

# What Next for Covid-19 Vaccines? Increasing Resistance, Safety Fears, Generalized Mistrust, Censorship and Surveillance

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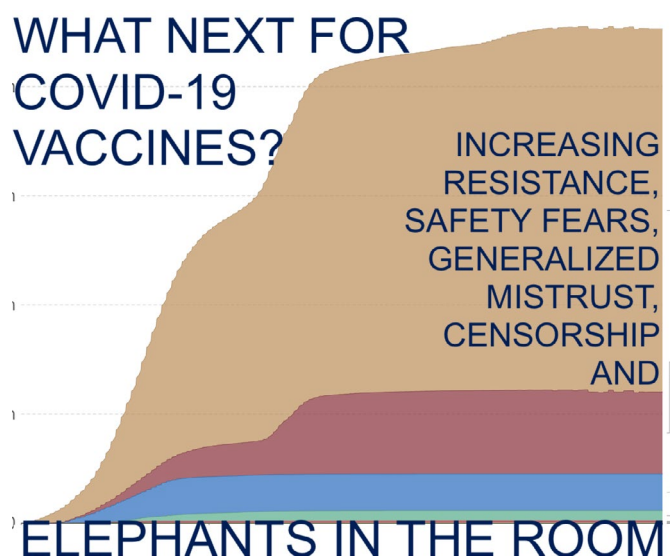
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**Abstract**

There can be no question that the COVID-19 pandemic has wrought devastation on the lives of billions of people, yet the high casualty rates are as much ideological and psychosocial phenomena as biological. Vaccines are front and centre of the effort to control the COVID-19 pandemic, an effort that has often been thwarted by political incompetence and failed leadership. The determinants of vaccine hesitancy exist within the microsocial and macrosocial systems. Traditional accounts of vaccination hesitancy focus on individuals within a microsocial system that makes individuals responsible for vaccine non-acceptance, yet macrosocial factors and neoliberal ideology strongly affect vaccine availability and are generally ignored. Politicization, dissemination of conspiracy beliefs, safety fears, mounting generalized distrust of science, medicine, the pharmaceutical industry and governmental authorities are all involved. To build preparedness for future pandemics, remedial efforts are necessary to restore generalized trust in science, political structures and governmental systems. In these spheres, transparency, open discussion and debate are necessary foundation stones.



**Keywords:** COVID-19 vaccines, Vaccine Resistance, Vaccine Hesitancy, Neoliberalism, Macro-Social Determinants, Generalized Mistrust, Lack of Transparency, Safety Fears, Censorship.

**1. Introduction**

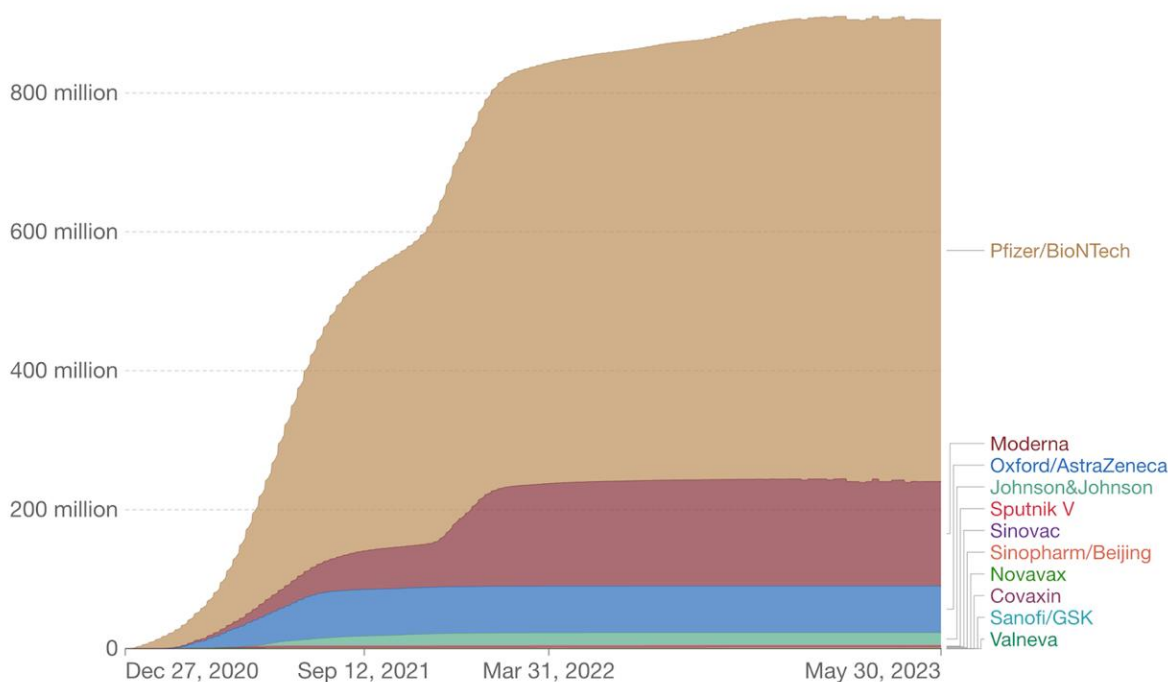
There is no question that the COVID-19 pandemic has wrought devastation to the lives of billions of people, yet the high casualty rates are as much ideological and psychosocial phenomena as a biological one. As of June 1, 2023, there were 766 894 311 confirmed COVID-19 cases and 6 935 876 registered deaths from COVID-19 [1]. In addition, based on WHO estimates, there are likely to have been an additional 4-5 M deaths that were unreg-

istered [2]. According to Our World of Data, 70% of the world population has received at least one dose of a COVID-19 vaccine, 13.39 billion doses have been administered globally, and 66,122 are now administered each day [3]. Only 30% of people in low-income countries have received at least one dose [3]. The numbers of doses administered by different manufacturers in the European Union are shown in Figure 1.

## COVID-19 vaccine doses administered by manufacturer, European Union

All doses, including boosters, are counted individually.

