Committee on Transportation and Infrastructure
U.S. House of Representatives
Washington DC 20515

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March 2, 2021

SUMMARY OF SUBJECT MATTER

TO: Members, Subcommittee on Aviation
FROM: Staff, Subcommittee on Aviation
RE: Subcommittee Hearing on "COVID-19's Effects on U.S. Aviation and the Flight Path to Recovery"

PURPOSE

The Subcommittee on Aviation will meet on Tuesday, March 2, 2021, at 10:00 a.m. (EST) in 2167 Rayburn House Office Building and virtually via Cisco WebEx to hold a hearing titled, "COVID-19's Effects on U.S. Aviation and the Flight Path to Recovery." The purpose of the hearing is to examine the continuing effects of the COVID-19 pandemic on the U.S. aerospace industry, what the industry will look like post-pandemic, and how best to aid in the recovery. The Subcommittee will receive testimony from representatives of the Government Accountability Office (GAO); Airlines for America (A4A); Air Line Pilots Association (ALPA); American Association of Airport Executives (AAAE); General Aviation Manufacturers Association (GAMA); and National Business Aviation Association (NBAA).

BACKGROUND

I. COVID-19 TRANSMISSIBILITY

The Centers for Disease Control and Prevention (CDC) states that COVID-19 is most commonly spread during close contact; individuals who are physically near (within 6 feet) a person with COVID-19 or have direct contact with that person are at greatest risk of infection.[1] Some infections can be spread by exposure to the virus through small droplets and particles that can linger in the air for minutes to hours. These particles can infect people who are further than 6 feet away from an infected individual or after that individual has left the space. This kind of spread is referred

[1] How COVID-19 Spreads, Ctr. for Disease Control (Updated: Oct. 28, 2020) *available at* https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/how-covid-spreads.html.

to as *airborne transmission*.[2] Although less common, COVID-19 can also be spread when a person touches a contaminated surface where respiratory droplets have landed, and then touches their own mouth, nose, or eyes.[3]

In September 2020, the CDC reported that it had investigated 1,600 cases of passengers flying commercial airlines while COVID-19 positive and found nearly 11,000 people may have been exposed; however, due to incomplete contact tracing data, the CDC was unable to confirm any case of viral transmission.[4] However, in March 2020, a separate CDC analysis found that a woman travelling from London to Vietnam, a more than 10-hour flight, infected 15 other passengers on a commercial flight prior to airline mask mandates.[5] Other studies have demonstrated the potential for the spread of coronavirus during long duration flights as well.[6]

As such, the CDC recommends people delay travel and stay home as much as possible during the pandemic, to protect themselves and others from COVID-19.[7] Consequently, the aviation industry has been severely affected by the significant decline in air travel.

II. COVID-19 EFFECTS ON THE AEROSPACE INDUSTRY

The COVID-19 pandemic has had a devastating effect on the U.S. aerospace industry. Demand for commercial air travel plummeted last spring as the coronavirus cases surged, and it continues to be far below typical levels. The most recent airline traffic data showed a 61 percent decrease in passenger traffic for November 2020 over November 2019.[8] In January 2021, total traveler throughput at Transportation Security Administration (TSA) checkpoints dropped by, on average, more than 60 percent compared to the same period in 2020.[9] The International Air Transport Association (IATA) estimated in October 2020 that global airlines were burning more than $13 billion in cash each month.[10] IATA also predicts the airline industry will not fully recover until 2024 at the earliest.[11] Aerospace manufacturing has also been hit hard; by the end of 2020, it was expected that global civil aircraft production would drop by nearly 50 percent, affecting the entire supply chain and repair infrastructure.[12]

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[2] *Id.*
[3] *Id.*
[4] Joseph Guzman, *CDC says nearly 11,000 people may have been exposed to COVID-19 on flights*, The Hill, Sept. 22, 2020, *available at* https://thehill.com/changing-america/well-being/longevity/517566-cdc-says-nearly-11000-people-may-have-been-exposed-to.
[5] Khanh N, Thai P, Quach H, Thi N, Dinh P, Duong T, et al., *Transmission of SARS-CoV 2 During Long-Haul Flight*, Vol. 26 No. 11 Emerging Infectious Diseases 2617-2624 (Nov. 2020) *available at* https://dx.doi.org/10.3201/eid2611.203299.
[6] Benedict Carey, *One 18-Hour Flight, Four Coronavirus Infections*, N.Y. Times, Jan.7, 2021 (Updated: Jan. 26, 2021), *available at* https://www.nytimes.com/2021/01/07/health/coronavirus-airline-passengers-outbreak.html.
[7] Traveling During COVID-19, Ctr. for Disease Control (Updated: Feb. 16, 2021), *available at* https://www.cdc.gov/coronavirus/2019-ncov/travelers/travel-during-covid19.html.
[8] U.S. Airlines November 2020 Passengers Decreased 61% from November 2019 (Preliminary), Bureau of Transp. Statistics, Jan. 12, 2021, *available at* https://www.bts.gov/newsroom/us-airlines-november-2020-passengers-decreased-61-november-2019-preliminary.
[9] TSA checkpoint travel numbers (current year(s) versus prior year/same weekday), Transp. Sec. Admin. (Feb. 19, 2021), *available at* https://www.tsa.gov/coronavirus/passenger-throughput.
[10] *Airlines continue to burn through cash,* Int'l Air Transport Assoc., Oct. 8, 2020, *available at* https://airlines.iata.org/news/airlines-continue-to-burn-through-cash.
[11] *Recovery Delayed as International Travel Remains Locked Down,* Int'l Air Transport Assoc., July 28, 2020, *available at* https://airlines.iata.org/news/airlines-continue-to-burn-through-cash.
[12] Eric Fanning, *It's time for Congress to act: Save jobs and stabilize the aerospace industry*, The Hill, Nov. 16, 2020, *available at https://thehill.com/blogs/congress-blog/economy-budget/526245-its-time-for-congress-to-act-save-jobs-and-stabilize-the?rl=1*.

