

To: **Excess Mortality Senate Committee**

From: Dr. Martin P. Stewart

Date: 17th May 2024

Dear Senate Committee,

With this letter I outline suggestions for a comprehensive enquiry into Australia's excess mortality crisis. I will first summarize my background credentials before highlighting key facts about the excess mortality situation across the world and in Australia.

The terms of reference for this enquiry are the following:

Excess Mortality with particular reference to:

- (a) Australian Bureau of Statistics (ABS) data showing excess deaths in recent years, with particular reference to:
 - (i) all-cause provisional mortality data reported by the states and territories to the ABS, and
 - (ii) the difference between all-cause provisional mortality data for 2021, 2022 and 2023 and the preceding years of 2015 to 2020 (inclusive);
- (b) factors contributing to excess mortality in 2021, 2022 and 2023;
- (c) recommendations on how to address any identified preventable drivers of excess mortality; and
- (d) any other related matter.

STRUCTURE OF THIS SUBMISSION:

1. Personal Background and Credentials.
2. Key facts regarding excess mortality in Australia and other countries throughout 2020-2023
3. Conclusion and Recommendations

1. Personal Background and Credentials

I have had 14 years of experience as a Biomedical research scientist working at academic institutions in Germany, Switzerland, the United States and Australia. I obtained a PhD in Biophysics from TU Dresden (Germany) from 2007-2012. I then worked as a postdoctoral fellow at ETH Zurich (Switzerland) from 2012-2013 and MIT (Cambridge, USA) from 2014-2018. While at MIT I worked across 2 laboratories: Klavs Jensen (Chemical Engineering) and Robert Langer (Biomedical Engineering). Notably, Robert Langer is a scientific advisor and founder of Moderna, one of the companies that produced mRNA covid vaccines. He and several of his lab members were involved in research into lipid nanoparticle delivery, a technology that contributed to mRNA vaccine development. After MIT, I worked as a lecturer at UTS (Sydney) from 2018-2021. Although I love science and innovation, I decided to take a break from the academic system from 2021 onwards. I have thus been working privately and on various personal projects since 2021.

During my time in academia, I conducted research across fields including biophysics, cell biology, cell mechanics, microfluidics, intracellular delivery and cell engineering. I have published 1st author paper in prestigious journals such as *Nature* and *Chemical Reviews*. My most highly cited paper (>700 citations on Google Scholar) is:

[In Vitro and Ex Vivo Strategies for Intracellular Delivery](#) MP Stewart, A Sharei, X Ding, G Sahay, R Langer, KF Jensen, Nature 538 (7624), 183-192

Thus, I am highly trained in biomedical science/engineering and am substantially experienced in reading and analysing scientific and medical literature.

2. Key facts regarding excess mortality in Australia and other countries throughout 2020-2023

Presented below are the Australian Bureau of Statistics (ABS) on mortality in Australia from 2013-2023.

Year	Expected deaths	Actual deaths	Excess deaths	Excess (%)	Reported deaths from or with COVID-19	Excess deaths not related to COVID-19
2013	150,321	148,502	-1,819	-1.2	..	
2014	152,821	153,883	1,062	0.7	..	
2015	158,234	159,918	1,684	1.1	..	
2016	157,737	158,456	719	0.5	..	
2017	159,612	163,932	4,320	2.7	..	
2018	161,699	159,086	-2,613	-1.6	..	
2019	163,995	164,393	398	0.2	..	
2020	170,045	164,795	-5,250	-3.1	906	
2021	169,048	171,799	2,751	1.6	1,355	1,396
2022	170,911	190,856	19,945	11.7	10,301	9,644
2023	169,500	182,386	12,886	7.6	4,525	8,361
2020-2023 key subtotals:			30,332		17,087	19,401

Table 1: Mortality statistics in Australia from 2013-2023 including covid-19 related deaths. Statistics on excess deaths and covid-19 related deaths were obtained from the Australian Bureau of Statistics (ABS). The statistics are an amalgamation of several downloadable spreadsheets provided by the ABS including A) "Measuring Australia's excess mortality during the COVID-19 pandemic" released at 11.30am (Canberra time) 18 December 2023, and B) "Provisional Mortality Statistics, Jan 2024" released at 11.30am (Canberra time) 30 April 2024. The number of expected deaths for 2023 (169,500) was not supplied by the ABS but arrived at by simple regression analysis using ABS data for previous years. All other numbers are either supplied by the ABS directly or calculated based on ABS numbers. Statistics relevant to the covid-19 related time period (2020-2023) are shown in blue. Key subtotals during this time period (excess deaths, covid-19 related deaths, and non covid-19 related excess deaths) are shown on the bottom row.

