Case No. 22-10077
CONSOLIDATED WITH
No. 22-10534

UNITED STATES COURT OF APPEALS
FOR THE FIFTH CIRCUIT

U.S. NAVY SEALS 1-26; U.S. NAVY SPECIAL WARFARE COMBATANT CRAFT CREWMEN 1-5; U.S. NAVY EXPLOSIVE ORDNANCE DISPOSAL TECHNICIAN 1; AND U.S. NAVY DIVERS 1-3,

Plaintiffs - Appellees,

v.

JOSEPH R. BIDEN, JR., IN HIS OFFICIAL CAPACITY AS PRESIDENT OF THE UNITED STATES OF AMERICA; LLOYD J. AUSTIN, III, INDIVIDUALLY AND IN HIS OFFICIAL CAPACITY AS UNITED STATES SECRETARY OF DEFENSE; UNITED STATES DEPARTMENT OF DEFENSE; CARLOS DEL TORO, INDIVIDUALLY AND IN HIS OFFICIAL CAPACITY AS UNITED STATES SECRETARY OF THE NAVY,

Defendants-Appellants.

On Appeal from The United States District Court, Northern District of Texas
Case No. 4:21-cv-01236-O
The Honorable Judge Reed O'Connor

BRIEF FOR *AMICI CURIAE* PROFESSOR TODD ZYWICKI AND JEFFREY SINGER, M.D., IN SUPPORT OF APPELLEES U.S. NAVY SEALS 1-26; U.S. NAVY SPECIAL WARFARE COMBATANT CRAFT CREWMEN 1-5; U.S. NAVY EXPLOSIVE ORDNANCE DISPOSAL TECHNICIAN 1; U.S. NAVY DIVERS 1-3

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SUPPLEMENTAL STATEMENT OF INTERESTED PERSONS

Pursuant to Rule 29.2, the undersigned counsel of record certifies that the following listed persons and entities as described in the fourth sentence of Rule 28.2.1 have an interest in the outcome of this case. These representations are made in order that the judges of this court may evaluate possible disqualification or recusal:

1. *Amici Curiae*:

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Jeffrey Singer, M.D.

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STATEMENT REGARDING ORAL ARGUMENT

Although *amici curiae* Professor Todd Zywicki and Jeffrey Singer, M.D. support Appellees' request for oral argument, *amici* do not request to participate in that argument.

TABLE OF CONTENTS

TABLE OF AUTHORITIES

CASES

STATUTES

OTHER AUTHORITIES

INTEREST OF AMICI CURIAE[1]

Todd Zywicki is the George Mason University Foundation Professor of Law at George Mason University's Antonin Scalia Law School. Jeffrey A. Singer, M.D., is president emeritus/founder of Valley Surgical Clinics, Ltd., the largest and oldest group private surgical practice in Arizona.

Professor Zywicki and Dr. Singer each contributed to the submission of a Comment on the Occupational Health & Safety Administration's proposed vaccine mandate prior to its withdrawal. The comment addressed the overwhelming scientific evidence showing that natural immunity is at least as effective as any of the available vaccines at preventing infection, transmission, and sickness from SARS-CoV-2, the virus that causes COVID-19, and highlighted the irrationality of OSHA's decision not to consider previous infection on par with vaccination. *Amici* submit this brief to explain why the Navy's application of its vaccine mandate to service members with natural immunity from COVID-19 does not further a compelling government interest.

SUMMARY OF ARGUMENT

Amici do not dispute that vaccines are an effective and vital tool in addressing the ongoing COVID-19 pandemic. To withstand scrutiny under the

[1] This brief is filed with the consent of all parties. No party or person other than *amici* and their counsel authored this brief in whole or in part or contributed money for its preparation or submission.

First Amendment and the Religious Freedom Restoration Act ("RFRA"), however, the government must base any policy to address the pandemic on the best available evidence and scientific findings.

Here, that means it must account for natural immunity. The most up-to-date, scientific literature confirms that, once people contract COVID-19, they develop natural immunity to the disease that protects against infection and transmission at least as effectively as vaccination. In light of these benefits and the limited efficacy of vaccines, there is no scientific basis to penalize service members with natural immunity, simply because they have not received a vaccine.

Nevertheless, the Navy claims for itself the broad power to force all airmen—including those with natural immunity like many of the plaintiffs in this action—to undergo forced vaccination or face being rendered non-deployable despite their religious objections and honorable past service. The government claims this sweeping mandate is necessary to further its interests in protecting the health and mission of the naval forces.

As applied to naturally immune service members, the Navy's vaccine mandate is not the least restrictive means to serve this interest. It does not further prevent the spread of the disease because naturally immunity is just as effective at preventing infection and transmission as vaccination, if not more so. Similarly, mandatory vaccination does not enhance naturally immune service members'

readiness to deploy because they are no more likely to contract the virus than vaccinated service members. If anything, vaccination of naturally immune airmen *decreases* their combat readiness, as the vaccines' adverse effects are more severe for previously infected people. Thus, to survive strict scrutiny, any vaccine mandate must, at *minimum*, exempt COVID-recovered service members. The Navy's mandate does not do so.

ARGUMENT

I. The Navy Must Prove that Its Vaccine Mandate Is the "Least Restrictive Means" of "Furthering" a "Compelling Governmental Interest."

