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THE LEGAL CHALLENGES OF INTERNATIONAL SUBORBITAL FLIGHTS: A BILATERAL SOLUTION

ARAM DANIEL KERKONIAN*
NIVEDITA RAJU**

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I. INTRODUCTION

SUBORBITAL FLIGHTS HAVE BEEN characterized as vehicles with the potential to rapidly transport people and cargo great distances while also offering relatively inexpensive “access to space.”¹ Given their unique technological design, however, suborbital flights evade regulation under a specific regime due to overlapping subsets of international law. Suborbital vehicles spend time in airspace (requiring the application of air law) as well as outer space (requiring the application of space law). This Article proposes a solution to the regulation of suborbital flights in a manner that bridges both aviation and space law.

A. TECHNICAL BACKGROUND OF SUBORBITAL FLIGHTS

A suborbital flight can be best described by what it is not, namely, an orbital flight. The differences between suborbital and orbital flights are the duration, angle, and speed with which a given space object enters, traverses, and exits what is considered “outer space.”² Orbital flights are characterized by a space object escaping Earth’s gravity and reaching a speed great enough to ensure that it “falls past” Earth as it rotates around the planet.³ A suborbital flight is one where a space object es-

¹ Jeff Foust, *What is the Future for Commercial Suborbital Spaceflight?*, SPACE REV. (Apr. 6, 2020), <https://www.thespacereview.com/article/3915/1> [<https://perma.cc/5CJE-XELS>].

² For a discussion on what amounts to “outer space,” see *infra* Part III.A.

³ Adam Mann, *What’s the Difference Between Orbital and Suborbital Spaceflight?*, SPACE.COM (Feb. 10, 2020), <https://www.space.com/suborbital-orbital-flight.html>

capable Earth's gravity but does not reach a sufficient speed to outrun the planet and therefore re-enters the atmosphere before it has made a complete rotation around Earth.⁴ Suborbital flights, therefore, require enough energy to reach outer space but not so much as to sustain an orbit (or multiple orbits) around the planet.⁵ The International Civil Aviation Organization (ICAO) presented a concept paper at a United Nations Office for Outer Space Affairs event in 2005 (discussed further below) that defined suborbital flights as "a flight up to a very high altitude which does not involve sending the vehicle into orbit."⁶ The global community distinguishes suborbital flights from orbital flights in that the former "are not intended to, and never actually enter, Earth orbit."⁷

Suborbital flights are thus meant to provide access to outer space without completing an orbit of the planet. One of the advantages of a suborbital flight is that it requires neither the same amount of fuel to reach and maintain an orbital velocity nor the technology to withstand the rigors of a high-speed re-entry through the Earth's atmosphere (depending on the height of the suborbital flight and in comparison to an orbital flight), thereby vastly reducing the cost of accessing space.⁸ As a result of this reduced cost, suborbital flights are expected to become accessible to more consumers.⁹

[<https://perma.cc/8W5R-G6BU>]; David Doody, *Orbiting a Real Planet*, in *BASICS OF SPACE FLIGHT* ch. 3, at 4 (Blaine Baggett ed., 2017) (ebook), <https://solarsystem.nasa.gov/basics/chapter3-4/> [<https://perma.cc/Y5UX-UCEG?type=image>].

⁴ See, e.g., Mann, *supra* note 3; Sara M. Langston, *First Space Tourists Will Face Big Risks, As Private Companies Gear Up for Paid Suborbital Flights*, *CONVERSATION* (June 11, 2020), <https://theconversation.com/first-space-tourists-will-face-big-risks-as-private-companies-gear-up-for-paid-suborbital-flights-138766> [<https://perma.cc/H6J2-T4HD>].

⁵ See, e.g., Mann, *supra* note 3; Langston, *supra* note 4.

⁶ Int'l Civil Aviation Org. [ICAO], *Working Paper, Concept of Sub-Orbital Flights*, at 1.2, ICAO Doc. C-WP/12436 (May 30, 2005) [hereinafter *ICAO Concept Paper*]. This paper was presented to the Legal Subcommittee of the U.N. Committee on the Peaceful Uses of Outer Space on March 19, 2010, at which time the ICAO Secretariat expressed its belief that the paper remained pertinent. Comm. on the Peaceful Uses of Outer Space, Rep. of the Legal. Subcomm. on Its Forty-Ninth Session, U.N. Doc. A/AC.105/C.2/2010/CRP.9 (2010).

⁷ *GLOBAL SPACE GOVERNANCE: AN INTERNATIONAL STUDY 130* (Ram S. Jakhu & Joseph N. Pelton eds., 2017).

⁸ See Lizi Gregory, *Quick Guide: Suborbital vs Orbital Flights*, *EXOS AEROSPACE* (Apr. 5, 2016), <https://exosaero.com/2016/04/05/suborbital-vs-orbital-flights/> [<https://perma.cc/63JN-2LV3?type=image>].

⁹ Foust, *supra* note 1.

B. RECENT COMMERCIAL DEVELOPMENTS

Suborbital technology is actively improving. While suborbital flights typically transported experimental payloads in the past,¹⁰ the beginning of 2020 witnessed the announcement by the U.S. National Aeronautics and Space Administration (NASA) of a Flight Opportunities program to allow researchers to accompany their payloads on commercial suborbital vehicles.¹¹ A number of private entities, including Virgin Galactic, Blue Origin Federation, LLC (Blue Origin), and Space Exploration Technologies Corp. (SpaceX), are playing a significant role in the development of both the technology of and the business case for such flights.¹² For example, Virgin Galactic has now entered into an agreement with the Italian Air Force to fly payloads and three persons on a SpaceShipTwo suborbital flight,¹³ while newer commercial entities such as Dawn Aerospace are also planning to enter the suborbital market.¹⁴ The technology employed by these companies, however, varies. Blue Origin's New Shepard rocket, for instance, is aimed at an eleven-minute spaceflight and involves launching a rocket through airspace with six people on board.¹⁵ It would remain in outer space for only a few minutes, after which the rocket would detach from the capsule carrying passengers, and the capsule would deploy parachutes

¹⁰ See Jeff Foust, *New Shepard Carries Research Payloads on Latest Suborbital Test Flight*, SPACE NEWS (Jan. 23, 2019), <https://spacenews.com/new-shepard-carries-research-payloads-on-latest-suborbital-test-flight> [<https://perma.cc/LBD5-R9WY>]; Stephanie Strom, *Six Suborbital Research Payloads from MIT Fly to Space and Back*, MIT NEWS (May 3, 2019), <http://news.mit.edu/2019/space-and-back-six-suborbital-research-payloads-mit-media-lab-0503> [<https://perma.cc/C8S9-JHLN>].

¹¹ Jeff Foust, *NASA to Allow Researchers to Fly on Commercial Suborbital Vehicles*, SPACE NEWS (Jan. 31, 2020), <https://spacenews.com/nasa-to-allow-researchers-to-fly-on-commercial-suborbital-vehicles/> [<https://perma.cc/CB3P-GYGE>].

¹² *Commercial Suborbital Flight Providers*, NASA, <https://www.nasa.gov/directorates/spacetech/flightopportunities/flightproviders> [<https://perma.cc/ZSJ5-PVEC>].

¹³ Jeff Foust, *Virgin Galactic to Fly Italian Air Force Research Mission*, SPACE NEWS (Oct. 2, 2019), <https://spacenews.com/virgin-galactic-to-fly-italian-air-force-research-mission/> [<https://perma.cc/WCW7-2P7E>].

¹⁴ Dawn Aerospace recently sought national permission to launch suborbital spaceflights from Oamaru Airport, New Zealand. Press Release, Dawn Aerospace, MOU for Suborbital Flights Out of Oamaru Airport (Jan. 17, 2020), <https://www.dawnaerospace.com/blog/waitaki-district-council-mou> [<https://perma.cc/CK2C-MB5M>].

¹⁵ See *New Shepard Mission Profile*, BLUE ORIGIN, <https://www.blueorigin.com/new-shepard/> [<https://perma.cc/44FN-NFYK>].

during its return to Earth.¹⁶ Virgin Galactic intends to deploy its WhiteKnightTwo aircraft to “air launch” the reusable winged spacecraft SpaceShipTwo to approximately 50,000 feet, after which SpaceShipTwo will modify its wings and tail to commence re-entry back to Earth.¹⁷ Such developments illustrate the technological implications of such activities and highlight the potential regulatory complexities surrounding suborbital technology, as it attracts both international air and space law.