Covid-19 began to spread from China across the world around January 2020. Lockdowns, travel restrictions and other control measures were then employed in Australia from early 2020 onwards. From 2022 onwards, a large discrepancy can be observed between expected deaths and actual deaths. Excess deaths refer to the number of deaths over and above the expected number (adjusted for population increase). The total excess deaths from the period 2020-2023 in Australia were around 30,000. The number of 5250 less deaths than expected for 2020 can be attributed to strict lockdowns and travel restrictions that were in place for that year, and work-study from home directives that were in place. Therefore, road deaths, travel deaths, deaths related outdoor activities, workplace-related deaths, and flu-related deaths were much lower for the year 2020. Because covid-19 was largely kept out of Australia in 2020, only 906 deaths were attributed to covid-19 for the year 2020.

From early-2021 onwards, AstraZeneca and mRNA vaccines for covid-19 (Pfizer and Moderna) became available to the public, firstly for the elderly and vulnerable, and then for the entire population. As the vaccination campaign progressed throughout mid-2021 into late 2021, travel restrictions and lockdowns began to be lifted only for those deemed to be “fully vaccinated” against covid-19. It was expected that large scale vaccination of the population would prevent covid-19 related hospitalizations and deaths once lockdowns and other restrictions were lifted. **According to medical authorities and newspapers, most Australian states reached 90% or more vaccination rate by December 2021, just in time for a lifting of some restrictions over the Christmas and New Year period of 2021.**

From early 2022 onwards, once it was decided by medical authorities and the state governments that the population had been adequately vaccinated, there was a large-scale relaxing of restrictions and lockdowns, as well as employees returning to the workplace and students to schools. **The deadliest phase of the pandemic was over at this stage and omicron strain, featuring a lower fatality rate but high transmissibility, was circulating in the population as the dominant strain of covid-19. Yet 2022 and 2023 are the years when Australia saw the most covid deaths (10,301 for 2022, and 4,525 for 2023) and excess deaths not related to covid-19 (9,644 and 8,361). Thus, according to ABS data, and assuming that the ABS data is complete and reliable, the total excess deaths not related to covid-19 in the period 2021-2023 in Australia are 19,401.** The purpose of this submission is to discuss possible reasons behind these approximately 20,000 excess deaths that have occurred from 2021-2023. It will be discussed to what degree the response of governments and medical authorities may be responsible for these excess deaths.

