percentage of population. ABS population at June 2021 assumed.



The pattern is different. It seems that there is a delay in some in this age group getting the second, starting from July 2021. From October catch up starts. Looking at actual doses we can see where this occurs. If second dose is recommended 3 weeks after the first, and everyone is following this, a horizontal line drawn across both lines should measure 3 weeks. At the start of the graph in July (data was not available for before this) the width is approximately 4 weeks. By September the gap is bigger. It closes back to 4 weeks by December. This was the time of work mandates coming in place.



There is also a flattening out. Zooming in on the percentage difference in dose count.



We see for this group the difference levels out at 2.1%. This implies that up to 2% of those receiving a first dose in this age group may have had an adverse reaction. I note that I have assumed the ABS population at June 2021. The population in Australia in the 40-49 year age group levelled out in 2021, but 40-44 was still increasing (see previous discussion).

We know that adverse events, such as myocarditis, have an age dependence (See section 9.6) affecting younger ages more than older. A full analysis, of the 1 dose only, across all ages, should be carried out, also looking at difference between males and females. This was not possible within the time this report was produced. The age dependency should be correlated with ages of adverse events in the TGA Adverse Event reporting system.

If a risk assessment had been performed when vaccine mandates were being decided upon, the data discussed above should have been in consideration. We can see that for one working age group that up to 2% of people may have had a severe adverse reaction.

Risk of adverse events appears not to have been considered in the determination of health worker vaccination mandates.

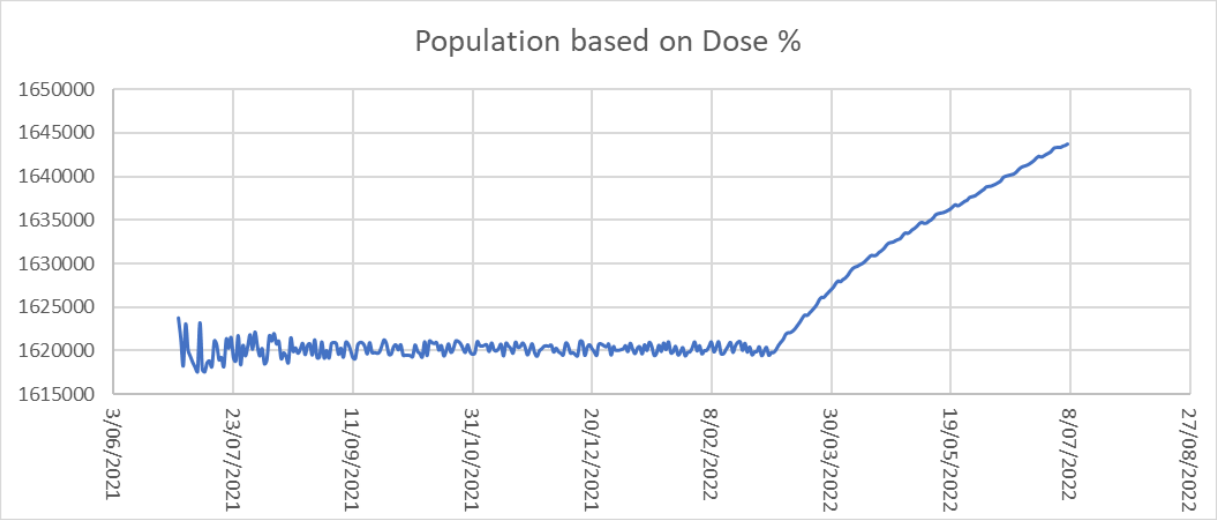
This risk of dying from COVID in this age group is low. According to the ABS data in the 40-49 year age group 53 males and 30 females have died of COVID, up till May 2022. The majority of these would likely have had comorbidities based on ABS data.

https://www.abs.gov.au/articles/covid-19-mortality-australia-deaths-registered-until-31-may-2022

This age group (40-49) consists of 3,304,535 people (ABS June 2021). 2% of these is 70,000 people. Clearly some proportion of this number are severe adverse reactions.

7.6.1 Data Quality

A major concern is data quality. Population, used in government data to calculate vaccination percentages is stated to be based on ABS June 2020 population. For the age group 40-44, the ABS population is 1,621,445. From the Health Department vaccination dose data and the population percentage (given to 1 decimal place) we can confirm that this is the population used. This was computed and is shown in the graph below.



The variation in the flat portion of the graph is due to the numerical precision (1 decimal place) of the percentage value provided. Averaging from the September 2021 to February 2022 section gives a population of 1,620,202. The ABS 2020 value for June 2020 is 1,621,445. Therefore, close agreement. But this data is already one year later, from the start of the graph. The ABS population for June 2021 for 40-44 is 1,654,500 which is 2% higher. By the end of the graph, June 2022, we expect it to be higher, assuming continuing trend. Note however there are some unusual population trends due to the pandemic. 40-44 age group increases 2020 to 2021, 44-49 age group decreases 2020 to 2021. Net zero population growth from 2020 to 2021 for 40-49 age group. There must be more outwards migration in the 44-49 age group.

For the 40-44 age group government data reports 99% (1 dose) was reached by 4 March 2022, using the incorrect population. The published percentage clips at 99% and this causes the artifact of increasing population at the right of the line in the graph above.

The number of first doses has become bigger than the assumed population by 30 May 2022.

We saw that by March 2022 first and second dose have levelled out. If we assume a June 2022 population being more appropriate (slight overestimate) this is 1,687,590, assuming a 2% annual increase from 2021. First dose count, at 4 March 2022, is 1,603,265 and that means approximately 95% have had first dose. Second dose count is 1,574,643, which is 93.3%. So, on this population estimate, 1.7% have not got second dose by this time. 5% are unvaccinated. Published data is showing 97% double vaccinated at this time.

It is clear that any estimates of rates of infection, hospitalisation or death from COVID are in error. The error is relatively worse as the percentage of unvaccinated gets smaller.

It is not possible to analyse the flaws in the vaccination data further in this report. We know there are errors and that **the proportion of those vaccinated are less than that reported in official data**. The proportion of unvaccinated people is therefore larger. Errors will be most dominant in older age groups where percent vaccinated is largest.

7.6.2 Vaccination Effectiveness Calculation

Going back to the infections table from the FOI. Looking first at data for ages 12 – 49. For dose counts, we subtract age 50 and over from 16 and over then add ages 12-15 to this. This age group, 12-49, broadly covers working ages, apart from ages 12-18 which are school ages.

	NSW (Counts)	QLD (Counts)	SA (Counts)	NSW+Qld+ SA (Counts)	Vax Propor-tion (NSW, Qld, SA	Vax Percent (%)	Infection Cases from FOI table	Infection Rate per 100,000
Population 12-49	4,148,188	2,623,998	848,763	7,620,949				
Dose 1 Only 12-49	73,811	140,915	48,647	263,373	0.035	3.5	10416	3955
Dose 2 12-49	3,698,979	2,089,772	689,225	6,477,976	0.850	85.0	316146	4880
No dose	375,398	393,311	110,891	879,600	0.115	11.5	12272	1395

The populations for the states are those from the Department of Health data, so we know these are underestimates. The No Dose percentage, 11.5%, is therefore actually higher than shown. The infection case rate per 100,000 population is calculated for each vaccination status. Clearly the case rates are higher for vaccinated categories compared to unvaccinated.

Vaccine Effectiveness is -250% for 2 dose compared to no dose. This is in line with what was found for NSW data from NSW surveillance reports, ie that case rates in vaccinated are higher than in unvaccinated.

I have not calculated for the ages over 50 because government data for Dose 1 percentage is above 100% due to population error. Therefore, the proportion of no dose will be massively in error for reasons described above. An estimate could be made by using more accurate estimates of vaccination proportions of the population.

Limitations of this analysis include that there will be different vaccine effectiveness in age sub-bands, within the 12-49 age range. Simpson's paradox (described in Section 6.1) may lead to different rates seen for the broad age group compared to the narrower age groups. However, we have some idea about age group effectiveness from the NSW data. All ages showed negative effectiveness. Behaviour may be different in different for different vaccination status. For the period of this data, 15 December 2021 to 13 January 2022, Australia had opened up borders with international travel allowed for vaccinated passengers. At the same time Omicron arrived in December 2021. Vaccinated people may have been testing unnecessarily with the known false positives from PCR testing. People who were vaccinated may have thought, based on government information, that they would not catch COVID, which was clearly incorrect.

However, these factors would not compensate for the magnitude of difference being seen. At best case it can be stated that vaccination provides no protection from infection when compared to not being vaccinated, based on Department of Health data.

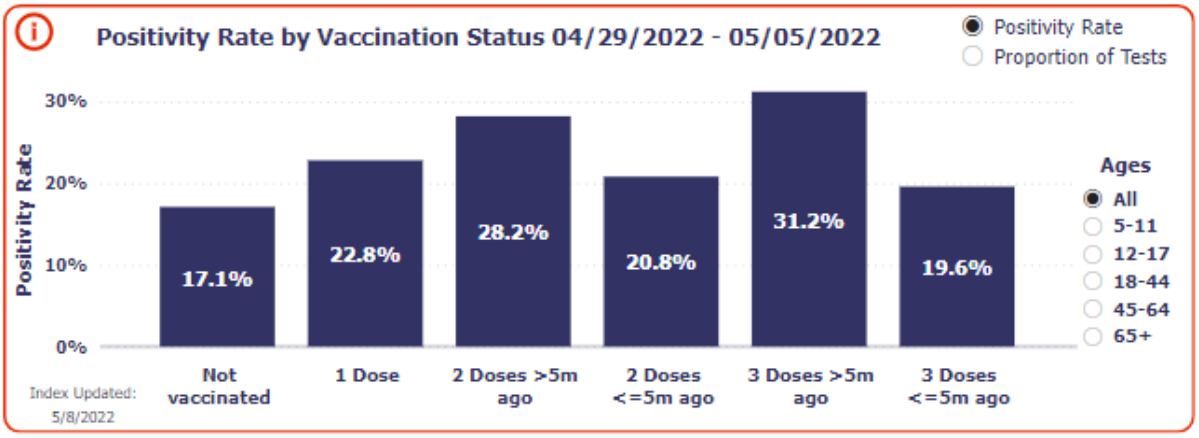
Mandates have been imposed based on knowledge of this data, that there is real world data showing to increased risk of infection in unvaccinated people.

7.7 Vaccine Effectiveness USA

Walgreens pharmacies in the USA provide a COVID testing service. People take these tests as they are required for work or travel. Walgreens record the rate of infection for different vaccination status. You can find the Walgreens tracker here:

https://www.walgreens.com/businesssolutions/covid-19-index.jsp

This graph below is a screen shot taken May 2020.



The tracker shows that the highest rate of infection is in the 3 dose > 5 months ago. The lowest is the unvaccinated. This is a trend that has been consistent. While this is a different measure of Vaccine Effectiveness, it shows that the unvaccinated people do not pose a higher risk of infection.

7.8 Recently Published Research

The following recent publication are offered with relevant information on vaccine effectiveness against infection from Iceland and the protection from reinfection in unvaccinated persons by previous infection from Qatar.

7.8.1 Iceland

Rate of SARS-CoV-2 Reinfection During an Omicron Wave in Iceland. Research Letter, in JAMA Network Open**:** https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2794886

The paper notes that reinfection is more likely with the Omicron variant. Authors note the population level risk of reinfection with Omicron had not yet been described. The paper estimates the proportion of persons who become reinfected with SARS-CoV-2 during the Omicron wave in Iceland. They find intuitively obvious things like reinfection probability is increased with time from initial infection.

They also found that it was higher amongst persons who had received 2 or more doses of vaccine compared with 1 dose or less (odds ratio 1.42).

This is further evidence of lack of protection from infection by vaccination.

A substantial proportion of persons experienced reinfection during Omicron wave. This was 15% amongst 18 to 29 year olds.

Data from Iceland albeit a small country has been widely accepted as good quality. All code and data is provided with the paper. They note limitations of the study complex relationships amongst prior infection, vaccine eligibility and underlying conditions.

7.8.2 Qatar

Protection against the Omicron Variant from Previous SARS-CoV-2 Infection. New England Journal of Medicine: https://www.nejm.org/doi/10.1056/NEJMc2200133

"the effectiveness of previous SARS-CoV-2 infection in preventing reinfection was defined as the proportional reduction in susceptibility to infection among persons who had recovered from infection as compared with those who had not been infected"

The effectiveness of previous infection in preventing reinfection was estimated to be 90.2% (95% confidence interval [CI], 60.2 to 97.6) against the alpha variant, 85.7% (95% CI, 75.8 to 91.7) against the beta variant, ***92.0%*** *(95% CI, 87.9 to 94.7) against the delta variant, and* ***56.0%*** *(95% CI, 50.6 to 60.9) against the omicron variant*

This study is based on data from Qatar. It is established that a previous infection is effective at preventing reinfection, However, it is less protective of reinfection with the Omicron variant. It is not known how protective Omicron infection is against further infection with Omicron. The study was of unvaccinated persons only.

7.9 Summary of REAL-WORLD Vaccine Effectiveness

For this report I have investigated real world COVID infection rates for unvaccinated and vaccinated people during the first Omicron wave. I used data from Surveillance reports from NSW and the UK. Similar trends were seen. Vaccination did not protect from infection.

I discussed the challenges with dealing with this data. I also discuss what appears to be interference to try to make numbers go a desired direction by changing categorisation from week to week in ways that would favour a particular outcome. In all cases, in this analysis, I have erred on the side of not trying to make unvaccinated category look better than it is.

The government reports for both UK and NSW provide narrative that infer certain behaviour by unvaccinated people. One inference in the media was that unvaccinated people did not go out and get tested. This seems improbable in Australia given the harsh restrictions imposed on unvaccinated people in NSW and the possibility of getting temporary exemption certificates based on recent infection.

A distinct difference between the UK and NSW is that NSW had almost zero natural immunity to the Omicron wave, from previous infection due to hard lockdowns in Australia. That appears to make the effect of the Omicron wave worse in Australia than other places in the world.

In one sense Australian data is unique in that the data on protection from infection by vaccination is not as confounded by the effect of immunity generated by previous infection (see reference in Section 7.8.2 from Qatar paper). This will particularly be the case in the state of Queensland which was not impacted as NSW and Victoria were with previous COVID waves.

It appears no effort was made to analyse relevant information on vaccine effectiveness against infection in determining Health Worker mandates.

Even if there is error in what are the true underlying infection rates for different vaccination status, this would not take into account the significant differences observed between vaccinated and unvaccinated infection rates in real world data reported here. It can be suggested that boosting brings back protection from infection. Data from the UK on boosters and infection rates, that has not been provided here, soon followed the same trend described in this section. In Scotland for example the reporting of this data was discontinued due to fear it would be misused.

I found no evidence in real world data that COVID vaccines provide any protection from infection.

8 Analysis of Severe COVID Outcomes

In this section severe outcomes based on vaccination status are reviewed. NSW data is the most detailed available.

Data was provided in the Affidavits for Queensland deaths from 27 December 2021 to 4 Feb 2022. An analysis of this data is provided in Section 8.2.

8.1 NSW Data

This section provides a review of recent adverse outcomes from COVID (ie hospitalisation and death) based on NSW data.

Graphics in this section come from a PowerBI dashboard found here: https://bit.ly/3ujYTQG created by Twitter handle @LCHF_Matt. The sources of data for this dashboard are found at

https://www.health.nsw.gov.au/Infectious/covid-19/Pages/weekly-reports.aspx

for NSW Surveillance reports and

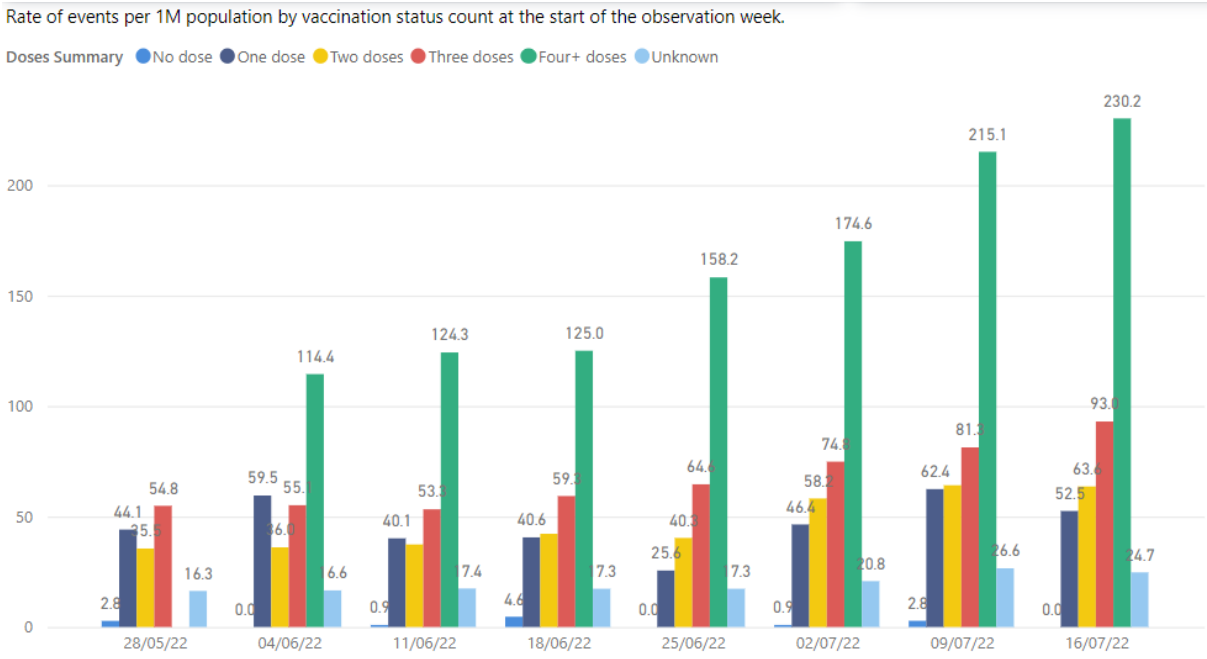
https://covidbaseau.com/historical/?title=People%20Vaccinated%20NSW&return=https://covidbaseau.com/nsw/

for vaccination rates in NSW. The covidbaseau.com website, likely uses data from the health.gov.au website with COVID-19 vaccination daily jurisdictional breakdown:

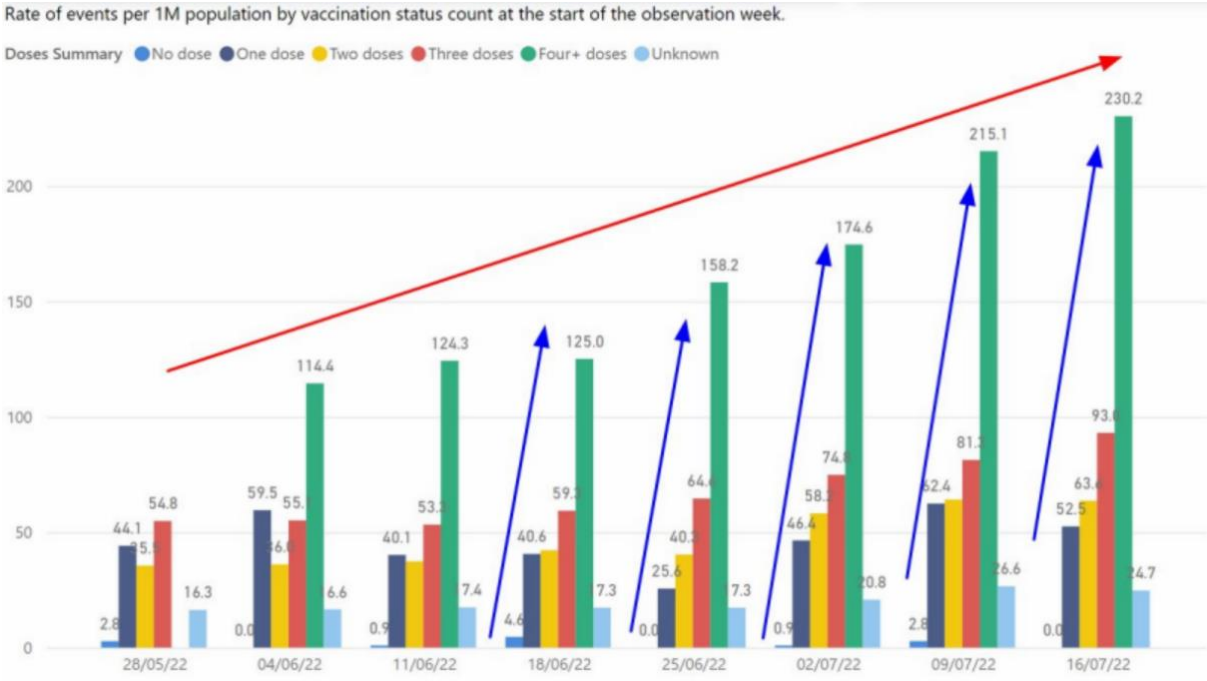
https://www.health.gov.au/resources/collections/covid-19-vaccination-daily-jurisdictional-breakdown

The graph below is for weeks ending 28 May 2022 to 16 July 2022. Note NSW epidemiological week end dates are offset by one day from the ISO week convention (ie week end Saturday rather than Sunday).

Rates of Hospitalisation, including ICU, against vaccination status, for eight successive weeks, is shown below:

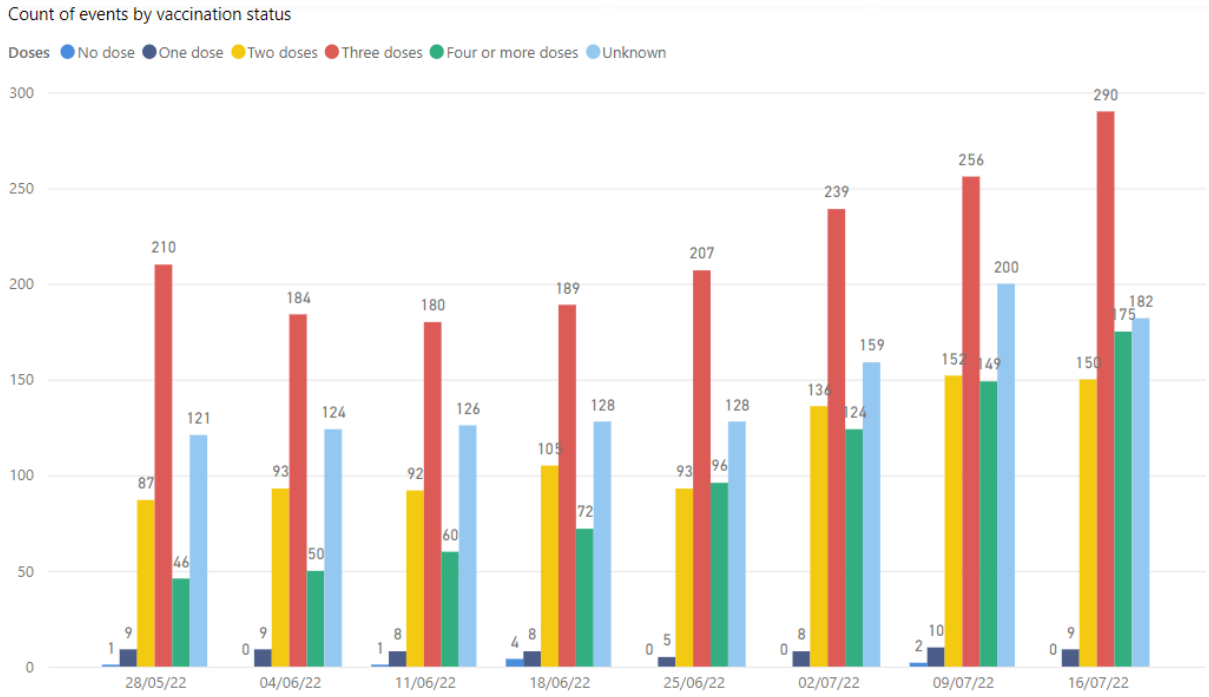


Various commentators have noted the trend:



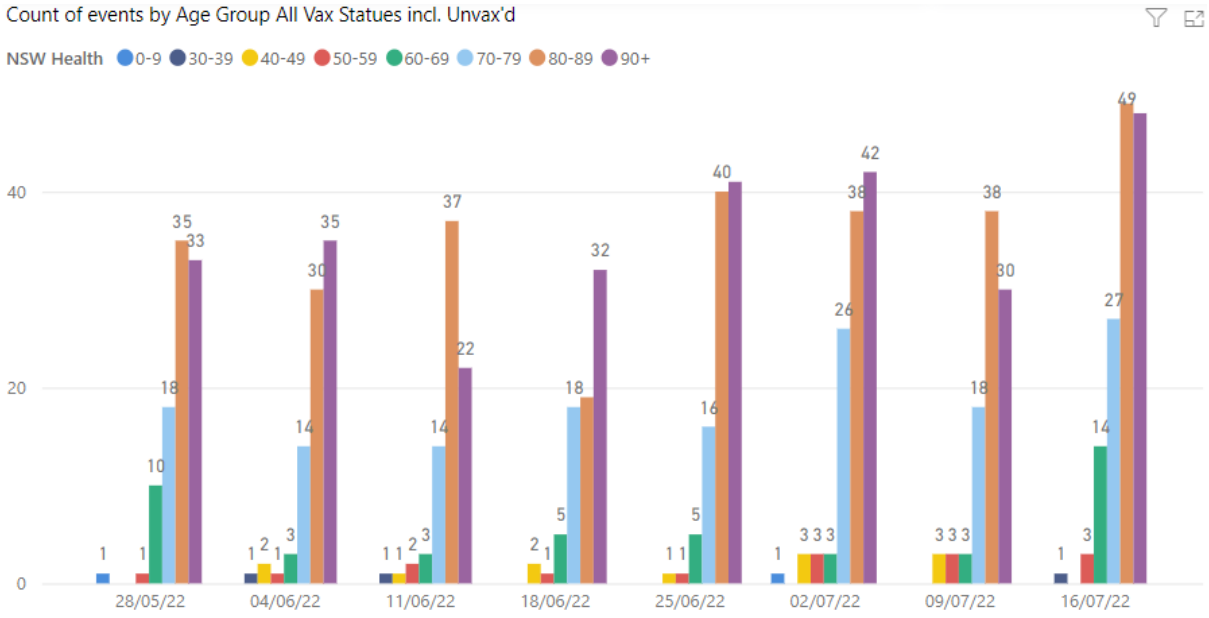
I note the limitations of this data. It is assumed that rates are calculated across the total eligible age population only, for each vaccine dosage.