II. INTERNATIONAL LAW

No discussion of air law, space law, or their relation to suborbital flights can take place without first appreciating, and second understanding, the origins of public international law. The discussions related to suborbital flights, therefore, start in the unlikely and tumultuous epoch of seventeenth century Europe, following a cessation in hostilities of the Thirty Years War.¹⁸ In 1648, following a grueling decades-long war over religious ideological inconsistencies, the numerous fragmented powers in Europe agreed, in a series of treaties signed in the region of Westphalia, to refrain from interfering in their neighbors’ domestic affairs.¹⁹ This obligation was accompanied by the reciprocal right of a State that neighbors would not involve themselves in their own domestic affairs.²⁰

Although not specifically enumerated in the treaties that led to the Peace of Westphalia,²¹ two founding principles of international law have emerged from this mutual exchange of rights and obligations, namely, State sovereignty and the equality of States.²² State sovereignty describes the unlimited authority of a

¹⁶ *Id.*

¹⁷ See *Learn*, VIRGIN GALACTIC, <https://www.virgingalactic.com/learn/> [<https://perma.cc/BA6J-MN49>].

¹⁸ See Derek Croxton, *The Peace of Westphalia of 1648 and the Origins of Sovereignty*, 21 INT’L HIST. REV. 569, 569 (1999).

¹⁹ *Id.*

²⁰ *Id.* at 582.

²¹ Andreas Osiander, *Sovereignty, International Relations, and the Westphalian Myth*, 55 INT’L ORG. 251, 266 (2001).

²² See generally THE OXFORD HANDBOOK OF THE THEORY OF INTERNATIONAL LAW (Anne Orford & Florian Hoffman eds., 2016). Scholars Havel and Sanchez stated that “the principle of State sovereignty, that is, a State’s exclusive and independent control over its geographic territory, including over those persons who abide within that territory, has been recognized (with caveats) among Western States since at least the Treaty of Westphalia (1648).” See BRIAN F. HAVEL & GABRIEL S. SANCHEZ, THE PRINCIPLES AND PRACTICE OF INTERNATIONAL AVIATION LAW 17 (2014).

sovereign (whether it be a democratically elected government, a republic of city-States, a monarchy, etc.) within its own boundaries.²³ Equality of States describes the recognition that all sovereigns are equally sovereign with their neighbors, thereby removing any hierarchy of sovereignty.²⁴ Acting in concert, these twin principles ensure, theoretically, that a sovereign has absolute authority to carry on as it sees fit within its jurisdiction, without worry that neighboring States may interfere.²⁵ Without foreign interference, States can only interact with one another on the basis of predetermined and prescribed rules.²⁶ These rules have come to develop into what is now recognized as international law.²⁷

Today, therefore, any instance of States interacting with each other is based on the understanding that both must agree to move forward—one State cannot impose its will on another.²⁸ This is true of issues related to international trade, human rights standards, and environmental protection.²⁹ Of course, this also applies to international transportation. When States agree on certain issues, they create records of their intentions and the explicit rules on which they are to interact.³⁰ The resulting creation of international law is explicitly documented and formalized in the form of a treaty (a written agreement) or implicitly crystallized in the form of custom (unwritten and unspoken agreements that all parties recognize as binding).³¹

Once a State has agreed to a specific international law, they are bound to follow through on the commitments espoused in that law.³² This binding obligation arises from the concept of State responsibility, which is in turn formed by the principles of

²³ See Hans Kelsen, *The Principle of Sovereign Equality of States as a Basis for International Organization*, 53 *YALE L.J.* 207, 207–8 (1944).

²⁴ See *id.* at 208–09.

²⁵ See *id.* at 207–09.

²⁶ See *id.*

²⁷ See *id.*

²⁸ See *id.* at 209; Benedict Kingsbury, *The International Legal Order*, in *THE OXFORD HANDBOOK OF LEGAL STUDIES* 274 (Mark Tushnet & Peter Cane eds., 2005).

²⁹ See, e.g., Soyoung Jung, *A State's Sovereign Rights and Obligations in the WTO to Harmonize Environmental Policies*, 21 *MICH. ST. INT'L L. REV.* 461, 467–68 (2013).

³⁰ See Statute of the International Court of Justice art. 38(1), June 26, 1945, 59 *Stat.* 1062.

³¹ See *id.*

³² See Frederic L. Kirgis, *Treaties as Binding International Obligation*, 2 *AM. SOC'Y INT'L L.*, May 14, 1997, at 1, <https://www.asil.org/insights/volume/2/issue/4/treaties-binding-international-obligation> [<https://perma.cc/8WHX-GY66>].

State sovereignty and equality of States.³³ The International Law Commission, widely recognized as the most highly qualified experts of international law, adopted the Articles on State Responsibility (ASR), which elaborated on norms of international responsibility.³⁴ While the ASR cannot be considered a treaty, it has nonetheless acquired increasing authority as an expression of the customary law of State responsibility.³⁵

According to the ASR, “[e]very internationally wrongful act of a State entails international responsibility of that State.”³⁶ The ASR deems a State’s conduct “internationally wrongful” when its conduct, “consisting of an action or omission, (a) is attributable to the State under international law; and (b) constitutes a breach of an international obligation of th[at] State.”³⁷ The ASR further stipulates that “[t]he State responsible for the internationally wrongful act is under an obligation: (a) to cease that act”; and “(b) to offer appropriate assurances and guarantees of non-repetition,” in addition to making “full reparation for the injury caused by the internationally wrongful act.”³⁸ The ASR’s true utility, therefore, is its encapsulation of the consequences when a sovereign State fails to abide by the rules it has agreed to follow. Without the ASR’s established process for how to address a State that has failed to uphold its obligations, States would have no legitimate reason to abide by the very rules they establish.

A. AIR LAW

Transportation by air has a rich history, originating in the late nineteenth century and continuing to develop to this day.³⁹ In the years following the World Wars, the aviation industry grew

³³ HAVEL & SANCHEZ, *supra* note 22, at 7–11.

³⁴ Int’l Law Comm’n, Draft Articles on Responsibility of States for Internationally Wrongful Acts, with Commentaries, Rep. of the Int’l Law Comm’n on the Work of Its Fifty-Third Session, U.N. Doc. A/56/10 (2001) [hereinafter ASR]. The Articles were commended “to the attention of Governments” by the U.N. General Assembly in 2002. G.A. Res. 56/83, Responsibility of States for Internationally Wrongful Acts, U.N. Doc. A/56/83 (Jan. 28, 2002).

³⁵ JAMES CRAWFORD, BROWNLIE’S PRINCIPLES OF PUBLIC INTERNATIONAL LAW 523 (9th ed. 2019).

³⁶ ASR, *supra* note 34, art. 1; *see also* MALCOLM N. SHAW, INTERNATIONAL LAW 569 (7th ed. 2014).

³⁷ ASR, *supra* note 34, art. 2; *see also* SHAW, *supra* note 36, at 569.

³⁸ ASR, *supra* note 34, arts. 30–31.

³⁹ *Aerospace History Timeline*, AM. INST. AERONAUTICS & ASTRONAUTICS, <https://www.aiaa.org/about/History-and-Heritage/History-Timeline> [<https://perma.cc/R8U4-EGY3>].

considerably and, with growing competition, certain international laws were devised to ensure safety, security, and related features of international air transportation.⁴⁰ It is necessary to acknowledge that the existing international air law framework that applies to everyday aviation would also apply to suborbital flights; since a suborbital flight would, for example, take off from the United States and land in Canada, it would be required to comply with requisite bilateral agreements, international conventions, and general standards and practices.

1. *Chicago Convention*

The Chicago Convention of 1944 (Chicago Convention)⁴¹ is a multilateral treaty⁴² that addresses international civil aviation. During the negotiations of the treaty, which occurred around the end of World War II, the States involved agreed that their well-defined and generally accepted territorial sovereignty would be extended vertically to include the airspace above their physical territory.⁴³ Fundamentally, the same way traversing through the territory of a State would require the explicit permission of that State by virtue of its sovereignty,⁴⁴ traveling over a territory through the airspace of a State would now also require its explicit permission.⁴⁵

⁴⁰ *The History of ICAO and the Chicago Convention*, INT'L CIVIL AVIATION ORG., <https://www.icao.int/about-icao/History/Pages/default.aspx> [<https://perma.cc/9UQ6-JF6P>].

⁴¹ Convention on International Civil Aviation, Dec. 7, 1944, 61 Stat. 1180, 15 U.N.T.S. 295 [hereinafter Chicago Convention].

⁴² *Current Lists of Parties to Multilateral Air Law Treaties*, INT'L CIVIL AVIATION ORG., https://www.icao.int/secretariat/legal/List%20of%20Parties/Chicago_EN.pdf [<https://perma.cc/UES3-J7TU>] (listing signatories to the Chicago Convention). When a State signs a treaty, it expresses both its willingness to engage in further steps of the adoption process and its acknowledgment not to engage in acts that defeat the object and purpose of the treaty. See Vienna Convention on the Law of Treaties, arts. 10, 12(2)(b), 14, 18, May 23, 1969, 1155 U.N.T.S. 331. On the contrary, the act of ratification expresses the State's consent to be bound by the terms of the treaty. *Id.* arts. 2(1)(b), 14–16.

