Annals of Health Law and Life Sciences

Volume 31
Issue 1 *Winter 2022*

Article 3

Winter 2022

Welcome to the Digital Age: Reinventing Contact Tracing and the Public Health Service Act for a Modern Pandemic Response

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I. INTRODUCTION

Contact tracing—the process of identifying and notifying close contacts of possible exposure to a communicable disease—has a troubled history in the United States.[1] Despite this, the U.S. has successfully relied on conventional contact tracing during past outbreaks of infectious diseases.[2] In fact, the U.S. was ranked as *the overall best*-prepared country in the world in terms of "health security" in 2019.[3] Among the six factors evaluated in the Global Health Security Index, the U.S. ranked first and second overall for

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[1] Cynthia Weiss, *Mayo Clinic Q&A: COVID-19 and Contact Tracing*, MAYO CLINIC (Nov. 16, 2020), https://newsnetwork.mayoclinic.org/discussion/mayo-clinic-q-and-a-covid-19-and-contact-tracing/ (describing the importance of contact tracing generally, noting that contact tracing is the "process of identifying those who may have been exposed to someone with a virus" and helps professionals assess the risk of exposure); *see also* Amy Lauren Fairchild et al., *Contact Tracing's Long, Turbulent History Holds Lessons for COVID-19*, OHIO ST. NEWS (July 20, 2020), https://news.osu.edu/contact-tracings-long-turbulent-history-holds-lessons-for-covid-19/ (discussing history of contact tracing in the United States and how the fear of a personal privacy breach is making the need for contact tracing during COVID-19 increasingly difficult).

[2] *See e.g.*, Melanie M. Taylor, et al., *COVID-19 Contact Tracing as an Enduring Important Public Health Tool*, 2 JAMA HEALTH FORUM 1, 1 (Mar. 03, 2021) ("[Contact tracing] and isolation of each new case and quarantine of any contacts who are potentially infected were key interventions that effectively limited secondary transmission resulting from the importation of Ebola virus to the US in 2014.").

[3] *Building Collective Action and Accountability*, GLOBAL HEALTH SEC. INDEX 5, 20 (Oct. 2019), https://www.ghsindex.org/wp-content/uploads/2020/04/2019-Global-Health-Security-Index.pdf.

"rapid response to" and "mitigation of the spread of an epidemic" in comparison to 194 other countries across the world.[4]

This ranking seemed well-founded given the country's experience combating past infectious disease outbreaks.[5] The SARS outbreak in 2003 infected eight U.S. citizens and caused zero deaths.[6] The impact of the Middle East Respiratory Syndrome (MERS) outbreak was similarly anemic, with two confirmed cases and zero deaths reported.[7] Following suit, the Ebola outbreak resulted in eleven U.S. citizens being treated for Ebola Virus Disease (EVD) and one fatality.[8] Despite this seemingly golden track record, the initial U.S. response to the novel coronavirus was, for lack of a better term, abysmal.[9]

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[4] *See id.* at 12, 20–21 ("The U.S. ranked first in "early detection & reporting for epidemics of potential international concern" and "sufficient & robust health system to treat the sick & protect health workers" as well. Meanwhile, South Korea's highest-ranked category was only fifth for early detection and sixth for rapid response & mitigation. The report still suggests that "[n]o country [was] fully prepared for epidemics or pandemics, and every country has important gaps to address.").

[5] *See* Mark Johnson, *The U.S. Was the World's Best Prepared Nation to Confront a Pandemic. How Did It Spiral to 'Almost Inconceivable' Failure?*, MILWAUKEE J. SENTINEL (Oct. 14, 2020), https://www.jsonline.com/in-depth/news/2020/10/14/america-had-worlds-best-pandemic-response-plan-playbook-why-did-fail-coronavirus-covid-19-timeline/3587922001/ (explaining how the United States was thought to be the most prepared out of any country for a pandemic, but failed due to "America's lethargic and inconsistent response" and due to serious lapses in addressing the pandemic); *see also* Catharine I. Paules et al., *What Recent History Has Taught Us About Responding to Emerging Infectious Disease Threats*, 167 ANNALS INTERNAL MED. 805, 810 (Dec. 07, 2017) ("Leadership at the NIAID has learned many valuable lessons through experiences . . . with regard to optimal responses to such outbreaks.").

[6] *Frequently Asked Questions About SARS*, CTRS. FOR DISEASE CONTROL & PREVENTION, https://www.cdc.gov/sars/about/faq.html (last visited Oct. 7, 2021).

[7] *Middle East Respiratory Syndrome (MERS)*, CTRS. FOR DISEASE CONTROL & PREVENTION, https://www.cdc.gov/coronavirus/mers/faq.html (last visited Oct. 7, 2021); *MERS in the U.S*, CTRS. FOR DISEASE CONTROL & PREVENTION, https://www.cdc.gov/coronavirus/mers/us.html (last visited Oct. 7, 2021).

[8] *2014-2016 Ebola Outbreak in West Africa*, CTRS. FOR DISEASE CONTROL & PREVENTION, https://www.cdc.gov/vhf/ebola/history/2014-2016-outbreak/index.html (last updated Mar. 8, 2019).

[9] SARS, MERS, and Ebola were chosen for this comparison to the COVID-19 outbreak due to their relatively high death rate compared to other outbreaks such as the H1N1 pandemic. While the swine flu is estimated to have killed between 150,000 and 575,000 people worldwide, it infected over one point four billion people. *See* Kimberly Hickok, *How Does the COVID-19 Pandemic Compare to the Last Pandemic?*, LIVESCIENCE (Mar. 18, 2020), https://www.livescience.com/covid-19-pandemic-vs-swine-flu.html; *see also* Philip A. Wallach & Justus Myers, *The Federal Government's Coronavirus Response—Public Health Timeline*, BROOKINGS (Mar. 31, 2020), https://www.brookings.edu/research/the-federal-governments-coronavirus-actions-and-failures-timeline-and-themes/ ("By now, it is obvious . . . that there were massive failures of judgment and inaction . . . . [and] our federal government's response compares unfavorably . . . [to] other countries.").

On December 31, 2019, Chinese officials informed the World Health Organization (WHO) of several cases of pneumonia "from an unknown source" in Wuhan, China.[10] Eleven days later, Chinese officials reported the first death from a novel coronavirus.[11] This novel coronavirus, SARS-CoV-2, causes the disease now dubbed COVID-19.[12] While the actual date the novel coronavirus arrived in the U.S. is currently unknown,[13] what is thought to be the first confirmed case was detected in Washington State on January 20, 2020.[14] In response, the U.S. federal government, under the Trump administration, created varying travel restrictions, released voluntary guidelines for social distancing and face coverings, and passed legislation designed to protect and bolster the economy.[15]

The Trump administration often praised the U.S. response to the pandemic.[16] However, the onslaught of cases and casualties rightfully

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[10] *See* Erin Schumaker, *Mysterious Pneumonia Outbreak Sickens Dozens in China*, ABC NEWS (Jan. 6, 2020), https://abcnews.go.com/Health/mystery-pneumonia-outbreak-sickens-dozens-china/story?id=68094861 (discussing how the Wuhan Health Commission ruled out other infectious diseases such as SARS, MERS, and influenza as the cause of the mysterious pneumonia cases).

[11] Zaheer Allam, *The First 50 Days of COVID-19: A Detailed Chronological Timeline and Extensive Review of Literature Documenting the Pandemic*, SURVEYING THE COVID-19 PANDEMIC AND ITS IMPLICATIONS 1, 2-3 (Jul. 24, 2020).

[12] *Naming the Coronavirus Disease (COVID-19) and the Virus that Causes It*, WORLD HEALTH ORG., https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance/naming-the-coronavirus-disease-(covid-2019)-and-the-virus-that-causes-it (last visited Oct. 7, 2021). Since the start of the pandemic, the delta variant has emerged as the dominant strain of the coronavirus. It is currently, as of this writing, responsible for the most infections in the U.S. and even causes breakthrough infections in vaccinated individuals; *see also* Kathy Katella, *5 Things to Know About the Delta Variant*, YALE MED. (Nov. 03, 2021), https://www.yalemedicine.org/news/5-things-to-know-delta-variant-covid.

[13] Mike Baker, *When Did the Coronavirus Arrive in the U.S.? Here's a Review of the Evidence.*, N.Y. TIMES (last updated June 1, 2020), https://www.nytimes.com/2020/05/15/us/coronavirus-first-case-snohomish-antibodies.html.

[14] Grace Hauck, *The First US Case. The First Death. The First Outbreak at a Nursing Home.*, USA TODAY (Jan. 19, 2021), https://www.usatoday.com/in-depth/news/nation/2021/01/19/first-covid-case-us-year-anniversary-snohomish-county/4154942001/.

[15] *See generally* Nick Schwellenbach, *The First 100 Days of the U.S. Government's COVID-19 Response*, PROJECT ON GOV'T OVERSIGHT (May 6, 2020), https://www.pogo.org/analysis/2020/05/the-first-100-days-of-the-u-s-governments-covid-19-response/ (describing the travel restrictions and notices on China, South Korea, and Italy, among other countries; the federal government's hesitancy to release social distancing guidelines; and federal legislation such as the CARES Act).

[16] *See* Jon Greenberg et al., *Pence Praises Trump's 'Seamless' COVID Response, Leaves out his State Feuds*, KAISER HEALTH NEWS (Aug. 27, 2020), https://khn.org/news/pence-praises-

undermined the administration's messaging.[17] By January 2021, roughly one year after the first confirmed case, the U.S. reported a total of nearly 21,500,000 confirmed cases and approximately 363,000 deaths associated with COVID-19—the most in the world in both categories.[18] With results that would suggest an apparent failure to contain the outbreak, the administration's self-touting seems misplaced, if not outright dishonest.[19]

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trumps-seamless-covid-response-leaves-out-his-state-feuds/ (describing and noting instances where the administration did not provide centralized coordination in the response to the pandemic); *see also* Benjamin Siegel et al., *Trump says US Efforts 'Working Very Well' as Coronavirus Death Trends Continue Upward*, ABC NEWS (Aug. 4, 2020), https://abcnews.go.com/Politics/trump-us-efforts-working-coronavirus-death-trends-continue/story?id=72172556 (reviewing statements of the administration which praise their response efforts despite rising numbers of fatalities and limited supplies); *see also* Quint Forgey, *'Maybe Our Best Work': Trump Praises His Coronavirus Response*, POLITICO (May 6, 2020), https://www.politico.com/news/2020/05/06/trump-praises-his-coronavirus-response-239787 (examining the Trump administration's support of various coronavirus response efforts in light of the upcoming 2020 election).

[17] *See* Daniel Funke & Katie Sanders, *Lie of the Year: The Downplay and Denial of the Coronavirus*, KAISER HEALTH NEWS (Dec. 16, 2020), https://khn.org/news/article/lie-of-the-year-the-downplay-and-denial-of-the-coronavirus/ (discussing how the Trump administration, along with numerous other online skeptics, "fueled conspiracy and confusion" about the deadliness and seriousness of COVID-19. In the United States, the virus has killed an exorbitant amount of people which was "exacerbated by the reckless spread of falsehoods").

[18] *See Coronavirus Map: Tracking the Global Outbreak*, N.Y. TIMES, https://www.nytimes.com/interactive/2020/world/coronavirus-maps.html (last visited Oct. 7, 2021) [hereinafter *Coronavirus Map*] (showing the global numbers of daily cases and deaths, along with overall numbers from COVID-19; this website is constantly updated to show new and most accurate data). It is important to note that for certain countries, the reported deaths may be significantly underreported. For example, it is thought that India's numbers are being heavily underreported. This was true before and during the pandemic. This can be partially explained by the fact that most deaths in the country are not registered and that many are not medically certified. Rukmini S., *How India Could Fill in the Blanks on Excess Mortality*, INDIASPEND (June 17, 2020), https://www.indiaspend.com/how-india-could-fill-in-the-blanks-on-excess-mortality/.

[19] Richard Wike et al., *U.S. Image Plummets Internationally as Most Say Country Has Handled Coronavirus Badly*, PEW RSCH. CTR. (Sep. 15, 2020), https://www.pewresearch.org/global/2020/09/15/us-image-plummets-internationally-as-most-say-country-has-handled-coronavirus-badly/ ("Across the 13 nations surveyed, a median of just 15% say the U.S. has done a good job dealing with the outbreak."); *compare* Andrew Solender, *Trump Says His Only Failure in 'Phenomenal' Coronavirus Response Was 'Public Relations'*, FORBES (Sep. 17, 2020), https://www.forbes.com/sites/andrewsolender/2020/09/17/trump-says-his-only-failure-in-phenomenal-coronavirus-response-was-public-relations/#5df5caef1d59 (highlighting the fact that the Trump administration might be dishonest with itself, and Trump believes that his response to COVID-19 has been "phenomenal...despite overwhelming public sentiment to the contrary.").

The Centers for Disease Control and Prevention (CDC) identified contact tracing as "key to slowing the spread of COVID-19."[20] However, Dr. Anthony Fauci, Director of the National Institute of Allergy and Infectious Diseases, expressed that contact tracing in the United States was "not working."[21] During the beginning stages of the pandemic, there was no unified federal action or comprehensive national guidance plan.[22] Thus, necessary responses, such as contact tracing, were left to the states.[23] Given the failure to respond properly to the COVID-19 pandemic,[24] the federal government must begin preparing for the future. The next pandemic will not

[20] *See Coronavirus Disease 2019 (COVID-19): Contact Tracing*, CTRS. FOR DISEASE CONTROL & PREVENTION, https://www.cdc.gov/coronavirus/2019-ncov/daily-life-coping/contact-tracing.html (last visited Oct. 7, 2021); *see also* Michael Fraser et al., *A Coordinated, National Approach to Scaling Public Health Capacity for Contact Tracing and Disease Investigation*, ASS'N STATE & TERRITORIAL HEALTH OFFS. 1, 3 (2020), https://www.astho.org/COVID-19/A-National-Approach-for-Contact-Tracing/ (calling for "rapid and massive scaling up of existing contact investigation resources in every community in the United States and its territories" to amass at least 100,000 contact investigators needed to address the current situation).

