1.1.1 The Efficacy of Covid Vaccines: Part-2

An initial justification for the picture right is made in the discussion entitled *Nutrition Health* published in 2022, although the analysis to follow may further support this position. However, part-1 of this discussion references back to *Aug-2020*, which was an initial attempt to not only quantify the efficacy of vaccines, but also to highlight some of the '*motivations*' behind various vaccine campaigns. This initial discussion was followed in Feb-2021 as some of the major pharmaceutical companies began to publish their results that suggested a vaccine efficacy in the region of 95% - see *Vaccine Perspective* for more details. While most mainstream publications still suggest that the efficacy of Covid vaccines is high, this essay will attempt to further analyse whether this efficacy can be quantified in terms of a statistical reduction of deaths, hospitalizations and infections, especially when correlated to age. While this discussion is not '*anti-vaccine*', it is not clear whether those with a vested self-interest in promoting vaccines have tried to suppress a wider discussion of the effectiveness of these vaccines and the scope of any negative side-effects, possibly for both economic and political reasons. At the end of the previous *Covid Statistical Analysis* essay, published Jan-2022, an unanswered question about the efficacy of Covid vaccines was raised in the last sentence – see note below by way of reference.

In 2020 there were no vaccines, while in 2021 there was mass vaccinations. However, the analysis of the ONS official data appears to suggest that Covid deaths, as a percentage of the UK population, probably never exceeded 0.1% in either year. If so, how might the efficacy of any Covid vaccine be calculated with respect to preventing death?

We might start with the inference in the note above, which alludes to the data in the updated table below, where all figures are taken from the website *virusncov.com*. The figures from earlier dates can still be cross-checked, but now includes the latest figures for the UK, dated 07-May-2022, such that we might make a progress comparison to 2020 and 2021.

		Infections	%-pop	deaths	%-pop	%-annual
31/12/2020	uk-2020	2,488,780	3.71%	73,512	0.110%	12.25%
31/12/2021	uk-2021	10,449,106	15.60%	75,112	0.112%	12.52%
07/05/2022	uk-2022	9,176,148	13.70%	27,588	0.041%	4.60%

Note: For clarification, the UK population is estimated to be 67 million, where the annual number of all-cause deaths is in the region of 600,000. As such, this figure suggests that approximately 1% of the UK population die every year. To-date, the accumulated number of infections in the UK is listed to be 22,114,034, which might suggest that about 33% of the population may have been exposed to the Covid virus. However, such an estimate does not include people infected, but not detected or account for people being infected multiple times. As such, infection numbers are considered unreliable as a total count for a virus that has been in circulation for over 2 years.

The current date of 07-May-2022 represents the 126th day of the year, such that we might project out the number of Covid deaths for the whole of 2022 to be 82,764. While this is higher than both 2020 and 2021, there are on average fewer death during the UK summer months, such that we might initially work with a comparable figure of 80,000 for each year, which is approximately 13% of the all-cause 600,000 figure.

Note: However, we might question the accuracy of the 80,000 Covid deaths per year. First, on the basis of an interview *with Professor Karol Sikova (19-Jan-2022), where it was stated that a freedom of information (FOI) request to the ONS suggested that only 17,371 people had died directly of Covid over the last 2 years, which would equate to 8,685 Covid deaths per year, where the average age was 82.5 years. Second, on the basis of a similar and revised figure of 12% deaths issued by Professor Walter Ricciardi for Northern Italy in 2020.*

Covid Vaccine Efficacy

While it is unlikely that there will ever be a case-by-case review of the official 80,000 Covid deaths in the UK, the idea that all of these deaths could be attributed solely to Covid, especially given an average age of 82.5, seems questionable to say the least. If we were to reduce the number of deaths directly related to Covid to a somewhat arbitrary lower estimate of 20% of the official 80,000 figure, then a revised figure of 16,000 deaths per year would only represent 0.024% of the UK population and only 2.7% of the annual all-cause mortality figure. We might also seek to better understand the risk of death by age, which was outlined in the *ONS Statistical Analysis* discussion.

