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FLORIDA SUPREME COURT

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FIRST INTERIM REPORT OF THE TWENTY-SECOND STATEWIDE GRAND JURY

- **INTRODUCTION** **2**
 - Our Investigation 3
 - “Safety” and “Efficacy” 4
- **THE RISK OF SARS-COV-2** **7**
 - Infection Risk 7
 - Symptomatic Infection Risk 9
 - Hospitalization Risk 9
 - Death Risk 10
- **PANDEMIC MODELING AND NONPHARMACEUTICAL INTERVENTIONS** **12**
 - “Lockdowns” and Stay-at-Home Orders 14
 - Collateral Consequences 16
 - The Use of Masks and Social Distancing 20
- **CONCLUSION** **29**

INTRODUCTION

On December 13, 2022, the Governor of the State of Florida issued a Petition for Order to Impanel the Twenty-Second Statewide Grand Jury. In its 19 pages, the Petition described a litany of statements by pharmaceutical executives, state and federal government officials, doctors, scientists, reporters and other individuals regarding the safety and efficacy of COVID-19 vaccines, ultimately deeming it “to be in the public interest to impanel a statewide grand jury to investigate criminal or wrongful activity in Florida relating to the development, promotion and distribution” of these vaccines. On December 22, 2022, the Florida Supreme Court responded to the Petition by issuing an Order Directing Impanelment of a Statewide Grand Jury and tasking what would eventually become this body to determine whether “pharmaceutical manufacturers (and their executive officers) and other medical associations or organizations” engaged in “criminal activity or wrongdoing” with respect to their involvement in the development, approval or marketing of COVID-19 vaccines. Over the ensuing months, hundreds of summonses were subsequently issued for prospective jurors from the Fifth, Sixth, Tenth, Twelfth and Thirteenth Judicial Circuits. This body was selected and ultimately sworn in on June 26, 2023. Since that date, we have been working diligently to address the issues raised in the Petition and Impanelment Order.

Given that this is our first Interim Presentment, we wish to make several things clear. First and foremost, as an institution, the Statewide Grand Jury is apolitical. The members of this Grand Jury are not public officials and we have no specific agenda with respect to these issues. We were selected at random, based solely on our commitment to impartiality and on our willingness to devote significant amounts of our own personal time, month after month, to this process. Through the operation of chance alone, this body is racially and ethnically diverse, diverse in age, diverse in gender, diverse in politics and even diverse in lifestyle. Our main uniting feature is that each of us believes the citizens of the State of Florida deserve unbiased answers to the important questions raised by the Petition and the Impanelment Order. Moreover, we concur that if violations of Florida criminal law occurred with respect to COVID-19 vaccines, they must be addressed by the appropriate authorities.

We also believe it is important for those who read this Interim Presentment to understand that by design, the Statewide Grand Jury is insulated from the influence of the political actors that caused us to be impaneled. Once the Governor of the State of Florida issues a Petition, his involvement in the Statewide Grand Jury is at an end. Once the Florida Supreme Court issues an

Impanelment Order, its involvement is essentially at an end. The Statewide Grand Jury's power, however, is limited to two outputs: Indictments, which subject individuals or organizations to criminal prosecution based on multi-circuit violations of Florida criminal law, and Presentments, which address issues of great public importance for which the law does not always provide a sufficient remedy. Grand Jury Presentments frequently involve allegations of corruption, neglect of duty or malfeasance by governmental agencies, private entities or individuals, and are often accompanied by legislative proposals to curb further misconduct. Occasionally, however, *the entire purpose of a Presentment may be to raise public awareness* about circumstances that should be addressed in some way, but for which our current laws are unequal to the task. All these situations share the same inherent limitation: The Statewide Grand Jury only has the power to *recommend* solutions; we cannot *enact* them. It will be up to state legislators, federal lawmakers or even the people themselves to ensure that our efforts are not wasted.

Our Investigation

Since last June, this Grand Jury has cast a wide net, eliciting sworn testimony from a range of both expert and lay witnesses on issues both central and adjacent to the questions we have been charged with resolving. We have learned a great deal—some of which we will discuss in detail below—and we would like to thank those witnesses who have appeared before us so far. Admittedly, however, we are not physicians. Some of us are involved in the medical field, but most of us work in other professions and vocations. We have, however, spoken to numerous doctors, professors and scientists with a broad range of viewpoints on the topics we will discuss below and other topics we intend to discuss in the future. In a way, this Grand Jury has allowed us to do something that most Americans simply do not have the time, access, or wherewithal to do: *Follow the science.*

As of today, our investigation is nowhere near complete. We remain in regular session and our Legal Advisor is actively scheduling future witness appearances. There are still many months and much more testimony and evidence to come before our work will be finished. The issue we have been asked to examine is different from prior statewide grand juries in that it obviously affects people all over the United States—and perhaps the world—in much the same way as it affects citizens of the State of Florida. Most of the actions we have been asked to investigate and the people who took those actions are elsewhere. On the one hand, this complicates our efforts to compel testimony and slows down the statewide grand jury process. On the other hand, a surprising amount of scientific and other information about the COVID-19 pandemic is readily available in

the public sphere. Medical and scientific experts have been solicitous with both their perspectives and their time.

Unfortunately, not all our investigative efforts have been met with fulsome cooperation. Some prospective witnesses have elected not to testify, often citing potential professional or personal consequences arising from their involvement with the Statewide Grand Jury process. Occasionally, prospective witnesses have raised concerns about the underlying fairness of this body, which—for the reasons described above—we believe to be unfounded. Similarly, our Legal Advisor has sought the assistance of several agencies of the United States Government which have thus far declined to participate. The Center for Disease Control (CDC), the Food & Drug Administration (FDA) and the U.S. Army, among others, all had a substantial hand in the contracting, approval and distribution process for the COVID-19 vaccines at the center of our inquiry. These agencies have elected not to provide representatives to testify before this body, and federal law prohibits us from compelling their cooperation.

This is not as much an impediment as one might imagine, however. There is a wealth of information in the public sphere that explains the deliberative process and opinions of these federal agencies. We are not unfamiliar with their decisions or the claimed justifications for those decisions. Furthermore, we do not intend to penalize them for refusing to participate in the Grand Jury process. Rather, it is our goal to gather as much relevant information as we can regarding a given topic, interpret it, and, where appropriate, credit sound and reasonable decisions, even good-faith mistakes resulting from incorrect or incomplete information.

To the extent that any government entity or other witness who has thus far refused to participate in the Grand Jury process disagrees with any of our conclusions, they are welcome to come to Tampa and offer sworn testimony. So long as we are still in session, we will make the time to hear them out.

“Safety” and “Efficacy”

The Petition for Order to Impanel the Twenty-Second Statewide Grand Jury contains a wide variety of alleged misrepresentations by public and private officials involving qualities attributed to COVID-19 vaccines. These include assertions that side effects from the vaccines either were “not established,” or, later on, “were ‘extremely’ or ‘very’ rare”; that “the benefit risk profile of our vaccine remains positive”; that the vaccines will “stop,” “slow” or “limit” the “spread” of COVID-19; that the vaccines “prevent COVID-19 disease” with an efficacy of over 90%; that getting vaccinated “isn’t just about protecting you, but also your community”; that

vaccination was the key to eventually developing “herd immunity”; and, perhaps most importantly, that “the vaccines were ‘safe and effective as determined by data from the manufacturers.’” All of the alleged misrepresentations described above—and, for that matter, the broader category of attributed statements from the Petition—share two primary commonalities: (1) Every statement involving the “risk” of a vaccine or the “rarity” of a vaccine’s side effects is essentially a statement about the vaccine’s “safety”; and (2) every statement about a vaccine’s ability to prevent COVID-19 disease is essentially a statement about its “effectiveness.” Because these two concepts, “safety” and “effectiveness,” form the axes around which the alleged misrepresentations orbit, we believe it appropriate that they form the primary focus of our inquiry.

Significantly, the concepts of “safety” and “effectiveness” are long-established principles in the world of federal drug, device and biological product approval. In fact, they form the primary goalposts of the FDA’s approval process, meaning that every pharmaceutical manufacturer who submits applications to the FDA for new biological products—including vaccines—sets out to establish through clinical trials and other means that their products are “safe” and “effective” as the FDA defines those terms. However, both “safety” and “effectiveness” are considered terms of art, meaning that in this specific milieu, they have definitions that are similar, but not identical to their conventional, plain-language meaning.