Rates are calculated across all ages. Aggregation across all ages has limitations that has already been discussed. It is difficult to estimate rates for unvaccinated group as the percentage is small. However, it is clear actual numbers are small for the no dose group. Look at these hospital admissions in raw counts over the same period.



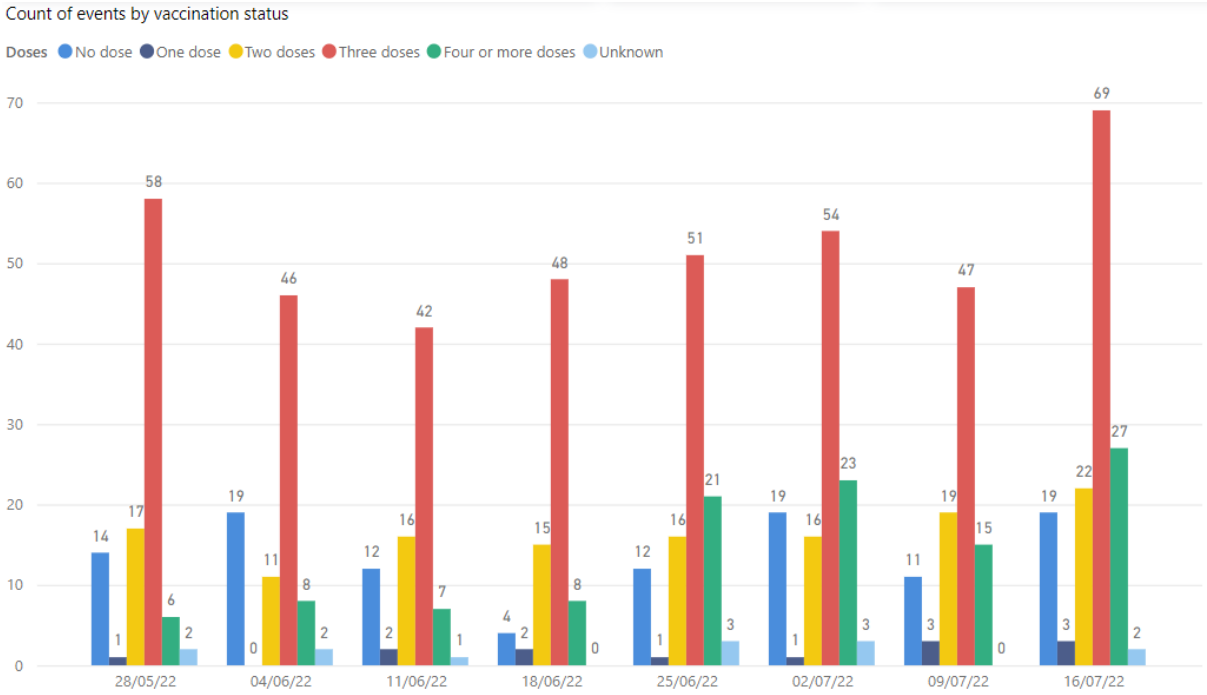
There are almost zero counts in the no dose group. Most numbers are now in three doses. This is because the four dose is a smaller population and so the rate goes relatively higher.

Now inspect for COVID deaths. The graph below shows COVID deaths in raw death counts against age group:



This graph makes clear what is known, ie that COVID deaths in ages 80's to 90's are by far the majority. With median age of death of approximately 83 years of age in Australia, many of these unfortunate deaths are above the typical age of death.

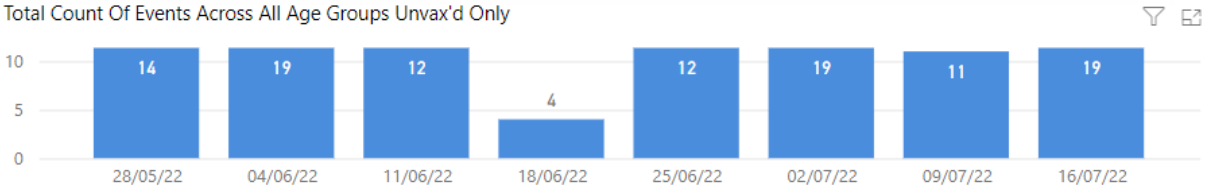
Looking at deaths by vaccination status in raw counts (going back to all ages):



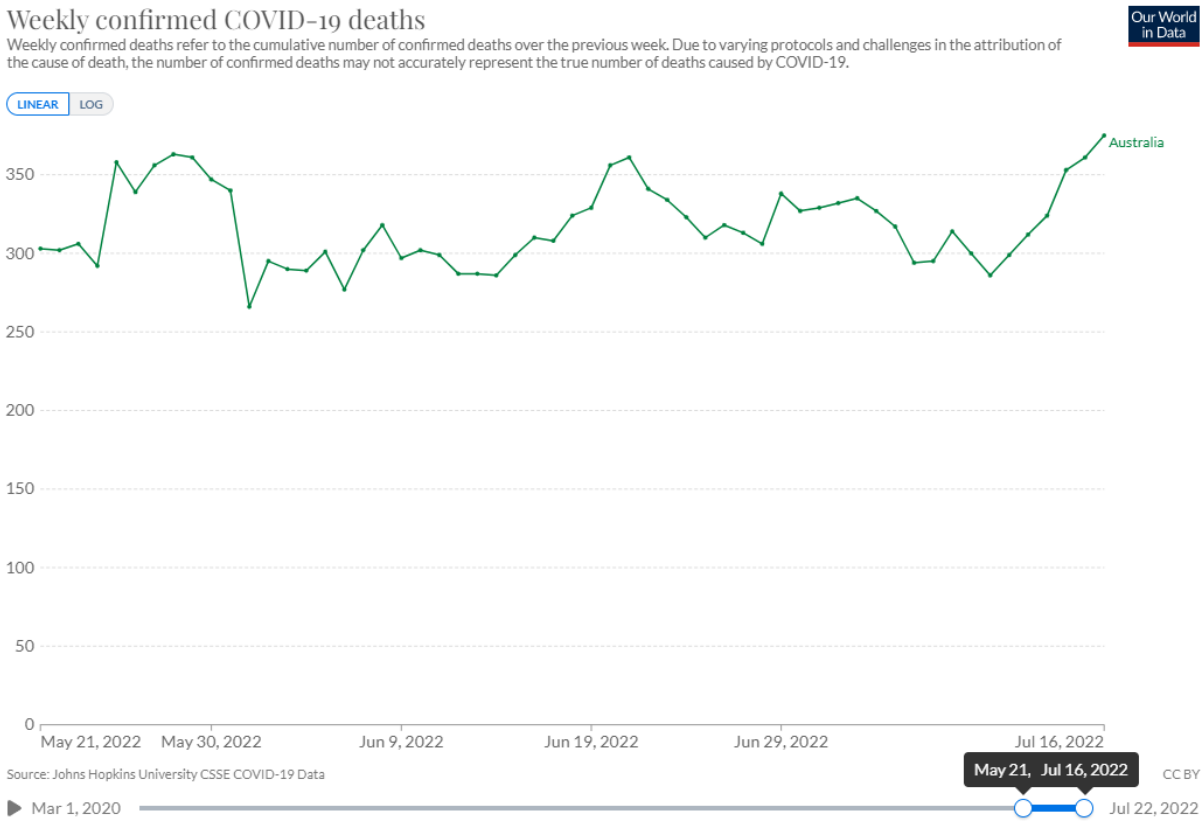
The majority of deaths are in the three-dose group.

For week ending 16/7/2022 the number of deaths in NSW by adding all categories of vaccination status above is 142. From Our world in Data for the same weekending 16/7/2022 the number of deaths for Australia is 375. The ratio of NSW to Australia is 142/375 =0.38. The population ratio is 8M/25M = 0.32, so NSW is only slightly overrepresented.

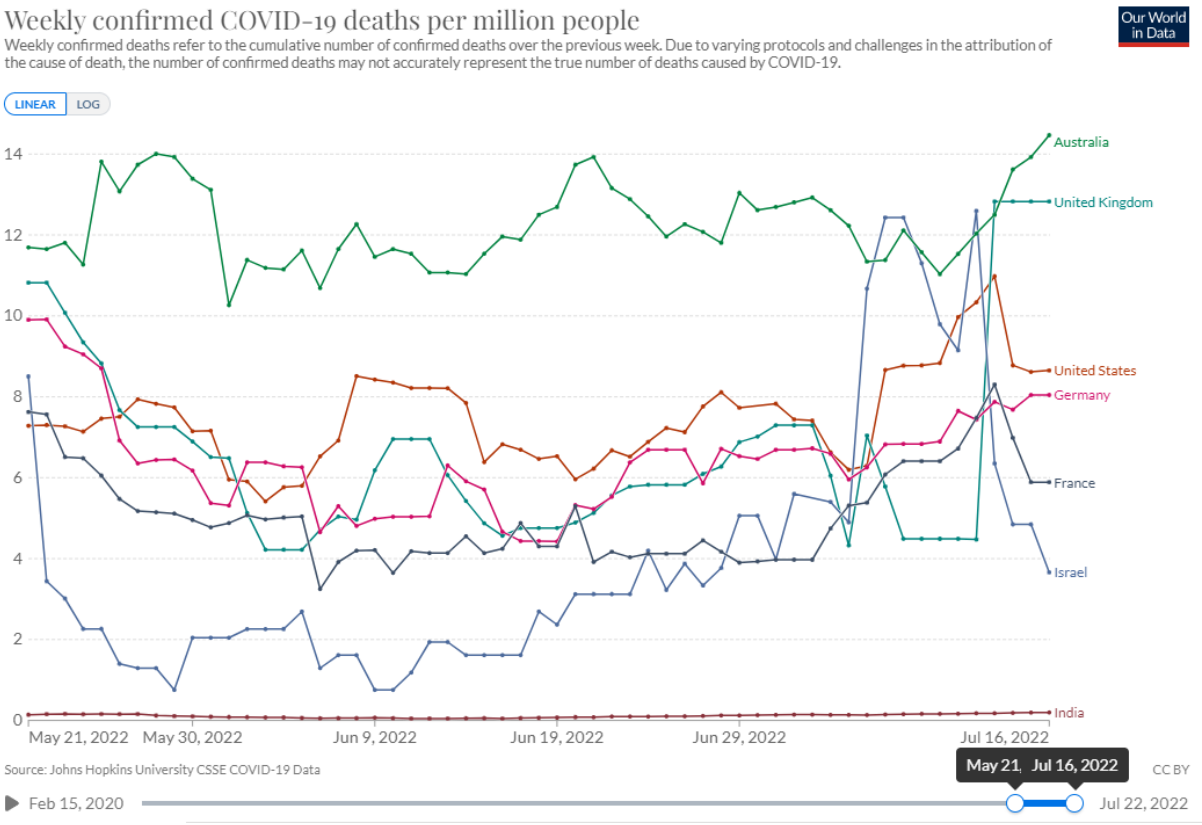
The number of unvaccinated deaths, shown below, is a roughly constant number. This does not follow the overall trend of the deaths for the Omicron wave.



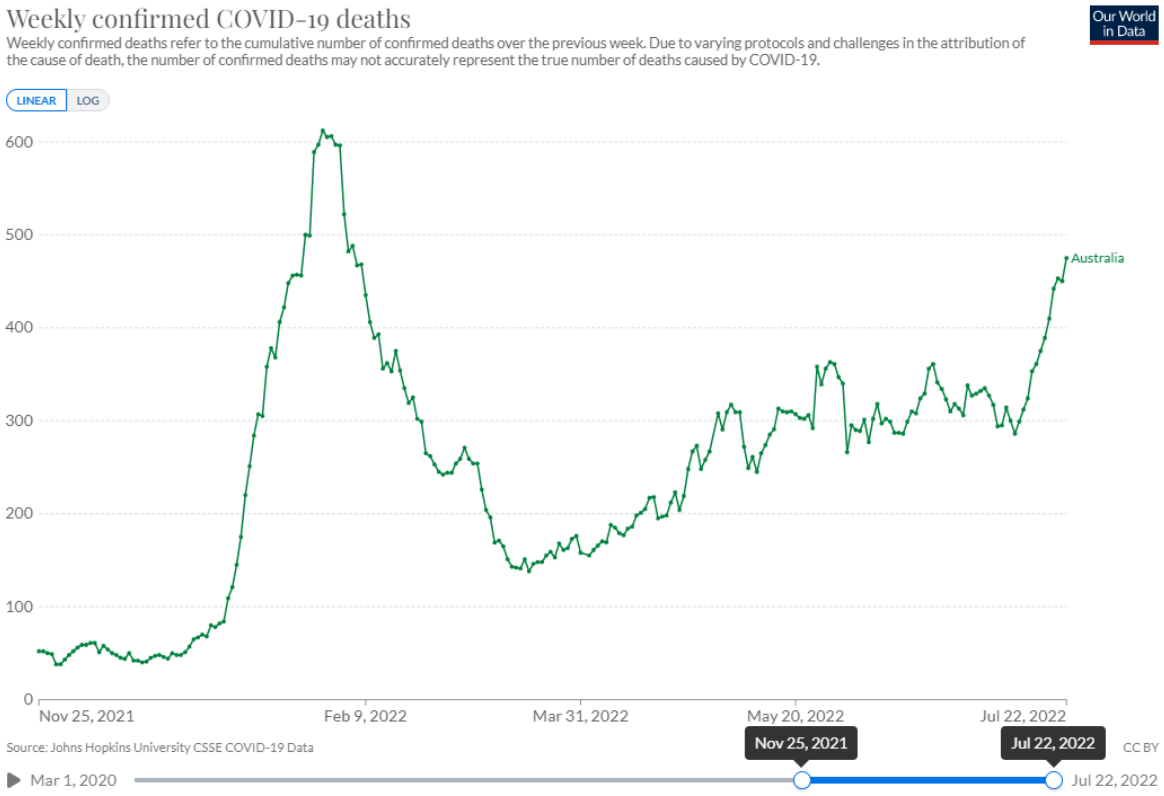
This can be compared to the trend seen in other vaccination dose categories. To put that in perspective, from the Our World in Data website, https://ourworldindata.org/covid-deaths showing data for number of COVID deaths over the same period:



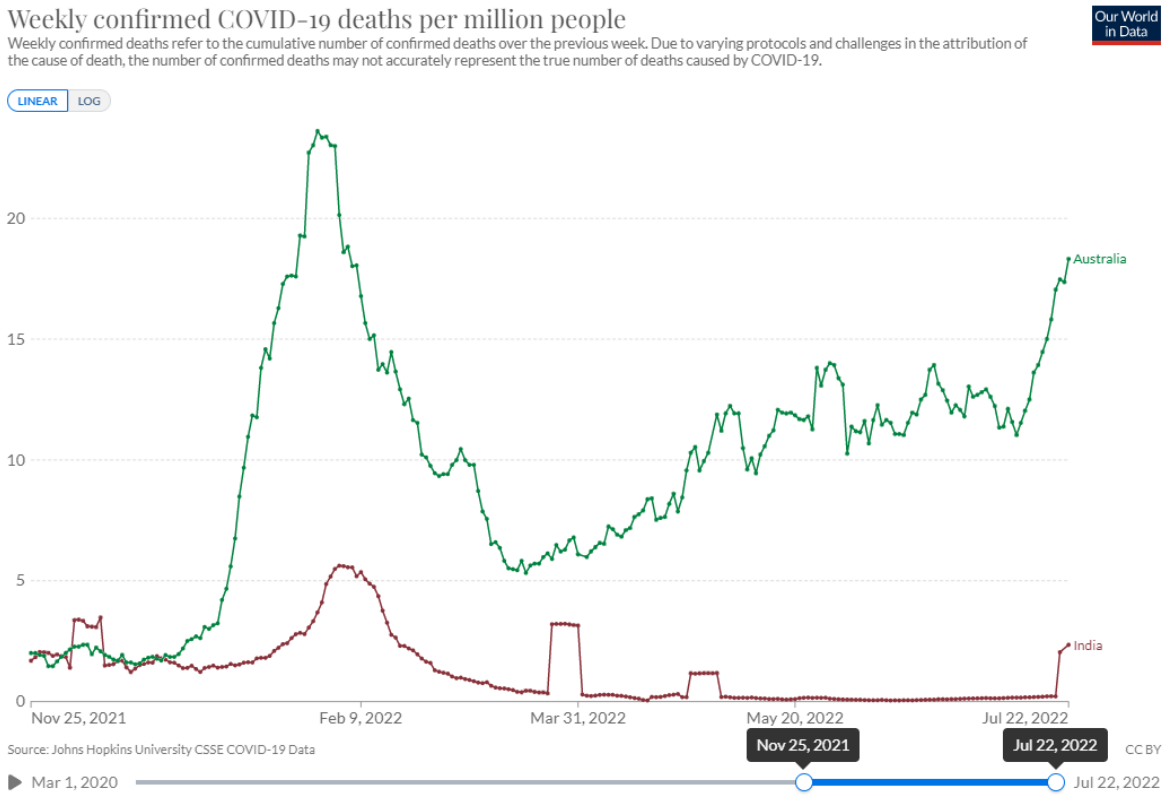
At the later weeks in the timeframe the deaths are on an upward trend. Putting Australia in context with other countries:



Australia has a higher rate of deaths than other countries, in July 2022. We have to keep in mind Australia is in the Southern Hemisphere Winter during this period. Putting this in context of the whole Omicron period from November 2021:



Comparison with India is shown below:



From the NSW COVID Deaths data it would appear that the unvaccinated are overrepresented in the COVID deaths (based on rate data), while they are underrepresented in infections and hospitalisations. However, this highlights a curious feature of this data.

That is that the unvaccinated deaths are not appearing in hospital.

See for example screenshot of NSW Surveillance reports. Week ending 16 July 2022 (Week 28):

	Admitted to hospital (but not to ICU)	Admitted to ICU	Deaths
Gender			
Female	386	25	69
Male	419	52	73
Not stated / inadequately described	1	0	0
Age group (years)			
0-9	46	1	0
10-19	10	0	0
20-29	42	3	0
30-39	73	3	1
40-49	33	4	0
50-59	61	17	3
60-69	104	10	14
70-79	153	24	27
80-89	200	12	49
90+	84	3	48
Vaccination status^			
Four or more doses	175	15	27
Three doses	290	29	69
Two doses	150	14	22
One dose	9	1	3
No dose	0	0	19
Unknown	182	18	2
Total	**806**	**77**	**142**

No hospital admissions and 19 deaths. The 19 deaths should appear in hospital in previous weeks.

For Week ending 9 July 2022 (week 27), ie the previous week.

	Admitted to hospital (but not to ICU)	Admitted to ICU	Deaths
Gender			
Female	389	36	45
Male	379	39	50
Not stated / inadequately described	1	0	0
Age group (years)			
0-9	54	1	0
10-19	19	1	0
20-29	43	3	0
30-39	58	2	0
40-49	35	6	3
50-59	52	9	3
60-69	86	18	3
70-79	187	23	18
80-89	154	11	38
90+	81	1	30
Vaccination status^			
Four or more doses	149	17	15
Three doses	256	26	47
Two doses	152	14	19
One dose	10	2	3
No dose	2	1	11
Unknown	200	15	0
Total	**769**	**75**	**95**

There are 3 unvaccinated hospitalisations (which may not necessarily have led to death).

Looking at the previous week again week ending 2 July 2022 (week 26):

	Admitted to hospital (but not to ICU)	Admitted to ICU	Deaths
Gender			
Female	341	24	52
Male	323	28	64
Not stated / inadequately described	2	0	0
Age group (years)			
0-9	62	3	1
10-19	20	2	0
20-29	26	0	0
30-39	43	2	0
40-49	36	3	3
50-59	48	6	3
60-69	67	10	3
70-79	123	14	26
80-89	164	9	38
90+	77	3	42
Vaccination status^			
Four or more doses	124	3	23
Three doses	239	23	54
Two doses	136	15	16
One dose	8	1	1
No dose	0	1	19
Unknown	159	9	3
Total	**666**	**52**	**116**

Here there is one hospitalisation only, for no dose.

Notes provided with the table:

Of the 116 people who were reported to have died with COVID-19, 115 were eligible for a third dose of a COVID-19 vaccine but only 77 (67% of those eligible) had received a third dose.[1]
• Fifty-two were aged care residents. Nine of these people died in hospital and 43 died at an aged care facility.
• Seven of the deaths occurred at home. Of these, two were diagnosed after death.
• Eight people aged under 65 years died with COVID-19. Seven had records of significant underlying health conditions that increase the risk of severe disease from COVID-19.
– Three of the cases had received no doses of a vaccine
– Four of the cases had received 2 doses of a vaccine
– One of the cases had received 3 doses of a vaccine
– The death of an infant who died in December 2021 is reported here. The death had been referred to the coroner and investigations have shown COVID-19 to be the cause of death. The infant had no significant underlying health conditions.
Note 1:
The Australian Technical Advisory Group on Immunisation (ATAGI) recommends that everyone aged 16 years and over has three doses of a COVID-19 vaccine, with an additional winter dose recommended for other people at increased risk of severe illness.

So about half (52) of the deaths are aged care residents and most of these (43) died in the facility.