Note: By way of initial summary based on ONS data, it was estimated that the +60 age groups accounted for 93.85% of all deaths with Covid cited on the death certificate. However, the presence of the Covid virus at death only became a mandatory requirement introduced in 2020, which was never previously required for the influenza virus. As such, it is unclear that there are reliable statistics to support the assumption that all of the cited deaths were actually caused by the Covid virus, especially as analysis shows that over 61% of these deaths were in the +80-age group, who invariably had multiple comorbidities and statistically may have had only months to live, irrespective of the availability of any vaccine.

At this point, we might consider two high-low statistical perspectives, based on 100% Covid deaths (80,000) against an estimate of 20% Covid deaths (16,000). Within this somewhat speculative framework of the deaths being directly attributed to Covid, we might then consider two different risk assessments in the table below, where the notation (CV) and (AC) denote Covid and all-cause deaths for each age group.

Age	Pop	%-Pop	AC	%-Pop	100%-CV	%-Pop	%-CV/AC	20%-CV	%-Pop	%-CV/AC
0-9	7,939,000	11.83%	537	0.007%	4	0.000%	0.75%	1	0.000%	0.19%
10-19	7,734,000	11.52%	1,014	0.013%	16	0.000%	1.58%	4	0.000%	0.39%
20-29	8,608,000	12.83%	3,103	0.036%	104	0.001%	3.35%	21	0.000%	0.68%
30-39	8,931,000	13.31%	6,821	0.076%	312	0.003%	4.57%	63	0.001%	0.92%
40-49	8,404,000	12.52%	15,012	0.179%	1,063	0.013%	7.08%	213	0.003%	1.42%
50-59	9,128,000	13.60%	36,063	0.395%	3,470	0.038%	9.62%	694	0.008%	1.92%
60-69	7,215,000	10.75%	67,583	0.937%	7,827	0.108%	11.58%	1,566	0.022%	2.32%
70-79	5,768,000	8.59%	138,563	2.402%	18,699	0.324%	13.49%	3,740	0.065%	2.70%
>80	3,386,000	5.05%	331,303	9.785%	49,325	1.457%	14.89%	9,865	0.291%	2.98%
All	67,113,000	100.00%	600,000	0.894%	80,820	0.120%	13.47%	16,164	0.024%	2.69%

Note: In the first three columns, we see the UK population by age groups. In columns 4 and 5, we see the ONS data for all-cause (AC) deaths by age groups, normalised to 600,000 deaths per year. In columns 6-8 are official Covid (100%-CV) deaths by age group, while columns 9-11 reflect the reduced Covid (20%-CV) deaths.