The legal definition of the word “safety,” with respect to biological products, can be found in the Code of Federal Regulations:

The word safety means the *relative* freedom from harmful effect to persons affected, directly or indirectly, by a product when prudently administered, *taking into consideration the character of the product in relation to the condition of the recipient at the time.*

(emphasis added). Right away, it should be apparent that when the FDA describes one of these products as “safe,” it is semantically different from the way people describe things as “safe” in everyday language. The definition incorporates a degree of relativity, meaning that a biological product can be fully approved for market and described as “safe” by the federal government with the knowledge that it will harm at least some of the people who take it.

We do not mean for the above to be taken as criticism; the world is full of dangerous diseases and often, on balance, it makes sense to judge the safety of a given treatment in the context of the disease it is designed to manage. The flexibility of this definition allows the FDA to approve treatments with significant safety risks for dangerous diseases like late-stage cancer because, on

balance, they are relatively “safe.” However, it should also be apparent that establishing the “safety” of a biological product *necessitates a comprehensive, meaningful and accurate evaluation of the risk presented by the disease that product is designed to address*. This is especially true in the case of vaccines because they are being administered to healthy people—not the afflicted—in the hopes of preventing or mitigating a disease they do not have.

We have drawn working definitions of both “efficacy” and “effectiveness” from a document entitled “Guidance for Industry, Providing Clinical Evidence of Effectiveness for Human Drug and Biological Products,” published by the FDA in May of 1998. This document defines the relevant terms as follows:

[T]he term *efficacy refers to the findings in an adequate and well-controlled clinical trial* or the intent of conducting such a trial and the term *effectiveness refers to the regulatory determination* that is made on the basis of *clinical efficacy and other data*.

(emphasis added). There are two aspects of this definition that are significant here. First, “efficacy” and “effectiveness” are distinct terms that have distinct meanings. The former refers solely to the outcomes of clinical trials, while the latter refers to the FDA’s regulatory determination regarding a drug or biological product. Second, while clinical efficacy is a named component in the FDA’s determination of “effectiveness,” it appears that determination may also be based on “other data.”

Once again, there is wisdom in allowing the FDA to be flexible. A popular hypothetical example illustrating the need for the flexibility to consider “other data” involves reducing the risk of death from jumping out of airplanes using parachutes. A well-designed randomized clinical trial would require the proponent of that intervention to assign some portion of study participants to jump out of planes *without* parachutes—as a “control” group—to establish the “efficacy” of the intervention. Obviously, such a study would be neither ethical nor informative; the “effectiveness” of using parachutes as an intervention is so obvious it can be well-established by observational data alone. In this way, considering “other data,” especially when potential ethical concerns arise, is entirely necessary and appropriate.

The definitional relativity incorporated into these critical terms presents a conundrum to this Grand Jury: As a practical matter, one cannot determine the truth of any statement touting the “safety” or “effectiveness” of COVID-19 vaccines without first making some judgment about the risks posed by the SARS-CoV-2 virus. Not only has our understanding of those risks evolved substantially over the last four years, the danger posed by this novel virus has been arguably

diminished—to a greater or lesser extent—by: (1) The development of effective treatments for those stricken with symptomatic COVID-19 infection; (2) the imposition of nonpharmaceutical interventions (NPIs) designed to slow or stop the spread of the virus; and (3) our evolving, population-level immunity.

For that reason, as we embarked on this investigation, it became apparent that this body could not answer the questions posed by the Petition in a vacuum. Rather, the COVID-19 vaccines—their approval, their rollout, and their administration—were a significant part of a broad societal response to a true national emergency: A novel disease that is estimated to have killed almost a hundred thousand Floridians and millions worldwide. Examining the degree to which these other modalities were employed to combat COVID-19 and their relative success or failure is necessary to contextualize the questions presented by the Petition and the Impanelment Order.

THE RISK OF SARS-COV-2

As a word, “risk” is easy to use in conversation, lectures, and discussions, but as a concept, it can refer to one of several different ideas. Some of those ideas are themselves moving targets, in that the actual probability of their occurrence changes either with time or is dependent on one or more other factors, sometimes referred to as “confounders.” When a person discusses the “risk” of the SARS-CoV-2, he or she could be referring to any of the following:

1. Infection Risk
2. Symptomatic Infection Risk
3. Hospitalization Risk
4. Long-Term Risk
5. Death Risk

For the purpose of discussing NPIs, we need not go into exhaustive detail regarding all of the “risks” described above. We will spend time in future presentments describing and explaining the details of each of these risks in a manner appropriate to the issue at hand.

Infection Risk

The risk of infection is the likelihood that anyone going about his or her ordinary life is going to be infected by SARS-CoV-2. This risk starts as a straightforward expression of viral contagiousness. However, it can vary substantially based on how many vectors exist through which a person may come into contact with the virus. The existence and number of viral vectors are heavily dependent on social and environmental factors like individual living arrangements, the size of crowds in cities, the density of people in residential communities or business districts,

seasonality, the proportion of time a given person spends indoors versus outdoors, air circulation, filtration quality in indoor spaces and a multitude of other factors. Infection risk is highly useful for discussing NPIs, which aim to reduce viral transmission by limiting the number of susceptible people who are exposed to a given pathogen.

The risk of infection is often referred to with an expression, written as R_0 (pronounced R-Naught), which describes the number of people to whom a single person can transmit a given communicable disease. Influenza, for example, has an R_0 that varies seasonally between 0.9 to 2.1. This means that averaging for all social and environmental factors, each person who gets seasonal influenza is expected to spread the virus to between 0.9 to 2.1 people. Significantly, however, an R_0 of less than one means that the infected population will shrink, while an R_0 of more than one means that the infected population will grow. Moreover, R_0 affects the curve of infection exponentially: The higher the R_0 , the more quickly people will become infected. The higher the number of infected, the faster the number will grow.

It can be challenging to accurately estimate R_0 , especially when a given virus produces only minor symptoms or infects some portion of the population asymptotically. Early estimates, which tend to be based primarily on those who appear for medical treatment or positive test results from those who are already symptomatic, tend to understate R_0 . On January 30, 2020, for example, the World Health Organization (WHO) estimated the mean (average) and median (midpoint) R_0 for COVID-19 to be 3.28 and 2.79, respectively. In February 2020, a study of passengers on the Diamond Princess cruise ship found SARS-CoV-2's R_0 to be 2.28. Later papers have given wider estimates of 1.9 to 6.5. The number is also likely to change based on viral variant. For example, a journal article published in March 2022 estimated the average R_0 for SARS-CoV-2's Omicron variant to be as high as 9.5.

The infection risk of SARS-CoV-2 can also be better understood by studying viral presence in wastewater, which also can be used week over week to determine whether cases are rising or falling, or through seroprevalence studies, which evaluate the number of antibodies for a virus found in a random set of blood samples. These samples can then be extrapolated to estimate the distribution of a given infection at a population level. This number does not provide a rate of change, like R_0 or wastewater surveillance, but it can shed light on the undercurrent of asymptomatic cases which tend not to be captured by other metrics like PCR testing, hospitalization, or death. As of April 2022, the CDC estimated that 58% percent of Americans, including 75% of children, had already been infected with SARS-CoV-2 based on seroprevalence.

That was almost two years ago. We expect, given the R0 of subsequent variants, that the number is significantly higher today and will continue to climb in the future. At this point, many Americans, like some of us here on the Grand Jury, have even been infected with SARS-CoV-2 more than once, confounding the efforts of even wastewater and seroprevalence studies to determine infection risk.

Symptomatic Infection Risk

The risk of symptomatic infection—more often referred to as “cases” or “confirmed cases”—is the most basic idea that most people consider when discussing “risk.” According to the WHO, as of the writing of this Presentment, there have been roughly 110 million “confirmed cases” of COVID-19 in the United States and roughly 773 million worldwide. As we mentioned above, however, “confirmed cases” are only taken from PCR testing after symptoms emerge, from treatment data at medical facilities, or from health department figures at the state level—all of which usually derive from the same sources and thus run some risk of double-counting. Regardless of its shortcomings, however, comparing the population level to the “confirmed case” count is most representative of symptomatic infection risk.