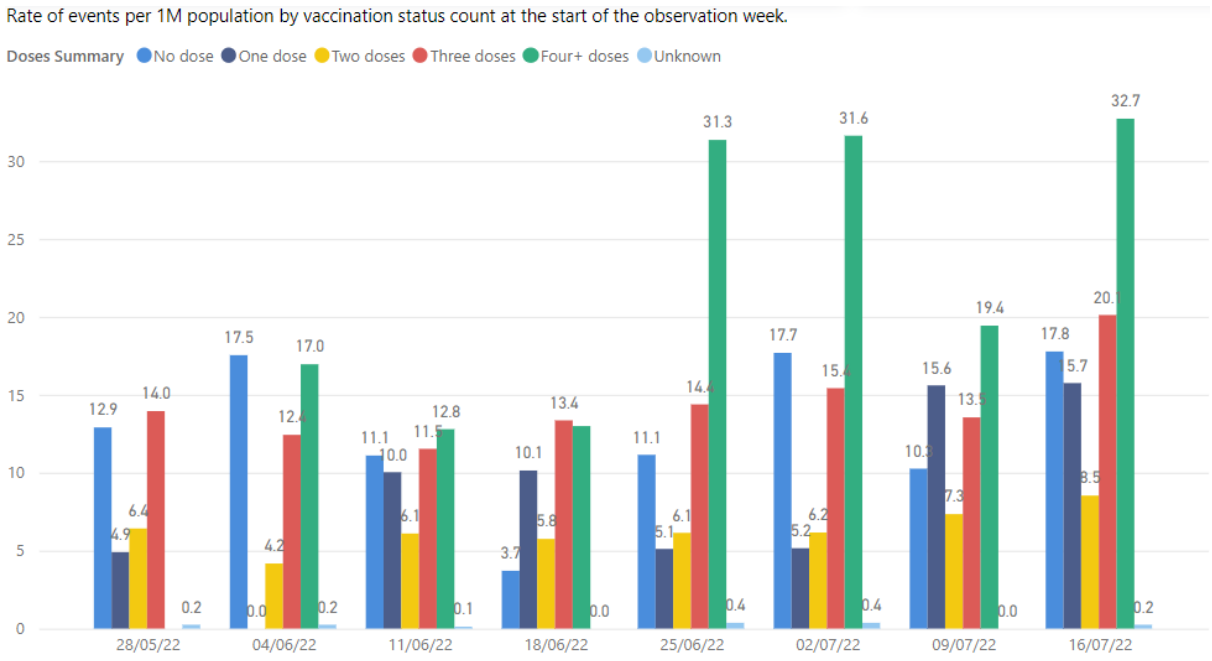
From the notes 7 out of 8 of the younger people (under 65) had significant underlying health conditions. 3 of the 8 people under 65 had no dose and we therefore know that possibly all (at least

two of them) had significant underlying health conditions. For example, they could have types of cancer where vaccination is not recommended.

We know that from time of hospitalisation, if death unfortunately occurs, it is within a two-week time frame. The deaths in the unvaccinated group do not appear to pass through the hospital system. There are several possible reasons. One is that these are deaths “with COVID” rather than “from COVID”. People have died outside the hospital setting, possibly of other causes, and they have been tested and found to be positive for COVID. Alternatively, they are elderly, perhaps in aged care, and have died in their Residential Aged Care Facility. Then the question is why were these people unvaccinated? when there is close to 100% coverage in older age groups in Australia.

The reason is likely that these COVID deaths were elderly frail people where the risk of adverse event following vaccination was deemed too high and therefore these elderly people remained unvaccinated. From a data analysis point of view this group should be separated out of any analysis related to determination of effectiveness of vaccines. If an informed decision has been made not to vaccinate elderly frail people, eg with dementia, then this is completely separate cohort. It is deceptive to try to include them in the no dose category for the purpose of justifying vaccination.

Looking at the rate of deaths against vaccination group using the Dashboard:



Previously where raw counts of death were shown the three-dose group was largest. When converted to rates it is the 4+dose group that is worryingly the highest. Note that the rates shown above are across all ages.

In terms of rates the unvaccinated group has relatively increased. In NSW vaccination rate is approximately 96% (as at end July 2022). So no dose is 4% of eligible population. But know this 4% is mainly younger ages, who we know are very unlikely to die of COVID in the Omicron wave.

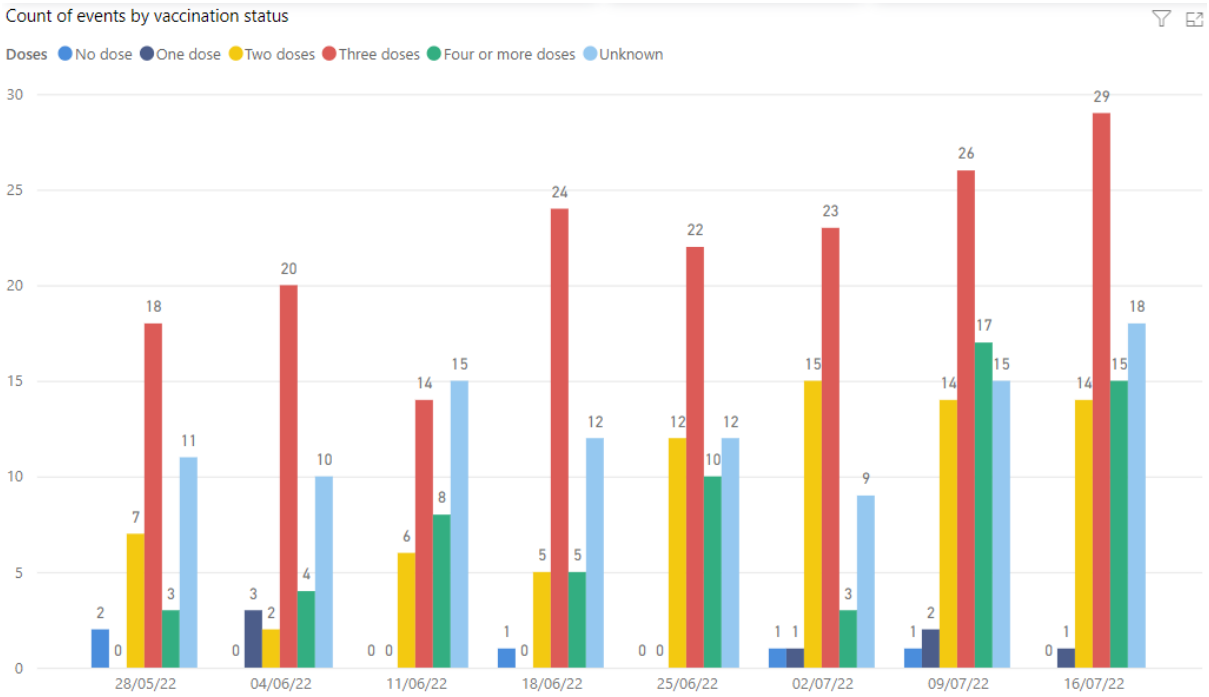
Conclusion from data review above:

The unvaccinated dying, from or with COVID, are predominantly elderly people who die outside the hospital setting. Any younger people unvaccinated have significant health issues. This group should

be separately categorised. There is a trend of increasing rate of deaths (also number of deaths) with more vaccination doses.

8.1.1 Anomalies in NSW Data

There is an unknown category in the data. Note the high number of unknowns in the graph above. It seems unlikely that no dose are in the unknowns. There is nothing to check if unvaccinated. Looking at Hospital ICU admissions only, counts by vaccination status:



There is also a large number of “Unknown”.

It seems inconceivable that vaccination status not known for patients in ICU.

The tables have a note:

> Vaccination status is determined by matching to Australian Immunisation Register (AIR) data. Name and date of birth need to be an exact match to that recorded in AIR. People with unknown vaccination status were unable to be found in AIR, though may have vaccination details recorded in AIR under a shortened name or different spelling.

This is unacceptable. NSW Health have been inconsistent with the Unknown category, trying to join them with No Dose. See screenshots of successive weeks of data, late 2021.

Total COVID-19 cases by vaccination status and week reported, NSW, 16 June to 18 December 2021

	Fully vaccinated	Partially vaccinated	No effective dose	Under investigation*	Not eligible for vaccination (aged 0-11 years)	Total
Total cases since 16 June 2021	17,604 (19.1%)	7,013 (7.6%)	39,257 (42.5%)	11,399 (12.3%)	17,114 (18.5%)	92,387 (100%)
Month						
June 2021	3 (1.3%)	11 (4.6%)	197 (83.1%)	2 (0.8%)	24 (10.1%)	237 (100%)
July 2021	70 (2.1%)	97 (2.9%)	2,665 (80.6%)	41 (1.2%)	434 (13.1%)	3,307 (100%)
August 2021	552 (2.9%)	808 (4.3%)	13,389 (70.5%)	1,098 (5.8%)	3,134 (16.5%)	18,981 (100%)
September 2021	2,600 (7.5%)	3,884 (11.1%)	15,462 (44.3%)	6,533 (18.7%)	6,395 (18.3%)	34,874 (100%)
October 2021	1,868 (15.1%)	1,709 (13.8%)	4,771 (38.6%)	875 (7.1%)	3,138 (25.4%)	12,361 (100%)
November 2021	2,144 (32.8%)	324 (5.0%)	1,499 (22.9%)	479 (7.3%)	2,095 (32.0%)	6,541 (100%)
Week ending						
27 Nov 2021	638 (41.3%)	43 (2.8%)	294 (19.1%)	148 (9.6%)	420 (27.2%)	1,543 (100%)
04 Dec 2021	743 (42.0%)	37 (2.1%)	339 (19.2%)	170 (9.7%)	480 (27.1%)	1,769 (100%)
11 Dec 2021	1,422 (50.1%)	49 (1.7%)	436 (15.4%)	364 (12.8%)	568 (20.0%)	2,839 (100%)
18 Dec 2021	8,430 (70.0%)	102 (0.8%)	612 (5.1%)	1,887 (15.7%)	1,010 (8.4%)	12,041 (100%)

* Vaccination status is updated regularly using both the Australian Immunisation Register and the patient's interview. See Glossary for details of vaccination status categories.

Total COVID-19 cases by vaccination status and week reported, NSW, 16 June to 25 December 2021

	Fully vaccinated	Partially vaccinated	No effective dose	Under investigation*	Not eligible for vaccination (aged 0-11 years)	Total
Total cases since 16 June 2021	42,847 (33.8%)	7,304 (5.8%)	45,113 (35.5%)	12,262 (9.7%)	19,410 (15.3%)	126,936 (100%)
Month						
June 2021	3 (1.3%)	11 (4.6%)	199 (84.0%)	0 (0.0%)	24 (10.1%)	237 (100%)
July 2021	71 (2.1%)	96 (2.9%)	2,676 (80.9%)	30 (0.9%)	434 (13.1%)	3,307 (100%)
August 2021	558 (2.9%)	806 (4.2%)	13,558 (71.4%)	925 (4.9%)	3,134 (16.5%)	18,981 (100%)
September 2021	2,623 (7.5%)	3,895 (11.2%)	16,481 (47.3%)	5,480 (15.7%)	6,395 (18.3%)	34,874 (100%)
October 2021	1,898 (15.4%)	1,719 (13.9%)	5,188 (42.0%)	418 (3.4%)	3,138 (25.4%)	12,361 (100%)
November 2021	2,185 (33.4%)	299 (4.6%)	1,941 (29.7%)	21 (0.3%)	2,095 (32.0%)	6,541 (100%)
Week ending						
04 Dec 2021	746 (42.2%)	38 (2.1%)	501 (28.3%)	4 (0.2%)	479 (27.1%)	1,768 (100%)
11 Dec 2021	1,428 (50.4%)	50 (1.8%)	778 (27.4%)	12 (0.4%)	567 (20.0%)	2,835 (100%)
18 Dec 2021	8,452 (70.4%)	96 (0.8%)	1,804 (15.0%)	656 (5.5%)	1,005 (8.4%)	12,013 (100%)
25 Dec 2021	25,114 (72.6%)	301 (0.9%)	2,147 (6.2%)	4,717 (13.6%)	2,303 (6.7%)	34,582 (100%)

* Vaccination status is updated regularly using both the Australian Immunisation Register and the patient's interview. See Glossary for details of vaccination status categories.

Total COVID-19 cases by vaccination status and week reported, NSW, 16 June to 1 January 2022

	Fully vaccinated	Partially vaccinated	No effective dose	Under investigation*	Not eligible for vaccination (aged 0-11 years)	Total
16 Jun - 25 Nov 2021	6,845 (9%)	6,825 (9%)	37,915 (50%)	8,779 (12%)	14,955 (20%)	75,319 (100%)
26 Nov 2021 - 1 Jan 2022	108,056 (71%)	1,112 (1%)	2,766 (2%)	28,176 (18%)	12,328 (8%)	152,440 (100%)
Month						
June 2021	3 (1%)	11 (5%)	197 (83%)	2 (1%)	24 (10%)	237 (100%)
July 2021	70 (2%)	97 (3%)	2,665 (81%)	41 (1%)	434 (13%)	3,307 (100%)
August 2021	554 (3%)	807 (4%)	13,388 (71%)	1,097 (6%)	3,134 (17%)	18,980 (100%)
September 2021	2,612 (7%)	3,888 (11%)	15,551 (45%)	6,427 (18%)	6,395 (18%)	34,873 (100%)
October 2021	1,872 (15%)	1,716 (14%)	4,813 (39%)	822 (7%)	3,138 (25%)	12,361 (100%)
November 2021	2,147 (33%)	328 (5%)	1,499 (23%)	472 (7%)	2,095 (32%)	6,541 (100%)
December 2021	93,969 (71%)	959 (1%)	2,496 (2%)	24,394 (18%)	10,418 (8%)	132,236 (100%)
Week ending						
11 Dec 2021	1,431 (50%)	50 (2%)	432 (15%)	355 (13%)	567 (20%)	2,835 (100%)
18 Dec 2021	8,458 (70%)	92 (1%)	659 (5%)	1,798 (15%)	1,006 (8%)	12,013 (100%)
25 Dec 2021	25,196 (73%)	244 (1%)	616 (2%)	6,212 (18%)	2,301 (7%)	34,569 (100%)
1 Jan 2022	72,042 (71%)	671 (1%)	634 (1%)	19,616 (19%)	7,874 (8%)	100,837 (100%)

* Vaccination status is updated regularly using both the Australian Immunisation Register and the patient's interview. See Glossary for details of vaccination status categories. The recent increase in cases with a vaccination status Under investigation is due to no record being found in AIR, and NSW Health no longer interviewing every case, such that cases cannot provide further information about vaccination. These cases likely represent a mix of fully vaccinated and those with no effective dose.

There was a small number of cases (612) for the No Dose 18 December 2021. Then the next week the Unknowns are shifted to the No Dose. After questions were raised, the 7th January report (with the 25th December figures) was then corrected by shifting the "unknown" cases back where they were originally, in the 13th January report (third screenshot above). Messaging changed around this time from protecting from infection to protecting from going to ICU.

Another example from the Week 8, ending 26 February 2022 report, No Dose is combined with Unknowns, which is deceptive.

Table 4. Reported deaths of people with COVID-19, by vaccination status, in the week ending 26 February 2022

Vaccination status	Number of deaths
Three or more doses	11
Two doses	28
One dose	0
No dose/Unknown	12
Total	51

- COVID-19 vaccines are very effective in preventing people from the severe impacts of infection with the virus. More than 93 per cent of people aged 12 and over in NSW have received two doses of a COVID-19 vaccine, while almost 60 per cent of people eligible for their third dose have received it. With such high vaccination coverage in the community, this means a greater proportion of people admitted to hospital or ICU with COVID-19 are now vaccinated. However, when the size of the vaccinated and unvaccinated populations in NSW are considered, people who are not vaccinated remain far more likely to suffer severe COVID-19. NSW Health will continue to present this analysis in its monthly epidemiological reports. Analysis to date shows the minority of the overall population who have not been vaccinated are significantly overrepresented among patients in hospitals and ICUs with COVID-19.

This was subsequently changed back to separate categorisations.

8.2 Queensland Data

Data is provided in the Affidavit Volume 7 of 8 regarding Queensland deaths from 27 December 2021 to 4 Feb 2022. An analysis of this data is provided.

What is apparent is the progressive lack of attention to detail. For the first deaths in Queensland there is some detail provided, then less and less is provided as more deaths occur. This could be because it was considered too much work or resources not provided. This reviewer notes that these are not large numbers (ie 200) and there is no reason that the appropriate detail should not be available.

The only evidence I find of any investigation of COVID deaths is on page 1755 (vol 7), in two emails from Dr Gerrard (19 Jan 2022) to his team. In the initial correspondence he requests information on patients dying who had 3 doses, and what "unknown" status means.

Dr Gerrard follows up by asking for detail on date of last dose of vaccine for those dying. This is a very relevant question. There is no response provided to these questions.

There is a death of a teenager in the list. Apparently, Dr Gerrard has knowledge that this death was a result of a car accident.

This one page is the only evidence I find of specific investigation by Qld Health of data related to COVID health and vaccination.

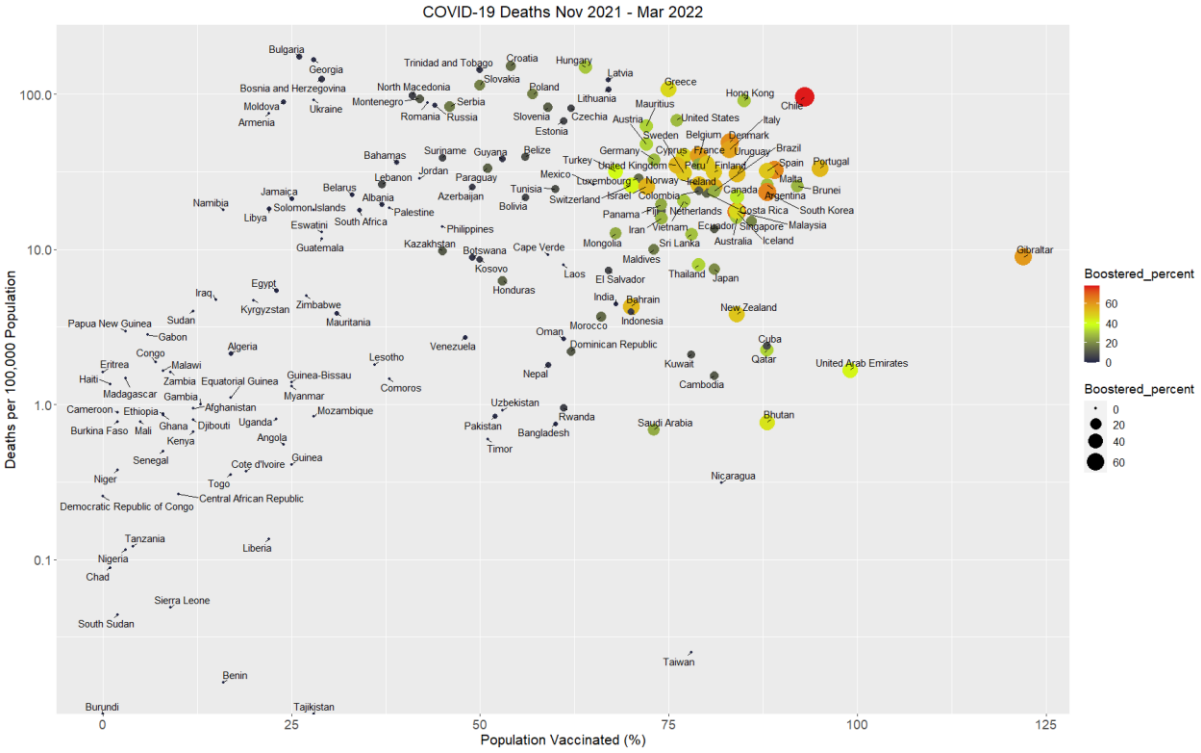
In the scanned documents tables have been cut off and this reviewer cannot tell if there is relevant information in these tables.

8.2.1 Analysis of Qld COVID Deaths

This section TBD.

8.3 Australia's Vaccination Performance with Respect to the World

Data on rate of Deaths from Our World in Data (https://ourworldindata.org/coronavirus) is plotted for the period of the initial Omicron wave (Nov 2021 – March 2022).



Percentage of population fully vaccinated is shown on the horizontal x axis. Death rate in Deaths per 100,000 people is shown on the vertical y axis. This is shown on a logarithmic scale, which allows country labels to be seen clearer. Booster rates are shown by size of points as well as in colour.

Countries in the top right quadrant have high vaccination rates. They also have high COVID death rates. Australia is amongst countries in the top right quadrant. It appears that the wealthy highly vaccinated countries have the highest mortality rates. High vaccination rates correspond to high booster rates.

Eastern European countries (top left quadrant) have separate issues related to their health systems. Gibraltar is an outlier with vaccination rate greater than 100% shown. This is attributed to their influx of temporary workers and vaccinations being greater than the permanent population.

Confounders to this data include:

- poorer countries may have younger populations and therefore are less affected by COVID
- use of low cost off label drugs, forbidden in wealthy countries

Ideally this analysis could be performed across age groups. Unfortunately, that data is not available.

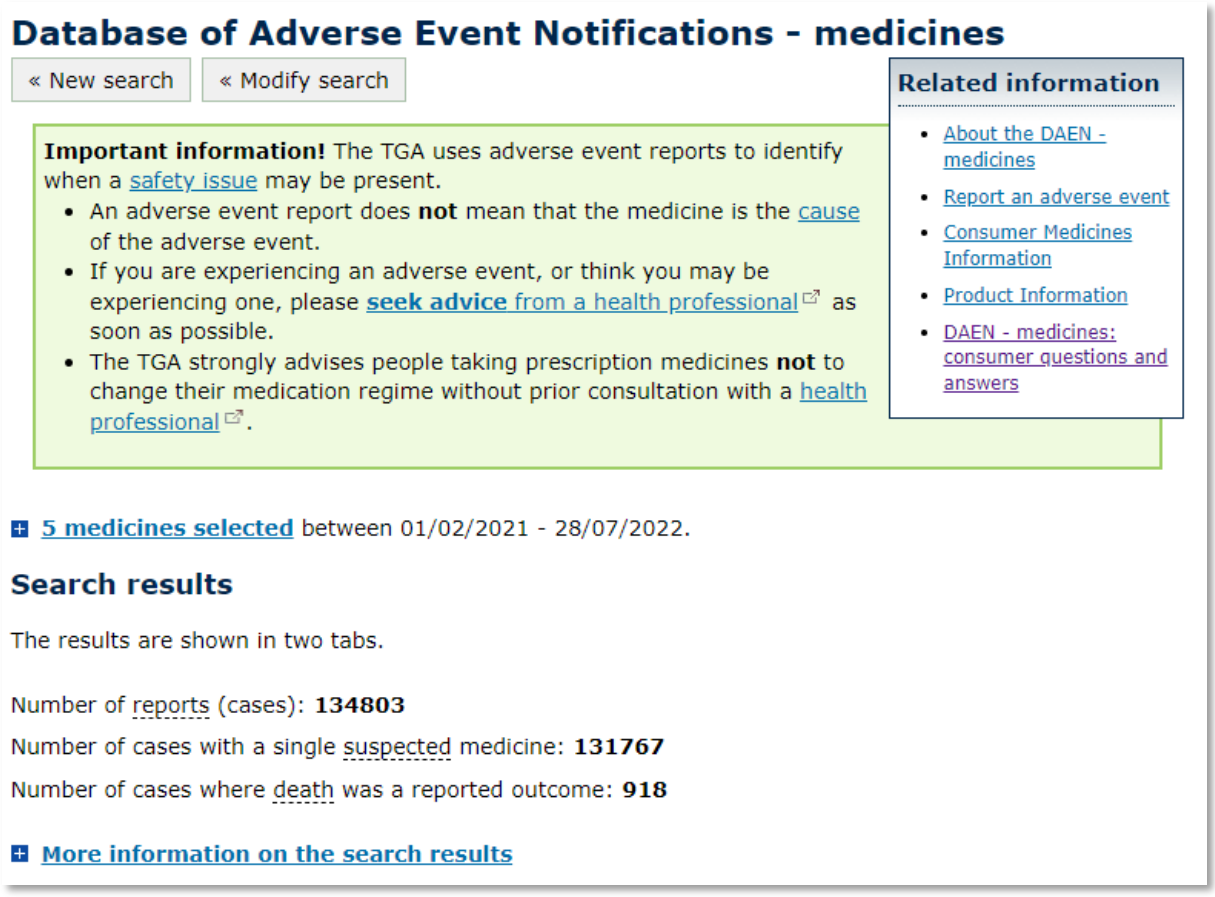
9 VACCINE ADVERSE EVENTS

It is prudent to review adverse events resulting from vaccination. This is relevant as mandatory vaccination implies a forced exposure to risk of adverse event. The question is what is the level of risk and is that risk justified for the benefit?