Our World  
in Data



Source: Official data collated by Our World in Data

OurWorldInData.org/covid-vaccinations • CC BY

**Figure 1:** Numbers of doses administered by manufacturer, European Union [3].

Pfizer reported that its revenues in 2022 exceeded \$100 billion for the first time in the company's 174-year history [4]. Meanwhile, the European Commission reported that Pfizer and Moderna, pay almost no tax on their profits [5]. It has been estimated that between Dec 8, 2020, and Dec 8, 2021, 31.4 million COVID-19-related deaths would have occurred during this timeframe in the absence of COVID-19 vaccination [6]. A total of 19.8 million deaths were averted by COVID-19 vaccination, a number that greatly exceeded the COVID-19 death toll. However, pre-production orders were made by rich countries with advance payments to producers and an estimated 156 900 additional deaths would have been averted if the COVID-19 Vaccines Global Access (COVAX) Facility's vaccination target of 20% (for each Advance Market Commitment country) had been achieved, and 599 300 additional deaths would have been averted if WHO's 2021 COVID-19 vaccination target of 40% (for each country) had been attained [6].

To facilitate rational planning and preparedness for the next pandemic, and to optimize citizens' reception of new vaccines, the vaccination goals, and vaccine effectiveness and safety need to be made fully transparent. Framing vaccine receptivity in terms of individual responsibility is consistent with neoliberalist ideology of individuals as self-regulating agents or 'entrepreneurs' [7]. Writing about the world's leading political theorist, Noam Chomsky, Robert W. McChesney has written: "*Neoliberalism is the defining political economic paradigm of our time - it refers to the policies and processes whereby a relative handful of private interests are permitted to control as much as possible of social life in order to maximize their personal profit*" [8, p. 7]. An alternative systems perspective is necessary that views non-vac-

inated (so-called 'hesitant' individuals), not as passive reproducers of conspiratorial behaviour, but as active resisters against public and private 'bodies of authority and power' (BsAP). The BsAP include governments, corporations, health systems, institutions, medicine, science, justice, state security and all other state actors. Here we propose a relationship between Trust in BsAP ( $T_{BsAP}$ ) and vaccine acceptance ( $ACC_V$ ) as follows:

$$ACC_V = \mathbf{fn} [T_{BsAP}] \text{ \{Formula i\}}$$

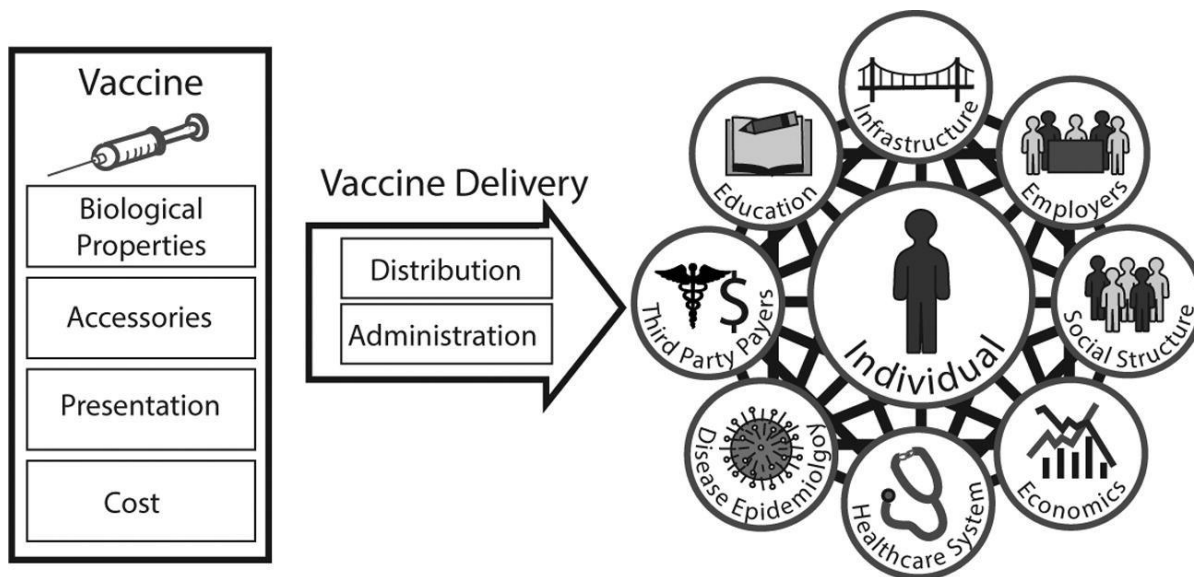
where  $ACC_V$  and  $T_{BsAP}$  lie in the range, 0.0 -1.0

If BsAP are transparent, honest, trustworthy and proven to act in good faith, then vaccine hesitancy is likely to be proportionately low. If BsAP are opaque, dishonest, untrustworthy and proven to act in bad faith, then vaccine resistance is likely to be proportionately high. Over the course of the COVID-19 pandemic, there has been evidence of a notable erosion of public confidence and trust in BsAP [9].

In the world's distribution of COVID-19 vaccines, once the supply chain and necessary infrastructure have been established, individuals' resistance to having a vaccine - euphemistically termed 'vaccine hesitancy' - is an obstacle to the goal of universal coverage. However, vaccine hesitancy has proved to be psychosocially highly complex and context-specific, varying somewhat unpredictably across time, place, and disease type. Vaccine hesitancy has become a growing concern for the World Health Organization (WHO) that defines it as a 'delay in acceptance or refusal of vaccines despite the availability of vaccination services' [10]. The UK Scientific Advisory Group for Emergencies (SAGE) has described vaccine hesitancy as a behavioral pattern, affected by three primary factors: confidence or trust in the effi-

cacy of the vaccine efficacy or the integrity of the provider, complacency, or the perceived need for a vaccine acknowledging its value, and convenience or the accessibility of the vaccine [11]. However, the SAGE approach appears simplistic and flawed. It

is essential to consider the systems that are necessary to complete the vaccine supply chain [12] because vaccine availability is critical and it has been highly inequitable to date [13-15].