The problem with using symptomatic infection risk as a metric—and the reason we mention it in this Presentment at all—is that when it is used as a denominator, it fails to account for asymptomatic cases, and thus tends to overstate downstream risks like hospitalization and death. Cases can be undercounted because persons do not have access to tests or choose not to report test results. As the pandemic took its toll, there was evidence that some people were hesitant to test or report for fear of being hospitalized, stigmatized or forced to quarantine. Early in the pandemic, for example, researchers estimated that the spread between “confirmed cases” and positive seroprevalence results was 8,430 to 367,000, resulting in only 2% of infections being confirmed. After PCR testing became more widespread, however, the ratio began to change significantly. Conservatively, later estimates put the percentage of symptomatic SARS-CoV-2 infections at anywhere from 45% to 65%, a rate which will likely fall as testing decreases and humans develop further immunological familiarity with the virus.

Hospitalization Risk

The risk of hospitalization from COVID-19 is the first level of risk that raises the question of intervention by public health in the way people live their day-to-day lives. Hospitalizations are often traumatic and difficult experiences that can stress families, disrupt careers, impose heavy

financial burdens and tax the medical system as a whole. As of the writing of this Presentment, the CDC reports roughly 6.75 million total hospitalizations in the United States for COVID-19 disease.

This number, however, is not free from controversy. In the CARES Act, the federal government created financial subsidies for Medicare and Medicaid patients with COVID-19 that were treated at hospitals and other medical facilities. The subsidy itself is not unjustified. During the pandemic, some medical facilities operated at a deficit, expanding hours for staff, dramatically and unexpectedly increasing costs for protective equipment and taking in far less revenue than usual from elective procedures that had been delayed. These CARES Act subsidy payments helped relieve the financial risk of their closure or collapse.

Nevertheless, putting that money on offer creates incentives to report more than just hospitalizations for COVID-19 disease. We know for a fact that this happened because numerous federal and state health officials have publicly stated that they did not ask or require hospitals to distinguish cases where someone was admitted with incidental SARS-CoV-2 infection versus cases where someone was so sick with symptoms of COVID-19 disease that he or she required hospitalization. Thus, it is highly likely that the CDC's number of total hospitalizations is inflated to some degree with asymptomatic or minor SARS-CoV-2 infections that were classified as "hospitalizations" in order to financially benefit the hospital.

Death Risk

The risk of death is the most salient and obvious risk presented by the SARS-CoV-2 virus. From an epidemiological perspective, it can also be one of the easier risks to compute, provided one starts with the proper inputs. In its simplest form, this can be expressed as a numerator (the number of people who died from a disease) and a denominator (the number of people who had the disease). We will deal with each of these categories and their distinct complications in turn.

First, the numerator. When people die, other people tend to notice. This means that unlike symptomatic or especially asymptomatic infections, the number of people who died from COVID-19 should be relatively easy to determine because deaths are recorded by hospitals, coroners and state agencies. For example, the CDC reports that as of the writing of this Presentment, roughly 1.17 million Americans have died from COVID-19 disease. Like the number of total hospitalizations, however, this figure is very likely inflated to some extent with people who died "with" rather than "of" COVID-19 disease in order to financially benefit whatever hospital the person died in. The CARES Act also provides for a "death benefit" of up to \$9,000 to the families of those who died from COVID-19 disease.

Second, the denominator. The results of the equation can be dramatically different based primarily on whether one plugs in the number of “confirmed cases,” or an estimate of total infections. “Confirmed cases” can be used to provide a “case fatality rate,” but that rate is very likely to dramatically overstate the risk of death by ignoring unreported infections. The Director-General of the WHO did exactly this when he caused widespread panic by stating in a March 2020 press briefing that “[g]lobally, about 3.4% of reported COVID-19 cases have died.” The statement itself was not inaccurate, it was just an incitive choice of denominator. The media reporting the story at the time did not catch the nuance, reporting breathlessly that the “coronavirus death rate is 3.4%, higher than previously thought.”

Using an “infection fatality rate” (IFR), however, provides a much more accurate answer to the primary question people care about: “If I get infected by SARS-CoV-2, how likely am I to die?” The best way to do this is to use seroprevalence to estimate a total number of infections and use that as the denominator. This is still a moving target, however. Infection numbers can vary geographically based on the factors we described in the section above. Fatality numbers, too, can vary from place to place based on differences in the population, the availability of treatment and any number of other factors. With that in mind, some of the best combined estimates of IFR from 2020 published in scientific journals ranged from 0.00% to 1.63% with a median of 0.27%, or around 2.7 people per 1000. Those numbers have likely lowered over time, but because the NPIs we discuss in this Presentment occurred primarily in 2020-21, we will use those estimates here.

Significantly, the IFR estimate is itself highly stratified by age, which turns out to be by far the most important factor when it comes to the risk of death from SARS-CoV-2 infection:

Years of Age	Deaths per 100,000	Percentage
5	2	0.002%
15	6	0.006%
25	29	0.029%
35	105	0.105%
45	286	0.286%
55	624	0.624%
65	1,706	1.706%
75	4,840	4.840%
85	12,972	12.972%

These numbers make it clear that, depending heavily on age, a person's IFR could be dramatically under or dramatically over the median of 0.27%. Through the lens of these numbers, COVID-19 is statistically almost harmless to children and most adults, with catastrophic IFRs in populations above the age of 65.

How much difference do comorbidities make? Not as much as one might think. The CDC lumps all comorbid conditions together, stating that the "Risk Ratio" of COVID-19 death (the number by which one would multiply his or her baseline IFR based on other factors like the existence of comorbidities) increases with the number of comorbid conditions a person has. The risk ratio could be anywhere from 1.5 with a single condition to 3.8 with greater than 10 conditions. This explanation is not unfounded (multiple comorbidities do have an additive effect on risk) but it has the advantage of simplicity at the cost of accuracy. Data published in July of 2020 describe with specificity the degree to which various comorbid conditions can positively affect the "Hazard Ratio" of SARS-CoV-2 infections, raising risk by specific amounts in individuals with specific conditions. Importantly, however, all the individual condition-related Hazard Ratios are dwarfed by the massive, exponential impact of age, which is by far the most important comorbidity.

PANDEMIC MODELING AND NONPHARMACEUTICAL INTERVENTIONS

To better understand and predict how viruses flow within a host population, epidemiologists employ a mathematical model known as "SEIR," an acronym for four population states of humans with respect to a given pathogen:

- "S" - "Susceptible"
- "E" - "Exposed"
- "I" - "Infected"
- "R" - "Recovered."

These models can vary widely in complexity depending on the circumstances surrounding a particular pathogen (e.g., its lethality, its rate of mutation) or the characteristics of a particular population (e.g., the immunosuppressed, aged cohorts). For our purposes, each of these four descriptive states provides a vector by which one can affect the course of a pandemic. Providing those in the "Infected" category with medical treatment, for example, is designed to move "Infected" people into the "Recovered" category. Most vaccines act to remove individuals from the "Susceptible" category altogether, effectively preventing that population from entering the

SEIR model at all with respect to a particular virus. COVID-19 vaccines appear to have a dual effect, reducing the “Susceptible” population in a limited way and for a limited time, and providing the “Infected” with some protection from the more serious consequences of COVID-19 disease for a longer (but still apparently limited) period.

NPIs, however, are designed to reduce (or eliminate) people from the “Exposed” category. In the last four years, all manner of NPIs have been employed around the world in response to the SARS-CoV-2 virus at the government, corporate and individual levels. To be clear, NPIs do not have to be mandated to be effective. An individual who stays home from work because he or she comes down with a cold is essentially self-employing an NPI, removing himself or herself from a mixed environment and thus reducing the “Exposed” population in the SEIR model. A corporation that urges employees who feel sick to stay home, similarly, is effectively employing an NPI in the same manner as the individual, just on a potentially larger scale.

Those kinds of small-scale NPIs, however, are not the focus of our inquiry. We are interested in large-scale NPIs enforced by mandate at the government level and the question of whether these interventions had a significant impact on the overall risk of the SARS-CoV-2 virus. For purposes of this Presentment, we have divided NPIs into the following broad categories:

- (1) “Lockdowns,” Stay-at-Home Orders, School Closures and other similar acts that impeded the movement of individuals regardless of disease status; and
- (2) Mask Mandates & Social Distancing Guidelines.

We recognize there may be other NPI measures that arguably had some impact on SARS-CoV-2 risk, but we believe the chosen categories are broad enough to address many of the more specific kinds of NPIs that were put in place during the pandemic.