Clearly this is an age dependent risk. Blanket mandates do not respect this fact.

Adverse events are recorded in the TGA Database of Adverse Event Notifications (DAEN). Found here: https://apps.tga.gov.au/Prod/daen/daen-entry.aspx

See screen shot of web page below:



At the time of screenshot, there are 918 reports with death as an outcome, up till 28 July 2022.

I note that the TGA DAEN, in its original form, is very clumsy to use. Concerned citizens would take daily captures to follow it. A particularly annoying aspect is that when death is a result this cannot be associated with the corresponding case. Freedom of Information requests have been required to do this (see Section 9.1)

The TGA accepts a very small number of deaths are a direct result of vaccination. This reviewer understands these were mainly for blood clots caused by Astra Zeneca vaccine.

It is out of scope for this review to argue whether these “reported” deaths are in fact caused by vaccination. It is a separate question as to whether the appropriate resources are being applied for such an important question.

For this review I have done a spot check of cases reported in the media to check the DAEN record (see Section 9.2).

The TGA is in the process of updating the Adverse Event reporting on the website.

https://daen.tga.gov.au/medicines-search/

A Beta version was released in June 2022. Note below from site:

Beta version of the Database of Adverse Event Notifications (DAEN) for medicines launched

8 June 2022

The TGA's Database of Adverse Event Notifications (DAEN) - medicines allows you to search reports of suspected side effects for medicines and vaccines (also known as adverse events) received by the TGA. We use adverse event reports to identify potential safety issues.

The TGA has launched a new beta version of the database. The upgraded version allows users to search, view results and interact with the data, both on desktop and mobile devices more easily.

The improvements are based on feedback from users of the DAEN - medicines. The new version enables users to interact with search results through dynamic tables, filters and graphs. Search results can also be extracted and saved in .csv and .xlsx formats. The beta version is available on the TGA website, alongside the older database. Assuming a successful trial, we are planning to switch over to the improved version in 3-4 months.

> It is important to remember that inclusion of a report in our database does not mean that the adverse event has been confirmed or that it was caused by the medicine or vaccine. The database does not contain all known safety information. An assessment of the safety of a medicine or vaccine cannot be made using the DAEN - medicines search results alone.

The disclaimer is in Yellow box.

This Beta version allows the user to download query sets of data. Previously it was almost impossible to get useful data for analysis. However, deaths are not identified with cases.

9.1 FOI Requests

TGA FOI Disclosure log is found here: https://www.tga.gov.au/foi-disclosure-log

Further information, found from public Freedom of Information (FOI) requests to Health Department are found here: https://www.health.gov.au/resources/foi-disclosure-log

Relevant FOIs identified during this review are shown in the table below:

FIO	Agency	Contents
3586	TGA	Ages of death. Redacted document. Caused confusion because of laziness in converting a spreadsheet to a pdf. Additional pages added.
3785	TGA	This FOI request was submitted by this reviewer. By providing the case number it allows to find those cases where death is an outcome.
3545	TGA	COVID-19: Vaccine adverse event reporting data FOI 3545 document 1 (xlsx,2014kb)
3798	Health Dept	3798-2022 7 July 2022 FOI 3798 – Vaccine dose data

9.2 SPECIFIC CASES

The reviewer was made aware of the following government inquiry.

COVID UNDER QUESTION is a cross-party inquiry into the Government's response to COVID held on 23rd March 2022. COVID Under Question was hosted by Senator Malcolm Roberts (One Nation Federal Senator for Queensland) and attended by Stephen Andrew (One Nation Queensland State MP for Mirani), George Christensen (Federal Nationals MP for Dawson), Gerard Rennick (Federal Liberal Senator for Queensland), Alex Antic (Federal Liberal Senator for South Australia) and Craig Kelly (Federal United Australia Party MP for Hughes).

Parliamentarians heard from a range of doctors, experts, economists and everyday people about how the Government's response to COVID has affected them and at times defied belief.

The full day's proceedings were recorded and are available here:
https://www.malcolmrobertsqld.com.au/covid-under-question-a-cross-party-inquiry/

The result of mandates is witnessed from the testimony of Raelene Gotze, on the death of her daughter following vaccination at the parliamentary inquiry.

Raelene Gotze

Raelene Gotze's daughter died after receiving a vaccine mandated by her workplace.

From the transcript:

Raylene:
So this is my daughter. Her name is Caitlin Georgia Gotze, and this is the true story of her life and death. Caitlyn was a young fit, healthy, vibrant girl. She had a passion for life. She loved travel and music and her friends and her family. She loved her animals. She was studying Griffith university on a path to become a large animal veterinarian. She earned a living training race horses, and then the vaccines were mandated by Queensland racing and Queensland health. Caitlin had to be vaccinated by the 21st of December 2021 to stay in her role as foreman. She had waited until Pfizer was

available in Toowoomba, as it was advertised as being safe, all the news stations were reporting that AstraZeneca could cause blood clots.

…

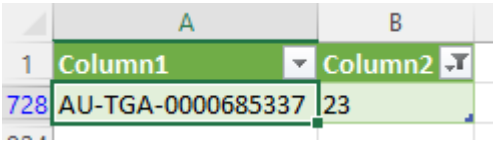
Raylene:
However, on the 17th of November 2021 at approximately 3:30 PM, Caitlin died.

….

Raylene:
Caitlin's friends, family, and doctors somehow acknowledge that the vaccine was to blame. As they tell me that Caitlin believed in vaccines and would've been happy to die for the greater good. I've been told by my now ex-partner that Caitlin's death is the price that we have to pay to keep the rest of us safe from COVID. Is it? I don't think it is. My beautiful, strong, intelligent, fearless girl didn't have to die, she didn't have to suffer to keep everyone else safe. If she'd been riding a horse in the paddock and she'd fallen off and hit her head on a rock, it would've been horrible and tragic and I would've been heartbroken, but I would've come to terms with it. She was doing something she loved on her own terms.

This testimony is heartbreaking. It is an example of a young Queensland woman who died.

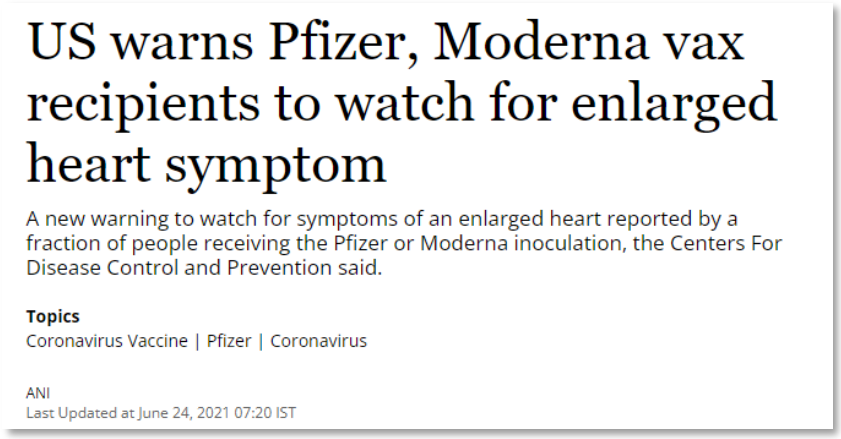
From the TGA website under a Freedom Of Information, request I obtained the list of case numbers corresponding to deaths. A search for age 23 years finds:



Case number	Report Date	Age	Sex	Drug	
685337	21/12/2021	23	Female	COMIRNATY COVID-19 vaccine (tozinameran) - Suspected	• Cardiomegaly • Malaise • Personality change

We learn the report date is approximately one month after Caitlin's death. We see the conditions resulting in death (enlarged heart) consistent with Caitlyn's mother's testimony. Searching for articles on the web for this condition

https://www.business-standard.com/article/current-affairs/us-warns-pfizer-moderna-vax-recipients-to-watch-for-enlarged-heart-symptom-121062400115_1.html



US warns Pfizer, Moderna vax recipients to watch for enlarged heart symptom

A new warning to watch for symptoms of an enlarged heart reported by a fraction of people receiving the Pfizer or Moderna inoculation, the Centers For Disease Control and Prevention said.

Topics
Coronavirus Vaccine | Pfizer | Coronavirus

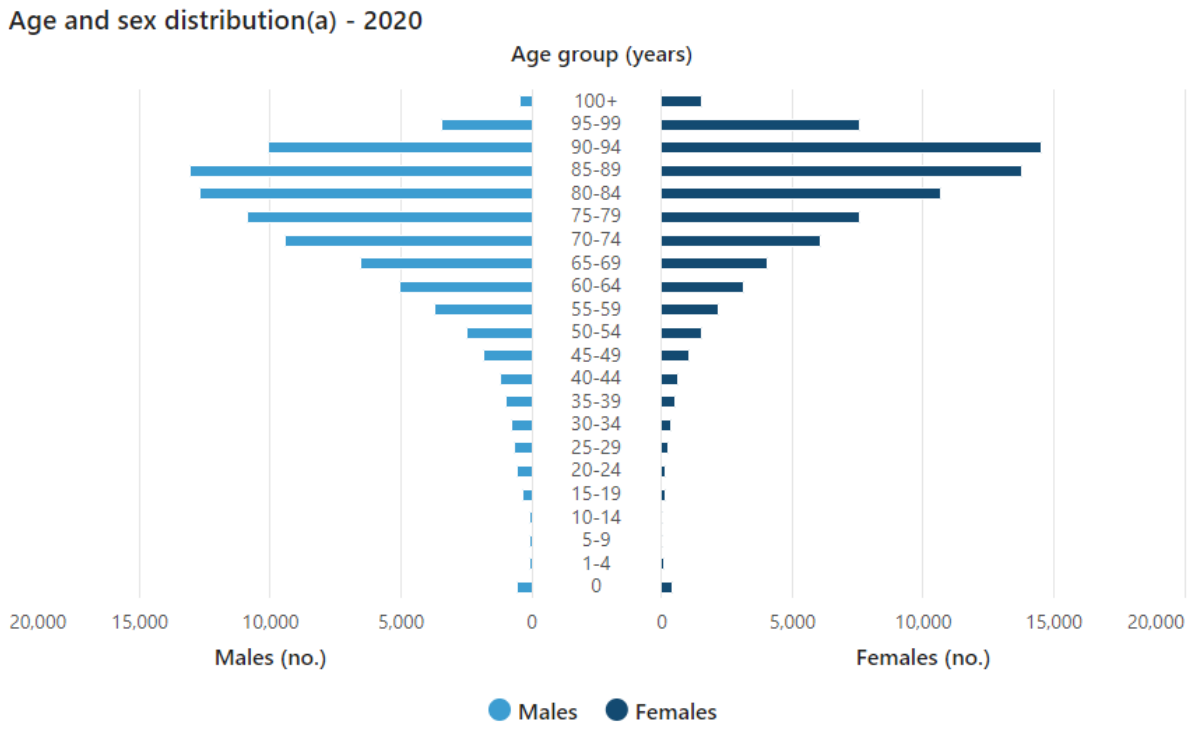
ANI
Last Updated at June 24, 2021 07:20 IST

While there is a report of the death of Caitlyn, it is not one of the TGA accepted vaccine deaths. To the lay person it is obvious that a healthy young person dying shortly after vaccination has an extremely high probability of being a causal effect of the vaccine.

While it is understood that determining the true cause of death is difficult, particularly if no autopsy is held, there are statistical methods that can be used. If the date of last vaccination shot is recorded with every death that occurs in the population it is possible to evaluate if there are increased deaths, above what is expected, linked to time of vaccination. This will be more difficult as age increases. The likelihood of someone dying, within a certain time period from some event, becomes greater with age. In other words, the old person just happened to die and it was a coincidence they died so many days after vaccination. However for young people this is much less likely.

It is the opinion of this reviewer that all deaths of people below a certain age (say 50 years) are reviewed in the context of the last vaccination date. From the ABS Deaths Australia page we obtain the ages of death in a year in Australia:

https://www.abs.gov.au/statistics/people/population/deaths-australia/latest-release



The number of deaths for under 50's is not so large such that it would be an impossible task to track date of last vaccination for each death.

As noted in Section 8.2 Dr Gerrard does ask the question in correspondence, for a particular case, of the time of last vaccination. But it is understood this is for a COVID death.

The adage "correlation does not determine causation" is understood, but this analysis would be a trigger for a deeper investigation. It is clear that there are deaths resulting from vaccination. The question is what is the magnitude? Is the Adverse Reporting System capturing this?

For this reviewer this would appear to be an essential activity.

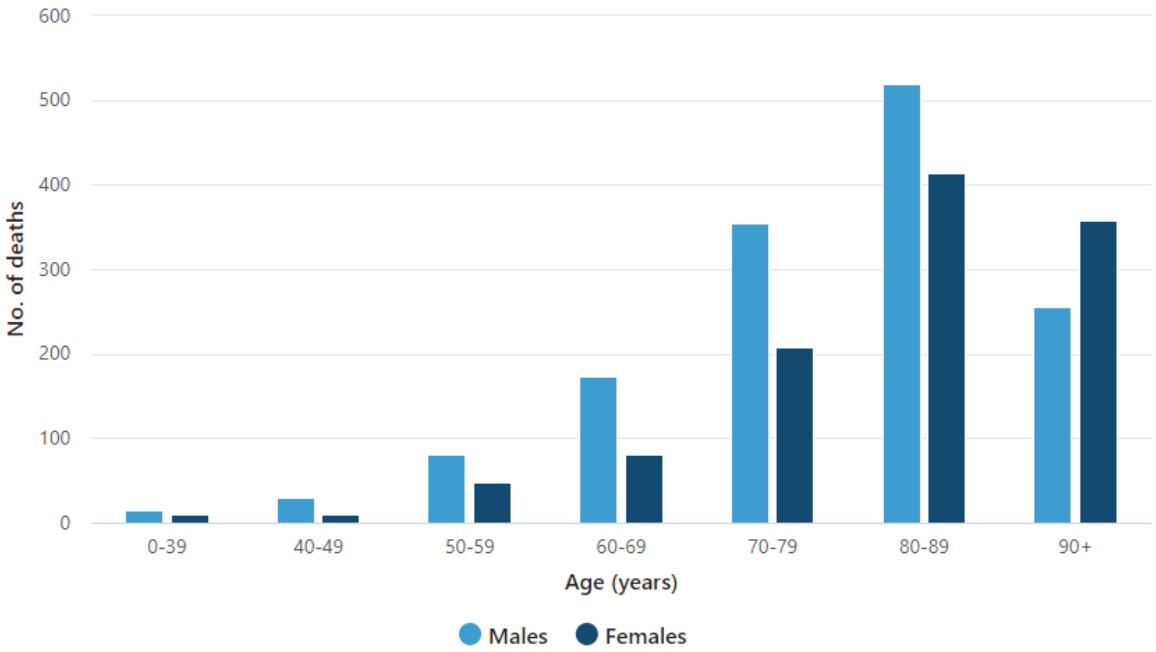
I find no mention of any detail of adverse events, such as for the case above, in any of the provided material. This is astounding.

9.3 Review of TGA DAEN

I have carried out an analysis TGA deaths reported following vaccination. I compare this to deaths from COVID. COVID Deaths taken from ABS till end January (matching the date of deaths in the TGA FOI providing ages of death) are found here

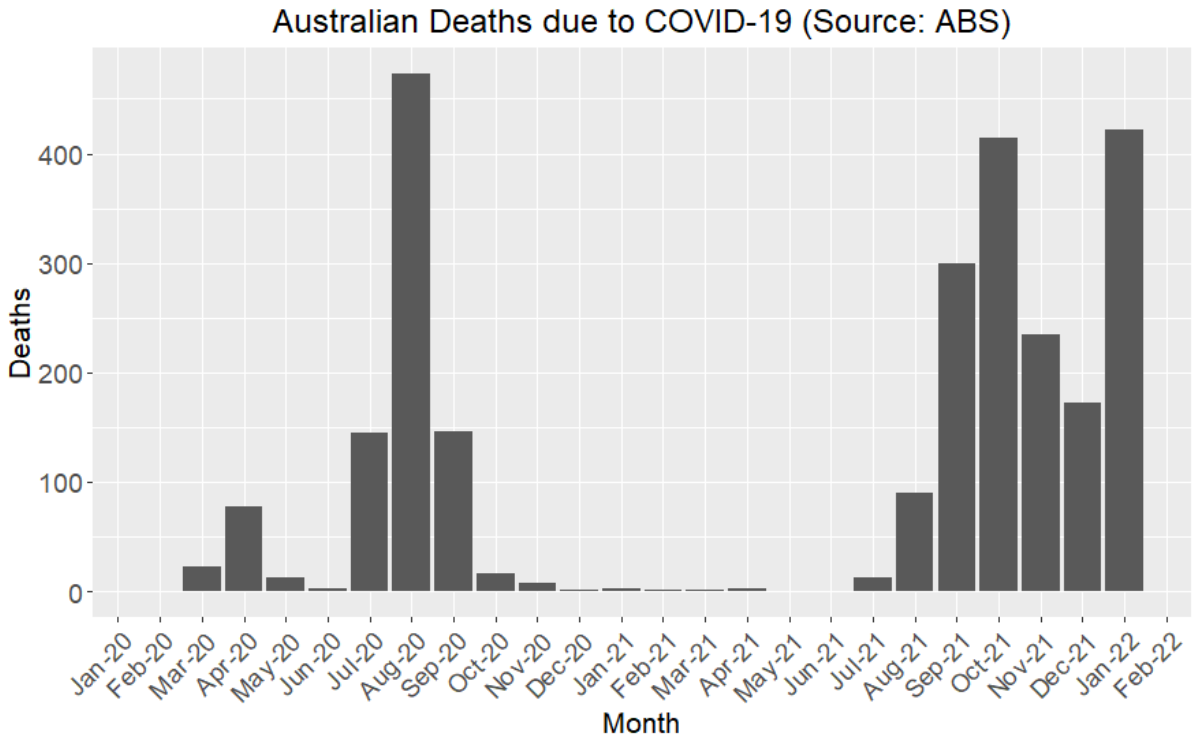
https://www.abs.gov.au/articles/covid-19-mortality-australia-deaths-registered-31-january-2022

COVID-19 registered deaths by age and sex (a)(b)(c)(d)(e)

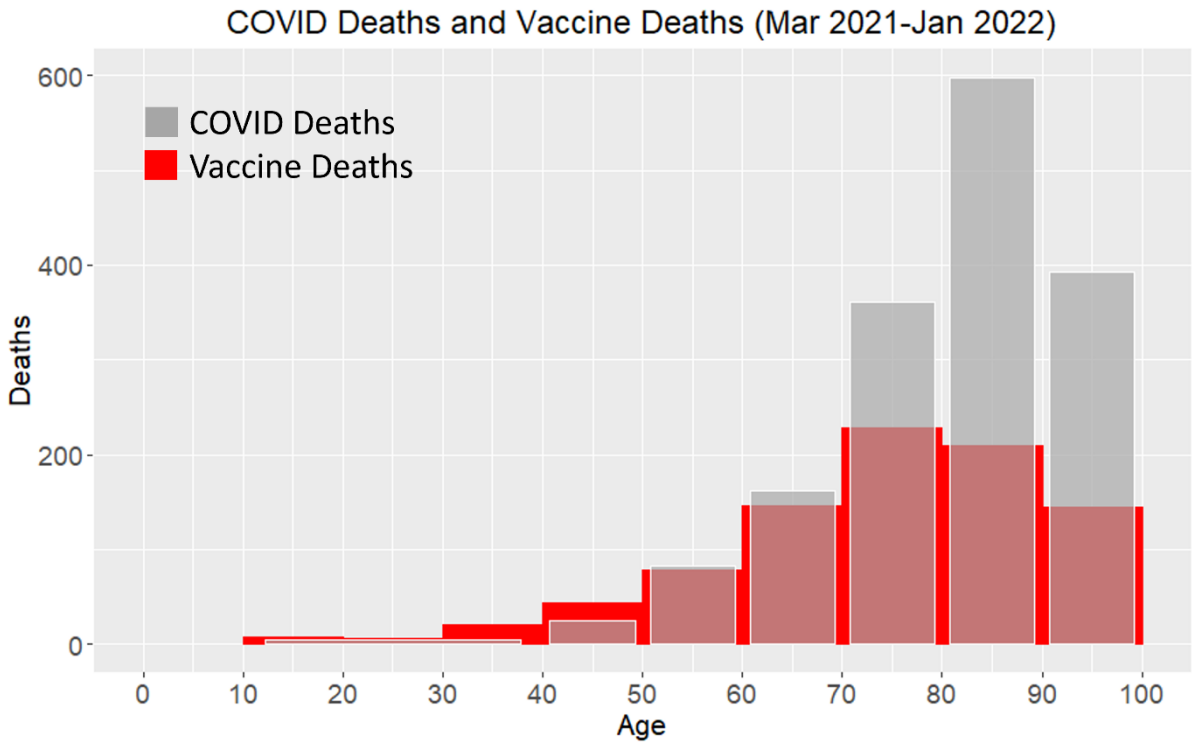


a. This graph only includes information on registered deaths due to COVID-19. Numbers of deaths will differ to disease surveillance systems.
b. Information on deaths due to COVID-19 include all deaths due to the disease that occurred and were registered by 31 January 2022.
c. Deaths due to COVID-19 in this report have an underlying cause of either ICD-10 code U07.1 COVID-19, virus identified or U07.2 COVID-19, virus not identified.
d. This data is considered to be provisional and subject to change as additional data is received.
e. Refer to methodology for more information regarding the data in this graph.

I note that numbers reported by ABS, which are doctor certified and coroner certified, differ to other government COVID mortality data. Another example is the data in the Our World in Data datasets, which is sourced from sites that collate government data. The COVID deaths, shown for each month on x axis, from start of pandemic to Jan 2022, is in the graph below.



I plot below the reported deaths following vaccination and COVID deaths.



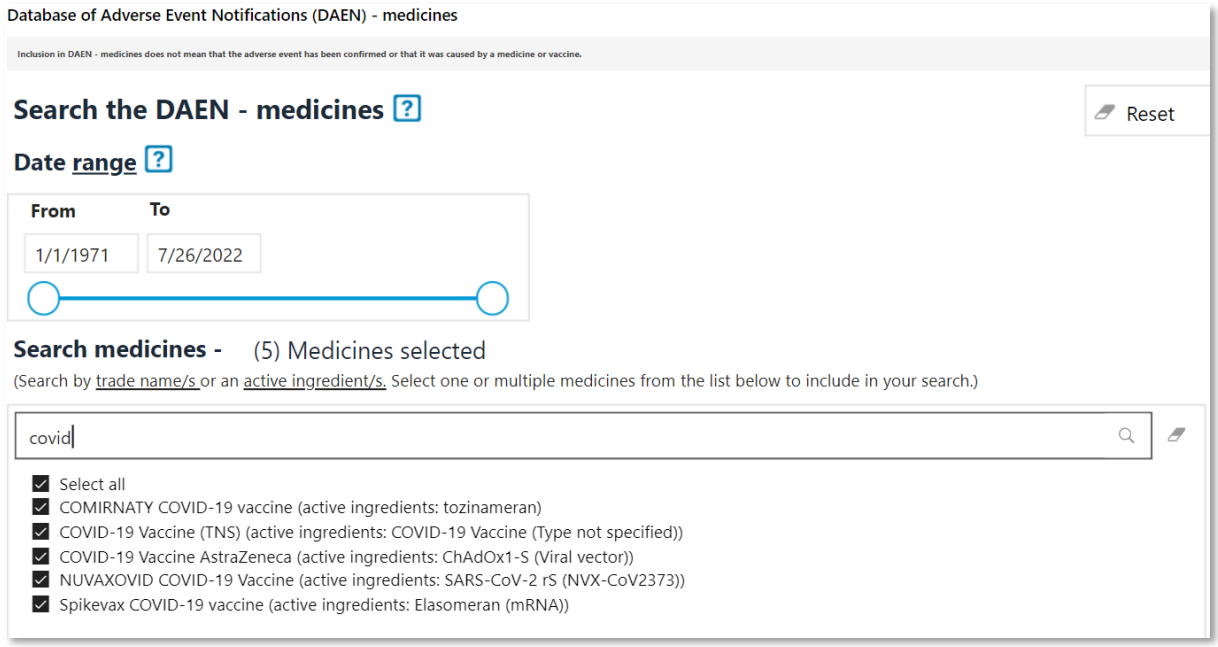
This graph is based on age data found from TGA FOI 3586, from start of vaccine rollout up till January 2022. I note that TGA advise that vaccine death data in FOI 3586 has duplicates. The same case can be reported multiple times. It is not clear how many there are. It may be possible to estimate it. The duplicates can only be where there are duplicate ages. This becomes less likely for the younger ages. It is expected the majority of duplicates are in older ages.