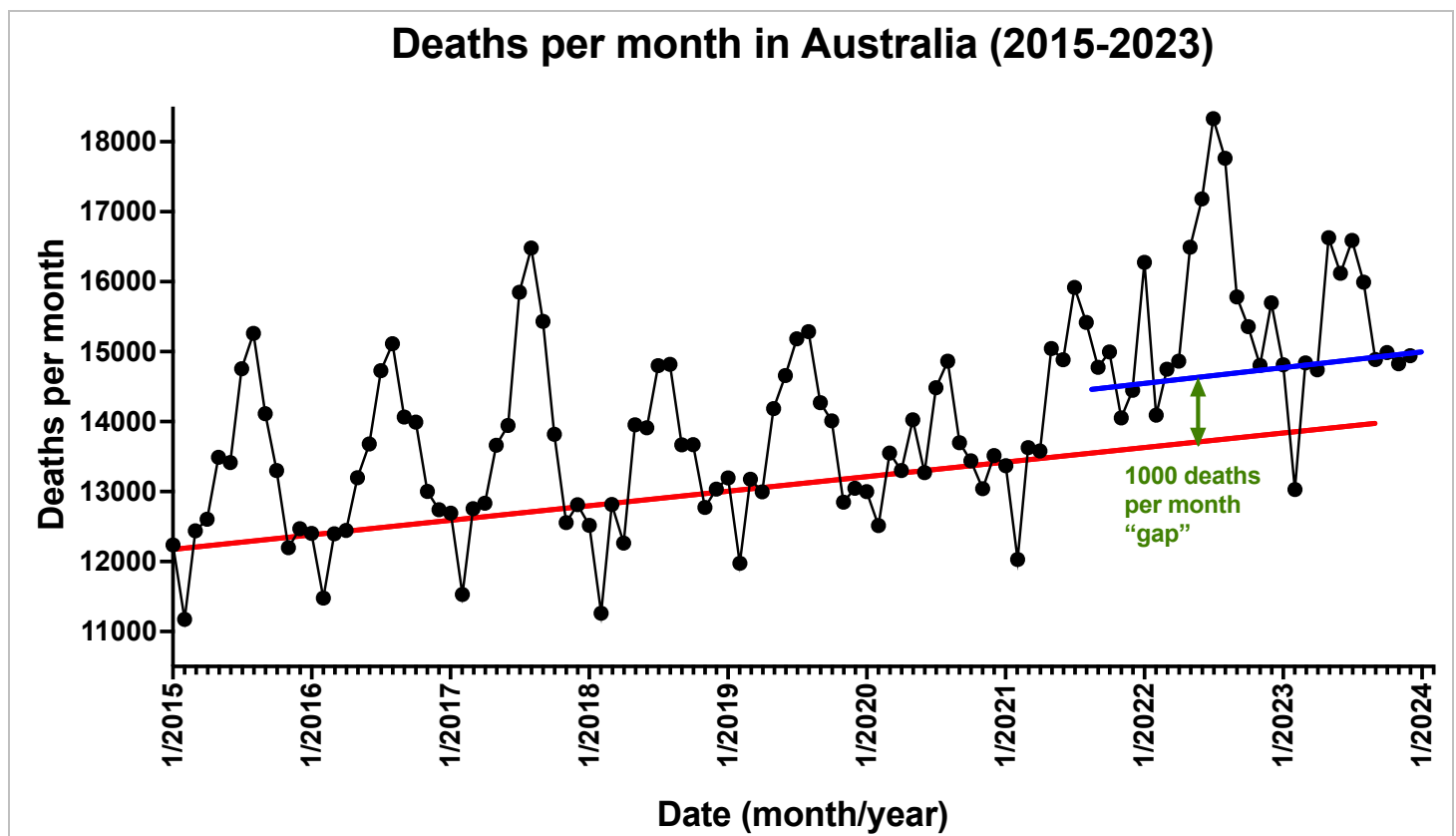


Figure 1: Deaths per month in Australia for the period January 2015 until December 2023 according to the ABS published statistics.

Figure 1 shows a month-by-month graphical representation of deaths over time in Australia from 2015 until the end of 2023. The data exhibits a well-known yearly cycle, where there is a peak in deaths during the winter months

thought to be partly due to cold weather and the increased incidence of respiratory diseases. While there is a significant variation in these winter peaks, the monthly death numbers in summer serve as a baseline for aligning a linear trendline (red). Note that the steady year-to-year increase in the baseline summer numbers is associated with population growth. In 2021 a shift is seen in the approximate previous baseline (red) to establish a new baseline (blue). The new baseline (blue) underpins the mortality data from mid-2021 until the end of 2023. The difference in deaths per months is approximately 1000 from a rough assessment of these two trendlines. This approximation fits well with the ABS data in Table 1, which shows 30,000 excess deaths during the period 2021-2023. Taking mid-2021 as a starting point for such an extrapolation, 30 months of approximately 1000 excess deaths per month = 30,000 extra deaths.

