

PUBLIC HEALTH POLICY AS PUBLIC CHOICE FAILURE

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ABSTRACT

The COVID-19 pandemic has wrought a devastating toll, causing over a million deaths in the United States along with widespread disability and economic disruption. Yet the magnitude of these costs was not inevitable—it was shaped by the policy choices made in response to the crisis. This Article argues that the U.S. pandemic response suffered from public choice dynamics that systematically skewed policymaking away from the public interest. Examining three key policy areas—vaccine rollout, mask mandates, and ventilation standards—the Article demonstrates how misaligned political incentives led officials to prioritize short-term appeasement of a pandemic-weary public over science-based strategies that would maximize long-term welfare. In each domain, political actors faced strong incentives to downplay risks, overpromise solutions, and delay difficult decisions, resulting in a pandemic response that was often too little, too late, and too beholden to partisan interests. The Article concludes that reckoning honestly with these failures is a crucial first step toward reforming our public health institutions and ensuring a more effective response to the next crisis. It offers recommendations for rebuilding public trust, depoliticizing public health communication, and institutionalizing science-based policymaking. More broadly, the Article underscores the urgent need to realign political incentives with the public interest in the prevention of and response to public health emergencies.

INTRODUCTION

American politicians and citizens have one thing in common: after over a million deaths in the United States, they are trying to put COVID-19 behind them and speak of the pandemic in the past tense. Nonetheless, the World Health Organization (WHO) has made it clear that the pandemic continues,¹ and COVID still spreads (in a fairly unmitigated manner) in the United States on a large scale. While many people consider themselves “done with the virus,” the virus is not done with them. The advent of vaccines has dramatically improved outcomes from acute COVID, but even vaccinated individuals remain at high risk of Long COVID and run the risks of (sometimes lethal) cardiovascular events or diseases such as diabetes.² Harvard economist Professor David Cutler estimates the costs of Long COVID to the United States at \$3.7 trillion, consisting of losses to quality of life combined with lost earnings and higher spending on medical care.³ Broad swaths of the population currently remain unaware both of the relationship between a number of health problems and previous (or repeat) COVID infections, and of the risks posed by unstopped spread.⁴ How did we get to a point in the United States and beyond where these risks, including what the WHO deems a 10-20% risk of “post-COVID-19 condition,”⁵ generally do not motivate the government to protect the population via regulatory and other measures?⁶

¹ While the WHO has called off the public health emergency status of COVID, it declared the need “to transition to long-term management of the COVID-19 pandemic.” World Health Organization (WHO), *Statement on the Fifteenth Meeting of the IHR (2005) Emergency Committee on the COVID-19 Pandemic* (May 5, 2023), <https://www.who.int/news/item/05-05-2023-statement-on-the-fifteenth-meeting-of-the-international-health-regulations-%282005%29-emergency-committee-regarding-the-coronavirus-disease-%28covid-19%29-pandemic>.

² See *infra* I.B.1.

³ David M. Cutler, *The Economic Costs of Long COVID: An Update*, HARVARD UNIVERSITY, https://scholar.harvard.edu/files/cutler/files/long_covid_update_7-22.pdf.

⁴ Optimism bias drives individuals to think that they are less likely to experience negative outcomes than other people. For a discussion of COVID-19 policies from a behavioral science lens, see generally Doron Teichman & Kristen Underhill, *Infected by Bias: Behavioral Science and the Legal Response to COVID-19*, 47 AM. J. L. & MED. 205 (2021).

⁵ *Coronavirus Disease (COVID-19): Post COVID-19 Condition*, WORLD HEALTH ORG. (Mar. 28, 2023), [https://www.who.int/news-room/questions-and-answers/item/coronavirus-disease-\(covid-19\)-post-covid-19-condition](https://www.who.int/news-room/questions-and-answers/item/coronavirus-disease-(covid-19)-post-covid-19-condition).

⁶ Experts were stating early on in the pandemic that herd immunity for COVID was a pipe

The government's failure to implement policy in the broader interests of the population's health appears, at least superficially, incomprehensible. *Prima facie*, population-level public health policy is (or should be) driven by the public interest. But the core drivers behind legislative and political choices more generally also apply to public health policy: political actors prioritize re-election, and re-election is necessarily dependent on capturing a majority vote share. Consequently, through this lens—a public choice lens—we can begin to better understand decisions about public health.

Deploying the most recent public health crisis—COVID-19—as an example, this Article argues that public choice failure explains significant parts of the policy and legal landscape surrounding public health in the United States. It outlines how a law and economics framework applies to health policy decision-making generally and highlights the challenges of political actors prioritizing re-election over the public good, leading to public health policies that do not follow the emerging scientific consensus.⁷

This Article proceeds in two parts. Part I outlines the devastating health and economic costs of the COVID-19 pandemic, providing crucial context for the policy decisions that have followed. Part II then examines three key areas of pandemic response—vaccines, masking, and ventilation—to demonstrate how public choice dynamics led to problematic outcomes in each domain. Through this analysis, the Article shows how misaligned political incentives have consistently led to the failure to implement science-based strategies that maximize long-term welfare.

dream. See, e.g., Jonathan W. Yewdell, *Individuals Cannot Rely on COVID-19 Herd Immunity: Durable Immunity to Viral Disease Is Limited to Viruses with Obligate Viremic Spread*, 17 PLOS PATHOGENS 1 (2021).

⁷ See, e.g., Darragh Roche, *Fauci Said Masks 'Not Really Effective in Keeping out Virus,' Email Reveals*, NEWSWEEK (June 2, 2021), <https://www.newsweek.com/fauci-said-masks-not-really-effective-keeping-out-virus-email-reveals-1596703>. See, e.g., Joshua Cohen, *COVID-19 Fallout: Ruinous Effects of Politicization of Public Health Agencies, Such As the CDC*, FORBES (Apr. 1, 2022), <https://www.forbes.com/sites/joshuacohen/2022/04/01/covid-19-fallout-ruinous-effects-of-politicization-of-public-health-agencies-such-as-the-cdc>.

I. THE COSTS OF PUBLIC HEALTH CRISES

Public health emergencies universally impose costs on individuals and communities. In Part A, we outline the general harms and costs that public health crises engender, including in ways that are disparate along gender, ethnic, and other axes. Part B then contextualizes public health harms by narrowing the lens on the most recent public health emergency in the United States, COVID-19.

A. The Harms of Public Health Crises

In the United States, states have long used their general police powers and the federal government has used its enumerated powers to protect public health.⁸ The goal of public health policies is generally to reduce the number of deaths and amount of acute and chronic disease, disability, and economic loss produced by both natural and man-made disasters.⁹ Despite various levels of efforts by government entities, private groups, and individuals, the United States has lost a significant number of lives to various pandemics. The so-called Spanish flu of 1918 killed 675,000 Americans, with the virus disappearing before pharmaceutical companies could isolate the virus and much less treat it.¹⁰ HIV/AIDS has taken 700,000 American lives, and COVID-19 has taken over 1.2 million so far. According to the Centers for Disease Control and Prevention (CDC), close to 727,000 Americans died from opioid overdoses between 1999 and 2022,¹¹ while tobacco use leads to more than 480,000 American deaths per year.¹²

Government actions matter. While governments can rarely prevent all deaths from what turns into an epidemic, international comparisons are one way to glean that national policies both during a

⁸ Wendy E. Parmet & Jason A. Smith, *Free Speech and Public Health: A Population-Based Approach to the First Amendment*, 39 LOY. L.A. L. REV. 363, 366 (2006).

⁹ See, e.g., MICHAEL OLUSEGUN AFOLABI, PUBLIC HEALTH DISASTERS 175–214 (Springer Nature, 2018), https://link.springer.com/chapter/10.1007/978-3-319-92765-7_1.

¹⁰ See Sara Francis Fujimura, *Purple Death: The Great Flu of 1918*, 8 PERSPECTIVES IN HEALTH (2003), <https://www.paho.org/en/who-we-are/history-paho/purple-death-great-flu-1918>.

¹¹ *Understanding the Opioid Overdose Epidemic*, CTR. FOR DISEASE CONTROL & PREVENTION, <https://www.cdc.gov/overdose-prevention/about/understanding-the-opioid-overdose-epidemic.html> (last updated Nov. 1, 2024).

¹² *Health Effects of Tobacco Use*, U.S. FOOD & DRUG ADMIN, <https://www.fda.gov/tobacco-products/public-health-education/health-effects-tobacco-use> (last updated May 31, 2024).

pandemic and on public health generally have an impact. For example, as of May 2024, the United States had 1,194 deaths from COVID per 100,000 people while Japan had seventy-five.¹³ This occurred due to a combination of factors, such as Japan's superior performance on infection control measures, vaccine coverage (though Japan had a slower start), and the general health of the population (which is influenced by pre-pandemic government health measures); this is the case even though age structure (with Japan having more elderly inhabitants than the United States), population density, urbanization, and initial vaccine coverage would have worked in the opposite direction.¹⁴

Notably, the effects of epidemics and pandemics are not distributed evenly across the population. For example, even though Black people represent only 12% of the U.S. population, they make up over 40% of HIV diagnoses and deaths, with the disparity between that group and other ethnicities only deepening over time; factors including poverty and lack of access to health are believed to be contributing to this situation.¹⁵ Black, Hispanic, and Native American individuals have also died at higher rates from COVID-19 than White or Asian people in the United States, due in part to having greater odds of working in jobs that could not be performed remotely, living in larger households, and having to use public transportation.¹⁶ Long COVID has also affected different groups in a disparate manner, with women being almost twice as likely to suffer this complication than men, and with higher odds of Long COVID as well for some ethnic groups such as Hispanics.¹⁷

¹³ See Philip Schellekens, *Japan and US Are Worlds Apart on Pandemic Mortality*, PANDEMIC (last updated Apr. 6, 2024), <https://pandemic.com/japan-and-us-are-worlds-apart-on-pandemic-mortality/>.

¹⁴ See *id.*

¹⁵ *The Impact of HIV on Black People in the United States*, KAISER FAM. FOUND. (Sept. 9, 2024), <https://www.kff.org/hiv/aids/fact-sheet/the-impact-of-hiv-on-black-people-in-the-united-states/>.

¹⁶ Latoya Hill & Samantha Artiga, *COVID-19 Cases and Deaths by Race/Ethnicity: Current Data and Changes Over Time*, KAISER FAM. FOUND. (Aug. 22, 2022), <https://www.kff.org/racial-equity-and-health-policy/issue-brief/covid-19-cases-and-deaths-by-race-ethnicity-current-data-and-changes-over-time/>.

¹⁷ Jennifer Cohen & Yana van der Meulen Rodgers, *An Intersectional Analysis of Long COVID Prevalence*, 22 INT. J. EQUITY HEALTH 1, 4 (2023), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10717295/>.

B. Situating Public Health Harms

While deaths are one of the major harms of epidemics, they are only part of the picture. As mentioned above, disability, acute and chronic disease, and economic harms suffered by the population are all significant problems that have a major impact on individuals' lives. The best representative of the multiple facets of such public health crises is one that most countries in the world face at this time: COVID-19. We trace here both the health and economic harms that the United States has suffered and continues to suffer from this viral plague.

1. Health Harms

Public health emergencies result in health harms. This Section seeks to describe and contextualize the health harms resulting from COVID-19 infection. The subsections below try to provide some clarity on the manifold consequences of infection by separating them into categories. That said, one must be aware that many of these categories are related and contain important overlaps. Rather than attempting to catalogue all the health harms stemming from COVID, which would be impossible in the space of a law review article, these subsections seek to provide key highlights that demonstrate the significant negative consequences of allowing the current rate of spread of the virus.

2. Acute Infections, Hospitalizations, and Deaths

In the acute phase after contracting COVID-19, people may experience anything from no symptoms, to mild or moderate respiratory symptoms, to symptoms so severe they lead to death.¹⁸ As the WHO explains, while some pre-existing conditions increase the likelihood of negative outcomes, "anyone can get sick with COVID-19 and become seriously ill or die at any age."¹⁹ As of the writing of this Article, the virus had led in the United States to over 7.6 million hospitalizations and over 1.2 million deaths.²⁰ The mRNA vaccines at one point

¹⁸ *Coronavirus Disease (COVID-19)*, WORLD HEALTH ORG., https://www.who.int/health-topics/coronavirus#tab=tab_1.

¹⁹ *Id.*

²⁰ COVID-NET, CTR. FOR DISEASE CONTROL & PREVENTION, <https://www.cdc.gov/covid/php/covid-net/index.html> (last visited July 6, 2025); COVID

appeared to reduce the risk of death and of the need for mechanical ventilation for COVID-19 infection by about 90%.²¹ As of data collected in California between October 11 and December 10, 2023, however, the most recent booster released in September 2023 was only about 60% effective at reducing hospitalization, while previous doses of COVID vaccine (regardless of type and number) no longer reduced the odds of hospitalization at all.²²

Some research suggests that reinfections increased the risk of death and other health consequences both in the acute phase and for the following six months, and that these risks persisted regardless of vaccination status.²³ Reinfection can happen more quickly than after ninety or even sixty days.²⁴

3. *Post-Acute Sequelae (PASC) Generally*

The term “Post-Acute Sequelae” (also known as PASC, or alternatively as Long COVID) describes a host of health issues that patients experience for weeks, months, or years after the acute phase of COVID-19 infection passes.²⁵ The most commonly described

Data Tracker, CTR. FOR DISEASE CONTROL & PREVENTION, https://covid.cdc.gov/covid-data-tracker/#trends_totaldeaths_select_00 (last visited July 6, 2025).

²¹ Mark W. Tenforde et al., *Effectiveness of mRNA Vaccination in Preventing COVID-19-Associated Invasive Mechanical Ventilation and Death – United States, March 2021-January 2022*, 71 MORBIDITY MORTALITY WKLY. REP. 459, 461 (2022), <https://www.cdc.gov/mmwr/volumes/71/wr/mm7112e1.htm>

²² Sara Y. Tartof et al., *Estimated Effectiveness of the BNT162b2 XBB Vaccine Against COVID-19*, 184 JAMA INTERNAL MED. 932, 934 (2024), <https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/2820268>.

²³ Benjamin Bowe et al., *Acute and Postacute Sequelae Associated with SAES-CoV2 Reinfection*, 28 NATURE MED. 2398, 2398 (2022); see also Nathaniel Hendrix et al., *Influence of Prior SARS-CoV-2 Infection on COVID-19 Severity: Evidence from the National COVID Cohort Collaborative*, MEDRXIV (Aug. 6, 2023), <https://www.medrxiv.org/content/10.1101/2023.08.03.23293612v1.full.pdf>.

²⁴ See Nhu Ngoc Nguyen et al., *Reinfections with Different SARS-CoV-2 Omicron Subvariants, France*, 28 EMERGING INFECTIOUS DISEASES 2341, 2341 (2022), https://wwwnc.cdc.gov/eid/article/28/11/22-1109_article.