In 1993, Congress enacted RFRA "to provide very broad protection for religious liberty." *Burwell v. Hobby Lobby Stores, Inc.*, 573 U.S. 682, 693 (2014). Under this statute, the "Government shall not substantially burden a person's exercise of religion even if the burden results from a rule of general applicability" unless it proves that applying that burden on the individual: "(1) is in furtherance of a compelling government interest; and (2) is the least restrictive means of furthering that compelling governmental interest." 42 U.S.C. § 2000bb-1(b).

Under the First Amendment, moreover, where "the challenged restrictions are not 'neutral' and of 'general applicability,' they must satisfy 'strict scrutiny,' and this means that they must be 'narrowly tailored' to serve a 'compelling' state interest." *Roman Cath. Diocese of Brooklyn v. Cuomo*, 141 S. Ct. 63, 67 (2020). A

regulation satisfies this test if it "employ[s] the 'least restrictive means' to advance its objective." *S. Bay United Pentecostal Church v. Newsom*, 985 F.3d 1128, 1142 (9th Cir. 2021).

Amici do not dispute that protecting the health and mission of the naval forces is a compelling interest. But in seeking to advance those interests, it is also undisputed that the government has substantially burdened the SEALs' religious exercise by failing to grant any of them a religious exemption to its vaccine mandate. *See* Appellants' Opening Br. ("Govt. Op. Br.") at 33–48 (no challenge to substantial burden element). Indeed, while the Navy routinely exempts service members for administrative and medical reasons—even when such exemptions are not medically necessary—it *never* grants COVID-19 vaccination exemptions for religious reasons.

Because of this discriminatory practice, the government must demonstrate that its system of exemptions for the mandate "(1) is in furtherance of a compelling governmental interest; and (2) is the least restrictive means of furthering that compelling governmental interest." 42 U.S.C. § 2000bb-1; *see also Cuomo*, 141 S. Ct. at 67. The government bears the burden of proof on both elements.

II. Applying the Vaccine Mandate to Service Members with Natural Immunity Is Not the Least Restrictive Means of Further a Compelling Government Interest.

To justify the burden the vaccine mandate imposes on the SEALs' religious exercise, the government first must "demonstrate that the compelling interest test is satisfied through application of the challenged law to the . . . particular claimant whose sincere exercise of religion is being substantially burdened." *Burwell*, 573 U.S. at 726. The government identified its interest as protecting the health and mission of the naval forces. *See* Govt. Op. Br. at 34–36. The government explains that its vaccination requirement furthers this interest because the vaccines reduce infection, transmission, and disease severity. *See id.* at 40.

Although *amici* do not dispute that this interest is compelling, it is not enough for the government to identify such an interest; it must also prove that the challenged measure is the "least restrictive means" to further it. 42 U.S.C. § 2000bb-1; *see also Cuomo*, 141 S. Ct. at 67 (laws that target religious exercise "must be 'narrowly tailored' to serve a 'compelling' state interest). Because its vaccine exemption policy ignores the effectiveness of natural immunity, the government cannot satisfy this test here.

A. Accepted biological principles indicate that natural immunity is more effective than vaccination.

Like any respiratory virus, the virus responsible for the COVID-19 pandemic—SARS-CoV-2—enters the body through a mucus-lined surface like the

nose, mouth, or eyes.[2] It then "latches its spiky surface proteins [i.e., the 'spike protein'] to receptors on healthy cells."[3] Once attached, the virus replicates its genome and uses the host cell to make structural proteins critical to form new copies of itself that will soon escape the host cell and infect the rest of the body.[4]

In response to infection, the body produces "IgA antibodies," which are specific to the mucosal surfaces where the virus first enters the body.[5] These antibodies recognize a broad array of proteins carried by the virus.[6] As a result,

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[2] Melinda Ratini, *Coronavirus: What Happens When You Get Infected?* WEBMD MEDICAL REFERENCE (Jan. 21, 2022), https://wb.md/38eZSJT; U.S. Centers for Disease Control and Prevention ("CDC"), *How COVID-19 Spreads* (July 14, 2021), https://bit.ly/3iQ7vZb.

[3] Ratini, *supra* n.2; *see also* Megan Scudellari, *How the coronavirus infects cells — and why Delta is so dangerous*, NATURE (July 28, 2021), https://go.nature.com/3Do2pNa ("SARS-CoV-2 spike proteins attach to a familiar protein . . . which adorns the outside of most human throat and lung cells.").

[4] Johns Hopkins Medicine, *How Coronaviruses Work*, https://bit.ly/3JX5XIH (July 22, 2020).

[5] *See* Claude Matuchansky, *Mucosal immunity to SARS-CoV-2: a clinically relevant key to deciphering natural and vaccine-induced defences*, 27(12) CLIN. MICROBIL. INFECT. 1724, 1724 (2021), https://bit.ly/3JVzlzc ("Natural SARS-CoV-2 infection does induce mucosal . . . S-IgA as well as systemic IgG antibody responses.").