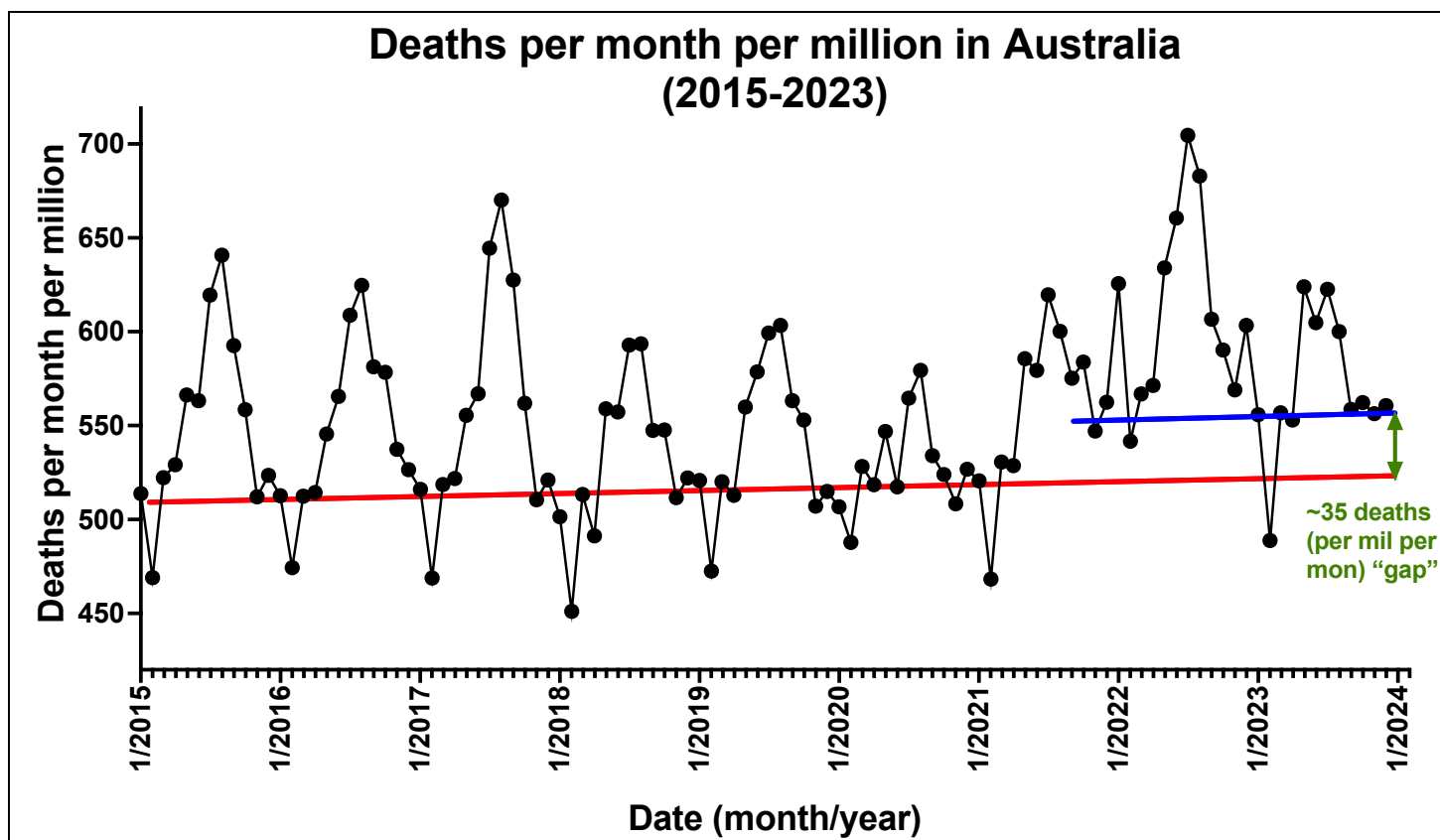


Figure 2: Deaths per month per million in Australia for the period January 2015 until December 2023 according to the ABS published statistics. In this case, deaths per month have been normalized to the population, as reported by the ABS.

Figure 2 is similar to Figure 1 but is normalized for population changes as Australian grew from approximately 23.8 million in 2015 to 26 million in 2023. The month-by-month mortality data is this time plotted in deaths per month per million from 2015 until the end of 2023. As in the previous graph, the data exhibits a well-known yearly cycle, where there is a peak in deaths during the winter months. While there is a significant variation in these winter peaks, the monthly death numbers in summer serve as relatively steady baseline indicator for aligning a linear trendline (red). In 2021 a shift is seen in the approximate previous baseline (red) to establish a new baseline (blue). The new baseline (blue) underpins the mortality data from about mid-2021 until the end of 2023. The difference in deaths per months per million is approximately 35. Multiplied by the Australian population (26 million), that yields an approximation of 910 extra deaths per month, in good agreement with the estimate from Figure 1 of 1,000.