[21] Bryan Walsh, *Why Coronavirus Contact Tracing Is Failing*, AXIOS (June 27, 2020), https://www.axios.com/coronavirus-contact-tracing-isnt-working-0d8ec92c-ec1c-4b46-a736-844649b760dd.html.

[22] *See* Ken Dilanian & Dan De Luce, *Trump Administration's Lack of a Unified Coronavirus Strategy Will Cost Lives, Say a Dozen Experts*, NBC NEWS (Apr. 3, 2020, 4:01 AM), https://www.nbcnews.com/politics/donald-trump/trump-administration-s-lack-unified-coronavirus-strategy-will-cost-lives-n1175126 (discussing lack of national strategy to COVID-19 outbreak under Trump Administration).

[23] *See* Benjamin Lesser et al., *Special Report: Local Governments 'Overwhelmed' In Race to Trace U.S. COVID Contacts*, REUTERS (Aug. 4, 2020, 6:16 AM), https://www.reuters.com/article/us-health-coronavirus-tracing-specialrep/special-report-local-governments-overwhelmed-in-race-to-trace-u-s-covid-contacts-idUSKCN2501GK (discussing how the lack of federal strategy and funding has overwhelmed state and local governments' contact tracing efforts).

[24] *See* Kevin Kunzmann, *The 4 Ways the United States Failed in COVID-19 Response*, CONTAGIONLIVE (Aug. 7, 2020), https://www.contagionlive.com/view/the-4-ways-the-united-states-failed-in-covid19-response (summarizing virologist's explanations for why U.S. COVID-19 response lagged behind other industrialized nations).

wait for fifty individual systems of pandemic response to coordinate on their own.[25] The U.S. must remedy its patchwork response.[26]

To improve contact tracing and future pandemic preparedness more broadly, the U.S. should look to countries that more successfully contained the spread of COVID-19. South Korea was one of the world's most successful countries in stopping the initial spread of the pandemic.[27] The South Korean response included a centralized contact tracing program using citizen location data.[28] Other countries that successfully slowed the spread of COVID-19, such as China, also used private technology platforms to

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[25] *See* Michael Dulaney, *The Next Pandemic Is Coming – And Sooner Than We Think, Thanks to Changes to the Environment*, ABC NEWS (June 6, 2020, 2:00 PM), https://www.abc.net.au/news/science/2020-06-07/a-matter-of-when-not-if-the-next-pandemic-is-around-the-corner/12313372 (discussing how increased human intervention in nature exacerbates the likelihood of new infectious diseases to emerge via zoonotic transfer). The surge of cases attributed to the delta variant highlights the continued importance of mitigation measures – vaccination alone will not suffice where breakthrough infections exist, there is uneven access to vaccinations, *and* existing mitigations are relaxed. *See* Christie Aschwanden, *Five Reasons Why COVID Herd Immunity is Probably Impossible*, NATURE (Mar. 18, 2021), https://www.nature.com/articles/d41586-021-00728-2 (explaining how pockets of unequal access to vaccinations can result in the "potential for new outbreaks"); Stephen Loiconi, *'Delta Is A New Game': Breakthrough Infections Still Rare, But Experts Urge Caution*, ABC13 NEWS (Aug. 2, 2021), https://wset.com/news/coronavirus/delta-is-a-new-game-breakthrough-infections-still-rare-but-experts-urge-caution (explaining how despite the "relative rarity" of breakthrough infections, "federal officials and public health experts say recent evidence still supports reviving some mitigation measures.").

[26] *See* Ed Yong, *America's Patchwork Pandemic is Fraying Even Further*, ATLANTIC (May 20, 2020), https://www.theatlantic.com/health/archive/2020/05/patchwork-pandemic-states-reopening-inequalities/611866/ (characterizing US response to COVID-19 outbreak as a series of decentralized state and local government interventions); *see also* Noah Higgins-Dunn & Will Feuer, *This is What Top U.S. Health Officials Say We Should Do Differently for the Next Pandemic*, CNBC (June 30, 2020, 4:33 PM), https://www.cnbc.com/2020/06/30/this-is-what-top-us-health-officials-say-we-should-do-differently-for-the-next-pandemic.html (reporting US health officials' statements from Senate Health, Education, Labor and Pension Committee hearing that increased coordination, funding, and public health infrastructure would improve US response to future pandemics).

[27] *See* Jason Beaubien, *How South Korea Reigned in the Outbreak Without Shutting Everything Down*, NPR (Mar. 26, 2020, 2:41 PM), https://www.npr.org/sections/goatsandsoda/2020/03/26/821688981/how-south-korea-reigned-in-the-outbreak-without-shutting-everything-down (discussing measures South Korea implemented to slowdown the number of new coronavirus cases without closing public places like schools).

[28] *See* Keren Landman, *What We Can Learn From South Korea's Coronavirus Response*, ELEMENTAL (June 1, 2020), https://elemental.medium.com/what-we-can-learn-from-south-koreas-coronavirus-response-97a4db5c9fef (identifying widespread data collection from private companies, including GPS data, as key to South Korean COVID-19 contract tracing response); *see also* Seung-Youn Oh, *South Korea's Success Against COVID-19*, REG. REV.: OP. (May 14, 2020), https://www.theregreview.org/2020/05/14/oh-south-korea-success-against-covid-19/ (describing changes to South Korean laws after 2015 MERS outbreak which allow authorities to access citizens' private data in public health emergency).

supplement contact tracing.[29] However, South Korea's system was legally authorized, transparent, and limited how location data was used to support necessary contact tracing efforts, and therefore is the best model to inform future U.S. preparedness.[30]

While the U.S. also implemented contact tracing, the fragmented effort led by the states was insufficient, ineffective, and resulted in a catastrophic loss of life and sweeping economic damage.[31] The interpretation and precedent of current federal laws and powers surrounding public health leave the U.S. ill-equipped to respond to future pandemics, as evidenced by the failed federal response to the COVID-19 pandemic.[32]

As one of many necessary steps to improve U.S. pandemic response, this article proposes an amendment to existing U.S legislation that would enable the creation of a centralized system designed to support state digital contact tracing efforts. Part II of this article will provide an overview of the current laws dedicated towards federal pandemic response and the actions taken by the U.S. federal government during the COVID-19 pandemic. Part III will discuss the origin of SARS-CoV-2 in China and the Chinese government's

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[29] China collected citizens' digital footprints, including location data, to issue "health codes" for contact tracing in "Alipay," a popular app. *See generally* Josh Ye et al., *Governments Worldwide Navigate Privacy Versus Urgency in Fight Against COVID-19*, POLITICO (June 8, 2020, 8:30 PM), https://www.politico.com/news/2020/06/08/government-privacy-coronavirus-china-308105; *see also* Mary Van Beusekom, *Study: Contact Tracing Slowed COVID-19 Spread in China*, UNIV. MINN. CTR. FOR INFECTIOUS DISEASE RES. & POL'Y (Apr. 28, 2020), https://www.cidrap.umn.edu/news-perspective/2020/04/study-contact-tracing-slowed-covid-19-spread-china (highlighting the increased attention given to the use of technology in contact tracing, and related results of long-term use of technology-based measures).

[30] Oh, *supra* note 28 (analyzing the changes between South Korea's response to the MERS outbreak and the COVID-19 outbreak regarding data).

[31] *See* Olga Khazan, *The Most American COVID-19 Failure Yet: Contact Tracing Works Almost Everywhere Else. Why Not Here?*, ATLANTIC (Aug. 31, 2020), https://www.theatlantic.com/politics/archive/2020/08/contact-tracing-hr-6666-working-us/615637/ (identifying pitfalls of US contact tracing systems as capacity and funding limitations, testing duration, and public mistrust in government); *see also Coronavirus Map*, *supra* note 18; *see also* Jeff Cox, *Second-Quarter GDP Plunged By Worst-Ever 32.9% Amid Virus-Induced Shutdown*, CNBC (July 30, 2020, 8:31 AM), https://www.cnbc.com/2020/07/30/us-gdp-q2-2020-first-reading.html ("The U.S. economy suffered its worst period ever in the second quarter, with GDP falling a historic 32.9%.").

[32] William A. Haseltine, *Restructuring the Federal Response to a Pandemic*, FORBES (Oct. 26, 2020, 1:22 PM), https://www.forbes.com/sites/williamhaseltine/2020/10/26/restructuring-the-federal-response-to-a-pandemic/?sh=28e51ebd5c50 (discussing the impact of state power over public health as opposed to federal authority, and discussing the need for increased federal leadership, governance of public health policies, continued research, and social solidarity).

response and contact tracing efforts. Part IV will review South Korea's response to the COVID-19 pandemic and their contact tracing system. Finally, Part V will propose an amendment to the Public Health Service Act giving the U.S. federal government the power to collect and distribute citizen location data for a centralized contact tracing support system during outbreaks of infectious diseases like COVID-19.

II. INABILITY BEGETS INACTION: A STORY OF AMERICAN MEDIOCRITY

For diseases other than influenza, federal plans for pandemic response were lacking when the COVID-19 pandemic began.[33] The influenza response plan created by the Bush administration in 2005 was the most comprehensive pandemic response plan in the U.S. and was generally applicable to other disease outbreaks.[34] According to this federal plan, the HHS is responsible for assisting state efforts during public health crises.[35] Additionally, the plan makes clear that the federal government is to provide states with guidance regarding measures designed to contain viral spread.[36] In short, the HHS's role is one of support. The 2005 plan mentioned contact tracing once as a means of deterring the initial introduction of a pandemic-level influenza into the country, rather than as an ongoing measure of spread prevention.[37] The 2017 update continued to undervalue the importance of contact tracing, mentioning it once in the context of tracing passengers of planes and ships.[38] Although the HHS maintained a supervisory role in the 2017 update, states fell further and further behind in contact tracing as coronavirus cases moved

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[33] *See* Diane Meyer, *Federal Pandemic Response Plans*, LADEX (April 27, 2018), https://www.centerforhealthsecurity.org/our-work/events/2018_clade_x_exercise/pdfs/Clade-X-federal-pandemic-response-plans.pdf (discussing the lack of federal pandemic response plans for diseases other than influenza, and the lack of a plan to identify and act "against a novel pathogen").

[34] *See* Barbara McQuade, *Bush Devised a Plan for Pandemics like the Coronavirus. Trump Is Ignoring It*, USA TODAY (last updated Apr. 6, 2020, 11:20 AM), https://www.usatoday.com/story/opinion/2020/04/06/coronavirus-donald-trump-ignores-2005-bush-pandemic-plan-column/2950848001/ (identifying George W. Bush's 2005 National Strategy for Pandemic Influenza as roadmap for COVID-19 pandemic response, and recommending that the Trump administration 1) provide resources to heavily-impacted areas, 2) provide technical assistance to state and local governments, and 3) communicate with the public to reduce exposure).

[35] *Pandemic Influenza Plan: 2017 Update*, U.S. DEP'T HEALTH & HUM. SERVS. 19 (2017), https://www.cdc.gov/flu/pandemic-resources/pdf/pan-flu-report-2017v2.pdf.

[36] *See id*. (discussing federal government objectives through HHS and other agencies to provide guidance on pandemic related factors).

[37] U.S. Homeland Sec. Council, National Strategy for Pandemic Influenza, 7 (Nov. 1, 2005), available at https://www.cdc.gov/flu/pandemic-resources/pdf/pandemic-influenza-strategy-2005.pdf.

[38] *Pandemic Influenza Plan: 2017 Update*, *supra* note 35 ("Procedures are in place for conducting contact investigations among passengers and crews of aircraft and cruise ships, scalable by disease and situation.").

to form another peak at the end of 2020,[39] and these efforts were severely underfunded.[40]

A. U.S. Federal Law Governing Infectious Disease Outbreak Response

Under existing federal law at the time of this writing, the HHS had delegated authority to the Centers for Disease Control and Prevention (CDC) to implement measures designed to prevent the spread of communicable diseases.[41] The basis of the HHS's power comes from 42 U.S.C. § 264, the Public Health Service Act,[42] and 42 C.F.R. §§ 70 and 71 provide specific delegations of power to the CDC.[43] These provisions allow the CDC to isolate and quarantine individuals to prevent the spread of specific infectious diseases between states.[44] In 2014, former President Barack Obama signed Executive Order No. 13674, adding severe acute respiratory syndromes, such as SARS-CoV-2, to the list of communicable diseases for which the CDC

[39] *See* Stephanie Soucheray, *COVID-19 Rising in 26 States as U.S. Hits 6 Million Cases*, UNIV. MINN. CTR. FOR INFECTIOUS DISEASE RES. & POL'Y (Aug. 31, 2020), https://www.cidrap.umn.edu/news-perspective/2020/08/covid-19-rising-26-states-us-hits-6-million-cases (detailing several states that reported record highs for weekly COVID-19 cases in August of 2020).