[6] *See* Ian Martiszus, *SARS-CoV-2 Vaccines*, *Breakthrough Infections and Lasting Natural Immunity*, CURE-HUB (Aug. 22, 2021), https://bit.ly/3q9iWQl (observing "the broad antibody repertoire generated after a natural infection").

even if the virus's proteins mutate so as to partially escape vaccine protection, natural immunity can still recognize the virus to a substantial degree.[7]

The IgA antibodies also reduce transmission, neutralizing the virus more than other antibodies during the time when an infected person is most infectious.[8] Finally, these antibodies evolve over time, developing greater "potency and breadth" and greater capacity to respond to future variants and mutations.[9]

Current COVID-19 vaccines, by contrast, target only the spike protein, are administered through the muscles rather than mucosal surfaces, and thus do "not generate [the] mucosal IgA" antibodies necessary to provide robust protection.[10] As such, vaccination does not prevent "the nasal cavity [from becoming] a

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[7] *Id.* ("Antibodies against [the virus's N protein] offer an additional layer of protection for naturally immune individuals. The N protein is reported to have a slower mutation rate than S, which further reduces susceptibility to SARS-CoV-2 variants.").

[8] Delphine Sterlin, *et al.*, *IgA dominates the early neutralizing antibody response to SARS-CoV-2*, SCI. TRANSL. MED., Jan. 2021, at 1, https://bit.ly/3JWyGgO ("IgA contributed to virus neutralization to a greater extent compared with [other antibodies].").

[9] Alice Cho, *et al.*, *Anti-SARS-CoV-2 receptor binding domain antibody evolution after mRNA vaccination*, 600 NATURE 517, 521 (2021), https://go.nature.com/3iNnPdc.

[10] Eva Piano Mortari, *et al.*, *Highly-specific memory B cells generation after the 2nd dose of BNT162b2 vaccine compensate for the decline of serum antibodies and absence of mucosal IgA*, MEDRXIV [preprint] (June. 09, 2021) https://bit.ly/3JT2T0H; *see also* CDC, *mRNA Vaccines* (Jan. 4, 2022), https://bit.ly/3uFpd79.

reservoir for [SARS-CoV-2] . . . placing patients at risk for reinfection or spread of disease."[11]

From a conceptual standpoint then, because of these biological mechanisms, those who recover from the disease should be *at least* equally resistant to reinfection and transmission as those who receive the vaccine, and likely more so.

B. The scientific evidence overwhelmingly confirms what biological principles suggest: natural immunity is at least as effective as vaccination when it comes to SARS-CoV-2.

Scientific testing bears out these expectations. Recent studies establish that natural immunity provides an efficacy equal or superior to vaccination, against both the original virus and variants.

1. Natural immunity exhibits rates of infection comparable to or lower than vaccination over longer periods.

First, contrary to the Navy's assertion below that there is "insufficient data concerning 'natural immunity' against COVID-19 . . . to indicate that an individual is protected from infection," Defs.' Opp'n to Pls.' Mot. for Prelim. Inj., ECF No. 43 ("Govt. Resp.") at 27, numerous studies now conclude that natural immunity produces protection against infection comparable to or greater than vaccines. As of October 2021, at least 150 studies affirmed the presence of robust, naturally

[11] Uday S. Kumar, *et al.*, *Gold-Nanostar-Chitosan-Mediated Delivery of SARS-CoV-2 DNA Vaccine for Respiratory Mucosal Immunization: Development and Proof-of-Principle*, 15 ACS NANO 17582 (2021), https://bit.ly/3K00fG7.

acquired immunity to COVID-19.[12] Meta-analyses of these studies have shown that natural immunity reduces the risk of infection by 90% or more for upwards of ten months after the original infection, reflecting the full time periods for which data was available.[13]

Another study, completed before the Delta variant became dominant, found that the odds of *any* SARS-CoV-2 infection were 13 times higher for vaccinated individuals than for those with natural immunity.[14] The same study found that

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[12] *See* Paul Elias Alexander, *150 Research Studies Affirm Naturally Acquired Immunity to Covid-19: Documented, Linked, and Quoted*, BROWNSTONE.ORG (Oct. 17, 2021), https://bit.ly/3qPwpwy (collecting studies).

[13] CDC, *Science Brief: SARS-CoV-2 Infection-induced and Vaccine-induced Immunity* (Oct. 29, 2021), https://bit.ly/3wQ0Zdb ("SARS-CoV-2 infection decreased risk of subsequent infection by 80-93% for at least 6-9 months."); N. Kojima, N. K. Shrestha, J. D. Klausner, *A Systematic Review of the Protective Effect of Prior SARS-CoV-2 Infection on Repeat Infection*, 44(4) EVALUATION AND THE HEALTH PROFESSIONS 327, 327 (2021), https://bit.ly/3NzXD48 (finding 90.4% reduction in risk against reinfection); Tawanda Chivese, *et al.*, *The prevalence of adaptive immunity to COVID-19 and reinfection after recovery—a comprehensive systematic review and meta-analysis*, MEDRXIV [preprint] (Dec. 11, 2021), https://bit.ly/3qXFpyQ (finding that "around 90% of people previously infected with SARS-CoV-2 had evidence of immunological memory . . . which was sustained for at least 6-8 months after recovery" and a prevalence of reinfection of 0.2%); Eamon O. Murchu, *et al.*, *Quantifying the risk of SARS-CoV-2 reinfection over time*, 2021 REV. MED. VIROL., May 2021, at 1, https://bit.ly/3iT0tmB (finding that "reinfection was an uncommon event (absolute rate 0%-1.1%) with no study reporting an increase in the risk of reinfection over time" and that "naturally acquired SARS-CoV-2 immunity does not wane for at least 10 months post-infection").

