

Negative Evidence: Non-pharmaceutical Interventions during COVID-19 Pandemic. A Tale of Authoritarian Overreach

Jane M. Orient, M.D.

"There is no crueler tyranny than that which is perpetuated under the shield of law and in the name of justice."
Baron de Montesquieu

Introduction

Throughout history, religious scriptures, secular chronicles, and oral traditions from various cultures recount the unfathomable horrors of the periodic pandemics known as plagues.¹⁻⁴ However, it is not a common knowledge that the apocalyptic chaos that accompanied those cataclysms provided various evildoers with opportunities for exploitation. To paraphrase Baron de Montesquieu, outbreaks of deadly contagions offered an ideal pretext for immoral politicians and power-hungry administrators to destroy their political competitors and to implement most tyrannical measures—all under the guise of “protecting the public” and in the name of “saving lives.” While in the past those types of governmental abuses did occur during pandemics—their impact did not exceed the damage caused by the disease itself. Times have obviously changed.

At the beginning of the 21st century, the fear of pandemics was fading. The false sense of security was rooted in the public's confidence in modern medicine, coupled with the fact that a century had elapsed since the last deadly pandemic (the 1918 Great Influenza).⁵ This illusion of safety was shattered by the emergence of the novel coronavirus SARS-CoV-2. That caused the global outbreak of the disease designated as COVID-19.⁶ This pandemic differed from historical plagues because the tyrannical mandates implemented to supposedly safeguard the public caused more harm than the novel virus.

The initial measures deployed to protect the public from the novel coronavirus SARS-CoV-2 were called non-pharmaceutical interventions (NPIs), a recently coined term describing actions aimed to slow down the spread of contagion without using drugs or vaccines, which are not yet available.⁷⁻¹¹ Masks, social distancing, and lockdowns are examples of NPIs. The significant differences in value systems, economic circumstances, and administrative power between the left and right wings resulted in creation of the two opposing partisan narratives about the benefits and risks of NPIs (Figures 1 and 2).

Unfortunately, many misgivings about the use of NPIs contained in the dark right-wing narrative have proven to be correct. Therefore, this editorial aims to highlight the duplicity, hypocrisy, lack of justification, and harm of the compulsory application of certain NPIs during the COVID-19 Global Health Emergency, plus the lack of accountability among public officials who were in charge of implementing those detrimental policies. As in previous guest editorials in this journal, from the winter 2022 issue up to this one, the concept of negative evidence—instances in which expected data, conclusions, or facts are conspicuously missing¹²—will be used to examine the vital non-scientific aspects of the purportedly “purely scientific” controversy.

Paying attention to non-scientific aspects of the controversy over NPI implementation is essential. This dispute is not an abstract academic collegial debate occurring in the political vacuum that can be won by simply presenting the “impeccable scientific evidence.” Negative evidence implies that essential details might have been intentionally concealed to cover up misconduct.



Figure 1. Allegorical depictions of the left-wing narrative describing the essential NPIs (masking, social distancing, and lockdowns)

Author-edited image generated with the AI assistance of Bing Image Creator

Figure 1 features the frequently used pandemic slogans: “We are all in this together,” “Follow the Science,” “#MaskUp,” “Stay home. Save lives.”¹³⁻¹⁷



Figure 2. Allegorical depiction of the right-wing narrative describing the essential NPIs
 Author-edited image generated with the AI assistance of Bing Image Creator

The right-wing narrative features terms like “plandemic” and “being muzzled.”

Overview of the Concept of Non-pharmaceutical Interventions

The recently formalized modern paradigm⁷ term “non-pharmaceutical interventions” (NPIs) or “public health and social measures” includes following categories of interventions:

- Personal NPIs: Hand hygiene, mask-wearing, respiratory etiquette;
- Environmental NPIs: Disinfection, ventilation, surface cleaning; and
- Social distancing NPIs: School closures, workplace closures, gathering restrictions, travel restrictions, lockdowns.

The general principles underlying NPIs are not new and have been a part of public health strategies for centuries. However, the specific term and modern concept began gaining prominence only in the early 2000s. The rapid evolution of the NPI paradigm was driven by several “pandemic readiness” initiatives led by national and global public health agencies. Various “pandemic preparedness

programs” started years before the COVID-19 emergency and were prompted by the concerns of virologists and public health researchers about the emergence of new infectious diseases.¹⁸⁻²⁰ The Centers for Disease Control and Prevention (CDC) and the World Health Organization (WHO) issued their first comprehensive guidelines for pandemic preparedness years before the COVID-19 Global Health Emergency^{8,10,21} These guidelines popularized the term “Non-Pharmaceutical Interventions” and its concept among scientists and administrators dealing with public health matters.

Yet, before the COVID-19 pandemic, laymen and even physicians outside of specialties associated with public health were unfamiliar with both the NPI moniker and the associated updated methodology. Consequently, numerous members of the public and the medical community have been puzzled by the government’s hurried, forceful, and most of all prolonged implementation of NPI policies during the COVID-19 pandemic. The public health agencies and policymakers did little to educate the public about the rationale for their decisions, using the excuse of the global emergency to push strict enforcement of their NPI mandates, demanding blind compliance.²²

In addition to the puzzling lack of educational efforts by the agencies responsible for responding to future pandemics, there is a notable scarcity of scientific studies examining the proper use of NPIs as “a set of multilayered interconnected interventions” before the COVID-19 pandemic. Figure 3 displays the number



NLM Search Query: “Use of NPIs during Pandemic”	
Year(s)	Count
2008	1
2009-16	0
2017	1
2018-19	0
2020	26
2021	28
2022	14
2023	3
2024	1

Figure 3. Results of NLM Timeline Tool run on Oct 17, 2024. Published in accordance with the NLM public copyrights policy.

of publications found by the National Library of Medicine (NLM) Timeline Tool similar to “Review Article about Use of NPIs during Pandemic, which was assigned PMID: 37892603.” There are many papers dealing with individual components of NPIs. However, despite all the enthusiastic rhetoric about the importance of NPIs, virtually no comprehensive NPI research was performed until the beginning of the COVID-19 pandemic in 2020. Even during the pandemic, the number of such studies was underwhelming. After two modest spikes in 2020 and 2021, the NPI research activity started to decline in 2022 and has returned to the near zero baseline already in 2023, the year the COVID-19 pandemic ended.

Brief History of NPI Implementation during COVID-19 in the U.S.

The first U.S. case of COVID-19 was identified on Jan 19, 2020. However, the national response to the emergence of this novel infection disease had already started in early January. It was centrally led by the CDC and the White House, but was managed locally by state officials. On Feb 9, 2020, governors received a briefing from the White House Coronavirus Task Force outlining the actions to be taken.²³ Starting in mid-March of 2020, state governors and city or county officials implemented a range of NPIs, focusing on masks, physical distancing, and lockdowns.²⁴ Very strict lockdown mandates included “stay-at-home orders,” closures of schools and businesses, and restrictions on the size of gatherings resulting in banning worship in churches, sport events, and family ceremonies. On Mar 19, 2020, President Trump convened with state governors via teleconference to coordinate state responses, while FEMA became involved in the efforts.²⁵

By Apr 7, 2020, full lockdowns had been ordered in 42 states.²⁶ Those mandates impacted the economy, leading to a sharp increase in unemployment as stores and workplaces closed down.²⁷ By Apr 15, protests and demonstrations had erupted in several states, calling for the re-opening of all areas for business and personal activities. By May 1, 2020, more than half of the states had experienced demonstrations. In response, only a handful of Republican governors started to slowly ease the lockdown restrictions.²⁸ However, most NPI mandates continued until the end of the COVID-19 pandemic.

As in past centuries, the response to the COVID-19 pandemic began with reliance on NPIs, due to the lack effective pharmaceutical measures. However, unlike in the past those responses should have been more logical and measured due to advances in virology and improved communication methods. Instead of this expected rational approach, arbitrary NPI mandates were imposed en masse. This overreach caused sharp partisan contention between the right and left-wing contingents about the rationale for those oppressive measures. The outrage of the right-wing-associated public led to accusations of tyrannical abuse of public health policies by left-wing administrators. The validity of those claims will be appraised below.

Contexts of NPI Implementation

In the previous editorials, complex and controversial aspects of the COVID-19 pandemic, such as the risk/benefit ratio of COVID-19 vaccinations, early treatment of COVID-19, and the origin of SARS-CoV-2 virus, have been addressed. Counterintuitively, the objective appraisal of the deployment of NPIs during the COVID-19 Global Health Emergency is even more challenging. Thorough analysis requires an understanding of the multifaceted contexts in which they were applied and familiarity with their own intrinsic specificities that set them apart from

typical medical interventions.

Over time, the American public has split into two hostile political factions: the Right and the Left. The implementation of NPIs took place in the context of severe political polarization, pervasive politicization of science, and power asymmetry favoring the Left. The detailed characteristics of those phenomena were discussed in previous editorials and are subject of several monographs.²⁹⁻³⁴ Salient differences included: contradictory value systems, divergent economic circumstances, unequal ability to exert essential powers (power asymmetry), different news sources, and conflicting cultures.

Contradictory Value Systems

Irreconcilable difference between the Right and Left value systems is the fundamental factor underlying not only the dispute over NPIs but also all other partisan conflicts, from abortion to transgenderism.^{35,36} A value system is a set of hierarchical standards that guide behavior and decision-making processes by determining what is important, ethical, and beneficial.^{37,38} The coercive deployment of NPIs during pandemic was the “perfect storm” that revealed the depths of the discord between the Right and Left value system.^{29,34}

The right-wing value system emphasizes individual liberty and downplays the role of government. Therefore, the Right instinctively opposed governmental masks and lockdowns. Those NPIs represented governmental overreach that violated personal freedom, in the face of the mounting tacit evidence that COVID-19 was not as severe as initially described.³⁹⁻⁴²

The left-wing hierarchy of values is the perfect antithesis of the right-wing system. It favors the “safety” of an abstract “community” over individual liberties and emphasizes the role of the government. The meaning of “individual” is self-explanatory.⁴³ In contrast, the concept of “community” is abstract, convoluted, and contrived.⁴⁴ The worst dictators in history were able to hide behind the vague idea of “community” in conjunction with the appeal to “safety” ensured by a strong government.⁴⁵⁻⁴⁸ Due to the nature of their value system, leftists do not see that the phrase “safety of community enforced by government” is a clever code for “benefits of tyrannical leaders.” Therefore, they have enthusiastically embraced all the government-mandated NPIs.

The “echo chamber” phenomenon discussed below blinded both political sides to their fundamental value-system differences.^{49,50} This unawareness hindered efforts to stop the tyrannical mandates while it gave leftists a perception of moral superiority. Consequently, in the setting of power asymmetry the stronger Left was able to force the weaker Right to accept solutions based on the Left’s value system (Figure 4).