As always, there are different ways of presenting statistics, such that we shall try to highlight two possibilities based on the Covid deaths per population (%-Pop) and Covid deaths per all-cause mortality (%-CV/AV). In this respect, it is argued that the %-CV figure is more representative of the overall risk of death from Covid within the UK population, while the %-CV/AC figure may reflect the impact of Covid on all-cause mortality. However, the %-CV/AC figure would suggest that Covid deaths should appear as excess deaths in both 2020 and 2021, which is questioned by official ONS statistics in the following charts showing a normalisation towards the 5-year average, shown as the black curve.
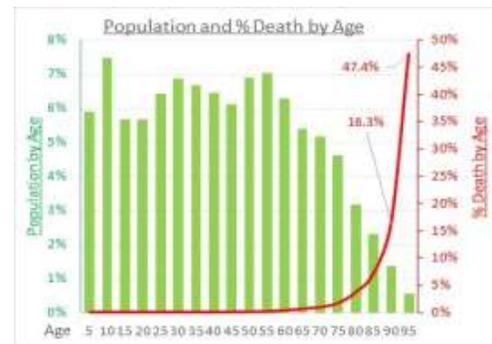
Covid Vaccine Efficacy
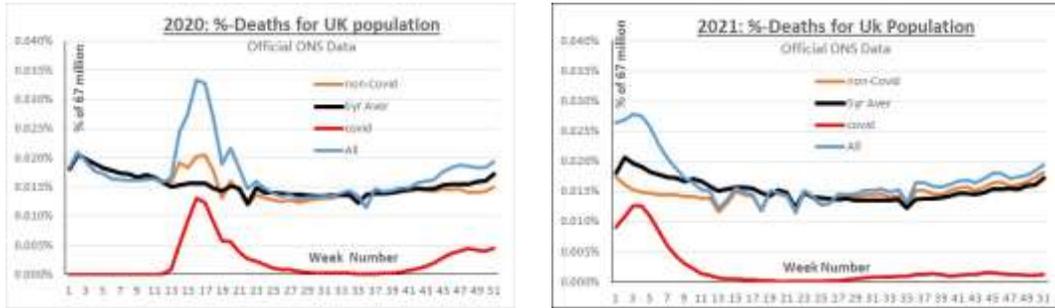
The vertical scale on both charts shows the 100%-CV deaths per week as a percentage of the UK population, rather than absolute numbers on the basis that % figures are a better measure of the statistical risk. The colour legend on each chart indicates the nature of the curve. In 2020, there is clearly a spike in the red curve associated with Covid deaths. However, the all-cause blue curve decays back towards the 5-year average, the black curve, by week-25, i.e. Jun, in 2020. It might also be highlighted that the orange curve possibly reflects excess deaths in 2020 caused by the lockdown impact on normal health services. While we can also see a secondary spike in the winter period 20/21, this is possibly more reflective of the normal seasonal spike in deaths that occurs every year, although potentially compounded by Covid. However, we see that the all-cause blue curve decays back towards the 5-year average, black curve, by week-11, i.e. March, in 2021. If we now return to the bottom row in the previous table, the figure of 600,000 all-cause deaths per year equates to 0.894% of the UK population, i.e. the 1% estimate. In this context, 80,820 Covid deaths per year equated to 0.12% of the UK population, but 13.47% of all-cause deaths. In columns 9-11, we see the revised figures when the Covid deaths are revised down to 16,164 and while accepting that these figures are only approximations, we might now come to some initial assessment of risk.

Note: When considered in terms of the UK population, we see that the official (100%) Covid deaths are heavily weighted towards age as we might expect, where the overall average, as a percentage of the population is 0.12%. However, the percentage of Covid (CV) deaths against all-cause (AC) deaths might be seen as more relevant to the discussion of vaccine efficacy, which is similarly weighted toward age, although this is not necessarily true of all virus infections. If it were accepted that the estimate of 20% Covid deaths might be closer to the true figure, then these deaths as a percentage of the age group population appears much lower, even when compared as a percentage of all-cause (%-CV/AC) deaths.

As has been highlighted in many of the previous discussions, the Covid pandemic has undoubtedly resulted in many tragic and early deaths across all age groups, although most will be thankful that younger age groups have been at significantly lower risk. However, the primary purpose of this analysis is to try to put the statistical risk into some better overall perspective. The figure of 600,000 deaths per year in the UK is obviously a large tragic number, although we might rationalise this risk to 1% of the population. As such, the official figure 80,000 Covid deaths would equate to 0.12% of the population, while a reduced figure of 16,000 Covid death falls to 0.024% of the population. However, it might be accepted that the majority of all deaths, Covid and all-cause, are weighted towards older age groups, as reflected in the chart below.