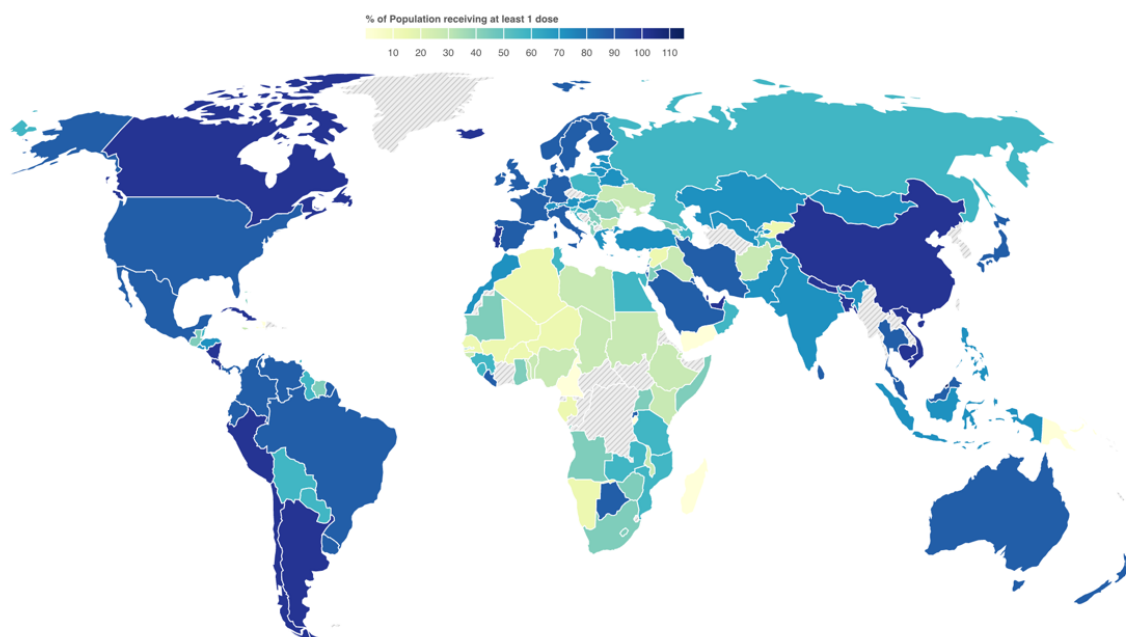
**Figure 2:** Successful vaccine development and delivery requires compatible macrosocial and microsocial systems supportive of vaccine acceptance. [12], reproduced with permission.

Vaccine availability and acceptability are the two principal determinants of vaccination rate and a lack of either lowers the vaccination rate. To understand the causes of variable vaccination rates, it is necessary to consider availability and hesitancy in a single formula. The probability that any average individual becomes vaccinated,  $P_{AV}$ , is the product of  $A_V$  (vaccine availability) and  $H_V$  (vaccine hesitancy):

$$P_{AV} = A_V \cdot (1.0 - H_V) \text{ \{Formula ii\}}$$

where  $A_V$  and  $H_V$  lie in the range, 0.0 -1.0<sup>3</sup>

In a region (such as North America), where  $A_V$  is close to the maximum of 1.0 and  $H_V$  is low, say 0.1, then  $P_{AV}$  is 90%. In other regions (such as most of Africa), where  $A_V$  is 0.4 and  $H_V$  is 0.6,  $P_{AV}$  is 24%. Multiple factors (Tables 1 and 2) influence  $A_V$  and  $H_V$  to produce diverse vaccination rates across different countries and World regions (Figure 3).



**Figure 3:** A map of the world indicating the percentage of country populations receiving at least 1 dose of a COVID-19 vaccine [16]

Vaccination of the majority of the population, together with naturally acquired immunity, enables the goal of herd immunity to be achieved. Because ‘nobody is safe until everyone is safe’, COVID-19 vaccines must be both maximally accessible and maximally accepted. Achieving one without achieving the other is futile. Based on ‘common sense’, individuals are assumed to be motivated to take any available opportunity to be vaccinated. If vaccination resistance is high or becomes high, for any reasons, herd immunity is unlikely to be achieved. The real-world is complicated and individual decisions to get vaccinated or booster shots is influenced by a multitude of variables. PubMed and Google Scholar (June 12, 2023) listed 4,199 and 45,200 articles respectively on COVID-19 vaccination hesitancy and 5,229 and 3,550,000 articles respectively on COVID-19, vaccine availability. To make any review of the different aspects of vaccine availability and acceptability feasible, it is helpful to divide the vaccine environment into what are best described as ‘mi-

cro’ and ‘macro’ systems. The former contributes to acceptance, while the latter contributes to availability. Any review of vaccine rates must necessarily consider both levels of influence. These are each discussed in turn.

## 2. Microsocial Determinants of Vaccine Hesitancy

At the microsocial level, demographic and psychosocial variables influence vaccine decisions by individuals. The vast research literature concerning vaccine hesitancy of individual actors is summarized in Table 1. The PubMed database was searched for relevant articles, supplemented by Google Scholar. While not exhaustive, the table includes 12 of the most researched sets of variables that are thought to influence individual vaccine decisions.

The largest numbers of studies concern Education, Concerns and Age.

Category	Microsocial Factor	Indicative Studies	Number of Articles on PubMed <sup>^</sup>
MI-A	Gender	[17-29]	513
MI-B	Age	[30 - 37]	1085
MI-C	Education	[38 - 47]	1443
MI-D	Ethnicity	[47 - 57]	369
MI-E	Conspiracy beliefs	[58- 67]	130
MI-F	Social media	[67-76]	628
MI-G	Trust in government	[77-84]	296
MI-H	Trust in science	[85-93]	569
MI-I	Trust in medicine	[94-101]	417
MI-J	Trust in pharmaceutical industry	[102-105]	11
MI-K	Concerns	[106-115]	1383
MI-L	Political, religious and/or moral beliefs	[116-127]	267

<sup>^</sup>June 11, 2023

**Table 1: Microsocial factors that influence individual vaccine hesitancy**

In the traditional narrative, the above variables are viewed as the primary correlates of individual vaccine hesitancy. However, vaccine hesitancy must be considered in context of the macrosocial variables that determine vaccine availability, as described in the next section.

## 3. Macrosocial Determinants of Vaccine Availability

The ‘macrosocial’ level refers to large-scale social, cultural, economic, and social justice forces that influence vaccine availability [128]. These factors are largely determined by ideological

factors, corporations and governments. It is therefore not surprising that macrosocial determinants affect poor countries and regions more strongly than better off countries and regions. The PubMed database was searched for relevant articles supplemented by a search on Google Scholar. Table 2 summarizes a set of 13 macrosocial factors relevant to vaccine acceptance at global, regional and national levels.