[40] *See* Elizabeth Hlavinka, *Distrust, Underfunding Hinders COVID-19 Contact Tracing*, MEDPAGE TODAY (July 7, 2020), https://www.medpagetoday.com/infectiousdisease/covid19/87443 (describing pervasive reasons behind the United States' flagging efforts to contact trace COVID-19 exposures); *see also* Lois Parshley, *The Magnitude of America's Contact Tracing Crisis is Hard to Overstate*, NAT'L GEOGRAPHIC (Sep. 1, 2020), https://www.nationalgeographic.com/science/2020/09/contact-tracing-crisis-magnitude-hot-mess-america-fixes-coronavirus-cvd/. *See* Danielle Allen, et *al., Roadmap To Pandemic Resilience,* EDMOND J. SAFRA CTR. FOR ETHICS HARV. UNIV. (Apr. 20, 2020) (supporting the recommendation from Johns Hopkins University for a $3.6 billion investment in hiring and training of 100,000 new contact tracing personnel); *see also* CRYSTAL WATSON, ET AL. FOR JOHNS HOPKINS UNIV., A NATIONAL PLAN TO ENABLE COMPREHENSIVE COVID-19 CASE FINDING AND CONTACT TRACING IN THE US 3 (Apr. 10, 2020) (finding that nationally, funding allocated for contact tracing was insufficient and suggesting that around three and a half billion dollars was needed to fund the minimum necessary contact tracing efforts nationwide).

[41] *Legal Authorities for Isolation and Quarantine*, CTRS. FOR DISEASE CONTROL & PREVENTION ("CDC") (Aug. 12, 2021), https://www.cdc.gov/quarantine/aboutlawsregulationsquarantineisolation.html.

[42] *Id.*; *see also* Public Health Service Act § 361, 42 U.S.C. § 264.

[43] *Legal Authorities for Isolation and Quarantine*, *supra* note 41; *see also* 42 C.F.R. §§ 70, 71.

[44] *Legal Authorities for Isolation and Quarantine*, *supra* note 41.

can implement federal isolation and quarantine.[45] Isolation and quarantine may be imposed on individuals infected with a communicable disease and those who are a "probable source of infection to individuals" who may move between states.[46]

There is limited interpretation to the meaning and breadth of these powers, the most notable quarantine case arising from the Ebola crisis.[47] In *Hickox v. Christie*, a nurse returning to the U.S. from Sierra Leone, where she provided care to those infected with Ebola, was required by state law to quarantine for eighty hours.[48] The District Court in *Hickox* recognized the CDC's authority to forcibly quarantine persons "traveling between states who are suspected of carrying these communicable diseases," even noting the relative rarity of this use of power, and affirmed their authority to force a quarantine.[49] However, this is the extent of the court's interpretation of the statute, merely confirming its basic assertions.[50] Instead, the court noted that the CDC has typically taken a "supportive role," leaving quarantine efforts mostly to the States.[51] As such, the court proceeded to assess the legality of the state quarantine order, leaving the CDC's authority under the Public Health Service Act relatively untouched and unquestioned.[52]

Even so, *Hickox* was decided before what some considered to be a 'drastic' expansion of the CDC's quarantine powers in 2017.[53] At the time, CDC quarantines appeared to be heavily restricted to interstate travel, affecting either those entering or exiting the country or those actually moving between states.[54] Further, the CDC was siloed into a pure advisory position unless explicitly invited to take charge by relevant state and local authorities, or society had broken down to the point where the Insurrection Act would be triggered.[55] Yet, some suspected that the CDC relished this limited power

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[45] Exec. Order No. 13674, 79 Fed. Reg. 45,671 (July 31, 2014); *see also What Diseases Are Subject to Federal Isolation and Quarantine Law?*, U.S. DEPT. HEALTH & HUM. SERVS., https://www.hhs.gov/answers/public-health-and-safety/what-diseases-are-subject-to-federal-isolation-and-quarantine-law/index.html (last reviewed on March 27, 2020).
[46] 42 U.S.C. § 264(d) (2011).
[47] *See* Hickox v. Christie, 205 F. Supp. 3d 579 (D.N.J. 2016) (ruling that a nurse's Constitutional rights were not violated by requiring an eighty-hour quarantine upon her return from treating Ebola patients in Africa).
[48] *Id.* at 584.
[49] *Id.* at 590.
[50] *Id.*
[51] *Id.* at 590–91.
[52] *Id.* at 591.
[53] Rob Stein, *CDC Seeks Controversial New Quarantine Powers to Stop Outbreaks*, NPR (Feb. 2, 2017, 4:47 AM), https://www.npr.org/sections/health-shots/2017/02/02/512678115/cdc-seeks-controversial-new-quarantine-powers-to-stop-outbreaks (describing the expansion of federal quarantine powers).
[54] Denver Nicks, *The CDC Has Less Power Than You Think, and Likes It That Way*, TIME (Oct. 17, 2014, 1:12 PM), https://time.com/3516827/cdc-constitution-quarantine/.
[55] *Id.*

since quarantines are inherently coercive, and public health necessarily relies on a degree of voluntary compliance[56]—unfettered wielding of this power could be counterintuitive to disease spread prevention.

In 2017, the CDC's powers were modernized and greatly expanded.[57] Now the agency could "detain people anywhere in the country without getting approval from state and local officials."[58] This necessarily increased the number of people that could fall under the scope of public health quarantines.[59] Critics raised concerns of threats to civil liberties, the possibility of action motivated by politics over science, and the risk that people may attempt to hide their illnesses to avoid federal detainment.[60] Yet, the regulations suggest that from a policy perspective, increased power to protect public health during a crisis is of the utmost importance.[61] However, for a time, the District Court's finding in *Hickox* that the CDC hardly

[56] *Id.*
[57] Stein, *supra* note 53; Control of Communicable Diseases, 82 Fed. Reg. 6890-01 (Jan. 19, 2017) (to be codified at 42 C.F.R. pt. 70 & 71).
[58] Stein, *supra* note 53.
[59] *Id*.
[60] *See id.* While critics were correct in their concern of the Trump Administration wielding public health for political reasons, they incorrectly assumed these new powers may lead to an increase in utilization; *see also id.* ("'My worst fear is we have a replay of Ebola, and we have, say, President Trump assert the policy he thought we ought to have when he was citizen Trump,' ... During the 2014-2016 Ebola outbreak in West Africa . . . Trump tweeted that American health workers who got sick while treating victims should be prevented from returning to the United States for medical care."). Instead, the Trump administration repeatedly contradicted the CDC's messaging and restricted action that was based on science. *See* Jason Dearen, *200,000 Dead as Trump Vilifies Science, Prioritizes Politics*, AP NEWS (Sept. 23, 2020), https://apnews.com/article/virus-outbreak-donald-trump-ap-top-news-pandemics-health-2c6af8d90eb758cbaa3a40c3cbd7c515 ("Over the past six months, the Trump administration has prioritized politics over science at key moments, refusing to follow expert advice that might have contained the spread of the virus and COVID-19, the disease it causes. Trump and his people have routinely dismissed experts' assessments of the gravity of the pandemic…[and] [t]hey have tried to muzzle scientists who dispute the administration's rosy spin.").
[61] Stein, *supra* note 53 ("The outlined changes are being welcome by many health lawyers, bioethicists and public health specialists as providing important tools for protecting the public. . . .While he agrees the civil liberties protections in the new regulations should be even stronger, [Lawrence] Gostin argues they're better than relying on the protections in the old rules.").

exercises its quarantine powers remained true.[62] That was, until the government was forced to play its hand by the COVID-19 pandemic.[63]

B. Unprepared, Inefficient, and Underfunded: The U.S. Response to COVID-19

Instead of focusing on contact tracing and spread reduction, collectively, the federal government's response at large throughout the first hundred days of the COVID-19 pandemic concentrated heavily on reactionary travel restrictions, recommendations, economic impact, and disease treatment.[64] The HHS and the CDC, however, engaged in arguably their most aggressive use of their quarantine powers during the COVID-19 pandemic.[65]

One of the first governmental responses to COVID-19, and evidence of the dramatically increased use of quarantine power, was the repatriation of U.S. citizens in the Hubei Province of China to the United States.[66] Isolation and quarantine sites took in roughly 800 people from Hubei Province.[67] Simultaneously, approximately 2,300 U.S. citizens were repatriated and quarantined from the *Diamond Princess* and *Grand Princess* cruise ships, bringing the total of those subjected to federal quarantine to over 3,000.[68] According to available sources, this was the most extensive quarantine effort undertaken by the federal government in recent history.[69] While the HHS believed these efforts likely slowed the spread of the virus to some degree, it simultaneously acknowledged that such federal efforts would not address the further spread of COVID-19 on other vessels and that such an operation could not be effectively scaled at the federal level to the needs of the pandemic due to limited resources.[70]

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[62] *See* Hickox v. Christie, 205 F. Supp. 3d 579, 590-91 (D.N.J. 2016) (explaining the CDC has authority to quarantine individuals suspected of carrying certain communicable diseases, but rarely does so).
[63] Stein, *supra* note 53 (discussing CDC powers, regulations and procedures in order to avert the danger of quarantinable communicable disease in the U.S.); *see also* Lawrence O. Gostin et al., *Presidential Powers and Response to COVID-19*, 323 [J]AMA 1547 (2020) ("[The CDC's] extensive use of federal quarantine powers has no modern precedent.").
[64] *See generally* Schwellenbach, *supra* note 15.
[65] Stein, *supra* note 53 (discussing the extent of the CDCs quarantine powers to avert the danger of quarantinable communicable diseases).
[66] *Id.*
[67] *Id.*
[68] *See* Control of Communicable Diseases; Foreign Quarantine, 85 Fed. Reg. 56424-01 (Sep. 11, 2020) (to be codified at 42 C.F.R. pt. 71).
[69] *Id.*
[70] *Id.*

Meanwhile, other areas of the federal government were slow to react.[71] After the first known U.S. citizen was diagnosed with COVID-19 in early January 2020, the U.S. merely increased the existing travel warning on Wuhan.[72] Weeks later, restrictions were expanded to all of China.[73] Similar travel advisories were soon created for South Korea, Italy, and Iran, among others.[74]

The fumbled attempt to roll-out accurate testing further highlights the laxity of the federal government's response.[75] The first diagnostic test to be publicized by the WHO was created on January 16, 2020 in Germany; however, the White House declared a *strong* preference for a diagnostic test produced in the United States.[76] Not until the end of February—four weeks after the WHO had begun its global distribution of tests—would the FDA permit independent COVID-19 tests in the U.S.[77] Furthermore, the White House did not release guidance to the public regarding social distancing and minimizing group activity until after declaring a state of emergency on March 13, 2020.[78] This guidance from the White House did not include the

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[71] *See* Eric Lipton et al., *He Could Have Seen What Was Coming: Behind Trump's Failure on the Virus*, N.Y. TIMES, (July 20, 2021), https://www.nytimes.com/20202, 2020/04/11/us/politics/coronavirus-trump-response.html (discussing how President Trump was slow to act in response to COVID-19).
[72] Schwellenbach, *supra* note 15 ("Although it would not be discovered until nearly the end of the month, the first known traveler with coronavirus came to the U.S. on January 13.").
[73] *Id.* ("DAY 29: Trump Administration Announces Restrictions on Travel from China").
[74] *See id.* (detailing that on February 29, 2020 "[t]he Trump administration announces it is increasing its travel warnings to the highest level with regards to certain areas in Italy and South Korea and expands Iran-related travel restrictions."); *see also* Daniel B. Jernigan, *Update: Public Health Response to the Coronavirus Disease 2019 Outbreak United States, February 24, 2020*, 69 CDC MORBIDITY & MORTALITY WKLY. REP. 216, 217 (2020), (giving a timeline in late February 2020 when travel notices were posted for Hong Kong, Japan, Iran, Italy, Singapore, Taiwan, Thailand, and Vietnam).
[75] *See id*. (discussing the first 100 days of U.S government's response to COVID).
[76] Dilip Hiro, *Comparing the US' and China's Response to Covid-19*, NATION (Apr. 28, 2020) https://www.thenation.com/article/world/coronavirus-us-china-response/ (claiming President Trump "demanded a test produced by US scientists").
[77] *Id.*
[78] *See 15 Days to Slow the Spread*, WHITE HOUSE, https://trumpwhitehouse.archives.gov/articles/15-days-slow-spread/ (Mar. 16, 2020) (explaining new guidelines to protect Americans from COVID-19); *see also Proclamation on Declaring a National Emergency Concerning the Novel Coronavirus Disease (COVID-19) Outbreak*, WHITE HOUSE, https://trumpwhitehouse.archives.gov/presidential-actions/proclamation-declaring-national-emergency-concerning-novel-coronavirus-disease-covid-19-outbreak/ (March 13, 2020) (proclaiming the COVID-19 outbreak a national emergency).

recommendation of wearing face coverings in public, which was announced in April by the CDC.[79]

While the federal government did act in response to the COVID-19 pandemic, its actions—especially in the early stages of the outbreak—were delayed and minimal.[80] It quickly became obvious that the CDC's seemingly broad isolation and quarantine powers were not feasible to implement on the scale needed for an infectious disease like COVID-19.[81] Adding to the inability for a federally-led quarantine protocol, the federal government also failed to provide a national plan for contact tracing.[82] As a result, states were left to create their own contact tracing programs, essentially being told to do as they wish.[83] The White House's effort to block an additional twenty-five billion dollars in aid for state contact tracing programs, claiming the "states already ha[d] funding", added insult to injury.[84]

Underfunded even before the pandemic, state public health departments found themselves without the financial means to create and scale the contact tracing programs needed for this outbreak.[85] The lack of substantive federal aid forcibly created a patchwork of inefficient programs and resulted in an "uneven implementation" of contact tracing.[86] From the start of the pandemic through July of 2020, no federal dollars were specifically spent on contact

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[79] *See* Schwellenbach, *supra* note 15 (explaining the White House voluntary guidance on day 74, which does not include mask wearing recommendations); *see also COVID-19: Considerations for Wearing Masks*, CDC (April 19, 2021), https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/cloth-face-cover-guidance.html (issuing guidance for wearing masks).