Note: Again, presenting the percentage statistics by age, rather than absolute numbers, possibly helps us to better rationalise the risk. If we were to use the 1% figure as a global average of deaths per year, it would equate to 78 million per year or over 200,000 per day. The scale of this human cost is difficult to comprehend, but we possibly have to accept that this tragic loss of life takes place every day, every year, irrespective of the impact of any pandemic or vaccine. Currently, the website virusncov.com *attributes 6,280,390 deaths to Covid after 800 days, which would average to 2.86 million per year and equate to 0.04% of the global 7.8 billion population.*
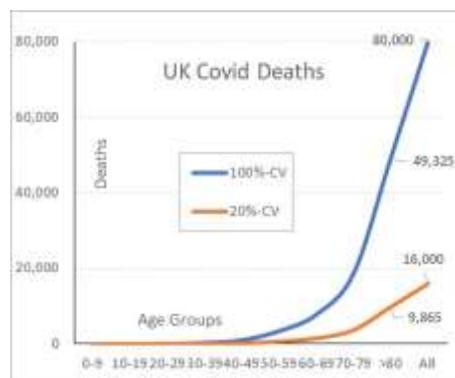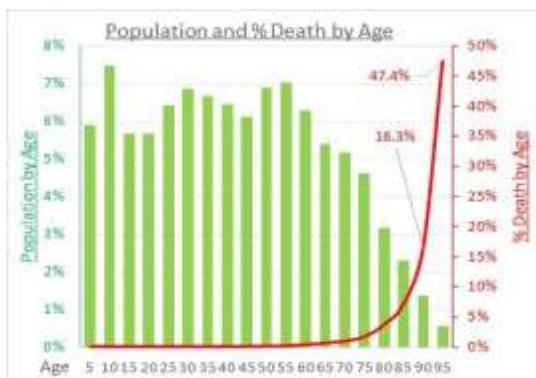
Covid Vaccine Efficacy

While this discussion has primarily focused on UK data for continuity with previous analysis, the following table might provide some wider perspective, where the first row relates to a ship, the Diamond Princess, which could be considered as an early study case that began its voyage on 20-Jan-2020 and was held in Covid quarantine until 1-Mar-2020. Over this time, 567 out of 2666 passengers and 145 of the 1045 crew were infected and 14 died. Row 2-5 then presents data taken from *virusncov.com* showing 3 different countries with the final row showing the global figures. However, it possibly needs to be highlighted that these figures are the accumulated totals after 800 days.

Order	Region	Pop	Infection	%-pop	Deaths	%-cases	%-pop
1	Ship (DP)	3,711	712	19.19%	14	1.97%	0.38%
2	UK	68,543,359	22,114,034	32.26%	176,212	0.80%	0.26%
3	India	1,360,903,399	43,102,508	3.17%	524,064	1.22%	0.04%
4	US	334,580,570	83,567,707	24.98%	1,024,525	1.23%	0.31%
5	Global	7,982,659,421	517,087,641	6.48%	6,276,075	1.21%	0.08%

Again, it will be stated that the number of infections as a percentage of the population is probably not representative of the actual percentage of a population exposed to the Covid virus. While this would seem to also question the number of deaths as a percentage of infections, the values in column-7 appear remarkably consistent. However, we then see a much wider variance when deaths are quantified as a percentage of the population, as shown in column-8. In part, the age demographics onboard the Diamond Princess were biased toward elderly passengers, which might then explain the higher figures in columns 7 and 8, while figures for India might reflect an under-reporting of Covid related deaths, especially in its rural regions. On the other hand, the reported Covid deaths in the UK and US may have been over-inflated, if the difference between Covid being the cause of death rather than simply being present at death was not accurately resolved, especially in the majority of elderly patients. Again, we might use an earlier hypothetical example by way of an illustration as to why it might be difficult to be precise about the actual cause of death in elderly patients.

Note: A frail 85-year-old man is walking along, when a strong gust of wind causes him to fall, such that he sustains a serious head injury. As a consequence, he is taken to hospital for what is perceived to be a life-threatening injury, where unfortunately he is exposed to an influenza virus. Due to his poor general health, the shock of the head injury and a virus infection, his weaken immune system succumbs to pneumonia, where respiratory complications lead to his subsequent death. So, the question is what was the cause of death?

As such, there is possibly a need to be more explicit about the ambiguity surrounding Covid deaths. Therefore, we might reproduce a previous chart showing all-cause deaths by age, shown left below, such that it can be more easily compared with the UK Covid deaths by age, shown right, with both the 100% and 20% CV-deaths previously outlined.