²⁵ *Long COVID or Post-COVID Condition*, CTR. FOR DISEASE CONTROL & PREVENTION, https://archive.cdc.gov/www_cdc.gov/coronavirus/2019-ncov/long-term-effects/index.html (last updated Dec. 16, 2022) (discussing that some of these symptoms overlap with ones we describe in the subsections below. For a discussion of the pathways that may lead to PASC), see Zaki A. Sherif et al., *Pathogenic Mechanisms of Post-Acute Sequelae of SARS-CoV-2 Infection*

symptoms of Long COVID are fatigue, respiratory and heart symptoms such as difficulty breathing or heart palpitations, neurological symptoms such as brain fog or headaches, digestive symptoms such as diarrhea or stomach pain, and other symptoms such as joint or muscle pain.²⁶ An individual can be infected with COVID-19 repeatedly, and they risk developing Long COVID each time even if they previously did not.²⁷ Some research finds an increased risk of Long COVID with each reinfection, with the severity of disease generally worsening after every instance of reinfection.²⁸ A June 2023 Canadian study found that 15% of individuals with one infection reported Long COVID symptoms, 25% of those with two infections, and a whopping 38% of those with three or more infections.²⁹ U.S. Census Bureau data through early November 2023 suggests that 24% of American adults have experienced symptoms for more than three months and that more than 30% of those individuals could not complete their previous daily activities as a result.³⁰ Among children and adolescents, over 16%

(PASC), ELIFE. *See also* Dr. Elisa Perego, LONG COVID KIDS (last visited July 6, 2025), <https://www.longcovidkids.org/champions/dr-elisa-perego/> (Dr. Elisa Perego, a researcher and advocate, is said to have termed the name “Long Covid.”); Dr. Elisa Perego (@elisaperego78), X (11:45 AM, Jan 22, 2024), <https://x.com/elisaperego78/status/1749488565577265387?s=20> (expressing concern that the press has at times implied that symptoms it named “longcold” or “longflu” are the same as Long COVID, and that by extension COVID is the same as a cold or flu, which has served as the narrative minimizing COVID as a problem.)

²⁶ *See id.*

²⁷ *Long COVID Basics*, CTR. FOR DISEASE CONTROL & PREVENTION, <https://www.cdc.gov/covid/long-term-effects/index.html> (Feb. 3, 2025).

²⁸ *See* Charles Schmidt, *Do Repeat COVID Infections Increase the Risk of Severe Disease or Long COVID?*, SCI. AM. (Feb. 15, 2023), <https://www.scientificamerican.com/article/do-repeat-covid-infections-increase-the-risk-of-severe-disease-or-long-covid/>; *see also* Bowe et. al., *supra* note 23 at 2402.

²⁹ Sianne Kuang et al., *Experiences of Canadians with Long-Term Symptoms Following COVID-19*, INSIGHTS CANADIAN SOC'Y (Dec. 8, 2023), <https://www150.statcan.gc.ca/n1/pub/75-006-x/2023001/article/00015-eng.htm> (resulting from a collaboration between the Public Health Agency of Canada and Statistics Canada).

³⁰ *See Nearly 1 in 4 American Adults Who Get COVID-19 Suffer from Long COVID*, HELPADVISOR, https://www.helpadvisor.com/community-health/long-covid-report?fbclid=IwAR2xfc8wN4MruDnqs-cODTXGMB3wvuG_AeGc1JOrMvbJmIO9aS2R8gWyqg2c (citing U.S. Census Bureau data through Nov. 8, 2023).

experienced one or more symptoms at least three months after COVID infection.³¹

While the COVID-19 vaccines for some time significantly lowered health risks in the acute phase, they only appear to reduce the odds of Long COVID by about 15-20%.³² A pre-print of an Australian study examining a large sample in which 94% of participants had received at least three doses of vaccine found that ninety days after infection with an Omicron variant, almost one in five respondents suffered Long COVID symptoms; in other words, Long COVID remained prevalent even in a highly vaccinated population.³³

A team of medical researchers summarized the current state of knowledge about the prevalence of Long COVID as follows:

At least 65 million individuals around the world have Long COVID, based on a conservative estimated incidence of 10% of infected people and more than 651 million documented COVID-19 cases worldwide; the number is likely much higher due to many undocumented cases. The incidence is estimated at 10-30% of non-hospitalized cases, 50-70% of hospitalized cases and 10-12% of vaccinated cases. Long COVID is associated with all ages and acute phase disease severities, with the highest percentage of diagnoses between the ages of 36 and 50 years, and most Long COVID cases are in non-hospitalized patients with a mild acute illness, as this population represents the majority of overall COVID-19 cases.³⁴

COVID-19 variants also seem to influence the risk of Long COVID, with the wild-type (original), Alpha, and Delta variants causing greater odds of PASC than the Omicron BA.1 variant.³⁵ However,

³¹ See Li Jiang et al., *A Systematic Review of Persistent Clinical Features After SARS-CoV-2 in the Pediatric Population*, 152 PEDIATRICS 1, 5, 19 (2023), <https://publications.aap.org/pediatrics/article/152/2/e2022060351/192816/A-Systematic-Review-of-Persistent-Clinical>.

³² Manlio De Domenico, *Prevalence of Long COVID Decreases for Increasing COVID-19 Vaccine Uptake*, 3 PLOS GLOB. PUB. HEALTH 1, 10 (2023), <https://doi.org/10.1371/journal.pgph.0001917>.

³³ Mulu Woldegiorgis et al., *Long COVID in a Highly Vaccinated Population Infected During a SARS-CoV-2 Omicron Wave—Australia, 2022*, MEDRXIV (Aug. 9, 2023), <https://www.medrxiv.org/content/10.1101/2023.08.06.23293706v1>.

³⁴ Hannah E. Davis et al., *Long COVID: Major Findings, Mechanisms and Recommendations*, 21 NATURE REVS. MICROBIOLOGY 133, 133 (2023), <https://www.nature.com/articles/s41579-022-00846-2>.

³⁵ Christian R. Kahlert et al., *Post-Acute Sequelae After Severe Acute Respiratory Syndrome*

receiving a booster before Omicron BA.1 infection does not appear to have reduced the number of resulting PASC symptoms.³⁶ The odds of developing PASC remain significant even if one remains up to date with vaccines, which the majority of the U.S. population is currently failing to do in any case.³⁷

A large meta-analysis also found that the odds of developing PASC are influenced by a number of individual characteristics, many of which can be controlled by the people in question either little or not at all; these include female sex, older age, higher BMI, smoking, and pre-existing conditions such as anxiety and/or depression, asthma, chronic obstructive pulmonary disease (COPD), diabetes, ischemic heart disease, and immunosuppression.³⁸ Neurodivergence and other mental differences also elevate the risk of an individual developing PASC.³⁹

Washington University epidemiologist Ziyad Al-Aly has summarized the situation as follows in his recent senatorial committee testimony on the topic of PASC: “The current research effort on Long COVID does not match the scale and the urgency of the problem. Research effort must be commensurate with the burden of disease caused by these infections. And it should be executed with a sense of urgency.”⁴⁰ He, like other commentators, urged the federal government

Coronavirus 2 Infection by Viral Variant and Vaccination Status: A Multicenter Cross-Sectional Study, 77 CLINICAL INFECTIOUS DISEASES 194, 199 (2023), <https://academic.oup.com/cid/article/77/2/194/7076063>.

³⁶ See *id.*

³⁷ As of May 2023, only 17% of the U.S. population had obtained the then-most-recent (so-called bivalent) booster vaccine available for almost a year. See Joanna J. Reagan, MD et al., *Use of Updated COVID-19 Vaccines 2023–2024 Formula for Persons Aged ≥6 Months: Recommendations of the Advisory Committee on Immunization Practices — United States, September 2023*, 72 MORBIDITY MORTALITY WKLY. REP. 1140, 1141 (2023).

³⁸ See Vasiliki Tsampasian et al., *Risk Factors Associated with Post-COVID-19 Condition: A Systematic Review and Meta-Analysis*, 183 JAMA INTERNAL MED. 566, 567 (2023).

³⁹ See, e.g., Rachael K. Raw et al., *Neurodivergence as a Risk Factor for Post-Covid-19 Syndrome* (June 12, 2023) (unpublished manuscript) (on file with medRxiv).

⁴⁰ Ziyad Al-Aly, M.D., Clinical Epidemiologist, Washington University, Addressing Long COVID: Advancing Research and Improving Patient Care, Testimony Before the U.S. Senate Committee on Health, Education, Labor, and Pensions, 118th Congress (Jan. 18, 2024), at 5, <https://www.help.senate.gov/download/al-aly-testimony>.

to invest (at least) \$1 billion a year into the problem.⁴¹ Some have also suggested that the definition of PASC should be expanded to include often-invisible organ damage, which “might affect over 50% of post-COVID-19 individuals, and perhaps more in adolescents and children.”⁴²

4. Cardiovascular Dysfunction

A study found that even after a year post-infection, COVID-19 increases the risk of stroke or transient ischemic attack (TIA) by over 50%.⁴³ The study authors concluded that “[b]ecause of the chronic nature of these conditions, they will likely have long-lasting consequences for patients and health systems and also have broad implications on economic productivity and life expectancy, [which] will require a much-needed, but so far lacking, urgent and coordinated long-term global response strategy.”⁴⁴ A study of previously predominantly healthy patients with mild COVID-19 symptoms in the acute phase found a clinically significant progression of vascular impairment in the months following the disease, suggesting “the existence of widespread and long-lasting pathological process in the vasculature following the infection” that may be rooted in a post-recovery autoimmune response to the virus.⁴⁵ Scientists have issued “a warning for the possibility of a heart failure pandemic” as a result of COVID.⁴⁶

In previously healthy children who were either asymptomatic or had mild symptoms of COVID-19 in the acute phase, significantly more frequent persistent left ventricular myocardial deformation

⁴¹ See *id.*; Lisa McCorkell & Michael J. Peluso, *Long COVID Research Risks Losing Momentum – We Need a Moonshot*, NATURE (Oct. 18, 2023), <https://www.nature.com/articles/d41586-023-03225-w>.

⁴² Andrew G. Ewing et al., *Review of Organ Damage from COVID and Long COVID: a Disease with a Spectrum of Pathology*, 5 MED. REV. 66 (July 2, 2024), <https://doi.org/10.1515/mr-2024-0030> (citations omitted).

⁴³ See Yan Xie et al., *Long-Term Cardiovascular Outcomes of COVID-19*, 28 NATURE MED. 583, 583 (2022).

⁴⁴ *Id.*

⁴⁵ Mario Podrug et al., *Long-Term Adverse Effects of Mild COVID-19 Disease on Arterial Stiffness, and Systemic and Central Hemodynamics: A Pre-Post Study*, 12 J. CLINICAL MED. 2123, 2123, 2135 (2023).

⁴⁶ Kozue Murata et al., *Predicted Risk of Heart Failure Pandemic Due to Persistent SARS-CoV-2 Infection Using a Three-Dimensional Cardiac Model*, 27 ISCIENCE, 1, 5 (2024).

abnormalities were detected than in children who had never been infected, with more significant involvement in children affected during the second wave of the pandemic.⁴⁷ The researchers expressed concern about finding abnormalities in about two thirds of the children who had been infected in light of the fact that such abnormalities have been associated with higher morbidity and mortality.⁴⁸

Another common cardiovascular consequence of COVID infection is the development of orthostatic problems, which some research has put at affecting about two thirds or more of all individuals with PASC.⁴⁹ This includes Postural Orthostatic Tachycardia Syndrome (POTS)—a disease in which upright postures are poorly tolerated and lead to excessive tachycardia, among many other problems.⁵⁰

5. Lung Damage and Respiratory Problems

While it could not pinpoint causality conclusively, a study using computed cardiopulmonography found an increase of ventilation inhomogeneity (meaning, uneven lung ventilation) in study subjects who had been infected with COVID-19 that was roughly equivalent to fifteen years of aging.⁵¹ Furthermore, a small study using low-field-strength MRI detected persistent pulmonary dysfunction in children and adolescents who had been infected with COVID-19, both among those who had recovered and those who suffered from Long COVID.⁵²

Scientists performing a review of past studies concluded that “[p]ersistent respiratory symptoms are common postacute sequelae of

⁴⁷ Jolanda Sabatino et al., *Mid- and Long-Term Atrio-Ventricular Functional Changes in Children After Recovery from COVID-19*, 12 J. CLIN. MED. 186, 186 (2023).

⁴⁸ *Id.* at 194.

⁴⁹ Nicholas W. Larsen et al., *Characterization of Autonomic Symptom Burden in Long COVID: A Global Survey of 2,314 Adults*, 13 FRONTIERS IN NEUROLOGY 1, 1 (2022). One study put it as high as 79%. See Marie-Claire Seeley et al., *High Incidence of Autonomic Dysfunction and Postural Orthostatic Tachycardia Syndrome in Patients with Long COVID: Implications for Management and Health Care Planning*, 138 AM. J. MED. 354, 354 (2023).

⁵⁰ Deobrat Mallick et al., *COVID-19 Induced Postural Orthostatic Tachycardia Syndrome (POTS): A Review*, 15 CUREUS 1,1 (2023).

⁵¹ Snapper R. M. Magor-Elliott et al., *Altered Lung Physiology in Two Cohorts After COVID-19 Infection as Assessed by Computed Cardiopulmonography*, 133 J. APPLIED PHYSIOLOGY 1175, 1175 (2022).

⁵² Rafael Heiss et al., *Pulmonary Dysfunction After Pediatric COVID-19*, 306 RADIOLOGY 1,1 (2022).

COVID19.”⁵³ Respiratory impairments can come in many forms, including obstruction (decreased airflow), restriction (reduced lung volume), or impaired perfusion (decreased blood flow).⁵⁴

6. Harm to Immune System and Increase in Cancer Risks

Some recent research suggests that severe COVID-19 may lead to long-term changes to the innate immune system, which may be causing organ damage all over the body as well as widespread inflammation.⁵⁵ Being infected with COVID also appears to subsequently render the immune-cell response to vaccination less effective.⁵⁶

One study reported an association between previous COVID infection and likelihood of developing respiratory syncytial virus (RSV) for young children.⁵⁷ Other research showed disruption of dendritic cell function (which plays an important role in the defense against viral infections) as late as seven months after infection.⁵⁸

An examination of Japanese health records uncovered that COVID-19 infection increases the risk of autoimmune diseases, with a substantial increase for systemic sclerosis and immunoglobulin G4-related disease (a fibroinflammatory disease involving organ

⁵³ Michel Achkar et al., *Post-COVID Lung Disease(s)*, 17 ANNALS THORACIC MED. 137, 137, 143 (2022).

⁵⁴ See, e.g., Jeffrey M. Sturek & Alexandra Kadl, *COVID-19 Can Cause Lasting Lung Damage - 3 Ways Long COVID Patients' Respiration Can Suffer*, CONVERSATION (Sept. 22, 2022), <https://theconversation.com/covid-19-can-cause-lasting-lung-damage-3-ways-long-covid-patients-respiration-can-suffer-189516>.

⁵⁵ *Severe COVID-19 May Lead to Long-Term Innate Immune System Changes*, NAT'L INST. OF HEALTH (Aug. 18, 2023), <https://www.nih.gov/news-events/news-releases/severe-covid-19-may-lead-long-term-innate-immune-system-changes> (citing Jin-Gyu Cheong et al., *Epigenetic Memory of Coronavirus Infection in Innate Immune Cells and Their Progenitors*, 186 CELL 3882, 3882 (2023)).