The reduction in U.S. air travel has also reduced the flow of aviation-related excise tax revenues into the Airport and Airway Trust Fund (AATF), the major source of funding for Federal aviation programs, including airport infrastructure grants, aviation safety programs, and air traffic control operations.[13] The *Coronavirus Aid, Relief, and Economic Security (CARES) Act* (Pub. L. 116-136) suspended the collection of most aviation excise taxes through calendar year 2020.[14] Due to the suspension of such taxes, the balance of the Federal Aviation Administration's (FAA's) AATF rapidly declined during the pandemic, according to FAA staff, including a revised projection of $571 million in downward Treasury adjustments and a projected $2.4 billion reduction to the Trust Fund cash balance.[15] Therefore, the *Continuing Appropriations Act, 2021 and Other Extensions Act* (Pub. L. 116-159), included a $14 billion general fund transfer to shore up the AATF to ensure funding stability for Federal aviation programs.[16]

III. COVID-19 EFFECTS ON THE AEROSPACE WORKFORCE

More than 750,000 workers are employed by U.S. passenger and cargo airlines,[17] with a large number of these workers facing the prospect of furlough as a result of substantially reduced demand. According to recent industry analysis, an estimated 100,000 aerospace manufacturing workers have already lost their jobs nationwide and 220,000 additional jobs are at risk of furlough.[18]

A. Payroll Support Program

Recognizing the immediate need to save airline jobs, Congress passed the *CARES Act*, which included the Payroll Support Program (PSP)—a $32 billion program to preserve the jobs of employees of U.S. airlines and certain airline contractors through September 30, 2020.[19] The assistance provided was conditioned on companies not involuntarily furloughing or reducing the pay rates or benefits of workers, refraining from stock buybacks, limiting executive compensation, and other conditions. Every major airline signed an agreement with the U.S. Treasury to receive PSP grants.[20]

Unfortunately, airlines struggled to remain solvent in the face of declining revenues, furloughing tens of thousands of flight attendants, pilots, and other workers after the PSP program and the prohibition on involuntary furloughs expired on September 30, 2020. While a second round of PSP funding was approved in December 2020 as part of a larger COVID-19 relief package, with the condition that air carriers recall any furloughed employees, the process to recall such employees

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[13] Airport and Airway Trust Fund (AATF) Fact Sheet, FAA (Updated: April 2020), *available at* https://www.faa.gov/about/budget/aatf/media/AATF_Fact_Sheet.pdf.
[14] Coronavirus Aid, Relief, and Economic Security (CARES) Act, Pub. L. No. 116-136 § 4007 (2020).
[15] FAA briefing for staff of the Committee on Transportation and Infrastructure, April 21, 2020.
[16] Continuing Appropriations Act, 2021 and Other Extensions Act, Pub. L. 116-159 (2020).
[17] Airline Employment Data by Month, Bureau of Transp. Statistics, (Visited: May 29, 2020), *available at* https://www.transtats.bts.gov/Employment/.
[18] David Shepardson and Eric M. Johnson, *U.S. lawmakers consider aid for aerospace workers in COVID-19 bill*, Reuters, Dec. 18, 2020.
[19] CARES Act, Pub. L. No. 116-136 § 4112-20 (2020).
[20] Payroll Support Program Payments, U.S. Treas., (Updated: Feb. 9, 2021) *available at* https://home.treasury.gov/policy-issues/cares/preserving-jobs-for-american-industry/payroll-support-program-payments.

is proved extraordinarily complex and expensive.[21] The recent December 2020 PSP extension provided a total of $15 billion in payroll grant funding for airlines and certain airline contractors through March 31, 2021.[22]

B. Worker Health and Safety

Aviation workers face significant risks of being exposed to COVID-19. Throughout the pandemic, flight attendants, pilots, gate agents, and service workers have had to deal with some travelers who refuse to follow airline mask requirements, have not been screened for the virus, and are unable to follow social distancing precautions both in the air and on the ground.[23] There have been numerous reports of airline passengers verbally abusing and taunting flight attendants as they have tried to enforce airline mask requirements and of passengers exploiting food and drink mask exceptions for prolonged periods to avoid mask wearing.[24] Moreover, these disturbances have safety implications beyond even spreading the virus, with at least one report of an airline captain being so distracted by a mask-related problem with a passenger that the captain mistakenly descended to the wrong altitude.[25] While an executive order now mandates passengers and crew wear face coverings in airports and on flights, including during check-in and boarding,[26] many personnel still have concerns regarding their safety, including mask enforcement, contact tracing, and whether they can miss work without repercussions.[27]