The list of deaths also has ages “not specified” and these are not shown in the graph. So, while duplicates decrease the number of vaccine deaths the unknowns increase it.

Of concern is that the number of reported deaths in the TGA DEAN, for under 60’s is greater than the COVID deaths. I note that the full impact of Omicron COVID deaths is not shown in the bar chart above. Ages of vaccine death reports were only available up till end January 2022.

At the time of writing (at 9 August 2022) from DAEN there are currently 917 deaths.

https://www.tga.gov.au/database-adverse-event-notifications-daen

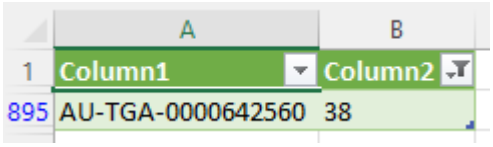


9.4 Another Specific Case – Vaccine and COVID?

On the 26th July 2021 a 38-year old woman called Adriana Takara died. At the time she was unfortunately the youngest death in Australia from COVID. It is understood she had no comorbidities and had a heart attack, which was not typical. There has been media speculation regarding her death and whether she had been vaccinated. It has been speculated that she sought vaccination at the time she was infected. This was before her age group was eligible. Shortly after this sad event occurred government instructions changed to warn not to be vaccinated within a certain time of being infected with COVID.

A concern is therefore the risk of being infected with COVID shortly after vaccination. One would expect that those working in the Healthcare environment are exposed to a higher risk of infection and therefore vaccinating when at risk should be considered.

Searching DAEN for age 38, there is one result.



	A	B
1	Column1	Column2
895	AU-TGA-0000642560	38

Case number	Report Date	Age	Sex	Drug	
642560	13/10/2021	38	Female	COMIRNATY COVID-19 vaccine (tozinameran) - Suspected	Fatigue Stillbirth

So this is not the same case. It seems Adriana Takara does not appear in the DAEN. Looking at the NSW Surveillance reports.

COVID-19 WEEKLY SURVEILLANCE IN NSW

EPIDEMIOLOGICAL WEEK 30, ENDING 31 July 2021

Published 13 August 2021

Overview

Table 1. Number and proportion of COVID-19 cases in NSW by likely source of infection to week ending 31 July 2021

	2020		2021			
	Jan – Jun	July – Dec	Jan – Jun	last 4 weeks	last 7 days	year to date
				25 Jul - 31 Jul	04 Jul - 31 Jul	
Locally acquired	1,236 (39%)	808 (52%)	255 (27%)	3,185 (98%)	1,360 (99%)	3,523 (82%)
Interstate acquired	67 (2%)	23 (1%)	1 (<1%)	0	0	1 (<1%)
Overseas acquired	1,892 (59%)	714 (46%)	672 (72%)	61 (2%)	16 (1%)	747 (17%)
Total	**3,195**	**1,545**	**928**	**3,246**	**1,376**	**4,271**
Deaths	51	5	0	14	8	14

Summary for the week ending 31 July 2021

- There were 1,360 locally acquired cases reported in the week ending 31 Jul 2021. Of these:
  - 352 (26%) cases were residents of Canterbury-Bankstown LGA
  - 214 (16%) cases were residents of Fairfield LGA
  - 177 (13%) cases were residents of Cumberland LGA
  - 617 (45%) cases were residents across 29 other LGAs
- There were 16 cases reported in overseas returned travellers in the last week (up 100%).
- There were eight deaths as a result of COVID-19 reported this week including a female in her 30s, a man in his 60s, a woman in her 70s, a man and two women in their 80s and two women in their 90s. One person was partially vaccinated and seven were unvaccinated.

Her death does appear here, a female in her 30's. It is stated that of the 8 deaths for this week in July 2021, one 30 years and all others above 60, one person was partially vaccinated, others were unvaccinated.

9.5 From Qld Reports

The following examples are found in Affidavit Vol 2. Section 5.4.

Eg p428 Adverse reactions

Daily Notes

- The Commonwealth has confirmed that Paediatric vaccine will be delivered on Friday 7 January, and the intention is that HHSs will be able to commence administering doses this weekend in areas of need (e.g. outbreak) and utilise the available vaccine to test clinic flows prior to the formal opening of 5-11 year old vaccinations on Monday 10th January.
- From Monday 21 January, Queensland Health will administer only Pfizer vaccine to the community, and cease the use of AstraZeneca vaccine.
- As of 03 January 2022, 25.3% of the Queensland First Nations Estimated Resident Population (aged 16+) are yet to receive their first dose.

Adverse reactions

- 2 Significant AEFI were reported between the 31 December 2021 to the 03 January 2022 throughout Queensland and are currently under investigation.
- As at 23:59 on 30 December 2021, there have been a total of 12,572 AEFI reported throughout Queensland Health since the vaccination program commenced.

From Affidavit Vol 3. examples of Adverse events 24 Jan:

Adverse reactions

- As at 2359hrs on 16 January 2022 there have been a total of 12,870 adverse events following immunisation (AEFI) reported throughout Queensland since the Vaccination program commenced.
- In the last 7 days (11 January 2022 – 17 January 2022), 25 adverse events of special interest (AESI) have been reported to Queensland Health and are currently under investigation.

And 4 Feb:

Adverse reactions

- As at 2359hrs on 30 January 2022 there have been a total of 13,151 adverse reactions following immunisations (AEFIs) reported throughout Queensland since the Vaccination program commenced.
- In the last 7 days (25-31 January 2022), 28 adverse events of special interest (AESI) have been reported to Queensland Health and are currently under investigation.

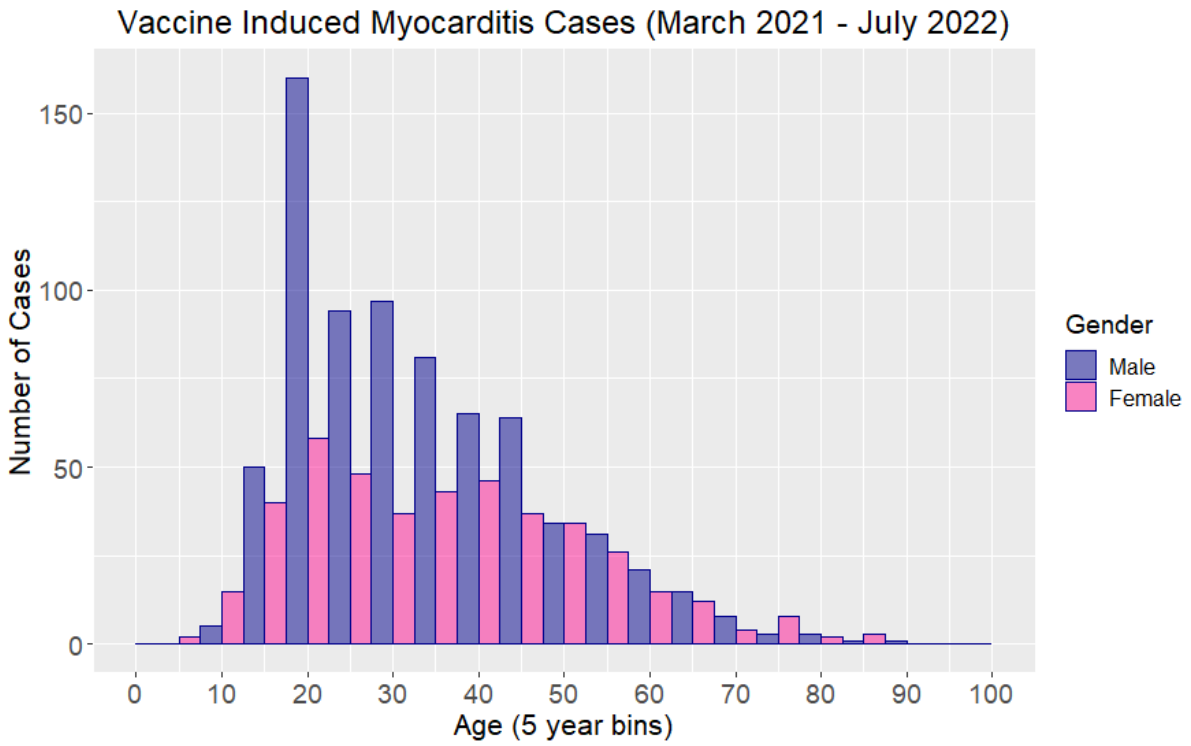
No attention appears to be paid to these adverse events in the Qld report.

Adverse Events of Special Interest (AESI) are noted. Presumably these are severe reactions and possibly deaths. 28 are reported for Queensland to occur in one week.

There appears to be only a very cursory consideration of adverse events in the determination of mandates.

9.6 MYOCARDITIS

I downloaded a dataset from the TGA Beta website, based on CVOID vaccines, and events with Myocarditis identified. I plot this below for males and females.



We see the effect is worst for younger ages and males. This is what is seen in overseas data, particularly for young males aged 15-24 years.

The population of young men, ages 15 to 24 is 770,645+899,060=1,669,705, from ABS data https://www.abs.gov.au/statistics/people/population/national-state-and-territory-population/dec-2021/31010do002_202112.xlsx

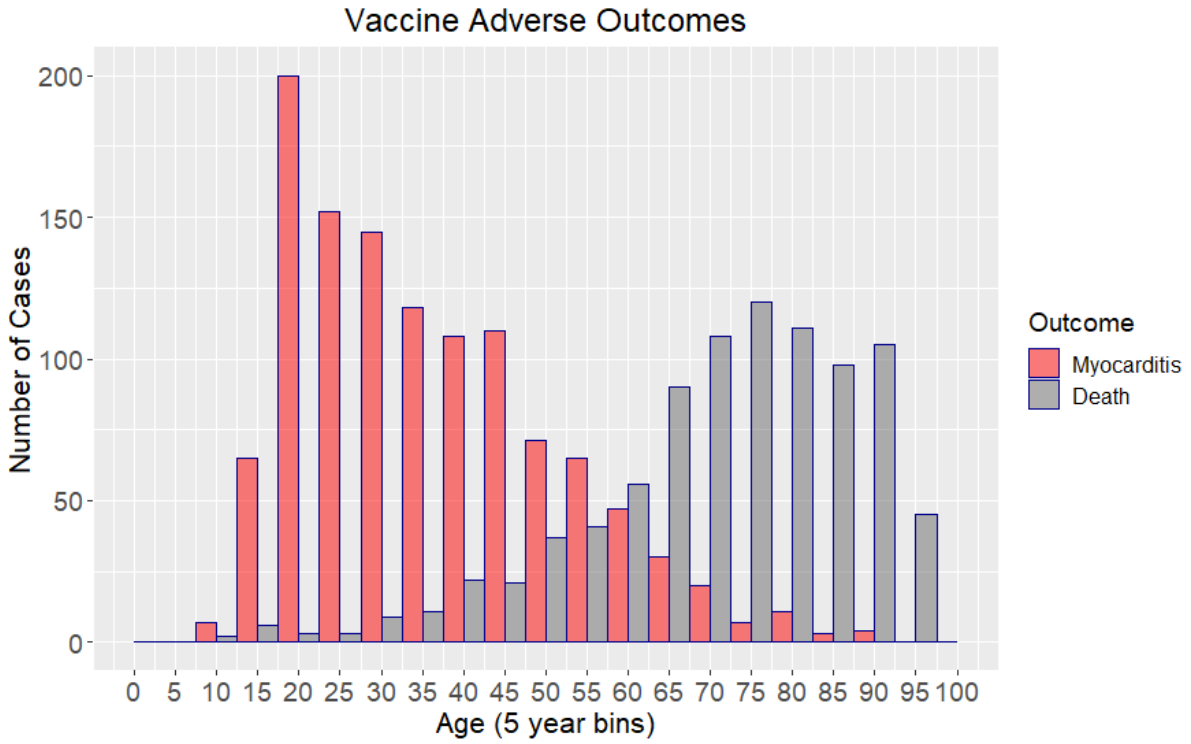
It has been reported that 1 in 5000 males, of this age group, suffer myocarditis following vaccination. Assuming this population is 90% vaccinated. This population is approximately 1.5M. 1 in 5000 is approximately 300. In the graph above there are approximately 160+90 =250 males reporting myocarditis following vaccination in the 15-24 years age group. So, the rate of myocarditis reported is in agreement with reports from overseas of 1 in 5000. It is suspected this is an underreported figure.

Mandating vaccination for health workers inevitably will lead to part of the young workforce suffering with heart inflammation. It is clear that for younger ages, the probability of getting vaccinated and suffering myocarditis is greater than not getting vaccinated and dying from COVID. Obviously, death is a worse outcome. However, myocarditis is not trivial.

A full risk analysis should be performed, based on age. It is either intentional or laziness that this is not done.

It is understood that European countries such as Denmark have stopped offering vaccination for under 18's.

Adverse events involving Myocarditis can be viewed in the context of reported deaths following vaccination.



The discouraging view, provided by this graph, is that while deaths following vaccination are more predominant as age increases, serious heart damage affects the younger population.

I note that myocarditis is only one of many cardiac adverse events. Of interest to this reviewer is Atrial Fibrillation (AF) as an adverse event. Atrial Fibrillation is a debilitating disease. It is progressive as once one has episodes it tends to progress. The expression “AF begets AF” was coined by an eminent electrophysiologist. Refer to Section 2.3 in Background, where this reviewer has worked with some of the world’s leading researchers into Atrial Fibrillation. Scar tissue in the heart causes electrical wavefronts to be disturbed, potentially leading to chaotic behaviour causing the atria to fibrillate.

This phenomenon, called as “AF begets AF,” has attracted clinical attention because it accounts for the clinical observation that recurrent episodes of paroxysmal AF often progresses to more persistent forms of AF. AF is a common cause of stroke.

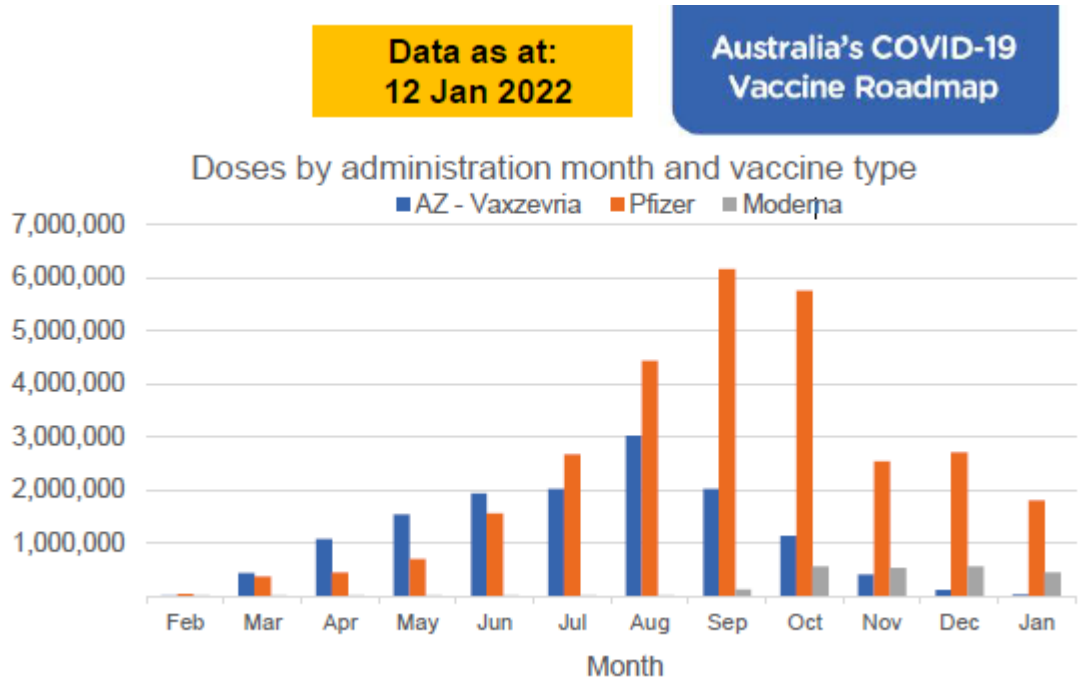
I also downloaded AF adverse events. Analysis still to be provided.

9.6.1 Myocarditis Causal Link

For the reports of Myocarditis, 1293 total, I made a count of the vaccine types identified.

- Pfizer (Comirnaty) 1076
- Astra Zeneca 77
- Novavax (Nuvaxovid) 8
- Moderna (Spikevax) 142
- Not specified 128

Noting sometimes more than one vaccine type is identified (due to the series of multiple vaccines delivered). Looking at the distribution of vaccine types from https://www.health.gov.au/resources/publications/covid-19-vaccine-rollout-update-13-january-2022



Over the period of the DAEN deaths (March 2021 to Jan 2022) Astra Zeneca is the main vaccine early, being taken over by Pfizer around July 2021.

The fact that the large majority of Myocarditis cases are mRNA vaccines is consistent with a causal link. Otherwise, if it was random cases of Myocarditis in the population there would be a larger proportion of cases following Astra Zeneca. However, young people are more likely to have had mRNA vaccines, than older people. Further analysis should be performed.

9.7 Paper on mRNA Risks by Seneff et al

The paper by Stefanie Seneff, Peter McCullough et al:

Innate immune suppression by SARS-CoV-2 mRNA vaccinations: The role of G-quadruplexes, exosomes, and MicroRNAs Stephanie Seneff, Greg Nigh, Anthony M. Kyriakopoulos, and Peter A. McCullough. Food Chem Toxicol. 2022 Jun.
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9012513/

provides a comprehensive review of the current literature on mRNA and its effects on the molecular biology within human cells. The authors note the mRNA technology has been deployed in advance of studies on the mechanisms by which the mRNA operates in the human body. They note there was early termination of Phase III clinical trials.

"The increasing evidence that the vaccines do little to control disease spread and that their effectiveness wanes over time make it even more imperative to assess the degree to which the vaccines might cause harm"

Also they "recognise that the causal link between biological effects initiate by mRNA vaccination and adverse outcomes have not been established in the large majority of cases".

They refer to:

- Impaired DNA repair and adaptive immunity
- Reactivation of varicella-zoster
- Immune thrombocytopenia
- Liver disease
- Guillain Bare syndrome and neurological injury syndromes
- Bell's Palsy
- Myocarditis
- Cancer

This reviewer is not qualified to provide opinion of the biology and medical aspects (apart from mechanistic aspects of cardiac abnormal rhythms). However, important is the paper's use of the Food and Drug Administrations (FDA) Vaccine Adverse Event Reporting System (VAERS). VAERS is the US national early warning system to detect unusual or unexpected patterns of adverse event reporting that indicate possible safety problems with a vaccine.

The total number of adverse event reports for COVID-19 injections is far greater than the cumulative number of annual vaccine adverse event reports combined in all prior years. The paper refers to work of Jessica Rose analysing the VAERS.

Critical appraisal of VAERS pharmacovigilance: is the U.S. vaccine adverse events reporting system (VAERS) a Functioning pharmacovigilance system? Rose J. Sci. Publ. Health Pol. the Law. 2021;3:100–129.

https://scholar.google.com/scholar_lookup?journal=Sci.+Publ.+Health+Pol.+the+Law&title=Critical+appraisal+of+VAERS+pharmacovigilance:+is+the+U.S.+vaccine+adverse+events+reporting+system+(VAERS)+a+Functioning+pharmacovigilance+system?&author=J.+Rose&volume=3&publication_year=2021&pages=100-129&

Rose estimates underreporting in the VAERS system by a factor of 31. Table below uses Under-Reporting Factor (URF) conversion (30x) to demonstrate suggested actual numbers of AEs rather than simply reported values in VAERS. The result for myocarditis is in table below:

Adverse Event (AE)	Observed AE 2021 (N)	Number AE (2015-2019)	Expected (Average/year)	Incidence Rate (AE) (N/Average per year	OBS URF adjusted (N*31)
Myocarditis	671.0	73.0	14.6	46.0	20,801.0

Seneff et al recommend an update to the VAERS to facilitate detection of health consequences of mRNA vaccination outlined in the paper. I note that the Australian TGA DAEN system is very primitive in comparison the VAERS.

10 Excess Mortality

Excess Mortality describes the deaths that occur in the population that are above an "expected" value. This expected value, also known as the baseline, is determined from the actual deaths recorded in previous years.

The number of deaths in the population, at any time, tends to be seasonal, with more deaths typically occurring in the cold winter months. The seasonality effect is also dependent on age with the elderly more affected in Winter. 2017 was a particularly bad influenza year in the Southern Hemisphere.

The baseline is formed by taking an average of previous years, week for week.

https://www.abs.gov.au/articles/covid-19-mortality-australia-deaths-registered-until-30-june-2022

Definitions:

- Expected All Cause Mortality are the normal deaths seen in any population. These are due to aging, accidents, typical illness patterns. Expected mortality is typically stable over time, changing only gradually as the population's demographics change. Year on year changes are typically only a few low single digit % points.
- Excess Mortality: these are deaths higher or above that which is expected from the normal historical trends. Typical causes can be war, natural catastrophe, an outbreak of infectious disease. When vulnerable persons in any place die earlier than expected, their deaths will show as an excess mortality. However, excess mortality is followed by a period of lower than usual mortality, while a new vulnerable population builds up. It is highly unusual for excess mortality in any population to be sustained over a long period. Excess mortality is an excellent indicator of overall population health and well-being.

If the number of deaths, being indicated by the TGA Adverse Event Notification system, are a result of vaccination we are looking for deaths of the order of 1000 additional in a year. 1000 deaths is unacceptable. But to detect this in the total number of deaths in Australia is difficult.

https://www.abs.gov.au/methodologies/deaths-australia-methodology/2020

> The number of deaths registered in 2020 (161,300) decreased by 8,001 compared to the 2019 registrations, but is similar to the average number of deaths recorded for 2015-2019 (161,252).

The 1000 deaths is spread across all ages.