Covid Vaccine Efficacy

In general, we might see the similarities in the shape of the curves being biased towards age, where the chart left reflects that 66% of the 600,000 all-cause deaths per year in the UK were caused by just 3 illnesses, i.e. cardiovascular (28%.6%=171,000), cancers (25.6%=153,600), respiratory (12.2%=73,200). However, the actual root cause of many of the all-cause deaths were also linked to various forms of inflammation throughout the body compounded by an immune system that weakens with age – see *Nutrition Health* for more details. What might reasonably be inferred from this data is that older age groups are at higher risk from all manner of illness, including the Covid virus, such that Covid was only one of many potential causal factors that contributed to these deaths.

Note: A critical factor that makes older age groups more susceptible to infectious diseases is called immunesenescence*, which in plain English describes the decline in the effectiveness of the immune system as people age. However, this also results in an increase in inflammatory diseases as older age groups invariably experience more chronic low-grade inflammation, especially in terms of respiratory diseases. As a consequence, a Covid infection in older age groups can often cause more severe inflammation in the respiratory tract. Overall, immunesenescence invariably leads to a diminished response to vaccination and it is well known that flu vaccines are far less effective in older age groups. However, the fact that immunization may be less effective in older age groups appears to be largely ignored in terms of any Covid vaccines, despite these older age groups being at significantly higher risk.*

On the basis of the analysis of official ONS data, it is argued that the efficacy of any vaccine to prevent death due to Covid can only be rationalised in terms of the number of people who have officially died from Covid per year, i.e. 80,000, or possibly the lower estimate of 16,000. If so, a vaccine that was theoretically 100% effective might have saved all these lives, but as pointed out in the initial note, there were no vaccines in 2020, which only became widely available in 2021. However, the analysis of the ONS data appears to suggest that Covid deaths, as a percentage of the UK population, was almost identical in 2021 and probably never exceeded 0.1% in either year with little projected change in 2022. Therefore, it seems very difficult to justify the common assertion that Covid vaccines are highly effective, at least, in preventing death, such that we might now try to consider the efficacy of these vaccines with respect to hospitalizations and infections. Unfortunately, it is difficult to find consistent data on which to judge the severity of hospitalisations and infection and to correlate this data with deaths. In this respect, the following tables for Germany and UK have been extracted from the website *virusncov.com*, for the dates shown, i.e. approximately every 3 months. This website specifies two measures '*Active'* and '*Serious*', which might be equated to '*infections*' and '*ICU hospitalisations'*. As defined on the website, active cases equal the total cases minus total deaths minus recovered, where the figure is said to represents the number of people infected with the virus within the limitations of testing. The figure for '*serious'* cases is said to reflect the number of patients being treated in Intensive Care Units (ICU). While the ICU number would not account for less serious cases still requiring some form of treatment or hospitalisation, it might be assumed that those most at risk may be reflected in the ICU figure. Finally, the delta (Δ) death figures are the difference in total deaths between two consecutive dates. While all these figures depend on the accuracy of reporting, it is assumed that they may, at least, be a reasonable ballpark estimate. We will start with Germany.

Date	Δ-Deaths	%-Pop	Active	%-Pop	Serious	%-active
			Germany			
01/05/2022	17,386	0.021%	2,278,400	2.738%	1,446	0.06%
01/02/2022	22,262	0.027%	2,072,817	2.491%	2,274	0.11%
01/11/2021	4,093	0.005%	227,165	0.273%	1,984	0.87%
01/08/2021	8,497	0.010%	30,681	0.037%	361	1.18%
01/05/2021	24,800	0.030%	309,129	0.371%	5,049	1.63%
01/02/2021	48,274	0.058%	233,756	0.281%	4,348	1.86%
01/11/2020	1,026	0.001%	180,535	0.217%	1,944	1.08%
01/08/2020	2,935	0.004%	7,873	0.009%	261	3.32%
01/05/2020		0.000%	30,002	0.036%	2,189	7.30%