Before we begin examining these categories, we would like to highlight a common refrain that has developed as our society struggles to canonize (and, perhaps, “memory-hole”) the experiences of the past four years. It has become very popular in 2023 (and now 2024) for many erstwhile advocates of NPIs to point to a lack of available scientific data when confronted with some of the more unfair or egregious consequences of the NPIs they imposed. To be clear, scientific research into NPIs and their consequences did not begin with the outbreak of COVID-19. A wealth of contemporaneous scientific information already existed in major publications that could have informed a much more robust and meaningful response with respect to NPIs, but much of it was ignored or even attacked by mainstream public health and media entities in the early

months of the pandemic, for reasons that are not always clear. In short, this was not an “information” problem, it was a “judgment” problem.

“Lockdowns” and Stay-at-Home Orders

On August 5, 1969, astronaut Neil Armstrong celebrated his 39th birthday in an Airstream trailer—modified by NASA scientists to function as a mobile quarantine facility—after he and two other Americans returned from the world’s first successful moon landing. This 21-day mandatory quarantine for the three astronauts, conceived by NASA, was a nod to the many unknowns faced by humanity in the wake of the Apollo 11 mission. Humans had never landed on the moon and certainly had never walked on it. No one had any concrete knowledge as to what could be hiding in the lunar dust the three astronauts had tracked back to Earth in their capsule and on their persons. Seen through the lens of an SEIR model, the quarantine was a reasonable way to avoid exposing the ground crew to any harmful pathogens picked up from the moon and brought back to Earth.

Fortunately for the astronauts, there were no dangerous pathogens brought back from the moon, but their story allows us to illustrate a meaningful difference between the popular notion of a small-scale quarantine, where one can use a targeted NPI to avoid altogether a population’s exposure to a pathogen, and a large-scale quarantine—often referred to as a “lockdown”—where community spread has already taken place and the purpose is merely to blunt the impact of an epidemic disease. Terms like “lockdown” and “stay-at-home order” were popularized during the COVID-19 pandemic, but the NPIs themselves were previously theorized, modeled and studied. Often, those prior studies refer to both large and small-scale segregation measures alike as “quarantines,” but it is the large-scale actions taken during the COVID-19 pandemic, commonly referred to as “lockdowns,” that we address here, and we do not want to conflate the two. *The logic behind small-scale quarantines should not be used to justify large-scale, sweeping lockdowns; likewise, the failings of large-scale lockdowns should not be used to undermine small-scale quarantines.*

Of course, between these large- and small-scale extremes, there is a spectrum of intensities. Some governments essentially put their population on an “honor system,” trusting the sick to self-isolate and protect their fellow citizens. Other countries physically secured their own citizens inside their homes and kept them there for extended periods. Most people in the United States found themselves somewhere between these two extremes, largely due to one of the most profound problems with lockdowns: *Our society is simply not organized in a way that could support long-term isolation.* People must leave home for essential goods, and there is a population of “essential

workers” who must leave home to provide those goods. Even in a society that nails shut the doors of people’s homes, someone must do the nailing. In short: *Lockdowns leak*.

The scientific literature on lockdowns prior to 2020 understood this all too well. In 2006, a prominent epidemiological journal stated that “the number of infections averted through the use of quarantine is expected to be very low provided that isolation is effective.” That same year, the WHO noted that “[i]ll persons . . . should remain home when they first become symptomatic, but forced isolation and quarantine are ineffective and impractical.” In 2019, the WHO reiterated this position, stating that “home quarantine of exposed individuals to reduce transmission is not recommended because there is no obvious rationale for this measure, and there would be considerable difficulties in implementing it.” As recently as January 2020, even the Director of the National Institute of Allergy and Infectious Diseases, responding to the Chinese government’s apparent “success” with lockdowns, made the following statement:

That’s something that I don’t think we could possibly do in the United States, I can’t imagine shutting down New York or Los Angeles, but the judgement on the part of the Chinese health authorities is that given the fact that it’s spreading throughout the provinces... it’s their judgement that this is something that in fact is going to help in containing it. Whether or not it does or does not is really open to question because *historically when you shut things down it doesn’t have a major effect*.

(emphasis added). Astoundingly, however, within weeks and at the urging of these same officials, nearly every state in the United States was adopting some form of mandatory, government-enforced stay-at-home measure, closing schools and shuttering businesses.

This Grand Jury carefully examined contemporaneous scientific and popular media to find evidence of what shifted the opinions of these officials so dramatically in such a short period of time. What we found were a series of media articles and studies based on observational data touting the “success” of early lockdowns in China. One study was based entirely on claims by the Chinese government that it had “completely reversed the occurrence of COVID-19 cases reported daily.” Similarly, WHO representatives returned from a February 2020 press junket in China claiming the country was “setting a new standard” for response to the virus. Prominent authors jumped on board, hyperbolizing that acting strongly in the short term could save millions of lives, but failing to act would cause millions to be infected and put our healthcare system at risk of collapse, pushing the Overton Window bit by bit into what had previously been anathema.

Of course, those authors were strictly correct. Millions of people were infected with SARS-CoV-2 and our healthcare system was, briefly and in a few particular areas, at risk of collapse. But it is obvious to this Grand Jury that no lockdown, regardless of its stringency, would have been able to prevent those events for one very important reason: By the time these measures were implemented, there was already significant community spread of the SARS-CoV-2 virus. One of the more comprehensive examples we have of this spread is a study from April 2020 estimating the seroprevalence rate of the SARS-CoV-2 virus in Los Angeles County to be approximately 4.34%. As of the 2020 census, Los Angeles County contained 10,014,009 people. 4.34% of that number is 434,608 people. If even 10% of those people are classified as “essential,” that is 43,461 people. This Grand Jury is not aware of any NASA-modified Airstream trailer that can hold that many individuals.

Given that there is no way to effectively quarantine a population of this size, according to the SEIR model, with no other inputs, these 43,461 people will inevitably interact with susceptible hosts, exposing them to the virus and infecting them at a rate defined by the R_0 . Even if we chose a conservative R_0 estimate of 2.28, within one disease cycle, 43,461 sick individuals would multiply to 99,091. Within two generations, it multiplies again to 225,927, and so on. Within five generations, if nothing changes, all 10,014,009 people in Los Angeles County will be infected.

This, of course, leads us into the other widely-claimed benefit of government-mandated lockdowns: They may not ultimately “stop the spread” of the disease, but they can at least “flatten the curve,” slowing down the infection growth rate and allowing our healthcare system to keep up with the influx of serious cases. The evidence for this effect is mixed. One prominent journal found in January of 2021 that “while small benefits cannot be excluded,” more restrictive NPIs did not confer significant benefits in terms of case growth, and that similar reductions may be achievable with “less restrictive interventions.” Similarly, a meta-analysis conducted on lockdowns in the Spring of 2020 showed “little to no effect on COVID-19 mortality.” On the other hand, age-adjusted charts from multiple European nations do echo the early Chinese claims, showing the same stalling or reversing of overall case growth during the pendency of the lockdown. This begs the question: Assuming the Chinese and European case growth data is accurate, is a lockdown that merely postpones case growth a worthwhile endeavor?

Collateral Consequences

In order to comprehensively answer that question, we must examine the significant collateral consequences of lockdowns which lie outside the boundaries of SEIR-based analyses.

First, one must consider the underlying economics: Lockdowns have been accurately called a “luxury of the laptop class” in that the benefits of these NPIs inure to the population who can afford to stay at home, not to the “essential workers” who cannot. The result is an income and class stratification that sees SARS-CoV-2 spread well-controlled among certain income strata while case growth remains rampant in others. Case growth data from low versus high income neighborhoods during the pandemic clearly demonstrates this distinction.

This is to say nothing of the overall impact of reduced economic activity in first-world countries like the United States and in Europe on other areas of the world. While many American workers, especially small business owners and those in the service sector, certainly felt the economic brunt of lockdown-related business closures, the CARES act did provide United States citizens with at least some economic protection. By contrast, many third world countries with more precarious economic prospects suffered far worse consequences but were not able to provide similar benefits. Pandemic-related economic depression produced a marked increase in extreme poverty (the number of people living on less than \$1.90 a day). This statistic had been declining for years before it spiked in 2020. As of 2022, the number had returned to the same levels it had been in 2018, but almost five years of worldwide declining poverty had been erased. Similar effects were observed on the global food supply, where food shortages associated with COVID-19-related economic fallout have been modeled to have contributed to thousands of deaths. Likewise, global vaccination programs have seen the largest decline in childhood vaccinations in the last 30 years, resulting in a resurgence of diseases like measles that had previously all but disappeared. Clearly, the pandemic itself was going to cause global disruption. Is it fair to lay these consequences at the foot of lockdowns alone? No, but they certainly did not help.