[14] Sivan Gazit, *et al.*, *Comparing SARS-CoV-2 natural immunity to vaccine-induced immunity: reinfections versus breakthrough infections*, MEDRXIV [preprint] (Aug. 25, 2021), https://bit.ly/3q9isK1.

vaccinated individuals were 27 times more likely to have a *symptomatic* infection and eight times more likely to be hospitalized than those with natural immunity.[15]

In terms of the duration of the protections, studies have shown that the relative protection against reinfection for the naturally immune stood at 85% at 3–15 months and remained 73% effective after 15 months.[16] Other studies have shown that natural immunity provides robust protection from 6 to 11 months after initial infection, some showing reduced risk of infection by 80–93% for at least 6 to 9 months.[17] Still other studies have shown that the risk of reinfection "remain[s]

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[15] *Id.*

[16] Victoria Hall, *et al.*, *Effectiveness and durability of protection against future SARS-CoV-2 infection conferred by COVID-19 vaccination and previous infection; findings from the UK SIREN prospective cohort study of healthcare workers March 2020 to September 2021*, MEDRXIV [preprint] at 24 (Dec. 01, 2021), https://bit.ly/3zAz9B7 ("Adjusted Absolute protection against infection" column of Table 3).

[17] CDC, *supra* n.13; Dana Wollins, *COVID-19 Clinician Call*, IDSA (July 17, 2021), https://bit.ly/3f8Lov2 ("Immune responses to SARSCoV2 following natural infection can persist for months (maximum follow-time is ~11 months."); World Health Organization, *COVID-19 natural immunity*, WORLD HEALTH ORG. SCIENTIFIC BRIEF (May 10, 2021), https://bit.ly/3n8AmdU (finding that "in most people, immune responses remain robust and protective against reinfection for at least 6-8 months after infection"—8 months being the longest follow up study at that point—and that "robust immunity [persisted] at 6 months post-infection in 95% of subjects under study").

low for up to *20 months*."[18] The data also suggest that the protection from natural immunity *increases* over time.[19]

By contrast, it is well-understood that the efficacy of protection from current vaccines wanes substantially in a relatively short period of time compared to natural immunity.[20] One study, for example, showed that the Pfizer vaccine's protection dropped from a peak of 81% at days 14–73 after vaccination to just 65%

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[18] Peter Nordstrom, *Risk of SARS-CoV-2 reinfection and COVID-19 hospitalisation in individuals with natural and hybrid immunity: a retrospective, total population cohort study in Sweden*, The Lancet (March 31, 2022), https://bit.ly/3yQklzE (emphasis added).

[19] Megan M. Sheehan, *et al.*, *Reinfection Rates among Patients who Previously Tested Positive for COVID-19: A Retrospective Cohort Study*, CLIN. INFECT. DIS. (Mar. 15, 2021), https://bit.ly/3fkb5cx ("Protection offered from prior infection was 81.8% . . . and against symptomatic infection was 84.5%. *This protection increased over time*.") (emphasis added).

[20] *See, e.g.*, Hiam Chemaitelly, *et al.*, *Waning of BNT162b2 Vaccine Protection against SARS-CoV-2 Infection in Qatar*, N. ENGL. J. MED., Dec. 2021, at e83(5), https://bit.ly/3NxTiy9 ("[Vaccine]-induced protection against infection builds rapidly after the first dose, peaks in the first month after the second dose, and then gradually wanes in subsequent months."); Peter Nordström, Marcel Ballin, Anna Nordström, *Effectiveness of Covid-19 Vaccination Against Risk of Symptomatic Infection, Hospitalization, and Death Up to 9 Months: A Swedish Total-Population Cohort Study*, SSRN [preprint] (Oct. 25, 2021), https://bit.ly/3f2IR5F ("Vaccine effectiveness of BNT162b2 against infection waned progressively from 92% . . . at day 15-30 to 47% . . . at day 121-180, and from day 211 and onwards no effectiveness could be detected. . . . The effectiveness waned slightly slower for mRNA-1273, being estimated to 59% . . . from day 181 and onwards.").

for days 74 to 144 and a mere 43% after 193 days.[21] This study thus demonstrates that natural immunity provides better protection against infection at the 3–9 month marks than vaccination does at the 2-week to 2.5-month marks. Natural immunity even provides better protection after 15 months than the Pfizer vaccine does from months 2.5 to 4.5. Additional studies reveal similar results.[22]

2. Natural immunity more effectively combats variants than vaccination.

Second, natural immunity more effectively guards against COVID-19 variants than vaccination. Recent research into the Omicron variant indicates that full vaccination—one dose of the Johnson & Johnson vaccine or two doses of Pfizer or Moderna—provides minimal protection against infection.[23]

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[21] Hall, *supra* n.16, at 22 ("aVE (1-HR)" column of Table 2, "Vaccinated 2 doses" section, rows for days 14–73, 74–133, and >193).