IV. CONGRESSIONAL RESPONSE

A. The *CARES Act*

In response to the pandemic, on March 27, 2020, Congress passed the bipartisan *CARES* Act.[28] This sweeping law provided economy-wide relief to individuals and businesses. In addition to authorizing the aforementioned PSP, providing $32 billion in payroll assistance to U.S. airlines and certain contractors conditioned on certain employer assurances, the *CARES Act* authorized $29 billion in Federal loans to airlines and a separate loan fund designed for businesses critical to maintaining national security.[29]

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[21] Consolidated Appropriations Act, 2021, Pub. L. 116-260 (2020); CNBC, *Airlines Begin Complex Process of Calling Back More Than 32,000 Furloughed Workers* (Visited: January 15, 2021) *available at* https://www.cnbc.com/2020/12/23/coronavirus-stimulus-gives-airlines-15-billion-to-call-back-furloughed-workers.html.

[22] Consolidated Appropriations Act, 2021, Pub. L. 116-260 (2020).

[23] Harmeet Kaur and Natalia V. Osipova, *For flight attendants, getting people to wear masks is now one of the hardest parts of the job*, CNN, Jan. 21, 2021, *available at* https://www.cnn.com/travel/article/flight-attendants-unruly-passengers-masks-trnd/index.html.

[24] Michael Laris, *Sneezed on, cussed at, ignored: Airline workers battle mask resistance with scant governmental backup*, Wash. Post, January 1, 2021, *available at* https://www.washingtonpost.com/local/trafficandcommuting/coronavirus-mask-airplanes/2020/12/31/09c12d52-4565-11eb-975c-d17b8815a66d_story.html.

[25] *Id.*

[26] Exec. Order No. 13998, 86 FR 7205, Jan. 21, 2021.

[27] Johanna Read, *'It's definitely not easy.' How flight attendants are handling travel during COVID-19.*, Nat'l Geographic, Jan. 26, 2021 *available at* https://www.nationalgeographic.com/travel/article/heres-what-flight-attendants-want-you-to-know-about-flying-during-covid.

[28] CARES Act, Pub. L. No. 116-136 (2020).

[29] *Id.* at § 4003.

The *CARES Act* also provided $10 billion in emergency aid for airports to address the effects of the pandemic.[30] In exchange for receiving these Federal funds, small, medium, and large hub airports were required to retain at least 90 percent of their workforce as of March 27, 2020, through December 31, 2020. The measure also provided $100 million directly to general aviation airports and $500 million to help airports cover the non-Federal cost share of any Airport Improvement Program (AIP) grant received in fiscal year 2020.[31]

B. The Consolidated Appropriations Act, 2021

On December 27, 2020, the bipartisan *Consolidated Appropriations Act of 2021* (Pub. L. 116-260) became law.[32] In the Act, the PSP was extended, authorizing an additional $16 billion for the program—$15 billion for air carriers and $1 billion for air carrier contractors. As such, it extended many of the conditions on employer acceptance of financial assistance through March 31, 2021.[33] The Act also included measures for airports similar to those included the *CARES Act*, providing $2 billion in emergency aid for airports to help them prepare for, mitigate, and respond to the effects of the COVID-19 pandemic.[34] Finally, the Act expanded the eligibility of the loan fund designed for businesses critical to maintaining national security created under the *CARES Act* to specifically include aerospace suppliers.[35]

C. Budget Reconciliation for Fiscal Year 2021

The reconciliation bill currently moving through the House would provide $15 billion to extend the PSP to fund payroll support for airline workers and related contract workers.[36] As with the original PSP authorization and its first extension, this second extension would prohibit air carriers and contractors from involuntarily furloughing or reducing pay rates or benefits of their workers until September 30, 2021, or on the date on which the assistance they receive is exhausted, whichever is later.[37] The extension includes similar restrictions on executive compensation and capital distributions, such as dividend payments, and taxpayer protections, as provided in the original program.[38]

The bill also provides a total of $8 billion in emergency aid for primary airports, non-primary airports, and airport concessions.[39] Of this amount, $6.4 billion would be distributed to primary airports for costs related to operations, personnel, debt service payments, and combating the spread of pathogens at airports, among other things.[40] In exchange for receiving these Federal funds, small, medium, and large hub airports are required to continue to retain at least 90 percent of their workforce as of March 27, 2020, through the end of this fiscal year.[41] Additionally, it would provide

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[30] *Id.* at tit. XII, 134 Stat. 596.
[31] *Id.*
[32] Consolidated Appropriations Act, 2021, Pub. L. 116-260 (2020).
[33] *Id.*
[34] *Id.*
[35] *Id.*
[36] The American Rescue Plan of 2021, H.R. 1319, 117th Cong. (2021)..
[37] *Id.*
[38] *Id.*
[39] *Id.*
[40] *Id.*
[41] *Id.*