By far, the largest number of studies are concerned with Globalization.

Category	Macrosocial Factor	Indicative Studies	Number of Articles on PubMed
MA-A	Globalization	[129-130]	2056
MA-B	Economy	[131-132]	516
MA-C	Colonialism	[133-134]	12
MA-D	Income distribution	[135-136]	326
MA-E	Poverty level	[137-138]	46
MA-F	Nutrition	[139 -141]	157
MA-G	Safe water management	[132-133]	6
MA-H	Corporate pricing and profit	[134-135]	4
MA-I	Political ideology	[136-137]	21
MA-J	Cold chain	[138]	32

MA-K	Vaccine wastage	[139]	2
MA-L	Social justice	[140]	24
MA-M	Generalized trust and social capital	[141-150]	4

\*June 11, 2023

**Table 2: Macrosocial factors influencing vaccine availability at global, regional and national levels**

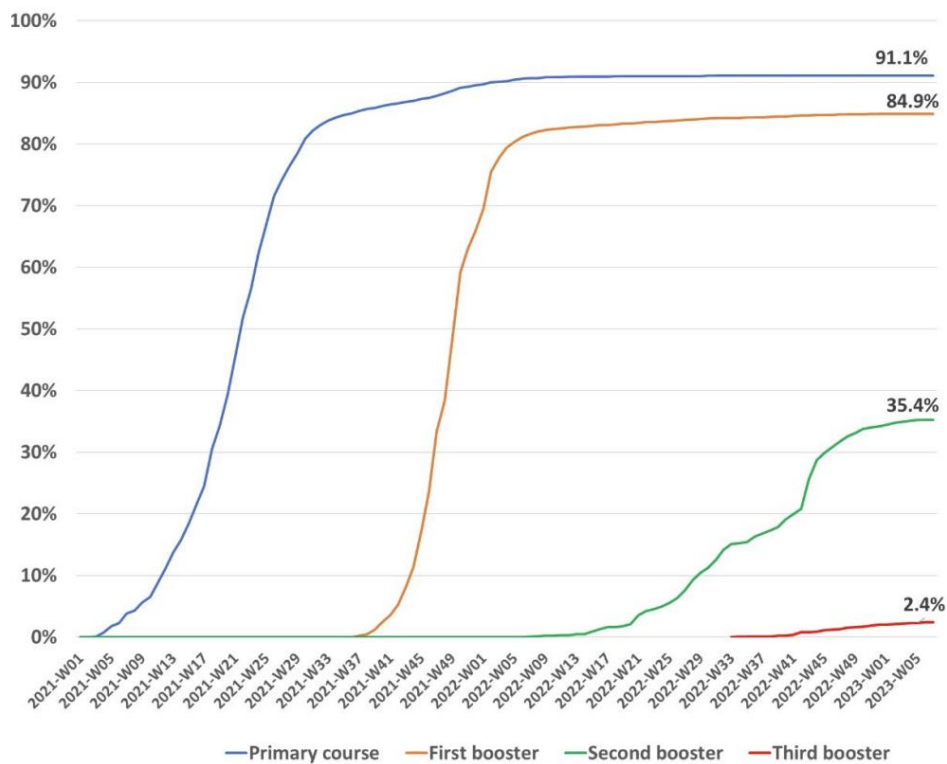
The macrosocial determinants, MA-A to MA-M, indicate the broad range of factors that influence vaccine availability. They co-determine the observed regional variations in vaccination rates, which cannot be explained by considering vaccine hesitancy/micro-social factors alone.

Next, I review studies that have examined the association between measures of trust and vaccine hesitancy.

#### 4. Generalized Mistrust and Vaccine Hesitancy

There are multiple studies showing strong empirical relation-

ships between generalized mistrust and vaccine hesitancy as described in Formula i. Considering data from the EU for people aged 60 and older, uptake levels systematically decreased from 91.1% for the first dose to 2.4% for the third booster (Figure 4) [160]. At the same time, levels of mistrust have risen strongly. Are the increases in vaccine hesitancy related to increases in generalized mistrust, as predicted by Formula i? To answer this question, we need longitudinal studies of trust and hesitancy over periods of time. There are relatively few of this type of study in the published literature, revealing a major gap.



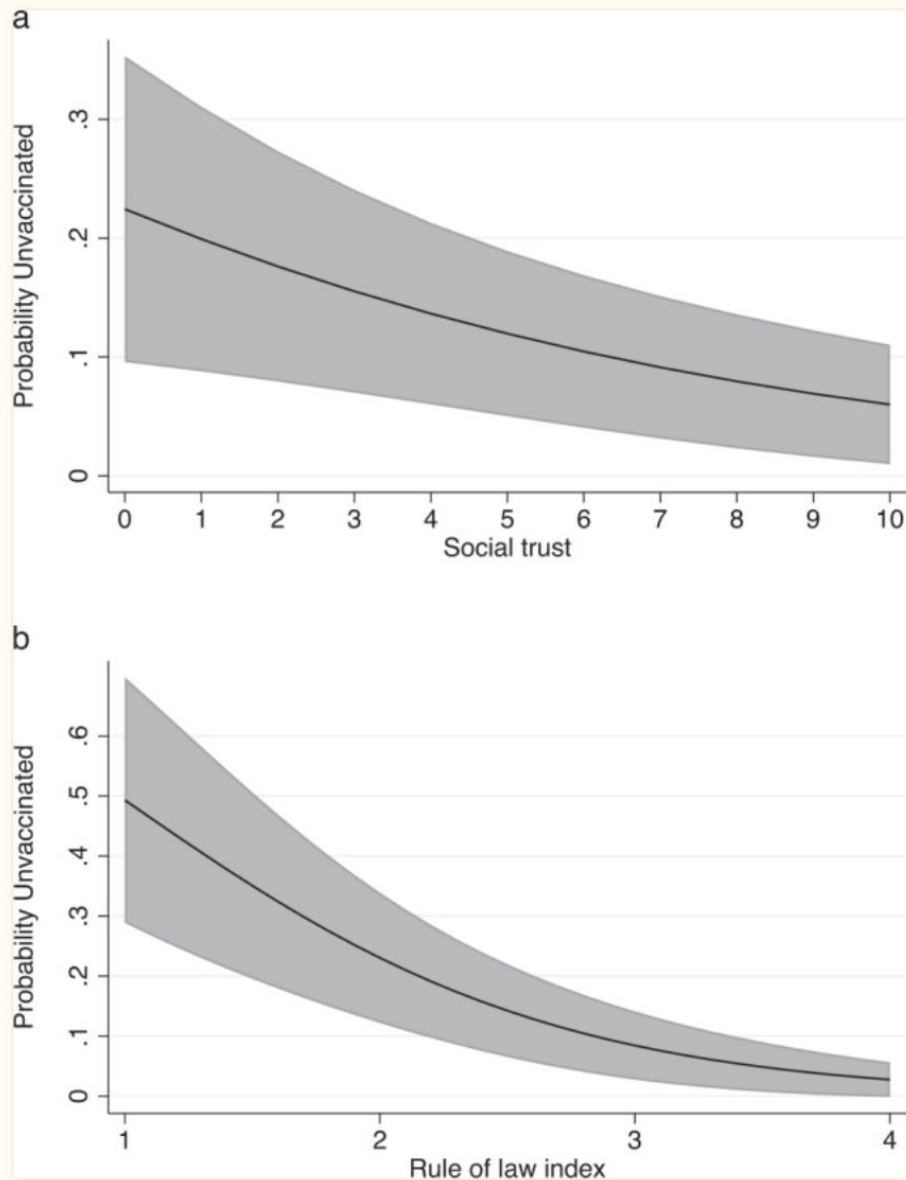
Source: Numbers of countries reporting to TESSy: 30 for uptake of the primary course, first booster and second booster, 20 for uptake of the third booster.