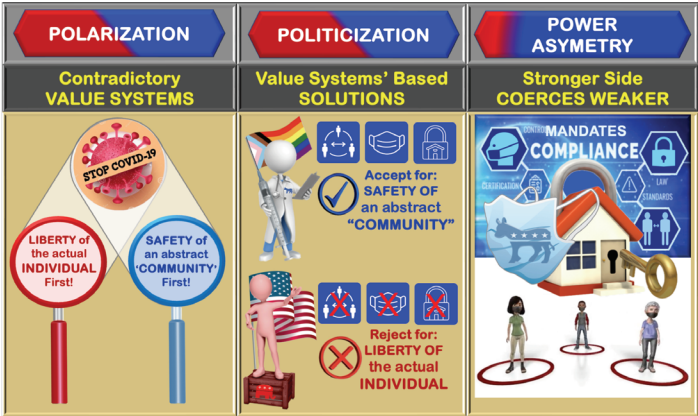


Figure 4. Illustration of the fundamental role of the irreconcilable difference between the Right and Left value systems in the context of the power asymmetry

Divergent Economic Circumstances

The unequal economic impact of NPIs is another pivotal element that shaped the partisan attitudes towards NPI deployment. Members of the right and left wings differ not only in ideology but also in the way they earn money. Due to those differences in employment, the negative economic consequences of the drastic NPI mandates were distributed unevenly between the two political sides. Members of the right-wing camp typically experienced very severe economic losses. Their small businesses were closed by lockdowns or damaged during political riots, which were hypocritically excluded from the NPI restrictions by the official “experts.” Small landlords were prevented from collecting the rent during lockdowns. In contrast, the vast majority of the left-aligned individuals and businesses were either spared financial ruin or earned immense profits as a result of COVID-19-related NPIs. This phenomenon has been described as the pandemic-related wealth transfer.⁵¹

Partisan Power Asymmetry

Regrettably, over many years right-wing politicians allowed left-wing policymakers to gain unrestrained control over all power centers that are in charge of the functioning of the state and therefore the life of its citizens.^{32,52} Those include governmental agencies like CDC and FDA that wield immense regulatory powers, academia (traditional source of expertise), and legacy media (traditional source of information).³³ Amazingly, most right-wing politicians are in denial about it.⁵³ Some authors even claim that power asymmetry is not real, pointing to the existence of “Republican megadonors and the right-wing media ecosystem,” etc.⁵⁴ Such claims are insincere, since as the story of coercive NPI mandates illustrates, right-wing-associated institutions do not possess even a fraction of the coercive power that the Left has.

Indeed, nothing demonstrated the enormous power advantage of the Left like the capricious, scientifically unjustified, and harmful prolonged deployment of NPIs during COVID-19 pandemic. Those despotic measures were forced by left-wing actors onto society despite the following significant resistance from the Right:

- Vigorous criticism by scientific dissidents who presented compelling arguments against NPI overreach, from the very first criticism by two brave emergency physicians to numerous individual dissenting clinicians, scientists, and organizations,⁵⁵⁻⁶¹ whose arguments were fully vindicated later on;⁶²⁻⁶³
- Strong opposition by politicians including Ron DeSantis, Kristi Noem, Greg Abbott, Rand Paul, and others;⁶⁴⁻⁶⁹
- Anger and frustration with NPIs expressed in the right-wing alternative press and on right-wing social media;⁷⁰⁻⁷⁴ and
- Large public protests against NPIs.⁷⁵⁻⁸⁰

Yet despite all this resistance, the Left was able to impose its will regarding NPIs. Dissident right-wing scientists with their solid evidence were dismissed as “dilettantes” who cannot “interpret the data correctly.”⁸¹ Republican politicians were ignored.⁸² Right-wing media were blamed for spreading “dangerous misinformation.”^{83,84} The protesting right-wing public was accused of “antiscientific aggression” and delusional conspiratorial thinking.^{84,85}

Unopposed in their power, left-wing decision-makers ignored evidence contradicting their biased justification for the use of NPIs because they saw that evidence through the prisms of their value system, their economic circumstances, and their other agendas.⁸⁶ They were not embarrassed by the complaints in the right-wing media since they were insulated by the left-dominated mainstream media. They were also not intimidated by the public protests since they were granted the protection

of state authority and sovereign immunity. Consequently, the stronger Left coerced the weaker Right.

Partisan Information Sources

The recent paradigm shift in the public’s consumption of general news and scientific information has significantly influenced the NPI controversy. This technology-driven change enabled unprecedented manipulation of both right and left-wing audiences, leading to further polarization and the creation of information trends such as QAnon, BlueAnon, etc.^{87,88} Along with scientism (see below), the partisan echo chambers have shaped the subjective perceptions of NPIs by both right and left-wing audiences. However, they are typically examined by left-wing scholars as uniquely affecting only the right-wing audience. This bias is caused by the power asymmetry resulting in the shortage of right-wing academic researchers.⁸⁹

Left-wing scholars used the concepts of “echo chambers” and “filter bubbles” to justify their claims that the right-wing public was more susceptible to “misinformation” about reasons for implementation of NPIs during COVID-19 pandemic than the left-wing public.^{50,61} The reality is more complex than this claim.

The term “echo chamber” describes a confined virtual environment where circulation of information is limited to the ideas and beliefs that are espoused by the people who “inhabit” this virtual space.^{50,90,91} When asked, people typically deny getting their news from an echo chamber. Yet, they typically do it without knowing. This happens because search algorithms, known as “filter bubbles,” show them only information they agree with, filtering out different viewpoints.^{90,92} In today’s digital media landscape, both sides of political spectrum are unwittingly trapped within their insulated partisan echo chambers. These digital confinements encompass not only passive news sources but also interactive social media sites where people can communicate with each other. Interestingly, this virtual captivity is very comfortable for the “captives” due to the phenomenon of social homophily. That term describes a strong preference of individuals to interact with those who share the same opinions, while avoiding those who do not.⁹³ Filter bubbles create the illusion that even the most blatant falsehoods must be true since they are repeated by supposedly “independent” media outlets and by many fellow users of social media. Unbeknownst to news consumers, their existing beliefs are reinforced and their exposure to diverse views is limited. This heightens partisan hostility and allows for significant manipulation of public opinion, affecting both sides of the aisle.^{50,90}

In contrast to biased academic claims, the left-wing echo chambers played a significantly negative role during the oppressive implementations of NPIs. They forced the scientism of NPIs on the captive left-wing audience that included members of general public and administrative leaders. Consequently, they were reinforcing social conformity with this false narrative while amplifying the enforcement of harmful and unjustified NPIs by influencing decision-makers. By doing so they have fanned the flames of cultural war, converting mask-wearing, social distancing, and lockdowns into symbols of political affiliation rather than public health measures.⁹⁴

The above does not mean that right-wing echo chambers are flawless sources of true information. Insufficient attention to the internal quality assurance and vetting processes within the right-wing news ecosystem resulted in occasional viral dissemination of flagrantly false but sensational and hence popular claims.^{95,96} It is impossible to discern whether those viral rumors are promoted by naive or misguided right wingers or planted by political enemies. Moreover, many right-wing influencers have succumbed to the audience capture trap, catering to the

audience's desire for confirmation of their cognitive biases.^{95,97,98}

However, despite those undeniable flaws the right-wing news services and social media have played immensely important role by questioning the one-sided left-wing NPI narratives. To deflect this valid criticism, the whole army of the left-wing funded "fact-checkers" has been mobilized. Their objective is not to check facts but to divert public attention from valid right-wing concerns about NPIs to sensational, easily debunked false claims. Such tactic is known in disinformation theory as "poisoning the well."⁹⁹ In the process, the "fact-checkers" have cleverly subverted the meaning of the word "misinformation" to include not only blatant falsehoods but also genuinely valid information that is inconvenient for the narratives of left-wing experts and decision-makers.¹⁰⁰ Since the term misinformation has been so widely misused by left-wing pundits, some right-wing authors are clearly tempted to reject it altogether.^{100,101} This is understandable given the circumstances. However, it is not a wise tactic: one cannot eliminate a word describing lies simply because his opponent is misusing it. Doing so will bring us closer to living in the "post-truth" world.

Understanding the concept of the "post-truth world" is also important for analysis of decisions regarding implementation of NPIs. The post-truth world phenomenon represents a societal transformation in which the reporting of objective facts and logical analysis influences public opinion much less than emotional appeals, personal beliefs, and manipulative partisan narratives.^{102,103} This term gained prominence around the 2016 U.S. presidential election and the Brexit referendum, when it was used by left-wing scholars to describe what in their opinion was the result of the right-wing populist "war on truth" exemplified by Donald Trump and Nigel Farage.¹⁰⁴ Ironically, such narrow and partisan interpretation was not truthful at all.

Historically, societies have often replaced the pursuit of objective truth with emotion-driven delusions as evidenced by work of philosophers such as Nietzsche and Arendt.^{105,106} Moreover, the same left-wing scholars who were accusing right-wing writers of "lying"—in 2016—were prevaricating even more and were in denial about their own strong cognitive biases, motivated reasoning (i.e. interpreting information to support pre-existing beliefs) and reliance on scientism (see below). Fortunately, they were exposed by critical analysts, who noted that leftists also live in the post-truth world while accusing sensible people of being conspiracy-theory zealots.^{107,108} Philosopher Hannah Arendt cautioned about the great risk to life and freedom by those who live in a post-truth world.¹⁰⁹

Scientism in News and Decision-making

Understanding the concept of scientism is crucial for defeating leftist tyranny. Strategy based on scientism is present in all contemporary Left-Right conflicts, not only in the NPI dispute. The Left has adeptly harnessed this dishonest tactic and keeps using it successfully. Many misguided right wingers try to employ it too, but typically it does not work for them and can lead to their downfall.

Scientism refers to inappropriate and excessive reliance on science to justify political positions or partisan narratives. It's not about valuing scientific evidence, but rather about misusing it to shut down debate, claim unquestioned authority, and advance a sinister agenda. True science embraces uncertainty, encourages debate, and constantly revises its understanding based on new evidence. In contrast, scientism only uses the language and authority of science to promote dogmas and stifle critical thinking.

In the past scientism was already heavily used by the Left to push its favorite agendas such as climate change, transgender

ideology, and critical race theory. During the COVID-19 pandemic scientism became the central coercive strategy used to thwart resistance to oppressive mandates. Here are ways in which the Left's scientism manifested itself:

The slogan "Follow the Science" became the mantra associated with pushing masks, social distancing, and lockdowns. Left-wing experts, decision-makers, and commentators kept using that phrase in place of presenting actual evidence to justify their positions, implying that their views are objectively correct and beyond reproach.¹¹⁰⁻¹¹⁴ This dishonest approach marginalized dissenting opinions, especially about lockdowns, even though those opinions were grounded in legitimate scientific evidence and economical and ethical considerations. Only after the damage was done did many mainstream scientists and journalists start to admit that while sensible science-based policies are typically beneficial, blindly adhering to every scientific study without considering the broader social and economic context has led to unintended bad consequences of NPI mandates.¹¹⁵⁻¹²²

While science operates on probabilities and evolving understanding, the scientism used to justify NPI mandates presented obviously biased experts' opinions and flawed studies as absolute, objective truths, ignoring uncertainties, nuances, the clear political bias of the experts, and the potential for future revisions.^{116-118,122}

Avid promoters of masking, social distancing, and lockdowns invoked "science" to push their own agenda and to silence any dissenting opinions. At first, they used only the mere "appeal to scientific expertise"¹²³ as sufficient "justification" for their oppressive orders. This tactic was used to portray any questioning of aggressive NPI implementation as irrational "anti-science aggression," even if the questioners had valid concerns.¹²⁴⁻¹²⁶ However, in the view of increasing resistance to NPI mandates those vague invocations of "science" have been backed up by the presentation of virtually made-to-order papers used as a "proof that science has been settled."¹²⁷⁻¹³¹ The conclusions of those papers have been questioned by NPI skeptics, who have collected an impressive set of evidence.⁶² In response to this, NPIs promoters have only doubled down on their original claims.¹³²

Crucial Non-Scientific Perspectives

The biggest act of malice perpetrated by NPI promoters was a willful and wanton disregard of the enormous economical, psychological, and social costs of those tyrannical measures. Even if their NPI policies had been technically sound (and they were not), the enormously important economic, social, and psychological implications should have been considered, as has now been demonstrated beyond any reasonable doubt.⁶² Unfortunately, as discussed above, decision-makers with coercive powers will not yield to evidence, which they see through the distorting prism of their values system.