⁵⁶ *SARS-CoV2 Infection Weakens Immune-Cell Response to Vaccination*, NAT'L INST. OF HEALTH (Mar. 20, 2023), <https://www.nih.gov/news-events/news-releases/sars-cov-2-infection-weakens-immune-cell-response-vaccination> (citing Fei Gao et al., *Spheromers Reveal Robust T Cell Responses to the Pfizer/BioNTech Vaccine and Attenuated Peripheral CD8+ T Cell Responses Post SARS-CoV-2 Infection*, 56 IMMUNITY 864, 864 (2023)).

⁵⁷ Lindsey Wang et al., *Disruption in Seasonality, Patient Characteristics and Disparities of Respiratory Syncytial Virus Infection Among Young Children in the US During and Before the COVID-19 Pandemic: 2010-2022* (Nov. 29, 2022) (unpublished article) (on file with medRxiv).

⁵⁸ Alberto Pérez-Gómez et al., *Dendritic Cell Deficiencies Persist Seven Months After SARS-CoV-2 Infection*, 18 CELLULAR & MOLECULAR IMMUNOLOGY 2128, 2128, 2132 (2021).

dysfunction or mass lesions whose possible outcomes include organ failure or death).⁵⁹

Last, scientists are concerned that COVID-19 may contribute to an increase in cancer diagnoses, and some research has begun to confirm the possible role of infection in causing malignancies at a greater rate.⁶⁰

7. Diabetes

According to a study pre-print, infection with COVID-19 increases the odds of type 2 diabetes and persists longer in hospitalized than non-hospitalized patients, though vaccination markedly reduces its incidence after infection.⁶¹ Similarly, previous research had found that infection increased the risk of diabetes, which endured after the Omicron variant gained dominance and was reduced to some extent by vaccination.⁶² In a study of youths aged ten to nineteen, rates of new-onset type 2 diabetes rose by 62% and type 1 diabetes by 17% after the COVID-19 pandemic began; the effects were most pronounced in Black and Hispanic children.⁶³

8. Cognitive and Neurological Damage

As one writer put it, “The most common, persistent and disabling symptoms of Long COVID are neurological.”⁶⁴ In their attempts to understand the phenomenon of “brain fog”—a collection of symptoms

⁵⁹ Shoichiro Inokuchi & Koji Shimamoto, *Persistent Risk of Developing Autoimmune Diseases Associated With COVID-19: An Observational Study Using an Electronic Medical Record Database in Japan*, 30 J. CLINICAL RHEUMATOLOGY 65, 65 (2024); Debashis Haldar et al., *An Overview of the Diagnosis and Management of Immunoglobulin G4-Related Disease*, 188 CANADIAN MED. ASSOC. J. 953, 953 (2016).

⁶⁰ See, e.g., Jia Li et al., *Causal Effects of COVID-19 on Cancer Risk: A Mendelian Randomization Study*, 95 J. MED. VIROLOGY 1, 1 (2023).

⁶¹ Kurt Taylor et al., *Diabetes Following SARS-CoV-2 Infection: Incidence, Persistence, and Implications of COVID-19 Vaccination. A Cohort Study of Fifteen Million People 5* (Aug. 9, 2023) (unpublished manuscript) (on file with medRxiv).

⁶² Alan C. Kwan et al., *Association of COVID-19 Vaccination with Risk for Incident Diabetes After COVID-19 Infection*, 6 JAMA NETWORK OPEN 1 (2023).

⁶³ See Matthew T. Mefford et al., *Incidence of Diabetes Among Youth Before and During the COVID-19 Pandemic*, 6 JAMA NETWORK OPEN 1 (2023).

⁶⁴ Stephani Sutherland, *Long COVID Now Looks Like a Neurological Disease, Helping Doctors to Focus Treatments*, SCI. AM. (Mar. 1, 2023), <https://www.scientificamerican.com/article/long-covid-now-looks-like-a-neurological-disease-helping-doctors-to-focus-treatments1/>.

including memory loss, attentional problems, and other cognitive issues—researchers explained that “SARS-CoV-2 infection induces a broad inflammatory response—well beyond the typical type-1 immune response seen with other respiratory viral infections” and concluded that “[t]he particularly immunogenic nature of SARS-CoV-2 and the persistence of the neuroinflammatory changes observed here, together with the magnitude of the population infected during the pandemic, contribute to the emerging crisis of lasting cognitive impairment associated with COVID.”⁶⁵ The researchers noted the consistent parallel between (1) the clinical similarities of the fog experienced by individuals after contracting COVID and the “chemo fog” of which cancer patients complain and (2) the pathophysiological similarities they found.⁶⁶ A study at Yale University suggests that COVID can trigger brain fog symptoms by essentially inducing Alzheimer’s disease.⁶⁷

A Brazilian study discovered significantly reduced visuospatial processing abilities in relatively young individuals who had suffered mild symptoms in the acute phase of their COVID infections, with 24% of patients (as opposed to 4% of controls) struggling to copy a simple figure.⁶⁸ European research concluded that one important common deficit in individuals with post-COVID-19 conditions is severe cognitive slowing, meaning an increase in the amount of time needed to process information and formulate a response.⁶⁹ Research involving older individuals showed a risk of about 30% of having COVID-related impairments in memory, attention and executive function, or multiple cognitive domains.⁷⁰ A study of over one million people that examined

⁶⁵ Anthony Fernández-Castañeda et al., *Mild Respiratory COVID Can Cause Multi-Lineage Neural Cell and Myelin Dysregulation*, 185 CELL 2452, 2464–65 (2022), (citing Carolina Lucas et al., *Longitudinal Analyses Reveal Immunological Misfiring in Severe COVID-19*, 584 NATURE 463 (2020)).

⁶⁶ See *id.* at 2454, 2465.

⁶⁷ See Sean J. Miller et al., *SARS-CoV-2 Induces Alzheimer’s Disease—Related Amyloid- β Pathology in Ex Vivo Human Explants and Retinal Organoids*, 11 SCI. ADVANCES EADS 5006 (2025), <https://www.science.org/doi/10.1126/sciadv.ads5006>.

⁶⁸ See Jonas Jardim de Paula et al., *Visuospatial Processing Impairment Following Mild COVID-19* 3 (Feb. 20, 2021) (unpublished manuscript) (on file with medRxiv).

⁶⁹ See Sijia Zhao et al., *Long COVID Is Associated with Severe Cognitive Slowing: A Multicentre Cross-Sectional Study*, 68 ECLINICALMEDICINE 1,1 (2024).

⁷⁰ See Marco Meglio, *Post-COVID Cognitive and Functional Impairments Predicted by Anosmia, Not Infection Severity*, NEUROLOGYLIVE (Aug. 1, 2022), <https://www.neurologylive.com/view/post-covid-cognitive-functional-impairments-predicted-anosmia-not-infection-severity>.

the health records of both adults and children for two years after COVID infection (to understand neurological and psychiatric effects) concluded:

[T]he risk of cognitive deficit, dementia, psychotic disorder, and epilepsy or seizures remained increased at [two] years after a COVID-19 diagnosis, while the risks of other diagnoses (notably, mood and anxiety disorders) subsided early and showed no overall excess over the two-year follow-up. Children are not at increased risk of mood or anxiety disorders (even over the first [six] months) but share adults' risk of several other diagnoses. The comparable risks seen after the emergence of omicron indicate that the neurological and psychiatric burden of COVID-19 might continue even with variants that lead to otherwise less severe disease.⁷¹

Another large study that examined individuals with mild COVID infections found that while some PASC symptoms improved over the course of a year, concentration and memory impairment—among other problems—continued to be “reported more frequently in infected patients a year after infection, indicating long-lasting symptoms.”⁷² Some recent research on university students suggests that health and cognitive impairments may remain present four years after infection, with fatigue issues worsening in women and memory problems in men.⁷³

Symptoms consistent with myalgic encephalitis/chronic fatigue syndrome (ME/CFS) have also been reported by many individuals after COVID infection, with one meta-analysis putting the figure at almost half of all Long COVID patients.⁷⁴ A German study found that based on both symptom severity and biomarkers, there was little improvement for patients with moderate-to-severe fatigue and exertion

⁷¹ Maxime Taquet et al., *Neurological and Psychiatric Risk Trajectories After SARS-CoV-2 Infection: An Analysis of 2-Year Retrospective Cohort Studies Including 1 284 437 Patients*, 9 LANCET PSYCHIATRY 815, 826 (2022).

⁷² See Barak Mizrahi et al., *Long Covid Outcomes at One Year After Mild SARS-CoV-2 Infection: Nationwide Cohort Study*, 2023;380 BMJ 1, 1 (2023), <https://www.bmj.com/content/380/bmj-2022-072529>.

⁷³ See Ashkan Latifi & Jaroslav Flegr, *The Impact of Virus Variants and Vaccination Timing*, 13 BIOMEDICINES 1, 16–17, <https://www.medrxiv.org/content/10.1101/2024.11.06.24316832v1>.

⁷⁴ See Nader Salari et al., *Global Prevalence of Chronic Fatigue Syndrome Among Long COVID-19 Patients: A Systematic Review and Meta-Analysis*, 16 BIOPSYCHOSOCIAL MED. 1, 8 (2023).

intolerance, even after twenty months.⁷⁵ According to Massachusetts Institute of Technology (MIT) research scientist Beth Pollack, 61% of individuals with ME/CFS are bedbound on some days and about 25% are bedbound daily; 75% are too ill to work, and only about 5% are expected to recover.⁷⁶

Some researchers have also argued that “selective neuronal mitochondrial targeting in SARS-CoV-2 infection affects cognitive processes to induce ‘brain fog’ and results in behavioral changes that favor viral survival and propagation.”⁷⁷ In other words, an individual infected with COVID risks developing behaviors that facilitate the circulation of the virus, making brain fog “an evolutionarily conserved and strategic mechanism on the part of the virus that aids its spread and survival.”⁷⁸

9. Risks for Pregnant Individuals and Developing Fetuses

One study found that male fetuses exposed to COVID-19 experienced higher odds of receiving a diagnosis of neurodevelopmental disorders in the first year after delivery, even after controlling for preterm delivery.⁷⁹ Other research detected placental abnormalities associated with prenatal COVID infections, which the authors stated “provide an explanation for SARS-CoV-2-associated morbidity of the fetus, such as fetal growth restriction.”⁸⁰ A meta-analysis of 137 studies from twelve

⁷⁵ See Franziska Legler et al., *Long-Term Symptom Severity and Clinical Biomarkers in Post-COVID-19/Chronic Fatigue Syndrome: Results from a Prospective Observational Cohort*, 63 *ECLINICALMEDICINE* 1, 15 (2023), [https://www.thelancet.com/journals/eclinm/article/PIIS2589-5370\(23\)00323-1/fulltext](https://www.thelancet.com/journals/eclinm/article/PIIS2589-5370(23)00323-1/fulltext).

⁷⁶ See Isabella Backman, *Will Long COVID Research Provide Answers for Poorly Understood Diseases Like ME/CFS*, *YALE SCHOOL OF MEDICINE NEWS* (Nov. 1, 2022), <https://medicine.yale.edu/news-article/will-long-covid-research-provide-answers-for-poorly-understood-ailments-like-chronic-fatigue/>.

⁷⁷ George B. Stefano et al., *Selective Neuronal Mitochondrial Targeting in SARS-CoV-2 Infection Affects Cognitive Processes to Induce ‘Brain Fog’ and Results in Behavioral Changes That Favor Viral Survival*, 27 *MED. SCI. MONITOR* e930886-1, e930886-3 (2021), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7845145/>.

⁷⁸ *Id.*

⁷⁹ Andrea G. Edlow et al., *Sex-Specific Neurodevelopmental Outcomes Among Offspring of Mothers With SARS-CoV-2 Infection During Pregnancy*, 6 *JAMA NETWORK OPEN* 1, 10 (2023), <https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2802745>.

⁸⁰ Patric Kienast et al., *SARS-CoV-2 Variant-Related Abnormalities Detected by Prenatal MRI: A*

countries involving over 13,000 pregnant women concludes that COVID infection at any stage of pregnancy raises the risk of maternal death, severe maternal morbidities, and neonatal morbidity.⁸¹ Finally, a recent study found a tripled risk of respiratory distress in infants born to COVID-infected mothers.⁸²

10. Economic and Productivity Losses

The economic and other costs of COVID-19, both that actually took place and in a variety of alternative scenarios, are complex to quantify. This subsection, however, seeks to provide information on some relevant calculations that have been made in this context. First, as mentioned in the introduction, Harvard economist Professor David Cutler puts the costs of Long COVID to the United States at \$3.7 trillion, which includes losses to quality of life as well as lost earnings and higher spending on medical care.⁸³ Both Cutler and, separately, the Brookings Institution calculated that about four million Americans were unemployed due to Long COVID as of Summer 2022, with the burden of related lost wages numbering around \$200 billion a year.⁸⁴ Other researchers have estimated “that as much as 30% of the COVID-

Prospective Case-Control Study, 26 LANCET REGIONAL HEALTH – EUROPE 1, 8 (2023), [https://www.thelancet.com/journals/lanep/article/PIIS2666-7762\(23\)00005-4/fulltext](https://www.thelancet.com/journals/lanep/article/PIIS2666-7762(23)00005-4/fulltext).

See also Brahm Coler et al., *Diminished Antiviral Innate Immune Gene Expression in the Placenta Following a Maternal SARS-CoV-2 Infection*, 228 AM. J. OBSTETRICS & GYNECOLOGY 463.e1, 463.e17 (2023), [https://www.ajog.org/article/S0002-9378\(22\)00747-5/fulltext](https://www.ajog.org/article/S0002-9378(22)00747-5/fulltext) (reporting placental abnormalities associated with COVID infection).

⁸¹ Emily R. Smith et al., *Adverse Maternal, Fetal, and Newborn Outcomes Among Pregnant Women with SARS-CoV-2 Infection: An Individual Participant Data Meta-Analysis*, 8 BMJ GLOBAL HEALTH 1, 1 (2023), <https://pubmed.ncbi.nlm.nih.gov/36646475/>.

⁸² See Olivia M. Man et al., *Respiratory Distress in SARS-CoV-2 Exposed Uninfected Neonates Followed in the COVID Outcomes in Mother-Infant Pairs (COMP) Study*, 15 NATURE COMMUNICATIONS 1, 13 (2024), <https://www.nature.com/articles/s41467-023-44549-5>.

⁸³ Cutler, *supra* note 3.

⁸⁴ See *id.*; Katie Bach, *New Data Shows Long Covid Is Keeping As Many As 4 Million People Out of Work*, BROOKINGS (Aug. 24, 2022), <https://www.brookings.edu/articles/new-data-shows-long-covid-is-keeping-as-many-as-4-million-people-out-of-work/>. For another study on the relationship between Long COVID and heightened risk of unemployment, see Roy H. Perlis et al., *Association of Post-COVID-19 Condition Symptoms and Employment Status*, 6 JAMA NETWORK OPEN 1, 1 (2023). For another discussion about Long COVID and productivity generally, see Salvatore Mattera (@SalvMattera), X (Feb. 6, 2024, 2:07 AM), <https://x.com/SalvMattera/status/1754778933508383039?s=20>.