Covid Vaccine Efficacy

Germany has a population of 83 million. Over the 800 days implied by the table, Germany recorded 137,020 Covid deaths, which would approximate to 62,500 Covid deaths per year and correspond to 0.075% as a percentage of Germany's population. The number of active and serious cases correspond to the date shown. It is generally assumed that people are at their most infectious 1-2 days before the onset of symptoms and for 2-3 days afterwards, such that the active number would apply for about 5 days. It might be assumed that serious cases admitted to an ICU may require 15 days to either recover or become a fatality. While the number of serious cases is too small to be represented as a meaningful % of the population, the number of ICU cases only appears to represent less than 1% of active cases on average.

Date	UK					
	Δ-Deaths	%-Pop	Active	%-Pop	Serious	%-active
01/05/2022	18,939	0.028%	653,021	0.95%	302	0.046%
01/02/2022	15,301	0.022%	3,787,443	5.53%	571	0.015%
01/11/2021	10,953	0.016%	1,566,518	2.29%	946	0.060%
01/08/2021	2,195	0.003%	1,230,749	1.80%	869	0.071%
01/05/2021	20,960	0.031%	72,834	0.11%	185	0.254%
01/02/2021	59,847	0.087%	1,961,247	2.86%	3,228	0.165%

The UK has a population of 67 million. Over the 800 days implied by the table, the UK recorded 176,424 Covid deaths, which would approximate to 80,400 Covid deaths per year and correspond to 0.117% as a percentage of the UK population. Again, the number of serious cases is too small to represent as a percentage of the population, while the number of ICU cases represents less than 1% of active cases on average. However, at this point, it might be highlighted that there is significant evidence that obesity increases the risk of a serious outcome of being infected with Covid. While somewhat anecdotal, it has been estimated that possibly 80% of those infected may have been asymptomatic or only have mild symptoms, while the next 15% may have had more severe symptoms, some possibly requiring some medical treatment. The last 5% may have experience life threatening symptoms requiring ICU treatment, the previous charts suggests that this number was closer to 1% of active cases, where subsequent Covid deaths probably represented about 0.1% of the population.

Note: As previously highlighted, obesity is known to impaired the functioning of the immune system and decrease lung capacity, such that obesity may triple the risk of hospitalization due to a Covid infection. Unfortunately, obesity is a problem affecting all age groups.

When a person has a background of chronic inflammation and is then exposed to a virus, the cells that are responsible for fighting the attack do not function as effectively as they should. Excess body fat in the abdomen that surrounds the liver, pancreas and even fat underneath the skin release several pro-inflammatory *cytokines*. However, a '*cytokine storm*' is an abnormal immune response that can lead to a condition known as '*acute respiratory distress syndrome*' that causes severe lung injury and death in many of those who are killed by Covid. Global data has revealed that in those under the age of 50 that have succumbed to Covid, obesity was the biggest risk factor for hospitalisation and death. While it still has to be highlighted that statistical data cannot quantify the risk to an individual prior to being exposed to Covid, it might be accepted that age, obesity and general health have to be obvious risk factors. At this point, we might cite a qualified assessment in 2021 by Dr. Anna Durbin, director of Immunization Research at Johns Hopkins.

Much like the flu shot, Covid vaccines are intended to lower your chance of infection and severe illness, not eradicate it.