⁴³ Chicago Convention, *supra* note 41, art. 1.

⁴⁴ See, e.g., *Applying for Admission into United States*, U.S. CUSTOMS & BORDER PROT., <https://www.cbp.gov/travel/international-visitors/applying-admission-united-states#> [<https://perma.cc/32Y3-DDGQ>].

⁴⁵ Chicago Convention, *supra* note 41, art. 1. The Chicago Convention requires State consent for all transit, except transit through the airspace over the High Seas. *Id.*; United Nations Convention on the Law of the Sea arts. 87, 89, *opened for signature* Dec. 10, 1982, 1833 U.N.T.S. 397 (entered into force Nov. 16, 1994) [hereinafter UNCLOS].

The Chicago Convention reinforces State sovereignty over airspace through several provisions, including the requirement that a State first acquire special permission before operating international air services through another State's airspace.⁴⁶ Additionally, the convention distinguishes between scheduled and non-scheduled air services, in that the latter enjoy fewer restrictions and are permitted to make stops for non-traffic purposes.⁴⁷ The Chicago Convention notably established the United Nations' ICAO as the organization responsible for regulating international air transportation and defining its organizational objectives.⁴⁸ These objectives primarily focus on the development of a safe and efficient global air transportation industry.⁴⁹ In addition, the convention also provides clauses on the nationality and registration of aircraft (discussed in detail below).⁵⁰

2. *Bilateral Agreement*

Although the Chicago Convention succeeded in a number of areas (such as the creation of ICAO and establishing the basic legal norms related to aviation), it did not establish the specific rules or regulations related to commercial air travel between different jurisdictions.⁵¹ As a result, there emerged over the next several decades a series of agreements between individual nations and groups of nations establishing the nature of their respective civil aviation relationships.⁵² These bilateral and multilateral air services agreements establish specifics related to air travel between jurisdictions and cover topics as varied as the number of routes allowed between countries, the number of daily, weekly, monthly, and annual flights, the total passenger-carrying capacity of all flights, and the flight paths to avoid.⁵³

⁴⁶ Chicago Convention, *supra* note 41, art. 6.

⁴⁷ *Id.* art. 5; *see also* PAUL STEPHEN DEMPSEY, PUBLIC INTERNATIONAL AIR LAW 57–58 (2d ed. 2017).

⁴⁸ Chicago Convention, *supra* note 41, arts. 43–44.

⁴⁹ *Id.* art. 44.

⁵⁰ *Id.* arts. 17–21; Part II.A.3, *infra*.

⁵¹ DEMPSEY, *supra* note 47, at 658–62 (citing Chicago Convention, *supra* note 41).

⁵² *Id.* at 661–728; *see also, e.g., Full List of Air Transport Agreements and Record Documents*, U.S. DEP'T OF STATE, <https://www.state.gov/full-list-of-air-transport-agreements-and-record-documents/> [<https://perma.cc/L9KX-XCXP>].

⁵³ DEMPSEY, *supra* note 47, at 734–810. Most bilateral agreements contain provisions to address these points, including Canada's bilateral agreements with other States. *E.g., Agreement between the Kingdom of the Netherlands and Canada Relating to Air Transport Between the Netherlands and Canada*, Can.-Neth., June 2, 1989, 2247 U.N.T.S. 215. For example, the bilateral agreement between

These provisions are influenced by each State's national aviation policy, resulting in different forms of bilateral and multilateral agreements regarding the exchange of rights in international aviation, known as "freedoms."⁵⁴

The five freedom rights of air transport are comprised of (1) the right of one State to fly across the territory of the other State without landing; (2) the right of one State to land (in respect of scheduled international air services) in the territory of the other State for non-traffic purposes; (3) the right of one State to fly commercially and offload traffic in the other State's territory; (4) the inverse right to fly from another State and take on traffic destined for the home State; and (5) the right granted by one State to another State to both put down and take on, in the territory of the first State, traffic either coming from or destined for a third State.⁵⁵

Liberal agreements that involve a broad exchange of rights between States, including the freedoms of the air, are termed "open skies agreements."⁵⁶ Although the nature of these agreements has evolved over the last few decades to include a broader exchange of rights,⁵⁷ the reality is that such agreements between States are still required, even in "open skies" situations, because each State retains control and sovereignty over its airspace.⁵⁸

Canada and the Netherlands contains provisions on agreed routes, tariff, designation, and capacity. *Id.* art. X, annex.

⁵⁴ DEMPSEY, *supra* note 47, at 731.

⁵⁵ Thomas Jérémie Hayden-Lefebvre, *The Five Freedoms of Aviation & Why They Matter*, SIMPLE FLYING (July 1, 2019), <https://simpleflying.com/five-freedoms-aviation/> [<https://perma.cc/MWY8-D9QV>]; *Freedoms of the Air*, INT'L CIVIL AVIATION ORG., <https://www.icao.int/Pages/freedomsAir.aspx> [<https://perma.cc/PF5P-D4QN>] (citing Int'l Civil. Aviation Org. [ICAO], Manual on the Regulation of International Air Transport, pt. 4, ICAO Doc. 9626 (3d ed. 2018) [hereinafter ICAO Manual]). There are also the additional "so-called" sixth, seventh, eighth, and ninth freedom rights. *Freedoms of the Air*, *supra* note 55. These are "so-called" freedoms because these rights have not been incorporated into any of the widely recognized air services agreements. *Id.*

⁵⁶ DEMPSEY, *supra* note 47, at 668; *Fact Sheet: Open Skies Partnerships*, U.S. DEP'T OF STATE (Sept. 16, 2016), <https://2009-2017.state.gov/r/pa/pl/262022.htm> [<https://perma.cc/FR7Z-D3P4>].

⁵⁷ DEMPSEY, *supra* note 47, at 657; HAVEL & SANCHEZ, *supra* note 22, at 70–71; Bruce Stockfish, *Opening Closed Skies: The Prospects for Further Liberalization of Trade in International Air Transport Services*, 52 J. AIR L. & COM. 599, 600–27 (1992).

⁵⁸ Chicago Convention, *supra* note 41, art. 1; Dempsey, *supra* note 47, at 728; *Freedoms of the Air*, *supra* note 55. Such agreements generally involve an exchange of first to fifth freedom landing rights for scheduled international air services as opposed to their traditional predecessors which only laid down permissible points of travel. RACHEL Y. TANG, CONG. RSCH. SERV., R44016, INTERNATIONAL AIR

Open skies agreements, therefore, refer to agreements that have as their aim the liberalization of air transport between two States; nevertheless, some States prefer more protectionist policies and, therefore, enter into bilateral agreements with a limited exchange of such rights.⁵⁹

3. *Nationality of Airlines and Registration of Aircraft*

When States exchange traffic rights through bilateral air services agreements, a clause regarding the “nationality” of the airline is usually included as a condition for such exchange.⁶⁰ Known as the “nationality rule,” the clause often stipulates that each State’s airline must be substantially owned and effectively controlled by the home State or its citizens.⁶¹ Notably, there is a difference between “nationality of airlines” and “nationality of

SERVICE CONTROVERSIES: FREQUENTLY ASKED QUESTIONS 1–2 (2015). Further, clauses on capacity and frequency of flights are now unrestricted under such agreements, curtailed only by competition laws and the Chicago Convention. *Id.* at 1; DEMPSEY, *supra* note 47, at 775–82. Similarly, flight routes and designations are not limited. DEMPSEY, *supra* note 47, at 734–42. Regarding pricing, the more conservative bilateral agreements involve rates being set by individual carriers and filed with aviation authorities, sometimes endorsing the International Air Transport Association “rate-making machinery.” *Id.* at 765–74. On the contrary, the more liberal pricing provision is a “double disapproval” mechanism, wherein the carrier-proposed rate goes into effect and requires disapproval by the governments of the participating States before the rate is rejected. *See* Steven Greenhouse, *One Europe, but Many Airlines*, N.Y. TIMES (Oct. 30, 1989), <https://www.nytimes.com/1989/10/30/business/one-europe-but-many-airlines.html> [<https://perma.cc/VQ8H-8YWH>]. In addition, given that open skies agreements are pro-competition, they incorporate standards of reasonableness, non-discrimination and most-favored state treatment with respect to different “soft rights” such as taxes, fuel and ground-handling. DEMPSEY, *supra* note 47, at 783–96; *see also, e.g.*, Air Transport Agreement Between the Government of Canada and the Government of the United States of America, Can.-U.S., Mar. 12, 2007, T.I.A.S. No. 07-312 [hereinafter U.S.-Canada ASA].