19 health burden could be due to COVID-induced disability, not death.”⁸⁵

As of August 2023, the Social Security Administration stated that it had received about 52,000 disability claims connected to COVID infections, counting 1% of total applications.⁸⁶ Meanwhile, Unum Life Insurance spent 35% more in payouts for disability claims between March 2020 and February 2022 than before the pandemic.⁸⁷ Michelle Roberts, a disability lawyer, explains that “Uncertainty about the volume of claims in the pipeline is part of what’s driving some insurers to fight Long COVID claims”, but also that it is not clear how long someone in their 30s or 40s might be disabled; “If this person doesn’t get better and they’re disabled until retirement age, this could be a payout in the high six or seven figures if a person is very young and was a very high earner.”⁸⁸

Recently published research following non-hospitalized patients who got sick in the spring of 2020 for the year after infection revealed a tremendous rise in the clinical and economic costs they incurred: their level of blood disorders increased by 166%, endocrine and metabolic disorders by 123%, nervous system diseases by 115%, digestive disorders by 76%, and mental and behavioral conditions by 75%.⁸⁹ Overall medical costs rose by 178% during the post-acute phase.⁹⁰

A study conducted in the fall of 2022 found that over 35 million American adults had ever had Long COVID and over 17 million were experiencing it at the time of the survey; of those, almost 14 million reported it “limit[ing] their daily activities, including 4.3 million who said their daily activities were limited ‘a lot.’”⁹¹ In some states, more

⁸⁵ Andrew Briggs & Anna Vassall, *Count the Cost of Disability Caused by COVID-19*, 593 NATURE 502, 503 (2021), <https://www.nature.com/articles/d41586-021-01392-2>.

⁸⁶ Lisa Rapaport, *Long COVID Disability Court Battles Just ‘Tip of Iceberg’*, MEDSCAPE (Aug. 2, 2023), <https://www.medscape.com/viewarticle/995101?form=fpf>.

⁸⁷ *Id.*

⁸⁸ *Id.*

⁸⁹ Amie Scott et al., *Substantial Health and Economic Burden of COVID-19 During the Year After Acute Illness Among US Adults Not at High Risk of Severe COVID-19*, 22 BMC MED. 1,1 (2024), <https://bmcmmedicine.biomedcentral.com/articles/10.1186/s12916-023-03235-5>.

⁹⁰ *Id.*

⁹¹ Hayley Brown et al., *The Extent and Demographics of Long COVID Disability in the United States*, CTR. FOR ECON. & POL’Y RSCH. (Dec. 20, 2022), <https://cepr.net/the-extent-and-demographics-of-long-covid-disability-in-united-states/>.

than 10% of non-elderly adults stated that they suffered from Long COVID and that it limited their daily activities, with certain groups being hit harder than others in their limitations: women, Hispanic/Latino adults, 40-54-year olds (odds of Long COVID and of limitations), those aged fifty-five and older (serious limitations), and individuals who make below \$50,000 a year.⁹² While more men than women have died during the pandemic so far, women have suffered a disproportionate amount of economic costs.⁹³

A recently published study of about 7,000 families found that if an adult in the family had persistent COVID-19 symptoms or, to a lesser extent, had suffered previous severe COVID-19, that family was at increased risk of suffering pandemic-related economic hardship.⁹⁴ In that context, families who had lower incomes before the pandemic experienced more significant problems if an adult family member's COVID-19 disease led to employment disruptions and earnings losses.⁹⁵

The harms of public health crises are manifold and often tragic, whether in the form of death, disease, disability, or economic harm. With COVID-19, these harms are ongoing at a high level, due in significant part to the decisions that have put politics above scientific realities. Part II explains how and why this has taken place.

II. COVID-19 POLICY AS PUBLIC CHOICE FAILURE

In Part I, we highlighted the harms of public health crises, specifically deploying the harms of COVID-19 as a salient and contemporary exemplar of harms resulting from pivotal public health moments. Given the serious nature of these harms, both health and economic, one might assume that legislative responses to public health crises would be driven by the public interest. Indeed, the public interest model of government presumes that there is a sense of common legislative mission to protect the public good, and that unlike legislation

⁹² See *id.*

⁹³ See Jeffrey D. Sachs et al., *The Lancet Commission on Lessons for the Future from the COVID-19 Pandemic*, 400 LANCET 1224, 1251 (2022).

⁹⁴ See Nicole L. Hair & Carly Urban, *Association of COVID-19 and Persistent COVID-19 Symptoms With Economic Hardship Among US Families*, 6 JAMA NETWORK OPEN 1, 8–9 (2023).

⁹⁵ See *id.*

that involves economic transactions, legislation involving health is not subject to the regular barter and sale seen in politics.⁹⁶ But public health is far from immune from political maneuvering, and legal responses to public health crises are also subject to political capture and bargaining. We contextualize the public choice frame through the lens of COVID-19, examining key public health measures in their success and failure.

COVID-19 is a global public health emergency that provides a particularly useful lens through which to examine the confluence of public health and public choice issues. Importantly, COVID-19 policy has concatenated multiple shifting mitigation measures that could only promise to reduce risk, rather than to eliminate it. In the sections below, we examine three specific COVID-19 mitigation measures—vaccinations, masking, and air quality improvements—to analyze public choice failures in public health policy.

A. Vaccinations

Vaccines to reduce the odds of infection with COVID-19 and the probability of severe acute symptoms became available within about a year of the outbreak of the pandemic in the United States, building on decades of previous public and private laboratory research.⁹⁷ The mRNA vaccines created by Pfizer and Moderna are credited with saving millions of lives in this country alone.⁹⁸ The history of their promotion and use, however, is a complex one that took many twists and turns in the government sphere and on (social and other) media. This subsection highlights some of the key events and developments in this context, including what went and is still going wrong in this arena.

One of the crucial figures in the federal government's communication with the public on the topic of COVID-19 vaccines and other

⁹⁶ For a discussion of the public interest theory of government (as contrasted with the public choice theory), see, e.g., Enrico Colomatto & Jonathan R. Macey, *A Public Choice Model of International Economic Cooperation and the Decline of the Nation State*, 18 CARDOZO L. REV. 925, 929 (1996). But see Timothy Meyer, *The Political Economy of WTO Exceptions*, 99 WASH U. L. REV. 1299, 1305 (2022) (arguing that public health is among the goods with large benefits but that “are diffuse, meaning that no one group may have an incentive to strongly lobby for the policy”).

⁹⁷ See *Decades in the Making: mRNA COVID-19 Vaccines*, NAT’L INST. OF HEALTH, <https://www.niaid.nih.gov/diseases-conditions/decades-making-mrna-covid-19-vaccines>.

⁹⁸ See *id.*

public health measures in the early years of the pandemic was Dr. Anthony Fauci.⁹⁹ Dr. Fauci was the director of the National Institute of Allergy and Infectious Diseases from 1984 to 2022 and also advised seven presidents on HIV / AIDS and many other public health issues.¹⁰⁰ Around the time that the first COVID vaccines were released in the United States in early 2021, Fauci stated that “we would need about 70% to 85% of the population to be vaccinated before we have what we call herd immunity” and that—while there were no guarantees—through said herd immunity, the United States could have “some degree of normality” by the fall of 2021.¹⁰¹ Assuming that Fauci believed this at the time, he and other government officials failed to speak clearly and warn people against relying on vaccines alone when it became obvious that herd immunity would not be possible.

The promise of the vaccines was high. The mRNA vaccines had a laboratory-tested 94–95% efficiency rate against infection, which means that someone who received the two required doses of mRNA vaccine was 94–95% less likely to contract COVID than they would have without it (e.g., if the risk was 1% as in the placebo arm of the trials, only fifty out of 100,000 vaccinated people would get infected for at least a three-month period).¹⁰² Meanwhile, the latecomer one-shot vaccine produced by Johnson & Johnson—still considered very effective when released, albeit potentially less so than the mRNA vaccines—became touted as a “one and done” solution for individuals.¹⁰³

The message from governments at both the federal and local levels, as well as from pharmaceutical companies and mainstream media, appeared to be that as long as the country hits a certain threshold of vaccinations, life would eventually go back to “normal,” with normal

⁹⁹ Anthony S. Fauci, M.D., NAT'L INST. OF ALLERGY & INFECTIOUS DISEASES, <https://www.niaid.nih.gov/about/anthony-s-fauci-md-bio>.

¹⁰⁰ *Id.*

¹⁰¹ Michelle Lampariello, *Dr Fauci on COVID-19 Vaccines and Putting an End to the Pandemic*, CLINICAL ADVISOR (Feb. 10, 2021), <https://www.clinicaladvisor.com/home/topics/vaccine-information-center/fauci-covid-19-vaccines-end-pandemic/>.

¹⁰² See Piero Olliaro, *What Does 95% COVID-19 Vaccine Efficacy Really Mean?* 21 LANCET CORRESPONDENCE 769 (2021), [https://www.thelancet.com/journals/laninf/article/PIIS1473-3099\(21\)00075-X/fulltext](https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(21)00075-X/fulltext).

¹⁰³ See, e.g., Noah Weiland, *One and Done: Why People Are Eager for Johnson & Johnson's Vaccine*, N.Y. TIMES (Mar. 4, 2021), <https://www.nytimes.com/2021/03/04/health/covid-vaccine-johnson-and-johnson-rollout.html>.

being defined as how we lived before the pandemic in 2019.¹⁰⁴ In New York, one of the hardest-hit states in the early phases of the pandemic, then-Governor Andrew Cuomo lifted many COVID-19 restrictions in June of 2021 once 70% of adult New Yorkers had received their first dose of the COVID-19 vaccine.¹⁰⁵ He declared at the time:

What New York has done is extraordinary. Not only do we have the lowest COVID positivity rate in the United States of America, we have hit 70% vaccination ahead of schedule. We successfully *deployed the weapon that will win the war*, and New York led the nation.¹⁰⁶

The communication from across levels of government seemed clear: the vaccine will eventually end the pandemic as long as enough people take it. The emphasis on adult vaccination also displayed the then-common underlying belief that COVID was not a serious issue for children (with the initial trope that they are also less likely to spread it in the population, which has been drastically debunked over time—such as via studies showing that over 70% of household spread began with a child¹⁰⁷). Both federal and state or local officials should have provided the population with updated information on all these issues once they realized that their previous statements, or the common perception, were inaccurate.

Cuomo's declaration was preceded in March 2021 by CDC Director Rochelle Walensky saying in an MSNBC interview that “[o]ur data from the CDC today suggests that vaccinated people do not carry the virus, don’t get sick, and that it’s not just in the clinical trials, but it’s

¹⁰⁴ This phenomenon was described, and at times criticized, by a number of observers. See, e.g., Helena Fitzgerald, *Haunted by the Ghost of 2019*, THE ATL. (Dec. 8, 2022), <https://www.theatlantic.com/family/archive/2022/12/pandemic-end-returning-to-normal-2019-nostalgia/672402/>.

¹⁰⁵ *Governor Cuomo Announces COVID-19 Restrictions Lifted As 70% of Adult New Yorkers Have Received First Dose of COVID-19 Vaccine*, N.Y. STATE (June 15, 2021), <https://www.governor.ny.gov/news/governor-cuomo-announces-covid-19-restrictions-lifted-70-adult-new-yorkers-have-received-first>.

¹⁰⁶ *Id.* (emphasis added).

¹⁰⁷ See Yi-Ju Tseng et al., *Smart Thermometer-Based Participatory Surveillance to Discern the Role of Children in Household Viral Transmission During the COVID-19 Pandemic*, 6 JAMA NETWORK OPEN 1,1 (2023), <https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2805468>. The odds of a child getting infected in turn correlated with time spent in school as opposed to on breaks. See *id.*

also in real-world data.”¹⁰⁸ And in May 2021, Fauci stated on CBS that vaccinated individuals become “dead ends” for the virus and that while “breakthrough infections” were possible despite vaccination, “fully vaccinated people can go without masks even if they have an asymptomatic case of COVID-19 because the level of virus is much lower in their nasopharynx, the top part of their throat that lies behind the nose, than it is in someone who is unvaccinated.”¹⁰⁹

Whether due to the original messaging of the government, a desire to reach a population threshold that would motivate the government to ease restrictions, or the vaccine mandates put in place by the government and/or private actors (including employers) in a number of locations, about 80% of the U.S. population had received at least one COVID vaccine dose and about 70% had completed a primary series of COVID vaccinations by May 2023, when the CDC stopped updating the data on its website.¹¹⁰ While this is a fairly large percentage of the population, and in the range of what Fauci originally stated should bring normalcy, only 17% of the U.S. population obtained the so-called bivalent booster between when it became available in the fall of 2022 and when the CDC stopped its count in May 2023.¹¹¹ What happened that led to this precipitous drop in interest in the vaccine? We argue that the answer resides in public choice factors and a governmental unwillingness to provide accurate health information explaining that the vaccine was not sterilizing yet still important for more nuanced reasons, allowing ignorance and misinformation to fill the gap.

Due to concerns about economic expediency and political unpalatability of other measures, the Biden administration bet almost everything on the vaccine as *the* solution for the first 100 days of Biden's

¹⁰⁸ Azmi Haroun & Hilary Brueck, *CDC Director Says Data 'Suggests That Vaccinated People Do Not Carry the Virus'*, BUS. INSIDER (Mar. 30, 2021), <https://www.businessinsider.com/cdc-director-data-vaccinated-people-do-not-carry-covid-19-2021-3>.

¹⁰⁹ Joseph Choi, *Fauci: Vaccinated People Become 'Dead Ends' for the Coronavirus*, THE HILL (May 16, 2021), <https://thehill.com/homenews/sunday-talk-shows/553773-fauci-vaccinated-people-become-dead-ends-for-the-coronavirus/>.

¹¹⁰ *US Coronavirus Vaccine Tracker*, USAFACTS, <https://usafacts.org/visualizations/covid-vaccine-tracker-states/> (last updated May 10, 2023).

¹¹¹ Joanna J. Regan et al., *Use of Updated COVID-19 Vaccines 2023–2024 Formula for Persons Aged ≥ 6 Months: Recommendations of the Advisory Committee on Immunization Practices – United States, September 2023*, 72 MORBIDITY MORTALITY WKLY. REP. 1140, 1140–46 (2023).

presidency.¹¹² This makes sense from a public choice perspective: asking the population to get two shots is a lot more politically appealing than requiring continued safety measures that must be implemented on a daily basis. As the Delta variant of the virus began raging in the summer of 2021, CDC Director Walensky stated that “this is becoming a pandemic of the unvaccinated,”¹¹³ suggesting that the vaccinated essentially had little to worry about and that—now that the vaccine was available to at least all adult age groups—it was an individual choice whether to prevent harm to oneself. From a public choice lens, this allowed vaccinated individuals to feel good about themselves and about the officials promoting this message, thus encouraging the population to leave that set of individuals in power.

As social epidemiologist Justin Feldman cogently explains, there were multiple problems with the line of thinking that the vaccinated could stop worrying. For one, while the media liked to portray those who were unvaccinated as “Trump voters,” half of them were not; and indeed, as of late 2021, “[t]he unvaccinated are largely low-income, uninsured, pregnant, incarcerated, and children”, with continued higher mortality rates among several ethnic minority groups (including Black, Latino, and Native American people).¹¹⁴ Additionally, “Fauci claimed in July that only 1% of COVID deaths were among vaccinated people, but the CDC’s data for the previous week showed the actual figure was 17%,” and when the administration continued reassuring vaccinated Americans that they were on the right track, the share of deaths of vaccinated individuals was as high as 28%.¹¹⁵

By the fall of 2021, the Biden administration supplemented the “pandemic of the unvaccinated” invocation with the phrase “we have

¹¹² Justin Feldman, *From Shutting Down the Virus to Letting It Rip: A Timeline of Biden’s Pandemic Response*, THE PETRIE-FLOM CTR. (Jan. 5, 2022), <https://blog.petrieflom.law.harvard.edu/2022/01/05/from-shutting-down-the-virus-to-letting-it-rip-a-timeline-of-bidens-pandemic-response/>.