As such, the statement that vaccines do not necessarily prevent infection or illness would appear to be a balanced assessment of the potential effectiveness of a Covid vaccine, although it does not quantify the efficacy of a vaccine. However, the Centre for Disease Control and Prevention subsequently claimed that being fully vaccinated prevents hospitalization in 86% of patients and

death in 82%. However, it is unclear how to interpret these figures, if 80% of those previously unvaccinated were essentially asymptomatic, while the next 15% may have only required local medical treatment. If we assume that only the last 5% may experience life threatening symptoms, does the 86% prevention figure only apply to this 5% figure. Finally, if only 0.1% of the population has died from Covid, does the 82% prevention figure only apply to the 0.1%. The statement above might also be questioned further as it does not make any reference to the susceptibility, or seriousness, of a Covid infection when weighted by age, obesity or possible vaccine side-effects. As cited, 93.85% of Covid deaths are associated with the +60 age groups, while 61% are associated with just the +80 age groups, where most are suffering from multiple comorbidities. If so, the effectiveness of the Covid vaccine needs to be assessed within each age group, where we might reference an *earlier analysis* of the risk of death as shown in the following table.

Age	Deaths	%-Deaths	Group-risk	Pop	%-Pop	Group-Pop
0-9	4	0.005%		7,939,000	11.83%	
10-19	16	0.020%		7,734,000	11.52%	
20-29	104	0.129%	1.85%	8,608,000	12.83%	62.01%
30-39	312	0.386%		8,931,000	13.31%	
40-49	1,063	1.315%		8,404,000	12.52%	
50-59	3,470	4.293%	4.29%	9,128,000	13.60%	13.60%
60-69	7,827	9.684%		7,215,000	10.75%	
70-79	18,699	23.137%	93.85%	5,768,000	8.59%	37.99%
>80	49,325	61.031%		3,386,000	5.05%	
All	80,820	100.000%	100.00%	67,113,000	100.00%	100.00%

By way of clarification, the table above reflects the official 2020 ONS numbers of Covid deaths, although this analysis has suggested that the actual number of deaths directly attributable to Covid might be considerably reduced. Equally, just focusing on Covid deaths ignores any excess deaths caused by the negative impact on health services for all other illnesses due to lockdowns and other stress factor or even vaccine side-effects. While similar ONS data for 2021 and 2022 was not available at the time of writing, there is no indication that the breakdown by age groups does not still apply.

But is this analysis simply biased against vaccines?

Those who support the various Covid vaccine campaigns around the world, both voluntary and mandatory, may simply assume that the analysis presented reflects the uninformed opinion of an 'anti-vaxxer'. However, it is argued that the purpose of this analysis has not been to deny any potential benefits associated with a Covid vaccine, only to put these benefits into some statistical perspective. For those that remain open-minded to further discussion, we might consider a different question:

How does the public at large come to judge the efficacy of Covid vaccines?

How this question is addressed may depend on where you live in the world, but as a generalization, the understanding of many people is often based on the assumption that everything they have been told about vaccines in mainstream sources is true. Of course, this then raises the issue as to whether these sources of information have been totally transparent with the public about their own sources of information and any underlying self-interests.

Note: To avoid too many complications, we might separate the idea of self-interest into two broad groups, political and economic, although there is often an underlying ideology driving both. However, information can quickly fragment into a multitude of opinions spread across various forms of 'social media'. In this context, it might be accepted that the majority of articles published on both mainstream and social media may simply be repeating or summarizing other sources of information that is believed to represent a majority consensus.

Covid Vaccine Efficacy

While the basic idea of a '*consensus of public opinion'* is not necessarily a bad thing, it is one that can be manipulated by influential individuals and powerful institutions to possibly best meet their own self-interests. When this is the case, the goal is not only to create a consensus in support of their position, but to then protect this consensus within a form of censorship, which attempts to restrict the publication of anything that might contradict the consensus – see *The Nature of Consensus* for more details. This position is not some veiled conspiracy theory, as any wider review of what has happen throughout the *Covid Pandemic* clearly highlights the attempts of governments and powerful institutions to control the narrative to the general public. While we might initially assume that politicians in government must be one of the powerful institutions controlling this narrative, the following quote might make us question this assumption.