Another aspect of lockdowns that deserves distinct consideration is that these NPIs effectively paused much of what would be considered “routine” healthcare like checkups, physicals, other health-related screenings and minor surgeries. This is an important point, because much of what one would consider “routine” is meant to detect conditions that could become serious in the future. A missed mammogram may be the difference between catching breast cancer at stage 1 versus stage 3 or 4. A routine checkup that would have revealed serious heart disease may be missed, resulting in a heart attack at some future date. There are thousands of potential scenarios, but even just these two adequately underscore our point: By pausing “routine” healthcare, lockdowns may have serious, unintended and unanticipated health consequences.

These collateral consequences will not be written in the language of SEIR. Rather, they will be written in the language of increased excess mortality—defined as the number of actual deaths over a given period of time versus the number of expected deaths—that can persist for months or even years after a lockdown is lifted. According to actuarial estimates based on data released by the CDC, excess mortality was indeed well above expected throughout the pandemic *even when COVID-19-related deaths were excluded*. Furthermore, excess mortality has remained dramatically higher through 2023 in age groups which—according to the IFR table we presented above—are at a greatly decreased risk of illness and death from SARS-CoV-2 infection.

These persistent excess deaths may not all be attributable to physical health problems. Mental health also declined precipitously during the pandemic. The WHO estimated in 2022 that anxiety and depression increased by 25% between 2020 and 2021. Even today, the NIH states that “[b]oth SARS-CoV-2 and the COVID-19 pandemic have significantly affected the mental health of adults and children[,]” describing that impact as follows:

If you get COVID-19, you may experience a number of symptoms related to brain and mental health, including:

- Cognitive and attention deficits (brain fog)
- Anxiety and depression
- Psychosis
- Seizures
- Suicidal behavior

Data suggest that people are more likely to develop mental illnesses or disorders in the months following infection, including symptoms of post-traumatic stress disorder (PTSD). People with Long COVID may experience many symptoms related to brain function and mental health.

We included this text because it aptly demonstrates one of the key problems with analyzing collateral consequences: *It conflates the consequences of SARS-CoV-2 with the consequences of our reaction to it*. Is this Grand Jury really supposed to believe—as the text above suggests—that *all* the mental health symptoms described therein are attributable to the virus, while *none* of them are attributable to the fact that heavy-handed, government-mandated lockdowns, stay-at-home orders and school closures turned people’s lives upside down for the better part of three years? That surmise not only offends common sense, it is also contradicted by CDC data from June of

2020 where a cross-section of Americans reported dramatically increased levels of anxiety, depression and PTSD at a time when—at the most—1 out of 20 of them had contracted the SARS-CoV-2 virus, but when NPIs across the nation had already been in place for months.

In the same vein, drug abuse deaths rose precipitously during the pandemic. No one has yet attempted to blame those on the SARS-CoV-2 virus itself, but they would fall squarely within the realm of a collateral consequence of lockdowns in that these deaths often tend to follow hand-in-glove with mental health issues. Once again, CDC data shows deaths relating to substance abuse rising beginning in early 2020 and only beginning to level out (but still rising) in 2022.

The final collateral consequences we wish to place on the scale are those related to one of the most controversial facets of lockdowns: School closures. One analytical model from a peer reviewed journal concluded that there was a median of 54 days of school instruction lost by children in the United States ages 5-11 during 2020. That may be a conservative estimate, and we plan to gather further empirical and anecdotal evidence about the collateral impacts of school closures and, if necessary, provide a deeper analysis of their consequences in a future Presentment. We include the concept here because school closures are perhaps the most important collateral consequence of lockdowns, and we did not wish to ignore their impact—even if that impact is difficult, at this point, to quantify—in our analysis.

As we gather and examine these consequences, an analogy starts to emerge. A government-mandated lockdown is like a credit card: It allows leaders to buy a period of depressed case growth, but that benefit is temporary and ends when the lockdown is lifted. The “interest” of this benefit—written in the language of excess mortality—is paid for in future months and years of economic hardship, mental & physical health consequences, and loss of educational attainment.

No one understood this relationship more clearly than one of the world’s most famous epidemiologists, Dr. Donald Henderson. Widely credited with eradicating smallpox, Henderson had this to say about large-scale quarantines in 2006:

As experience shows, there is no basis for recommending quarantine either of groups or individuals. The problems in implementing such measures are formidable, and secondary effects of absenteeism and community disruption as well as possible adverse consequences, such as loss of public trust in government and stigmatization of quarantined people and groups, are likely to be considerable.

Somehow, because of panic, hubris, ineptitude or some unfortunate combination of the three, this widely rejected idea not only made its way back into scientific discourse in 2020, it became the

law of the land in most of the United States between 2020 and 2022. It is clear to this Grand Jury that whatever benefits inured from these mandates, they were not worth the price.

The Use of Masks and Social Distancing

As of the writing of this Interim Presentment, the CDC provides the following “Key Messages” on using facemasks to prevent or limit the spread of the SARS-CoV-2 virus:

- Masking is a critical public health tool for preventing spread of COVID-19, and it is important to remember that any mask is better than no mask.
- To protect yourself and others from COVID-19, CDC continues to recommend that you wear the most protective mask you can that fits well and that you will wear consistently.
- Masks and respirators are effective at reducing transmission of SARS-CoV-2, the virus that causes COVID-19, when worn consistently and correctly.
- Some masks and respirators offer higher levels of protection than others, and some may be harder to tolerate or wear consistently than others. It is most important to wear a well-fitting mask or respirator correctly that is comfortable for you and that provides good protection.
- While all masks and respirators provide some level of protection, properly fitting respirators provide the highest level of protection. Wearing a highly protective mask or respirator may be most important for certain higher risk situations, or by some people at increased risk for severe disease.
- CDC’s mask recommendations provide information that people can use to improve how well their masks protect them.

The substance of these recommendations has not been monolithic. In early 2020, the director of NIAID opined that masks would be ineffective at mitigating SARS-CoV-2 infection, only changing his opinion later to match newly-published federal public health guidance. In May of 2021, the CDC temporarily reversed itself on masks (in a now-deleted press release), citing observational studies showing lower viral transmissibility among vaccinated individuals as grounds to reconsider its prior guidance, only to reiterate its previous recommendation in July of that year (in another now-deleted press release) as the SARS-CoV-2 Delta Variant began to show higher transmissibility among vaccinated and unvaccinated individuals. As of today, the “Key

Messages” we cite above are part of a section entitled “Types of Masks and Respirators,” the first in a confusing multi-page labyrinth of advice which indicates it was last updated on May 11, 2023.

To make these public health policy recommendations, our understanding is that the CDC relies on two primary sources of scientific literature: (1) Studies & trials published in major, peer-reviewed journals; and (2) studies published in its own journal, Morbidity and Mortality Weekly Report (MMWR). It is also our understanding that unlike major peer-reviewed journals, studies and trials published in MMWR are reviewed internally for rigor and accuracy by scientists and policymakers from the CDC.

MMWR did publish several studies on masks in the early part of the pandemic. Here are three prominent examples:

- (1) “Absence of Apparent Transmission of SARS-CoV-2 from Two Stylists After Exposure at a Hair Salon with a Universal Face Covering Policy — Springfield, Missouri, May 2020” (known colloquially as the “Great Clips Study”);
- (2) “Trends in County-Level COVID-19 Incidence in Counties With and Without a Mask Mandate — Kansas, June 1–August 23, 2020” (known colloquially as the “Kansas Study”); and
- (3) “Maximizing Fit for Cloth and Medical Procedure Masks to Improve Performance and Reduce SARS-CoV-2 Transmission and Exposure, 2021” (known colloquially as the “Dummy Study”).

The Great Clips Study was among the first published in MMWR touting the utility of masking in preventing SARS-CoV-2 transmission. It involved two hairstylists who developed symptoms of COVID-19 and continued servicing clients for several days while wearing cloth or surgical masks. All in all, they exposed a total of 139 clients to potential SARS-CoV-2 transmission, but after a two-week period, none of the clients developed COVID-19 symptoms.