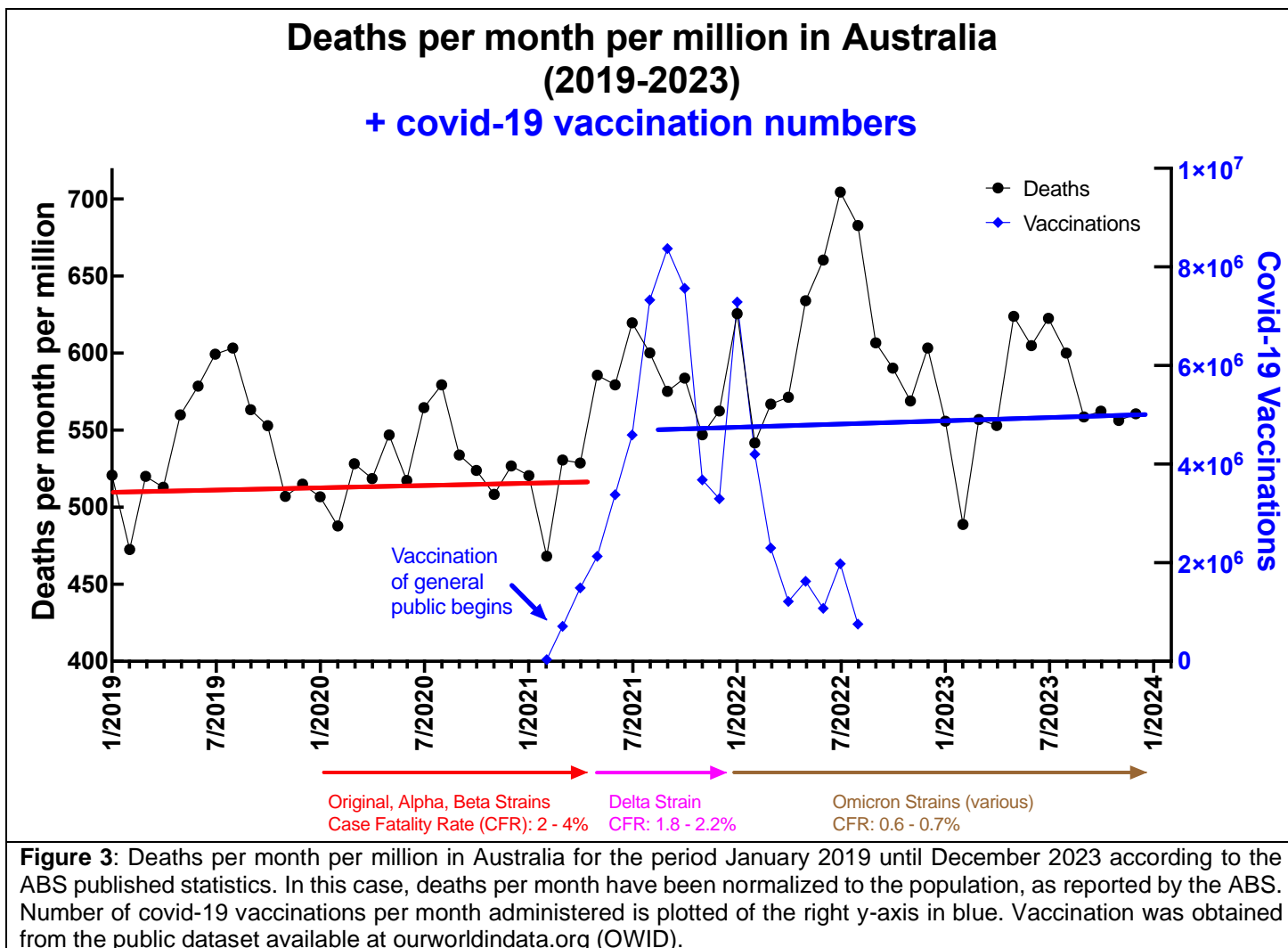


Figure 3: Deaths per month per million in Australia for the period January 2019 until December 2023 according to the ABS published statistics. In this case, deaths per month have been normalized to the population, as reported by the ABS. Number of covid-19 vaccinations per month administered is plotted of the right y-axis in blue. Vaccination was obtained from the public dataset available at ourworldindata.org (OWID).

Figure 3 focusses on the time period of 5 years showing population normalized mortality data from 2019 to 2023. The red and blue baseline trendlines from Figure 1 and 2 are included for the sake of comparison. In addition to mortality data, numbers of covid-19 vaccinations performed per month are plotted in blue on the right hand y-axis. Covid-19 Vaccinations are observed to begin in February 2021 before peaking at about 8 million doses per month in September 2021. The mass vaccination campaign throughout 2021 and early 2022 coincides with the previously observed upward shift in deaths per month observed in this figure as well as Figure 1 and Figure 2. Note that the upward shift in deaths per months does not correlate with the fatality rate of the observed strains of covid-19 in Australia over this period. Case fatality rate (CFR) is highest for the original, alpha and beta strains (2 – 4%), before dropping slightly with delta strain, and finally declining significantly with the advent of Omicron strains and their variants (0.6 – 0.7%) which became the dominant strains detected in circulation from early 2022 onwards (note that case fatality rates were taken from publication Xiao Q, et al: Int J Infect Dis . 2024 Apr;141:106950. doi: 10.1016/j.ijid.2024.01.017). The data on dominant covid-19 strains in Australia during the period 2020-2023 is obtained from ourworldindata.org (OWID). In summary, from the data in Figure 3 it can be observed that mortality increased during and after the mass vaccination campaign of 2021. Furthermore, this went against the trend of covid-19 strains becoming less deadly over time.