> *Note: As an example of how institutions can use the media to force governments to adopt specific policies, in March 2020, prior to the UK government enforcing its lockdown policy, the Guardian newspaper ran a headline suggesting that if the UK government had enforced its Covid lockdown one week earlier, it could have saved 20,000 lives. It is believed that the source of this unsupported claim was based on statements made by Prof Neil Ferguson, initially an influential member of the SAGE advisory group, whose* SIR model *was subsequently discredited. However, we might possibly understand why politicians can be manipulated by such headlines, especially if they have no real understanding of the issues.*

Similar examples might be cited as the only way to explain the near uniformity of government lockdown policies in the developed world, even though questioned by many eminent scientists around the world – see *Pandemic Addendum* for more details. Again, reference might also be made back to the political rhetoric made by the Governor of New York, Andrew Cuomo.

> *I want to be able to say to the people of New York, I did everything we could do.*
> *And if everything we do saves just one life, I'll be happy.*

However, without an understanding of the real risks by age groups, politicians in New York transferred elderly Covid patients back into care homes at the height of the pandemic. As a consequence, New York had one of the highest care home death tolls with more than 6,400 Covid related deaths in its care facilities.

Around the same time as the previously cited Guardian article, Facebook assumed the role of public censor when it announced that they would alert its users to what it considered to be 'misinformation' concerning the pandemic. In this respect, it started to substitute references to the World Health Organization (WHO), as one of only a few authoritative sources of information. However, whether the WHO director Dr. Tedros Ghebreyesus acted in the best interest of public health or his own might be debated. We might also question whether Anthony Fauci, once Chief Medical Advisor to the US President, acted in the best interest of the public or his own self-interests.

> *Note: For while being a physician and immunologist, Fauci has often been described as a power broker between government and the pharmaceutical industry. In essence, Fauci had the power to control the flow of research funding by cutting off funding to researchers who did not conform to the consensus narrative. He could also censure journalists by restricting access to information and scientists. It is claimed that within this framework of control and censorship, Fauci could manipulate the narrative of scientists, doctors, journalists, and companies.*

Covid Vaccine Efficacy

Finally, we might turn our attention to the pharmaceutical industry that profits from the manufacture and distribution of the Covid vaccines. The third quarter financial reports released in 2021 showed that Pfizer and Moderna had made combined profits of $65,000 every minute from vaccines that were primarily developed by public funding. These two companies alone have produced five new billionaires during the pandemic with a combined net wealth of over $35 billion. However, we might cite the abstract of a 2021 paper entitled *Epistemic Corruption, the Pharmaceutical Industry, and the Body of Medical Science*.

When a knowledge system importantly loses integrity, ceasing to provide the kinds of trusted knowledge expected of it, we can label this epistemic corruption. Epistemic corruption often occurs because the system has been co-opted for interests at odds with some of the central goals thought to lie behind it. There is now abundant evidence that the involvement of pharmaceutical companies corrupts medical science. Within the medical community, this is generally assumed to be the result of conflicts of interest. However, some important ways that the industry corrupts are not captured well by standard analyses in terms of conflicts of interest. It is not just that there is a body of medical science perverted by industry largesse. Instead, much of the corruption of medical science via the pharmaceutical industry happens through grafting activities: Pharmaceutical companies do their own research and smoothly integrate it with medical science, taking advantage of the legitimacy of the latter.

It has been argued that this discussion has not been a veiled attempt to construct a conspiracy theory, as it has shown the evidence on which a better understanding of the statistical risks associated with Covid could have been based. However, it has questioned how powerful institutions, both political and economic, attempted to control the narrative given to the general public, possibly in their own self-interests rather than the public at large.

Note: Whether you accept that some of these issues need to be examined through a more open and transparent process has to be a personal decision. However, as indicated, many of the institutions inferred will not necessarily help you to come to the best decision for the general public, if it conflicts with their own self-interest.

Therefore, it might be suggested that public policy throughout the pandemic needs to be subject to an independent inquiry, not just in terms of the efficacy of vaccines, but also the efficacy of lockdowns, PCR tests and mask-wearing; especially in respect to age groups. If not, political rhetoric will remain open to manipulation and potentially slide towards the authoritarian policies as now being imposed in China – see *The Great Reset* for more details.