$100 million to non-primary airports to help address costs related to the current pandemic and more than $600 million to help ensure all airports receive a 100 percent Federal cost share for any AIP grant awarded to them in fiscal year 2021.[42] The measure would allocate $800 million to airport concessions at primary airports in the form of relief from rent and minimum annual guarantee obligations.[43] Of this $800 million allocation, 80 percent would be targeted toward small businesses and minority-owned firms and 20 percent would be provided to large concessionaires.[44]

Finally, the bill establishes a $3 billion payroll support program for aerospace manufacturers. Administered by the U.S. Department of Transportation (DOT), it would provide a 50 percent Federal share to eligible U.S. aerospace manufacturing companies—those that involuntarily furloughed at least 10 percent of their workforce or experienced at least a 15 percent decline in revenues in 2020 and have a majority of their aviation employees based in the United States—to help cover the wages, salaries, and benefits of manufacturing employees most at risk of being furloughed and to facilitate the recall or rehire of such employees furloughed during the COVID-19 pandemic.[45] The assistance is also specifically targeted at workers making less than $200,000 annually. Moreover, while receiving Federal funds, a manufacturer recipient is prohibited from conducting involuntary furloughs or reducing the pay rates and benefits of its eligible employee groups.

V. COMBATING COVID-19 TRANSMISSION IN AIR TRAVEL—CURRENT AND PROPOSED MITIGATION STRATEGIES TO INCREASE SAFETY AND RECOVERY

A. Voluntary Symptom Self-Screening

People infected with COVID-19 should not travel.[46] Since the easiest way to suspect a COVID-19 infection is with active symptoms, the CDC and airlines currently ask passengers not to fly if they have symptoms. Unfortunately, a recent CDC study modeled that 59% of COVID-19 transmission came from people who were asymptomatic.[47] As such, self-screening is just the first of many methods used to ensure public safety.

B. Masks and Face Coverings

Wearing masks on any high-density public transport, if worn correctly, substantially reduces transmission. Masks protect both the wearer and others by containing the illness at its source and, if it is a specific type of mask (e.g., N95), by filtering the air the person breathes in. While the efficacy of the mask greatly depends on material, fit, and construction,[48] masks and face coverings in the

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[42] *Id.*
[43] *Id.*
[44] *Id.*
[45] *Id.*
[46] Traveling During COVID-19, Ctr. for Disease Control (Updated: Feb. 16, 2021), *available at* https://www.cdc.gov/coronavirus/2019-ncov/travelers/travel-during-covid19.html.
[47] Ben Guarino, *People without symptoms spread virus in more than half of cases, CDC model finds*, Wash. Post, Jan. 7, 2021, *available at https://www.washingtonpost.com/science/2021/01/07/covid-asymptomatic-spread/*. Please note, this article is referring to the general population and is not specific to airline passengers.
[48] Abrar A. Chughtai, Holly Seale, and C. Raina Macintyre, *Effectiveness of Cloth Masks for Protection Against Severe Acute Respiratory Syndrome Coronavirus 2,* Vol. 26 No. 10 Emerging Infectious Diseases 3201 (Oct. 2020) *available at* https://wwwnc.cdc.gov/eid/article/26/10/20-0948_article.

aggregate have proven to be one of the most cost effective and minimally intrusive measures to mitigate transmission.[49]

Initially, the FAA declined to require airlines to block seats or to require passengers to wear masks on board commercial aircraft. However, many major airlines began independently requiring passengers and flight attendants to wear masks or other protective face coverings on board their aircraft. Unfortunately, once in the air, most airlines relied heavily on customer compliance rather than enforcement.[50] Seeing the need for stronger enforcement in view of belligerent passengers, airlines began independently banning passengers for non-compliance. In October 2020, it was reported that more than 900 passengers had been banned from airlines for refusing to wear a mask.[51] On January 13, 2021, citing increased disruptive behavior by airplane passengers stemming from refusal to wear masks, the FAA issued a zero-tolerance policy by which the agency committed to taking enforcement action against unruly passengers, including fines up to $35,000 and possible jail time, as opposed to first using counseling and warnings.[52] The policy is currently in effect through March 30, 2021.

On January 21, 2021, President Biden issued an Executive Order (EO) mandating masks to be worn on all forms of public transportation, including in airports and on commercial airplanes.[53] The EO confers, upon agency heads, significant discretion to authorize broad exceptions to the mask requirement.[54] The TSA has since announced that it will begin fining travelers in the United States who refuse to wear a mask in airports. The first time they fail to do so, the fine will be $250. Repeated offenses will be fines of up to $1,500. Based on substantial aggravating or mitigating factors, the TSA may seek a sanction amount that falls outside these ranges.[55] All passengers over the age of two must wear a mask. Passengers who refuse to wear a mask at the security check-in area will not be allowed to enter the secure area of the airport, including the terminal and gate area.[56] Airlines have also revised their language on masks to reflect CDC requirements and have pushed such information out to passengers through a variety of electronic communications.[57] The DOT also issued a Notice of Enforcement on February 5, 2021, to remind U.S. and foreign air carriers of their

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[49] Deborah Netburn, *New forecasts show why masks are the easiest — and cheapest — way to save U.S. lives*, L.A. Times, Oct. 23, 2020 *available at* https://www.latimes.com/science/story/2020-10-23/if-americans-would-just-wear-masks-we-could-save-more-than-671-000-lives.