Partisan Cultural Clash: Virtue Signaling and Hypocrisy

Different political ideologies reflect distinctive beliefs going beyond value systems. The antagonistic right and left-wing ideologies created two incompatible cultures. Right-wing culture emphasizes tradition, religion, individualism, personal freedom, and free-market principles. Left-wing culture promotes novelty, social justice, prioritizing needs of community over individuals, and compliance with rules purported to protect and uplift oppressed communities.

The reactions to the implementation of NPIs have been influenced by these cultural perspectives.¹³³ Due to skepticism about the veracity of official experts, the Right instinctively wanted to reject the facial mask mandates. However, this was not possible in most locations due to the power asymmetry. The

Left embraced wearing the masks since in addition to alleged protection their use provided them with the opportunity for virtue signaling.¹³⁴ Ultimately, right wingers became annoyed not only with the overbearing mask mandates but also with the left-wing performative activism related to masking. In turn, the Left became resentful of the Right's lack of compliance with "benevolent," "science-based" rules. Mask-wearing became a symbol of political identity. In many cases, wearing or not wearing a mask signaled one's political affiliation and stance on government intervention.^{94,134}

Hypocrisy in self-enforcing NPIs was another infuriating element of the mandates. The Leftist elites enjoyed secret visits to indoor hairstylists or dining without masks with friends at restaurants, while right-wing "peasants" were banned from those activities by the mandated NPIs.^{135,136} While attending church in small groups was deemed to be too "risky" by the authorities, the same administrators did not simply allow but applauded the participation in the "mostly peaceful" massive riots by left-wing participants.^{137,138}

Unique Intrinsic Characteristics of NPIs

Besides the external contextual challenges, NPIs have inherent traits that make them difficult to analyze. Unlike standard medical interventions, NPIs hadn't been widely used for more than a century, leaving the current generation with no practical experience. Since NPIs are used solely for pandemics, which are exclusively medical in nature, evaluation of their benefits and risks demands interdisciplinary expertise extending beyond medicine.

The Theory behind the Current Model of General NPIs

A contemporary universal framework for deploying NPIs during pandemics caused by novel emerging pathogens was developed prior to COVID-19.^{7-11,139-141} It was prompted by epidemiologists' concerns about the potential for such occurrences in the near future.¹⁸⁻²⁰ Its development was associated with the introduction of the concept of Disease X, the term used by WHO to describe a hypothetical, unknown pathogen that could cause a future epidemic or pandemic.^{139,142-143} WHO included Disease X on its list of priority pathogens in 2018 to emphasize the necessity to prepare for unknown threats amplified by unpredictable factors alongside known high-risk pathogens like SARS, MERS, and Ebola. That idea also underscored the importance of developing flexible and rapid response strategies, including the judicious use of NPIs.

According to this hypothetical paradigm, NPIs should be grounded in the principles of infectious disease transmission. The basic reproduction number (R_0) represents the average number of secondary infections caused by a single infected individual in a susceptible population.¹⁴⁵ The aim of NPIs was to reduce R_0 by (1) reducing contact rates via social distancing, school closures, travel restrictions, and lockdowns that limit opportunities for the pathogen to spread; (2) interrupting transmission pathways by mask-wearing, hand hygiene, and respiratory etiquette to prevent the dissemination of infectious particles; and (3) protecting susceptible individuals by shielding vulnerable populations, such as the elderly or immunocompromised to reduce their risk of exposure.

This plan emphasized that deployment of NPIs was to be strictly tailored to the specific characteristics of the pathogen and the affected population, guided by epidemiological modeling, surveillance data, and risk assessments to develop adaptive strategies that use gradual escalation or de-escalation of NPIs based on the evolving situation.

The Reality of NPI Use during the COVID-19 Pandemic

Astonishingly, when the theoretical "Disease X" materialized as COVID-19 in 2020, numerous elements of this elegant theory were immediately abandoned. Instead of following the sensible blueprint developed for Disease X, dubiously effective NPIs have been arbitrarily forced upon the population without any tailoring, careful guiding, or adaptive gradual escalation-de-escalation.^{146,147} In addition, the utilization of certain other NPIs that were clearly appropriate was not promoted or was rejected. Instead, officialdom capriciously imposed useless and harmful NPIs using scientism-driven tactics to provide contrived "justification" for their deployment. The tyrannical imposition of the following NPIs was especially egregious:

Facial Masks in Adults

Pandemic mask mandates were implemented at the state, county, and municipal levels, with varying degrees of stringency and enforcement, and became a contentious issue very early on as discussed above. Interestingly, while economic factors do not play as big a role in response to the mask mandates as they do in case of lockdowns, the irreconcilable polarization of opinions between Left and Right became simply astounding. The Left asserted that the evidence supporting the use of facial masks in adults to prevent COVID-19 transmission is robust and multifaceted.¹⁴⁸ The Right asserted that the theory behind mask mandates appears to be flimsy.¹⁴⁹

These are the contrasting narratives as of November 2024:

Left-wing experts assert that masks are effective in reducing the transmission of respiratory diseases, including SARS-CoV-2, when worn correctly and consistently. According to them, this is supported by a comprehensive review of more than 100 studies, which found strong evidence for the airborne transmission of SARS-CoV-2 and the effectiveness of masks in reducing transmission. For instance, observational studies have demonstrated that mask use is associated with reduced transmission of SARS-CoV-2 in community settings, and mask mandates have been shown to provide substantial protection.¹⁴⁸ Respirators, such as N95 masks, are significantly more effective than medical or cloth masks, particularly in high-risk settings.¹⁵⁰ However, even cloth masks can provide a degree of source control, reducing the spread of respiratory particles from infected individuals.¹⁵¹ The effectiveness of masks is enhanced when combined with other preventive measures like physical distancing and ventilation.¹⁵² Left-wing-associated academic scholars posit also that "common right-wing myths" about mask-wearing can be debunked with evidence. For instance, the notion that masks provide a false sense of security is contradicted by findings that mask-wearing is positively correlated with other preventive behaviors.¹⁵³ Additionally, concerns that masks increase hand-face contact are not supported by evidence, as studies have shown no significant increase in hand-face contact among mask wearers.¹⁵⁴ Lastly, the idea that masks are harmful to the general population is not substantiated; while some individuals may experience discomfort, there is no evidence of significant physiological harm from mask use.¹⁴⁷

Right-wing commentators provided many objective reasons to be skeptical about the official narrative describing purported benefits and safety of masks.⁷² Moreover, some recommendations contradict common sense. For example, how do masks prevent infection in restaurants while people are waiting with them on, but eating when they are taken off? Initially, wearing standard surgical masks was primarily recommended for medical workers and symptomatic individuals, mainly due to initial masks shortage. However, the public was not provided with the real

reason for those initial advisories and learned about them much later.¹⁵⁵ The ludicrous recommendation to use fabric masks was not even theory-driven, as the SARS-CoV-2 virus is simply too small to be stopped by any fabric.¹⁵⁶ Yet, officialdom was able to produce several clearly made-to-order studies that purported “some” effectiveness of fabric masks.^{157,158}

With time the CDC updated its mask guidance to acknowledge the superior protection offered by N95 or KN95 respirators.¹⁵⁹ There are numerous problems with recommending use of those types of masks to the general public. First, it has been long recognized that only properly fitted respirators provide the highest level of protection, and in the past the use of those masks has been limited to 30 minutes.¹⁶⁰ However, “miraculously” the recommendations have been relaxed recently with no evidence given. For instance, now N-95 respirators can be used up to 8 hours and are very “safe.”¹⁶¹

Tacit observation indicates that many people experience a variety of unpleasant symptoms even with light medical and fabric masks. Concerns have been raised that wearing a medical mask can cause CO₂ intoxication and/or oxygen deficiency. A paper published in 2016 stated that: “(N-95) respirators have been found to interfere with many physiological and psychological aspects of task performance at levels from resting to maximum exertion.”¹⁶² During use of N-95 respirator, initial hypoventilation with hypercapnia is followed by compensatory hyperventilation with increased oxygenation and decreased CO₂.¹⁶² Because of the power asymmetry, the right wing cannot produce the type of studies that Left-dominated academia was able to supply after COVID-19 pandemic. Studies that existed prior to that time confirmed the concerns of right-wing activists.¹⁶²

The issue of the need for eye protection is complex. It is discussed by Chu et al.¹²⁷

Facial Masks in Children

Widespread mandates by mostly left-wing public health officials for the use of masks in children to prevent COVID-19 transmission can be described as cruel and senseless. This approach contradicted common sense and real science for numerous reasons. Children have been more resistant to COVID-19 than adults. Masks certainly cause discomfort and stress, especially in children. They interfere with communication and block facial expressions. Concerns about CO₂ retention, hypoxia, and acid-base balance, proven in case of N-95 masks in adults, are plausible although not demonstrated so far (perhaps due to academic self-censorship). While there was a clear consensus among mainstream medical experts about the use of masks in adults, the use in children has been a topic of considerable debate.¹⁴⁸ A systematic review found no high-quality evidence demonstrating the real-world effectiveness of child mask mandates in reducing SARS-CoV-2 transmission or infection.¹⁶³ Observational studies that suggested a benefit had significant biases and confounding factors.¹⁶⁴ However, some studies have shown that mask mandates in schools can reduce COVID-19 incidence, although these findings are not universally consistent.¹⁶⁵ Yet despite all those factors that disfavor use of masks in children, this NPI has been mandated.

Social/Physical Distancing

There is some confusion about the use of the terms “social distancing” and “lockdowns.” Vernacularly, the term social distancing is sometimes used interchangeably with physical distancing, i.e., maintaining a physical distance of at least six feet from others. Similarly, “lockdown” is used to describe stay-at-home and businesses-closure orders. However, according to the official definition, “social distancing recommendations” included

the following key interventions:

- Physical distancing: Maintaining a distance of at least 1 meter (approximately 3 feet) from others was recommended to reduce transmission risk.¹²⁷
- Closure of public spaces: This included the closure of schools, workplaces, and public transport, as well as restrictions on mass gatherings and public events.¹⁶⁶
- Lockdowns: Stay-at-home orders and restricting movement within communities were implemented to reduce the spread of the virus.¹⁶⁶
- Workplace measures: Encouraging work-from-home arrangements and implementing workplace closures were part of the social distancing measures.¹⁶⁶
- Avoiding crowded places: Measures to avoid crowding, such as limiting the size of gatherings and promoting voluntary isolation at home, were also recommended.¹⁶⁷
- Telehealth and reduced healthcare encounters: These measures were meant to reduce contacts in medical settings.¹⁶⁸

These “multiprong social distancing” measures were justified in the mainstream media by the neat-looking and initially popular but later “memory holed” scientism-driven concepts of “Flattening the Curve” and “Raising the Line.”^{169,170}

The left-wing narrative as of November 2024 held that “the science is settled” for the value of social distancing because the evidence supporting it is strong and multi-layered. A systematic review and meta-analysis published in *The Lancet* found that maintaining a physical distance of at least 1 meter significantly reduces the risk of virus transmission, with greater distances providing even more protection.¹²⁷ Another study in *PLoS One* demonstrated that national social distancing policies corresponded with a dramatic reduction in COVID-19 infection rates, estimating a 65% reduction in new cases over a two-week period.¹⁷¹ Additionally, a study in *Nature Communications* showed that individuals in communities with high levels of social distancing had a 31% lower risk of contracting COVID-19.¹⁷² Again, officialdom’s experts claim that common right-wing “falsehoods” about social distancing can be dismissed using the evidence-based fact-checking process. One myth is that social distancing is unnecessary if masks are worn. However, studies indicate that while masks are effective, combining mask use with social distancing provides the best protection.¹²⁷ Another myth is that social distancing is ineffective in crowded or low socioeconomic areas, but research shows that while effectiveness can vary, social distancing still significantly reduces transmission in these settings.¹⁷³

Right-wing criticism of distancing pointed out that while epidemiological modeling and observational studies used by the Left to justify lockdowns imply that they were “effective,” they do not paint at all the whole picture—the image of massive tragedy. There were widespread disruptions in education, employment, and mental well-being.¹⁷⁴⁻¹⁷⁸ It shows the landscape of economic devastation with loss of jobs, permanent closures of private businesses, and unprecedented supply-chain disruptions. Those interventions also had devastating social and psychological consequences. Family ties were broken, lives were devastated, faithful were banned from worshipping, children lost their quality education and childhood all together. Those are all tacit real-life devastating consequences that require no “Clinical Trials” to assess. The effectiveness of those measures was limited and outweighed by their enormous negative consequences. The 6-foot distance recommendation was based upon a lie, as the terrified public learned after the fact.^{118,179} The call for “telehealth and reduced healthcare encounters,” combined with ban on hospital visits of family was particularly inhumane and perfidious. Routine care was delayed. The ability of patients to get second

opinions was taken away. Excluding visitors from hospital visits was not only cruel but eliminated the most important quality control measure: observations by people who cared about the patient.