**Figure 4:** Vaccination uptake in people aged 60 or older in EU countries for primary course, first booster, second booster and third booster.

Italy was the epicenter of the European COVID-19 pandemic and implemented strict measures to incentivize vaccination by mandating vaccination for every citizen fifty years plus and required proof of vaccination and a booster to receive the green pass (rafforzato) required for work, restaurants, and social life more generally. A [151] survey in March 2022 while the green pass was still in force found a significant proportion of citizens

continuing to resist vaccination. They hypothesised from a social contract perspective that higher levels of social trust and stronger commitment to the rule of law will be associated with lower levels of hesitancy. Both hypotheses were confirmed (Figure 5). The authors suggest that appeals emphasizing individual benefits may be more effective than appeals emphasizing collective responsibility.





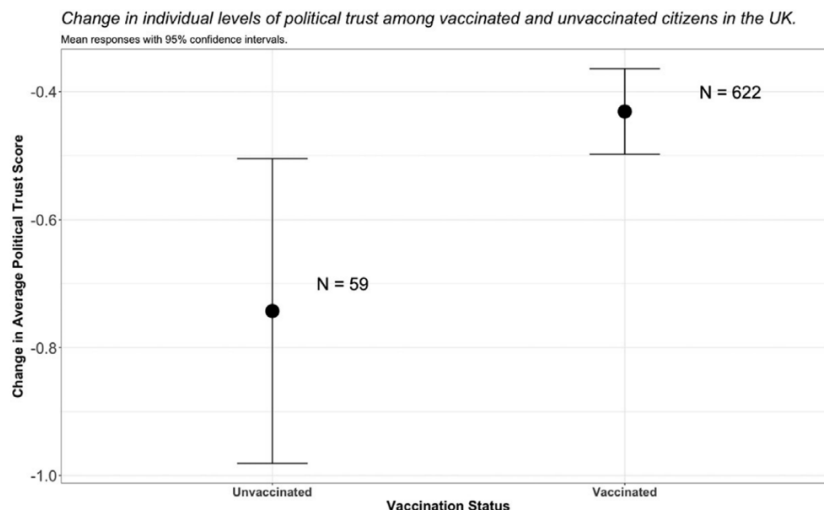
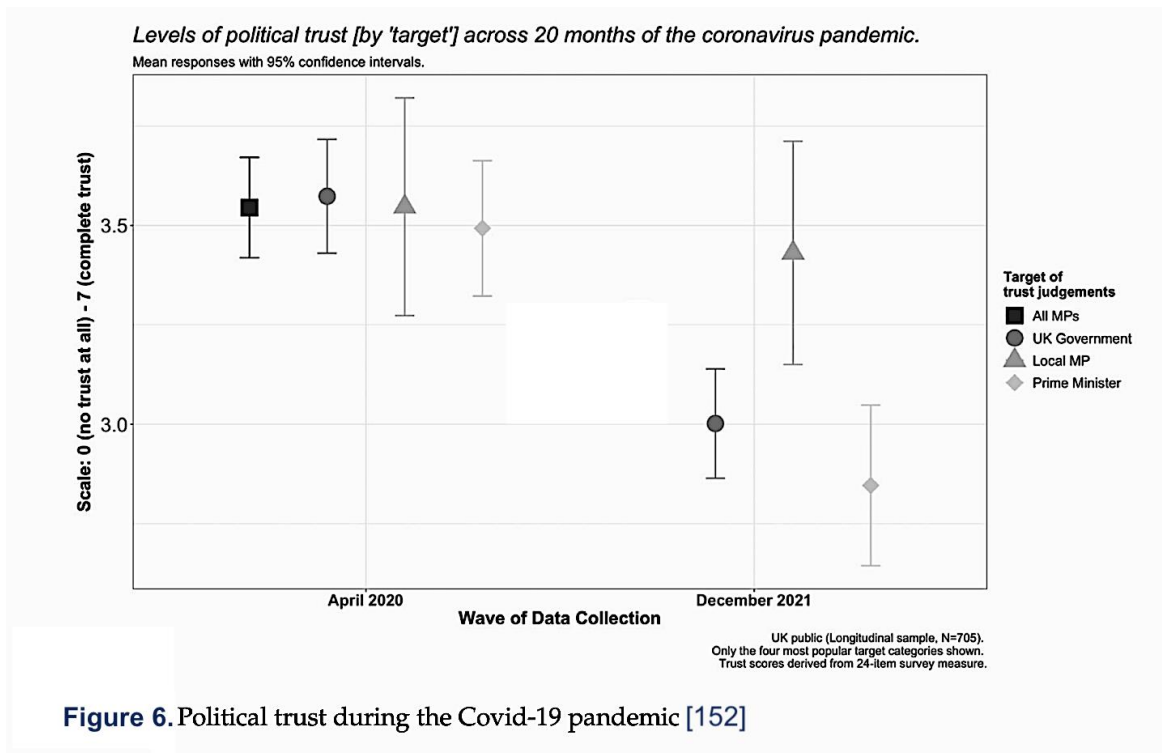
**Figure 5.**

**Social Trust, Attachments to the Rule of Law, and Vaccination Status.**

Predicted probabilities of being unvaccinated by social trust (a) and attachments to the rule of law (b), holding all other factors constant at their medians. Shaded bands indicate 95% confidence intervals. [151]

In the UK, [152] collected longitudinal data from UK citizens at the start of the pandemic and again twenty months later. Weinberg discovered that the public became less trusting and more distrusting of politicians in a fashion that was strongly linked to vaccination resistance and mask wearing (Figures 6 and 7).