[50] Pete Muntean, *Airlines Are Having Trouble Enforcing Their Face Mask Policies*, CNN, May 14, 2020, *available at* https://www.cnn.com/2020/05/13/business/airlines-mask-policy-enforcement/index.html.

[51] Shannon McMahon, *Delta, United and Alaska Airlines have banned more than 900 passengers for not wearing masks*, Wash. Post, Oct. 26, 2020, *available at* https://www.washingtonpost.com/travel/2020/10/26/airlines-banning-passengers-masks/.

[52] David Shepardson, *Exclusive: U.S. FAA chief orders 'zero tolerance' for disruptive airline passengers, possibly jail*, Reuters, January 13, 2021, *available at* https://www.reuters.com/article/us-usa-election-aviation-exclusive/exclusive-u-s-faa-chief-orders-zero-tolerance-for-disruptive-airline-passengers-possibly-jail-idUSKBN29I302; See also FAA, *Press Release – Federal Aviation Administration Adopts Stricter Unruly Passenger Policy*, January 13, 2021, *available at* https://www.faa.gov/news/press_releases/news_story.cfm?newsId=25621.

[53] Exec. Order No. 13998, 86 FR 7205, Jan. 21, 2021.

[54] *Id.*

[55] Press Release, *TSA to implement Executive Order regarding face masks at airport security checkpoints and throughout the transportation network*, Transp. Sec. Admin. (Jan 31, 2021), *available at* https://www.tsa.gov/news/press/releases/2021/01/31/tsa-implement-executive-order-regarding-face-masks-airport-security.

[56] *Id.*

[57] Donald Wood, *New Government Mask Mandate for Airlines Now in Effect*, Travel Pulse, Feb. 2, 2021, *available at:* https://www.travelpulse.com/news/airlines/new-government-mask-mandate-for-airlines-now-in-effect.html.

legal obligation to accommodate passengers with disabilities when implementing the Federal mask mandate.[58] According to a briefing from the TSA, passengers have nearly universally complied with this mandate with little to zero prompting from TSA officers.[59]

C. Cleaning

Both public and private transportation services have explored innovations in disinfection and U.S. airlines have enhanced their airplane cleaning protocols since the onset of the pandemic. For example, United Airlines has used an antimicrobial coating called "Zoono Microbe Shield" that inhibits the growth of microbes by forming a long-lasting bond with surfaces, such as seats, trays, tables, and armrests.[60] JetBlue has experimented with a machine from Honeywell that uses UV light to disinfect cabins.[61] Nonetheless, the CDC still recommends frequent hand washing and use of hand sanitizer containing at least 60 percent alcohol.[62] To help airplane passengers adhere to this recommendation, the TSA allows passengers to carry on one container of hand sanitizer up to 12 ounces.[63]

D. Airflow and Filtration

If a virus is airborne—i.e., transmitted by aerosolized small droplets— intra-cabin airflow plays a critical role in its spread or lack thereof. For instance, while the cross-sectional nature of circulation in the cabin (see image) limits airflow up and down the aisle, studies have shown that air is still shared a few rows to the front and back.[64] Moreover, gaspers (personal air vents in the passenger service unit above your head) have the potential to drastically increase the possibility of

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[58] *Notice of Enforcement Policy: Accommodation by Carriers of Persons with Disabilities Who Are Unable to Wear or Safely Wear Masks While on Commercial Aircraft*, Dept. of Transp. (Feb. 5, 2021), *available at: https://www.transportation.gov/sites/dot.gov/files/2021-02/Mask%20Notice%20Issued%20on%20Feb%205.pdf*.

[59] TSA briefing for Members of the Subcommittee on Transportation and Maritime Security, Committee on Homeland Security and some Members of the Committee on Transportation and Infrastructure, February 17, 2021.

[60] Press Release, *United Adds Antimicrobial Spray to Already Extensive Cabin-Cleaning Measures*, United Airlines, September 16, 2020, *available at* https://hub.united.com/2020-09-16-united-adds-antimicrobial-spray-to-already-extensive-cabin-cleaning-measures-2647678535.html.

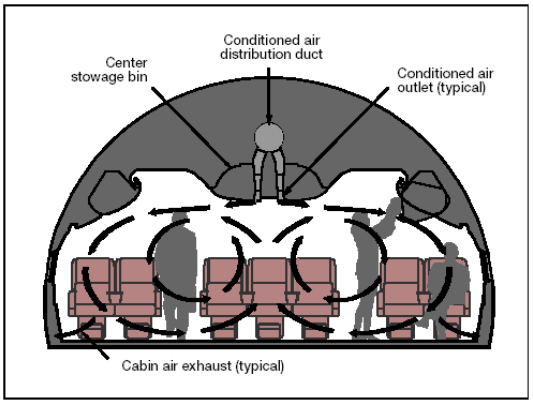
[61] Cailey Rizzo, *JetBlue Is Testing a Giant UV Light Machine That Could Disinfect Plane Cabins in Under 10 Minutes,* Travel + Leisure, July 30, 2020, *available at* https://www.travelandleisure.com/airlines-airports/jetblue/jetblue-airplane-cabin-disinfectant-machine-coronavirus.