[80] *See* Jacquelyn Corley, *U.S. Government Response to COVID-19 was Slow. But how does it Compare to Other Countries?*, FORBES (Apr. 10, 2020, 8:12 PM), https://www.forbes.com/sites/jacquelyncorley/2020/04/10/us-government-response-to-covid-19-was-slow-but-how-does-it-compare-to-other-countries/?sh=6d0c5fdd6dc2 (discussing how America was slow to escalate its policies in response to COVID compared to other countries); *see also* Michael D. Shear et al., *The Lost Month: How a Failure to Test Blinded the U.S. to Covid-19*, N.Y. TIMES (Mar. 28, 2020), https://www.nytimfes.com/2020/03/28/us/testing-coronavirus-pandemic.html (discussing the effect of the U.S. government's failures in testing for COVID-19).

[81] *See* Stein, *supra* note 53 (displaying the CDCs powers to prohibit introduction of persons into the U.S. from certain places in order to avert the danger of communicable diseases).

[82] *See* Christie Aschwanden, *Contact Tracing, a Key Way to Slow COVID-19, Is Badly Underused by the U.S.*, SCI. AM. PUB. HEALTH (July 21, 2020), https://www.scientificamerican.com/article/contact-tracing-a-key-way-to-slow-covid-19-is-badly-underused-by-the-u-s/ (discussing U.S. shortcomings in regard to contact tracing).

[83] *Id; see* Selena Simmons-Duffin, *Why Contact Tracing Couldn't Keep Up With the U.S. COVID Outbreak*, NPR (June 3, 2021), https://www.npr.org/sections/health-shots/2021/06/03/1002878557/why-contact-tracing-couldnt-keep-up-with-the-u-s-covid-outbreak ("The lack of federal leadership made it hard for different contact tracing programs to learn from each other...").

[84] Aschwanden, *supra* note 82.

[85] *Id.*

[86] *Id.*; Simmons-Duffin, *supra* note 83.

tracing.[87] Seemingly, one of the largest obstacles to effective contact tracing in the U.S. was the federal government.[88] Legislators seeking to reshape future pandemic response and contact tracing in the U.S. should look to other countries for guidance.

III. FOREIGN SUCCESS: COVID-19 RESPONSE & CONTACT TRACING IN CHINA

China is no stranger to outbreaks of infectious diseases.[89] Before COVID-19, the Chinese government had revamped its ability to respond to epidemics based on prior experience.[90] On January 3, 2020, within one week of the discovery of the novel coronavirus, the Chinese National Health Commission (CNHC) centralized testing, started epidemiological investigations, identified the novel coronavirus, and made its genome available worldwide.[91]

As the disease began to rapidly spread, the novel coronavirus was classified as a "category B infectious disease," which authorized Chinese medical institutions to isolate patients and take the precautions needed to identify and trace cases.[92] New hospitals were built to handle the potential influx of cases while old hospitals were prepared to start receiving patients.[93] Among the most drastic of the measures taken, the Chinese government placed a lockdown order on the eleven-million people of Wuhan and surrounding residents.[94] To enforce these orders, the government sent officials to civilian homes to enforce quarantine and isolation orders.[95]

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[87] *Id*.
[88] *See* Alice Miranda Ollstein & Darius Tahir, *Contact Tracing Foiled by Conspiracy Theories, Lack of Federal Messaging*, POLITICO (Sept. 3, 2020, 7:55 PM), https://www.politico.com/news/2020/09/03/contact-tracing-conspiracy-theories-trump-messaging-408611 (suggesting a significant challenge was the White House's silence regarding contact tracing efforts).
[89] *See China's Recent History of Deadly Epidemics*, MED. XPRESS (Jan. 22, 2020), https://medicalxpress.com/news/2020-01-china-history-deadly-epidemics.html (recapping the history of deadly epidemics in China).
[90] Nourah S. AlTakarli, *China's Response to the COVID-19 Outbreak: A Model for Epidemic Preparedness and Management*, 3 DUBAI MED. J. 44, 45–46 (2020).
[91] Hiro, *supra* note 76; AlTakarli, *supra* note 90 at 46.
[92] Hiro, *supra* note 76; AlTakarli, *supra* note 90 at 46.
[93] AlTakarli, *supra* note 90, at 47.
[94] Schwellenbach, *supra* note 15; Hiro, *supra* note 76.
[95] AlTakarli, *supra* note 90, at 46.

Despite the controversy over their methods, China was able to quell the initial spread of the coronavirus by March 2020.[96]

Concerted contact tracing for every positive case was an integral part of the Chinese response to the pandemic.[97] Shao Yiming, a virologist at the Chinese Center for Disease Control and Prevention (CCDC), claimed that China's ability to contain the spread was in large part facilitated by their comprehensive contact tracing.[98] To carry out such intensive work at such a large scale, the CCDC mobilized the vast resources at its disposal, establishing a coalition of over 1,300 teams assigned to investigate the epidemic and closely monitor public transportation, and utilizing big data.[99] Government officials used tech-based systems integrated into popular apps—namely Alipay and WeChat—to track individuals' travel history and health, assigning them a "health code color," named a "health card."[100] Since the "health card" in everyone's pockets tracked their movements, contact tracers no longer needed to rely solely on an individuals' possibly faulty memory.[101] Such comprehensive digital contact tracing and tracking was possible due to China's "highly digitized and online urban society . . . and weak constraints from privacy concerns and civil liberties."[102]

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[96] *See* Hiro, *supra* note 76 (describing how by early March 2020, "daily new cases in Wuhan had already dropped to 19 from thousands a day a month earlier"); Ken Moritsugu, *A Pandemic Atlas: China's State Power Crushes COVID-19*, AP NEWS (Dec. 16, 2020), https://apnews.com/article/health-china-pandemics-coronavirus-pandemic-2019-2020-coronavirus-pandemic-56675860128a7ded7e97a3016d212fef ("[I]n a sense, the crisis illustrates the strength of the [Chinese] system, and its dark side. The virus has been kept at bay – but only because of the government's power to dictate monumental changes and its willingness to use surveillance and censorship to control its people."). In August of 2021, the Chinese government, in response to a surge in cases driven by the delta variant, sectioned off parts of Wuhan again and scheduled all 12 million residents for testing. *See* Ryan Woo, *China's Wuhan to Test All 12 Million Residents as Delta Variant Spreads*, REUTERS (Aug. 3, 2021), https://www.reuters.com/world/china/china-reports-90-new-coronavirus-cases-aug-2-vs-98-day-earlier-2021-08-03/.

[97] Jon Cohen, *'The House Was on Fire.' Top Chinese Virologist on How China and U.S. Have Met the Pandemic*, SCI. MAG. (May 22, 2020), https://www.science.org/news/2020/05/house-was-fire-top-chinese-virologist-how-china-and-us-have-met-pandemic (stating that based on models, if the lockdown had started one week later there was a possibility of a sixfold increase in cases).

[98] *Id.*

[99] Jacques DeLisle, *China's Administrative State Is Both a Blessing and a Curse*, REGUL. REV. (June 30, 2020), https://www.theregreview.org/2020/06/30/delisle-china-administrative-state-both-blessing-curse/; *see also* Cohen, *supra* note 97.

[100] AlTakarli, *supra* note 90, at 46; Cohen, *supra* note 97; *See* Daniel Keyes & Greg Magana, *REPORT: Chinese Fintechs Like Ant Financial's Alipay and Tencent's WeChat Are Rapidly Growing Their Financial Services Ecosystem*, BUS. INSIDER (Dec. 18, 2019), https://www.businessinsider.com/china-fintech-alipay-wechat (detailing Alipay and WeChat's market dominance).

[101] AlTakarli, *supra* note 90, at 46; Cohen, *supra* note 97.

[102] DeLisle, *supra* note 99.

One year after the novel coronavirus was discovered in its borders, China reported over 97,000 confirmed cases and over 4,600 confirmed deaths due to COVID-19,[103] showing that China's public health measures designed to contain and stop the spread of COVID-19 were extremely effective.[104] Although China's success is enticing, their digital contact tracing model is simply a bad fit for the United States.[105]

China's methods raise privacy concerns that would make adoption in the U.S. difficult since experts believe transparency over the use of such personal data is of the utmost importance.[106] The "health card" was likely integrated into Alipay and WeChat purposefully given their immense popularity;[107] these apps are nearly essential for most basic activities of daily life like going to work, entering the market, or riding on public transit.[108] However, how the

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[103] *Coronavirus Map*, *supra* note 18.

[104] *Coronavirus Map*, *supra* note 18. The rhetoric surrounding the Chinese government's handling of COVID-19 has been extremely diverse in the United States. Many outlets were highly critical of the government's actions in ways that fed into the common "Yellow Peril" narrative. *See, e.g.*, Wenshan Jia & Fangzhu Lu, *US Media's Coverage of China's Handling of COVID-19: Playing the Role of the Fourth Branch of Government or the Fourth Estate?*, 6 GLOBAL MEDIA & CHINA 8, 8-10 (2021) (describing potentially racist and xenophobic trends of U.S. rhetoric regarding the COVID-19 pandemic). This rhetoric seems to have contributed to the increase in anti-Asian rhetoric and hate crimes against people of Asian descent in the U.S. and around the world. *See Covid-19 Fueling Anti-Asian Racism and Xenophobia Worldwide*, HUMAN RIGHTS WATCH (May 12, 2020, 3:12pm), https://www.hrw.org/news/2020/05/12/covid-19-fueling-anti-asian-racism-and-xenophobia-worldwide (discussing how "increases in racist rhetoric have coincided with increases in racist attacks… since February, Asians and people of Asian descent around the world have been subjected to attacks and beatings, violent bullying, threats, racist abuse, and discrimination that appear linked to the pandemic."). This author, as one of many recipients of racism towards the Asian American community before and during the pandemic, highlights that it is extremely important to levy criticisms of the Chinese government's actions towards the government, not its citizenry. The Chinese government's response leaves much to be desired in terms of privacy and human rights. However, the framing behind these critiques should be pointed and thoughtful as to not promote or facilitate further xenophobia towards Asians and Asian Americans, which is often overlooked.

[105] *See generally* Kasra Zarei, *Digital Contact Tracing Efforts Hampered by Privacy Concerns*, GOV'T TECH. (July 8, 2020), https://www.govtech.com/health/Digital-Contact-Tracing-Efforts-Hampered-by-Privacy-Concerns.html (outlining experts' concerns regarding digital contact tracing tools in the United States).

[106] *Id.*

[107] *See* Shirin Ghaffary, *What the U.S. can Learn from Other Countries Using Phones to Track COVID-19*, VOX (Apr. 22, 2020), https://www.vox.com/recode/2020/4/18/21224178/covid-19-tech-tracking-phones-china-singapore-taiwan-korea-google-apple-contact-tracing- (discussing popular private app companies partnering with the Chinese government to create app "add-ons" for tracking COVID-19).

[108] *Id.*

Chinese digital contact tracing system works was not publicly explained.[109] A similarly secretive system in the U.S. would likely exacerbate recent conflicts over civil liberties and privacy, dooming widespread adoption.[110] Instead, the U.S. should seek to emulate a model that boasts greater transparency, and in turn foster public support and comfort.

IV. SOUTH KOREA: THE INFECTIOUS DISEASE CONTROL AND PREVENTION ACT ("IDCPA") POST-MERS AND DIGITAL TRACKING & CONTACT TRACING

As China stamped out COVID-19 cases, similar success was being attained just across the Yellow Sea. South Korea's strong response to the coronavirus pandemic is not due to luck; it is a product of experience.[111] In 2015, South Korea was the unfortunate host to one of the worst outbreaks of MERS in the world.[112] The outbreak started after a South Korean citizen returned from a trip in Bahrain.[113] By the time it was discovered that he was infected with MERS, the patient had already spread the disease to nearly thirty others during his hospital-to-hospital detour.[114] A similar patient, dubbed "Patient 14," infected another eighty-two people.[115] After the outbreak, South Korea took legislative action to ensure it would not repeat past mistakes.[116] The legislature made significant amendments to the IDCPA, "clarifying the roles of national and local government, public health, and industry sectors in the event of another outbreak."[117]

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[109] Paul Mozur et al., *In Coronavirus Fight, China Gives Citizens a Color Code, With Red Flags*, N.Y. TIMES (Mar. 1, 2020), https://www.nytimes.com/2020/03/01/business/china-coronavirus-surveillance.html (last updated July 26, 2021).
[110] *See* Zarei, *supra* note 105 (outlining experts' concerns regarding digital contact tracing tools in the United States).
[111] HyunJung Kim, *South Korea Learned Its Successful COVID-19 Strategy from a Previous Coronavirus Outbreak: MERS*, BULL. ATOMIC SCIENTISTS (Mar. 20, 2020), https://thebulletin.org/2020/03/south-korea-learned-its-successful-covid-19-strategy-from-a-previous-coronavirus-outbreak-mers/.
[112] *Id.*
[113] *Id.*
[114] *Id.*
[115] *Id.*
[116] *See* Landman, *supra* note 28 (discussing legislation promulgated by South Korea in response to COVID-19).
[117] *Id.*; *see also* Infectious Disease Control and Prevention Act, *amended by* Act No. 14286, Dec. 2, 2016 (S. Kor.).