Body Temperature Screening

Body temperature screening was widely implemented during the COVID-19 pandemic in the U.S., but even officialdom agreed that it showed limited effectiveness in detecting SARS-CoV-2 infection. Several studies have evaluated the utility of temperature screening in various settings:

- **University Settings:** A study conducted at a large public university found that daily temperature monitoring was feasible and acceptable but had low sensitivity for detecting SARS-CoV-2. The sensitivity ranged from 0% to 40.5%, indicating that the majority of potentially infectious individuals were not detected by temperature screening alone.¹⁸⁰
- **Medical Personnel:** Research at a public hospital in San Francisco revealed that temperature screening of medical personnel was ineffective. Over a year, only one employee had an elevated temperature on screening, which normalized on re-check, suggesting no utility in controlling COVID-19 transmission.¹⁸¹
- **Workplace Settings:** A survey of multinational corporations found that temperature screening identified very few COVID-19 cases compared to the number of cases missed. Specifically, one case was identified for approximately every 40 cases missed.¹⁸²
- **Emergency Departments:** A retrospective review in emergency departments showed that about a quarter of patients who tested positive for COVID-19 did not present with a fever.¹⁸³
- **Nursing Homes:** Studies in nursing homes indicated that the standard fever threshold of 38.0°C had low sensitivity for detecting SARS-CoV-2. Lowering the threshold improved sensitivity but still did not provide adequate detection.

The evidence suggests that temperature screening was insufficient as a primary means of detecting COVID-19 and controlling its transmission. It simply added yet another humiliation and deprivation of personal freedom.

Testing and Contact Tracing

Opinions about testing and contact tracing in the U.S. are mixed. Evidence suggests that these measures can significantly reduce transmission when implemented effectively, but their use was associated with justified fears of violating civil liberties and invasion of privacy.¹⁸⁵ A study by Wang et al. demonstrated that timely testing and contact tracing could avert a substantial proportion of COVID-19 cases. Detecting 40% of symptomatic cases followed by isolation could avert 39% of cases, and this could be increased to 53% with contact tracing, assuming a median delay of 2 days on a university campus and 5 days in the community.¹⁸⁶ Lash et al. highlighted the challenges faced by public health authorities in reaching and monitoring contacts. Only 59% of cases were interviewed, and 71% of named contacts were notified of their exposure. The median time from specimen collection to contact notification was 6 days or less in most locations, indicating room for improvement in timeliness.¹⁸⁷ Bayly et al. quantified the performance of contact tracing in the U.S., finding that traditional contact tracing methods identified only a small fraction of transmission events. They suggested that more robust contact tracing protocols, similar to those used in East Asia, could significantly improve detection rates.¹⁸⁸ Oeltmann et al. found that engagement in contact tracing was

positively correlated with adherence to isolation and quarantine guidelines.¹⁸⁹ However, identifying and reaching contacts remained a significant challenge, limiting the overall effectiveness of these efforts. Overall, while testing and contact tracing have proven effective in mitigating COVID-19 transmission under certain circumstances, civil liberties and privacy concerns should be a focus in assessing future use of these methods, especially in the view of the violations of those two most essential concepts that took place during COVID-19 pandemic.

Reasonable but Underutilized NPIs

Officialdom did recommend obvious types of NPIs that were simple and justified by evidence and common sense. However, quite ironically, they were neither featured prominently in the public service announcements and not even used that frequently by officials. Those included: (1) regular hand washing with soap and water or use of hand sanitizers; (2) regular disinfection of surfaces; (3) increasing ventilation. One can only speculate why those NPIs were accepted but underused by left-wing decision-makers.

Interventions Neglected by Officialdom

Simple interventions were deliberately and intentionally ignored or even rejected by officialdom for clear ideological reasons. They did not fit the left-wing narrative of useful NPIs because they were either mentioned by a disliked right-wing politician or did not resonate with the principles of social justice that became the official state “religion” of the Left. Those included the use of ultraviolet light and ozone for disinfection of public spaces and conveyances. Very useful, affordable, and effective interventions that are technically not NPIs but were neglected or actively suppressed include vitamin D and other nutritional supplements, disinfecting nose drops and gargles,¹⁹⁰ and early treatment and prophylaxis with hydroxychloroquine and ivermectin.^{95,96}

Accountability

The identities of the governmental executives who mandated the “cruellest tyrannies” described above are well-known since their decisions are documented in public records. In the aftermath of the COVID-19 pandemic, numerous right-wing-affiliated organizations, politicians, physicians, and individuals made calls to hold all public officials accountable for their malfeasance during this national health crisis.¹⁹¹⁻¹⁹³ However, to date no significant actions have been taken in this regard except for punishing a few minor players who were not the main decisions-makers.¹⁹⁴ When legislators attempted to scrutinize the performance of the senior governmental leaders, those administrators have vehemently denied any wrong-doing.^{132,195} Moreover, they have strongly reaffirmed the validity of their COVID-19 policies and vowed that future pandemic responses will be even more stringent and restrictive.

Lessons Learned

Left-wing-aligned official researchers have produced numerous lengthy, highly technical and detail-rich papers about “lessons learned from the COVID-19 pandemic about NPIs.”¹⁹⁶⁻¹⁹⁸ Not unexpectedly, it seems that the authors of those reviews have actually learned very little. Many will want to forget worrisome facts and their alarming context as soon as possible. Three important lessons from the viewpoint of this editorial are:

First, everybody who has been damaged by the tyrannical

NPIs during the COVID-19 pandemic or who feels sorrow for those who were will never forget any single tyranny that was perpetrated under the shield of “law and science” during that dark period. Second, we all will learn how to recognize and defeat the perverse scientism that is the tyrants’ weapon of choice. Third, we will appreciate that while science is indispensable it has serious limitations, and the non-scientific context is usually more relevant. Fourth, we must recognize the need to defeat the cruel tyranny, remembering that the path from slavery and tyranny to freedom and justice is fraught with hardship, and success requires unwavering determination to take necessary actions, no matter how difficult they may be.

Conclusions

The objective analysis presented above indicates that numerous NPIs have been imposed arbitrarily, capriciously, and without the proper rationale, likely to serve hidden agendas instead of their officially stated goals. Those oppressive and harmful mandates have been enforced under the false banners of “law, science and benevolence.” At the same time, NPIs that would be appropriate to implement due to their obvious effectiveness have been neglected or even discouraged. As a result, a large part of society has been significantly and often irreversibly harmed. It is critical to balance the emotional urgency to control disease spread with the realistic assessment of the benefits and harms of NPIs. Civil liberties must be protected. The optimum balance can be achieved only in a truly free society that is not shaped by a cultist leftist ideology that worships false authority and uses politicized dishonest experts to justify its tyrannical excesses.

Jane M. Orient, M.D., is a practicing general internist and serves as executive director of AAPS and managing editor of the Journal. Contact: jane@aapsonline.org.