[62] How to Protect Yourself & Others, Ctr. for Disease Control (Updated: December 31, 2020) *available at* https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/prevention.html.

[63] Hand Sanitizers, Transp. Sec. Admin. (Visited: Feb. 21, 2021) *available at* https://www.tsa.gov/travel/security-screening/whatcanibring/items/hand-sanitizers.

[64] Chen, McDevitt, et al., *Infectious Disease Transmission in Airliner Cabins,* Report No. RITE-ACER-CoE-2012-01, National Air Transportation Center of Excellence Research in the Intermodal Transport Environment (RITE), (Feb. 22, 2012) *available at https://www.faa.gov/data_research/research/med_humanfacs/cer/media/infectiousdiseasetransmission.pdf*; *see also* Walkinshaw, *Germs, Ventilation, Occupancy Density and Exposure Duration: A Thirteen Setting Pathogen Inhalation Comparison*, American Society of Heating, Refrigerating and Air-Conditioning Engineers Indoor (ASHRAE) IAQ Conference Papers (2010); *see also* Walkinshaw, *A Brief Introduction To Passenger Aircraft Cabin Air Quality*, ASHRAE Journal, Oct. 2020 *available at* https://www.ashrae.org/file%20library/technical%20resources/covid-19/12-19_walkinshaw.pdf.

droplet spread.[65] While there have been a few recent studies on the topic, including one that was conducted jointly by the Department of Defense and United Airlines, most have not considered variables such as passenger movement, eating and drinking, lavatory use, and humidity. [66]



Most commercial airliners use high-efficiency particulate air (HEPA) filters and have a high air-exchange rate, including a mix of outdoor and recirculated air. Such HEPA filters play a critical role in reducing risks as they can filter out almost all airborne droplets that contain COVID-19.[67] However, they are also limited. For instance, a HEPA filter affords no protection to an individual if they are exposed to the virus prior to it settling or reaching the circulation intake.[68] As such, airborne particles generated by sneezing or coughing, remain in the cabin air until they enter the ventilation system and are effectively removed by HEPA filters or settle on common surfaces, creating potential exposure for disease transmission.[69]

E. Contact Tracing

Contact tracing is a resource intensive exercise dependent upon individuals with the right public health skills and access to laboratory testing facilities. However, it has been shown to be an effective measure to help control the spread of infectious diseases, including COVID-19.[70] It is also an incredibly useful scientific tool to help public health professionals learn how the disease spreads, in what environments or work places, and what factors, or lack of protective measures, may help to augment the spread of the disease to others.

A study by researchers at Harvard and Stanford Universities, using a mathematical model, found that the most effective contact tracing programs could reduce the overall transmissions of COVID-19 infections by almost half.[71] The United States does not have a cohesive Federal contact

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[65] You, Chen, Lin et al., *Investigating the impact of gaspers on cabin air quality in commercial airliners with a hybrid turbulence model*, Vol. 111 Building and Environment, 110-122 (Jan. 2017); *see also* Darrah, Bennet, Jones et al., *Infectious Passenger Isolation System for Aircraft,* Vol. 125 Pt. 2 ASHRAE Transactions 288-296 (2020) *available at* https://www.ashrae.org/file%20library/technical%20resources/covid-19/kc021.pdf.

[66] Gio Benitez and Sam Sweeney, *Risk of COVID-19 exposure on planes 'virtually nonexistent' when masked, study shows*, abcNews, Oct. 15, 2020, *available at* https://abcnews.go.com/Politics/risk-covid-19-exposure-planes-virtually-nonexistent-masked/story?id=73616599.

[67] Johanna Read, *How clean is the air on planes?* Nat'l Geographic, Aug. 28, 2020 *available at* https://www.nationalgeographic.com/travel/article/how-clean-is-the-air-on-your-airplane-coronavirus-cvd.

[68] Tim Heffernan, *Can HEPA Air Purifiers Capture the Coronovirus, N.Y. Times*, Updated: Nov. 18, 2020 *available at* https://www.nytimes.com/wirecutter/blog/can-hepa-air-purifiers-capture-coronavirus/.

[69] ACRP Report 91, *Infectious Disease Mitigation in Airports and on Aircraft,* Nat'l Acad. of Sci., 2013 *available at* http://nap.edu/22512.

[70] Matt J. Keeling, T. Deirdre Hollingsworth, and Jonathan M. Read, *Efficacy of contact tracing for the containment of the 2019 novel coronavirus (COVID-19)*, J. of Epidemiology and Cmty. Health, October 2020, *available at* https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7307459/#:~:text=In%20general%2C%20contact%20tracing%20is,transmission%20from%20the%20secondary%20cases.