A. South Korea Overhauls the IDCPA In the Wake of MERS

In an attempt to regain public trust, South Korea made sweeping changes to the IDCPA.[118] The amendments provided a legal grounding that facilitated "clear central-local cooperation" and delegated the actual implementation of control measures to local governments.[119] Public health officials also gained the ability to close various facilities and acquire CCTV footage and cell phone records to ascertain individuals' movements while infected.[120] South Korea's digital contact tracing program during the COVID-19 pandemic was made possible by the far-reaching provisions of the IDCPA amendments.[121]

Under article 76-2(1) of the IDCPA, the Health Minister and the Director of the Korean Centers for Disease Control and Prevention ("KCDC") have the authority to force "medical institutions, … corporations, … and individuals to provide information concerning patients and potential patients."[122] Article 76-2(2) adds to this far-reaching power, giving the Health Minister the ability to acquire private data from both confirmed and potential patients without first needing to acquire a warrant.[123]

Without defining what a potential patient is, these provisions have essentially given the South Korean government the ability to extract various forms of highly sensitive, personal data during a public health emergency.[124] Such data could include "surveillance footage, credit card histories, and cellular geolocation data."[125] The government's only burden is to notify the individual and to destroy the information when "the relevant tasks have been

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[118] *See* Derek Thompson, *What's Behind South Korea's COVID-19 Exceptionalism?*, ATLANTIC (May 6, 2020), https://www.theatlantic.com/ideas/archive/2020/05/whats-south-koreas-secret/611215/ (discussing South Korea's experience with MERS informing the nation's COVID-19 response).
[119] Oh, *supra* note 28.
[120] *Id*.
[121] Brian Kim, *Lessons For America: How South Korean Authorities Used Law to Fight the Coronavirus*, LAWFARE (Mar. 16, 2020, 2:39 PM), https://www.lawfareblog.com/lessons-america-how-south-korean-authorities-used-law-fight-coronavirus; *see also* Michael Ahn, *How South Korea Flattened the Coronavirus Curve with Technology*, CONVERSATION (Apr. 21, 2020, 8:47am), https://theconversation.com/how-south-korea-flattened-the-coronavirus-curve-with-technology-136202 (discussing the legal basis for South Korea's use of location information for contact tracing and testing purposes).
[122] Kim, *supra* note 121.
[123] *Id.*
[124] *See id*. (discussing the ability of the South Korean government to collect private data related to location from surveillance footage and telecommunication companies).
[125] *Id.*

completed."[126] Additional provisions require certain public disclosures of information by the Health Minister, including the "movement paths, transportation means . . . and contacts of patients of the infectious disease."[127]

B. Prepared, Efficient, and Informed: The South Korean Response to COVID-19

While ranked only ninth overall and sixth in "rapid response to and mitigation of the spread of an epidemic," South Korea has been ardently preparing for the possibility of a new infectious disease outbreak ever since the 2015 MERS outbreak.[128] The first confirmed case of COVID-19 in South Korea was found on the same day as the first case in the United States, yet South Korea was able slow the spread without resorting to complete lockdowns.[129]

Initial public health efforts focused on rapidly building massive testing centers, establishing over 600 of such centers for COVID-19 testing.[130] In order to minimize the risk of cross contamination and intra-hospital infections, a major problem during the MERS outbreak, the testing centers were placed outside of hospitals and other health facilities.[131] Additionally, "hospital and nonclinical facilities [were used] to care for and isolate . . . infected people."[132] By the end of March, South Korea was able to test as many as 100,000 people per day and provided free testing for those who met certain criteria.[133] As positive tests turned into a need for treatment, precious hospital space was prioritized for high-risk patients—low-risk groups were alternatively sent home to recover in quarantine.[134]

South Korea also emphasized clear top-down communications. Public officials held daily briefings to inform the public about government efforts

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[126] *See id.* (discussing when the government must destroy the information, but not indicating the actual methods that must be used by the South Korean government to destroy the data under this provision).
[127] Kim, *supra* note 121.
[128] *Global Health Security Index*, *supra* note 3; Timothy Huzar, *COVID-19: What Can We Learn From South Korea's Response?*, MEDICALNEWSTODAY (Aug. 18, 2020), https://www.medicalnewstoday.com/articles/covid-19-what-can-we-learn-from-south-koreas-response.
[129] Tim Mullaney, *The US and South Korea Got Coronavirus on the Same Day, But Only America's Economy Has Been Destroyed. This is Why*, INDEP. (Apr. 2, 2020, 6:56pm), https://www.independent.co.uk/voices/coronavirus-us-south-korea-economy-when-cases-map-a9444096.html.
[130] Landman, *supra* note 28.
[131] *Id.*
[132] *Id.*
[133] JaHyun Kang et al., *South Korea's Responses to Stop the COVID-19 Pandemic*, 48 AM. J. INFECTION CONTROL 1080, 1082 (2020) (discussing the diagnostic tests, tracking processes, and other measures South Korea took to mitigate and manage COVID-19).
[134] Kang, *supra* note 133, at 1083.

and the pandemic's status.[135] Briefings previously held by bureaucrats were instead led by scientists to restore the public's confidence in the government's response, which had been severely shaken during the MERS outbreak.[136] This effort blossomed into widespread community cooperation, thought to be "a key ingredient" in the country's comprehensive pandemic response.[137]

To comply with the mandatory disclosure requirements of the IDCPA, some local public officials sent daily movement information of infected individuals via text to local citizens.[138] Despite the privacy concerns associated with such methods, "a social consensus was established" that normalized the sentiment of prioritizing public cooperation during a public health emergency.[139] As a result, South Korea fared much better than other similarly situated countries during the initial months of the pandemic.[140] Thus, as of January 2021, South Korea reported just over 74,000 confirmed cases and 1,328 deaths.[141]

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[135] Landman, *supra* note 28.
[136] *Id.*
[137] *Id.*
[138] Kim, *supra* note 111.
[139] Kang, *supra* note 133, at 1083.
[140] *See* Jim O'Neill, *South Korea's Economy Is Doing Better Than Any Other OECD Country*, WORLD ECON. F. (Aug. 24, 2020), https://www.weforum.org/agenda/2020/08/south-korea-covid19-government-pandemic-response/ (comparing South Korea's economy to other OECD nations); *see also* Ishaan Tharoor, *South Korea's Coronavirus Success Story Underscores How the U.S. Initially Failed*, WASH. POST (Mar. 17, 2020), https://www.washingtonpost.com/world/2020/03/17/south-koreas-coronavirus-success-story-underscores-how-us-initially-failed/ (comparing South Korea's response to Covid-19 to the United States' response); Landman, *supra* note 28 ("It may be tempting to argue that South Korea's response is not culturally portable – that it relies on a high level of public trust and tolerance for both privacy invasion and centralized government[,] . . . . [b]ut these arguments ignore South Korea's own recent experience of public distrust, polarized politics, and fake news, all of which its leaders and people overcame in their response to the coronavirus pandemic.").
[141] *Number of Coronavirus (COVID-19) confirmed and death cases in South Korea from January 20, 2020 to October 6, 2021*, STATISTA, https://www.statista.com/statistics/1098721/south-korea-coronavirus-confirmed-and-death-number/ (measuring cases and deaths on approximately January 21, 2021). Like most countries, South Korea has struggled to grapple with multiple waves of infections. Cases as of early August 2021 totaled 203,926, and deaths totaled 2,106. *See* Hyonhee Shin, *S.Korea COVID-19 Count Spikes Amid Vacations, Spread of New Variants*, REUTERS (Aug. 4, 2021, 2:43 AM EDT), https://www.reuters.com/world/asia-pacific/skorea-covid-19-count-spikes-amid-vacations-spread-new-variants-2021-08-04/ (discussing how the difficulty in accessing a vaccine has likely contributed to new spikes in COVID-19 infections in South Korea); *see*

C. Technological Success: South Korea's Digital Contact Tracing

South Korea was in part able to slow the spread of the pandemic by effectively scaling contact tracing, "a tried-and-true method that epidemiologists have been using for decades."[142] The IDCPA gave the KCDC the authority to collect various forms of electronic data, including GPS location data from phones, in order to track people's recent movements for digital contact tracing efforts.[143] This enabled the KCDC to conduct an incredibly efficient and accurate contact tracing program, resulting in the "rapid identification and isolation . . . of infected people and their close contacts."[144] Due to the aggregation of personal data with camera footage and client interviews, the data used for digital contact tracing was extremely precise.[145] By revolutionizing contact tracing in the digital age, South Korea was able to perform a "thorough epidemiolog[ical] investigation" for every confirmed case, thought to be essential to their success during the initial outbreak of COVID-19.[146]

Consider the following example, which demonstrates the efficacy of South Korea's digital contact tracing capabilities.[147] After multiple cases of COVID-19 were reported at various night clubs, contact tracers discovered that a patron of a night club infected one of their students.[148] This student then infected a taxi-driver who worked as a photographer for a birthday event at a restaurant.[149] By utilizing "surveillance footage and mobile phone records," investigators were able to contact everyone who was present at the restaurant during the birthday party that the taxi-driver had attended.[150] Officials determined that one woman was likely infected at the restaurant and became the subsequent source of another outbreak at the warehouse she worked at—the warehouse employed over 4,000 people.[151] Because of the

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also Hyonhee Shin & Sangmi Cha, *S.Korea Apologises as Moderna Halves August COVID-19 Vaccine Shipments*, REUTERS (Aug. 8, 2021, 9:09 PM), https://www.reuters.com/world/asia-pacific/south-korea-opens-covid-19-vaccine-reservations-all-adults-2021-08-09/ (discussing Moderna vaccine shortages in South Korea).

[142] Aschwanden, *supra* note 82.

[143] Landman, *supra* note 28.

[144] *Id.*

[145] Huzar, *supra* note 128.

[146] Heesu Lee, *The Elite Contact Tracers Show the World How to Beat COVID-19*, BLOOMBERG (July 27, 2020), https://www.bloomberg.com/news/articles/2020-07-25/these-elite-contact-tracers-show-the-world-how-to-beat-covid-19.

[147] *Id.*

[148] Lee, *supra* note 146.

[149] *Id.*

[150] *Id.*

[151] *Id.*

vigorous contact tracing and testing that resulted, the potential warehouse outbreak was limited to only 152 positive cases of the 9,000 people tested.[152]

In addition to using the data to notify close contacts, the government went one step further to enable South Korean citizens to take proactive precautions against possible exposure.[153] To that end, government officials publicized detailed movements of those infected with COVID-19,[154] allowing South Korean citizens to check if the virus had been potentially spread in their area to take necessary precautions.[155]

Furthermore, government officials sent emergency text messages to citizens in their area, warning them of possible exposure.[156] Such an emergency text could reveal one's age, gender, and a "detailed log of their movements down to the minute."[157] Some included CCTV footage and "credit-card transactions, with the time and names of the businesses they visited."[158] In certain circumstances, these texts even conveyed highly detailed and sensitive information, such as whether the infected person was wearing a mask and what rooms the person visited in a building, including the bathroom.[159]

This system of public data disclosure was *the* most transparent and detailed in the world, as other countries opted for contact tracing methods that prioritized privacy.[160] While this amount of disclosure would be alarming to most, the South Korean government believed that transparency was key to gaining the public's trust.[161] Their methods clearly worked, earning praise from the WHO and other experts who claimed that South Korea's digital contact tracing helped to slow the spread and contain the virus within months.[162]

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[152] *Id.*
[153] Huzar, *supra* note 128.
[154] *Id*.
[155] *Id.*
[156] Mark Zastrow, *South Korea Is Reporting Intimate Details of COVID-19 Cases: Has It Helped?*, NATURE (Mar. 18, 2020), https://www.nature.com/articles/d41586-020-00740-y.
[157] *Id.*
[158] *Id.*
[159] *Id.*
[160] *Id.*; *see also Covid-19 Tracing Apps: Ensuring Privacy and Use Across Borders*, EUR. PARLIAMENT (Dec. 1, 2020), https://www.europarl.europa.eu/news/en/headlines/society/20200429STO78174/covid-19-tracing-apps-ensuring-privacy-and-data-protection (discussing various contact tracing applications).
[161] *See* Zastrow, *supra* note 156 (discussing public trust of information about the virus).
[162] *See id.*

V. LEARNING FROM OUR MISTAKES: CO-OPTING THE IDCPA TO BRING U.S. CONTACT TRACING INTO THE DIGITAL AGE

Contact tracing is critical to curb an outbreak of infectious disease, if it is done "quickly and effectively, [sic] and efficiently."[163] Whether the U.S. federal government delegated contact tracing to the states or simply forced the states to pick up the slack, it is clear that the "patchwork" response that ensued hindered the country's ability to combat the COVID-19 pandemic.[164] The absence of a unified contact tracing effort caused unnecessary complications that delayed the country's recovery.[165] While some states took on the brunt of the contact tracing efforts within their own health departments, others partnered with neighboring states or contracted out to third parties.[166] Such a scattered response is ineffectual at best and must change if the U.S. is to properly address future outbreaks of infectious diseases.[167] While privacy advocates endorse decentralized alternatives,

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[163] DeeDee Stiepan, *What Is Contact Tracing, and Why Is It Important in Fight Against COVID-19?*, MAYO CLINIC (Apr. 14, 2020), https://newsnetwork.mayoclinic.org/discussion/what-is-contact-tracing-and-why-is-it-important-in-fight-against-covid-19/. The more transmissible the disease is, the more important effective and efficient contact tracing becomes; *see e.g.*, *Case Investigation and Contact Tracing: Part of a Multipronged Approach to Fight the COVID-19 Pandemic*, CDC (Dec. 3, 2020), https://www.cdc.gov/coronavirus/2019-ncov/php/principles-contact-tracing.html ("Identifying contacts and ensuring they do not interact with others is critical to protect communities from further spread. If communities are unable to effectively isolate patients and ensure contacts can separate themselves from others, rapid community spread of COVID-19 is likely to increase to the point that strict mitigation strategies will again be needed to contain the virus."); *see also* Denise Chow, *Why Scientists are Talking About Viral Load and the Delta Variant*, NBC NEWS (Aug. 7, 2021, 6:01 AM), https://www.nbcnews.com/science/science-news/delta-variant-viral-load-scientists-are-watching-covid-pandemic-rcna1604 ("[W]ith the delta variant, [the detection] window was shortened to four days…The shorter window also makes contact tracing even more of a challenge for public health departments that are already overburdened.").