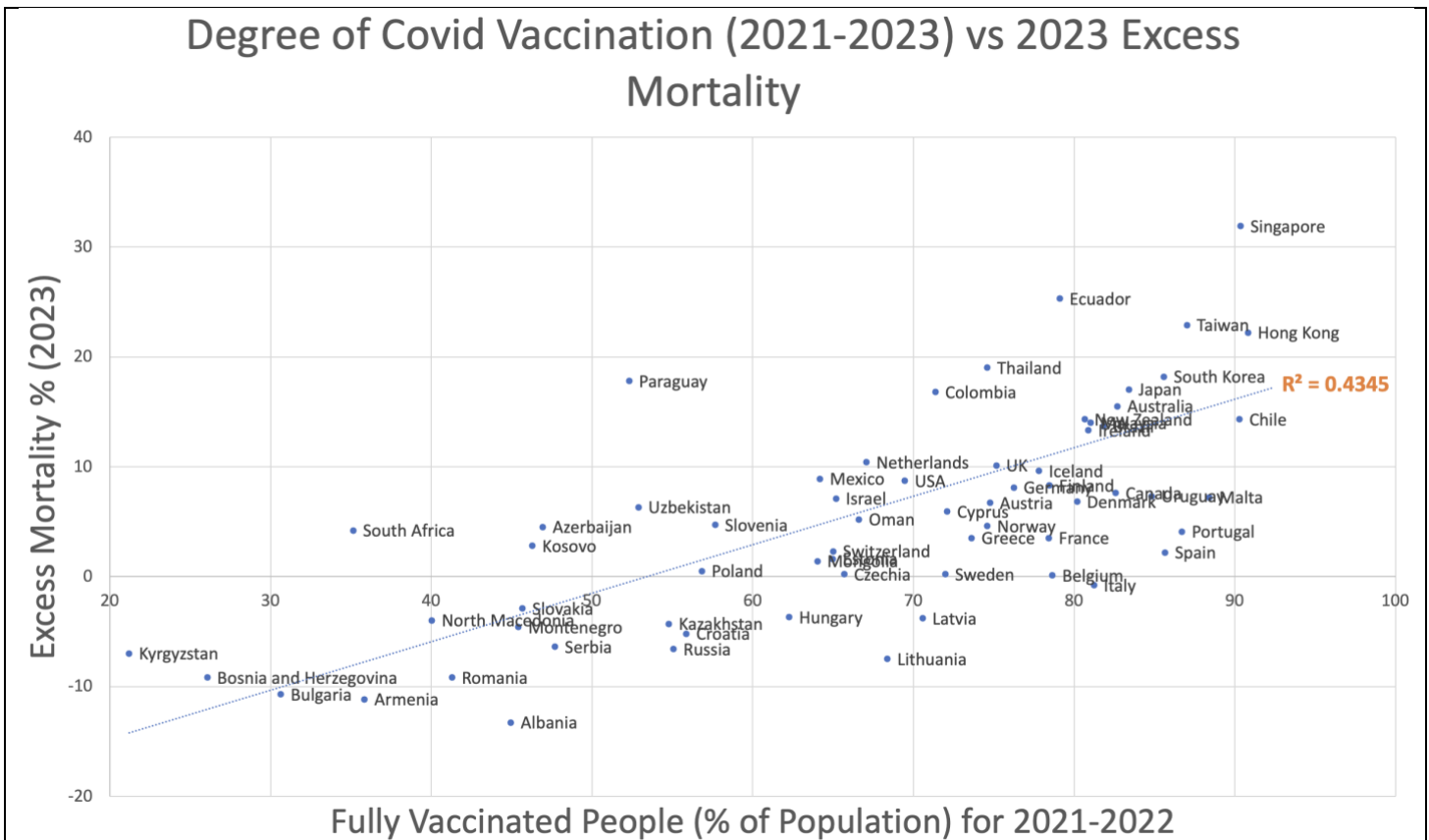


Figure 4: Degree of covid-19 vaccination (shown as fully vaccinated people) throughout 2021-2022 plotted against excess mortality % for 2023 for 65 different countries as sourced from ourworldindata.org (OWID). Note that the analysis was conducted in September 2019 and so does not contain mortality data for the whole year of 2023.