[22] *See, e.g.*, Yair Goldberg, *et al.*, *Protection and waning of natural and hybrid COVID-19 immunity*, MEDRXIV [preprint] (Dec. 05, 2021), https://bit.ly/34lHflp ("Protection from reinfection decreases with time since previous infection, but is, nevertheless, higher than that conferred by vaccination with two doses at a similar time since the last immunity-conferring event."); Ariel Israel *et al.*, *Large-scale study of antibody titer decay following BNT162b2 mRNA vaccine or SARS-CoV-2 infection*, MEDRXIV [preprint] (Aug. 22, 2021), https://bit.ly/3G8pJix ("In vaccinated subjects, antibody titers decreased by up to 40% each subsequent month while in [COVID-recovered individuals] they decreased by less than 5% per month.").

[23] *See* Sandile Cele, *et al.*, *SARS-CoV-2 omicron has extensive but incomplete escape of Pfizer BNT162b2 elicited neutralization and requires ACE2 for infection*, MEDRXIV [preprint] (Dec. 09, 2021), https://bit.ly/3qZBFNl ("[B]ased on the large number of mutations in the spike protein and elsewhere on the virus . . . [the Omicron] variant will have considerable escape from vaccine

As such, vaccine efficacy has waned as Omicron became the dominant strand. In fact, one study shows that the Pfizer and Moderna vaccines prove only 6% effective at preventing infection against Omicron for the first two months, their efficacy dropping to -13% for months 2–4, -39% at 4 months, and -42% at 6 months.[24] Another study put those numbers as low as -76.5% for Pfizer and -39.3% for Moderna.[25] These negative efficacies mean vaccination makes people more susceptible to Omicron infection. In other words, vaccinated individuals are *more likely* to be infected than unvaccinated individuals. And once infected, moreover, vaccinated people "seem to have the same transmission capacity [as] non-vaccinated people."[26] In this way, vaccination provides no reduction in transmission versus Omicron.

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elicited immunity. . . . The results we present here with Omicron show much more extensive escape."); *see also* Nicola Davis, Hannah Devlin, and Ian Sample, *Two jabs offer little protection against Omicron infection, UK data shows*, THE GUARDIAN (Dec. 20, 2021), https://bit.ly/3zEOUqB ("Having two doses of a Covid vaccine offers less defence against symptomatic infection from the Omicron variant than with Delta.").

[24] Sarah A. Buchan, *et al.*, *Effectiveness of COVID-19 vaccines against Omicron or Delta infection*, MEDRXIV [preprint] (Jan. 1, 2022), https://bit.ly/3GvDpUZ (Table 2).

[25] Christian Holm Hansen, *et al.*, *Vaccine effectiveness against SARS-CoV-2 infection with the Omicron or Delta variants following a two-dose or booster BNT 162b2 or mRNA-1273 vaccination series: a Danish cohort study*, MEDRXIV [preprint] (Dec. 23, 2021), https://bit.ly/3Kom4jo (Table).

[26] Javier Del Aguila-Mejia *et al.*, *Secondary Attack Rates, Transmission, Incubation and Serial Interval Periods of first SARS-CoV-2 Omicron variant cases*

The findings on the ineffectiveness of the vaccines in preventing both infection and transmission of Omicron are consistent with the public statements of the Pfizer and Moderna CEOs. Both executives have publicly conceded that two doses of their vaccines do not provide protection against Omicron infection.[27]

By contrast, the protection provided from a previous infection remains robust against Omicron. One study found that the protection for those with natural immunity remained at 61.9% despite the rise in that variant.[28] And interestingly, the same research also showed that protection fell for naturally immune persons who were subsequently vaccinated.[29] This research indicates that vaccination increases the risk of infection for people who have recovered from COVID-19, suggesting the vaccines' negative efficacy affected not just for those that vaccinate but have never been infected but also the recovered and then vaccinated.

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in a northern region of Spain, RESEARCH SQUARE (Jan. 20, 2022), https://bit.ly/3tQqk4T.

[27] Spencer Kimball, *Pfizer CEO says two Covid vaccine doses aren't 'enough for Omicron'*, CNBC: Health & Science (Jan. 10, 2022), https://www.cnbc.com/2022/01/10/pfizer-ceo-says-two-covid-vaccine-doses-arent-enough-for-omicron.html; Tom Westbrook & Kim Coghill, *Moderna CEO says vaccines likely less effective against Omicron – FT*, Reuters: Healthcare & Pharmaceuticals (Nov. 30, 2021), https://reut.rs/3ITsepH.

[28] Heba Altarawneh, *et al.*, *Protection afforded by prior infection against SARS-CoV-2 reinfection with the Omicron variant*, MEDRXIV [preprint] (Jan. 6, 2022), https://bit.ly/3GvDA2B (Table 3).

[29] *Id*. (Table 3).