From the perspective of a layperson, 139-0 looks compelling. Nobody got infected. What else is there to know? There is even a made-for-media infographic of 139 barber chairs interspersed with two hairdryers to underscore the findings. From a scientific perspective, however, the data is riddled with potential confounders. To begin with, there is no control group of people who had their hair cut by one of the two barbers who was not wearing a mask. Because zero people developed symptoms, there is also no rate from which we can begin to determine the degree of protection afforded by the mask, and because no one was PCR tested for SARS-CoV-2, the study does not at all account for potential asymptomatic transmission. Even if there was a potential rate,

there are an astounding number of confounders that could have dramatically influenced the outcome, dwarfing the impact of the masks. How well-ventilated was the area? How many clients required the use of a blow-dryer? Had some of the clients previously been infected with SARS-CoV-2? When were cloth versus surgical masks used and by whom? Other than being “well-fitted,” how were they worn? At some point in the ten-day period would these symptomatic hairdressers have ceased to be contagious? We could go on, but the point should be clear: *This is not quality science.*

MMWR attempted to address some of the deficiencies from the Great Clips Study in the Kansas study, which identified trends in the rolling average of new COVID-19 cases in every county in the state of Kansas from June 1 to August 23, 2020. Once again, the graphs and trendlines seem to tell a compelling story: Rolling averages went up in both sets of counties before the implementation of the mandate, and then there was a split, with case counts continuing to rise in non-mandated counties but stabilizing and falling in mandated counties. The study’s authors concluded from this data that “[c]ountywide mask mandates appear to have contributed to the mitigation of COVID-19 transmission in mandated counties.”

Once again, however, even moderate scientific scrutiny renders those conclusions suspect. The data shows that the 7-day rolling average was never higher in counties with no mask mandate for the entire period of the study. Rather, the rolling averages appear to have exploded in mandate counties prior to the mandate and leveled off afterward. These data raise questions that seem to confound even the study’s authors. Why were the mask mandate counties higher in the first place? Were there other interventions like stay-at-home orders in place that could have also affected the rolling average? Were there substantial differences between the people in the 81 non-mandated counties versus the 24 mandated counties? Were urban density or wealth taken into account? All in all, *this study, too, is problematic.*

Finally, we get to the Dummy Study, where CDC scientists strapped various single and dual mask configurations on a “pliable elastomeric headform” (that looks a lot like the head of a CPR dummy), pointed it at another “pliable elastomeric headform” six feet away, and tested the ability of various mask configurations to filter out a mixture of exhaled potassium chloride with particles ranging in size from 100 to 7,000 nanometers. The study concluded that masks were effective at filtering out these particles, and that situations where both “pliable elastomeric headforms” were equipped with double masks (where a cloth mask is worn over a surgical mask)

or knotted/tucked surgical masks offered even greater protection, filtering out an impressive 96.4% and 95.9% of particles, respectively.

There is a significant problem, however, with this analysis. The size of the SARS-CoV-2 virus is approximately 90 nanometers, the very bottom of the range of particle sizes tested. Other studies from 2020 have estimated the minimum amount of liquid necessary to sustain the virus for any length of time in air to be somewhere in the range of 250-1,000 nanometers. Still, at best, this would fall within the bottom 1/7 of the tested particle sizes. Importantly, as we will explore in detail below, particles of this size are not droplets, but aerosols, which can remain in the air for extended periods of time provided they are not blown away or evaporated. The study did not specify what ratios of particle sizes were tested, but it would be reasonable to expect that these smaller aerosol-type particles were the 3.4% and 4.1% of particles that went through both masks.

Additionally, testing various mask configurations on two dummy heads in a laboratory really can't tell us much about the protection offered by these masks in a real-world environment. *Human beings are not "pliable elastomeric headforms."* We move. We talk. We eat. We sweat. We vary in age. We vary in size. We vary in mask-wearing behavior. Some of us have beards. Most importantly, perhaps, we inhale, causing negative pressure behind our masks that sucks in air through every available gap, provided there are any. All of these factors and many others influence the effectiveness of masks for real human beings in the real world.

These three are far from the only studies MMWR has published on masks, but they are good examples of the type of flawed observational and laboratory data the CDC has published to justify its Guidance. This is a "quality" problem, not a "quantity" problem. The number of published studies available cannot serve as a substitute for the quality of the underlying science upon which they are based.

The situation has gotten so convoluted with MMWR, that there is science on the science. A preprint posted in July 2023 concluded—after reviewing 77 studies published by MMWR on the issue of masking—that:

MMWR publications pertaining to masks drew positive conclusions about mask effectiveness over 75% of the time despite only 30% testing masks and <15% having statistically significant results. No studies were randomized, yet over half drew causal conclusions. The level of evidence generated was low and the conclusions drawn were most often unsupported by the data. Our findings raise concern about the reliability of the journal for informing health policy.

How does what should be the leading journal on infectious disease in the world, sponsored by the United States government, in the midst of a global pandemic, find itself seemingly unable to publish sound science on such a critical and controversial question? In this particular situation, the best way to determine the reliability of masks—especially the all-important question of whether to mask children—would be to conduct a properly designed Randomized Controlled Trial (RCT). The structure of an RCT would call for researchers to take a number of steps beyond what we see in the observational and laboratory studies above: Create a control group; define endpoints in advance; limit the time period of the study; account for as many external variables as possible; and ultimately, we would all be able to see what the data have to say. So why not conduct one? In sworn testimony before the United States House of Representatives on February 8, 2023, the CDC Director described her agency’s position on that question as follows:

In order to do a randomized clinical trial you need to have equipoise in the question, and ultimately what would happen... what happened is that there were so many studies that demonstrated time and time again in the height of covid transmission that masks were working to prevent transmission, that I’m not sure anybody would have proposed a clinical trial because in fact there wasn’t equipoise to the question anymore.

In medicine, “equipoise” is defined as “a state of uncertainty as to the balance of benefits and harm that may result from two or more therapeutic regimens[,]” indicating the appropriateness of an RCT. Is there equipoise on the question of masking? In one sense, the Director is correct, outside her sandbox of MMWR, there are indeed RCTs that precisely address the question her agency refused to ask in that format: Do masks work?

We have the beginnings of an answer. The Cochrane Library is a U.K. nonprofit that specializes in the collection and synthesis of scientific research data “for anyone interested in using high-quality information to make health decisions.” Much of this research is published in the form of “meta-analyses,” where Cochrane researchers analyze and weigh available scientific studies in order to form a conclusion on some issue of interest. In the world of medicine and scientific research, Cochrane is considered the “gold standard,” respected for its careful and considered treatment of the topics it addresses. After examining available studies from around the world, including several all-important RCTs regarding the effectiveness of masks, here is what Cochrane’s researchers concluded and published in January 2023, approximately one week before the congressional testimony of the CDC Director we cited above:

There is uncertainty about the effects of face masks. The low to moderate certainty of evidence means our confidence in the effect estimate is limited, and that the true effect may be different from the observed estimate of the effect. The pooled results of RCTs did not show a clear reduction in respiratory viral infection with the use of medical/surgical masks. There were no clear differences between the use of medical/surgical masks compared with N95/P2 respirators in healthcare workers when used in routine care to reduce respiratory viral infection. . . . ***There is a need for large, well-designed RCTs addressing the effectiveness of many of these interventions in multiple settings and populations, as well as the impact of adherence on effectiveness, especially in those most at risk***

(emphasis added). Once again, we are not physicians, but we do not believe years of medical school education or an advanced degree is required to read the paragraph above as confirmation that there is indeed equipoise in the question of whether masks are an effective NPI for SARS-CoV-2. If the best meta-analysis we have says there needs to be more RCTs, someone should do those RCTs. The NIH and CDC receive billions of our tax dollars every year to elucidate these important questions in public health for the American people.

With all these resources at their disposal and given the importance of the question, why did these agencies not just do the RCTs? Frankly, we do not believe equipoise had much to do with it. Rather, after reading between the lines of the scientific data involving the structure of the SARS-CoV-2 virus and how it spreads, we believe at least some of the officials in these agencies were acutely aware that a properly conceived and administered RCT where the effects of masking are isolated from the effects of other NPIs is very likely to show that mask mandates—if not masks themselves—have little to no efficacy in stopping or slowing the spread of SARS-CoV-2 virus. This, of course, would invite further criticism of the CDC and other federal agencies who championed these broad mask mandates, and on the federal, state and local agencies who codified and enforced them.