10.1 Australian Data

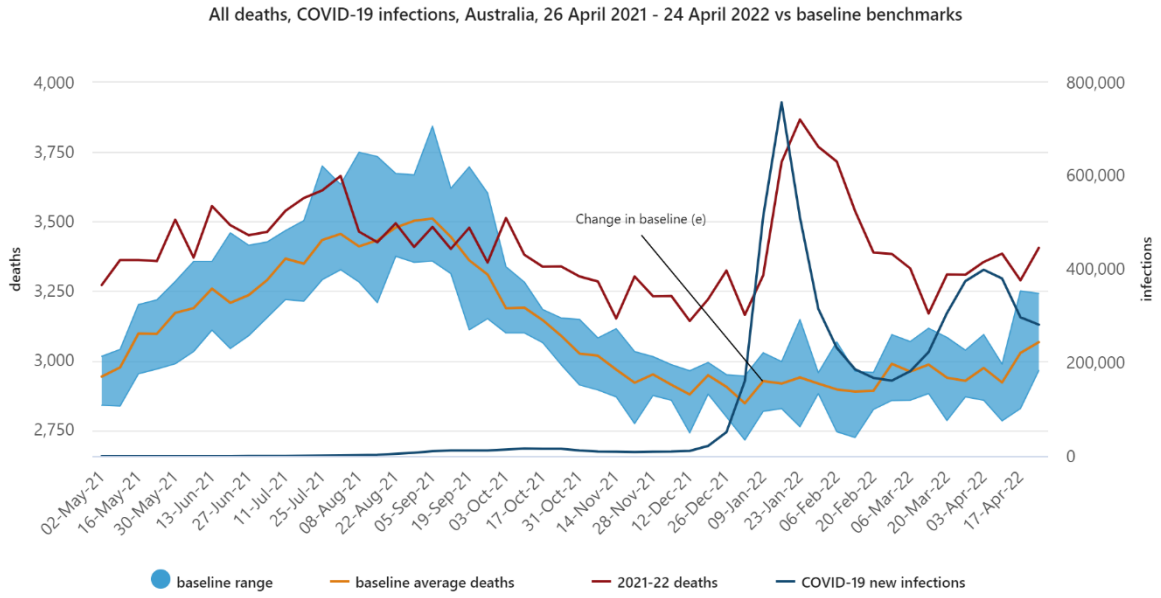
The Australian Bureau of Statistics (ABS) publishes data each month on Mortality in Australia. The following page contains the most recent release:

https://www.abs.gov.au/statistics/health/causes-death/provisional-mortality-statistics/latest-release

For a particular month the release is found on archived pages, eg for Jan-Mar 2022

https://www.abs.gov.au/statistics/health/causes-death/provisional-mortality-statistics/jan-mar-2022

The Australian Bureau of Statistics does an excellent job in collating data. As of time of writing this report, April 2022 data is released. The graph below, from the ABS page link above, shows deaths for all ages combined:



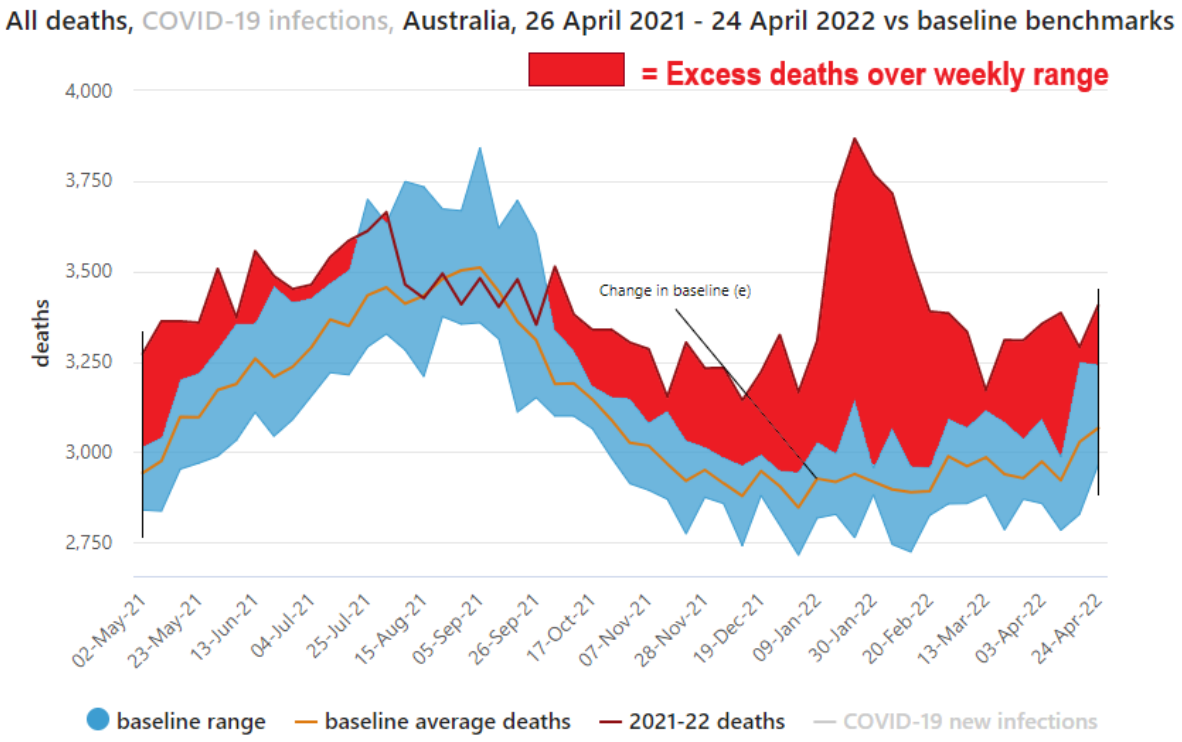
a. Data is by occurrence.
b. Data is provisional and subject to change.
c. Weeks are defined as seven-day periods which start on a Monday as per the ISO week date system. Refer to 'Weekly comparisons' on the methodology page of this publication for more information regarding the data in this graph.
d. Data for the number of COVID-19 infections has been sourced on 8 July 2022 from the COVID-19 daily infections graph published on the Australian Department of Health website.
e. The baseline includes deaths from 2015-19 (for 2021) and from 2017-19 and 2021 (for 2022).

Source: Australian Bureau of Statistics, Provisional Mortality Statistics Jan - Apr 2022

Features that are observed in this graph:

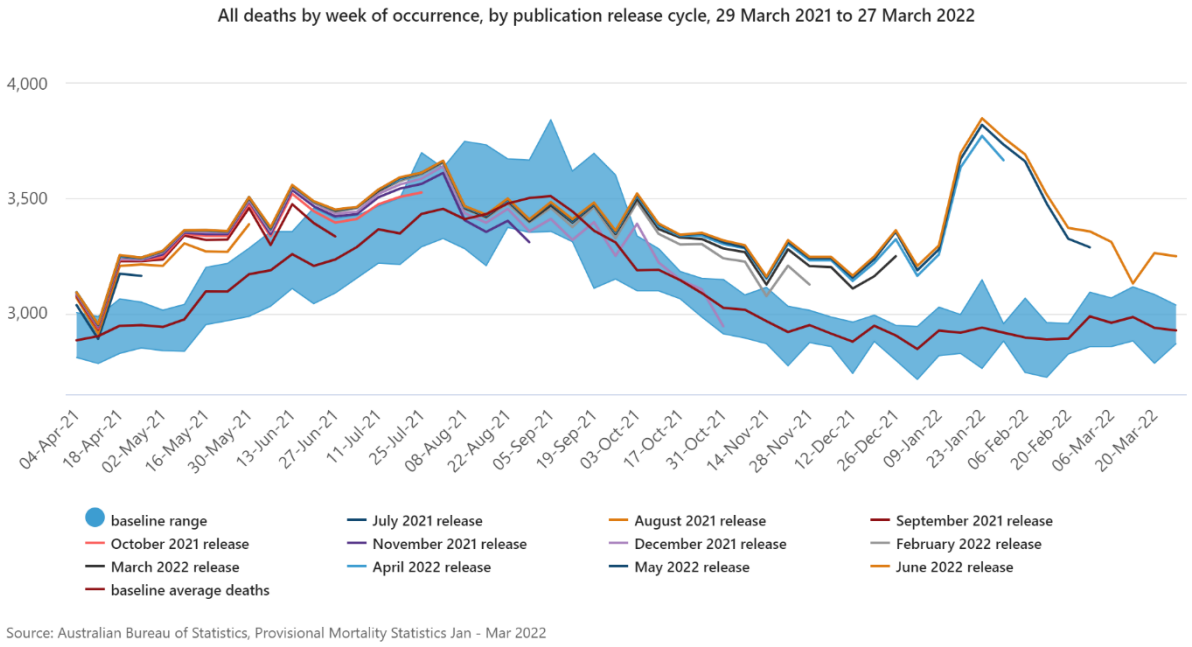
- Orange line is the computed baseline. For 2021 the years 2015-2019 are used, for 2022 the years 2017-19 and 2021 are used. I note that there are also more sophisticated methods to work out a baseline, this will be discussed later.
- Blue shaded area is the range of values making up the baseline. This is useful because it gives an idea of what is the range and maximum at times previously (in baseline years). We can see that in Winter there is a wider range of values. The bad flu season of 2017 is the top of the blue region around August.
- Red line is the actual 2021-2022 deaths. We can see that this tracks above the baseline for almost all the 2021-2022 period. It also tracks above the maximum of all the baseline years, ie the top of the blue shaded region, for all but the winter season.
- Large rapid increase in deaths from January 2022. The shape is like that of a bad flu season (although sharper) reaching the same level as 2017. This is the onset of the Omicron wave in Australia. The COVID infections in Australia are shown in a dark blue line indicating the correlation of this peak with the COVID wave. COVID deaths follow infections by approximately two weeks.

The Excess, above previous years maximum, is made clear in the graph below, shown in red fill. Noting that this area includes COVID deaths:



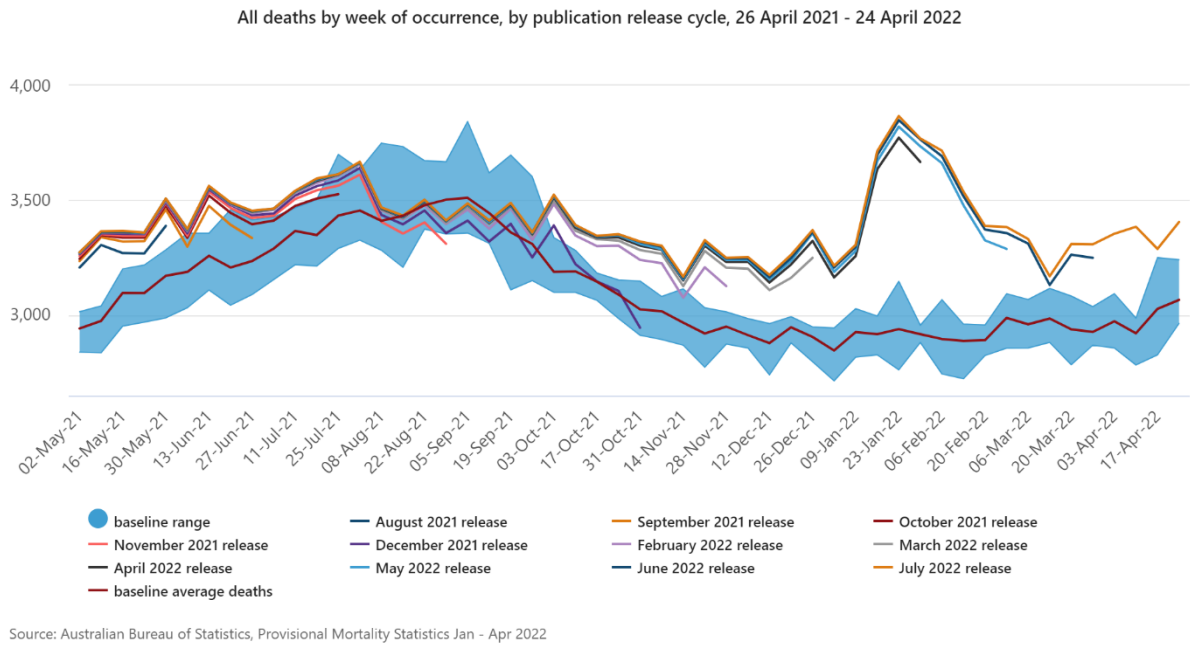
While this is alarming COVID deaths need to be taken into account. We assume that COVID is an abnormal event when looking for other excess mortality that might be a side effect of pandemic measures. Statistical methods need to be used to determine if numbers are above what should e expected.

It should be noted that the deaths in the most recent months are subject to updates, as deaths for those months are registered later. The ABS helpfully shows how the deaths are updated in publication releases as shown below for March release:



Source: Australian Bureau of Statistics, Provisional Mortality Statistics Jan - Mar 2022

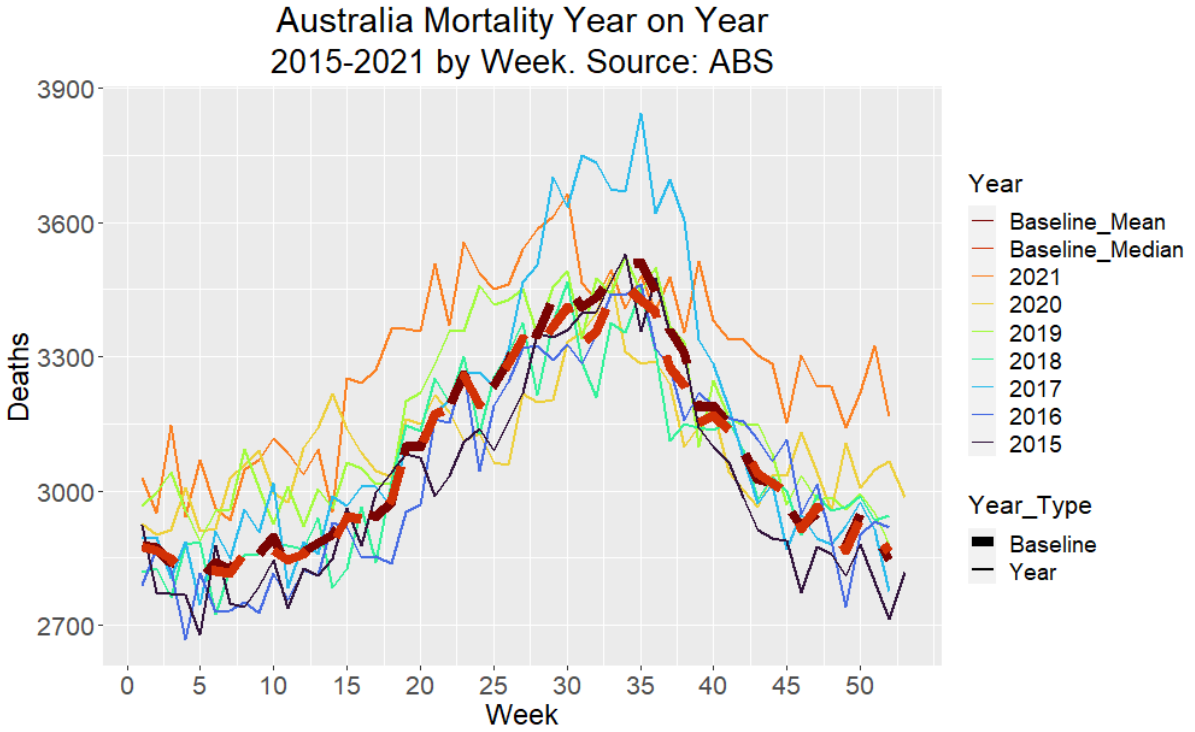
For April 2022 release:



Source: Australian Bureau of Statistics, Provisional Mortality Statistics Jan - Apr 2022

In the graph above, the orange line is the most recent. You can see each month how death numbers are updated in ABS released reports. We therefore expect January, February, March and April 2022 numbers to increase as further updates are released. Numbers of deaths recorded always go up.

For reference, I plot the actual number of deaths (all ages) in Australia for years 2015-2021 and the simple calculated baseline (based on 2015-2019).

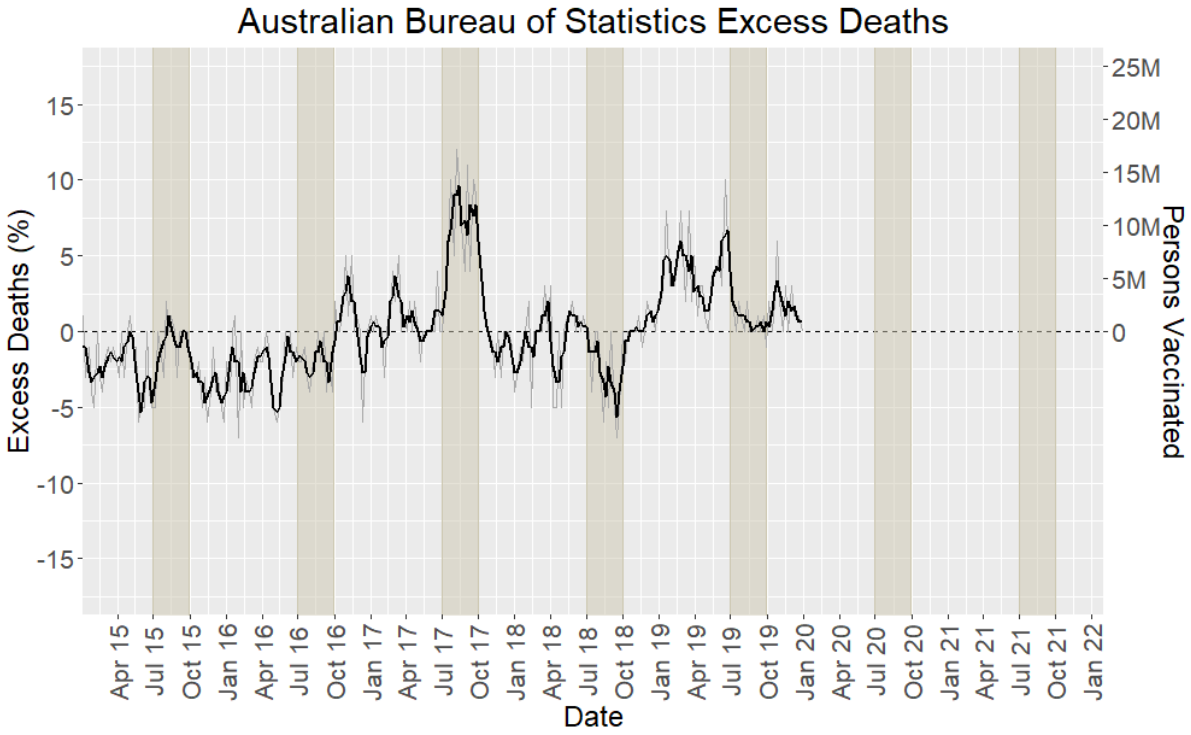


This graph is from dataset downloaded from ABS. Two baselines are shown, one for a mean and one for a median calculation. The median may handle unusual outliers better. You can see they are similar with the mean baseline slightly higher in the Winter months, driven by the abnormally bad flu

season in 2017. The year 2017 is the light blue line and 2021 is the orange line. It is clear 2021 is very different to the baseline.

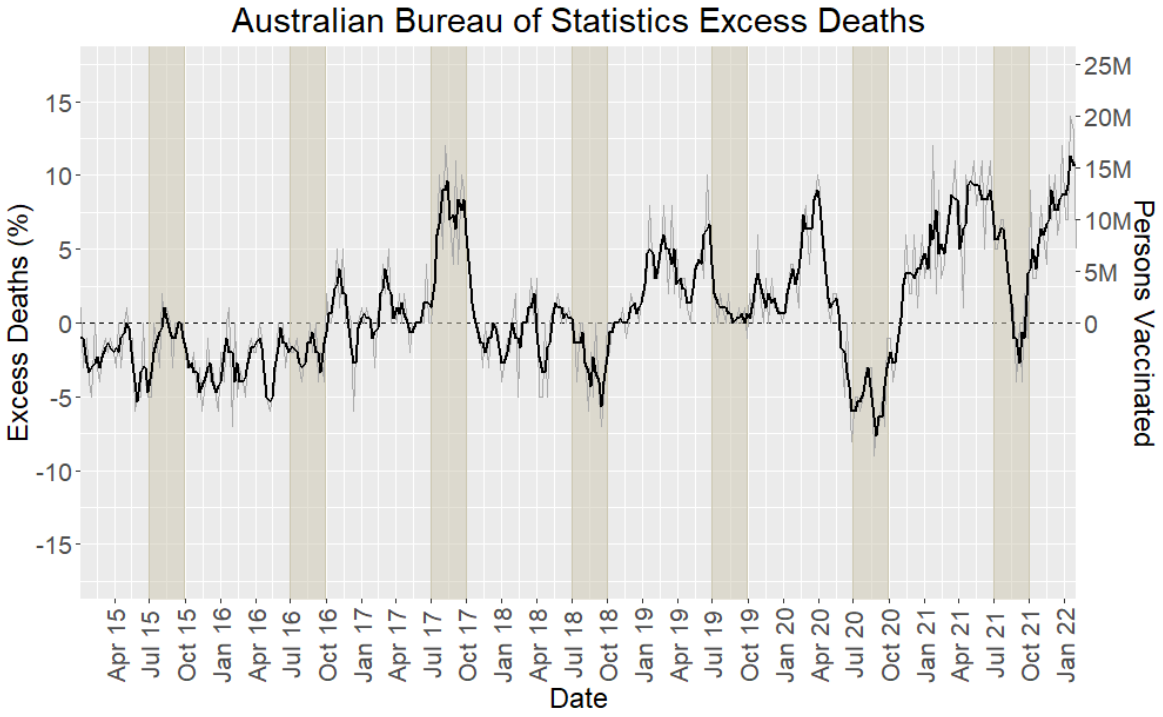
In the context of a mass vaccination rollout, it is crucial to monitor Excess Mortality to look for signals that might indicate vaccine adverse events. This is routinely done for all vaccines. See Section 10.4 for the Danish Study on COVID vaccines by Christine Stabel Benn.

Excess mortality, calculated by subtracting the baseline deaths from current year deaths during "typical" years, 2015-2019, looks like the following, expressed as a percentage relative to the baseline:



The Excess Mortality hovers around zero with ± 5% is the typical maximum deviation from zero. However, we know the Winter of 2017 was a bad influenza season. We can see a peak in Excess Deaths in that winter, almost reaching 10% excess. Winter in the Southern Hemisphere is June-August. The flu season is generally shifted by one month and I have highlighted the months July to September (ie Quarter 3). I show the actual week to week numbers with the light grey line and a 3-point average to smooth it out with a black line.

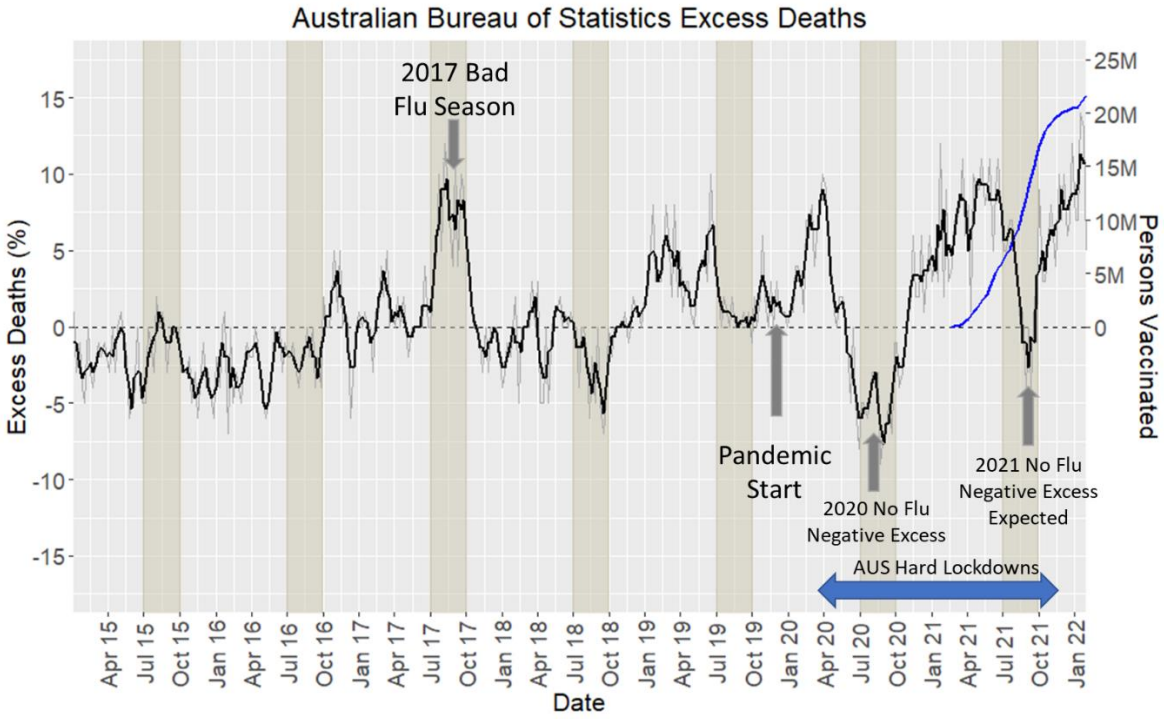
Next we extend the line above, with the Excess Mortality for pandemic years 2020 and 2021 First COVID deaths were removed from the total deaths, so this is Excess deaths, excluding COVID. This is shown in the graph below:



Note that in the graph above only data up till January 2022 (before Omicron peak) was used (this will be updated).