One can only speculate about the likely decreases in political trust following the ex-Prime Minister's lies to parliament about Partygate but the news is unlikely to be good for vaccination programmes.



In Hong Kong, using a critical medical anthropology framework, [153] found the decision-making experience of older adults reflected an interaction of factors at different social levels: the individual (trust, confidence, and social support networks), micro-social (stigma toward health care workers), intermediate-social (government), and macrosocial (cultural stereotypes, civic and collective responsibility, and economic considerations) levels.

In the Republic of the Philippines, [154] reported that people's vaccination decisions are influenced by one's social ties' trust in the vaccines, safety of use, benefits vaccines can offer, the role of media in information dissemination, and the influence of social networks. An international scoping review [155] found that the most common determinants affecting vaccination intention include vaccine efficacy, vaccine side effects, mistrust in health-

care, religious beliefs, and trust in information sources. The strong relationships between general trust in institutions by individuals and vaccine hesitancy [e.g., 155, 156] require systems analysis to explain the underlying macro-social mechanisms for the profound levels of mistrust that have been observed. In the current review, no such studies could be identified, which is a serious gap in the literature. One complementary approach has been to use longitudinal data to track variables and associations over time.

A longitudinal study conducted in Japan [157] explored the associations of unwillingness and indecisiveness with COVID-19 vaccination and generalized trust, mental health conditions such as depression and generalized anxiety, and fear of COVID-19. Data of wave 1 (from October 27 till November 6, 2020) and

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wave 3 (from April 23 till May 6, 2021) were used. Unvaccinated participants at wave 3 were asked about their willingness to be vaccinated (willing, unwilling, or undecided). Multinomial logistic regression analyses were conducted with willingness to be vaccinated as the reference group with generalized trust, depression, generalized anxiety, and fear of COVID-19 both at wave 1 and 3, and sociodemographic and health-related variables. Of the 11,846 valid respondents, 209 (1.8%) answered that they had already been vaccinated against COVID-19, 7089 (59.8%) responded that they were willing to be vaccinated, 3498 (29.5%) responded that they were undecided, and 1053 (8.9%) responded that they were unwilling to be vaccinated. After adjusting for covariates, they found that: (1) participants with lower generalized trust at wave 1 and 3 were more likely to be undecided or unwilling at wave 3; (2) respondents with moderately severe or severe depression at wave 1 and 3 were more likely to be undecided at wave 3; (3) participants with moderate or severe levels of generalized anxiety at wave 3 but not at wave 1 were more likely to be unwilling at wave 3; and (4) respondents with high levels of fear of COVID-19 at wave 1 and 3 were less likely to be undecided and unwilling at wave 3.

In the US, Black communities have traditionally exhibited higher vaccine resistance and refusal than White communities for good reason: “vaccine mistrust was used as self-protective reactions by Black Americans in response to their historical oppression, contemporary maltreatment, and sociopolitical climate” [158]. The latter reported a macro, longitudinal approach to differential changes in vaccine hesitancy and refusal between Black and White populations. The results indicated that the proportion of the Black population in a state was associated with higher levels of vaccine hesitancy. However, the positive effect of the

Black population on COVID-19 vaccine hesitancy and refusal was found to decline rapidly over a 10-month period in 2021. The reasons for this change remain uncertain [159].

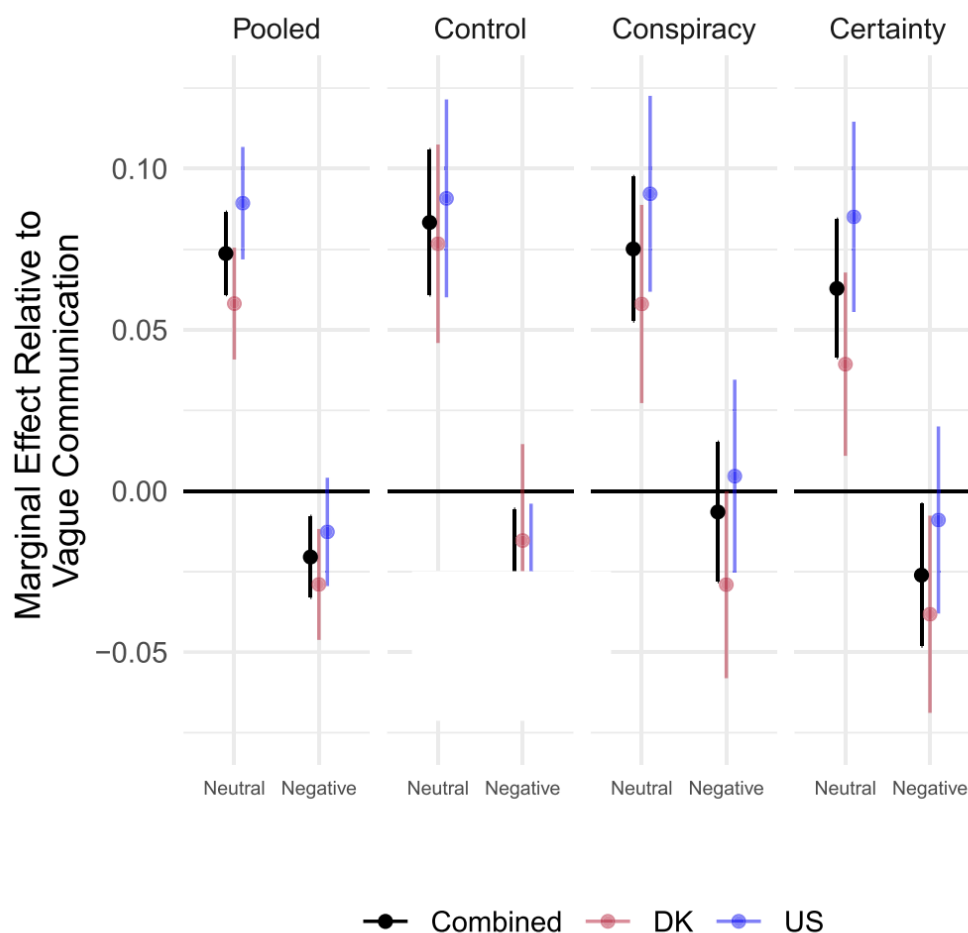
Investigated vaccine willingness in three nations, Israel, Japan and Hungary, which have differing vaccine histories. Employing an ecological-systems approach they analysed associations between health status, individual cognitions, norms, trust in government, COVID-19 myths and vaccination in three nationally representative samples (Israel, Jan. 2021, N=1011; Japan, Feb. 2021, N=997; Hungary, April 2021, N=1130). Vaccine willingness was higher in Israel (74%) than Japan (51%) or Hungary (31%) but, in all three countries, vaccine willingness was greatest amongst who would regret not being vaccinated and respondents who trusted their government.