REFERENCES

- Huremović D. Brief history of pandemics (pandemics throughout history). In: *Psychiatry of Pandemics: A Mental Health Response to Infection Outbreak*. Springer Nature Link; Jan 1, 2019:7-35. doi: 10.1007/978-3-030-15346-5_2/FIGURES/4.
- Pitlik SD. Covid-19 compared to other pandemic diseases. *Rambam Maimonides Med J*. 2020;11(3). doi: 10.5041/RMMJ.10418.
- Madhav N, Oppenheim B, Gallivan M, et al. Pandemics: risks, impacts, and mitigation. In: Jamison DT, Gelband H, Horton S, et al., eds. *Disease Control Priorities: Improving Health and Reducing Poverty*. ed 3, vol 9. Washington, D.C.: International Bank for Reconstruction and Development / World Bank; Nov 27, 2017:315-345. doi: 10.1596/978-1-4648-0527-1_CH17.
- Drago EB. Quacks, plagues, and pandemics. *Distillations Magazine*. Science History Institute; Dec 15, 2020. Available at: <https://www.sciencehistory.org/stories/magazine/quacks-plagues-and-pandemics/>. Accessed Oct 26, 2024.
- Spreeuwenberg P, Kroneman M, Paget J. Reassessing the global mortality burden of the 1918 influenza pandemic. *Am J Epidemiol* 2018;187(12):2561-2567. doi: 10.1093/AJE/KWY191.
- Hu B, Guo H, Zhou P, Shi ZL. Characteristics of SARS-CoV-2 and COVID-19. *Nature Rev Microbiol* 2020;19(3):141-154. doi: 10.1038/s41579-020-00459-7.
- FEMA. Non-pharmaceutical interventions. In: *Key Planning Factors and Considerations for Response to and Recovery from a Biological Incident*. KPF 3: *Control the Spread of Disease*. FEMA; 2023. Available at: <https://www.fema.gov/cbrn-tools/key-planning-factors-bio/kpf-3/1>. Accessed Oct 28, 2024.
- Qualls N, Levitt A, Kanade N, et al. Community mitigation guidelines to prevent pandemic influenza—United States, 2017. *MMWR* 2020;66(1):1-34. doi: 10.15585/MMWR.RR6601A1.
- CDC. Community Mitigation. Pandemic Flu; Jun 6, 2024. Available at: <https://www.cdc.gov/pandemic-flu/php/fed-gov-planning/community-mitigation.html>. Accessed Oct 28, 2024.
- WHO. Non-pharmaceutical public health measures for mitigating the risk and impact of epidemic and pandemic influenza. Technical Document; Sep 19, 2019. Available at: <https://www.who.int/publications/i/item/non-pharmaceutical-public-health-measures-for-mitigating-the-risk-and-impact-of-epidemic-and-pandemic-influenza>. Accessed Oct 28, 2024.
- Fong MW, Gao H, Wong JY, et al. Nonpharmaceutical measures for pandemic influenza in nonhealthcare settings-social distancing measures. *Emerg Infect Dis* 2020;26(5):976-984. doi: 10.3201/EID2605.190995.
- Thompson WC, Scurich N. When does absence of evidence constitute evidence of absence? *Forensic Sci Int* 2018;291:e18-e19. doi: 10.1016/J.FORSCIINT.2018.08.040.
- NIODA. We are all in this together. National Institute of Organisation Dynamics Australia. Available at: <https://www.nioda.org.au/we-are-all-in-this-together/>. Accessed Oct 31, 2024.
- Galea S. Follow the science. Public Health Post. Boston University School of Public Health; Apr 16, 2024. Available at: <https://publichealthpost.org/health-equity/follow-the-science/>. Accessed Oct 31, 2024.
- AMA. Mask Up: Stop the spread of COVID-19. American Medical Association. Available at: <https://www.ama-assn.org/delivering-care/public-health/mask-stop-spread-covid-19>. Accessed Oct 31, 2024.
- Alcantar S. Together but six feet apart. Booster Redux. Pittsburg High School, Pittsburg, KS; Apr 10, 2020. Available at: <https://www.boosterredux.com/uncategorized/2020/04/10/together-but-six-feet-apart/>. Accessed Oct 31, 2024.
- Slavitt A, Frist B, Bitton A, et al. Stay Home, Save Lives. Available at: <https://www.stayhomesavelives.us/>. Accessed Oct 31, 2024.
- Adalja AA. Review of Osterholm MT, Olshaker M. *Deadliest Enemy: Our War against Killer Germs*. Boston, Mass.: Little, Brown and Company. In: *Emerg Infect Dis* 2018;24(1):185. doi: 10.3201/EID2401.171081.
- Baric R, Carroll D, Donis R, et al. *Emerging Viral Diseases: The One Health Connection*. Forum on Microbial Threats; Board on Global Health; Institute of Medicine. National Academy of Sciences; 2015. Available at: <https://www.ncbi.nlm.nih.gov/sites/books/NBK284991/>. Accessed Oct 28, 2024.
- Menachery VD, Yount BL, Debbink K, et al. A SARS-like cluster of circulating bat coronaviruses shows potential for human emergence. *Nature Medicine* 2015;21(12):1508-1513. doi: 10.1038/nm.3985.
- CDC. Interim Pre-pandemic planning guidance. community strategy for pandemic influenza mitigation in the United States: early, targeted, layered use of non-pharmaceutical interventions; 2007. Available at: <https://stacks.cdc.gov/view/cdc/11425>. Accessed Oct 28, 2024.
- Teasdale E, Santer M, Geraghty AWA, Little P, Yardley L. Public perceptions of non-pharmaceutical interventions for reducing transmission of respiratory infection: Systematic review and synthesis of qualitative studies. *BMC Public Health* 2014;14(1). doi: 10.1186/1471-2458-14-589.
- Timeline: The Trump Administration's Decisive Actions to Combat the Coronavirus; Apr 27, 2020. Available at: <https://web.archive.org/web/20200711100629/https://www.donaldjtrump.com/media/timeline-the-trump-administrations-decisive-actions-to-combat-the-coronavirus>. Accessed Nov 6, 2024.
- Rodriguez OR, Jars J. San Francisco Bay Area counties issue shelter-in-place order. ABC News; Mar 16, 2020. Available at: <https://web.archive.org/web/20200525143041/https://abcnews.go.com/Health/wireStory/bay-area-counties-california-order-shelter-place-69627648>. Accessed Nov 6, 2024.
- Remarks by President Trump and Vice President Pence in a Video Teleconference with Governors on COVID-19; Mar 19, 2020. Available at: <https://web.archive.org/web/20210120200339/https://trumpwhitehouse.archives.gov/briefings-statements/remarks-president-trump-vice-president-pence-video-teleconference-governors-covid-19/>. Accessed Nov 6, 2024.
- Dittrich V. COVID-19: ‘People have to be responsible for themselves’: Eight U.S. states still not locked down. *National Post*, Apr 7, 2020. Available at: <https://nationalpost.com/news/covid-19-people-have-to-be-responsible-for-themselves-eight-states-still-not-locked-down>. Accessed Nov 6, 2024.
- Lee YN. Coronavirus pandemic's effect on global economy in 7 charts. CNBC; Apr 24, 2020. Available at: <https://web.archive.org/web/20200502002953/https://www.cnbc.com/2020/04/24/coronavirus-pandemics-impact-on-the-global-economy-in-7-charts.html>. Accessed Nov 6, 2024.
- Budryk Z. Governors, experts await results of reopening states as protests continue. *The Hill*, May 3, 2020. Available at: <https://web.archive.org/web/20200510022802/https://thehill.com/homenews/sunday-talk-shows/495877-governors-experts-await-results-of-reopening-states-as-protests>. Accessed Nov 6, 2024.
- InfoHealer. The partisan divide over COVID-19: its general characteristics, root causes and implications. Information Heals; Feb 4, 2023. Available at: <https://neutralresearcher.substack.com/p/the-partisan-divide-over-covid-19>. Accessed Feb 3, 2023.

30. Kerr J, Panagopoulos C, van der Linden S. Political polarization on COVID-19 pandemic response in the United States. *Pers Individ Dif* 2021;179:110892. doi: 10.1016/J.PAID.2021.110892.
31. Rodríguez CG, Gadarian SK, Goodman SW, Pepinsky TB. Morbid polarization: exposure to COVID-19 and partisan disagreement about pandemic response. *Polit Psychol* 2022;43(6):1169-1189. doi: 10.1111/POPS.12810.
32. InfoHealer. Politicization, polarization & power asymmetry. Information Heals; Dec 3, 2022. Available at: <https://neutralresearcher.substack.com/p/politicization-polarization-and-power>. Accessed Feb 2, 2023.
33. InfoHealer. Progressive power advantage. The partisan divide over COVID-19; Feb 4, 2023. Available at: <https://neutralresearcher.substack.com/i/92334383/progressive-power-advantage>. Accessed Feb 12, 2024.
34. Hegland A, Zhang AL, Zichettella B, Pasek J. A partisan pandemic: how COVID-19 was primed for polarization. *Ann Amer Acad Political Social Sci* 2022;700(1):55-72. doi: 10.1177/00027162221083686/ASSET/IMAGES/LARGE/10.1177_00027162221083686-FIG19.JPEG.
35. Diffen. Left Wing vs. Right Wing. Available at: https://www.diffen.com/difference/Left_Wing_vs_Right_Wing. Accessed Nov 3, 2024.
36. Biddle C. Political 'left' and 'right' properly defined. The Objective Standard; Jun 26, 2012. Available at: <https://theobjectivestandard.com/2012/06/political-left-and-right-properly-defined/>. Accessed Nov 3, 2024.
37. Hreha J. What is a value system in behavioral science? The Behavioral Scientist. Available at: <https://www.thebehavioralscientist.com/glossary/value-system>. Accessed Oct 31, 2024.
38. Macedo P, Camarinha-Matos LM. An approach in value systems modeling. In: Camarinha-Matos, LM, Afsarmanesh H, eds. *Collaborative Networks: Reference Modeling*. Springer; January 2008:277-296. doi: 10.1007/978-0-387-79426-6_19.
39. Ioannidis JPA. The infection fatality rate of COVID-19 inferred from seroprevalence data. *medRxiv*; July 14, 2020. doi: 10.1101/2020.05.13.20101253.
40. Engler J. Every single aspect of the 'Covid' narrative is fake. There was no pandemic. PANDA; Apr 8, 2024. Available at: <https://pandata.org/every-single-aspect-of-the-covid-narrative-is-fake-there-was-no-pandemic/>. Accessed Nov 2, 2024.
41. PANDA. The nature of the events of the Covid era. Available at: <https://pandata.org/position-covid-era/>. Accessed Nov 2, 2024.
42. Blaylock RL. COVID update: what is the truth? *Surg Neurol Int* 2022;13. doi: 10.25259/SNI_150_2022.
43. Carroll P, Sanchez D. Individualism: a deeply American philosophy. Foundation for Economic Education; Jul 2, 2022. Available at: <https://fee.org/resources/individualism-a-deeply-american-philosophy/>. Accessed Nov 2, 2024.
44. Chavis DM, Lee K. What is community anyway? *Stanford Social Innovation Review*; May 12, 2015. doi: 10.48558/EJJ2-JJ82.
45. Coates R. Why freedom matters more than safety. *Learn Liberty*; Oct 9, 2023. Available at: <https://www.learnliberty.org/blog/why-freedom-matters-more-than-safety/>. Accessed Nov 2, 2024.
46. Ebeling RM. Collectivism breeds indifference to the loss of liberty. *Future of Freedom Foundation*; Dec 1, 2020. Available at: <https://www.fff.org/explore-freedom/article/collectivism-breeds-indifference-to-the-loss-of-liberty/>. Accessed Nov 2, 2024.
47. Welch D. Manufacturing a consensus: Nazi propaganda and the building of a 'national community' (Volksgemeinschaft). *Contemp Eur Hist* 1993;2(1):1-15. doi: 10.1017/S096077730000028X.
48. Holm AB. Toward a Marxist concept of community. *SATS* 2020;21(1):1-20. doi: 10.1515/SATS-2019-0024.
49. Bruns A. Filterbubble. *Internet Policy Rev* 2019;8(4).doi:10.14763/2019.4.1426.
50. Lachlan KA, Hutter E, Gilbert C. Covid-19 echo chambers: examining the impact of conservative and liberal news sources on risk perception and response. *Health Secur* 2021;19(1):21-30. doi: 10.1089/HS.2020.0176/ASSET/IMAGES/HS.2020.0176_FIGURE3.JPG.
51. John M. Pandemic boosts super-rich share of global wealth. *Reuters*; Dec 7, 2021. Available at: <https://www.reuters.com/business/pandemic-boosts-super-rich-share-global-wealth-2021-12-07/>. Accessed Feb 8, 2024.
52. Gurri M. I refused to vote in the last two elections. Now, I'm voting for Trump. *The Free Press*; Oct 16, 2024. Available at: <https://archive.vn/S2oTd>. Accessed Nov 4, 2024.
53. Baskerville S. 8 Reasons why conservatives lose. *American Thinker*; Oct 24, 2024. Available at: https://www.americanthinker.com/articles/2024/10/8_reasons_why_conservatives_lose.html. Accessed Oct 30, 2024.
54. Young C. When anti-woke becomes pro-Trump. *Persuasion*; Nov 1, 2024. Available at: <https://www.persuasion.community/p/when-anti-woke-becomes-pro-trump>. Accessed Nov 3, 2024.
55. Newsweek. Yale doctor Harvey Risch calls COVID lockdown 'counterproductive.' *Newsweek*, Apr 20, 2021. Available at: <https://www.newsweek.com/yale-professor-lockdowns-1585070>. Accessed Nov 4, 2024.
56. Creitz C. California urgent care doctor questions stay-at-home orders: 'You can get to herd immunity without a vaccine.' *Fox News*; Apr 27, 2020. Available at: <https://www.foxnews.com/media/california-doctor-questions-stay-at-home-orders>. Accessed Nov 4, 2024.
57. Morrison C. Four high-profile doctors who are challenging the COVID-19 response. *Washington Examiner*, Jan 11, 2022. Available at: <https://www.washingtonexaminer.com/news/83532/four-high-profile-doctors-who-are-challenging-the-covid-19-response/>. Accessed Nov 4, 2024.
58. D'Ambrosio A. Who are the scientists behind the Great Barrington Declaration? *MedPage Today*; Jul 26, 2021. Available at: <https://www.medpagetoday.com/infectiousdisease/covid19/89204>. Accessed Nov 15, 2021.
59. Bhattacharya J, Packalen M. The silence of economists about lockdowns. *Brownstone Institute*; Aug 31, 2021. Available at: <https://brownstone.org/articles/the-silence-of-economists-about-lockdowns/>. Accessed Nov 4, 2024.
60. AAPS warns against more devastating, unwarranted lockdowns. *Association of American Physicians and Surgeons*; Oct 29, 2020. Available at: <https://aapsonline.org/aaps-warns-against-more-devastating-unwarranted-lockdowns/>. Accessed Nov 4, 2024.
61. McGregor G. Doctor fired after speaking out against lockdowns: another example of medical cancel culture, says not-for-profit healthcare organization. *The Published Reporter*; Jan 4, 2021. Available at: <https://publishedreporter.com/2021/01/04/doctor-fired-after-speaking-out-against-lockdowns-another-example-of-medical-cancel-culture-says-not-for-profit-healthcare-organization/>. Accessed Nov 4, 2024.
62. Alexander PE. More than 400 studies on the failure of compulsory Covid interventions (lockdowns, restrictions, closures). *Brownstone Institute*; Nov 30, 2021. Available at: <https://brownstone.org/articles/more-than-400-studies-on-the-failure-of-compulsory-covid-interventions/>. Accessed Nov 4, 2024.
63. Tucker JA. Anti-lockdown goes mainstream. *Brownstone Institute*; Nov 2, 2023. Available at: <https://brownstone.org/articles/anti-lockdown-goes-mainstream/>. Accessed Nov 4, 2024.
64. Geranios NK. Far-right US politicians label lockdowns anti-constitutional. *Associated Press*; Apr 15, 2020. Available at: <https://komonews.com/news/local/far-right-us-politicians-label-lockdowns-anti-constitutional-04-15-2020>. Accessed Nov 4, 2024.
65. Phillips M, Boyd C, Martinez G. 'We must stop living in fear and move forward': GOP Senator leads Republican fury at Fauci's 'lies' and constant COVID lockdowns after major study showed they only reduced mortality by 0.2% and wreaked economic havoc. *Daily Mail*; Feb 2, 2022. Available at: <https://www.dailymail.co.uk/news/article-10470293/GOP-Senator-leads-Republican-fury-study-showed-lockdowns-reduced-mortality-0-2.html>. Accessed Nov 4, 2024.
66. McClosky J. Top US politician refuses to bring in lockdown or other Covid rules saying he wants to leave people alone. *Metro News*; Nov 30, 2020. Available at: <https://metro.co.uk/2020/11/30/top-us-politician-refuses-to-bring-in-lockdown-or-other-covid-rules-saying-he-wants-to-leave-people-alone-13679432/>. Accessed Nov 4, 2024.
67. Eastman L. Senator Ron Johnson warns against a return of mask and vaccine mandates. *Legal Insurrection*; Aug 26, 2023. Available at: <https://legalinsurrection.com/2023/08/senator-ron-johnson-warns-against-a-return-of-mask-and-vaccine-mandates/>. Accessed Nov 4, 2024.
68. Creitz C. Sen. Rand Paul: 'No real evidence' lockdowns are 'changing the trajectory' of COVID-19. *Fox News*; Dec 7, 2020. Available at: <https://www.foxnews.com/politics/rand-paul-covid-19-lockdowns-no-real-evidence-they-work>. Accessed Nov 4, 2024.
69. Trump cheers as anti-lockdown protests spread. *Financial Times*. Available at: <https://www.ft.com/content/c8f6f413-39c4-47ce-b1ff-0e2969cb612>. Accessed Nov 4, 2024.
70. Kleefeld E. Fox News and other right-wing media mount new back-to-work push against coronavirus lockdowns. *Media Matters for America*; Apr 3, 2023. Available at: <https://www.mediamatters.org/coronavirus-covid-19/fox-news-and-other-right-wing-media-mount-new-back-work-push-against>. Accessed Nov 4, 2024.
71. Garcia-Hodges A. Doctors blame right-wing media for eroding trust during pandemic. *NBC News*; Dec 18, 2020. Available at: <https://www.nbcnews.com/news/all/doctors-blame-right-wing-media-eroding-trust-during-pandemic-n1251221>. Accessed Nov 4, 2024.