Natural immunity has proven more effective than vaccinations against the Delta variant as well. The CDC, for example, has found that "after emergence of the Delta variant and over the course of time, incidence increased sharply in [vaccinated persons without a previous COVID-19 diagnosis], but only slightly among both vaccinated and unvaccinated persons with previously diagnosed COVID-19."[30] This finding is consistent with "early declining of vaccine-induced immunity in many persons."[31] It is also consistent with "recent international studies," which "have also demonstrated increased protection in persons with previous infection, with or without vaccination, relative to vaccination alone."[32]

3. Natural immunity more effectively combats transmission on reinfection.

Finally, vaccinated individuals who nevertheless experience a "breakthrough infection" of COVID-19 are more likely to contract the disease again in the future and transmit it to others than naturally immune people who suffer reinfection. Multiple studies have confirmed, for example, that when a vaccinated person

[30] Tomás M. León *et al.*, *COVID-19 Cases and Hospitalizations by COVID-19 Vaccination Status and Previous COVID-19 Diagnosis — California and New York, May–November 2021*, CDC, 71 Morbidity and Mortality Weekly Report 4 at 126–27, 130 (Jan. 28, 2022), https://bit.ly/3iWp5ut.

[31] *Id.* at 130.

[32] *Id.*

contracts COVID-19, the infectiousness of his disease is comparable to that of an unvaccinated individual who has never contracted the disease.[33]

In addition, vaccinated individuals who suffer breakthrough infections are much more likely to be infected with and transmit variants than unvaccinated individuals who have never contracted COVID-19.[34] This increased vulnerability

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[33] *See, e.g.*, Karen K. Riemersma, *et al.*, *Vaccinated and unvaccinated individuals have similar viral loads in communities with a high prevalence of the SARS-CoV-2-Delta variant*, MEDRXIV [preprint] (Nov. 06, 2021), https://bit.ly/3JVsndK ("[I]nfectious SARS-CoV-2 is found at similar titers in vaccinated and unvaccinated persons when specimen Ct values are low.") (full text); Charlotte B. Acharya, *et al.*, *No Significant Difference in Viral Load Between Vaccinated and Unvaccinated, Asymptomatic and Symptomatic Groups When Infected with SARS-CoV-2 Delta Variant*, MEDRXIV [preprint] (Oct. 05, 2021), https://bit.ly/3K4dear ("In our study, mean viral loads [a proxy for infectiousness] as measured by Ct-value were similar for large numbers of asymptomatic and symptomatic individuals infected with SARS-Cov-2 during the Delta surge, regardless of vaccine status, age, or gender.").

[34] Venice Servellita, *et al.*, *Predominance of antibody-resistant SARS-CoV-2 variants in vaccine breakthrough cases from the San Francisco Bay Area, Calif.*, NATURE MICROBIOLOGY (Jan. 10, 2022), https://bit.ly/3nsdupZ ("[V]accine breakthrough infections are overrepresented by immunity-evading variants as compared with unvaccinated infections."); Rui Wang, Jiahui Chen, Guo-Wei Wei, *Mechanisms of SARS-CoV-2 Evolution Revealing Vaccine-Resistant Mutations in Europe and America*, 12(49) J. PHYS. CHEM. LETT. 11850, 11854-55 (2021), https://bit.ly/3tRR1WK ("[V]accine-resistant mutations correlate strongly with the vaccination rates in Europe and America."); Debra Van Egeren *et al.*, *Risk of rapid evolutionary escape from biomedical interventions targeting SARS-CoV-2 spike protein*, PLOS ONE (April 28, 2021), https://bit.ly/3F6WwDA ("SARS-CoV-2 mutants . . . are expected to exist in high numbers due to neutral genetic variation, and consequently resistance to vaccines or other prophylactics that rely on one or two antibodies for protection can develop quickly.").

from the vaccines may explain the Delta variant's rise to dominance in the summer of 2021 following widespread vaccinations.

In short, vaccinated individuals are both more likely to contract COVID-19 and to transmit it to others than naturally immune individuals. Indeed, one study showed that naturally immune individuals are as much as *four times* less likely to transmit the disease than vaccinated individuals who contract the disease.[35] And as of January 2022, the CDC did not have a single documented case of reinfection of a naturally immune person transmitting SARS-CoV-2 to another person.[36]

Where reinfections do occur, moreover, they are overwhelmingly asymptomatic, and any symptoms that do manifest are rarely severe.[37]

The CDC recently released data to this effect:[38]