Figure 4 shows a graph of data from 65 different countries plotting the percentage of people fully vaccinated with government-approved covid-19 vaccines (x-axis) versus the excess mortality of that country for 2023 (y-axis). The data shows a clear association between extent of covid-19 vaccination throughout 2021 to 2023 and excess mortality in 2023. No country where the public was less than 50% fully vaccinated exhibited more than 6% excess mortality in 2023. Conversely, approximately 15 countries with rates of fully vaccinated people above 50% exhibited excess mortality above 10% in 2023. A linear trendline fitted to the data indicates an R-squared value of 0.4345. Such an R-squared value indicates that vaccination rate of the population is not the only factor contributing to excess mortality but is at least a significant and strong variable affecting the data.

If covid-19 vaccination is indeed contributing to excess deaths, how might this be occurring? A study from Christian Mueller and co-workers out of Switzerland in 2023 indicated that recipients of mRNA vaccines undergo cardiac damage at a higher rate than untreated people (Eur J Heart Fail. 2023 Oct;25(10):1871-1881. doi: 10.1002/ejhf.2978. Epub 2023 Aug 9.). Among 777 participants, 40 participants exhibited elevated high-sensitivity cardiac troponin T blood concentration on day 3 and mRNA-1273 vaccine-associated myocardial injury was adjudicated in 22 participants. Although none developed major adverse cardiac events within 30 days, the patients who exhibited signs of cardiac damage were warned to rest and not to over-exert themselves. Therefore, cardiovascular related-deaths may be one area where covid-19 vaccines are causing excess deaths.