¹¹³ Emily Anthes & Alexandra E. Petri, C.D.C. Director Warns of a ‘Pandemic of the Unvaccinated’, N.Y. TIMES, <https://www.nytimes.com/2021/07/16/health/covid-delta-cdc-walensky.html> (last updated Jul. 22, 2021).

¹¹⁴ Justin Feldman, *A Timeline of Biden’s Pandemic Response, Part 2: A Pandemic of the Unvaccinated* (May–Sept. 2021), THE PETRIE-FLOM CTR. (Jan. 5, 2022), <https://blog.petrieflom.law.harvard.edu/2022/01/06/a-timeline-of-bidens-pandemic-response-part-2-a-pandemic-of-the-unvaccinated-may-sept-2021/>.

¹¹⁵ See *id.*

the tools”, with the tools including booster shots, rapid tests, and masks and representing “individual choices based on personal risk tolerance rather than elements of regulatory frameworks to be pursued by various levels of government.”¹¹⁶ While the exact tools would go on to fluctuate over time (from monoclonal antibodies-based medication Evusheld that eventually lost efficacy, to antiviral Paxlovid), that concept would go on to live a long political life, including the word “tools” showing up no fewer than six times in the press briefing by President Biden’s press secretary Karine Jean-Pierre and then-COVID-19 response coordinator Dr. Ashish Jha in October of 2022.¹¹⁷ This is reminiscent of how the federal, state, and local governments sought during the early days of the AIDS crisis to put the responsibility on the gay community to protect itself with little to no help from governments.¹¹⁸

The “tools” language endured even though it was clear from early on that the “tools” were not all they were cracked up to be. The highly infectious Omicron variant of the virus became the second-deadliest since the start of the pandemic, peaking in January 2022 and being only 29% less deadly in the general population than the wave that peaked in the United States in January 2021 when almost nobody was vaccinated yet; for some high-risk groups such as cancer patients, Omicron was the single deadliest pandemic wave altogether.¹¹⁹ And crucially, as explained in Part 1, vaccination does not eliminate the risk of Long COVID and its concomitant risks of disability and/or death some months or years after initial infection. Some data suggests that

¹¹⁶ Justin Feldman, *A Timeline of Biden’s Pandemic Response, Part 3: We Have the Tools* (Sept.-Dec. 2021), HARVARD LAW PETRIE-FLOM CENTER BILL OF HEALTH (Jan. 7, 2022), <https://blog.petrieflom.law.harvard.edu/2022/01/07/a-timeline-of-bidens-pandemic-response-part-3-we-have-the-tools-sept-dec-2021/>.

¹¹⁷ The White House, *Press Briefing by Press Secretary Karine Jean-Pierre and COVID-19 Response Coordinator Dr. Ashish Jha* (Oct. 25, 2022), <https://www.whitehouse.gov/briefing-room/statements-releases/2022/10/25/press-briefing-by-press-secretary-karine-jean-pierre-and-covid-19-response-coordinator-dr-ashish-jha-6/>.

¹¹⁸ See RANDY SHILTS, *AND THE BAND PLAYED ON: POLITICS, PEOPLE, AND THE AIDS EPIDEMIC* (1987); Irina D. Manta, Cassandra Burke Robertson & Zoë Robinson, *Can Speech Policy Protect Public Health?*, UTAH L. REV. (forthcoming), draft available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=5229087.

¹¹⁹ Adriell Bettelheim, *Omicron Was the Deadliest Pandemic Wave for Cancer Patients*, AXIOS (Aug. 31, 2023), <https://www.axios.com/2023/08/31/omicron-covid-cancer-deadly>.

unfortunately, another much-touted “tool”, the medication Paxlovid (nirmatrelvir), does not reduce the odds of developing Long COVID.¹²⁰

While the CDC, perhaps in part due to the embarrassingly low uptake of the Fall 2022 booster, has stopped reporting recent vaccination data, some states still provide numbers. For example, the dashboard for the state of New York shows that only about 11% of the population took the Fall 2023 booster in its first four months of availability.¹²¹ The reasons for most individuals’ refusal to get vaccinated again are certainly complex and likely include elements of inherent wishful thinking and other biases by large parts of the population.¹²² That said, while there is debate as to when which member of the administration became aware that vaccines alone would not eliminate COVID, that point undoubtedly came eventually. And when it did, government officials should have informed the population that they needed (and still need) to take measures in addition to vaccines to stay safe.

Instead, a CNN fact check, consistent with the state of scientific knowledge at the time, concluded that President Biden made inaccurate claims, for example, by the summer of 2021 at a CNN town hall when he made “blanket promises . . . that vaccinated people are simply ‘not going to be hospitalized,’ ‘not going to die’ and, even with the very contagious Delta variant, ‘not going to get COVID’.”¹²³ The willingness of the President and other members of his administration to make false promises could not have helped when the administration

¹²⁰ See Matthew S. Durstenfeld et al., *Association of Nirmatrelvir for Acute SARS-CoV-2 Infection with Subsequent Long COVID Symptoms in an Observational Cohort Study*, J. MED. VIROLOGY (2024), <https://onlinelibrary.wiley.com/doi/10.1002/jmv.29333>.

¹²¹ New York State, *Updated COVID-19 Vaccination Data*, <https://coronavirus.health.ny.gov/updated-covid-19-vaccination-data> (last updated Jan. 12, 2024).

¹²² See Teichman & Underhill, *supra* note 4. A study from mid-2021 also suggests that having knowledge of Long COVID increases the odds of choosing vaccination. See Daryl Austin, *People Who Understand ‘Long Covid’ Are More Likely to Get Vaccinated, Study Shows*, FORBES (June 30, 2021), <https://www.forbes.com/sites/darylaustin/2021/06/30/new-study-reveals-the-more-people-understand-long-covid-the-more-likely-they-are-to-get-vaccinated>.

¹²³ Daniel Dale & Tara Subramaniam, *Fact Check: Biden Makes False Claims About Covid-19, Auto Prices and Other Subjects at CNN Town Hall*, CNN (July 22, 2021), <https://www.cnn.com/2021/07/22/politics/fact-check-biden-cnn-town-hall-july/index.html>.

made later pushes for boosters.¹²⁴ The message around vaccines and boosters needed to be much more nuanced: that they are important in reducing the odds of infection (and thus transmission) and severity of the disease, but that they are not enough by themselves to reduce viral spread to manageable levels. This strongly suggests that government speech matters, to the point of having life-or-death consequences.

Relatedly, the much-promoted attributes of mRNA vaccines—as being rapidly adaptable to new variants—actually require a corresponding investment so that the boosters can be updated more frequently than once a year. Somewhat ironically, it is former President Trump's White House Coronavirus Response Coordinator, Dr. Deborah Birx, who made the point in August 2023 that the booster needs to be adapted more frequently than was happening under the Biden administration, which instead was hoping to treat it like an annual flu booster even though COVID mutates much more quickly and is a much more dangerous disease than flu.¹²⁵ As evidence of how much the Biden administration's policy misfired here, despite the known relative dangers, more Americans were getting flu boosters than COVID boosters as of 2023.¹²⁶ If the Biden administration was unwilling or unable to invest in updating boosters more than yearly, it was even more important for the administration to explain to the population that individuals needed to take other precautions in addition to vaccines.

The governmental downplaying of COVID risks (including via the end of the federal COVID-19 Public Health Emergency declaration¹²⁷

¹²⁴ U.S. News Staff, *Biden Has Called for Annual COVID-19 Booster Shots. But Is That Realistic?*, U.S. NEWS & WORLD REPORT (Jan. 5, 2023), <https://www.usnews.com/news/health-news/articles/2023-01-05/biden-has-called-for-annual-covid-19-booster-shots-but-is-that-realistic>.

¹²⁵ See Former Trump Health Adviser Believes Current COVID Response Is Falling Behind, ABCNEWS (Aug. 29, 2023), <https://abcnews.go.com/US/trumps-former-health-adviser-believes-current-covid-response/story?id=102646852>.

¹²⁶ See Mary Van Beusekom, *Studies: More US Adults Roll up Sleeves for Flu Than COVID, RSV Vaccines*, CTR. FOR INFECTIOUS DISEASE RSCH. & POL. (Dec. 27, 2023), <https://www.cidrap.umn.edu/covid-19/studies-more-us-adults-roll-sleeves-flu-covid-rsv-vaccines>.

¹²⁷ This took place on May 11, 2023 and had a number of consequences such as ending private insurance company's obligation to cover at-home rapid tests and reduced the level of national reporting of COVID-related data. *End of the Federal COVID-19 Public Health Emergency (PHE) Declaration*, CTR. FOR DISEASE CONTROL & PREVENTION, <https://www.cdc.gov/coronavirus/2019-ncov/your-health/end-of-phe.html> (last updated Sept. 12, 2023).

despite the broadly-circulating virus), messages such as “one and done” that were never fully rolled back, the advertising of tools such as Paxlovid—including as a substitute for vaccination for risk reduction—that are hard to obtain for many individuals and do not meaningfully reduce Long COVID odds, the removal of most public and private vaccine mandates, and the Biden administration’s repeated decisions to move political focus away from COVID and toward other issues help to explain the lacking individual will to obtain boosters. Boosters have increasingly not prevented infection, and the government has failed in its messaging as to the difference that boosters still make when it comes to reducing the odds of severe disease. In short, due to the administration’s “all-or-nothing” push when it came to vaccines—combined with anti-vaxxers’ seizing on any governmental missteps in anti-vaxxers’ promotion of deceptive messages—the government moved closer and closer to “nothing.” Decisively, frequently, and prominently providing accurate information on what the boosters can and cannot do, and the fact that other precautions remain necessary, would have been key to preventing the Biden administration from living in infamy for the level of death, disease, and disability it failed to stop.

There is unfortunately little hope for improvement in this area in the early days of the second Trump administration in 2025, with the nomination of vaccine skeptic Robert F. Kennedy, Jr. to head Health and Human Services (HHS)¹²⁸ and President Trump’s announcement that the United States would withdraw from the WHO, in addition to the CDC being prohibited from working with the WHO,¹²⁹ and all health agencies being at times suspended from communications with the public generally, among other restrictions.¹³⁰

¹²⁸ See Berkeley Lovelace et al., *Trump Picks RFK Jr., Anti-Vaccine Activist, for Health and Human Services Secretary*, NBC NEWS (Nov. 14, 2024), <https://www.nbcnews.com/health/health-news/trump-picks-rfk-jr-anti-vaccine-activist-health-human-services-secretary-rcna180182>.

¹²⁹ Mike Stobbe, *CDC Ordered to Stop Working with WHO Immediately, Upending Expectations of an Extended Withdrawal*, AP NEWS (Jan. 27, 2025), <https://apnews.com/article/cdc-who-trump-548cf18b1c409c7d22e17311ccdfe1f6>.

¹³⁰ Meredith Wadman & Jocelyn Kaiser, *Trump Hits NIH with ‘Devastating’ Freezes on Meetings, Travel, Communications, and Hiring*, SCIENCE (Jan. 22, 2025), <https://www.science.org/content/article/trump-hits-nih-devastating-freezes-meetings-travel-communications-and-hiring>.

As of Summer 2025, significant uncertainty reigned as to who would be able to obtain COVID boosters that fall, if anyone at all. Top vaccine official Vinay Prasad overrode government scientists to restrict use of the COVID vaccine.¹³¹ The discussion of COVID fall boosters that was supposed to take place in a June 2025 meeting of the CDC's Advisory Committee on Immunization Practices (ACIP) was postponed after Senator Bill Cassidy, MD (R-LA) expressed concern about Robert F. Kennedy, Jr. replacing the seventeen previous ACIP members with eight new ones (including vaccine skeptics).¹³² As of early August 2025, it was unclear when these conversations would resume.

B. Masking

1. *Mixed Messaging on Masks in Early 2020*

From the beginning of the pandemic, personal protection equipment (PPE) in the form of masks was one of the most controversial topics and measures to reduce the spread of COVID-19. On March 8, 2020—as the virus was spreading throughout the United States and a week before the New York City public school system (the largest in the country) was shut down¹³³—Dr. Anthony Fauci stated:

There's no reason to be walking around with a mask. When you're in the middle of an outbreak, wearing a mask might make people feel a little bit better and it might even block a droplet, but it's not providing the perfect protection that people think it is. And often, there are

¹³¹ See Christina Jewett, *Top F.D.A. Official Override Scientists on Covid Shots*, N.Y. TIMES (July 2, 2025), <https://www.nytimes.com/2025/07/02/health/fda-covid-vaccines.html>; *Vinay Prasad Leaves Agency After 3 Months*, REUTERS (July 30, 2025), <https://www.reuters.com/business/healthcare-pharmaceuticals/us-fdas-top-vaccine-official-vinay-prasad-leaves-agency-after-3-months-2025-07-30/>.

¹³² See Lisa Schnirring, *Newly Appointed CDC Vaccine Advisory Committee Holds First Meeting, Stirs More Controversy*, CIDRAP (June 25, 2025), <https://www.cidrap.umn.edu/covid-19/newly-appointed-cdc-vaccine-advisory-committee-holds-first-meeting-stirs-more-controversy>.

¹³³ David Sencer, *CDC Museum COVID-19 Timeline*, CTR. FOR DISEASE CONTROL & PREVENTION, <https://www.cdc.gov/museum/timeline/covid19.html> (last reviewed Jul. 8, 2024).

unintended consequences—people keep fiddling with the mask and they keep touching their face.¹³⁴

Relatedly, the CDC was telling individuals only to mask if showing symptoms of illness.¹³⁵ Less than a month after Fauci's statement, however, on April 3, 2020, the CDC announced mask wearing guidelines that included recommendations that everyone wear a mask when leaving home.¹³⁶ When explaining in July of that year why his views on masking had changed toward encouraging mask wearing as the CDC was doing, Fauci cited two reasons: first, while he was initially worried about there not being enough PPE for healthcare workers, it later turned out there was no mask shortage given the option of using cloth; second, he and others took a while to fully realize the extent of asymptomatic viral spread, "[s]o it became clear that we absolutely should be wearing masks consistently."¹³⁷ All this occurred even though Chinese researchers published an article in *The Lancet* as early as January 2020 in which they stated clearly in the context of COVID-19: "Airborne precautions, such as a fit-tested N95 respirator, and other personal protective equipment are strongly recommended."¹³⁸

Critics noted early on how the government lost societal trust after officials—including not just Fauci but also President Trump's Surgeon General, Jerome Adams—sent mixed messages on masks, such as Adams's statement that the general public should not wear masks for protection but that healthcare workers needed the limited supply for theirs; these critics emphasized that "[t]his contradiction confuses an ordinary listener. How do these masks magically protect the wearers

¹³⁴ Fact Check: Outdated Video of Fauci Saying "There's No Reason to Be Walking Around with a Mask", REUTERS (Oct. 8, 2020), <https://www.reuters.com/article/idUSKBN26T2T9/>.