[164] *See* Jessie Hellmann & Nathaniel Weixel, *Patchwork Approach to Contact Tracing Hampers National Recovery*, HILL (Aug. 30, 2020, 7:00 AM), https://thehill.com/homenews/state-watch/514233-patchwork-approach-to-contact-tracing-hampers-national-recovery (discussing the complication of recovery efforts resulting from states' varied approaches to pandemic response).

[165] *See id.* ("Experts said such a decentralized approach can miss outbreaks if local departments aren't communicating with each other, meaning any data should be public.").

[166] Megan Lent et al., *How States Are Ramping Up Their COVID-19 Contact Tracing Capacity*, NAT'L ACAD. FOR STATE HEALTH POL'Y (June 8, 2020), https://www.nashp.org/how-states-are-ramping-up-their-covid-19-contact-tracing-capacity/.

[167] Higgins-Dunn, *supra* note 26 ("If the country were to experience another pandemic in the future, officials would need to do a better job of responding to the outbreak 'in a coordinated way' rather than allowing disparate responses from different regions of the country, [Dr. Anthony] Fauci said during a hearing."). Digital complements, like the contact tracing apps used by South Korea and Singapore, can significantly support manual contact tracing efforts. Jobie Budd et al., *Digital Technologies in the Public-Health Response to COVID-19*, 26 NATURE MED. 1183, 1188 (2020).

studies question whether widespread adoption is possible in the U.S.[168] To afford the best possible chance at efficacy, the U.S. must act at the federal level to unite public health fronts during times of crisis.[169] Thus, Congress should amend the Public Health Service Act to create a model similar to the South Korean approach and seek to implement a legally authorized and transparent system of digital contact tracing that will operate within existing legal principles and privacy protections.

A. Decentralized Contact Tracing and the Fourth Amendment Challenge

Voluntary, decentralized contact tracing apps have been lauded as a privacy-focused alternative to centralized methods.[170] These apps use Bluetooth to record when two phones are in close proximity, logging the interaction.[171] If one app user tests positive, a message can be sent to their recent contacts to inform them of possible exposure.[172] These decentralized apps are considered safer for users' data because the information is kept on the users' phones instead of on a central server susceptible to a breach.[173]

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[168] Mark Zastrow, *Coronavirus Contact-Tracing Apps: Can They Slow the Spread of COVID-19?*, NATURE (May 19, 2020), https://www.nature.com/articles/d41586-020-01514-2.

[169] Rebecca L. Haffajee & Michelle M. Mello, *Thinking Globally, Acting Locally – The U.S. Response to Covid-19*, 382 NEW ENG. J. MED., May 28, 2020, at e75(1) ("Strong, decisive national action is therefore imperative.").

[170] Cristina Criddle & Leo Kelion, *Coronavirus Contact-Tracing: World Split Between Two Types of App*, BBC (May 7, 2020), https://www.bbc.com/news/technology-52355028 ("Supporters of the decentralised approach say it offers users a higher degree of privacy, protecting them from hackers or the state itself revealing their social contacts."); Natasha Lomas, *EU Privacy Experts Push a Decentralized Approach to COVID-19 Contacts Tracing*, TECH CRUNCH (Apr. 6, 2020), https://techcrunch.com/2020/04/06/eu-privacy-experts-push-a-decentralized-approach-to-covid-19-contacts-tracing/?guccounter=1&guce_referrer=aHR0cHM6Ly93d3cuZ29vZ2xlLmNvbS8&guce_referrer_sig=AQAAABgnkY4KB1Z1AR-HHxjbjaFzB8Lf_wc0DOyU1C58LZRCfOuVxeZtMwnlNdK41saE5AabAU5-1GDNvdoLdLQOrgGbYZr675Q7LPTQpvednHoyNoxHk1NG1el4NTlC9yg9jjFjaHJ2gMRi15XUrAbVKpL8z6cVqLI-dCbfybcAFjkf ("Under [the decentralized] design, there's no requirement for pseudonymized IDs to be centralized, where the pooled data would pose a privacy risk. . . .[Potential threats under the decentralized model] are small and more manageable vs creating centralized pots of data that risk paving the way for 'surveillance creep.'"). *But see* Lucie White & Philippe van Basshuysen, *Privacy Versus Public Health? A Reassessment of Centralised and Decentralised Digital Contact Tracing*, 27 SCI. & ENGINEERING ETHICS Art. No. 23, at 10 (2021) (challenging the notion that decentralized apps are "inherently safe" and promoting a centralized design).

[171] Criddle & Kelion, *supra* note 171.

[172] *Id*.

[173] *Id*.

Singapore successfully deployed a decentralized app, TraceTogether, as one component of its strict contact tracing and quarantining approach to curbing the spread of COVID-19.[174]

However, decentralized contact tracing apps are not without their flaws.[175] Issues such as false positives and false negatives; the failure to take into account personal precautions such as mask wearing; and minor or brief contacts that are unlikely to transmit infectious diseases may cripple the effectiveness of decentralized apps.[176] Decentralization also deprives public health institutions of highly important "anonymous aggregated data."[177] Perhaps more importantly, widespread adoption is absolutely necessary for decentralized apps to work.[178] Experts estimate that an adoption rate of sixty percent or greater is necessary for Bluetooth apps to be effective.[179] Singapore's TraceTogether only achieved a country-wide adoption rate of twenty percent in the early stages of the pandemic.[180] Meanwhile, several states in the U.S. tested decentralized apps and limited results showed woeful

[174] Saheli Roy Choudhury, *Singapore Says It Will Make Its Contact Tracing Tech Freely Available to Developers*, CNBC (Mar. 25, 2020, 2:40 AM), https://www.cnbc.com/2020/03/25/coronavirus-singapore-to-make-contact-tracing-tech-open-source.html.
[175] Zastrow, *supra* note 156.
[176] Jennifer Daskal & Matt Perault, *The Apple-Google Contact Tracing System Won't Work. It Still Deserves Praise.*, SLATE (May 22, 2020, 12:11 PM), https://slate.com/technology/2020/05/apple-google-contact-tracing-app-privacy.html; *See also* Ashkan Soltani et al., *Contact-Tracing Apps are Not a Solution to the COVID-19 Crisis*, BROOKINGS (Apr. 27, 2020), https://www.brookings.edu/techstream/inaccurate-and-insecure-why-contact-tracing-apps-could-be-a-disaster/.
[177] Joseph Duball, *Centralized vs. Decentralized: EU's Contact Tracing Privacy Conundrum*, IAPP (Apr. 28, 2020), https://iapp.org/news/a/centralized-vs-decentralized-eus-contact-tracing-privacy-conundrum/.
[178] Zastrow, *supra* note 168 (explaining that although efficacy of such apps is yet to be proved, "[m]odelling suggests they can help to slow the spread of the virus — but only if enough of the population uses them," and that "a take-up threshold of 60% of the population can bring an outbreak under control").
[179] *Id.*; Daskal & Perault, *supra* note 176.
[180] *See* Sarah Kreps et al., *Contact-Tracing Apps Face Serious Adoption Obstacles*, BROOKINGS (Sept. 11, 2020), https://www.brookings.edu/techstream/contact-tracing-apps-face-serious-adoption-obstacles/.While Singapore's app did reach nearly eighty percent adoption, it did so under coercive government requirements, despite being advertised as optional at the start of the pandemic. *See* Kyra Jasper & Camille Bismonte, *Singapore's Updated TraceTogether Privacy Policy Could Erode Public Trust*, CTR. STRATEGIC INT'L STUDIES (Feb. 17, 2021), (stating the government required a high rate of adoption of TraceTogether for Singapore to enter Phase 3 of its reopening process).

adoption rates.[181] Polling also shows that the U.S. population is relatively averse to voluntarily downloading a contact tracing app.[182]

A mandatory centralized program on the other hand, where the government compels the distribution of location data by third party telecommunication companies, faces another potential hurdle in the form of the Fourth Amendment.[183] Federal contact tracing legislation can be justified under the Commerce Clause, but courts have not yet had the occasion to rule on whether a unilateral centralized collection effort of location data for digital contact tracing programs would violate one's "reasonable expectation of privacy."[184] Such a centralized system would likely implicate *Carpenter v. United States*, a landmark case where the Supreme Court held Fourth Amendment protections apply to historical cell-site location (HCSL) data.[185]

Due to the highly sensitive and intrusive nature of HCSL data, essentially allowing the government to track Carpenter's complete movement history,

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[181] Zastrow, *supra* note 156; Alejandro De La Garza, *Contact Tracing Apps Were Big Tech's Best Idea for Fighting COVID-19. Why Haven't They Helped?* TIME (Nov. 10, 2020, 7:00 AM), https://time.com/5905772/covid-19-contact-tracing-apps/ (explaining how even though Bluetooth based contact tracing apps are available in ten states, "adoption generally remains low").

[182] Kat Jercich, *Survey Says Majority of Americans Won't Use COVID-19 Contact-Tracing Apps*, HEALTHCARE IT NEWS (June 16, 2020), https://www.healthcareitnews.com/news/survey-says-majority-americans-wont-use-covid-19-contact-tracing-apps.

[183] *See* Patrick McKnight, *Could Contact Tracing Technology Violate the Fourth Amendment*, A.B.A. (June 11, 2020), https://www.americanbar.org/groups/business_law/publications/committee_newsletters/cyberspace/2020/202006/contact-tracing/ (discussing government-mandated contact tracing and the Fourth Amendment).

[184] *Id*. The Commerce Clause was the justification of power used to enact the Public Health Service Act, the main source of power for federal disease spread prevention and emergency public health measures. This exercise of Commerce Clause power has not been challenged in court. *See* 42 U.S.C. § 264 (discussing regulations to control communicable diseases); Gonzales v. Raich, 545 U.S. 1, 17 (2005) ("[E]ven if appellee's activity be local and though it may not be regarded as commerce, it may still, whatever its nature, be reached by Congress if it exerts a substantial economic effect on interstate commerce... In this vein, we have reiterated that when 'a general regulatory statute bears a substantial relation to commerce, the *de minimis* character of individual instances arising under that statute is of no consequence.'"); *see also Two Centuries of Law Guide Legal Approach to Modern Pandemic*, A.B.A. (Apr. 2020), https://www.americanbar.org/news/abanews/publications/youraba/2020/youraba-april-2020/law-guides-legal-approach-to-pandemic/ (discussing constitutional authority surrounding emergency public health measures).

[185] Carpenter v. United States, 138 S. Ct. 2206, 2221 (2018); Shane Rogers, *Two Years of Carpenter*, COVINGTON (July 7, 2020), https://www.insideprivacy.com/uncategorized/two-years-of-carpenter/.

the Court in *Carpenter* reasoned that individuals have a legitimate expectation of privacy in such data, and that the application of the third-party doctrine in this specific factual scenario would inappropriately presume that "consumers assume the risk of warrantless government surveillance simply by using technologies that are … increasingly integrated into modern life."[186] *Carpenter* has been less impactful than dissenters originally thought, but the holding has expanded to other similar forms of data such as real-time cell-site location information, and HCSL data covering shorter periods of time.[187]

What is especially troublesome about *Carpenter* is its application to public health and disease control. Typically, the Fourth Amendment requires government searches to be reasonable; i.e., get a warrant.[188] But a warrant is not always required, such as when exigent circumstances exist, an explicit exception carved out by the Court in *Carpenter*.[189] Lower courts have applied the exigent circumstances exception to searches where active danger is involved, such as bomb threats and active shootings.[190] Potentially, such an exception could be expanded to include major public health emergencies like a global pandemic. Where the COVID-19 pandemic produced nearly 363,000 deaths in the U.S. in under a year, the threat of imminent harm is unfathomably greater than anything considered in *Carpenter*, and digital contact tracing for public health emergencies—like pandemics—could fall under this exception.[191]

However, exigent circumstances exceptions are typically very narrowly defined.[192] In the context of law enforcement, there is still a general requirement that the police have probable cause of the activity at issue where exigent circumstances arise.[193] Public health interventions, specifically disease spread prevention, requires constant data analysis and collection, including of asymptomatic individuals where something similar to "probable cause" may be lacking.[194] Thus, application of the exigent circumstances

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[186] Jeewon Kim Serrato et al., *US Supreme Court Expands Digital Privacy Rights in Carpenter v United States*, DATA PROTECTION REP. (June 27, 2018), https://www.dataprotectionreport.com/2018/06/scotus-expands-digital-privacy-rights-carpenter/.
[187] Shane Rogers, *supra* note 185.
[188] Alan Z. Rozenshtein, *Disease Surveillance and the Fourth Amendment*, LAWFARE (Apr. 7, 2020), https://www.lawfareblog.com/disease-surveillance-and-fourth-amendment#.
[189] *Carpenter*, 138 S. Ct. at 2222.
[190] *Id.* at 2223.
[191] *See Carpenter,*138 S. Ct. at 2221; *see also* Bill Chappell, *'Enormous and Tragic': U.S. Has Lost More Than 200,000 People to COVID-19*, NPR (Sept. 22, 2020, 11:39 AM), https://www.npr.org/sections/coronavirus-live-updates/2020/09/22/911934489/enormous-and-tragic-u-s-has-lost-more-than-200-000-people-to-covid-19 (discussing COVID-19 death toll in the United States).
[192] Rozenshtein, *supra* note 188.
[193] *Id.*
[194] *Id.*

exception may be a dead end for federal contact tracing legislation during a pandemic.[195]