⁵⁹ DEMPSEY, *supra* note 47, at 731. Open skies agreements are only one form of air service agreements (ASAs): under Canada’s national “Blue Sky Policy” there are only twenty-two open skies agreements, and thirty “expanded agreements” with other countries. *The Blue Sky Policy: Made in Canada, for Canada*, GOV’T OF CAN., <https://www.tc.gc.ca/eng/policy/air-bluesky-menu-2989.htm> [<https://perma.cc/H4V3-849Q>]. The latter category of agreements “modifies an existing bilateral agreement” to grant greater flexibility to the carriers involved. *Id.*

⁶⁰ DEMPSEY, *supra* note 47, at 743–48.

⁶¹ *See* HAVEL & SANCHEZ, *supra* note 22, at 69–70. The delegates of the Chicago Conference first agreed on the incorporation of this rule in the Two Freedoms and Five Freedoms Agreements. *Id.* at 87–88 (citing International Air Services Transit Agreement art. 1, § 5, Dec. 7, 1944, 59 Stat. 1693, 84 U.N.T.S. 389; International Air Transport Agreement art. 1, § 6, Dec. 7, 1944, 59 Stat. 1701, 171 U.N.T.S. 387).

aircraft.” Article 17 of the Chicago Convention states that *aircraft* have the nationality of the State in which they are registered,⁶² but the convention is silent on the nationality of an *airline*.⁶³ For this reason, the nationality of airlines is established by national laws through the approval of the domestic aviation authority, which will issue an Air Operator’s Certificate (AOC) to an airline upon approval.⁶⁴ For example, the AOC issued by Transport Canada (Canada’s federal department that oversees transportation related matters) to Air Canada demonstrates that Air Canada is incorporated and constituted under Canadian laws.⁶⁵

To reinforce the nationality connection between airlines and their home States, bilateral agreements require that the designated airlines⁶⁶ must have their principal place of business in the designating State.⁶⁷ Registration is one of the key factors that determine the airline’s principal place of business.⁶⁸ Similar to the difference between the nationality of an airline and the nationality of an aircraft, the registration of an airline and the registration of an aircraft also differ (including with respect to the registration of the individual aircraft flown by an airline). Registration of the airline involves the process described above, whereby a company registers in a State’s territory, upon which the company is granted an AOC from the State’s national avia-

⁶² Chicago Convention, *supra* note 41, art. 17.

⁶³ DEMPSEY, *supra* note 47, at 62.

⁶⁴ HAVEL & SANCHEZ, *supra* note 22, at 340–41; DEMPSEY, *supra* note 47, at 62–63, 159; e.g., *Applying for an Air Operator’s Certificate*, GOV’T OF CAN., <https://tc.canada.ca/en/aviation/publications/starting-commercial-air-service-tp-8880/21-applying-air-operator-certificate> [<https://perma.cc/XV4C-6KRZ>].

⁶⁵ *View Operator Details: Air Canada*, GOV’T OF CAN., <https://wwwapps.tc.gc.ca/saf-sec-sur/2/CAS-SAC/olsrles.aspx?lang=eng> (search for “Air Canada” in “Legal or Trade Name” search bar) (last visited Oct. 13, 2020).

⁶⁶ Designated airlines are the airlines identified in the bilateral agreement and granted permission to travel to the other State. DEMPSEY, *supra* note 47, at 734–38. Therefore, both States are designating States, because both countries agree on designated airlines. *Id.*

⁶⁷ ICAO Manual, *supra* note 55, pt. 4.4. The ICAO Manual defines “principal place of business” to require that the airline be

established and incorporated in the territory of the designating party in accordance with [that State’s laws], has a substantial amount of its operations and capital investment in physical facilities in the territory of the designating party, pays income tax, registers and bases its aircraft there, and employs a significant number of nationals in managerial, technical and operational positions.

Id.

⁶⁸ *See id.*

tion authority.⁶⁹ Registration of aircraft, on the other hand, occurs on a State's national registry, and ownership of these individual aircraft can be transferred to different entities outside of the nation in which they are originally registered.⁷⁰ The aircraft of an airline are thus not always registered in the State where the airline is incorporated.⁷¹ For example, British Airways can "own aircraft that operate out of the United Kingdom (U.K.)," but the aircraft may be "registered in Australia or Japan." Alternatively, British Airways could operate aircraft that are "registered in the U.K.," but those aircraft may actually be "owned by Australian or Japanese lessors."⁷² The concept of registration of both airlines and aircraft thus facilitates operations across multiple jurisdictions and encourages broad forms of international aircraft financing.⁷³

Although the Chicago Convention is silent on registration or nationality of airlines, it does mention that registration of an aircraft can be transferred.⁷⁴ Article 83 was introduced in 1997 to explicitly permit the transfer of responsibility (primarily in cases of international aircraft leasing) from the State of registry (i.e., the aircraft's nationality) to the State where the operator of the aircraft has its principal place of business or permanent residence.⁷⁵ International aircraft financing has since been globally streamlined by the Cape Town Convention⁷⁶ and its supporting Protocol.⁷⁷ This mechanism facilitates the creation of a uniformly recognized security interest in aviation assets and provides remedies to creditors in the event of a default.⁷⁸ Significantly, the drafters of the Cape Town Convention also in-

⁶⁹ See Part II.A.3, *infra*.

⁷⁰ Chicago Convention, *supra* note 41, art. 19, annex 7; Sir Roy Goode, *Asset Identification Under the Cape Town Convention and Protocols*, 81 L. & CONTEMP. PROBS. 135 (2018) (discussing international sale of aircraft and associated registration processes).

⁷¹ HAVEL & SANCHEZ, *supra* note 22, at 341.

⁷² *Id.*

⁷³ *Id.* at 328–32.

⁷⁴ Chicago Convention, *supra* note 41, art. 19.

⁷⁵ *Id.* art. 83.

⁷⁶ Convention on International Interests in Mobile Equipment, Nov. 16, 2001, T.I.A.S. No. 06-301.2, 2307 U.N.T.S. 285 [hereinafter Cape Town Convention].

⁷⁷ Protocol to the Convention on International Interests in Mobile Equipment on Matters Specific to Aircraft Equipment, Nov. 16, 2001, S. Treaty Doc. No. 108-10, 2367 U.N.T.S. 517.

⁷⁸ Cape Town Convention, *supra* note 76, arts. 1, 8–13.

roduced a protocol for space assets in 2012, although this protocol has not been ratified.⁷⁹

4. ICAO Standards and Recommended Practices

Most international rules and regulations related to aviation emerge as a result of an ICAO Standard and Recommended Practice (SARP), which are introduced as annexes to the Chicago Convention.⁸⁰ Although Article 12 of the Chicago Convention imposes a general obligation on States to keep their own regulations uniform with those established under the agreement, it does not specifically make a reference to SARPs.⁸¹ Nevertheless, SARPs are the result of extensive ICAO committee discussions dedicated to improving the safety and efficiency of commercial aviation by creating widespread “uniformity in regulations, standards, procedures, and organization.”⁸² Although SARPs are not legally binding on States, States that find it “impracticable to comply” with an existing standard or procedure must notify ICAO under Article 38.⁸³

While actual compliance with the SARPs (as well as the aforesaid reporting) is not obligatory, many bilateral aviation agreements contain clauses requiring a State’s commitment to implement SARPs.⁸⁴ Therefore, a failure to comply with SARPs may amount to a violation of an air traffic agreement (a binding treaty between two or more States) and result in other State parties to the agreement prohibiting flights to or from a non-compliant State’s jurisdiction (a legitimate international legal consequence of failing to uphold an international obligation).

Although ICAO does not have the power to compel non-performing States to adhere to SARPs, there remain indirect sanc-

⁷⁹ International Institute for the Unification of Private Law [UNIDROIT], Protocol to the Convention on International Interests in Mobile Equipment on Matters Specific to Space Assets (Mar. 9, 2012), <http://www.unidroit.org/english/conventions/mobile-equipment/spaceassets-protocol-e.pdf> [https://perma.cc/J5RG-QS5R].

⁸⁰ DEMPSEY, *supra* note 47, at 69, 72–73; Chicago Convention, *supra* note 41, art. 37.

⁸¹ DEMPSEY, *supra* note 47, at 71; Chicago Convention, *supra* note 41, art. 12.

⁸² DEMPSEY, *supra* note 47, at 69–70; Chicago Convention, *supra* note 41, art. 37.

⁸³ DEMPSEY, *supra* note 47, at 73–74; Chicago Convention, *supra* note 41, art. 38.