¹³⁵ *Coronavirus Disease 2019 (COVID-19): How to Protect Yourself & Others*, CTR. FOR DISEASE CONTROL & PREVENTION (Mar. 18, 2020), <https://web.archive.org/web/20200402114045/https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/prevention.html>.

¹³⁶ Sencer, *supra* note 133.

¹³⁷ Priya Mathew, *Fauci on How His Thinking Has Evolved on Masks, Asymptomatic Transmission*, WASHINGTON POST LIVE (July 24, 2020), https://www.washingtonpost.com/video/washington-post-live/fauci-on-how-his-thinking-has-evolved-on-masks-asymptomatic-transmission/2020/07/24/799264e2-0f35-4862-aca2-2b4702650a8b_video.html.

¹³⁸ Chaolin Huang et al., *Clinical Features of Patients Infected with 2019 Novel Coronavirus in Wuhan, China* 6 THE LANCET 497, 502 (2020), <https://www.thelancet.com/action/showPdf?pii=S0140-6736%2820%2930183-5>.

only and only if they work in a particular field?"¹³⁹ The federal government's poor messaging on masks set the tone for years to come, and while Fauci pleaded with the public that "[w]e need to put that nonsense behind us about 'well, they keep changing their minds,'" the fact that his initial statements were presented as based on scientific evidence when they were not just mistaken but also had a political motive—to preserve PPE for healthcare workers—opened the door to future attacks, however justified or not in each case, of the government acting manipulatively.¹⁴⁰ Only a full accounting of government mistakes is likely to get more members of the population to trust information from officials in the future.¹⁴¹

While one might, if feeling generous, term Fauci's statements on masks early on in the pandemic a "noble lie," many mass media channels' rather forgiving take in their fact checks of his subsequent explanations for the shift only made the issue more embattled. Coming down in the middle between those who defend Fauci and the (often right-wing) groups calling him a liar, commentator Jacob Sullum concludes—based on the knowledge that already existed before Fauci's infamous March 2020 statement that the incubation period could be as long as two weeks and so it was clear that presymptomatic transmission was an issue—along with Fauci's admitted desire to preserve PPE for healthcare workers: "[I]t seems fair to say that he was less than

¹³⁹ Zeynep Tufekci, *Why Telling People They Don't Need Masks Backfired*, N.Y. TIMES (Mar. 17, 2020), <https://www.nytimes.com/2020/03/17/opinion/coronavirus-face-masks.html>. See also U.S. Surgeon General, (@Surgeon_General, X (Feb. 29, 2020, 4:08 AM), https://web.archive.org/web/20200229123317/https://twitter.com/surgeon_general/status/1233725785283932160 ("Seriously people- STOP BUYING MASKS! They are NOT effective in preventing general public from catching #Coronavirus, but if healthcare providers can't get them to care for sick patients, it puts them and our communities at risk!"),. When it came to actual shortages of PPE in states such as New York that had a third of the nation's COVID cases at the time, President Trump's senior advisor (and son-in-law) Jared Kushner opposed directing supplies that way in a tense White House meeting in late March 2020, leaving several attendees with the impression that Kushner was comfortable letting New York fend for itself because it was a blue state. See Katherine Eban, *"That's Their Problem": How Jared Kushner Let the Markets Decide America's COVID-19 Fate*, VANITY FAIR (Sept. 17, 2020), <https://www.vanityfair.com/news/2020/09/jared-kushner-let-the-markets-decide-covid-19-fate>.

¹⁴⁰ *Facts First: Did Fauci Say Not to Wear Masks?*, CNN, https://www.cnn.com/factsfirst/politics/factcheck_e58c20c6-8735-4022-a1f5-1580bc732c45 (last visited Apr. 6, 2025).

¹⁴¹ See, e.g., Bradley P. Owens & David R. Hekman, *Modeling How to Grow: An Inductive Examination of Humble Leader Behaviors, Contingencies, and Outcomes*, 55 ACADEMY MGMT. J. 787 (2012) (discussing the importance of admitting mistakes to effective leadership).

completely candid about the reasons for his initial position and the reasons for abandoning it.”¹⁴² Indeed, Fauci’s statements quite possibly led to less collaboration by the population down the line.

2. *Messaging on the Relationship Between Masks and Vaccines and on General Mask Effectiveness*

The issue of masks also intersected in unfortunate ways with that of vaccines discussed in subsection II.B.1. The CDC was not clear in its messaging about why it was suddenly alright for vaccinated individuals to stop masking in Spring 2021, when this had not been the case in statements the agency made two and a half week earlier, leaving some commentators, such as Jacob Sullum, to suspect that what was really happening was that “[t]he CDC seems to have recognized that expecting people to continue living constrained lives even after they get their shots reduces the incentive to get vaccinated, especially among Americans who are at low risk from COVID-19.”¹⁴³

Two things are worth highlighting about that statement. Sullum is correct to note that not having to mask anymore was one of the “carrots” that the government presented to the public in exchange for particular or enough individuals being vaccinated, as discussed in the subsection above. This plan, however, was not rooted in scientific realities to the extent the public expected never to have to mask again anywhere and no matter what, including because the vaccine turned out not to be sterilizing and its effectiveness waned with time. The second part of Sullum’s statement, involving the idea that some Americans are “low risk” must be constrained to the *acute phase* of COVID. Indeed, fully vaccinated and otherwise healthy individuals did not run a high risk of death or hospitalization in the spring of 2021 (though they could still experience rather unpleasant symptoms). When it comes to the odds of contracting PASC, however, as Part I shows, there is no such thing as a truly low-risk individual. And even if some individuals were “lower”-risk, relatively speaking and leaving aside the

¹⁴² Jacob Sullum, *Anthony Fauci May Not Have ‘Lied’ About Face Masks, But He Was Not Exactly Honest Either*, REASON (Apr. 6, 2021), <https://reason.com/2021/06/04/anthony-fauci-may-not-have-lied-about-face-masks-but-he-was-not-exactly-honest-either/>.

¹⁴³ Jacob Sullum, *The CDC’s Ever-Shifting COVID-19 Advice Shows the Agency Is Ill-Suited to Decide Which Risks Are Acceptable*, REASON (May 14, 2021), <https://reason.com/2021/05/14/the-cdcs-ever-shifting-covid-19-advice-shows-the-agency-is-ill-suited-to-decide-which-risks-are-acceptable/>.

fact that what was then one and is now five years into a novel disease provides little information as to the long-term health risks for anybody, any assumption that higher-risk individuals should be excluded from society so that lower-risk ones do not have to mask is a tall order. It may reveal another public choice calculation by the government as to whose votes and/or political donations are more likely to matter.

There have been many problems with the “you do you” messaging increasingly endorsed by the federal and local governments, as well as other entities, as time has passed since the start of the pandemic. One of the issues is that COVID has mutated to become increasingly infectious, which has exacerbated the problem that (1) one-way masking has never been as effective as two-way masking; and (2) there are many situations in which an individual cannot mask 100% of the time and is at the mercy of others’ actions, such as when hospitalized, at the dentist’s or many other doctors’ offices, or when needing to eat on a long-haul plane or train ride. Refusing to state these things unambiguously and prominently represents a failure of government actors to disclose and publicize true risks to the population, including those created by the government’s decisions themselves to drop mandates.

Numerous studies have shown that mandating masks reduces spread in many situations. A study funded by the National Institutes of Health (NIH) led by Duke University scientists compared sixty-one school districts across nine states numbering more than 1.1 million students from kindergarten through grade twelve and concluded that mandatory, as opposed to optional, masking led to a 72% reduction of in-school COVID-19 cases during the period when the Delta variant dominated.¹⁴⁴ Similarly, recently published research using data from late 2020 to early 2022 showed the crucial role of masks as part of infection control measures in hospitals, where even after the highly transmissible Omicron strain became dominant, the study found that in a setting where “[m]ask compliance of HCWs [healthcare workers] when caring for patients was consistent . . . we did not identify any transmission occurring between known positive cases and HCWs.”¹⁴⁵

¹⁴⁴ See *Mandatory Masking in Schools Reduced COVID-19 Cases*, NAT’L INST. OF HEALTH RESEARCH MATTERS (March 22, 2022), <https://www.nih.gov/news-events/nih-research-matters/mandatory-masking-schools-reduced-covid-19-cases>.

¹⁴⁵ Jocelyn Keehner et al., *Integrated Genomic and Social Network Analyses of Severe Acute Respiratory Syndrome Coronavirus 2 Transmission in the Healthcare Setting*, CLINICAL INFECTIOUS DISEASES

Government officials today know, or have every reason to know, that two-way masking is one of the most effective forms of COVID infection control—they generally just refuse to give out this information due to public choice motivations.

Despite the mountain of scientific evidence that masks, and especially well-fitting respirator masks such as N95s, reduce the spread of COVID-19, the discourse and vitriol around the topic will not calm down. In 2023, the authors of Cochrane Library research concluded—based on twelve main studies on masks of which only two took place during the COVID-19 pandemic¹⁴⁶—that it is “inconclusive” whether masks slow the spread of respiratory diseases including COVID-19, after which some in the (often conservative segments of the) media published that masks and mask mandates make no difference.¹⁴⁷ After broad criticism by numerous scientists and commentators about the flaws in the study, the Cochrane authors clarified in their conclusions that “[t]he high risk of bias in the trials, variation in outcome measurement, and relatively low adherence with the interventions during the studies hampers drawing firm conclusions.”¹⁴⁸ Other researchers have also explained that once one adds some relevant studies on face masks and applies infectious disease models, it becomes clear “that masks can reduce respiratory infections significantly.”¹⁴⁹ Instead of letting misstatements run wild in a vacuum after the Cochrane Review came out, the government could have chosen to provide clear information on the topic. Yet for reasons that public choice theory explains, the government did not.

(Jan. 16, 2024), <https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciad738/7517603>.

¹⁴⁶ See Jessica McDonald, *What the Cochrane Review Says About Masks for COVID-19—and What It Doesn't*, FACTCHECK.ORG (Mar. 16, 2023), <https://www.factcheck.org/2023/03/scicheck-what-the-cochrane-review-says-about-masks-for-covid-19-and-what-it-doesnt/>.

¹⁴⁷ See Naomi Oreskes, *What Went Wrong with a Highly Publicized COVID Mask Analysis*, SCI. AM. (Nov. 1, 2023), <https://www.scientificamerican.com/article/what-went-wrong-with-a-highly-publicized-covid-mask-analysis/>.

¹⁴⁸ Tom Jefferson et al., *Physical Interventions to Interrupt or Reduce the Spread of Respiratory Viruses*, COCHRANE LIBRARY (2023), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9885521/>.

¹⁴⁹ Brian M. Gurbaxani, Andrew N. Hill & Pragna Patel, *Unpacking Cochrane's Update on Masks and COVID-19*, AM. J. PUB. HEALTH 1074, 1074 (2023), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10484132>.

3. *The Federal Government's Devolution of Responsibility on COVID-19 Mitigation*

A crucial shift in government strategy that significantly affected masking rules took place in early 2022 when the CDC shifted its color-coded maps from showing the relatively simple-to-understand community transmission levels of COVID-19 based on weekly cases in a county, to an opaque formula called “community levels” that incorporated a calculation based on a combination of weekly cases and hospital metrics, such as hospital admissions and overall hospital capacity.¹⁵⁰ This shift was rooted in public choice factors rather than science. Notably, under the old metrics a county would be considered green only if it had under ten new weekly cases per 100,000 people, while under the new metric, if hospital metrics were low, a county could remain green if it had up to 200 weekly cases per 100,000 people—an increase of a factor of twenty that from one day to the next produced an almost completely green U.S. map rather than the old, mostly red and orange map.¹⁵¹ And people in green and yellow counties on the new map (meaning most Americans) would generally not be asked to wear masks.¹⁵²

Critics of this change immediately accused the CDC of “mov[ing] the goalposts to justify the political imperative to let people get back to their normal lives,” with one epidemiologist calling the now-potentially-green level of up to 200 cases a week per 100,000 people “extraordinarily high” and stating that “[e]verybody that I know in the infectious disease space is kind of gobsmacked by that shift,” plus many raising the concern that hospitalizations are a lagging indicator of highly problematic spread.¹⁵³ The CDC’s accompanying technical brief is telling. Five of its six “key considerations” for this policy change discuss vaccines, including the CDC referring to vaccination as “the leading public health prevention strategy to prevent severe disease and deaths from COVID-19” and stating that “[p]eople who are up to date

¹⁵⁰ Will Stone & Selena Simmons-Duffin, *CDC's New COVID Metrics Can Leave Individuals Struggling to Understand Their Risk*, NPR (Mar. 12, 2022), <https://www.npr.org/sections/health-shots/2022/03/10/1085797307/cdcs-new-covid-metrics-can-leave-individuals-struggling-to-understand-their-risk>.

¹⁵¹ *See id.*

¹⁵² *See id.*

¹⁵³ *Id.*

on vaccines have much lower risk of severe illness and death from COVID-19 compared with unvaccinated people.”¹⁵⁴ Not once in the entire technical brief can one find terms or reference to concepts such as PASC or Long COVID.

From one day to the next, most individuals in America no longer lived in a place where they were generally supposed to mask in public indoor spaces. The idea that focusing on hospitalizations and deaths is sufficient to prevent serious harm from COVID flew in the face of the evidence available—both at the time, in early 2022, and today. By early 2023, and despite continued high levels of circulation of the virus, states like New York joined the ranks of those dropping mask mandates, even in healthcare settings such as hospitals.¹⁵⁵ On May 11, 2023, which is when the Biden administration let the Public Health Emergency declaration expire, the CDC moved from its already highly diluted COVID-19 Community Levels to only reporting COVID-19 hospital admission levels.¹⁵⁶ In short, most people infected with the virus—an important subset of whom develop PASC—became irrelevant for what would be visibly counted.

The move toward the federal government abdicating virtually all responsibility for the spread of COVID-19 was now complete. The CDC website in a now-archived section last recommended that individuals mask when hospital admissions are high—or medium, for high-risk individuals—and the only time masks were mentioned under the heading of “Community-Level Prevention Strategies” is that at all levels of hospital admission, the CDC recommended that communities “[p]romote equitable access to vaccination, testing, masks and

¹⁵⁴ CTR. FOR DISEASE CONTROL & PREVENTION, INDICATORS FOR MONITORING COVID-19 COMMUNITY LEVELS AND COVID-19 AND IMPLEMENTING COVID-19 PREVENTION STRATEGIES (2022), <https://www.cdc.gov/coronavirus/2019-ncov/downloads/science/Scientific-Rationale-summary-COVID-19-Community-Levels.pdf>.

¹⁵⁵ See Nina Kohn & Irina D. Manta, *Hospitals That Ditch Masks Risk Exposure*, HARVARD LAW PETRIE-FLOM CENTER BILL OF HEALTH (Feb. 20, 2023), <https://blog.petrieflom.law.harvard.edu/2023/02/20/hospital-liability-covid-infection/> (describing how hospitals have been inconsistent in whether they have brought back masking even when COVID was clearly surging); See Judy Stone, *Hospitals Vary on Universal Masking Amid COVID-19 Surge*, FORBES (Jan. 17, 2024), <https://www.forbes.com/sites/judystone/2024/01/17/hospitals-need-to-resume-universal-masking-heres-what-they-are-doing-now/>.