A more promising defense lies in the special needs doctrine.[196] The United States Supreme Court has held that, "where a Fourth Amendment intrusion serves special governmental needs, beyond the normal need for law enforcement, it is necessary to balance the individual's privacy expectations against the Government's interests to determine whether it is impractical to require a warrant or some level of individualized suspicion in the particular context."[197]

Courts in the past have held that the prevention of terrorism is a special need that is both immediate and substantial and, therefore, that justifies certain warrantless searches.[198] This justification should be extended to outbreaks of highly infectious diseases. The worst terrorist event in U.S. history, 9/11, claimed nearly 3,000 lives in a single day.[199] The human toll attributable to the unchecked spread of the coronavirus presented (and continues to present via variants like the delta variant) a threat to the public safety that is not only akin to that of a terrorist attack, but far exceeds any and all terrorist attacks that have occurred on U.S. soil.[200] From April through December of 2020, the U.S. experienced the equivalent of between one and

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[195] *Id.*
[196] *Id*.
[197] Nat'l Treasury Employees Union v. Von Raab, 489 U.S. 656, 665-6 (1989); *see also* Griffin v. Wisconsin, 483 U.S. 868, 873 (1987) ("[W]e have permitted exceptions when 'special needs, beyond the normal need for law enforcement, make warrant and probable-cause requirement impracticable.'").
[198] MacWade v. Kelly, 460 F.3d 260, 271 (2d Cir. 2006) (upholding a New York program which installed inspection checkpoints in New York subways to deter and uncover terrorist attacks under the special needs doctrine); United States. v. Hartwell, 436 F.3d 174, 179 (3rd Cir. 2006) (recognizing the need to "prevent terrorist attacks on airplanes" and rejecting a Fourth Amendment claim against airport checkpoint searches).
[199] *US Terrorist Attacks Fast Facts*, CNN (Sept. 2, 2021, 2:51 PM), https://www.cnn.com/2013/04/18/us/u-s-terrorist-attacks-fast-facts/index.html.
[200] *Id.*; *See also COVID-19 Death Data and Resources: Daily Updates of Totals by Week and State*, CTRS. FOR DISEASE CONTROL & PREVENTION (Aug. 27, 2021), https://www.cdc.gov/nchs/nvss/vsrr/covid19/index.htm (reporting COVID-19 death data); Ariana Eunjung Cha, Dan Keating, & Jacqueline Dupree, *U.S. Covid Death Toll Hits 1,500 a Day Amid Delta Scourge*, WASH. POST (Sept. 3, 2021, 11:21 AM), https://www.washingtonpost.com/health/2021/09/03/delta-deaths-us-fourth-wave/ (explaining the rise in deaths alongside the surge of the delta variant and how even after logging over 640,000 deaths, "many experts believe we are not yet at the peak").

seven 9/11 events every week in terms of lives lost.[201] Where the courts have allowed warrantless searches of individuals under the justification of preventing future terrorism, it surely follows that a special need exists for the prevention of the unchecked spread of infectious diseases such as COVID-19.

B. Reinventing the Public Health Service Act for a Modern Pandemic Response

This article proposes that additional provisions be added to the Public Health Service Act that would allow the CDC to collect location data and assist state Departments of Health to create a digital contact tracing system. These additional provisions aim to provide transparency and privacy protections for the limited use of individual's location data. The proposed additions to 42 U.S.C. § 264, which shall be inserted after existing subsection (d), shall read as follows:[202]

> § 264. Regulations and *permitted actions* to control communicable diseases[203]
>
> (e) Request for de-identified location data
>
> (1) The Surgeon General, with the approval of the Secretary, during a national state of emergency declared in response to an outbreak of a communicable disease as specified by executive order of the President pursuant to subsection (b), may instruct the Director of the Centers for Disease Control and Prevention, in order to prevent the transmission or spread of such a communicable disease from one State or possession into any other State or possession, to collect the location data of all individuals in any of the fifty States and District of Columbia. The Director may order the heads of telecommunications companies in the fifty States and

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[201] *See COVID-19 Death Data and Resources: Daily Updates of Totals by Week and State*, CTRS. FOR DISEASE CONTROL & PREVENTION (Aug. 27, 2021), https://www.cdc.gov/nchs/nvss/vsrr/covid19/index.htm (During this time, the CDC reported a weekly *low* of 3,000 deaths, the first week of this period, and a weekly *high* of 21,000 deaths. The percentage of COVID-19 deaths of expected deaths (as a percentage of all cause deaths) is also provided. These numbers indicate "All Deaths involving COVID-19", but the table also provides numbers regarding deaths involving COVID-19 and pneumonia (*see* Table 1, columns one and two between 3/28/2020 and 12/26/2020, and columns 3, 4, and 6)).

[202] The proposed amendment would start as the new subsection (e) of the statute and end as the new subsection (i).

[203] 42 U.S.C. § 264 ("*permitted actions*" [emphasis added] has also been appended to the name of the section).

District of Columbia to provide the cell-site location data ("location data") of all individuals and customers as reasonably necessary under this subsection.[204]

(2) Any and all location data collected at the request of the Director, provided by telecommunications companies, shall be de-identified to the fullest extent possible. De-identification of the location data shall be the responsibility of the telecommunications companies.

(3) For the purposes of this subsection, the term "de-identify" means to remove personal identifiers from a set of data such as, but not limited to, the name, age, phone number, email address, social security number, Internet Protocol (IP) addresses, medical record numbers, and biometric identifiers.[205]

(f) Assisting State digital contact tracing efforts

(1) For the purpose of preventing the transmission or spread of a communicable disease from one State or possession into any other State or possession, the Director may provide the de-identified location data collected under subsection (e) to a State's Department of Health for the purpose of supplementing manual contact tracing with a digital contact tracing system for those infected or reasonably believed to be infected.

(2) The Centers for Disease Control and Prevention may not use or share this data for any purpose other than to collect and redistribute it to State Departments of Health for digital contact tracing programs.

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[204] One note of importance regarding this section – the CDC Director may collect the location data of all individuals *as reasonably necessary*. This implies that if an outbreak is highly localized and warrants the collection of location data for contact tracing, it would be improper for the CDC Director to collect the location data of a separate locality where disease outbreak is of no current concern.

[205] Telecommunication companies de-identifying location data should seek to use the HIPAA Privacy Rule's "Safe Harbor" method as a guide for the types of identifiers to be removed from the data set. As many identifiers as possible should be removed from this list to protect privacy. Additionally, it would be wise to also use the expert determination method found under § 164.514 of the HIPAA Privacy Rule which applies statistical or scientific principles to ensure the risk of reidentification is sufficiently small. *See Guidance Regarding Methods for De-Identification of Protected Health Information in Accordance with the Health Insurance Portability and Accountability Act (HIPAA) Privacy Rule*, U.S. DEPT. HEALTH & HUM. SERVS., https://www.hhs.gov/hipaa/for-professionals/privacy/special-topics/de-identification/index.html#rationale (Nov. 6, 2015) (explaining HIPAA privacy rule's de-identification standards).

(3) Telecommunications companies shall be responsible for re-identifying location data provided under this subsection. Telecommunications companies shall only re-identify the location data for a State Department of Health and only for the express purpose of digital contact tracing.[206]
(4) The federal government shall provide the reasonably necessary funding to States, as determined by the Director, that choose to use the location data provided under this subsection for digital contact tracing, for associated costs necessary to receive, store, use, and destroy such data.
(5) Any State Department of Health that chooses to use location data provided under this subsection shall not use such data for any purpose besides digital contact tracing of persons infected or reasonably believed to be infected with a communicable disease. The State Department of Health shall also not transfer or share the data with any other government agency, business, or individual unrelated to the digital contact tracing program. The State Department of Health shall not make any location data publicly available or accessible and shall take all possible precautions to protect any location data.
(6) Any State Department of Health that chooses to use location data provided under this subsection shall provide notice to any affected individual that their location data is being used for digital contact tracing. Upon completion of contact tracing for an individual, the State Department of Health shall destroy any and all location data pertaining to the individual within seven (7) days.
(7) Upon notice by the Director or upon the end of the state of emergency required under subsection (e), the State Department of Health shall destroy all location data provided under this subsection within seven (7) days.
(8) Upon notice of a State's failure to abide by their obligations under this subsection, the Director shall cease the provision of any location data and related

[206] Under this provision, telecommunication companies cannot re-identify the data for the federal government. The deidentification for the state government is only for the Department of Health and *only* for the purpose of use in a digital contact tracing program during an outbreak of an infectious disease. While telecommunication companies may be tempted to share the location information with other private companies, what the companies choose to do with the data with entities other than state and federal governments, or their own personal use of the data, is beyond the scope of this amendment and this article.

funding as provided under this subsection unless strict compliance can be reasonably assured.

(g) Initial collection, maintenance, and destruction of location data
  (1) Upon the initial request by the Director under subsection (e), telecommunications companies shall provide the Director the location data of all individuals and customers for the fourteen (14) days prior to the request. Until the state of emergency ceases or the Director makes clear that the location data is no longer needed, telecommunications companies shall continue to provide updated location data every three (3) days.
  (2) The Centers for Disease Control and Prevention shall, for the duration of the state of emergency, on a regular basis, destroy any location data collected under subsection (e) that is older than fourteen (14) days.
  (3) Upon the decision of the Director, or upon the end of the national state of emergency, the Director shall order the complete destruction of all location information collected under subsection (e) within seven (7) days.

(h) Civil action for impermissible conduct
Any individual may recover damages in the amount of $10,000, for each violation, from any involved party for the purposeful, knowing, reckless, or negligent improper de-identification, use, transfer, or failure to destroy their location data within seven (7) days, as specified under subsections (e), (f), or (g).

(i) Preemption
Except as otherwise provided, subsections (e), (f), (g), and/or (h) shall supersede any and all State laws insofar as they may now or hereafter relate to the ability of the federal or a state government to obtain and distribute location data within a state to prevent the transmission or spread of a communicable disease from one State or possession into any other State or possession.

As discussed above, this legislation relies on the Commerce Clause, the existing justification for the Public Health Service Act.[207] The argument rests

[207] As an amendment to the Public Health Service Act, this legislation would use the same justification, the Commerce Clause. In *Gonzales v. Raich*, the Supreme Court held that even local, non-commercial activity could be regulated by federal statute under the Commerce Clause so long as the statute "bears a substantial relation to commerce." 545 U.S. 1, 17 (2005). *See also Two Centuries of Law Guide Legal Approach to Modern Pandemic*, *supra* note 177 (describing the legal justification of the Public Health Service Act as coming from

on the hypothetical situation where the unchecked spread of a communicable disease within a state would necessarily have a substantial impact on interstate commerce as individuals freely move between the states.[208] This hypothetical has been perfectly demonstrated by the coronavirus pandemic, where the unchecked spread of COVID-19 within states has caused various economic shutdowns that have had an enormous effect on interstate commerce.[209]

The goal of the amendment is simple, to provide a legally authorized and transparent method for the federal government to assist state digital contact tracing efforts. While heavily inspired by the South Korean IDCPA, the amendment seeks to provide key protections for individual privacy which are lacking in the IDCPA.[210] Subsection (e) of the proposed amendment, which gives the CDC the ability to request location information from telecommunications companies, is a direct correlate to article 76-2(2) of the IDCPA.[211] Under the IDCPA, the KCDC requests the location information from the police, an important step that this amendment purposefully omits in order to protect privacy and address concerns over unrestricted police access to location data.[212]

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the Commerce Clause); *Legal Authorities for Isolation and Quarantine*, *supra* note 41 ("The federal government derives its authority for isolation and quarantine from the Commerce Clause of the U.S. Constitution.").

[208] *See* Gonzales v. Raich, 545 U.S. 1, 17 (2005) (holding that intrastate and non-commercial activities are subject to the Commerce Clause if they have a substantial effect on interstate commerce).

[209] *See* Rosie Perper et al., *More than Half of the US Population is Now Under Orders to Stay Home – Here's a List of Coronavirus Lockdowns in US States and Cities*, BUS. INSIDER (Mar. 31, 2020, 11:57 PM), https://www.businessinsider.com/states-cities-shutting-down-bars-restaurants-concerts-curfew-2020-3 (reporting on nation-wide shut down orders); *see also Coronavirus: US Economy Sees Sharpest Contraction in Decades*, BBC NEWS (July 30, 2020), https://www.bbc.com/news/business-53574953 ("The US economy shrank at a 32.9% annual rate between April and June as the country grappled with lockdowns and spending cutbacks during the pandemic.").

[210] *See* Yasheng Huang et al., *How Digital Contact Tracing Slowed Covid-19 in East Asia*, HARV. BUS. REV. (Apr. 15, 2020), https://hbr.org/2020/04/how-digital-contact-tracing-slowed-covid-19-in-east-asia ("There is likely a fundamental conflict between [East Asia's technocratic approach] and deeply entrenched Western liberal values, such as the expectation of privacy, consent, and the sanctity of individual rights.").

[211] *See* Infectious Disease Control and Prevention Act, *supra* note 117, art. 76-2(2) (discussing the need for location information to prevent the transmission of disease).

[212] *Id.*; *see also* DANIEL KAHN GILLMOR, PRINCIPLES FOR TECHNOLOGY-ASSISTED CONTACT-TRACING (2020). ("[T]here should be legal, procedural, and technical safeguards to prevent law enforcement agencies from accessing [location data], combined with mechanisms to detect such access, and clear, enforceable penalties for doing so."). Under subsection (h) of the proposed amendment, the police would constitute an "involved party" subject to civil liability for the purposeful or knowingly unlawful receipt of any location data under this amendment.