72. Gillihan SJ. Why are masks triggering conflict and rage? *Psychology Today*; May 6, 2020. Available at: <https://www.psychologytoday.com/us/blog/think-act-be/202005/why-are-masks-triggering-conflict-and-rage>. Accessed Nov 4, 2024.
73. Smith B. Now is the time for Americans to rebel against lockdowns, mask laws and forced vaccination. *Alt-Market.us*; Nov 18, 2020. Available at: <https://alt-market.us/now-is-the-time-for-americans-to-rebel-against-lockdowns-mask-laws-and-forced-vaccination/>. Accessed Nov 4, 2024.
74. Luther D. Tempers are flaring over lockdown, masks, and money: Is all-out civil unrest about to erupt? *The Organic Prepper*; May 5, 2020. Available at: <https://www.theorganicprepper.com/lockdown-masks-money-civil-unrest/>. Accessed Nov 4, 2024.
75. Hernandez S. A group linked to Betsy DeVos is organizing protests to end social distancing. *BuzzFeed News*; Apr 17, 2020. Available at: <https://www.buzzfeednews.com/article/salvadorhernandez/coronavirus-quarantine-protests-facebook-groups>. Accessed Nov 4, 2024.
76. BBC. Coronavirus: Anti-lockdown protests grow across US. *BBC News*; Apr 17, 2020. Available at: <https://web.archive.org/web/20200417172715/https://www.bbc.com/news/world-us-canada-52330531>. Accessed Nov 4, 2024.
77. Andone D. Protests are popping up across the US over stay-at-home restrictions. *CNN*; Apr 17, 2020. Available at: <https://www.cnn.com/2020/04/16/us/protests-coronavirus-stay-home-orders/index.html>. Accessed Nov 4, 2024.
78. BBC. Coronavirus: President Trump defends tweets against US states' lockdowns. *BBC News*; Apr 18, 2020. Available at: <https://www.bbc.com/news/world-us-canada-52330531>. Accessed Nov 4, 2024.
79. Boyer D. Activists plan march on state capitals to reopen for May 1. *Washington Times*; Apr 22, 2020. Available at: <https://www.washingtontimes.com/news/2020/apr/22/activists-plan-march-state-capitals-reopen-may-1/>. Accessed Nov 4, 2024.
80. Flynn M. Chanting 'lock her up,' Michigan protesters waving Trump flags mass against Gov. Gretchen Whitmer's coronavirus restrictions. *Washington Post*; Apr 16, 2020. Available at: <https://www.washingtonpost.com/nation/2020/04/16/michigan-whitmer-conservatives-protest/>. Accessed Nov 4, 2024.
81. Williams A. 'Reckless and untested musings': Health experts criticize 2 doctors urging ease on social distancing. *FOX10 Phoenix*; Apr 29, 2020. Available at: <https://www.fox10phoenix.com/news/reckless-and-untested-musings-health-experts-criticize-2-doctors-urging-ease-on-social-distancing>. Accessed Nov 4, 2024.
82. Wood R, Reinhardt GY, Rezaeedyakani B, Windsor LC. Resisting lockdown: the influence of COVID-19 restrictions on social unrest. *International Studies Quarterly* 2022;66(2). doi: 10.1093/ISQ/SQAC015.
83. John T. Critics say lockdown damage is worse than the virus. Experts say it's a false choice. *CNN*; May 29, 2020. Available at: <https://www.cnn.com/2020/05/29/europe/lockdown-skeptics-coronavirus-intl/index.html>. Accessed Nov 4, 2024.
84. Tuters M, Willaert T. Deep state phobia: Narrative convergence in coronavirus conspiracism on Instagram. *Convergence* 2022;28(4):1214-1238. doi: 10.1177/13548565221118751/ASSET/IMAGES/LARGE/10.1177_13548565221118751-FIG12.JPEG.
85. Hotez PJ. Anti-science killings: From Soviet embrace of pseudoscience to accelerated attacks on US biomedicine. *PLoS Biol* 2021;19(1). doi: 10.1371/JOURNAL.PBIO.3001068.
86. Network for Public Health Law. Individual Rights and the Public's Health: Constitutional, Ethical, and Political Aspects of COVID-19 Measures and Their Enforcement; Feb 24, 2021. Available at: <https://www.networkforphl.org/news-insights/individual-rights-and-the-publics-health-constitutional-ethical-and-political-aspects-of-covid-19-measures-and-their-enforcement/>. Accessed Nov 4, 2024.
87. Morelock J, Narita FZ. The nexus of QAnon and COVID-19: Legitimation crisis and epistemic crisis. *Critical Social* 2022;48(6):1005-1024. doi: 10.1177/08969205211069614.
88. Thalen M. What exactly is 'Blue Anon,' conservatives' favorite new term? Available at: <https://www.dailydot.com/debug/what-is-blue-anon/>. Accessed Nov 4, 2024.
89. Shields J. The disappearing conservative professor. *National Affairs*; fall 2018. Available at: <https://nationalaffairs.com/publications/detail/the-disappearing-conservative-professor>. Accessed Apr 22, 2023.
90. Flaxman S, Goel S, Rao JM. Filter bubbles, echo chambers, and online news consumption. *Public Opin Q* 2016;80(SpecialIssue1):298-320. doi: 10.1093/POQ/NFW006.
91. InfoHealer. Politicization, polarization & power asymmetry. *Information Heals*; Dec 3, 2022. Available at: <https://neutralresearcher.substack.com/i/88363170/partisan-silos-bubbles-and-echo-chambers>. Accessed Feb 6, 2024.
92. Chitra U, Musco C. Understanding filter bubbles and polarization in social networks. *arXiv* 1906.08772; Jun 20, 2019. Available at: <http://arxiv.org/abs/1906.08772>. Accessed Feb 6, 2024.
93. McPherson M, Smith-Lovin L, Cook JM. Birds of a feather: Homophily in social networks. *Annu Rev Sociol* 2001;27(Volume 27, 2001):415-444. doi: 10.1146/ANNUREV.SOC.27.1.415/CITE/REFWORKS.
94. Druckman JN, Ognyanova K, Baum MA, et al. The role of race, religion, and partisanship in misperceptions about COVID-19. *Group Processes Intergroup Relations* 2021;24(4):638-657. doi: 10.1177/1368430220985912/ASSET/IMAGES/LARGE/10.1177_1368430220985912-FIG6.JPEG.
95. Orient J. Negative evidence: COVID-19 vaccines and sudden deaths. *J Am Phys Surg* 2023;28(2):38-47.
96. Orient J. Negative evidence: The Gordian knot of the dispute on the origin of SARS-CoV-2. *J Am Phys Surg* 2024;29(1).
97. Orient J. Negative evidence: COVID-19 vaccines and cancer. *J Am Phys Surg* 2023;28(1):2-10.
98. Gurwinder. The perils of audience capture. *The Prism*; Jun 30, 2022. Available at: <https://gurwinder.substack.com/p/the-perils-of-audience-capture>. Accessed Apr 22, 2023.
99. Logically Fallacious. Poisoning the well. Available at: <https://www.logicallyfallacious.com/logicfallacies/Poisoning-the-Well>. Accessed Nov 6, 2024.
100. Durden T. Misinformation is bad. Prohibiting it is worse. *ZeroHedge*; Sep 30, 2024. Available at: <https://www.zerohedge.com/political/misinformation-bad-prohibiting-it-worse>. Accessed Nov 6, 2024.
101. Leake J. Disinformation: the Democrats' favorite tool and smear. *Courageous Discourse*; Oct 17, 2024. Available at: <https://petermcculloughmd.substack.com/p/disinformation-the-democrats-favorite>. Accessed Nov 6, 2024.
102. Lewandowsky S. The 'post-truth' world, misinformation, and information literacy: a perspective from cognitive science. *Informed Societies*; Feb 22, 2019:69-88. doi: 10.29085/9781783303922.006.
103. Harsin J. Regimes of posttruth, postpolitics, and attention economies. *Commun Cult Crit* 2015;8(2):327-333. doi: 10.1111/CCCR.12097.
104. Klepper D. Analysis: Donald Trump's war on truth confronts another test with voters. *Associated Press*; June 23, 2023. Available at: <https://apnews.com/article/trump-misinformation-jan6-coronavirus-twitter-2024-election-c9cbbb9363e907257d54a6c20e2aa29d>. Accessed Nov 4, 2024.
105. Heit H. 'There are no facts...' Nietzsche as predecessor of post-truth? *Studia Philosophica Estonica*; 2018. Available at: <https://www.academia.edu/37907110>. Accessed Nov 4, 2024.
106. Arendt Hannah. *Crises of the Republic: Lying in politics; Civil disobedience; On Violence; Thoughts on Politics and Revolution*. Houghton Mifflin Harcourt; 1972:240.
107. Gillett G. The myth of post-truth politics. *Blog*; Oct 20, 2017. Available at: <https://georgegillett.com/2017/04/20/the-myth-of-post-truth-politics/>. Accessed Nov 4, 2024.
108. Green E. The liberals who can't quit lockdown. *Atlantic*; May 4, 2021. Available at: <https://www.theatlantic.com/politics/archive/2021/05/liberals-covid-19-science-denial-lockdown/618780/>. Accessed Nov 5, 2024.
109. Arendt H. *The Origins of Totalitarianism*. Harcourt Brace Jovanovich; 1973.
110. Colman E, Wanat M, Goossens H, Tonkin-Crine S, Anthierens S. Following the science? Views from scientists on government advisory boards during the COVID-19 pandemic: a qualitative interview study in five European countries. *BMJ Glob Health* 2021;6(9):e006928. doi: 10.1136/bmjgh-2021-006928.
111. Lohse S, Canali S. Follow 'the' science? On the marginal role of the social sciences in the COVID-19 pandemic. *Eur J Philos Sci* 2021;11(4):99. doi: 10.1007/s13194-021-00416-y.
112. Safford TG, Whitmore EH, Hamilton LC. Follow the scientists? How beliefs about the practice of science shaped COVID-19 views. *J Science Communication* 2021;20(7):1213. doi: 10.22323/2.20070203.
113. Trotter G. COVID-19 and the authority of science. *HEC Forum* 2021;12(2):1-28. doi: 10.1007/s10730-021-09455-7.
114. Greenmyer JR. 'Follow the Science' in COVID-19 policy: a scoping review. *HEC Forum*; Mar 12, 2024:1-19. doi: 10.1007/s10730-024-09521-W/METRICS.