¹⁵⁶ See *COVID-19: COVID-19 by County*, CTR. FOR DISEASE CONTROL & PREVENTION, <https://archive.cdc.gov/#/details?url=https://www.cdc.gov/coronavirus/2019-ncov/your-health/covid-by-county.html> (last updated May 11, 2023).

respirators, treatment and prevention medications, community outreach, and support services.”¹⁵⁷ The message inherent in the recommendations for individuals to protect themselves from COVID—that it is realistically possible to do so without further government help—is inaccurate given the number of situations where vaccination plus one-way masking is often insufficient to prevent infection (in addition to the situations in which someone cannot mask at all due to undergoing medical treatment or needing to eat at some point).

When the United States found itself in what appears to be its second-largest COVID-19 surge ever in January 2024, President Biden’s White House Press Secretary, Karine Jean-Pierre, received questions from journalists about the administration’s views on masking, including whether hospitals should bring back mandates; she responded that the administration has “always been very consistent on this” and that “that is something that is localized” where hospitals, communities, cities, states “have to make their own decisions. That’s not something that we get involved in.”¹⁵⁸ When pushed on there being thirty-one states with high levels of respiratory illness at that time (COVID-19, RSV, and flu) and what Americans should do, Jean-Pierre stated that “it is up to each and every American to make their decision on what they want to do,” mentioning several times more the magic phrase that we now have the “tools” to protect against the impact of COVID-19 in the form of vaccines, at-home tests, and treatments.¹⁵⁹ In short, it was quite clear how the White House press secretary could not get far away from the “M” word—mandate—or ongoing federal responsibilities fast enough.

4. The Federal Government’s Refusal to Mitigate COVID-19 via Masks Even Where Directly Empowered to Do So: The Case of Air Travel

Not only has the federal government abdicated any sense that the CDC ought to at least provide stronger guidance to states and localities, but it has in fact also dropped the ball in areas where it has direct

¹⁵⁷ *Id.*

¹⁵⁸ WFAA, *Karine Jean-Pierre Says Biden Administration Has Always Been Consistent in Not Pushing Mask Mandates*, YOUTUBE (Jan. 4, 2024), <https://www.youtube.com/watch?v=HVZ79JNdQPI>.

¹⁵⁹ *Id.*

control over whether masks are worn—due to public choice rationales. One of the most problematic settings to avoid COVID-19 is airplanes, where one has little control over whether an infected person might be sitting directly next to oneself (a situation in which no ventilation system alone can prevent infection if there is no masking, leaving aside the fact that planes often do not consistently have the promised high level of ventilation in the first place). Several court fights took place on whether various arms of the federal government have the authority to impose masking on planes, but most relevantly, in the fall of 2022 the Supreme Court left in place a previous ruling by the Court of Appeals for the D.C. Circuit that affirmed the ability of the Transportation Security Administration (TSA) to mandate masking.¹⁶⁰ While the legal fight was pending, the government could have continued highlighting information about how important it is to mask in air travel settings.

Additionally, despite (1) this ruling, (2) the fact that when the mandate was dropped in April 2021 upon the district court's initial order to do so, 60% of Americans supported extending the mandate, and (3) the CDC's continued recommendation to mask in public indoor settings such as airports as of the Supreme Court's denial of certiorari in fall of 2022, the federal government never returned to requiring masking in flight-related settings.¹⁶¹ Indeed, the driving force appears to have been lobbying by the chief executives of seven U.S. airlines against masking as well as against pre-departure testing requirements for international travelers heading to the United States, both viewed as "bad for [airlines'] business."¹⁶² All pre-departure testing was dropped as of summer of 2022.¹⁶³ This scenario unfolded just as public choice

¹⁶⁰ *Corbett v. Transp. Sec. Admin.*, 19 F.4th 478 (D.C. Cir. 2021), *cert. denied*, 143 S. Ct. 395 (2022).

¹⁶¹ Suzanne Rowan Kelleher, *Supreme Court Allows TSA to Issue Mask Mandates*, FORBES (Nov. 1, 2022), <https://www.forbes.com/sites/suzannerowankelleher/2022/11/01/supreme-court-allows-tsa-to-issue-mask-mandates>.

¹⁶² *Id.*

¹⁶³ See David Shepardson, *U.S. Drops COVID Testing for Incoming International Air Travelers*, REUTERS (June 11, 2022, 11:05 PM), <https://www.reuters.com/world/us/us-drop-covid-testing-incoming-international-air-travelers-2022-06-10/>. Some on social media also noted the suspicious timing of a public letter by the Delta Airlines CEO asking the CDC to reduce the recommended COVID isolation period from ten to five days—which received support from other airlines days later (though the Association of Flight Attendants disagreed)—that was followed by the CDC actually reducing the period accordingly just six days after the letter was publicized; Snopes noted that “while the CDC has stated that the change in guidance

theory would have predicted. Independent-minded public health officials, however, could have chosen to provide information that continued to emphasize the dangers of unmasked air travel.

Another important aspect of the year 2022 is that it was a year of midterm elections, and in a shift allegedly motivated by “a blend of science and political science,” the Democrats decided “to declare victory against COVID ahead of a tough midterm election, amid recent polling data showing that Americans are less fearful of COVID-related illness and eager to return to normal life.”¹⁶⁴ There is, of course, a chicken-and-egg problem embedded in all this. Indeed, why would the average American continue to fear COVID when the federal government, via the CDC, turned the map green and focused on all the “tools” we now had to avoid hospitalization and death? When, as per public choice theory, it was much easier to tell the public what it wanted to hear—that it could drop precautions as long as vaccinated—rather than what it needed to hear, which is that everyone remained at significant risk of PASC and that perhaps measures such as masks

was based on current science and the necessity of ensuring that people can ‘safely continue their daily lives,’ the question of whether, or to what degree, the airline industry’s public comments may have influenced the decision remain unanswered.” Jordan Liles, *Did Delta’s CEO Influence the CDC on 5-Day COVID Isolation?*, SNOPE (Dec. 28, 2021), <https://www.snopes.com/news/2021/12/28/delta-ceo-cdc/>. States such as Oregon, as of May 2023 when the PHE ended, and California as of January 2024 stopped following even the CDC recommendation of five days; indeed, California allows asymptomatic positive individuals not to isolate at all, and explains that those with mild symptoms can end isolation once their symptoms improve and they have not had a fever in twenty-four hours even if that takes under five days. See Aria Bendix, *In a Break with CDC, California Quietly Changed Its Covid Isolation Guidelines*, NBC NEWS (Jan. 19, 2024, 2:41 PM), <https://www.nbcnews.com/health/health-news/california-changed-covid-isolation-guidelines-differ-cdc-rcna134696>. (“The message that ‘if you don’t have symptoms, you’re not really risky to those around you,’ [epidemiologist Saskia Popescu] said, is ‘not only counter to what the science says, but it’s also very dismissive of the fact that this person does have an infectious disease.’”). Popescu also “said it doesn’t make sense to lump Covid isolation guidelines with those for other respiratory viruses. ‘We really just don’t see asymptomatic cases of influenza and RSV. If you’ve got it, you know it. You feel like you got hit by a bus. Covid is different in that regard.’” *Id.* Within weeks of the adoption of the new policy, a parent posted on social media the policy that their San Diego school had adopted in the aftermath of California’s virtual elimination of the isolation period, which engaged in further dilution by stating that “Students should wear a mask when returning to school through Day 10 *but are not required to.*” Liesl McConchie (@LieslMcconchie), X (Feb. 2, 2024, 12:48 PM), <https://x.com/LieslMcconchie/status/1753490479843537259?s=20> (emphasis the poster’s).

¹⁶⁴ Sahil Kapur, *Democrats Turn Against Mask Mandates As Covid Landscape and Voter Attitudes Shift*, NBC NEWS (Mar. 1, 2022, 5:03 AM), <https://www.nbcnews.com/politics/politics-news/democrats-turn-mask-mandates-covid-landscape-voter-attitudes-shift-rcna18043>.

would need to stay for a long time? By February 2022, the message of President Biden's polling firm, Impact Research, to Democrats was clear, as reflected in a memo it issued:

It's time for Democrats to take credit for ending the COVID crisis phase of the COVID war, point to important victories like vaccine distribution and providing economic stability to Americans, and fully enter the rebuilding phase that comes after any war. [Democrats need to:] Declare the crisis phase of COVID over and push for feeling and acting more normal [and r]ecognize that people are "worn out" and feeling real harm from the years-long restrictions and take their side.¹⁶⁵

The memo, unsurprisingly, never makes mention of the significant long-term health and economic problem that PASC represents, possibly assuming that by the time the public recognizes it, midterm elections (and maybe even the presidential election two years later in the fall of 2024) would be over. To top it all off, by September of 2023 masks had turned into a laughing matter as President Biden told journalists "don't tell them I didn't have it on when I walked in" as he headed into a press conference unmasked after being advised to mask due to his wife testing positive for COVID a few days earlier.¹⁶⁶ CDC directors' unmasked appearances—including that of Mandy Cohen as part of an equally unmasked group of CDC staffers (with the exception of one person in a crowd of over forty people) near the peak of the United States's second-largest surge—conveyed a similar message that masks were passé.¹⁶⁷

¹⁶⁵ Memorandum from Molly Murphy & Brian Stryker, Impact Rsch., to Interested Parties (Feb. 24, 2022), <https://docs.house.gov/meetings/VC/VC00/20220302/114453/HHRG-117-VC00-20220302-SD009.pdf>.

¹⁶⁶ Joey Garrison, 'Don't Tell Them I Didn't Have It on': Biden Flaunts Not Wearing Mask After COVID Exposure, USA TODAY (Sept. 6, 2023, 3:57 PM), <https://www.usatoday.com/story/news/politics/2023/09/06/president-biden-flaunts-not-wearing-mask-after-covid-19-exposure/70778723007/>.

¹⁶⁷ Dr. Susan Monarez (@CDCDirector), X (Jan 22, 2024, 11:37 AM), <https://x.com/CDCDirector/status/1749486459113848876?s=20> (quoting Mandy Cohen as saying "Whether fighting infectious disease, ensuring we are ready to respond to health threats, supporting the health of young families, or improving mental health, CDC is working hard to protect health for all Americans" followed by the flexed arm emoji).

C. Air Quality

Ventilation levels are mainly a concern for diseases that are heavily spread by airborne vectors (where one could become infected from an infected person who is sitting far away in a room or who has in fact somewhat recently left the room) rather than only through direct contact via droplets (where one becomes infected because someone located relatively close coughs or—generally accidentally—spits while speaking in one's direction).¹⁶⁸ It is beyond reasonable scientific dispute today that COVID spreads through both droplets and airborne particles.¹⁶⁹ Just like with masks, however, missteps on the part of what should have been the trustworthy authorities on health have muddled the message and reduced the political will to implement long-term safety measures. Most importantly, most government officials have generally failed to provide any information at all on the topic of ventilation.

Notably, it took the WHO over a year since the start of the pandemic—until spring of 2021—to issue a definitive, official statement that COVID is airborne, despite the fact that in July of 2020 as many as 239 scientists signed an open letter urging the medical community and governing bodies to acknowledge the possible risk of airborne transmission; some commentators blame both political and bureaucratic hindrances for how long the process took.¹⁷⁰ After the WHO finally accepted this reality, the CDC eventually also admitted in May 2021 that the virus was airborne and that the previous guideline of six feet of distance between individuals was insufficient to prevent spread.¹⁷¹ This should have resulted in CDC calls about the need for stronger safety measures.

¹⁶⁸ See Hua Qian & Xiaohong Zheng, *Ventilation Control for Airborne Transmission of Human Exhaled Bio-Aerosols in Buildings*, 10 J. THORACIC DISEASE S2295 (2018), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6072925/>.

¹⁶⁹ See, e.g., *Indoor Air and Coronavirus (COVID-19)*, U.S. ENV'T PROT. AGENCY, <https://www.epa.gov/coronavirus/indoor-air-and-coronavirus-covid-19> (last updated Feb. 2025).

¹⁷⁰ See JV Chamary, *WHO Finally Admits Coronavirus Is Airborne. It's Too Late*, FORBES (May 4, 2021, 6:30 PM), <https://www.forbes.com/sites/jvchamary/2021/05/04/who-coronavirus-airborne/?sh=28d7d4472c7c>.

¹⁷¹ See Yelena Dzhanova, *The CDC for the First Time Acknowledges That the Coronavirus Is Airborne*, BUS. INSIDER (May 8, 2021, 9:13 AM), <https://www.businessinsider.com/cdc-admits-coronavirus-is-airborne-2021-5>.

Instead, the recognition that COVID is airborne did not change the CDC's guidance that fully vaccinated individuals go about their business maskless.¹⁷² Meanwhile, it took until early 2024, about four years after the start of the pandemic, for Dr. Fauci to open up in testimony to the House Select Subcommittee on the Coronavirus Pandemic about the fact that "the six-foot rule for social distancing 'sort of just appeared' without a solid scientific basis."¹⁷³ Again, this realization should have at least led Fauci to take the next step: make strong recommendations in the form of stricter safety measures that individuals should take as a result.

In his recent senatorial committee testimony, epidemiologist Ziyad Al-Aly urged Congress to consider improvements to ventilation and air filtration systems, asking why we do not protect buildings against the dangers of airborne pathogens when we do so against hazards such as earthquakes.¹⁷⁴ Indeed, improved ventilation would not even require (1) daily efforts by individuals as may be the case for masking, or (2) the incurrence of side effect risks from vaccines. It would, however, necessitate an economic investment by builders and owners, and the federal government does not currently seem willing to make that ask. Public health officials that are able to speak on this issue should do so and provide information as to the absolute necessity of proper ventilation.

An imperfect but simple way to evaluate ventilation today in a given space is via a CO₂ monitor, which can help to determine if there is adequate outdoor air flow to reduce the risk of infection from airborne diseases indoors. In Japan, for example, the Act on Maintenance of Sanitation in Buildings—based on the WHO's health standard—sets the threshold of acceptable CO₂ concentration at equal to or less than 1,000 ppm (parts-per-million, indicating the ratio of CO₂ to other gases).¹⁷⁵ In the United States, the Occupational Safety and Health Administration (OSHA) does not begin to set a permissible limit of CO₂

¹⁷² See *id.*

¹⁷³ Editorial Board, *Anthony Fauci Fesses Up*, WALL ST. J. (Jan. 11, 2024, 6:34 PM), <https://www.wsj.com/articles/anthony-fauci-covid-social-distancing-six-feet-rule-house-subcommittee-hearing-44289850>.

¹⁷⁴ Ziyad Al-Aly, *supra* note 40, at 4.