[71] Alyssa Bilinski, MS, Farzad Mostashari, MD and Joshua A. Salomon, PhD, *Modeling Contact Tracing Strategies for COVID-19 in the Context of Relaxed Physical Distancing Measures*, JAMA Network Open (Research Letter/Public Health), August 21, 2020, *available at* https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2769618.

tracing program or plan.[72] Instead, the Federal response has largely left COVID-19 contact tracing efforts up to State and local officials.

In February, Airlines for America (A4A) announced that its major members would all begin voluntarily collecting information for contact tracing to turn over to the CDC.[73] While, Delta and United have been engaging in this practice since December, American, Southwest, Alaska, JetBlue, and Hawaiian will now also ask passengers to make their names, phone numbers, email, and physical addresses available to the CDC.[74]

F. National Aviation Preparedness Plan

Following the Ebola outbreak in 2014, the GAO recommended the U.S. Department of Transportation (DOT) develop a plan to limit the spread of pandemics through the aviation system. Specifically, the GAO issued following recommendation:

> To help improve the U.S. aviation sector's preparedness for future communicable disease threats from abroad, the Secretary of Transportation should work with relevant stakeholders, such as the Department of Health and Human Services, to develop a national aviation-preparedness plan for communicable disease outbreaks. Such a plan could establish a mechanism for coordination between the aviation and public health sectors and provides clear and transparent planning assumptions for a variety of types and levels of communicable disease threats.[75]

According to the GAO, the DOT has not implemented this recommendation. The GAO found that had the DOT implemented such a plan, it "could have improved coordination between public-health and aviation sectors during COVID-19 to address issues like passenger screening."[76] Moreover, the GAO found that since the time the 2015 report was published, the FAA had sponsored limited research on disease transmission within airplanes and airports.[77]

G. Testing Requirements

On January 21, 2021, the Biden Administration issued an Executive Order which requires travelers seeking to enter the United States from a foreign country to show proof of a recent

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[72] Beth Duff-Brown, *Model shows potential contact tracing impact against COVID-19*, News Center, Stanford Univ. School of Med., Aug. 24, 2020, *available at* http://med.stanford.edu/news/all-news/2020/08/model-shows-potential-contact-tracing-impact-against-covid-19.html.

[73] Press Release, *Major U.S. Airlines Announce Support for International Contact Tracing Program*, Airlines for America (Feb. 19, 2021) *available at* https://www.airlines.org/news/major-u-s-airlines-announce-support-for-international-contact-tracing-program/.

[74] *Airlines plan to ask passengers for contact-tracing details,* Associated Press, Feb. 22, 2021, *available at* https://apnews.com/article/public-health-airlines-united-states-coronavirus-pandemic-edb4fdb3997a07ab02ad35c347cb0839.

[75] Gov't Accountability Office, *Air Travel and Communicable Diseases: Comprehensive Federal Plan Needed for U.S. Aviation System's Preparedness* 43, Rpt. No. GAO-16-127 (December 2015), *available at* https://www.gao.gov/assets/680/674224.pdf.

[76] Gov't Accountability Office, *Air Travel and Communicable Diseases: Status of Research Efforts and Action Still Needed to Develop Federal Preparedness Plan,* Rpt. No. GAO-20-655T (June 2020), *available at* https://www.gao.gov/assets/710/707757.pdf.

[77] *Id.*

negative COVID-19 test prior to entry; and comply with other applicable CDC guidelines concerning international travel, including recommended periods of self-quarantine or self-isolation after entry into the United States.[78] Other countries have put in place similar requirements.[79]

In February 2021, there were media reports that the Biden Administration was considering mandating a pre-departure testing requirement of all passengers on domestic commercial flights.[80] It is estimated that such a requirement would amount to approximately 900,000 tests per day (based on current passenger levels), or 27 million more tests per month,[81] requiring a massive scale-up in testing capacity. Moreover, many experts agree that mitigation measures such as masks, hand sanitizers, social distancing, and proper ventilation would still need to be required, regardless of whether a passenger tests negative.[82] As such, numerous organizations voiced their concerns that this could effectively lead to a ban on domestic air travel, devastating U.S. airlines, with limited benefit.[83] On February 12, 2021, the Biden Administration announced that it would not be pursuing such a requirement at this time.[84]

In a limited capacity, some airports and air carriers are pushing a scaled-down rollout of testing between specific destinations. This concept, otherwise known as "safe travel corridors", would require passengers to take rapid COVID-19 tests before certain flights in exchange for removing the destination country's travel restrictions and quarantine requirements.[85]

H. Vaccinations

When Ebola exploded across West Africa in 2014, it took more than five years to get a vaccine approved.[86] In 2020, "…researchers were able to develop multiple protective coronavirus vaccines and get them authori[z]ed within 12 months of the virus being discovered."[87] On December 11, 2020, the U.S. Food and Drug Administration (FDA) issued the first emergency use