⁸⁴ *E.g.*, Air Transport Agreement Between the United States and Brazil, Braz.-U.S., art. 6, Mar. 21, 2018, T.I.A.S. 18–521; U.S.-Canada ASA, *supra* note 58, art. 14.

tions for non-compliance as reflected in the national policies of both the United States and the European Union (EU). The U.S. Federal Aviation Administration (FAA) assigns ratings to foreign aviation authorities based on their compliance with SARPs and, on the basis of this rating system, prohibits poorly rated States from serving the U.S. market.⁸⁵ The EU has a different approach by which it “blacklists” airlines that do not meet SARPs or additional standards under EU law, preventing them from serving their market.⁸⁶ Although these two mechanisms are embedded entirely in their respective domestic legal systems, they ensure other States implement SARPs in their own jurisdictions, as all States desire access to U.S. and EU markets. For these reasons, even though SARPs are non-binding, States typically ensure that they implement them in their jurisdictions.

5. Domestic Aviation Law

Since States have exclusive sovereignty over the airspace above their territories, they are free to determine their own domestic aviation rules, including the licensing of their carriers, establishing airport regulations, implementing security requirements, among other rules.⁸⁷ Given the international character of aviation, however, most jurisdictions choose to impose the same requirements on domestic flights as they do on international flights to remain consistent and facilitate interactions between various airlines, airports, and passengers.⁸⁸

⁸⁵ DEMPSEY, *supra* note 47, at 110–20; *International Aviation Safety Assessment (IASA) Program*, FED. AVIATION ADMIN., <https://www.faa.gov/about/initiatives/iasa/> [<https://perma.cc/84Z9-WU7S>].

⁸⁶ DEMPSEY, *supra* note 47, at 121–30; Commission Regulation 2111/2005 of Dec. 14, 2005, On the Establishment of a Community List of Air Carriers Subject to an Operating Ban within the Community and on Informing Air Transport Passengers of the Identity of the Operating Air Carrier, and Repealing Article 9 of Directive 2004/36/EC, 2005 O.J. (L 344); Commission Regulation 473/2006 of Mar. 22, 2006, Laying Down Implementing Rules for the Community List of Air Carriers Which Are Subject to an Operating Ban within the Community Referred to in Chapter II of Regulation (EC) No. 2111/2005 of the European Parliament and of the Council, 2006 O.J. (L 84).

⁸⁷ DEMPSEY, *supra* note 47, at 54–57.

⁸⁸ For example, if international standards require a red blinking light on the right wing of a plane and a white blinking light on the left wing, all international carriers would have to implement such lighting systems on their aircraft. However, a State is free to determine whether to impose the same lighting system on purely domestic flights. Notwithstanding this liberty, to avoid potentially hazardous interactions between international and domestic flights (with regard to the pilots, air traffic control operators, airport personnel, etc.), most jurisdictions re-

Due to such harmonized domestic regulation, international aviation has encroached on the functional concept of State sovereignty. While the traditional concept of State sovereignty remains in place, the independent decisions of a State on purely domestic affairs have evolved to maintain compliance with the objectives of the Chicago Convention. Some States have adopted a more flexible and functional approach to sovereignty to accommodate today's international aviation marketplace. Although a completely legitimate consequence of international law (such that a State makes the conscious decision to participate in international aviation activities knowing that it will likely concede some of its sovereignty), there is value in acknowledging this reality. This approach has accommodated, for example, the emergence of the EU as a single aviation market (such that independent European States relinquish a degree of control over their individual jurisdictions in exchange for a harmonized continental system),⁸⁹ as well as the increasing conferral of responsibility to ICAO on issues such as security and safety.⁹⁰ States thus legally retain exclusive sovereignty over their airspace, but practically ensure uniformity and efficiency in air transport by way of domestic rules that mimic international standards. This evolving nature of sovereignty is particularly relevant when considering the regulatory framework that may appropriately oversee cross-border suborbital flights.

B. SPACE LAW

The law that governs outer space has evolved over time, beginning with declarations and treaties and now characterized by principles, norms, and guidelines. Notwithstanding the legal enforceability of these various instruments, in combination, they today make up the corpus of international space law and apply to governmental and non-governmental activities that are carried out in outer space.⁹¹ While suborbital flights may spend rel-

quire domestic flights to comply with international standards since all flights share the same airspace and land-based infrastructure.

⁸⁹ See Esteban Coito & Benjamin Klaus Wilhelm Blaser, *Air Transport: Market Rules*, FACT SHEET ON EUR. UNION (Feb. 2020), <https://www.europarl.europa.eu/factsheets/en/sheet/131/air-transport-market-rules> [https://perma.cc/L7MW-3CSK].

⁹⁰ HAVEL & SANCHEZ, *supra* note 22, at 172–82, 185–89; Esteban Coito & Benjamin Klaus Wilhelm Blaser, *Aviation Safety*, FACT SHEET ON EUR. UNION (Feb. 2020), <https://www.europarl.europa.eu/factsheets/en/sheet/134/aviation-safety> [https://perma.cc/6CWU-G6WE].

⁹¹ DEMPSEY, *supra* note 47, at 936–40.

actively less time in the domain of outer space than they do in airspace, international space law nevertheless applies, particularly in cases of accident or damage.⁹² The applicable provisions of the international space treaties and the historical background from which they were introduced are presented below as a means of demonstrating the underlying intentions of space law and the manner in which it may differ from air law.

1. *Historical and Contemporary Space Activities*

The 1961 decision of the Union of Soviet Socialist Republics (Soviet Union) to send a cosmonaut into space aboard the *Vostok 1* was a demonstration of humanity's ability and aptitude to operate in the space domain.⁹³ Alongside the Soviet Union, the United States also undertook a series of space operations that pushed humanity further into space with each successful undertaking, culminating in the Moon landings of 1969 and the early 1970s.⁹⁴ Given the extremely expensive nature of space operations, governmental agencies were at the helm of developing and implementing nearly all of the earliest space technologies and programs, with NASA (formerly the National Advisory Committee for Aeronautics) and Roscosmos (a part of the Russian Federal Space Agency) leading the way.⁹⁵ In fact, during the height of the Cold War space race, the U.S. government devoted an increasing percentage of its annual gross domestic product to NASA and its related space activities.⁹⁶ As a result, great advances in space technology led to the development of numerous new activities that have since shaped human life on Earth. For example, telecommunications systems, broadcasting services, remote sensing innovations, and global navigation satellite system

⁹² *Id.* at 944–45.

⁹³ *Vostok*, ENCYCL. BRITANNICA, <https://www.britannica.com/technology/Vostok-Soviet-spacecraft> [<https://perma.cc/D353-ZNJF>].

⁹⁴ *What Was the Apollo Program?*, NASA (July 18, 2019), <https://www.nasa.gov/audience/forstudents/5-8/features/nasa-knows/what-was-apollo-program-58.html> [<https://perma.cc/LJQ9-5TGP?type=image>].

⁹⁵ *See This Day in History: NASA Created (July 29, 1958)*, HISTORY (July 27, 2020), <https://www.history.com/this-day-in-history/nasa-created> [<https://perma.cc/Y76X-2E9L>]; John M. Logsdon, *Roskosmos*, ENCYCL. BRITANNICA, <https://www.britannica.com/topic/Roskosmos> [<https://perma.cc/Z38K-VCM5>].

⁹⁶ J.H. CHAPMAN, P.A. FORSYTH, P.A. LAPP & G. N. PATTERSON, SCI. COUNCIL OF CAN., UPPER ATMOSPHERE AND SPACE PROGRAMS IN CANADA 91 (1967).

applications all originated with government-backed space programs.⁹⁷

Although largely advanced by public space programs, humanity's reliance on space has started to shift from national space agency activities to private space activities.⁹⁸ The total investment in space technologies and space applications has shifted from public expenditure to private investment, such that more than 75% of 2018's \$360 billion space economy⁹⁹ is now generated by private space companies, which is up from \$345 billion in 2016.¹⁰⁰ As a result, the dynamics of space operations are rapidly changing: innovative applications are being developed for market at a quicker pace and competition is enhancing the quality of product delivered to clients.¹⁰¹ For example, remote sensing technologies now allow private space operators to provide their clients with daily updates in a variety of formats and constellations of telecommunication satellites will allow for unfettered global Internet access.¹⁰² Of course, a number of private entities are also working to provide commercial launch vehicles to ferry consumers to space; some intend to provide suborbital flights whereas others intend to deliver guests to orbiting space hotels.¹⁰³

⁹⁷ See, e.g., *NASA Benefits: At Home*, NASA (July 29, 2004), https://www.nasa.gov/audience/foreducators/k-4/features/F_NASA_Benefits_at_Home.html [<https://perma.cc/Q27K-YF99>]; *Highly Accurate GPS is Possible Thanks to NASA*, NASA (Sept. 27, 2019), https://www.nasa.gov/directorates/spacetech/spinoff/Highly_Accurate_GPS_Is_Possible_Thanks_to_NASA [<https://perma.cc/Y6RC-AFJQ>].

⁹⁸ FRANCIS LYALL & PAUL B. LARSEN, *SPACE LAW: A TREATISE* 413–15 (2d ed., Routledge 2018).