The divergence from typical trends for 2020-2021 is clear. It is like there is a flu season in the Summer of 2020, even though there was no influenza. The Winter of 2020 had a deficit of deaths. There is a large excess for all of 2021, except a short period around August. This is also seen in the ABS data (first graph of this section). Probably caused by no influenza occurring.

These values above zero are therefore unexplained deaths. **Note that all COVID deaths have been subtracted first.** Anything above 5% is unusual. In the plot below I have annotated the plot with various features of interest.



Australia implemented a Zero COVID policy including a hard lockdown until the end of 2021. There was minimal influenza for both Winters of 2020 and 2021. Because the baseline being subtracted is high during these Winter periods, due to the typical influenza season, this puts two dips in the Excess Deaths plot. So, we look for a trend ignoring these uncharacteristic dips. The excess deaths outside Winter period show higher than normal Excess Mortality. There is also a peak in early 2020 when the lockdowns commenced.

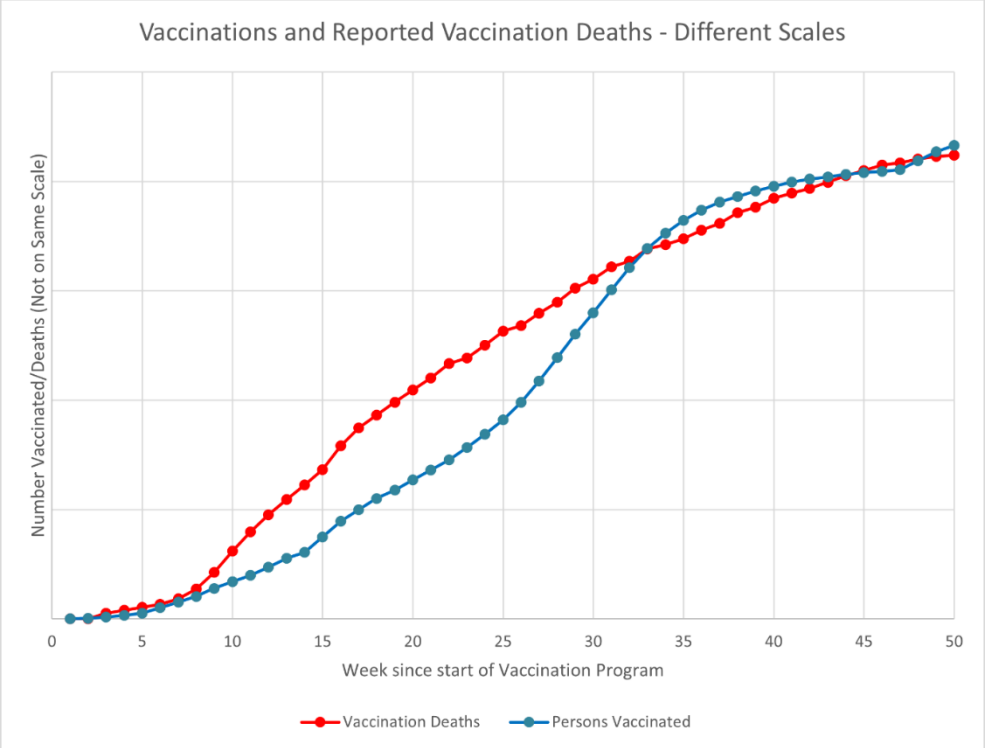
Also shown in the graph above is the vaccination rollout starting in March 2021. Number of persons with first dose is shown in blue with axis labels on right hand side.

What are the possible cause of excess deaths? They include:

- Consequences of lockdowns, eg suicides, drug overdose, elderly dying in despair or from lack of care.
- People not attending medical appointments and missing early diagnosis.
- Medical errors.
- Impact of vaccination rollout. We know there are acute adverse events and death resulting from administration of COVID-19 vaccines (see Section 9).
- Long term effects of vaccination on the population slowly being uncovered.

All possible mechanisms must be considered.

In the graph below I have plotted the number of persons vaccinated since the start of vaccination in Australia and the number of reported deaths from vaccination, based on Adverse Events reports to the Therapeutic Goods Administration (TGA).



The vertical scales in the graph above for each line are not the same. They have been adjusted to match the shape of the curves. Total persons vaccinated (at least one shot) in Australia was approximately 20M (as at Jan 2022). Number of reported deaths from vaccination was approximately 800 (for March 2021-January 2022). Underreporting factors of up to 30 have been suggested for the US VAERS system. 800 deaths is approximately an average 16 deaths per week over this period. Using a scale factor of 10 would mean 160 deaths per week. The average number of deaths per week in Australia is approximately 3100. An increase in Excess Mortality of 5% would result from 155 additional deaths per week.

To be clear this is not causally linking the excess mortality to vaccination.

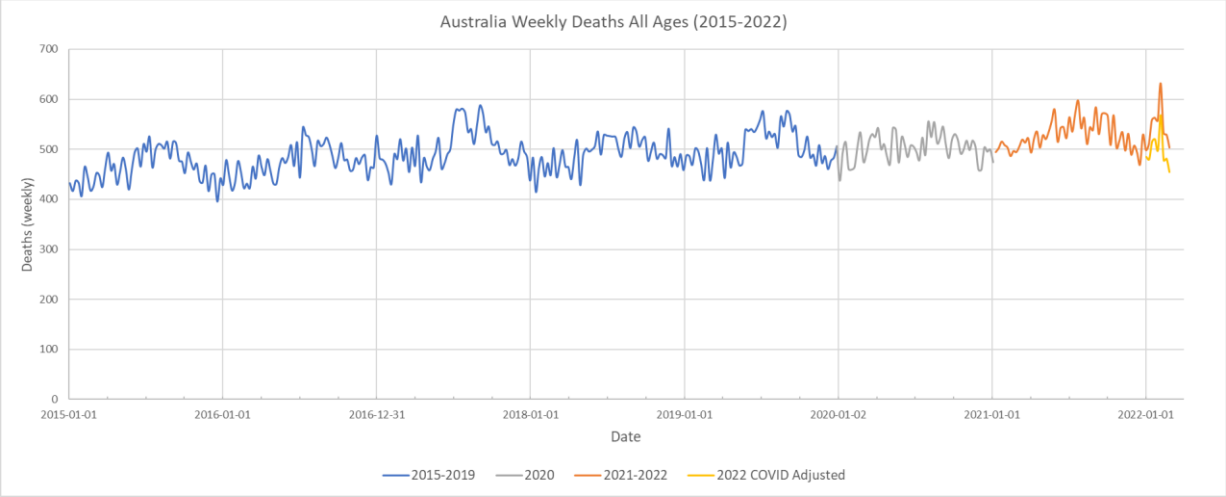
Vaccination is one of several factors that must be considered in a risk benefit analysis. It is quite possible that the reduction in the workforce, due to imposing mandatory vaccination, results in a less effective system, leading to excess deaths.

To summarise this discussion, it is clear that there are unexplained excess deaths occurring in Australia from 2021 onwards. There are several possible causes. It appears that nothing has been done by Qld Health to investigate this.

10.2 Analysis of 65-74 year old age group.

Mortality data above is for all ages combined. To understand better where excess mortality may be occurring, we need to look at specific age ranges.

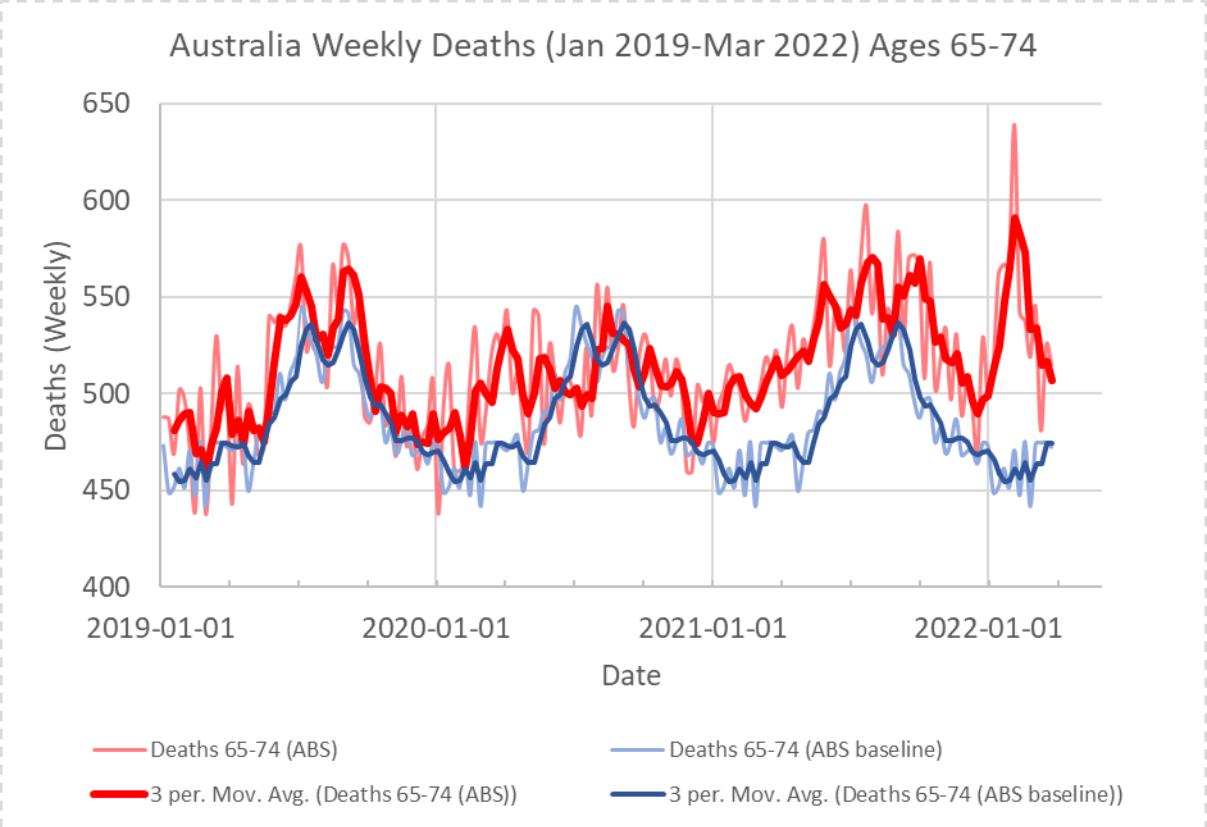
The ABS provides an age breakdown in public datasets. Below 65 the age ranges are broad. The first 10-year age range is 65-74 years. In the graph below I plot the recent years for just the age group 65-74, based on ABS datasets made available.



From this graph we can see that there is a very slight trend of deaths increasing over the 2015-2019 timeframe (blue line). The 2017 flu season is apparent. 2020 (grey line) is different to other years, with no apparent flu seasonality. 2021 (orange line) appears to have a seasonal effect even though there was minimal COVID and influenza in this year. 2022 is also in orange line and the influence of COVID deaths from Omicron wave is apparent.

I have then corrected this curve by taking out all COVID deaths. This is yellow line. There is still what looks like an apparent Excess.

See the graph below for the deaths each week (in red) over a period from 2019 (no pandemic) to March 2022. The baseline is shown in blue line and repeated across years for convenience.



Next, we wish to subtract COVID deaths. The federal government (health.gov.au) focusses on providing daily updates and does not provide datasets including history for vaccination and covid cases/deaths.

Various organisation have written programs to collate this data every day. An example previously referenced is website codebaseau.com.

The ABC has also done this. See:

https://www.abc.net.au/news/2020-03-17/coronavirus-cases-data-reveals-how-covid-19-spreads-in-australia/12060704

From the ABC web page on data collection:

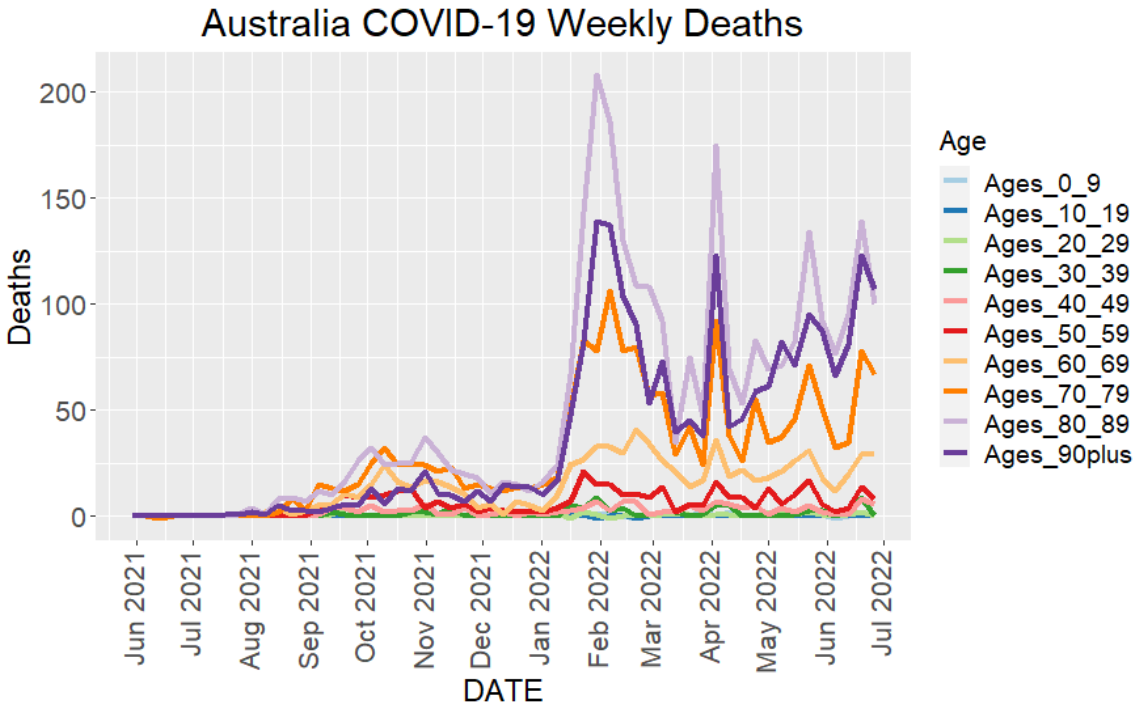
- From October 26, 2021, federal government data is extracted by Ken Tsang from data tables published by the Department of Health. This data is generally updated daily around 9pm AEST, except on weekends as of May 7, 2022. The Department of Health does not publicly archive these figures, so data for dates that the department has not updated are omitted.
- Between March 27 2020 and October 25, 2020, federal government data came from a daily PDF emailed by the Department of the Prime Minister and Cabinet, titled "COVID-19 Update". Prior to March 27, 2020, federal government data came from daily updates to the Department of Health website and a PDF "dashboard" also published by the Department of Health.

Data is found in a github repository:

https://github.com/jxeeno/aust-govt-covid19-stats

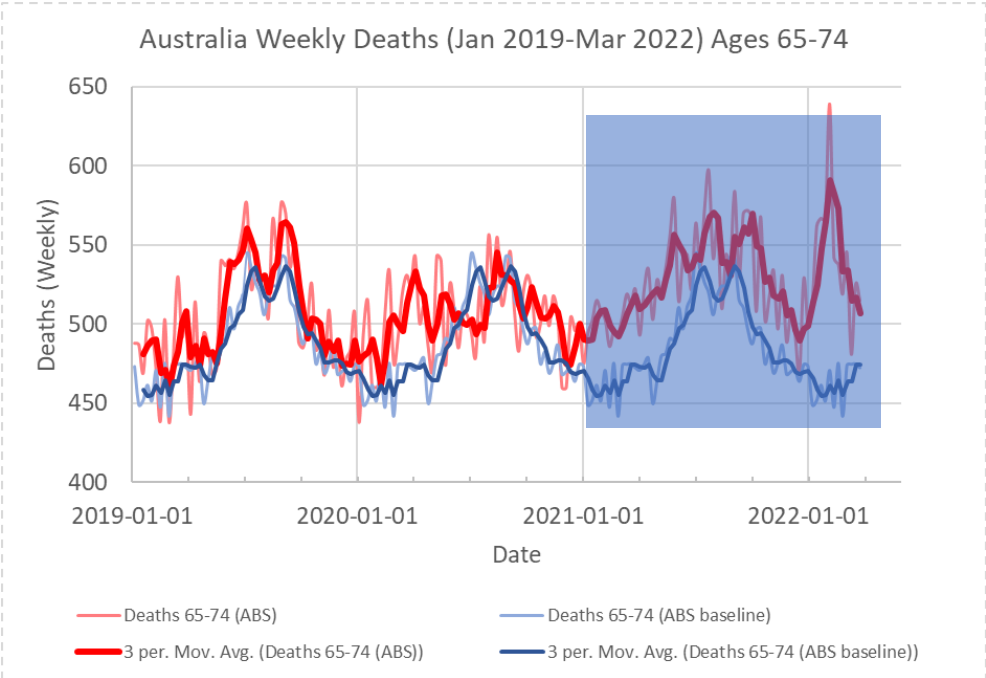
I used data available from this repository. It was necessary to write a program (R programming language) to "clean the data", for example handle missing days.

COVID deaths are shown below based on data from the ABC:



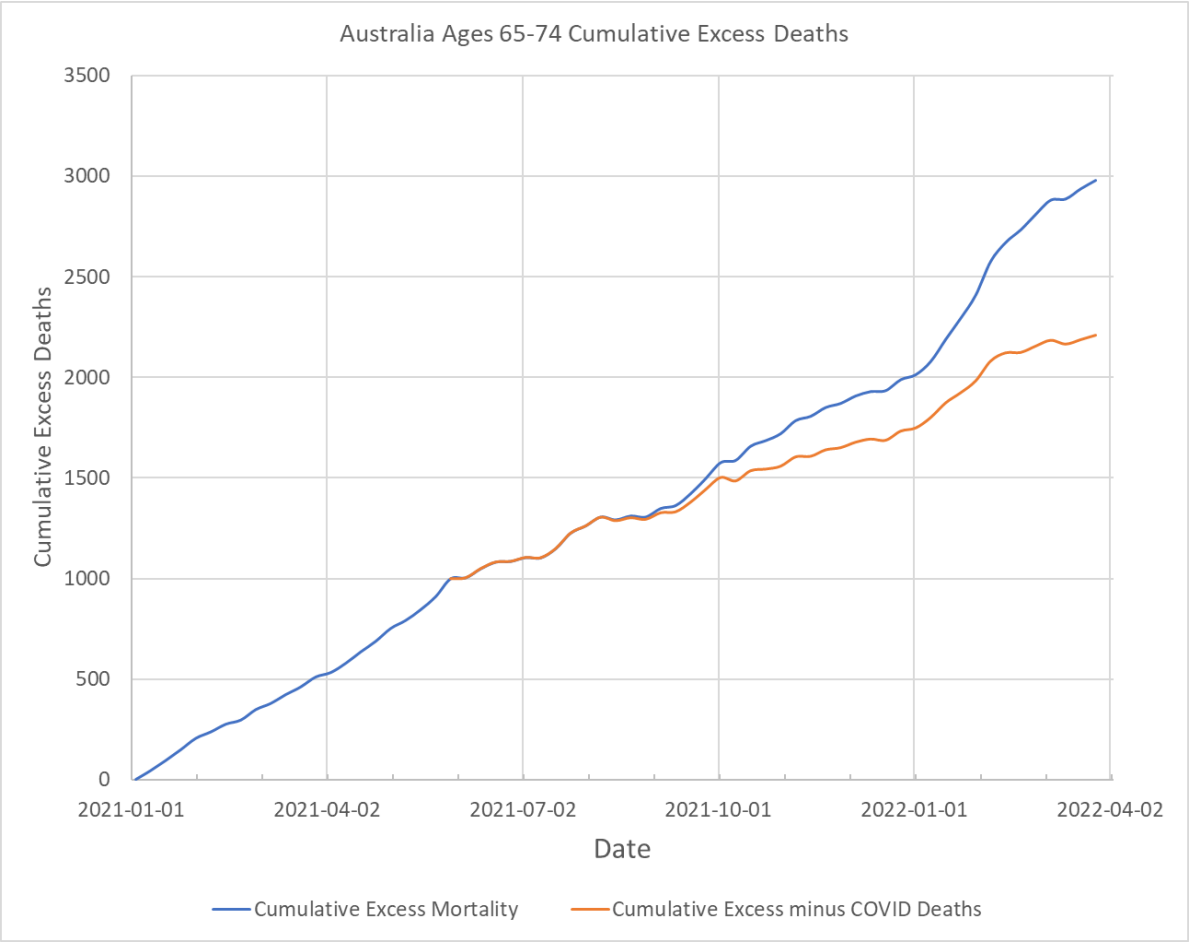
Note that the age bands of COVID deaths and all cause deaths from ABS are offset by 5 years. I made an estimate of the COVID deaths in the 65-74 year band based on neighbouring age bands to match the ABS Mortality data.

Subtracting the COVID deaths from all-cause deaths, over the period from start of 2021 shown shaded below



We get the excess deaths. To get a sense of the magnitude of the excess deaths it is useful to calculate the cumulative excess deaths. In normal times the cumulative excess deaths should be close to zero. Excess goes above zero sometimes and below zero other times. The cumulative value

will be close to zero. The cumulative excess deaths are shown in the graph below, starting from 1 Jan 2021:

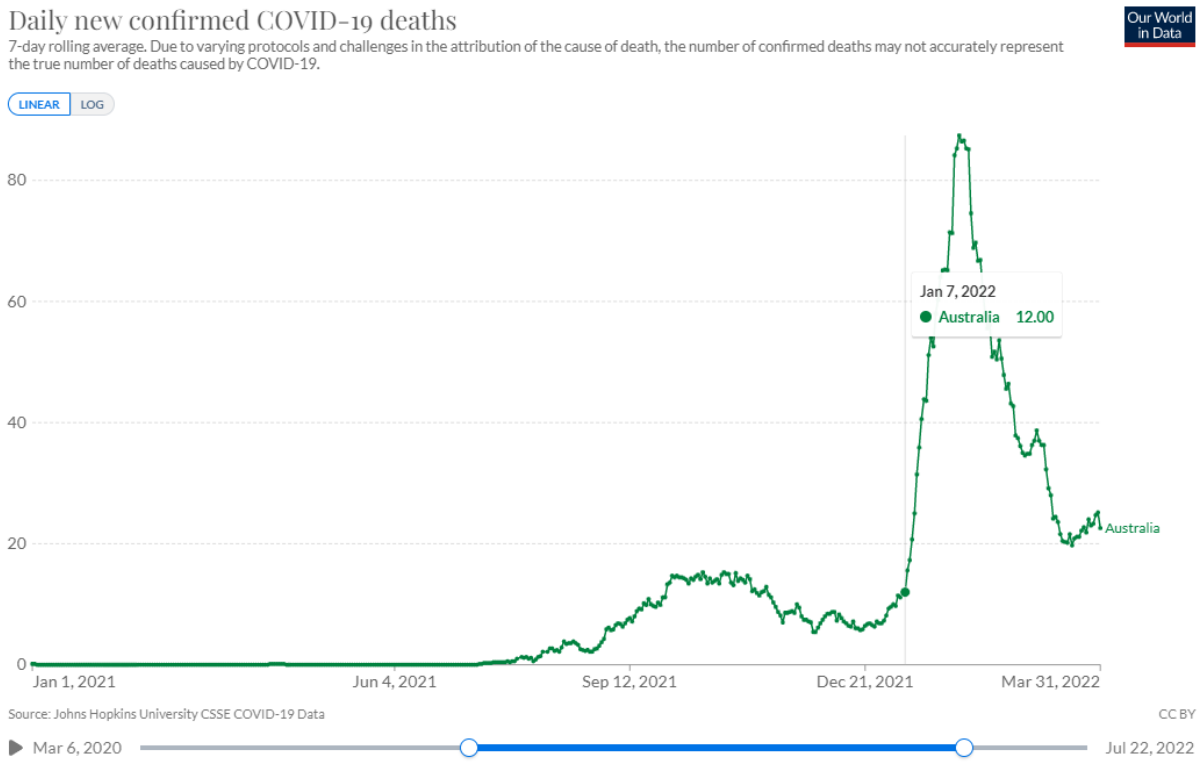


Features to look for in this graph:

- When there is no excess mortality the cumulative curve will be flat ie horizontal. If it is increasing, there are more excess deaths each week.
- Where there are upswings, ie slope increasing, this is where there are sudden extra excess deaths occurring. In the graph above there is a distinct upswing at the start of January 2021. This occurs even after subtraction of COVID deaths.
- At any point of the line the value is the total excess deaths from the time of the start of the graph. After correcting for COVID this is approximately 2100 excess deaths at end of March 2022. For one year, for this age group, the baseline total deaths is 25,368. From 1 Jan 2021 to 1 Jan 2022 the accumulated excess is approximately 1700, after accounting for COVID. This is approximately 7% increase.