In the final two sections, I review evidence concerning: i) lack of transparency about vaccine safety; ii) state-controlled censorship and monitoring of vaccine information.

### **5. Lack of Transparency About Vaccine Safety**

Lack of transparency about vaccine safety reduces trust and facilitates the spread of conspiracy theories. In a recent study, large, representative samples of Americans and Danes (N > 13,000) compared the effects of vague vaccine communication with transparent communication, which discloses either positive or negative vaccine features [161]. Publicly sharing transparent negative communication may harm vaccine acceptance in the shorter term but it increases trust in health authorities over the longer term. Vague, reassuring communication did not increase vaccine acceptance and led to both lower trust and higher endorsement of conspiracy theories (Figure 8).





**Figure 8.** Marginal effects of transparent negative and transparent neutral communication, respectively, relative to vague communication on vaccine support, pooled across induction conditions, and separated by induction conditions. Marginal effects are calculated using OLS regression, regressing vaccine support on communication conditions (for “pooled” panel) and the two-way interaction between the two experimental factors (for the other panels). The reference category is vague communication. Vaccine support is coded between 0 and 1. Whiskers represent 95% confidence intervals.  $N = 3,436$  (United States) and 3,427 (Denmark). [161].

In the vaccine’s rollout, building and maintaining public trust toward COVID-19 vaccines was essential and could only be fully achieved by disseminating transparent, valid, information, debunking popular myths with facts and remaining impartial toward political and financial interests. Of critical importance is vaccine safety. In the first stage of vaccine rollout the information was limited to three Phase III trials [162-164]. On the basis of these three trials, the world’s citizens were informed that the vaccines were “effective and safe”. In the following two years, a body of evidence has been gathered indicating that serious harms of the COVID-19 vaccines have been underreported in published trial reports [165]. Götzsche and Demasi’s [166, preprint only] systematic review of papers with data on serious adverse events (SAEs) associated with COVID-19 vaccine included 18 systematic reviews, randomised trials, and 34 other studies with a control group. The investigators considered most studies to be of ‘poor quality’ making definite conclusions somewhat uncertain. A systematic review of regulatory data on the pivotal randomised trials of the mRNA vaccines found sig-

nificantly more SAEs of special interest with the vaccines than with placebo [166]. The investigators considered that “excess risk was considerably larger than the benefit, measured as the risk of hospitalisation”. They also found that: “adenovirus vector vaccines increased the risk of venous thrombosis and thrombocytopenia, and the mRNA-based vaccines increased the risk of myocarditis, with a mortality of about 1-2 per 200 cases”. Worrying evidence of serious neurological harms were found: Bell’s palsy, Guillain-Barré syndrome, myasthenic disorder and stroke, likely due to an autoimmune reaction. According to the two investigators: “Severe harms, i.e. those that prevent daily activities, were hugely underreported in the randomised trials. These harms were very common in studies of booster doses after a full vaccination and in a study of vaccination of previously infected people.” [166, p.2]. The Abstract concludes:

*Serious and severe harms of the COVID-19 vaccines have been ignored or downplayed, and sometimes been deliberately excluded by the study sponsors in high impact medical journals.*

*This area needs further study. Authorities have recommended virtually everyone get vaccinated and receive booster doses. They fail to consider that the balance between benefits and harms becomes negative in low-risk groups such as children and people who have already acquired natural immunity [166, p. 2].*

Recent articles have also reported evidence of harms including multifocal necrotizing encephalitis and myocarditis after BNT162b2 mRNA vaccination against COVID-19 [167], disproportionate association of cerebral venous thrombosis with mRNA COVID-19 vaccines [168]. Cell signalling in human host cells elicited by SARS-CoV-2 spike protein has also been reported [169]. Although nothing untoward has been discovered about such signalling, the authors suggest long-term monitoring.

The rebuilding of trust in our institutions and national health authorities must be founded on clarity and consistency of recommendations and advice. An alarming level of confusion and inconsistency is appearing in the advice about COVID-19 vaccinations in different countries. It is concerning that the advice offered by health authorities in the US, UK, Denmark and Switzerland are contradictory and inconsistent. In the US, on April 6, 2023, the CDC recommended as follows:

**1 Updated COVID-19 vaccine dose for everyone aged 6 months and older [170].**

For people in England, on April 6, 2023 the UK health authorities recommended:

“Spring booster eligibility. COVID-19 is more serious in older people and in people with certain underlying health conditions.

For these reasons, people aged 75 years and over, those in care homes, and those aged 5 years and over with a weakened immune system are being offered a spring booster of COVID-19 vaccine” [171].

At the same time, the Swiss health authorities, have advised: “In principle, no COVID-19 vaccination is recommended for spring/summer 2023. Nearly everyone in Switzerland has been vaccinated and/or contracted and recovered from COVID-19. Their immune system has therefore been exposed to the coronavirus. In spring/summer 2023, the virus will likely circulate less. The current virus variants also cause rather mild illness. For autumn 2023, the vaccination recommendation will be evaluated again and adjusted accordingly” [172].