⁹⁹ *2018 Global Space Economy*, BRYCE SPACE & TECH. (2018), https://brycetechnology.com/reports/report-documents/2018_Global_Space_Economy.pdf [<https://perma.cc/5TQE-V5YS>].

¹⁰⁰ BRYCE SPACE & TECH., *GLOBAL SPACE INDUSTRY DYNAMICS: RESEARCH PAPER FOR AUSTRALIAN GOVERNMENT, DEPARTMENT OF INDUSTRY, INNOVATION AND SCIENCE* 3 (2017), https://brycetechnology.com/downloads/Global_Space_Industry_Dynamics_2017.pdf [<https://perma.cc/FZD3-33Q5>].

¹⁰¹ *Id.* at 11.

¹⁰² *Id.* at 9.

¹⁰³ Elizabeth Howell, *Virgin Galactic to Launch Its 1st Suborbital Spaceflight from Spaceport America in October: Report*, SPACE.COM (Sept. 14, 2020), <https://www.space.com/virgin-galactic-spaceshiptwo-test-launch-october-2020.html> [<https://perma.cc/HUK4-CYQZ>]; Kate Baggaley, *Huge Space Hotel Promises Fake Gravity and 'Supersized Basketball'*, NBC NEWS (Sept. 14, 2019), <https://www.nbcnews.com/mach/science/huge-space-hotel-promises-fake-gravity-supersized-basketball-ncna1051596> [<https://perma.cc/TTT8-D5TN>].

2. *Outer Space Treaty*

Although the Outer Space Treaty of 1967 (Outer Space Treaty) established innumerable principles related to space law, for the purposes of this Article, some are more relevant than others, namely: (1) the special status denoted to astronauts (Article V); (2) the role of States in overseeing private space activities (Article VI); (3) the attribution of liability to launching States (Article VII); (4) the registration of space objects (Article VIII); and (5) that all users of space must pay due regard to the interests of other users (Article IX).¹⁰⁴ Setting the tone for the entire document, Article I requires that the exploration and use of outer space must be carried out for the “benefit and in the interests of all countries; irrespective of their degree of economic or scientific development,” and further that outer space is “the province of all mankind”; therefore, although a State is free to explore and use outer space, its freedom is limited by the subsequent provisions of the Outer Space Treaty.¹⁰⁵

Prominent among these limitations is a State’s duty to bear “international responsibility for national [space] activities” (whether conducted by governmental or non-governmental entities), as articulated in Article VI, imposing an obligation on all States to ensure the authorization and continuing supervision of the activities of all non-governmental entities in outer space.¹⁰⁶ While the expressions “authorization” and “continuing supervision” are neither defined in the Outer Space Treaty nor further clarified in the subsequent space treaties, States have interpreted both terms to mean, respectively, formal approvals by way of a licensing process and continuous supervision through license conditions as required by national law.¹⁰⁷ This provision has therefore resulted in a displaced law-making obligation from the international to the national level, and is evidenced by the numerous domestic laws in existence across jurisdictions.¹⁰⁸ In

¹⁰⁴ Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, Jan. 27, 1967, 18 U.S.T. 2410, 610 U.N.T.S. 205 [hereinafter Outer Space Treaty].

¹⁰⁵ *Id.* art. I.

¹⁰⁶ *Id.* art. VI.

¹⁰⁷ See Paul Stephen Dempsey, *National Laws Governing Commercial Space Activities: Legislation, Regulation, & Enforcement*, 36 NW. J. INT’L L. & BUS. 1, 6 (2016).

¹⁰⁸ See generally GLOBAL SPACE GOVERNANCE: AN INTERNATIONAL STUDY, *supra* note 7, at 87–112 (wherein scholars observe the trend toward national regulations to ensure that space activities are approved and monitored by the responsible State government).

comparison with the regulation of international air transport, the regulation of activities in outer space demonstrates a clear movement towards national law-making at the governmental level, rather than the continued implementation of international standards. This trend of domestic law-making can be attributed, at least partially, to the growing commercialization of outer space and the obligations of States that they regulate such activities.

Another notable provision, Article IX of the Outer Space Treaty, requires that States conduct activities in outer space with “due regard to the corresponding interests of all other State Parties.”¹⁰⁹ The concept of due regard is reflected in international law, the earliest treaty reference being Article 3 of the Chicago Convention.¹¹⁰ With respect to outer space, the obligation of due regard has been interpreted as “the performance of an act with a certain standard of care, attention or observance.”¹¹¹ Article IX further provides that States are required to undertake international consultations if they have reason to believe that their activities may cause “potentially harmful interference with activities of other State Parties.”¹¹² While this language does not impose a concrete obligation on State Parties, Article IX has been interpreted to create an obligation for States to conduct their space activities with a standard degree of care.¹¹³

3. *Agreement on the Rescue and Return of Astronauts*

Under the Outer Space Treaty, astronauts are denoted a special characterization as “envoys of mankind.”¹¹⁴ The status of astronauts (or personnel of a spacecraft)¹¹⁵ is clarified by provisions contained in a subsequent treaty, the Agreement on

¹⁰⁹ Outer Space Treaty, *supra* note 104, art. IX.

¹¹⁰ See Chicago Convention, *supra* note 41, art. 3 (which exempted State aircraft from complying with procedures established by ICAO and required that these aircraft fly with “due regard for the safety of navigation of civil aviation.”).

¹¹¹ Sergio Marchisio, *Article IX*, in 1 COLOGNE COMMENTARY ON SPACE LAW: OUTER SPACE TREATY 569–70 (Stephen Hobe, Bernhard Schmidt-Tedd & Kai-Uwe Schrogl eds., 2009).

¹¹² Outer Space Treaty, *supra* note 104, art. IX.

¹¹³ John S. Goehring, *Can We Address Orbital Debris with the International Law We Already Have? An Examination of Treaty Interpretation and the Due Regard Principle*, 85 J. AIR L. & COM. 309, 312–20 (2020).

¹¹⁴ Outer Space Treaty, *supra* note 104, art V.

¹¹⁵ The drafting history of the Rescue and Return Agreement suggests that the use of the term “astronauts” in the Preamble and “personnel” in the body of the treaty indicate that the terms have the same meaning. See Rep. of the Legal Subcommittee on the Work of the Second Part of its Third Session, U.N. Doc. A/

the Rescue and Return of Astronauts and Space Objects of 1968 (Rescue and Return Agreement).¹¹⁶ Since the Rescue and Return Agreement refers only to “astronauts” and “personnel” without explicitly defining either term, it is unclear whether the provisions of the Rescue and Return Agreement will apply to all space travelers, including space tourists aboard suborbital vehicles. Whether this lack of State-appointed space voyagers (as opposed to, for example, NASA or European Space Agency astronauts) will reduce the applicability of the rights and responsibilities afforded in the Rescue and Return Agreement is yet to be seen.

While this ambiguity requires legislative attention, there is evidence of customary international law that implies that travelers aboard suborbital flights would nonetheless be afforded basic rights in cases of emergency. The duty to render assistance in situations of distress can be traced to the nineteenth century, where the Geneva Red Cross Convention of 1864 included a provision for participating States to take care of the wounded, the sick, and the shipwrecked in war at sea.¹¹⁷ This duty was included in subsequent Red Cross Conventions, including the still operating Geneva Red Cross Convention (II) of 1949.¹¹⁸ This principle to render assistance in case of distress also transferred over to the maritime environment, as demonstrated by Article 98(1) of the United Nations Convention on the Law of the Sea of 1982.¹¹⁹ The duty to aid and render assistance was also considered critical to the aviation environment in 1944, with a similar provision appearing in Article 25 of the Chicago Convention.¹²⁰ While discussing maritime regulation in 1956, the International Law Commission acknowledged that the principle of rendering assistance to those in distress qualified as customary interna-

AC.105/21 (1964); see also Francis Lyall, *Who is an Astronaut? The Inadequacy of Current International Law*, 66 ACTA ASTRONAUTICA 1613, 1614 (2010).

¹¹⁶ Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched Into Outer Space, Apr. 22, 1968, 19 U.S.T. 7570, 672 U.N.T.S. 119.

¹¹⁷ Convention for the Amelioration of the Condition of the Wounded in Armies in the Field art. 6, Aug. 22, 1864, 22 Stat. 940, 75 U.N.T.S. 31 (no longer in force).

¹¹⁸ Geneva Convention Relative to the Treatment of Prisoners of War art. 6, Aug. 12, 1949, 6 U.S.T. 3316, 75 U.N.T.S. 135.

¹¹⁹ UNCLOS, *supra* note 45, art. 98(1).

¹²⁰ Chicago Convention, *supra* note 41, art. 25.

tional law.¹²¹ On this basis, the absence of a specific obligation under the space treaties does not negate a State's duty to render assistance to travelers aboard suborbital flights, and customary international law ensures that such travelers will receive basic support in case of distress or emergency, regardless of whether the suborbital vehicle is considered to be a space object or ordinary aircraft.