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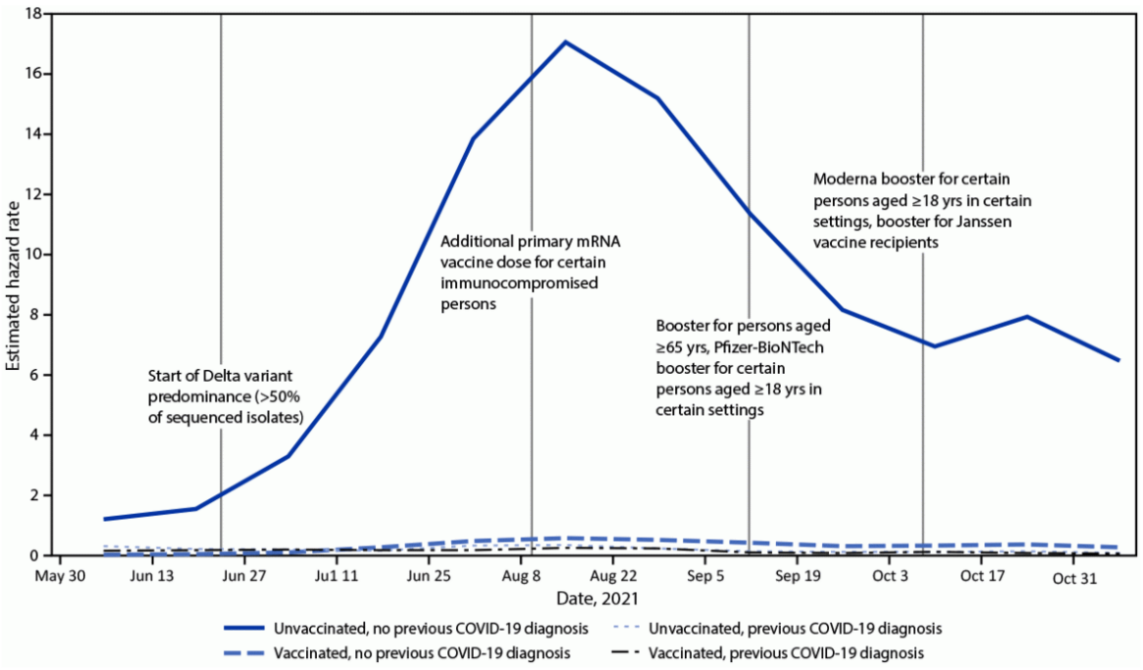
[35] Laith J. Abu-Raddad, *et al.*, *Effect of vaccination and of prior infection on infectiousness of vaccine breakthrough infections and reinfections*, MEDRXIV [preprint] (July 30, 2021), https://bit.ly/33grFXD ("The Ct value was 1.3 . . . cycles higher for [Pfizer] breakthrough infections, 3.2 . . . cycles higher for [Moderna] breakthrough infections, and 4.0 . . . cycles higher for reinfections in unvaccinated individuals.")

[36] Letter of Department of Health and Human Services to Elizabeth Brehm (Nov. 5, 2021), https://bit.ly/3qfHwPD.

[37] CDC, *Science Brief: SARS-CoV-2 Infection-induced and Vaccine-induced Immunity* (Oct. 29, 2021), https://bit.ly/3Gojis5 ("[A] large proportion of the reinfections reported across the studies were asymptomatic infections"); Megan M. Sheehan, *supra* n.18, at 1883, https://bit.ly/3LyHcDn ("Prior infection in patients with COVID-19 was highly protective against reinfection and symptomatic disease.").

[38] León *et al.*, supra n.29, at 129 (link to "Figure").

FIGURE. Incident laboratory-confirmed COVID-19-associated hospitalizations among immunologic cohorts defined by vaccination and previous diagnosis histories — California, May 30–November 13, 2021*,†



C. Given their natural immunity, forcing the SEALs to vaccinate will not further the government's interests and in fact disserves those interests.

The Navy argues its refusal to grant the SEALs a religious exemption to mandatory vaccination will serve its compelling interest. It predicates this inflexible application of its mandate on two assumptions: (1) all unvaccinated individuals are equally likely to contract and spread the disease, regardless of prior infection; and (2) an unvaccinated service member with natural immunity is substantially more likely to become seriously ill and infect others than a vaccinated service member who has never contracted COVID-19.

As outlined above, these assumptions are incorrect. *See supra* §§ II.A–B. Natural immunity reduces the risk of infection, transmission, and severe disease to

at least the same extent as vaccination, and studies have shown the vaccine does not provide any significant additional benefits to the naturally immune.[39] Thus, mandatory vaccination of naturally immune service members does not further the government's stated interests.

Quite the opposite, mandatory vaccination of such individuals *undermines* the government's interest in protecting the health and mission of the naval forces. The scientific literature demonstrates that vaccines pose greater risks of adverse side effects to people who have already contracted COVID-19 than those who have not. One study, for example, found that 6.8% of naturally immune individuals who received a dose of mRNA vaccine suffered "severe symptoms that required medical attention," compared to only 0.6% of people who had never contracted COVID-19 after the first shot and zero after the second shot.[40] Another reported a 4.59-fold higher risk of adverse effects associated with the first shot for naturally

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[39] *See* Mahesh B. Shenai, *et al.*, *Equivalency of Protection From Natural Immunity in COVID-19 Recovered Versus Fully Vaccinated Persons: A Systematic Review and Pooled Analysis*, CUREUS J. OF MED. SCI., Oct. 2021, https://bit.ly/3KaveQ5 ("[W]hile there may be some incremental protection to vaccination in COVID-recovered individuals, the absolute magnitude of that protection is dramatically lower compared to that experienced by COVID-naïve individuals.") (finding that it would require injection of 218 individuals with natural immunity to prevent one SARS-CoV-2 infection of any type compared to 6.5 COVID-naïve individuals, a 33.5-fold difference) (full text).