¹⁷⁵ Hiroko Kitamura et al., *Ventilation Improvement and Evaluation of Its Effectiveness in a Japanese Manufacturing Factory*, 12 SCI. REP. 1, 8 (2022).

level until a 5,000 ppm average concentration weighted over eight hours, which is mainly targeted for industrial settings where CO₂ itself could become hazardous to life.¹⁷⁶ Meanwhile, the CDC (in a fairly buried section of its website) explains that in the context of managing COVID infection risks, “[o]ne potential target for the baseline concentrations that is used to represent good ventilation is CO₂ readings below 800 parts per million (ppm).”¹⁷⁷

Effectively, the federal government, at least as a regulatory matter, allows employers and schools to subject both adults and children to ventilation that, as per CO₂ measurements, is more than six times worse than where it would need to be for significant reduction of infection risk (5,000 ppm versus 800 ppm). The federal government causes this predicament by essentially only setting a standard that seeks to prevent the ill effects of CO₂ itself and by not setting a standard meant to reduce the spread of illness *at all*. As part of its proposal for a model indoor air quality (IAQ) act that states could adopt even if the federal government refuses to, the Johns Hopkins Center for Health Security explains:

While multiple federal and state legislative and regulatory laws have addressed IAQ over decades, laws collectively present only a patchwork of coverage. Most public indoor spaces in the US lack sufficient and enforceable IAQ standards. Modern IAQ measures in public spaces would help prevent significant harms to human health, address disparities across populations, and reduce negative economic impacts tied to low worker productivity, high healthcare costs, and premature mortality.¹⁷⁸

¹⁷⁶ See 20 C.F.R. § 1910.10000 (2025); *see also* U.S. DEP’T OF AGRIC., CARBON DIOXIDE HEALTH HAZARD INFORMATION SHEET (describing the permissible levels and health hazards of excessive CO₂).

¹⁷⁷ COVID-19: *Ventilation in Buildings*, CTR. DISEASE CONTROL & PREVENTION, <https://www.cdc.gov/coronavirus/2019-ncov/community/ventilation.html> (last updated May 12, 2023). As Australian aerosol specialist Robyn Schofield explains, 800 ppm is the level at which “1 per cent of the air being inhaled has been breathed out by someone else – and is therefore a good proxy for infection risk.” Hayley Gleeson, *The COVID-Safe Strategies Australian Scientists Are Using to Protect Themselves from the Virus*, ABC NEWS AUSTRAL. (Jan. 20, 2024, 12:00 PM), <https://www.abc.net.au/news/2024-01-21/covid-safe-strategies-australian-scientists-virus-infection/103335466>.

¹⁷⁸ JOHNS HOPKINS CTR. HEALTH SEC., MODEL CLEAN INDOOR AIR ACT 7 (2023).

Public health officials should provide information on the topic of air quality as part of their key mission to keep the population safe. Instead, officials remain largely silent due to public choice factors.

The importance of ventilation when it comes to COVID spread cannot be overemphasized. In a study of over 10,000 Italian classrooms of which 316 had mechanical ventilation, researchers found that mechanical ventilation reduced the relative risk of infection compared to only natural ventilation by 74%.¹⁷⁹ A systematic review of eighteen studies of outbreak investigations found that at least sixteen of the outbreaks involved long-distance airborne transmission in settings such as restaurants, workplaces, or venues for choirs, and identified insufficient air replacement as a contributor to transmission, concluding that COVID mitigation measures should include adequate ventilation.¹⁸⁰ Another systematic review, this time of thirty-two studies, showed that increased ventilation rate was associated with decreased transmission, among other relevant measures.¹⁸¹ Researchers have studied and proposed other tools as well in addition to ventilation, such as air filters, adaptation of temperature and humidity levels, ultraviolet (UV) technologies, and other options.¹⁸² Australian infectious diseases researcher Brendan Crabb, who found that from January 2022 to March 2023 Tasmania had twice the excess deaths of Queensland likely due to “less time spent in poorly ventilated indoor spaces” in the latter region, concluded that “the future of COVID-19—and other pandemics to come—is regulating indoor air quality: a responsibility for

¹⁷⁹ Giorgio Buonanno et al., *Increasing Ventilation Reduces SARS-CoV-2 Airborne Transmission in Schools: A Retrospective Cohort Study in Italy's Marche Region*, FRONTIERS PUB. HEALTH (2022), <https://pubmed.ncbi.nlm.nih.gov/36568748/>. Of course, the specific level of mechanical ventilation also makes a difference to infection risk, as per the discussion in the previous paragraph.

¹⁸⁰ See Daphne Duval et al., *Long Distance Airborne Transmission of SARS-CoV-2: Rapid Systematic Review*, 2022;377 BMJ 1, 10 (2022), <https://www.bmj.com/content/377/bmj-2021-068743>.

¹⁸¹ Gail M. Thornton, *The Impact of Heating, Ventilation, and Air Conditioning Design Features on the Transmission of Viruses, Including the 2019 Novel Coronavirus: A Systematic Review of Ventilation and Coronavirus*, PLOS GLOBAL PUB. HEALTH (2022), <https://pubmed.ncbi.nlm.nih.gov/35395010/>.

¹⁸² Gentry Berry et al., *A Review of Methods to Reduce the Probability of the Airborne Spread of COVID-19 in Ventilation Systems and Enclosed Spaces*, ENV'L RESEARCH (2022), <https://www.sciencedirect.com/science/article/pii/S0013935121010598>. For a discussion in the popular press about the use of ultraviolet technologies to fight disease, see Dylan Matthews, *Ultraviolet Light Can Kill Almost All the Viruses in a Room. Why Isn't It Everywhere?*, VOX (Jan. 17, 2024), <https://www.vox.com/the-highlight/23972651/ultraviolet-disinfection-germicide-far-uv>.

governments, public institutions and workplaces.”¹⁸³ Most members of the public are not aware of these facts, and government officials should provide accurate health information that fills this gap instead of continuing their silence. Unlike with vaccination, there are no strong “anti-ventilation” activist groups that would even represent a hurdle of misinformation here.

The U.S. Environmental Protection Agency (EPA) states that “[p]rofessionals who operate school, office, and commercial buildings should consult guidance by ASHRAE (formerly known as American Society of Heating, Refrigerating and Air-Conditioning Engineers), and other professional and government organizations for information on ventilation and air filtration to help reduce risks from the virus that causes COVID-19.”¹⁸⁴ The EPA acknowledges that improving ventilation with outside air may not always be doable, in which case it suggests limiting room or building occupancy, as well as “encourag[ing] remote participation.”¹⁸⁵ There is no legal penalty for failing to follow any of these recommendations. For example, if an employer falsely claims that its filtration system provides better air quality than a CO₂ monitor suggests, an individual does not even have any means of verifying the truthfulness of that claim. The employer in that situation would likely only potentially suffer serious consequences if an individual became infected and mounted a successful tort claim, given that there is no regulatory mechanism of redress. At the very least, government officials should provide information that explains the state of air quality and its regulation to the population, who could then try to demand improvements from employers and others.

In summary, the strategy of federal, state, and local governments has been to walk the line of pushing for the COVID vaccine (eventually abandoning even that) while removing restrictions they viewed as impediments to economic recovery, and to general societal return to a sense of “normalcy,” such as mask mandates; officials also chose not to promote less individually onerous regulations such as improved ventilation accompanied by mandated CO₂ monitors that allow for immediate verification. The miscalculations involved in this strategy

¹⁸³ Gleeson, *supra* note 177.

¹⁸⁴ *Ventilation and Coronavirus*, ENV. PROT. AGENCY, <https://www.epa.gov/indoor-air-quality-iaq/ventilation-and-respiratory-viruses> (last updated Feb 21, 2025).

¹⁸⁵ *Id.*

have had disastrous consequences to the country's health and finances. The first step to turning back the tide is the dissemination of accurate information on the part of government officials so that the population can start taking more safety measures and engage in other forms of harm reduction.

One of the complexities of COVID is that it requires a multi-dimensional approach by governments, health organizations of every level, private businesses, and individuals. While this has been true of other diseases in some ways, COVID is the first widespread airborne disease to have arisen in the era of globalization. Fighting COVID is a massive undertaking that requires the expenditure of political capital because—unless a sterilizing vaccine appears that functions across strains, or at least medications that prevent/treat PASC after infection are created—the disease is unlikely to stop causing broad health harms in the years to come.

The political incentives to downplay the risks of COVID are high. In a study of anti-mask tweets, the top-cited reason—over 30% of the time—for opposing them was physical discomfort or negative health effects (actual or believed).¹⁸⁶ Was it simpler for the government to drop and no longer encourage mask mandates, as long as few people understand the risks that ensue as a result of those actions, or to invest in the development of more comfortable masks and convince the population that the risk and discomforts of PASC overshadow mask discomfort? Public health experts such as Yale University epidemiology professor Gregg Gonsalves and University of Colorado chemistry professor and aerosols specialist Jose-Luis Jimenez have commented on the pointed avoidance of mask mentions by CDC directors after a certain point in the pandemic and the preference of these directors for emphasizing handwashing, which does little to prevent COVID infection given that transmission heavily occurs via the air rather than other methods.¹⁸⁷

¹⁸⁶ Lu He et al., *Why Do People Oppose Mask Wearing? A Comprehensive Analysis of U.S. Tweets During the COVID-19 Pandemic*, J. AM. MED. INFORMATICS ASSOC. (2021), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7989302>.

¹⁸⁷ See Judy Stone, *Where Have All the Masks Gone?*, FORBES (Sept. 7, 2023), <https://www.forbes.com/sites/judystone/2023/09/07/where-have-all-the-masks-gone> (quoting an email by Gregg Gonsalves stating: "The CDC director, in talking about this late increase in COVID cases, bends over backward to mention hand-washing, but not N95s.

As journalist Judy Stone sums up the consequences of the Biden administration's COVID policies:

Many hospitals dropped their masking requirements after Biden declared the public health emergency over. Once that happened, most people stopped masking. One physician said, "We weren't told to mask, so people don't. People do what the policy is—and there is no policy now." She only occasionally sees surgical masks being worn, and rarely an N95, because of peer pressure. She added that she regularly sees hospital-acquired COVID-19 and that many people come to work while ill.¹⁸⁸

Meanwhile, even making a request for reasonable accommodation to have at least treating staff put on a mask produces uneven results (plus leaves the problem of surrounding patients in healthcare settings being unmasked while potentially infectious).¹⁸⁹

Individuals and private businesses often seem to interpret a lack of mandates, or at least of recommendations for mandates, as a lack of need for any safety measures. Given that most people would rather not wear a mask all things being equal, motivated reasoning likely kicks in as well. Messaging matters, as one can also see in a study of seventy-seven high HIV burden countries estimating that had condom use remained at 1990 levels—instead of being promoted and supplied for via governments, as took place—an additional 117 million HIV infections would have occurred.¹⁹⁰ And today, researchers are finding disconcerting parallels between the immune responses of the human body to COVID and to HIV, further suggesting the usefulness of

Without question, N95s offer individuals protection against infection and leaving out that fact is a disservice and an abdication of duty" and a tweet by Jose-Luis Jimenez accusing the CDC director of "gaslighting us that hand washing does something to prevent COVID (Zero evidence) but does not mention N95 masks"). In more recent times, the CDC has mentioned masking several times again, such as in social media posts. *E.g.*, CDC, *Stay Informed*, Facebook post (Oct. 17, 2024) (stating in an infographic that "[t]o lower your risk of getting sick from respiratory viruses like flu, COVID-19, and RSV, use preventive strategies that fit your needs" including "[u]se a mask").

¹⁸⁸ *Id.*

¹⁸⁹ *See id.*

¹⁹⁰ John Stover & Yu Teng, *The Impact of Condom Use on the HIV Epidemic*, GATES OPEN RSCH. (2022), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8933340/>.

learning from what strategies have worked for HIV prevention to avert further damage from COVID.¹⁹¹

Given what is known today about the risks of PASC as well as continued hospitalizations and deaths in not only unvaccinated but also vaccinated people, the government's response (or lack thereof) is unconscionable. The government could have reduced the need to require masks in some settings by requiring improved ventilation, and vice versa; instead, it eventually did neither. Federal and local governments could launch public health information campaigns about PASC to emphasize the need for precautions and avoidance of infection like they worked to promote vaccines in the early days of the pandemic, but they chose barely even to do that.¹⁹²

CONCLUSION

The COVID-19 pandemic has imposed an immense burden on the United States, with a death toll exceeding one million, widespread disability and chronic illness, and severe economic disruption. However, as this Article has demonstrated, the severity of these impacts was significantly exacerbated by a pandemic response that was riddled with public choice failures. Across key policy areas such as vaccine rollout, mask mandates, and ventilation standards, misaligned political incentives have consistently trumped public health imperatives, leading to suboptimal and often counterproductive outcomes.

Political actors, far more attuned to short-term approval ratings than long-term consequences, have faced strong incentives to downplay risks, overpromise quick fixes, and avoid politically difficult decisions. The result has been a disjointed, politicized response that has failed to effectively control the virus's spread and sowed deep public mistrust. While the unique challenges posed by COVID-19 have certainly contributed to these failures, the pandemic has ultimately

¹⁹¹ See, e.g., Catherine Demoliou et al., *SARS-CoV-2 and HIV-1: So Different Yet So Alike. Immune Response at the Cellular and Molecular Level*, 19 INT'L J. MED. SCI. 1787 (2022), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9608044/>.

¹⁹² The New York City Department of Health and Mental Hygiene, for example, eventually launched a campaign explaining what Long COVID is and recommending that affected individuals speak with their health care provider or a specialized clinic. See, e.g., @nychealthy, X, *What is Long COVID?* (Mar. 27, 2024, 8:10 AM), <https://x.com/nycHealthy/status/1772974408807632950>.

served to expose and exacerbate deeper structural problems in our public health decision-making process.

Addressing these deficiencies will require a multi-pronged approach. First and foremost, we must work to rebuild public trust in health institutions and authorities. This will require a commitment to transparency, a willingness to acknowledge and learn from past mistakes, and a dedication to clear, consistent communication. Public health officials should prioritize regular, accessible briefings and should strive to provide honest, actionable information even in the face of uncertainty.

Second, we need to take steps to insulate public health decision-making from partisan politics. This could involve measures like strengthening the independence of public health agencies, establishing clear guidelines for evidence-based policymaking, and creating channels for apolitical expert input. Policymakers should commit to basing decisions on the best available science and should resist the temptation to let political considerations override public health imperatives. Mechanisms such as expert advisory committees and independent review boards can aid in securing policies grounded in evidence rather than politics. Scholar Dorit Reiss has proposed partial insulation of the CDC via the passage of a statute that clearly defines the CDC's role as well as the restructuring of the CDC's leadership to resemble the Board of Governors of the Federal Reserve System, a system that she argues has a long history of acceptance and is on solid constitutional ground in addition to providing real guarantees of independence while still allowing the President and Senate to structure the leadership.¹⁹³

Finally, we should consider reforms to institutionalize a more proactive, prevention-oriented approach to public health threats. This might include regular pandemic preparedness drills, standing funding mechanisms for rapid response, and more robust surveillance and early warning systems. By investing in these capacities before a crisis hits, we can ensure that we are poised to act quickly and decisively when threats emerge. Policymakers should view public health preparedness as a critical ongoing priority rather than an afterthought to be addressed only in times of emergency.

¹⁹³ Dorit R. Reiss, *Institutionalizing the Centers for Disease Control and Prevention's Independence*, 12 CONLAWNOW 107, 123–24 (2020).

Implementing these reforms will undoubtedly be challenging, given the deeply entrenched political dynamics at play. But the costs of inaction are simply too high to ignore. The COVID-19 pandemic has provided a stark reminder of the devastating consequences of failure in the realm of public health. By learning from this experience and taking steps to realign our decision-making structures with the public interest, we can make sure that we are better prepared to meet the next great public health challenge. More broadly, by shining a light on the perverse incentives that too often shape our governance, this Article hopes to contribute to a larger conversation about how to build a political system that is more responsive, effective, and trustworthy.