4. *Registration Convention*

As an expansion of Article VIII of the Outer Space Treaty, the Registration Convention of 1974 (Registration Convention) aimed to increase the transparency and accessibility of information related to space objects and aspired to promote cooperation among States.¹²² In doing so, the Registration Convention encouraged launching States to register their space objects by granting compliant States explicit jurisdiction and control over their objects in space.¹²³ Therefore, in the great expanse of outer space, where territoriality does not exist, some semblance of ownership may exist over man-made space objects if a launching State properly registers said object in their national registry.

With respect to cross-border suborbital flights, although in theory the vehicles may be considered space objects and, if registered, would provide ownership rights,¹²⁴ in practice the Registration Convention would not apply. State practice for the registration of orbital space objects—while desirable from the perspective of transparency—is neither consistent nor uniform.¹²⁵ Indeed, for suborbital vehicles that will likely only remain in space for a few hours, the licensing process would far outlast the flight itself.¹²⁶ Therefore, imposing a registration requirement on suborbital flights would be ineffective and would likely hamper the development of a suborbital marketplace. Although the objectives of the Registration Convention are impor-

¹²¹ Int'l Law Comm'n, Rep. on the Work of Its Eight Session, U.N. Doc. A/CN.4/104, art. 36 (1956).

¹²² Convention on Registration of Objects Launched into Outer Space pmbl., opened for signature Sept. 15, 1976, 28 U.S.T. 695, 1023 U.N.T.S. 15.

¹²³ *Id.* art. III.

¹²⁴ *See id.*

¹²⁵ For documentation of delayed submissions of launches from numerous States including spacefaring nations such as the United States and Russia, see Ram S. Jakhu, Bhupendra Jasani & Jonathan C. McDowell, *Critical Issues Related to Registration of Space Objects and Transparency of Space Activities*, 143 ACTA ASTRONAUTICA 406, 409–10 (2018).

¹²⁶ *See, e.g.*, Registration of Space Objects, 14 C.F.R. § 417(b) (2019).

tant and worth pursuing, the mechanism of registering a suborbital vehicle in national and UN registers is ill-suited to the fleeting presence of a suborbital vehicle in space. Rather, by upholding Article IX of the Outer Space Treaty (namely, ensuring a suborbital flight is carried out with due regard for the interests of other space activities), the objectives of the Registration Convention can be satisfied.

5. *Liability Convention*

The Liability Convention of 1971 expanded on Article VII of the Outer Space Treaty and provided that the launching State of a space object is liable for any damage caused by that space object, whether the damage occurs during launch or operation, and whether the damage occurs in space, on Earth, or to an aircraft in flight.¹²⁷ A launching State is defined as: (1) a State that launches a space object; (2) a State that procures the launch of a space object; (3) a State whose territory is used to launch a space object; and (4) a State whose facility from which a space object is launched.¹²⁸ The Liability Convention also denotes that if the damage occurs in space between two or more space objects, the launching State of the object that caused the damage is liable on the basis of internationally recognized fault;¹²⁹ if the damage is caused on Earth or to an aircraft in flight, the launching State is liable on the basis of absolute liability (barring a finding that the injured party had acted with gross negligence).¹³⁰

In many instances, two or more States can be characterized as the launching State of a space object, making them jointly and severally liable for any damage caused by that space object.¹³¹ For example, if Maple Leaf Space (a Canadian company) was to

¹²⁷ Convention on International Liability for Damage Caused by Space Objects arts. II–III, Mar. 29, 1972, 24 U.S.T. 2389, 961 U.N.T.S. 187 [hereinafter *Liability Convention*].

¹²⁸ *Id.* art. I(c).

¹²⁹ *Id.* art. III. International jurisprudence suggests that international fault is characterized as negligence, which is understood to be an infringement of the duty of due diligence or due care. See *Corfu Channel (U.K. v. Alb.)*, Judgment, 1949 I.C.J. 4 (Apr. 9); *Pulp Mills on the River Uruguay (Arg. v. Uru.)*, Judgment, 2010 I.C.J. 425 (Apr. 20); see also Giuseppe Palmisano, *Fault*, MAX PLANCK ENCYCLS. PUB. INT'L L. (2007), <http://opil.ouplaw.com/home/EPIL> [<https://perma.cc/FK7T-FB63>].

¹³⁰ *Liability Convention*, *supra* note 127, art. II.

¹³¹ LYALL & LARSEN, *supra* note 98, at 85–87; *Liability Convention*, *supra* note 127, art. IV.

procure the launch of a satellite from Bald Eagle Rockets (a U.S. company), and the object were to be launched from New Zealand, then all three—Canada, the United States, and New Zealand—would be launching States. If Maple Leaf Space’s satellite were to cause damage, all three would be jointly and severally liable. This remains true even if (as is the case in most instances) only Canada (by way of Maple Leaf Space) had control over the space object when it caused damage. To avoid the consequences of being found liable for damage caused by a space object exclusively under the control of another State, launching States often enter into an indemnification agreement prior to launch to appropriately protect the interests of the “bystander” States in case damage is caused by a space object of which they are a launching State.¹³²

6. Domestic Space Legislation

Domestic space laws fulfill an essential role in the regulation of space activities, as they implement a State’s international legal obligation to authorize the space activities of non-governmental entities. By creating a national regulatory framework (embodied by domestic space laws), a State provides legal clarity and certainty to its private space sector by precisely outlining the kinds of space activities, minimum safety standards, orbital requirements, system disposal plans, and other regulations that a State deems acceptable.

In some instances, the concretization of otherwise non-binding international norms into domestic space law (such as debris mitigation requirements¹³³ or the long-term sustainability of outer space¹³⁴), can influence the adoption of similar measures in other jurisdictions. For example, as a major spacefaring nation, the United States has been recognized for its ability to influence the development of global governance principles; by making a concerted effort to tackle specific issues within its national legal regime, it sets the course for other States to follow, or at the very least, consider implementing similar mecha-

¹³² LYALL & LARSEN, *supra* note 98, at 87, 89–90.

¹³³ Inter-Agency Space Debris Coordination Comm., Space Debris Mitigation Guidelines of the Committee on the Peaceful Uses of Outer Space, ¶¶ 1–2, U.N. Doc. ST/SPACE/49 (2010) http://www.unoosa.org/pdf/bst/COPUOS_SPACE_DEBRIS_MITIGATION_GUIDELINES.pdf [<https://perma.cc/ZEQ9-YBL4>].

¹³⁴ Comm. on the Peaceful Uses of Outer Space, Rep. on Its Fifty-Ninth Session, ¶¶ 125–38, annex, U.N. Doc. A/71/20 (2016).

nisms.¹³⁵ For example, when the United States enacted the space resource law,¹³⁶ soon thereafter Luxembourg followed¹³⁷ and the United Arab Emirates announced that it too would enact similar legislation.¹³⁸ This can be seen as a demonstration of other nations following the United States' lead in determining, at a domestic level, principles of international law that are not clearly defined or explained in the international space treaties. The expectation is that, in the context of suborbital flights, the United States may also assume a leading role in adopting new regulations to facilitate suborbital flights. This includes the U.S. Commercial Space Launch Amendment Act of 2004 (CSLAA), which has defined the expressions "suborbital rocket" and "suborbital trajectory" based on the unique technical features of these vehicles.¹³⁹ The CSLAA additionally stipulates the procedure for issuance of permits for suborbital rockets under a provision for "experimental permits."¹⁴⁰

III. LEGAL ISSUES ASSOCIATED WITH CROSS-BORDER SUBORBITAL FLIGHTS

Notwithstanding the technological complexities associated with suborbital flights, there are also significant legal complexities. Aside from simply determining how a State is to regulate suborbital flights within its own jurisdiction (such as the efforts already undertaken by the United States), there are additional legal complexities associated with such transportation when considering that the significant benefits, and likely future volume of flights, of suborbital transportation will be cross-border in nature.

¹³⁵ GLOBAL SPACE GOVERNANCE: AN INTERNATIONAL STUDY, *supra* note 7, at 108.

¹³⁶ Commercial Space Launch Competitiveness Act, Pub. L. No. 114-90, 129 Stat. 704 (2015).

¹³⁷ L'exploration et l'utilisation des ressources de l'espace [Exploration and Use of Space Resources], No. 674 (July 20, 2017) (Lux.), <http://data.legilux.public.lu/file/eli-etat-leg-loi-2017-07-20-a674-jo-fr-pdf.pdf> [<https://perma.cc/4VEX-9PZY>].