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[78] Exec. Order No. 13998, 86 FR 7205, Jan. 21, 2021.
[79] COVID-19 Country Specific Information, U.S. Dept. of State – Bureau of Consular Affairs (Visited: Feb, 24, 2021) *available at*: https://travel.state.gov/content/travel/en/traveladvisories/COVID-19-Country-Specific-Information.html.
[80] Marnie Hunter, *US considers Covid-19 testing requirement for domestic air travel*, CNN, Feb. 9 2021 *available at* https://www.cnn.com/travel/article/us-domestic-covid-19-test-considered-air-travel/index.html.
[81] TSA checkpoint travel numbers (current year(s) versus prior year/same weekday), Transp. Sec. Admin. (Feb. 19, 2021), *available at* https://www.tsa.gov/coronavirus/passenger-throughput.
[82] Holly Yan, *Don't get a false sense of security with Covid-19 testing. Here's why you can test negative but still be infected and contagious*, CNN, Nov. 3, 2020, *available at* https://www.cnn.com/2020/11/03/health/covid-test-negative-contagious-wellness/index.html.
[83] Airlines for America Letter to Mr. Jeffrey Zients, COVID-19 Recovery Team Coordinator, The White House, *A4A Joins Coalition in Letter to White House COVID-19 Recovery Team* (Jan. 29, 2021) *available at* https://www.airlines.org/news/a4a-joins-coalition-in-letter-to-white-house-covid-19-recovery-team/.
[84] Alison Sider and Sabrina Siddiqui, *Covid-19 Testing Won't Be Required Before Domestic Flights, CDC Says*, Wall St. J., Feb. 12, 2021, *available at* https://www.wsj.com/articles/covid-19-testing-wont-be-required-before-domestic-flights-cdc-says-11613183533.
[85] Hira Humayun, *Delta's new travel corridor offers quarantine-free access to the Netherlands*, CNN, Dec. 15, 2020 *available at* https://www.cnn.com/travel/article/delta-air-lines-atlanta-amsterdam-corridor/index.html.
[86] Olivia Willis, *How COVID-19 vaccines were developed in record time, without compromising safety*, ABC Health & Wellbeing, Jan. 28, 2021, *available at* https://www.abc.net.au/news/health/2021-01-29/how-covid-vaccines-were-developed-in-record-time/13096682.
[87] *Id.*

authorization (EUA) for a vaccine for COVID-19 in individuals 16 years of age and older.[88] The EUA allows the Pfizer-BioNTech COVID-19 Vaccine to be distributed in the United States. A week later, on December 18, 2020, the FDA issued an EUA for the Moderna COVID-19 vaccine for use in individuals 18 years of age and older.[89] On February 24, 2021, the FDA announced that the Johnson & Johnson COVID-19 vaccine had met the requirements for emergency use authorization.[90] All three vaccines were developed and FDA approved in record time.

According to the Department of Health and Human Services, "vaccines will help prevent the spread of COVID-19 and bring this pandemic to an end."[91] COVID-19 vaccine availability is increasing rapidly in the United States; as of February 24th, more than 13 percent of Americans had received at least one COVID-19 vaccine dose.[92] President Biden recently pledged to make 600 million vaccine doses available by the end of July; this is effectively enough to vaccinate every American. [93]

Airlines and analysts anticipate that increased vaccination rates will release "pent up demand" for domestic air travel in 2021.[94] The belief is that the availability of vaccines and testing will give air travelers comfort again.[95] Another analyst estimates that while travel was down by 50 percent last summer, this summer there will be a 70-80 percent return in leisure travel.[96] As airline travel returns, hospitality, tourism, airports, and aerospace manufacturing, maintenance, and repair industries will also benefit.

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[88] Pfizer-BioNTech COVID-19 Vaccine, Food and Drug Admin.(Visited: Feb. 24, 2021) *available at* https://www.fda.gov/emergency-preparedness-and-response/coronavirus-disease-2019-covid-19/pfizer-biontech-covid-19-vaccine.

[89] Moderna COVID-19 Vaccine, Food and Drug Admin. (Visited: Feb. 24, 2021) *available at* https://www.fda.gov/emergency-preparedness-and-response/coronavirus-disease-2019-covid-19/moderna-covid-19-vaccine.

[90] Jen Christensen, *FDA says Johnson & Johnson Covid-19 vaccine meets requirements for emergency use authorization*, CNN, Feb. 24, 2021, *available at* https://www.cnn.com/2021/02/24/health/johnson-vaccine-fda-analysis/index.html.

[91] COVID-19 Vaccines, Dept. of Health and Human Services (Updated: Feb. 2021) *available at* https://www.hhs.gov/coronavirus/covid-19-vaccines/index.html.

[92] Covid-19 Tracker, Bloomberg (Visited: Feb. 24, 2021) *available at* https://www.bloomberg.com/graphics/covid-vaccine-tracker-global-distribution/.

[93] Zeke Miller Jonathan Lemire, Biden says US is securing 600 million vaccine doses by July, Associated Press, Feb. 11, 2021 *available at* https://apnews.com/article/vaccine-biden-600-million-doses-july-b7845a7d0f709199265d9243598b629e.

[94] Mina Kaji and Amanda Maile, *Experts say vaccine rollout, cheap fares may lead to more rapid air travel rebound*, ABC News, January 12, 2021 *available at* https://abcnews.go.com/Politics/experts-vaccine-rollout-cheap-fares-lead-rapid-air/story?id=75202169.

[95] *Id.*

[96] *Id.*

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