Before explaining why we believe such a study would not show efficacy, we acknowledge the conventional wisdom that masks, which limit the outflow of fluids associated with respiration, should limit transmission of a respiratory virus like SARS-CoV-2. Viewed through that lens, the “Key Messages” we cited at the beginning of this section make sense: Wearing masks limits droplets and limiting droplets prevents viral spread. That analysis is not exactly wrong, *per se*, it is just incomplete.

There are two reasons for this. The first comes down to the fact that humans are almost invariably imperfect mask wearers. The SARS-CoV-2 virus does not know we just sat down at a restaurant for lunch, or that we have a big speech to make, or that grandpa needs a hug. Even if we were to find the right kind of mask with exactly the right kind of fit, shave every day and change filters diligently, it would still be virtually impossible for us to conduct our affairs with the rigidity necessary to receive the full measure of benefits the mask would provide to a CPR dummy in a laboratory. The CDC Director argued in her February 2023 testimony that one of the primary obstacles to an effective RCT involving mask-wearing was that it would be difficult to get study participants to adhere to the protocols. She has a good point, but we offer a counterpoint: If the protocols are such that a large number of study participants who are compensated for their time and effort in an RCT cannot adhere to them, what use will they be to the rest of us?

The second reason is less well-known, but perhaps equally significant. Unlike many other respiratory diseases, it appears that SARS-CoV-2's primary mode of transmission is via aerosol. To understand why this matters, we must delve into the science of aerosols. As we mentioned above, humans emit respiratory ejecta of various sizes, all of which could theoretically contain some concentration of SARS-CoV-2 viruses, and all of which are subject to environmental effects like gravity and air circulation based on their size. The largest droplets, measuring some 42,000 nanometers, drift to the ground within seconds and are therefore unable to travel more than a few feet. As the particles get smaller, however, gravity has less of an impact. Particles from 9,000 to 1,900 nanometers can hang in the air for anywhere from a few minutes to a half hour like mist from a fog machine at a rock concert. Particles of 400 nanometers or smaller can hang in the air for hours provided they do not evaporate (as they certainly would in sunny, exterior areas). SARS-CoV-2 itself is approximately 90 nanometers. It does require some liquid in order not to desiccate before it reaches a new host, but normal respiration by an infected person could produce any number of small aerosol particles that are surprisingly persistent in the right environmental conditions. Moreover, time would be a factor, a few seconds in such an environment might not be enough time to build the viral load necessary to cause an infection, but as the number of respiratory expressions increase, so goes the number of droplets inhaled and the viral load.

The concept of aerosol-based transmission of SARS-CoV-2 is not at all a new idea. We were able to trace the earliest research papers discussing it to around mid-2020. They also discussed, in detail, the considerations that would arise from different daily activities like riding in cars, planes, or even just having normal conversations. For whatever reason, however, the

concept of aerosol-based spread never came to significantly inform public health science communication. The word “aerosol” and its attendant properties should have become part of the zeitgeist. People should have been told that masks, like any protective device, have limitations. Surgical and cloth masks have limited utility against aerosol particles. Well-fitted N95 masks will protect only the wearer, not anyone else, and only for as long as the filter remains viable and the mask remains dry. It would have underscored the minimal utility of the ubiquitous plastic shielding that persists in the retail and food service sector today. Were aerosol-based spread taken account, we believe the CDC guidance cited at the top of this section would look very different.

This incomplete, inaccurate advice is not without its own potential consequences. High-risk individuals who have been misled into believing masks offered more protection than they did may have been encouraged to do activities they should not have done or to go places they should not have gone. People who got sick with COVID-19 may have persisted in their daily activities in a misplaced belief that wearing a mask—even an N95 mask—would protect those around them from potential transmission. “Isolation bubbles” that appeared around exterior restaurant tables in some states may have increased the risk of viral spread between whoever was inside the bubble by limiting sources of potential ventilation. For that matter, congregating in open-air spaces should have been encouraged back in 2020, not shunned.

SARS-CoV-2’s primary mode of transmission being aerosolized also sheds light on another oft-criticized area of CDC advice—not updated since July 2020—which reads as follows:

Social distancing, also called “physical distancing,” means keeping a safe space between yourself and other people who are not from your household.

To practice social or physical distancing, stay at least 6 feet (about 2 arms’ length) from other people who are not from your household in both indoor and outdoor spaces.

....

COVID-19 spreads mainly among people who are in close contact (within about 6 feet) for a prolonged period. Spread happens when an infected person coughs, sneezes, or talks, and droplets from their mouth or nose are launched into the air and land in the mouths or noses of people nearby. The droplets can also be inhaled into the lungs.

The CDC’s six-foot guideline was drafted based on the prevalence of SARS-CoV-1 on a single airline flight in 2003. The WHO based its recommendation of three feet between people on

even older research from influenza in the 1930s. Neither are based on the particularities of SARS-CoV-2. The problem, once again, is that when one is dealing with an aerosol, the primary concern is not the distance between people, it is whether one is dealing with an interior or exterior space, and, in an interior space, whether there is sufficient air filtration to prevent the accumulation of aerosol clouds containing SARS-CoV-2 virus. In enclosed interior spaces for extended periods of time, a distance of six feet or sixty feet is not going to make any difference. By fall of 2020, there was peer-reviewed, published scientific data available containing all of these facts. Public policy should have been focused on taking advantage of exterior spaces. Instead, many states and municipalities did the opposite, closing parks, taping up playgrounds and confining people to interior spaces—where viral transmission was more likely—with stay-at-home orders.

Not only was most of the information involving aerosol-based spread available in 2020, there was also a contemporaneous, large and growing body of scientific research showing the effectiveness of High-Efficiency Particulate Air (HEPA) and other air exchange and filtration systems in limiting SARS-CoV-2 spread in indoor settings. Planes, for example, which have robust air circulation systems, had unusually low spread given the proximity of passengers to one another on flights. Hospital transmission was also low. Even MMWR did a study on air filtration systems in hospitals reducing transmission. One peer-reviewed paper detected zero SARS-CoV-2 pathogens in one of its wards after installing an air/UV filter, but detected the virus in the air both before those filters were turned on and after they were shut down again a week later. Perhaps instead of runs on hand sanitizer, toilet paper and N95 masks, there should have been runs on HEPA filters.

To their credit, the CDC's website does contain significant information about the importance of air filtration in indoor spaces. Our critique is that the relationship between this information and the social distancing guidelines should have been much more a matter of public discourse, and the guidelines should have been updated to reflect our emerging understanding of how the disease moves in indoor versus outdoor spaces. Institutional public health experts had this science at their disposal but continued to stick to advice that bore only a cursory resemblance to the contrary scientific evidence presented in the emerging data. That, coupled with heavy-handed directives from state and local actors, essentially turned scientific inquiry—the very basis of which is asking questions and doubting priors—into a form of civil disobedience. The world could have had a very different approach, where people understood that the protection offered by masks was at-best limited and speculative, but the outdoors could have essentially been at their disposal. How

many more quality air filtration systems could we have installed in 2020-21 as opposed to pointless plastic shields, social distancing stickers, and hand-sanitizer dispensers? We have no way to know.

CONCLUSION

This brings us back to our original question: How did these nonpharmaceutical interventions affect the overall risk presented by the SARS-CoV-2 virus?

With respect to lockdowns, there does exist a pattern in the data showing a short-term stabilization of case growth that persists until the lockdown is lifted, followed by months or even years of excess mortality that can partially be attributed to collateral consequences concentrated in the groups at lowest risk from COVID-19 disease. There is a case to be made that these lockdowns enabled others in high-risk groups to “bridge the gap” until 2021 when they had access to vaccines—a subject which this Grand Jury will undoubtedly examine in future presentments. On average, however, when one includes all age groups, lockdowns were not a good trade. Comparative data showed that jurisdictions that held to them tended to end up with higher overall excess mortality. This is especially evident when compared to jurisdictions that targeted their protective efforts towards the highest-risk groups instead of mandating large-scale, extended periods of quarantine for everyone. Effectively, lockdowns traded the immediate welfare of a smaller, affluent, well-represented group of older Americans who could afford to stay home for the longer-term welfare of a larger, less-affluent, poorly-represented group of children, teens, twenty-, thirty- and forty-somethings who could not. If anything, the result of this was a modest benefit to the former group at the expense of the latter.