115. Bozeman B. Use of science in public policy: lessons from the COVID-19 pandemic efforts to 'Follow the Science.' *Sci Public Policy* 2022;49(5):806-817. doi: 10.1093/scipol/scac026.
116. Murray GR, Murray SM. Following the Science? Examining the issuance of stay-at-home orders related to COVID-19 by U.S. governors. *Am Politics Res* 2023;51(2):147-160. doi: 10.1177/1532673x221106933.
117. Nocera J, McLean B. COVID lockdowns were a giant experiment. It was a failure. A key lesson of the pandemic. *Intelligence*; Oct 30, 2023. Available at: <https://nymag.com/intelligencer/article/covid-lockdowns-big-fail-joe-nocera-bethany-mclean-book-excerpt.html>. Accessed Nov 5, 2024.
118. Russell N. COVID guidelines caused millions to suffer. Now Fauci admits 'there was no science behind it.' *USA Today*, Jun 5, 2024. Available at: <https://www.msn.com/en-us/news/opinion/covid-guidelines-caused-millions-to-suffer-now-fauci-admits-there-was-no-science-behind-it/ar-BB1nEX5Q>. Accessed Nov 5, 2024.
119. Jefferson T, Dooley L, Ferroni E, et al. Physical interventions to interrupt or reduce the spread of respiratory viruses. *Cochrane Database of Systematic Reviews* 2023;2023(1). doi: 10.1002/14651858.CD006207.PUB6/FULL.
120. MacAulay M, Fafard P, Cassola A, Palkovits M. Analysing the 'follow the science' rhetoric of government responses to COVID-19. *Policy Polit* 2023;51(3):466-485. doi: 10.1332/030557321X16831146677554.
121. Loyola N. The great lockdown lie. *National Review*, Feb 3, 2022. Available at: <https://www.nationalreview.com/2022/02/the-great-lockdown-lie/>. Accessed Nov 5, 2024.
122. Graso M, Henwood A, Aquino K, Dolan P, Chen FX. The dark side of belief in Covid-19 scientists and scientific evidence. *Pers Individ Dif* 2022;193:111594. doi: 10.1016/J.PAID.2022.111594.
123. Mercuri M. Just follow the science: a government response to a pandemic. *J Eval Clin Pract* 2020;26(6):1575. doi: 10.1111/JEP.13491.
124. Hotez PJ. Mounting antisense aggression in the United States. *PLoS Biol* 2021;19(7). doi: 10.1371/JOURNAL.PBIO.3001369.
125. Yanovskiy M, Socol Y. Are lockdowns effective in managing pandemics? *Int J Environ Res Public Health*. 2022;19(15):9295. doi: 10.3390/IJERPH19159295.
126. Schippers MC. For the greater good? The devastating ripple effects of the Covid-19 crisis. *Front Psychol* 2020;11. doi: 10.3389/FPSYG.2020.577740.
127. Chu DK, Akl EA, Duda S, et al. Physical distancing, face masks, and eye protection to prevent person-to-person transmission of SARS-CoV-2 and COVID-19: a systematic review and meta-analysis. *Lancet* 2020;395(10242):1973-1987. doi: 10.1016/S0140-6736(20)31142-9.
128. Howard J, Huang A, Li Z, et al. An evidence review of face masks against COVID-19. *Proc Natl Acad Sci U S A*. 2021;118(4):e2014564118. doi: 10.1073/PNAS.2014564118/ASSET/AEB5FE3F-AA3C-4665-8688-72AAF80C1A38/ASSETS/IMAGES/LARGE/PNAS.2014564118FIG01.JPG.
129. Flaxman S, Mishra S, Gandy A, et al. Estimating the effects of non-pharmaceutical interventions on COVID-19 in Europe. *Nature* 2020;584(7820):257-261. doi: 10.1038/s41586-020-2405-7.
130. Zhang X, Ji Z, Zheng Y, Ye X, Li D. Evaluating the effect of city lock-down on controlling COVID-19 propagation through deep learning and network science models. *Cities* 2020;107. doi: 10.1016/j.cities.2020.102869.
131. Viner RM, Russell SJ, Croker H, et al. School closure and management practices during coronavirus outbreaks including COVID-19: a rapid systematic review. *Lancet Child Adolesc Health* 2020;4(5):397-404. doi: 10.1016/S2352-4642(20)30095-X.
132. Tierney J. Fauci and Walensky double down on failed Covid response. *Wall St J*, Aug 18, 2022. Available at: <https://www.wsj.com/articles/fauci-and-walensky-double-down-on-failure-covid-pandemic-evidence-data-lockdowns-mask-mandates-restrictions-public-health-experts-11660855180>. Accessed Oct 28, 2024.
133. Gadarian SK, Goodman SW, Pepinsky TB. Partisanship, health behavior, and policy attitudes in the early stages of the COVID-19 pandemic. *PLoS One* 2021;16(4). doi: 10.1371/JOURNAL.PONE.0249596.
134. Clinton J, Cohen J, Lapinski J, Trussler M. Partisan pandemic: How partisanship and public health concerns affect individuals' social mobility during COVID-19. *Sci Adv* 2021;7(2):eabd7204. doi: 10.1126/SCIADV.ABD7204.
135. Stinson S. Nancy Pelosi gets haircut inside San Francisco salon despite COVID orders. *KRON4*; Sep 2, 2020. <https://www.kron4.com/news/bay-area/nancy-pelosi-caught-getting-prohibited-haircut-in-san-francisco-salon/>. Accessed Feb 8, 2024.
136. Ronayne K. California governor went to party, violated own virus rules. Associated Press; Nov 13, 2020. Available at: <https://apnews.com/general-news-political-news-9426bc09f958ae9865309dd71a04aa97>. Accessed Feb 8, 2024.
137. Knudsen H. Poll: Majority disagree with left's description of 'mostly peaceful protests': they were 'riots.' *Breitbart*; Jun 5, 2021. Available at: <https://www.breitbart.com/politics/2021/06/05/poll-majority-disagree-with-lefts-description-of-2020s-mostly-peaceful-protests-they-were-riots/>. Accessed Feb 10, 2024.
138. Lesniewski L. McConnell blasts Bowser for restricting church services but allowing protests. *Roll Call*, Jun 9, 2020. Available at: <https://rollcall.com/2020/06/09/mcconnell-blasts-bowser-for-restricting-church-services-while-allowing-protests-during-covid-19-pandemic/>. Accessed Feb 10, 2024.
139. Rezza G. Prevention and control of emerging infections: a challenge for the 3rd millennium. *New Microbiologica* 2007;30(3):358-361.
140. Welfare W, Wright E. Planning for the unexpected: Ebola virus, Zika virus, what's next? *Br J Hosp Med* 2016;77(12):704-707. doi: 10.12968/hmed.2016.77.12.704.
141. Peak CM, Childs LM, Grad YH, Buckee CO. Comparing nonpharmaceutical interventions for containing emerging epidemics. *Proc Natl Acad Sci USA* 2017;114(15):4023-4028. doi: 10.1073/PNAS.1616438114.
142. Christofferson RC, Cormier SA. Beyond the unknown: a broad framing for preparedness for emerging infectious threats. *Am J Trop Med Hyg* 2022;107(6):1159-1161. doi: 10.4269/AJTMH.22-0341.
143. Van Kerkhove MD, Ryan MJ, Ghebreyesus TA. Preparing for 'disease X.' *Science* 2021;374(6566):377. doi: 10.1126/SCIENCE.ABM7796.
144. Simpson S, Kaufmann MC, Glozman V, Chakrabarti A. Disease X: accelerating the development of medical countermeasures for the next pandemic. *Lancet Infect Dis* 2020;20(5):e108. doi: 10.1016/S1473-3099(20)30123-7.
145. Delamater PL, Street EJ, Leslie TF, Yang YT, Jacobsen KH. Complexity of the basic reproduction number (R0). *Emerg Infect Dis* 2019;25(1):1. doi: 10.3201/EID2501.171901.
146. Perra N. Non-pharmaceutical interventions during the COVID-19 pandemic: a review. *Phys Rep*. 2021;913:1-52. doi: 10.1016/J.PHYSREP.2021.02.001.
147. Aho Glele LS, de Rougemont A. Non-pharmacological strategies and interventions for effective COVID-19 control: a narrative review. *J Clin Med* 2023;12(20):6465. doi: 10.3390/JCM12206465.
148. Cash-Goldwasser S, Reingold AL, Luby SP, Jackson LA, Frieden TR. Masks during pandemics caused by respiratory pathogens—evidence and implications for action. *JAMA Netw Open* 2023;6(10):E2339443. doi: 10.1001/JAMANETWORKOPEN.2023.39443.
149. Yan Y, Bayham J, Fenichel EP, Richter A. Do face masks create a false sense of security? A COVID-19 dilemma. *medRxiv*; May 27, 2020:2020.05.23.20111302. doi: 10.1101/2020.05.23.20111302.
150. Greenhalgh T, MacIntyre CR, Baker MG, et al. Masks and respirators for prevention of respiratory infections: a state of the science review. *Clin Microbiol Rev* 2024;37(2). doi: 10.1128/CMR.00124-23.
151. Czypionka T, Greenhalgh T, Bassler D, Bryant MB. Masks and face coverings for the lay public: a narrative update. *Ann Intern Med* 2021;174(4):511-520. doi: 10.7326/M20-6625.
152. Cheng Y, Ma N, Witt C, et al. Face masks effectively limit the probability of SARS-CoV-2 transmission. *Science* 2021;372(6549):1339-1343. doi: 10.1126/SCIENCE.ABG6296.
153. Chen R, Fwu BJ, Yang TR, Chen YK, Tran QAN. To mask or not to mask: debunking the myths of mask-wearing during COVID-19 across cultures. *PLoS One* 2022;17(9). doi: 10.1371/JOURNAL.PONE.0270160.
154. Tao Z-Y, Dong J, Culleton R. The use of facemasks may not lead to an increase in hand-face contact. *Transbound Emerg Dis* 2020;67(6):3038-3040. doi: 10.1111/TBED.13698.
155. Jancowicz M. Fauci said US government held off promoting face masks because it knew shortages were so bad that even doctors couldn't get enough. *Business Insider*, Jun 15, 2020. Available at: <https://www.businessinsider.com/fauci-mask-advice-was-because-doctors-shortages-from-the-start-2020-6>. Accessed Nov 6, 2024.
156. Bar-On YM, Flamholz A, Phillips R, Milo R. SARS-CoV-2 (COVID-19) by the numbers. *Elife* 2020 Apr 2;9:e57309. doi: 10.7554/ELIFE.57309.
157. Chughtaita AA, Seale H, MacIntyre CR. Effectiveness of cloth masks for protection against severe acute respiratory syndrome coronavirus 2. *Emerg Infect Dis* 2020;26(10). doi: 10.3201/EID2610.200948.
158. Lustig SR, Biswakarma JJH, Rana D, et al. Effectiveness of common fabrics to block aqueous aerosols of virus-like nanoparticles. *ACS Nano* 2020;14(6):7651-7658. doi: 10.1021/ACS.NANO.0C03972.
159. CDC. Masks and Respiratory Viruses Prevention. Respiratory Illnesses; Mar 1, 2024. Available at: <https://www.cdc.gov/respiratory-viruses/prevention/masks.html>. Accessed Nov 6, 2024.