Subsection (e) also provides a narrower scope than existing law regarding federal quarantine.[213] The federal power here is limited to the duration of a national state of emergency in response to a communicable disease.[214] Additionally, de-identifying the location data provides further privacy protections for individuals, unlike the IDCPA, which allows for the synthetization of multiple types of personal information and no mandate to de-identify it.[215]

Under subsection (f) of the proposed amendment, the CDC gains the ability to share this de-identified location data with State Departments of Health, drawing on article 76-2(3) of the IDCPA.[216] Subsection (f) also provides substantial limits on both the federal and state government's ability to use or share the location data with other parties, which are strengthened by the need for the State Department of Health to have the telecommunications companies re-identify the data. The telecommunication companies are also limited to re-identifying the data only for the State Department of Health's use in digital contact tracing. States are further incentivized to oblige by their statutory duty by a threatened loss of *new* funding designed to pass constitutional muster.[217] With public health resources already scarce, federal

[213] 42 C.F.R. § 70.6(a) (2017).
[214] *See supra* Section IV.B ("The Surgeon General, with the approval of the Secretary, during a national state of emergency declared in response to an outbreak of a communicable disease as specified by executive order of the President pursuant to section (b), may instruct the Director of the Centers for Disease Control and Prevention …").
[215] GILLMOR, *supra* note 212, at 6.
[216] *See* Infectious Disease Control and Prevention Act, *supra* note 117, art. 76-2(3) (discussing the Minister of Health and Welfare's ability to provide information to the heads of agencies).
[217] *See* South Dakota v. Dole, 483 U.S. 203, 206-207 (1987) ("Congress may attach conditions on the receipt of federal funds …[but] it must do so unambiguously, enabling the States to exercise their choice knowingly, cognizant of the consequences of their participation; and that conditions on federal grants must be related to a national concern…"). Dole's holding is limited in the sense that conditional funding may not be used to impose substantial new conditions—that change the nature of previous conditioned funds—on existing funding; *see also* Nat'l Fed'n of Indep. Bus. v. Sebelius, 567 U.S. 519, 588 (2012) ("Congress may offer the States grants and require the States to comply with accompanying conditions, but the States must have a genuine choice whether to accept the offer. The States are given no such choice in this case: They must either accept a basic change in Medicaid, or risk losing all Medicaid funding."). Since previous funding is not at issue, Dole controls here.

funding in exchange for compliance will be an irresistible carrot dangling from the federal stick.[218]

Subsection (f) also provides a statutory requirement of notice to the individual whose location data is used, mirroring article 76-2(5) of the IDCPA while omitting the publicization requirement found under article 34-2, which led to the area wide text-blasts with personal information.[219] Requiring states to delete data after its use ensures that data minimization is maintained after the data has left the federal government's hands.[220]

The issue of data being "accidentally" kept in federal servers is addressed under subsection (g) and is in direct response to concerns arising from the discovery that South Korea had kept patient data from the 2015 MERS outbreak.[221] Additionally, the provision adds a clear end date to prevent a perpetual emergency paradox and creates a schedule for the regular destruction of the data so that only the data that is most relevant to the epidemiological event is accessible, another limitation not found in the IDCPA.[222]

Possibly the greatest incentive for all parties to oblige by their statutory duties under the proposed amendment is the imposition of civil remedies under subsection (h). The goal of such a provision is to not only encourage compliance with a perennial "big brother"—here taking the form of the U.S. population rather than the government—but also to provide peace of mind and a viable remedy for each and every person whose personal data may be used for public health.

Finally, the proposed amendment provides an express preemption provision. Individual states, especially in the wake of the pandemic, may be quick to propose laws more stringent than baseline federal privacy laws such

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[218] *See* Dan Goldberg & Alice M. Ollstein, *A Dangerous New Chapter of the Outbreak: Every State for Itself*, POLITICO (July 14, 2020), https://www.politico.com/news/2020/07/14/states-look-to-trump-for-a-national-plan-to-fight-coronavirus-361906 ("Cash-strapped cities and states trying to create their own testing, tracing and public awareness [programs] from scratch are desperate for federal support... 'The federal government's efforts range from a little bit of backup to not even being present.'").

[219] Infectious Disease Control and Prevention Act, *supra* note 117, art. 76-2(5), 34-2; *see also* Zastrow, *supra* note 156 (discussing the advantages and disadvantages of collecting location data).

[220] GILLMOR, *supra* note 212, at 8.

[221] All Things Considered, *South Korea Admits Keeping Personal Data of 2015 MERS Outbreak Patients*, NPR, (June 23, 2020), https://www.npr.org/2020/06/23/882481377/south-korea-admits-keeping-personal-data-of-2015-mers-outbreak-patients.

[222] Infectious Disease Control and Prevention Act, *supra* note 117, art. 76-2(4).

as HIPAA.[223] One example is the California Consumer Privacy Act of 2018, which gives consumers in the state of California the right to request that certain businesses delete any information collected about the consumer.[224] While states were relatively slow to adopt digital contact tracing during the COVID-19 pandemic, future efforts may be further hindered by state privacy laws.[225] The inclusion of an express preemption provision is based on the necessity to circumvent these protections in limited times of dire need in the name of public health.[226]

VI. CONCLUSION

Mere months before the SARS-CoV-2 virus was discovered, the U.S. was thought best prepared to respond to an outbreak of a highly infectious disease.[227] However, with the benefit of hindsight, it is clear that the country failed to take the steps needed to mitigate the spread of the virus.[228] In the future, the U.S. cannot rely on haphazard mitigation measures until a viable

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[223] *See Health Privacy: HIPAA Basics*, PRIVACY RIGHTS CLEARINGHOUSE (2015), https://privacyrights.org/consumer-guides/health-privacy-hipaa-basics (discussing the basics of HIPAA, the Health Insurance Portability and Accountability Act, "a federal law that provides baseline privacy and security standards for medical information"); *see* Paige Smith & Chris Marr, *As Offices Reopen, State Laws Thread Worker Privacy and Safety*, BL (July 21, 2021, 4:11 AM), https://news.bloomberglaw.com/daily-labor-report/as-offices-reopen-state-laws-thread-worker-privacy-and-safety (detailing state laws protecting worker privacy during the pandemic); *see also* Jake Holland, *State Privacy Bills Reemerge as Momentum Grows Nationwide*, BL (Feb. 16, 2021, 4:01 AM), https://news.bloomberglaw.com/privacy-and-data-security/state-privacy-bills-reemerge-as-momentum-grows-nationwide ("State privacy legislation is likely to get a boost from the public's heightened interest in privacy due to the pandemic. . . .The pandemic has spurred the public's interest in privacy, and that could translate into more momentum at the state and federal levels. . . .").

[224] *Digital Contact Tracing and Data Protection Law*, CONG. RSCH. SERV. (2020), https://fas.org/sgp/crs/misc/R46542.pdf.

[225] Zarei, *supra* note 105, at 3.

[226] The preemption provision is primarily concerned with preempting conflicting state laws. Other laws, such as the HIPAA Privacy Rule, already allow certain disclosures that would encompass the provisions of this amendment. The HIPAA Privacy Rule allows covered entities to disclose protected health information (which can include information about location) "to public health authorities authorized by law to collect or receive such information for preventing or controlling disease, injury, or disability to public health." *Summary of the HIPAA Privacy Rule*, DEP'T HEALTH & HUM. SERVS., https://www.hhs.gov/hipaa/for-professionals/privacy/laws-regulations/index.html (last reviewed July 26, 2013).

[227] GLOB. HEALTH SEC. INDEX, *supra* note 3, at 20.

[228] Ed Yong, *How the Pandemic Defeated America*, ATLANTIC (Sept. 2020), https://www.theatlantic.com/magazine/archive/2020/09/coronavirus-american-failure/614191/.

vaccine is produced, especially given the prevalence of vaccine hesitancy spurred by misinformation.[229] Since the next "once in a century" pandemic is likely right around the corner, the U.S. should use the COVID-19 pandemic as an opportunity to reflect on and improve the existing legal paradigms that shape pandemic response.[230]

South Korea is the perfect role model.[231] After the MERS outbreak in 2015, South Korean legislators radically changed their laws, clarifying the federal government's role in pandemic response and enabling the federal government to better support the state and local governments implementing public health interventions.[232] The U.S. must follow suit and bring public

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[229] Michael Daly et al., *Public Trust and Willingness to Vaccinate Against COVID-19 in the US From October 14, 2020, to March 29, 2021*, 325 JAMA 2397 (2021) (detailing how despite a decrease in vaccine hesitancy to start 2021, "estimates of vaccine hesitancy remained high, especially among young adults"); *see* Sahil Loomba et al., *Measuring the Impact of COVID-19 Vaccine Misinformation on Vaccination Intent In the UK and USA*, 5 NATURE HUM. BEHAV. 337 (2021) (describing how "exposure to misinformation lowers individuals' intent to vaccinate … and lowers their altruistic intent to vaccinate to protect others). The threat of vaccine misinformation is demonstrably worse in the digital age. High-profile skeptics like Tucker Carlson reach millions of viewers daily with selectively picked phrases and statistics that cast fear, uncertainty, and doubt on vaccine efficacy or the purpose of vaccination campaigns. *See* Gilad Edelman, *Let's Keep the Vaccine Misinformation Problem In Perspective*, WIRED (July 28, 2021, 7:00 AM), https://www.wired.com/story/lets-keep-vaccine-misinformation-problem-in-perspective/ (explaining how skeptics like Tucker Carlson "skirt the scientific question entirely in favor of ranting about how the government's vaccine push is really about social control"); *see* Olga Khazan, *The Tucker Carlson Fans Who Got Vaxxed*, ATLANTIC (Aug. 9, 2021), https://www.theatlantic.com/politics/archive/2021/08/why-so-many-republicans-wont-get-vaccinated/619659/ (detailing some of the misleading information that Carlson has spread on his show, such as the idea that "[Congressional] [m]embers and staffers would be required to get a shot that the CDC told us [] doesn't work very well, and … whose long-term effects cannot be known" despite the CDC never making such a statement). For an interesting investigation into how conservative YouTube channels—such as Steven Crowder's 'Louder with Crowder,' and PragerU—may have substantially increased the spread of COVID-19 misinformation and decreased trust in public health experts (which is associated with vaccine hesitancy), *see* Michael J. Layer, Conservative Media's Coverage of Coronavirus on YouTube: A Qualitative Analysis of Media Effects on Consumers (2020) (M.A. dissertation, University of South Carolina) (on file with University Libraries, University of South Carolina) (studying the role of conservative new media, such as YouTube, in "shifting [] audience's attention" away from public health and science and "toward external enemies, fueled by division and contempt").

[230] David Murdoch, *The Next Once-a-Century Pandemic is Coming Sooner Than You Think – But COVID-19 Can Help Us Get Ready*, CONVERSATION (June 14, 2020, 3:56 PM), https://theconversation.com/the-next-once-a-century-pandemic-is-coming-sooner-than-you-think-but-covid-19-can-help-us-get-ready-139976.

[231] Landman, *supra* note 28.

[232] *Id.*; *See also* Mark Ryan, *In Defence of Digital Contact-Tracing: Human Rights, South Korea and Covid-19*, 16 INT'L J. PERVASIVE COMPUTING AND COMMC'NS. 383, 384 (2020) ("Local governments, in cooperation with the KCDC, quickly identified the movement path of the confirmed cases [for contact tracing].").

health response into the digital age. If the government is to use location data at all, it must be strictly monitored and controlled.[233] The amendment to the Public Health Service Act that this article proposes would do just that, creating a highly controlled, centralized system designed to supplement state contact tracing efforts. If future diseases spread with the same rapidity as COVID-19 and its subsequent variants, manual contact tracing as it stands will likely be unable to scale at the necessary pace.[234] Digital supplements (being significantly more scalable) can help identify "contacts that are otherwise untraceable manually, such as encounters with strangers in public transport or a coffee shop."[235] While digital contact tracing "is not a panacea," it can fill a necessary complementary role in our public health response.[236] A role-clarifying, top-down system that utilizes the technological tools available to maximize public health response would provide the U.S. federal government with an effective framework to support its state and local governments, protect individual privacy, and most importantly, save lives.

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[233] Location data is already being used behind closed doors, without general oversight. *See* Kim Lyons, *US Government Officials Using Mobile Ad Location Data to Study Coronavirus Spread*, VERGE (Mar. 29, 2020, 8:57 AM), https://www.theverge.com/2020/3/29/21198158/us-government-mobile-ad-location-data-coronavirus ("US government officials are using cellphone location data from the mobile ad industry—not data from the carriers themselves—to track Americans' movements during the coronavirus outbreak, the Wall Street Journal reports."). If location is to be used to augment public health response, any procedures must provide proper safeguards and remedies. The amendment offered by this article is one step in that direction.

[234] Dyani Lewis, *Why Many Countries Failed at COVID Contact-Tracing – But Some Got It Right*, NATURE (Dec. 14, 2020), https://www.nature.com/articles/d41586-020-03518-4 ("The reasons for the failures are complex and systemic…Wealthy nations have struggled to hire enough contact-tracers [or] marshal them efficiently… Measures that work include tracing multiple layers of contacts, investigating outbreak clusters, and ... [t]echnology might help, too: from software that streamlines conventional contact-tracing efforts, to smartphone apps…").

[235] *See* Muhammad Shahroz et al., *COVID-19 Digital Contact Tracing Applications and Techniques: A Review Post Initial Deployments*, 5 TRANS. ENG'G 1, 8 (2021) (describing the benefits of digital contact tracing).

[236] *Id.*