The Swiss health authorities mention the high level of natural immunity to the COVID-19 virus and the mild illness produced by the current circulating variant of the virus. These very same considerations apply equally to the US and the UK, yet both countries continued to recommend booster vaccinations; in the US, for everybody older than 6 months; in England, for people 75+ and people with underlying conditions (UK).

Meanwhile, Denmark decided not to offer COVID-19 boosters in 2023 [173]. A summary of recommendations for the age group 6 months to five years for 29 EU countries is shown in Table 3 [173].

Primary vaccination of children aged six months to five years	Countries
Yes, for all children	Bulgaria, Cyprus, Greece, Ireland, Lithuania, Malta, Poland
Yes, but only for children with risk factors	Austria*, Belgium**, Czechia***, Estonia, Finland, France, Germany****, the Netherlands, Norway, Latvia, Luxembourg^, Slovenia, Spain
No, vaccination is not offered to this age group	Denmark, Hungary, Iceland, Romania, Sweden
This is under discussion for all children	Ireland
This is under discussion for children with risk factors	Croatia, Portugal, Slovakia^^

**Table 3: Countries recommending primary vaccination of children aged six months to five years (n=29) [173].**

Sources: ISAA survey responses and validation from countries. Rapid desk review of official sources. \* Children in this age group who are not at risk for severe disease can also receive the vaccine in consideration of their personal situation and individual settings. \*\* Primary vaccination is not recommended in healthy children, but it can be done on an individual basis with parental consent. \*\*\*Healthy children can be vaccinated upon request and after individual risk assessment in consultation with the doctor. \*\*\*\*Primary vaccination of healthy children can be carried out after an individual risk assessment in consultation with the doctor. ^Healthy children can be vaccinated upon request. ^^Such as children with cardiovascular, neurological, respiratory, endocrine, metabolic, and other serious diseases.

The reasons for the stark international differences in vaccination advice remain unclear. Increasing concerns about vaccination injuries may be one reason for these different approaches.

According to the CDC website, however: “COVID-19 vaccines are safe and effective and severe reactions after vaccination are rare.” [174]. The official government statistics suggest only a small number of deaths and injuries attributable to COVID-19 vaccinations. As the findings from systematic research on vaccine safety become more robust and widely known, it can be predicted that COVID-19 vaccine hesitancy will become stronger and more resilient in many segments of society.

**6. Censorship And Monitoring of Vaccine Information**

The studies referred to above indicate that conspiracy beliefs based on the spread of vaccine misinformation may contribute to vaccine refusal/hesitancy and consequent harms. The tactic by the authorities to censor misinformation is often rejected on the grounds of free expression following John Stuart Mill’s views *On Liberty*. Saunders [175] argues that Mill’s arguments apply “only to normal, reasonably favourable circumstances. In other

cases, it may be permissible to restrict freedom, including freedom of speech. Thus, while Mill would ordinarily defend the right to express false views, such as that vaccines cause autism, he might have accepted restrictions on anti-vaccine misinformation during the present pandemic. This illustrates that even the staunchest defenders of free speech can permit temporary restrictions in exceptional circumstances” [175]. If valid, this argument provides a rationale for censorship, surveillance and control of information concerning COVID-19 vaccines, vaccine certificates, mandates and other relevant issues such as testing, masks and lockdowns. The hub of the discussion about freedom of expression and surveillance has been focused on China [176,177] yet surveillance and control of information is as much a feature of democracies as of authoritarian regimes [178]. Since 2019 the UK government has established its Counter Disinformation Unit (CDU), a kind of ‘Big Brother’ for media. In spite of its existence since 2019, a public notice about the unit was only published four years later on March 23, 2023 [179]. The notice states:

*“CDU leads the UK government’s operational response to disinformation threats online, and ensures the government takes necessary steps to identify and respond to acute misinformation (i.e. incorrect or misleading information) and disinformation (i.e. information which is deliberately created to cause harm) in areas of public interest.”* [179].

This belated notification of government censorship has created significant public interest with one newspaper revealing:

*“A secretive government Covid unit accused of seeking to suppress free speech during the pandemic was in “hourly” contact with social media firms, the official in charge of the operation has disclosed. The civil servant – who can today be named as Sarah Connolly – said that one of the Counter Disinformation Unit’s (CDU’s) main functions was “passing information over” to companies such as Facebook and Twitter to “encourage... the swift takedown” of posts”* [180].

The BBC is also identified as having a role in coordination with the CDU. It can safely be assumed that similar efforts to censor and control communications about COVID-19 vaccines and the COVID-19 pandemic more generally have been operating in a coordinated fashion throughout the World.

## 7. Conclusions and Next Steps

i) Traditional accounts of vaccination hesitancy focus on individuals within a microsocial system that makes individuals responsible for vaccine non-acceptance. It is apparent, however, that macrosocial factors and neoliberal ideology strongly affect vaccine availability, but these determinants are generally ignored.

ii) Politicization, dissemination of conspiracy beliefs, safety fears, mounting generalized distrust of science, medicine, the pharmaceutical industry and governmental authorities are all involved.

iii) Use of censorship and control has been viewed as a necessary step in the recruitment of citizens to COVID-19 vaccination programs. However, secrecy and lack of transparency about vaccine effectiveness and safety have eroded generalized trust in government, healthcare systems and communication, which in turn has undermined the implementation of COVID-19 vaccination programs.

iv) The gradual (re-)establishment of trust is critical to vaccina-

tion programs and such trust must be reinforced by responsible and truthful messaging, dialogue and cooperative efforts.

v) To overcome vaccine hesitancy, governments need to launch transparent, truthful and targeted communication efforts about the effectiveness and safety of COVID-19 vaccines.

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## Institutional Review Board Statement

Not applicable.

## Informed Consent Statement

Not applicable.

## Data Availability Statement

Not applicable.

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## Conflicts of Interest

The author declares no conflict of interest. He has received two BioNTech Pfizer vaccinations and one booster, as has his wife. He was positively diagnosed with COVID-19 illness on two occasions. However, to the best of his knowledge, he has none of the recognized symptoms of PASC.

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