160. Wang RC, Degesys NF, Fahimi J, et al. Incidence of fit test failure during N95 respirator reuse and extended use. *JAMA Netw Open* 2024;7(1):e2353631-e2353631. doi: 10.1001/JAMANETWORKOPEN.2023.53631.
161. California Department of Public Health. N95 Respirator Masks FAQs. Emergency Preparedness Office; Available at: <https://www.cdph.ca.gov/Programs/EPO/Pages/Wildfire%20Pages/N95-Respirators-FAQs.aspx>. Accessed Nov 6, 2024.
162. Johnson AT. Respirator masks protect health but impact performance: a review. *J Biol Eng* 2016;10(1):4. doi: 10.1186/S13036-016-0025-4.
163. Sandlund J, Duriseti R, Ladhani SN, et al. Face masks and protection against COVID-19 and other viral respiratory infections: assessment of benefits and harms in children. *Paediatr Respir Rev* 2024 Sep 6:S1526-0542(24)00074-5. doi: 10.1016/J.PRRV.2024.08.003.
164. Sandlund J, Duriseti R, Ladhani SN, et al. Child mask mandates for COVID-19: a systematic review. *Arch Dis Child* 2024;109(3):E2. doi: 10.1136/ARCHDISCHILD-2023-326215.
165. Viera L. Effect of face mask on lowering COVID-19 incidence in school settings: a systematic review. *J Sch Health* 2024;94(9):878-888. doi: 10.1111/JOSH.13483.
166. Murphy C, Lim WW, Mills C, et al. Effectiveness of social distancing measures and lockdowns for reducing transmission of COVID-19 in non-healthcare, community-based settings. *Philos Trans A Math Phys Eng Sci* 2023;381(2257). doi: 10.1098/RSTA.2023.0132.
167. Fong MW, Gao H, Wong JY, et al. Nonpharmaceutical measures for pandemic influenza in nonhealthcare settings—social distancing measures. *Emerg Infect Dis* 2020;26(5):976-984. doi: 10.3201/EID2605.190995.
168. Mikuls TR, Johnson SR, Fraenkel L, et al. American College of Rheumatology guidance for the management of rheumatic disease in adult patients during the COVID-19 pandemic: version 3. *Arthritis Rheumatol* 2021;73(2):e1-e12. doi: 10.1002/ART.41596.
169. Barclay E, Scott D, Animashaun C. The US doesn't just need to flatten the curve. It needs to 'raise the line.' *Vox*; Apr 7, 2020. Available at: <https://www.vox.com/2020/4/7/21201260/coronavirus-usa-chart-mask-shortage-ventilators-flatten-the-curve>. Accessed Nov 7, 2024.
170. Scott D. Flattening the curve worked—until it didn't. *Vox*; Dec 31, 2020. Available at: <https://www.vox.com/22180261/covid-19-coronavirus-social-distancing-lockdowns-flatten-the-curve>. Accessed Nov 7, 2024.
171. McGrail DJ, Dai J, McAndrews KM, Kalluri R. Enacting national social distancing policies corresponds with dramatic reduction in COVID19 infection rates. *PLoS One* 2020;15(7). doi: 10.1371/JOURNAL.PONE.0236619.
172. Kwon S, Joshi AD, Lo CH, et al. Association of social distancing and face mask use with risk of COVID-19. *Nat Commun* 2021;12(1). doi: 10.1038/S41467-021-24115-7.
173. Vopham T, Weaver MD, Adamkiewicz G, Hart JE. Social distancing associations with COVID-19 infection and mortality are modified by crowding and socioeconomic status. *Int J Environ Res Public Health* 2021;18(9). doi: 10.3390/IJERPH18094680.
174. Kelly J. The failed experiment of social distancing. *Tennessee Star*, May 6, 2020. Available at: <https://tennesseestar.com/commentary/commentary-the-failed-experiment-of-social-distancing/admin/2020/05/06/>. Accessed Nov 7, 2024.
175. Senger M. The deeper history of 'social distancing'—the Western term for lockdown. *Brownstone Institute*; Sep 13, 2022. Available at: <https://brownstone.org/articles/real-story-of-social-distancing/>. Accessed Nov 17, 2024.
176. Jackson J. Yale doctor Harvey Risch calls COVID lockdown 'counterproductive.' *Newsweek*, Apr 20, 2021. Available at: <https://www.newsweek.com/yale-professor-lockdowns-1585070>. Accessed Nov 7, 2024.
177. Katz DL. Is our fight against coronavirus worse than the disease? *NY Times*, Mar 20, 2020. Available at: <https://www.nytimes.com/2020/03/20/opinion/coronavirus-pandemic-social-distancing.html?ysclid=m38ld80ugy958593078>. Accessed Nov 7, 2024.
178. Watson S. Anti-lockdown Stanford professor: 'Academic freedom is dead.' *Modernity*; Nov 24, 2022. Available at: <https://modernity.news/2022/11/24/anti-lockdown-stanford-professor-academic-freedom-is-dead/>. Accessed Nov 7, 2024.
179. Christensen J, Hammond E, Radford A, Chowdhury M. Takeaways from Fauci's testimony at contentious House hearing on Covid-19 pandemic. *CNN*; Jun 3, 2024. Available at: <https://www.cnn.com/2024/06/03/politics/fauci-testimony-house-hearing-covid-19/index.html>. Accessed Nov 7, 2024.
180. Facente SN, Hunter LA, Packel LJ, et al. Feasibility and effectiveness of daily temperature screening to detect COVID-19 in a prospective cohort at a large public university. *BMC Public Health* 2021;21(1). doi: 10.1186/S12889-021-11697-6.
181. Maung Z, Kristensen M, Hoffman B, Jacobson MA. Temperature screening of healthcare personnel is ineffective in controlling COVID-19. *J Occup Environ Med* 2022;64(5):382-384. doi: 10.1097/JOM.0000000000002518.
182. Stave GM, Smith SE, Hymel PA, Heron R. Worksite temperature screening for COVID-19. *J Occup Environ Med* 2021;63(8):638-641. doi: 10.1097/JOM.0000000000002245.
183. Vilke GM, Brennan JJ, Cronin AO, Castillo EM. Clinical features of patients with COVID-19: Is temperature screening useful? *J Emerg Med* 2020;59(6):952-956. doi: 10.1016/J.JEMEREMED.2020.09.048.
184. McConeghy KW, White E, Panagiotou OA, et al. Temperature screening for SARS-CoV-2 in nursing homes: evidence from two national cohorts. *J Am Geriatr Soc* 2020;68(12):2716-2720. doi: 10.1111/JGS.16876.
185. Ahmed N, Michelin RA, Xue W, et al. DIMY: Enabling privacy-preserving contact tracing. *J Network Computer App* 2022;202. doi: 10.1016/J.JNCA.2022.103356.
186. Wang X, Du Z, James E, et al. The effectiveness of COVID-19 testing and contact tracing in a US city. *Proc Natl Acad Sci USA* 2022;119(34). doi: 10.1073/PNAS.2200652119.
187. Lash RR, Moonan PK, Byers BL, et al. COVID-19 case investigation and contact tracing in the US, 2020. *JAMA Netw Open* 2021;4(6). doi: 10.1001/JAMANETWORKOPEN.2021.15850.
188. Bayly H, Stoddard M, Van Egeren D, et al. Looking under the lamp-post: quantifying the performance of contact tracing in the United States during the SARS-CoV-2 pandemic. *BMC Public Health* 2024;24(1). doi: 10.1186/S12889-024-18012-Z.
189. Oeltmann JE, Vohra J, Matulewicz HH, et al. Isolation and quarantine for coronavirus disease 2019 in the United States, 2020-2022. *Clin Infect Dis* 2023 Jul 26;77(2):212-219. doi: 10.1093/cid/ciad163.
190. Garg P. Role of povidone-iodine gargles in COVID-19 pandemic and a ray of hope for future. *J Family Med Prim Care* 2021;10(10):3941. doi: 10.4103/JFMPC.JFMPC_2611_20.
191. Badger D, Moffit R. COVID-19 and federalism: public officials' accountability and comparative performance. *Heritage Foundation Report*; Jul 26, 2021. Available at: <https://www.heritage.org/health-care-reform/report/covid-19-and-federalism-public-officials-accountability-and-comparative>. Accessed Oct 28, 2024.
192. LoveWorldUK. 'We need accountability' for failed COVID-19 policies: Dr. Scott Atlas. *Loveworld UK*; Mar 24, 2022. Available at: <https://loveworlduk.org/we-need-accountability-for-failed-covid-19-policies-dr-scott-atlas/>. Accessed Oct 28, 2024.
193. Stand for Health Freedom. Take action: Ask key congressmen to formally investigate the CDC's conduct during COVID-19; Jul 30, 2023. Available at: <https://standforhealthfreedom.com/actions/investigate-the-cdc/>. Accessed Oct 28, 2024.
194. Moffit R. In COVID-19 oversight, House Republicans deliver a win for accountability. *Daily Signal*, May 23, 2024. Available at: <https://www.dailysignal.com/2024/05/23/in-covid-19-oversight-house-republicans-deliver-a-win-for-accountability/>. Accessed Oct 28, 2024.
195. Setty M. Too little too late: WSJ tries to save face on failed COVID policies. *The Burning Platform*; Sep 14, 2022. Available at: <https://www.theburningplatform.com/2022/09/14/too-little-too-late-wsj-tries-to-save-face-on-failed-covid-policies/comment-page-1/>. Accessed Oct 28, 2024.
196. Lison A, Banholzer N, Sharma M, et al. Effectiveness assessment of non-pharmaceutical interventions: lessons learned from the COVID-19 pandemic. *Lancet Public Health* 2023;8(4):e311-e317. doi: 10.1016/S2468-2667(23)00046-4/ASSET/6D7E7FEA-0419-455F-AA53-15086AFCABB8/MAIN.ASSETS/GR2.JPG.
197. He X, Chen H, Zhu X, Gao W. Non-pharmaceutical interventions in containing COVID-19 pandemic after the roll-out of coronavirus vaccines: a systematic review. *BMC Public Health* 2024;24(1). doi: 10.1186/S12889-024-18980-2.
198. Agyapon-Ntra K, McSharry PE. A global analysis of the effectiveness of policy responses to COVID-19. *Sci Rep* 2023;13(1). doi: 10.1038/S41598-023-31709-2.