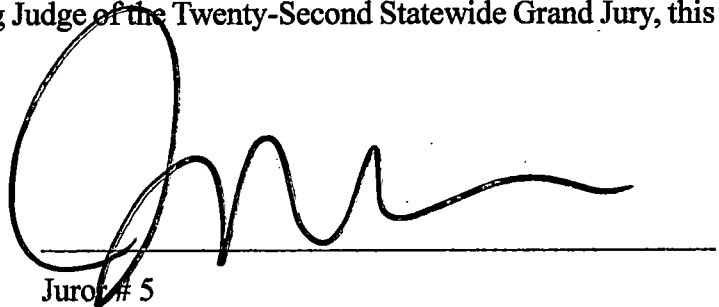
With respect to masks, we have never had sound evidence of their effectiveness against SARS-CoV-2 transmission in the form of reliable RCTs that demonstrated statistically significant benefits. There have always been legitimate questions around the impracticality of individual adherence to mask recommendations, but once it became clear that the primary transmission vector of SARS-CoV-2 was via aerosol, their potential efficacy was further diminished. Public health agencies failed to adequately explain this important distinction to the American public in favor of a broad mask recommendation that did not make nearly enough distinction between the types of masks available and put at risk those it sought to help. Well-financed federal agencies chose to fill the discourse with flawed observational and laboratory studies, hiding behind their conclusion of “no equipoise” to avoid the potential embarrassment of the public health advice they championed being invalidated by evidence.

Likewise, the aerosol-based spread of SARS-CoV-2 changes the equation with respect to social distancing. It is not nearly as important how far away people are from one another as it is whether they are in an interior or exterior environment and whether that environment is subject to adequate airflow. Even today, this important information is missing from the CDC's Social Distancing Guidelines.

As for their effect on overall SARS-CoV-2 risk, we cannot ignore the fact that these NPIs were not administered based on the best available scientific data. In fact, many public health recommendations and their attendant mandates departed significantly from scientific research that was contemporaneously available to everyone: Individuals, scientists, corporations and governments alike. Often this research was ignored by institutional policymakers. Occasionally it was even attacked. It is a sad state of affairs when something as simple as following the science constitutes an act of heresy, but here we are. Importantly, while some of these NPIs may have shifted risk to later in time or from one group to another or had some speculative efficacy against viral spread when used in perfect laboratory conditions, comparative evidence suggests they did not significantly change the overall risk profile presented by the SARS-CoV-2 virus in terms of excess death, especially once collateral consequences are taken into consideration.

CERTIFICATION

THIS REPORT IS RESPECTFULLY SUBMITTED in Open Court to the HONORABLE CHRISTOPHER C. SABELLA, Presiding Judge of the Twenty-Second Statewide Grand Jury, this 2nd day of February, 2024.



Juror # 5

Foreperson

Twenty-Second Statewide Grand Jury of Florida

I, NICHOLAS B. COX, Statewide Prosecutor and Legal Adviser, Twenty-Second Statewide Grand Jury of Florida, hereby certify that I, as authorized and required by law, have advised the Grand Jury which returned this report on this 2nd day of February, 2024.



NICHOLAS B. COX

Statewide Prosecutor

Legal Adviser

I, JEREMY B. SCOTT, Chief Assistant Statewide Prosecutor and Assistant Legal Adviser, Twenty-Second Statewide Grand Jury of Florida, hereby certify that I, as authorized and required by law, have advised the Grand Jury which returned this report on this 2nd day of February, 2024.

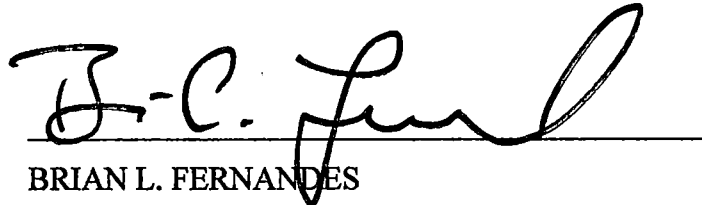


JEREMY B. SCOTT

Chief Assistant Statewide Prosecutor

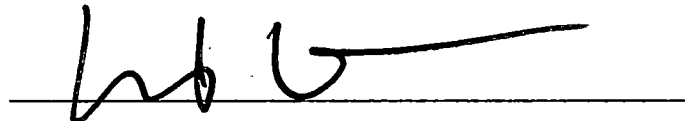
Assistant Legal Adviser

I, BRIAN L. FERNANDES, Chief Assistant Statewide Prosecutor and Assistant Legal Adviser, Twenty-Second Statewide Grand Jury of Florida, hereby certify that I, as authorized and required by law, have advised the Grand Jury which returned this report on this 2nd day of February, 2024.



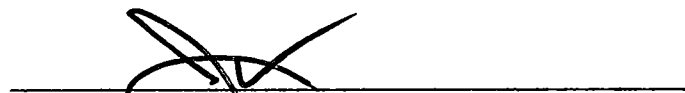
BRIAN L. FERNANDES
Chief Assistant Statewide Prosecutor
Assistant Legal Adviser

I, KENNETH L. A. LINEBERGER, Assistant Statewide Prosecutor and Assistant Legal Adviser, Twenty-Second Statewide Grand Jury of Florida, hereby certify that I, as authorized and required by law, have advised the Grand Jury which returned this report on this 2nd day of February, 2024.




KENNETH L. A. LINEBERGER
Assistant Statewide Prosecutor
Assistant Legal Adviser

I, JAMES R. HARRIS, Assistant Statewide Prosecutor and Assistant Legal Adviser, Twenty-Second Statewide Grand Jury of Florida, hereby certify that I, as authorized and required by law, have advised the Grand Jury which returned this report on this 2nd day of February, 2024.



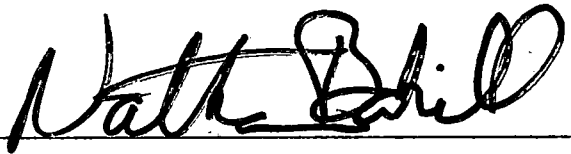
JAMES R. HARRIS
Assistant Statewide Prosecutor
Assistant Legal Adviser

I, JAE HEE KIM, Assistant Statewide Prosecutor and Assistant Legal Adviser, Twenty-Second Statewide Grand Jury of Florida, hereby certify that I, as authorized and required by law, have advised the Grand Jury which returned this report on this 2nd day of February, 2024.



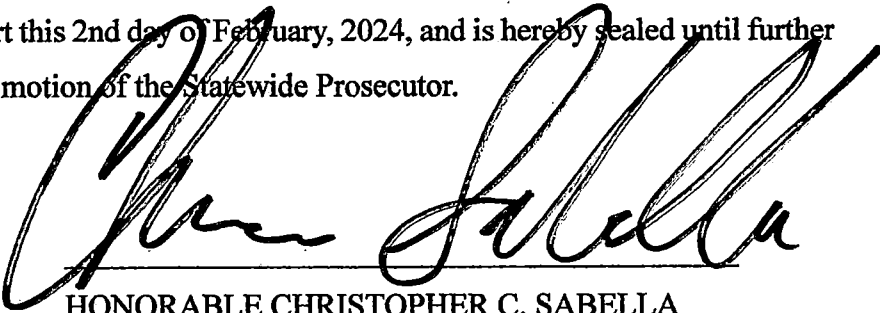
JAE HEE KIM
Assistant Statewide Prosecutor
Assistant Legal Adviser

I, NATHANIEL S. BAHILL, Assistant Statewide Prosecutor and Assistant Legal Adviser, Twenty-Second Statewide Grand Jury of Florida, hereby certify that I, as authorized and required by law, have advised the Grand Jury which returned this report on this 2nd day of February, 2024.



NATHANIEL S. BAHILL
Assistant Statewide Prosecutor
Assistant Legal Adviser


THE FOREGOING First Interim Report of the Twenty-Second Statewide Grand Jury was returned before me in Open Court this 2nd day of February, 2024, and is hereby sealed until further order of this Court, upon proper motion of the Statewide Prosecutor.



HONORABLE CHRISTOPHER C. SABELLA
Chief Judge of the Thirteenth Judicial Circuit
Presiding Judge, Twenty-Second Statewide Grand Jury

Received, Clerk, Supreme Court

FEB 2 2024

A True Copy
Attest:
John A. Tomasino, Clerk
Supreme Court of Florida
By 
Deputy Clerk