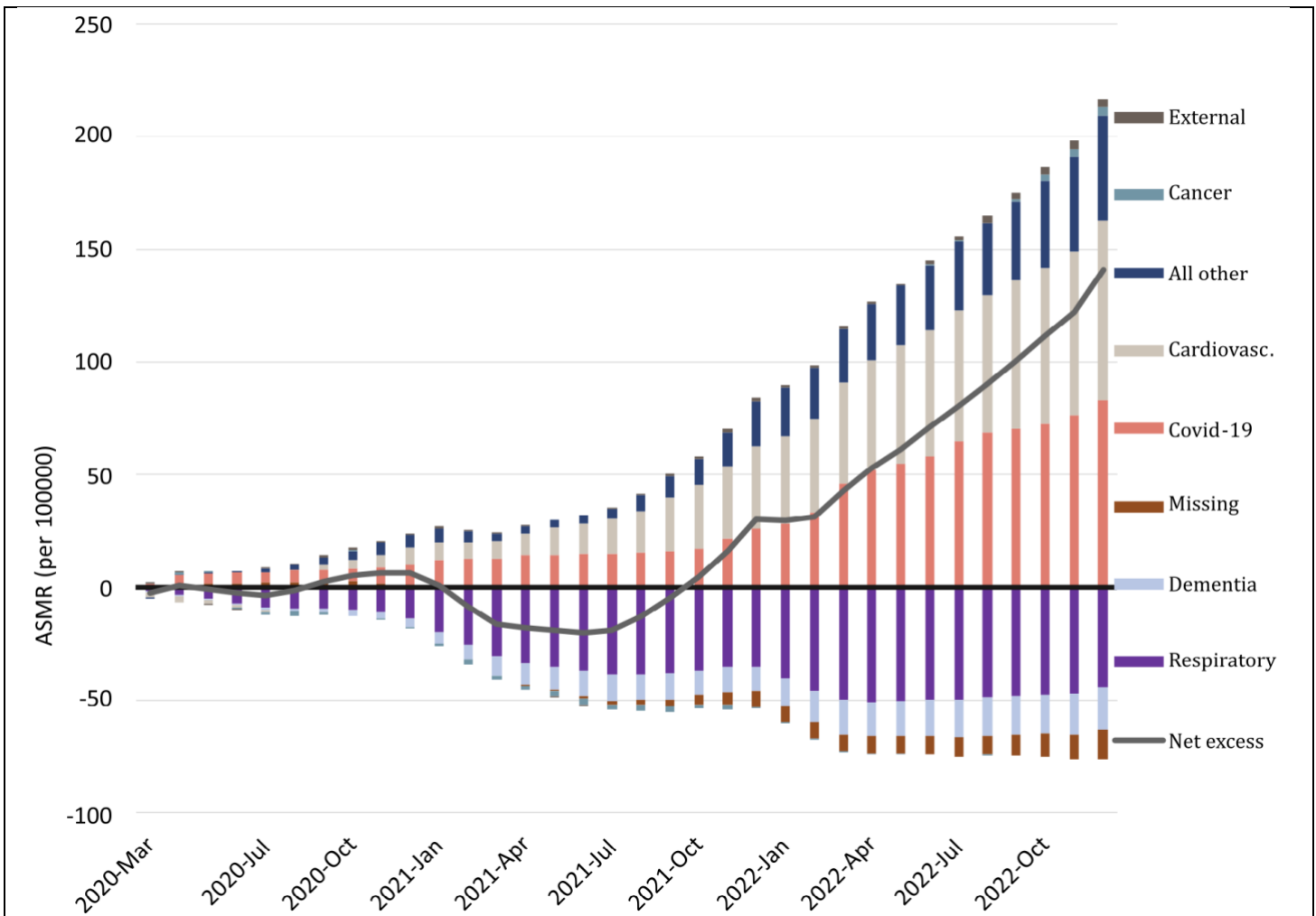


Figure 5: Age standardised mortality rate (ASMR) per 100,000 people in Norway throughout the time April 2020 to December 2022. The thick grey/brown line represents cumulative excess deaths, which increased significantly throughout 2022. Bars below zero indicate a lower number of deaths/ASMR than predicted. Graph from Raknes et al., “Excess non-COVID-19 mortality in Norway 2020–2022” BMC Public Health. 2024 Jan 22;24(1):244. doi: 10.1186/s12889-023-17515-5.

A recently published study out of Norway showed that non-covid-19-related cardiovascular-related deaths contributed about 40% towards excess deaths, and ramped significantly throughout 2022, even after the most deadly phase of the pandemic was over. (BMC Public Health. 2024 Jan 22;24(1):244. doi: 10.1186/s12889-023-17515-5.) See Figure 5 for a graph of excess deaths in Norway from April 2020 until December 2022. **Note that covid-19 related deaths (red data) contribute less than half of the excess deaths time cardiovascular related excess deaths (light brown data) almost match those of covid and begin rising from 2021 onward after covid-19 vaccines were widely disseminated to the population.**

In conclusion, it has become apparent that Australia and many other countries are experiencing a high degree of excess mortality even after the worst and most deadly phases of the pandemic are over. A significant number of these excess deaths cannot be attributed to covid-19 related illness. They may be associated with long-term effects after covid-19 (e.g. long covid), longer term problems due to the healthcare system being inhibited from properly caring for people throughout 2020-2022, or due to government-sanctioned interventions such as lockdowns and covid-19 vaccinations. It is a complex and multi-factorial problem, however the data presented in this report

strongly indicates that unproven and novel covid-19 vaccinations are likely to be a contributing factor in excess deaths. As products such as mRNA-based and viral vector-based vaccines are newly developed and haven't had the extensive background of human testing, it is highly likely that these vaccines could be causing unforeseen problems in recipients of these products and this issue deserves a thorough and full-scale investigation.

3. Conclusion and Recommendations

To investigate the potential link between covid-19 vaccination and excess deaths, the Australian Federal and State governments should work with health authorities and doctors to properly survey and monitor illnesses and death after all covid-19 vaccinations, mRNA vaccinations (e.g. Pfizer and Moderna), and viral vector-mediated (e.g. AstraZeneca) vaccinations. The pandemic represented an excellent opportunity to monitor and understand the impact of mRNA vaccines and covid-19 vaccines on recipients of these products throughout the last few years. From now on, every such vaccination must be monitored with rates of illness and death compared to unvaccinated control groups for up to a year. To do anything less than this is gross negligence and a lack of care for human life.

Other potential sources of excess deaths, such as long covid, reduced capacity of medical care, and micronutrient deficiency must be investigated also. Furthermore, it is imperative for Australia and other developed nations to understand why their excess death rates throughout 2022-2024 have been much higher than less developed countries. What is it about our approach and interventions that have caused excess death rates of 10-30% in many of the highest GDP per person countries in the world? The evidence indicates that a high rate of covid-19 and mRNA vaccination are strong contributing factors to this trend and thus the issue deserves urgent investigation and intervention in order to bring excess mortality rates back down to normal, or even below normal, once again.

Sincerely,

Martin P. Stewart