[40] Shai Efrat, *et al.*, *Safety and humoral responses to BNT162b2 mRNA vaccination for SARS-CoV-2 previously infected and naïve populations*, NATURE SCIENTIFIC REPORTS, Aug. 2021, https://go.nature.com/3Lk4Vaa.

immune individuals compared to the COVID-naïve population and an additional 0.60-fold increased risk from the second shot.[41] Still another found a 1.56-fold increased risk of side effects that required hospital care.[42]

This is but a small sample of the studies evidencing a higher risk of adverse effects from vaccination of naturally immune individuals compared to those without prior infection.[43]

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[41] Amanda K. Debes, *et al.*, *Association of Vaccine Type and Prior SARS-CoV-2 Infection With Symptoms and Antibody Measurements Following Vaccination Among Health Care Workers*, 181(12) JAMA INTERNAL MED. 1660, 1661 (2021), https://bit.ly/3uKa44w (Table).

[42] Alexander G. Mathioudakis, *et al.*, *Self-Reported Real-World Safety and Reactogenicity of COVID-19 Vaccines: A Vaccine Recipient Survey*, LIFE, March 2021, at 3, https://bit.ly/3ISGMGa ("[A] prior COVID-19 infection was associated with an increased severity of any side effect, local side effects or fatigue ($p <$ 0.001). More importantly, a prior COVID-19 infection was associated with the risk of experiencing a severe side effect requiring hospital care (1.56 (1.14–2.12)).").

[43] *See also, e.g.*, Rajneesh K. Joshi, *Higher incidence of reported adverse events following immunisation (AEFI) after first dose of COVID-19 vaccine among previously infected health care workers*, 77 MED. J. ARMED FORCES INDIA S505, S505–07 (2021), https://bit.ly/3wQZhs3; Florian Krammer, *et al.*, *Antibody Responses in Seropositive Persons after a Single Dose of SARS-CoV-2 mRNA Vaccine*, 384(14) N. ENGL J. MED. 1372, 1372–74 (2021), https://bit.ly/38jC73v; Rachael Kathleen Raw, *et al.*, *Previous COVID-19 infection, but not Long-COVID, is associated with increased adverse events following BNT162b2/Pfizer vaccination*, 83 J. INFECT. 401, 401–03 (2021), https://bit.ly/370KYq7; Marie Tré-Hardy, *et al.*, *Reactogenicity, safety and antibody response, after one and two doses of mRNA-1273 in seronegative and seropositive healthcare workers*, 83(2) J. INFECT. 254, 254 (2021), https://bit.ly/3tSpJj5; Cristina Menni, *et al.*, *vaccine side-effects and SARS-CoV-2 infection after vaccination in users of the COVID symptom study app in the UK: a prospective observational study*, 21(7) LANCET INFECT. DIS. 939, 943–46 (2021), https://bit.ly/373brmA.

The literature also shows that far from preventing infection, at a certain point, vaccine efficacy in those without prior infection turns negative, particularly for the Omicron variant, making them more likely to suffer infection. *See supra* § II.B.2. Forcing service members like the naturally immune SEALs to receive a vaccine thus impedes the health and mission of the naval forces.

The Navy argued below that natural immunity did not entitle the SEALs to an exemption because it determined, relying on guidance from the CDC, that "there are insufficient data concerning 'natural immunity' against COVID-19, both as to the length of time antibodies stay in the body following infection and the level of antibodies necessary to indicate that an individual is protect from infection." Govt. Resp. at 27. But the studies it cited confirm that the risk of infection is *higher* for vaccinated individuals and that vaccination of naturally immune individuals is *more likely* to produce adverse side effects.[44]

Furthermore, the CDC claims only that there is some slight increase in protection for those with natural immunity *who also vaccinate* over those with natural immunity alone—not, as the Navy suggests, that anyone vaccinated has

[44] *See* Decl. of Colonel Tonya Rans, Dist. Ct. ECF No. 44-3, Ex. 18 ¶ 25 (citing studies that showed (1) "the rates of SARS-CoV-2 breakthrough infections in vaccinated individuals . . . were 13 times higher than the rates of reinfection and hospitalization in previously infected individuals" and (2) "the risk of myocarditis [a side effect of vaccination] was substantially higher in those who had COVID-19 disease" than in those who had never had it).

greater resistance to disease than those with natural immunity.[45] And in all events, the Navy's argument is outdated and inconsistent with the scientific consensus that natural immunity *is* as effective at combatting COVID-19 as vaccines. *See supra* § I.B.

CONCLUSION

The district court's order granting a preliminary injunction should be affirmed.

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[45] *See* CDC, *Frequently Asked Questions about COVID-19 Vaccination* (updated Feb. 28, 2022), https://go.usa.gov/xzUSk ("People who already had COVID-19 and do not get vaccinated after their recovery are more likely to get COVID-19 again than those who get vaccinated after their recovery.") (response to "If I already had COVID-19 and recovered, do I still need to get a COVID-19 vaccine?").

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CERTIFICATE OF SERVICE

I HEREBY CERTIFY that on September 1, 2022, a true and correct copy of this **BRIEF FOR AMICI CURIAE PROFESSOR TODD ZYWICKI AND JEFFREY SINGER, M.D., IN SUPPORT OF APPELLEES U.S. NAVY SEALS 1-26; U.S. NAVY SPECIAL WARFARE COMBATANT CRAFT CREWMEN 1-5; U.S. NAVY EXPLOSIVE ORDNANCE DISPOSAL TECHNICIAN 1; U.S. NAVY DIVERS 1-3** was filed electronically (via CM/ECF) and will thereby be served on all counsel of record.

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