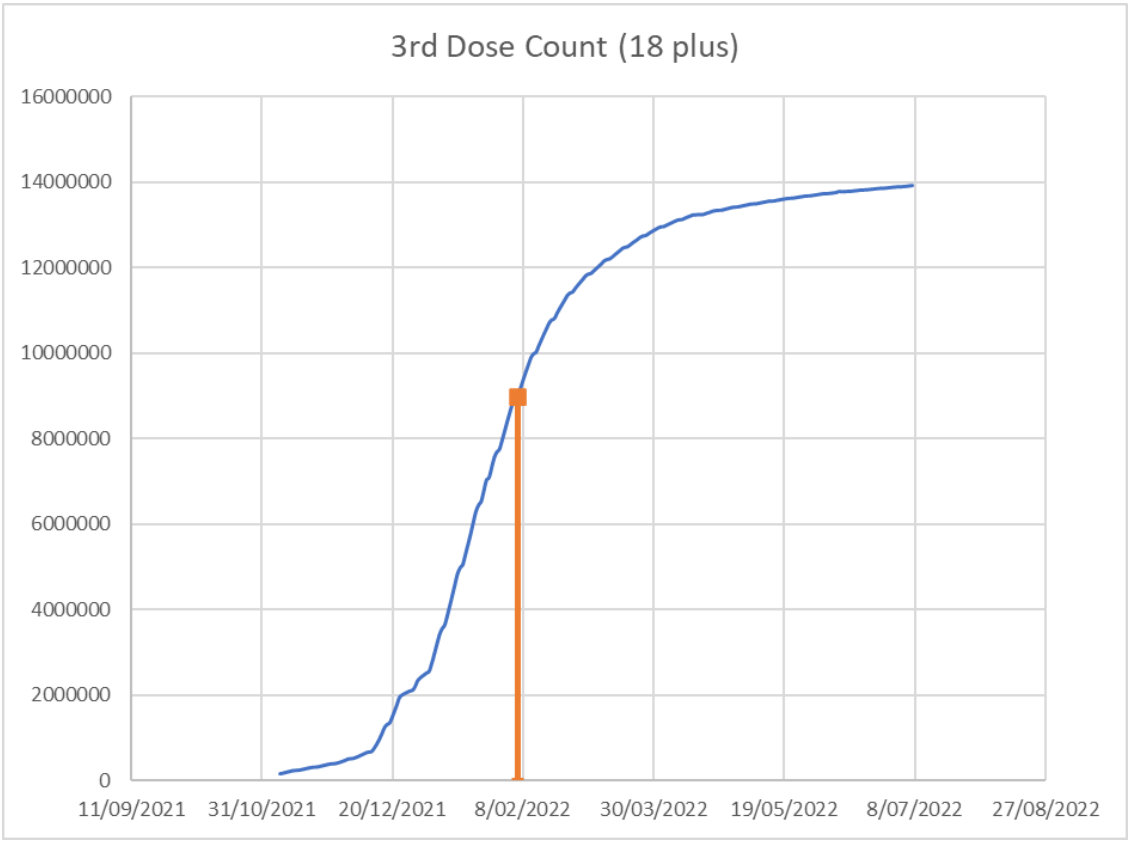
A possibility is that there were extra COVID deaths not taken into account. This would seem unlikely as it is known that there are COVID deaths that are “with COVID” rather than “from COVID”. These are people would have died in any case, but were tested to have COVID. This is a controversial topic. In the UK this different category of COVID deaths are split out. Not in Australia.

There are two relevant events occurring around this time. One is the start of the Omicron wave. COVID Deaths for all ages from 1 Jan 2021 are shown below (from Our World in Data) up till end March 2022.



The sharp upswing in COVID deaths with Omicron starts around 7 Jan 2022.

The other event is ramp up of booster shots. This is shown in graph below



The marker is set to the time of maximum uptake of boosters (around 8 Feb). Booster data for age groups is not available.

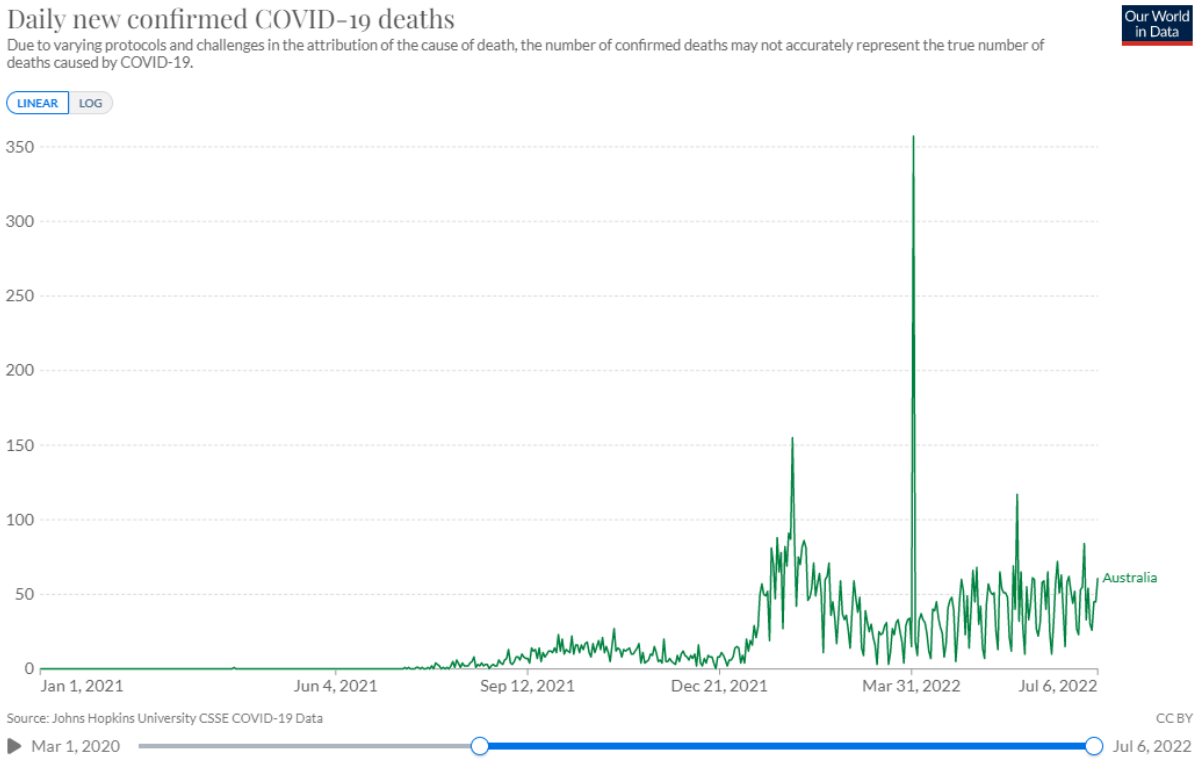
The upswing in the Cumulative Excess Deaths excluding COVID is at approximately the same time (from an analysis of the slope of this curve).

A question is was there any evidence that boosting right in the middle of an infection wave a good idea?

10.2.1 Limitations of the data

It is understood that ABS deaths are recorded in the week they occur. However, as previously noted, ABS data for the most recent months will increase in later reports. This will make the graph swing up further towards the end.

COVID deaths are not necessarily recorded in the week they occur. An example is that NSW registered additional deaths following a review on 1 April. The daily deaths recorded is shown below:



Peaks and dips can be seen that do not reflect actual days people died. Dips occur on Sundays. When averaged over a week of results, weekly data will be more accurate. The big spike on April 1st is due to 331 deaths added, based on a review in NSW of death certificates. So these deaths should be spread out backwards in time. Given the percentage of 65-75 year olds in the total deaths this number is likely to be something like less than 10%. This highlights a challenge with the data. We don't know how these deaths are distributed across age but I found from news article

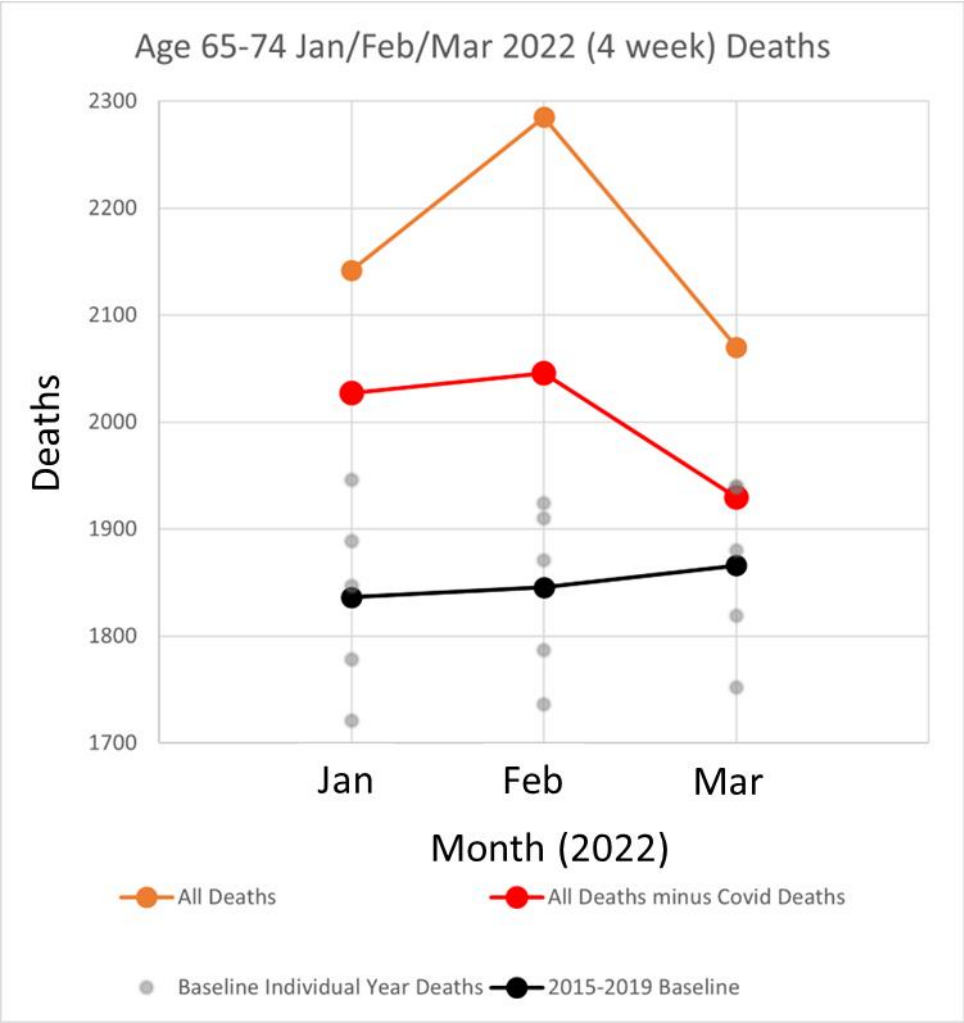
https://www.smh.com.au/national/nsw/nsw-adds-331-previously-unreported-deaths-to-covid-19-toll-20220401-p5a9zh.html

"of the previously unreported deaths, 270 occurred this year, 58 in 2021 and three were deaths from 2020, in the first year of the pandemic".

So the contribution is likely less than 30 extra deaths in the age band.

10.2.2 Significance of the Excess

An analysis of the statistical significance of the excess is provided in this section. In Australia over the months January to March the number of deaths typically occurring are fairly constant, averaged out week to week. The variation that occurs in the 65-74 yar age band week to week is of order 10's of deaths. I look at the deaths for each of the months Jan, Feb, and Mar. I note one of these months has 5 weeks, but I have made each 4 weeks of data for consistency.



All-cause deaths (orange points) are way above baseline (black points) and I have shown in the grey dots the deaths for the corresponding months making up the baseline. The orange dots, which include COVID deaths, are all clearly above baseline and the maximum, on any particular previous year contributing to the baseline. The deaths after subtracting COVID deaths are the red dots. In March the deaths are approximately the same as the largest previous year. However, we know that March data for all cause deaths will increase in future ABS reports. Therefore, deaths excluding COVID will increase and be higher than for any previous year.

The non-COVID excess deaths over the 3 months is 454. This is approximately 8% larger than baseline.

Of course, for some reason 2022 could just be an unlucky year and we should be comparing with the maximum of any of the previous years, but even then, we still have an excess. We also know that excess mortality at a similar rate is being seen in other Western countries following similar pandemic measures.

We can do a test to find if there is a "statistically significant" difference between the deaths for the deaths from two groups of years, ie 2022 and 2015-2019. There is a small number of samples but I find that it is significant (p value < 0.05 using the Welch t-test) and the 95% confidence interval does not cover that the possibility that there is no difference.

The result is significant.

10.3 New Zealand

Analysis has been performed in New Zealand at the University of Waikato, School of Accounting Finance and Economics. Gibson J (2022), The Rollout of COVID-19 Booster Vaccines is Associated With Rising Excess Mortality in New Zealand https://repec.its.waikato.ac.nz/wai/econwp/2211.pdf

Abstract:

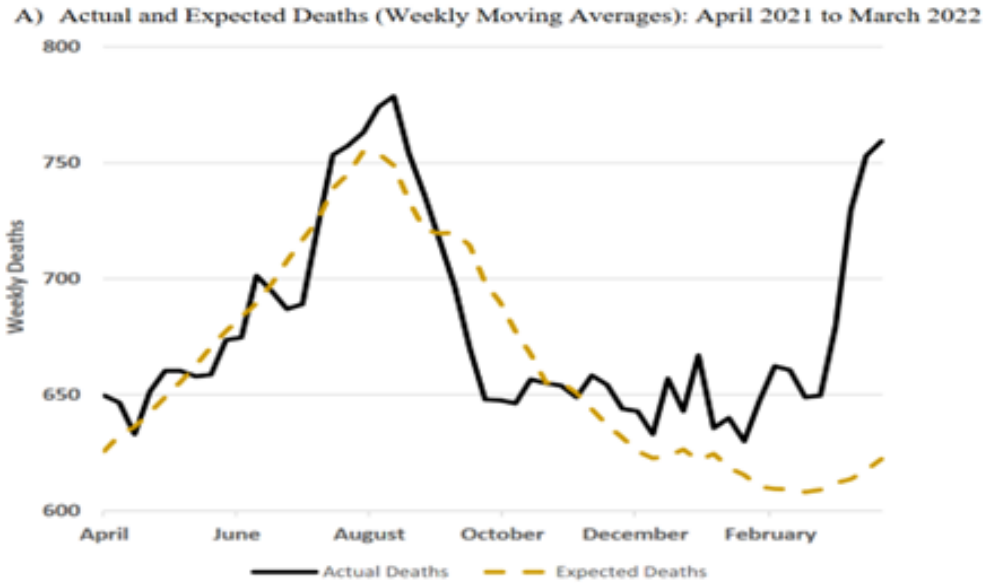
"The rollout of booster doses of COVID-19 vaccines to the general population is controversial. The ratio of vaccine risk to benefits likely has swung more towards risk than during the original randomized trials, due to dose-dependent adverse events and to fixation of immune responses on a variant no longer circulating, yet the evidence underpinning mass use of boosters is weaker than was the evidence for the original vaccine rollout. In light of an unsatisfactory risk-evidence situation, aggregate weekly data on excess mortality in New Zealand are used here to study the impacts of rolling out booster doses. Instrumental variables estimate using a plausible source of exogenous variation in the rate of booster dose rollout indicate 16 excess deaths per 100,000 booster doses, totalling over 400 excess deaths from New Zealand's booster rollout to date. The value of statistical life of these excess deaths is over $1.6 billion. The age groups most likely to use boosters had 7–10 percentage point rises in excess mortality rates as boosters were rolled out while the age group that is mostly too young for boosters saw no rise in excess mortality."

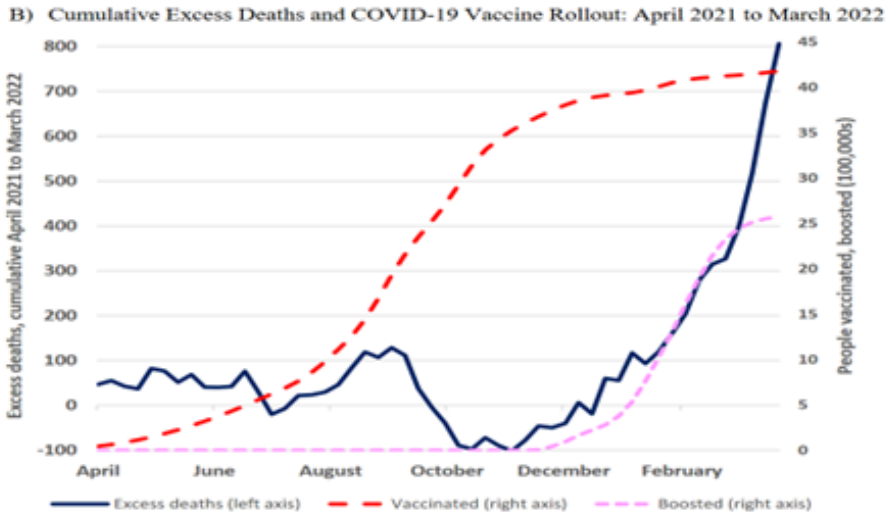
Repeating the finding from Gibson's paper:

> *The **age groups most likely to use boosters had 7–10 percentage point rises in excess mortality rates** as boosters were rolled out while the age group that is mostly too young for boosters saw no rise in excess mortality.*

This analysis is completely consistent with findings made here for Australian data.

Graphs from the paper:





10.4 Danish Study on Excess Mortality

Danish Professor, Christine Stabell Benn, studies the effects of vaccines on excess mortality at her institute. This is something that they routinely study for all types of vaccines. The study is found here: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4072489 Lancet (preprint).

It is well known that, while some vaccines (not just COVID) aim to reduce the disease they are targeted at, they also cause other problems leading to a reduction in the overall mortality benefit. Serendipitously some vaccines have worked against a disease and beneficially reduced other disease as well, leading to further reduced mortality.

Dr Stabell Benn compared adenovirus-based vaccines (AstraZeneca) and mRNA vaccines (Pfizer, Moderna). They had limited data, but the result of the study is that adenovirus vaccines showed an improvement in overall mortality. On the other hand, **mRNA vaccines showed no difference in mortality compared to unvaccinated.**

What this means that, if the mRNA vaccines are good at reducing deaths due to COVID-19, they are doing something else that leads to deaths such that there is no overall mortality benefit. This shouldn't be surprising because in the Pfizer trials more people actually died in the vaccination arm of the trial compared to the control unvaccinated arm of the trial, irrespective of COVID-19.

In an interview https://www.youtube.com/watch?v=o_nKoybyMGg she couldn't justify vaccination with mRNA vaccines for anyone under the age of 50.

10.5 Summary on Excess Mortality

There is a worrying signal in the Australian Mortality data of excess deaths not due to COVID. This is appearing in ages from 60 years upwards.

Australian data available on mortality is 3 months behind current time. Other countries, with more up to date reporting are also finding signals of increased excess mortality in younger age groups.

In the context of vaccine mandates, the excess mortality is another factor that has to be considered in a risk/benefit analysis. We know that vaccine adverse events make a contribution to excess mortality. The question is by how much? Some research (see Section 10.4) suggests for certain vaccine types there is no mortality benefit.

Also, it is an age stratified risk. Of course, there can be many causes of excess mortality. For the elderly, in aged care, there is the disruption caused by lockdowns.

I found no information in Affidavits of any consideration of Excess Mortality.

11 SUMMARY

As a data analyst, I have been astounded during this review by the lack of attention to detail for data collected in what is the most important health emergency in living memory. When looking at the performance of vaccines, based on real world public health agency data reports, it is clear no attempts have been made to control for confounding variables. At the current time it appears that the majority of unvaccinated deaths are occurring in frail elderly people. It is possible an informed conscious decision may have been made not to vaccinate. Those younger people (under 65) dying with COVID typically have severe comorbidities.

It is now widely accepted, in the Omicron period, that vaccination does not prevent COVID infection. From my investigation of data in the Australian context (for NSW and one limited dataset across three Australian states) it is apparent that vaccination can increase the rate of infection in the population. The term Negative Effectiveness refers to when an intervention makes a person more likely to catch a disease. This concurred with what was found in data from the UK.

An issue found in the Australian data was an overestimation of the proportion of the vaccinated population. Counts of doses were found to be greater than the population in certain age groups in the government data. This creates a large error in the calculated rates of COVID adverse outcomes (infection, hospitalisation, death) in the unvaccinated population, particularly when that population is small, as it is in Australia. This is unacceptable.

Health data reporting in Australia is deficient. It is inconceivable that with the resources being applied during the pandemic that data quality issues, albeit complex, could not be sorted out. On the other hand, I found that the Australian Bureau of Statistics data was of an exemplary quality and professional.

When looking at Australia's performance, in the context of the world, it has performed poorly during the Omicron period despite having one of the highest vaccination rates in the world. There has likely been a worse impact of Omicron, relative to other countries, due to the strict lockdowns in Australia and no natural immunity built up in the community prior at the onset of the Omicron wave. The second wave of Omicron has been exacerbated by coinciding with the Southern Hemisphere Winter.

A question that never appears to have been considered by public health authorities is the risk entailed while vaccinating in the midst of a dominant wave of infection.

An analysis of adverse event reports following vaccination is worrying. The TGA adverse event reporting system is deficient, although a beta updated version has been available from June 2022. The only way to find relevant information has been through Freedom of Information requests to the TGA. Currently there are over 900 deaths reported following vaccination.

Myocarditis, heart inflammation, is observed as an adverse outcome following vaccination in young people. Young males are the hardest hit. The incidence of myocarditis in young males in Australia was found to be consistent with what has been observed overseas.

I have investigated "all-cause mortality" in Australia. After taking into account the COVID deaths across Australia this shows worrying trends, with a signal of unexplained deaths in the age groups from 60 upwards. There has been suggested that this is linked with a dose dependent response to mRNA vaccines with the older population more likely to be "boosted". The mortality data in

Australia is 3 months behind real time, so unfortunately the signals will appear before it is too late to take appropriate action.

The main consideration in mandating vaccination by Dr Gerrard in his Affidavit (for previous Health Directions No 2) was “mitigating the risk of spread of COVID-19” in Queensland, as reported in Section 5.1. This appears to be based on legacy data and publications that do not reflect the effectiveness of vaccines in the Omicron period.

I found no relevant data to justify vaccination mandates for workers in healthcare in the over 2,000 pages of information in Affidavits provided. No risk/benefit analysis for the individual or the healthcare setting appears to have been performed. This is concerning.

Based on data publicly available in Australia the imposition of mandatory vaccination appears to provide no benefit to the stated aim in the Queensland Health Direction to *“reduce risk of exposure to staff, patients and clients at the healthcare setting*”.