¹³⁸ The UAE recently enacted its own legislation but chose to enact a comprehensive space law rather than a law specific to space resource exploitation. On the Regulation of the Space Sector, Federal Law No. (12) (Dec. 19, 2019) (U.A.E.), <https://www.moj.gov.ae/assets/2020/Federal%20Law%20No%2012%20of%202019%20on%20THE%20REGULATION%20OF%20THE%20SPACE%20SECTOR.pdf.aspx> [<https://perma.cc/MG39-P4LH>].

¹³⁹ Commercial Space Launch Amendment Act, Pub. L. No. 108-492, § 2(b)(19)–(20), 118 Stat. 3974, 3976 (2004) [hereinafter CSLAA].

¹⁴⁰ *Id.* § 70105a.

A. THE DELIMITATION DEBATE

The regulation of suborbital flights is connected with the issue of delimitation between airspace and outer space.¹⁴¹ Discussions related to where airspace ends and where outer space begins were never finalized during the negotiations of the space treaties and continue to this day in the United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS).¹⁴² One ideology favors a “spatialist” approach, believing that it is necessary to delimitate a physical boundary between airspace and outer space,¹⁴³ whereas an opposing ideology favors a “functionalist” approach, believing that the law applicable to a specific activity can be determined by the nature and purpose of the activities being carried out.¹⁴⁴

Indeed, the absence of a clearly defined boundary results in ambiguities as to which laws are most appropriate for the regulation of suborbital flights.¹⁴⁵ This is attributed to the almost contradictory approaches to sovereignty in airspace and outer space.¹⁴⁶ States are prohibited from appropriating the outer space environment and are only permitted to assert sovereignty over their own space objects.¹⁴⁷ This is sharply contrasted with the extension of State sovereignty to the airspace above its territory.¹⁴⁸ From the absence of a boundary, the following questions thus emerge—at precisely what point would a suborbital flight move from airspace to outer space, and which laws would apply? Specifically, consider an international suborbital flight, which would entail the vehicle first traversing one State’s airspace, thereafter briefly entering and exiting outer space, and finally traversing another State’s airspace and landing in its territory.

¹⁴¹ Vernon Nase, *Delimitation and the Suborbital Passenger: Time to End Prevarication*, 77 J. AIR L. & COM. 747, 748–49 (2012).

¹⁴² *Id.* at 752.

¹⁴³ See Jinyuan Su, *The Delineation Between Airspace and Outer Space and the Emergence of Aerospace Objects*, 78 J. AIR L. & COM. 355, 363 (2013).

¹⁴⁴ *Id.* Scholar Jinyuan Su noted that the functionalist approach has been predominant in the last few decades due to the mostly separate spheres of aerial and space activities. *Id.* Consequently, there has been no urgent requirement for a physical boundary, as States directly comply with aviation law for aerial activities and comply with space law for space activities. *Id.*

¹⁴⁵ DEMPSEY, *supra* note 47, at 934–35, 944–45, 950–62.

¹⁴⁶ *Id.* at 940–50.

¹⁴⁷ Outer Space Treaty, *supra* note 104, art. II.

¹⁴⁸ Chicago Convention, *supra* note 41, art. 1.

B. ICAO CONCEPT PAPER ON SUBORBITAL FLIGHTS

In 2005, ICAO presented a concept paper on the regulation of suborbital flights, noting the future potential that a single suborbital flight could cross more than one national airspace.¹⁴⁹ In fact, ICAO had suggested that the issues surrounding cross-border travel could be addressed by way of bilateral agreements.¹⁵⁰ ICAO has raised the possibility of regulating suborbital flights within the framework of the Chicago Convention by incorporating additional annexes to the Chicago Convention, applicable to topics such as communication, navigation, surveillance, licensing, and airworthiness.¹⁵¹ However, due to the difficulties posed by the evolution of entirely new SARPs for this area, ICAO referred to a recommendation from the thirty-fifth ICAO Assembly in 2004, wherein an interim measure was proposed for “certain categories of aircraft or classes of airmen,” where it may be many years before SARPs are adopted, if at all.¹⁵²

ICAO cited Resolution A35-14, which stipulates that “certificates and licenses issued or rendered valid, under national regulations, by the Contracting State in which the aircraft is registered shall be recognized by the other Contracting States for the purpose of flight over their territories, including landings and takeoffs.”¹⁵³ The subsequent reference to domestic U.S. legislation in this regard¹⁵⁴ is of particular relevance, as the CSLAA identified the Department of Transportation and the FAA as the governmental entities responsible for the regulation of operations and safety of the commercial human space flight industry.¹⁵⁵

IV. REGULATING SUBORBITAL FLIGHTS WITHIN EXISTING AVIATION LAW AGREEMENTS

The legal discussions presented above apply to specific activities solely within the domain of airspace or outer space; however, suborbital flights are unique in that they straddle both domains and cannot be characterized as exclusive enterprises of

¹⁴⁹ *ICAO Concept Paper*, *supra* note 6, at 5.2.

¹⁵⁰ *Id.*

¹⁵¹ *Id.* at 5.3.

¹⁵² *Id.* (referencing G.A. Res. 35/14, app. G (Nov. 3, 1980)).

¹⁵³ *Id.* (citing G.A. Res. 35/14, *supra* note 152, cl. 2).

¹⁵⁴ *Id.* at 5.4.

¹⁵⁵ CSLAA, *supra* note 139, § 70101(c)(1).

aviation or space.¹⁵⁶ Therefore, until international law or national consensus (as derived from a majority of domestic space laws) has concluded that suborbital flights belong exclusively in one domain or another, a hybrid governance structure will necessarily apply.

As stated above, the technology for suborbital flights differs across companies.¹⁵⁷ Regardless of the chosen technological deployment, however, suborbital vehicles spend only a minimal amount of time in outer space and a majority of the vehicle's function occurs in airspace.¹⁵⁸ Therefore, suborbital flights are more similar in function to traditional aircraft, and hence are more suited to be regulated under the laws applicable to aviation. Given the similarities between traditional international aviation and suborbital aviation (for example, their use of the same airspace, their use to transport people and cargo, etc.), continuity between air traffic management, takeoff and landing permissions, safety, security, and other related matters would prove necessary. Rather than creating a parallel regulatory structure for suborbital activities (simply because of their limited exposure to space), incorporating such activities into the existing aviation regime is preferable. As technologies flourish, this approach would better serve the specific and relevant interests of States.

A. A PROPOSAL TO REGULATE CROSS-BORDER SUBORBITAL FLIGHTS

A bilateral agreement governing cross-border suborbital flights would be a progressive development toward ensuring the safe and efficient operation of a nascent suborbital industry with minimal disruption to the existing and extremely important aviation industry. As discussed above, bilateral agreements are treaties between concerned States under international law.¹⁵⁹ Although a bilateral or multilateral air services agreement that includes provisions related to suborbital flights does not yet exist, there is clear support for such a solution, including ICAO's own suggestions that such vehicles be regulated through bilateral agreements.¹⁶⁰ If a critical mass of States include provisions

¹⁵⁶ GLOBAL SPACE GOVERNANCE, AN INTERNATIONAL STUDY, *supra* note 7, at 130.

¹⁵⁷ See Part I.B, *infra*.

¹⁵⁸ Nase, *supra* note 141, at 757.

¹⁵⁹ See Part II.A.2, *infra*.

¹⁶⁰ ICAO *Concept Paper*, *supra* note 6, at 5.2.

related to the safe and secure operation of suborbital flights in their bilateral and multilateral air services agreements, such precedent would allow ICAO to establish best-practices and produce SARPs related specifically to suborbital technologies.

Given the current legal ambiguities surrounding the status of suborbital flights,¹⁶¹ it is contended that standards related to cross-border suborbital flights be introduced to existing bilateral agreements between two States (such as the United States and Canada). These amendments would include provisions on liability, indemnity, and registration and would not only ensure that States involved in the suborbital flight in question comply with international space law (if the vehicle is considered a space object), but also would provide a means to said States to clarify their positions in case of damage. Since suborbital vehicles spend the majority of their flight time traversing airspace and only remain in outer space for a short period, traditional “space object registration” methods will not prove effective.¹⁶² Instead, registration of the craft (or its “principal place of business” in ICAO parlance) ought to be carried out (as is the case with aircraft), and the jurisdiction in which the vehicle is registered ought to be considered the launching State (and therefore determine liability) for any space-related damage.

Consider the following example: Vehicle X is registered in Canada and scheduled to take off from a spaceport located in Nova Scotia, spend ten minutes in space and re-enter Earth, finally landing at a spaceport located in the United States. Under the proposed framework, imagine that X accidentally collides with a Japanese satellite Y, and Japan chooses to bring a claim under the Liability Convention¹⁶³ for damage to Y. Since the bilateral agreement between Canada and the United States specified that the State in which the suborbital vehicle is registered is to be considered the sole launching State for the purposes of liability,¹⁶⁴ and because X is registered in Canada, Canada would be the launching State and would assume fault-based liability for damage caused to the Japanese satellite Y. Under the proposed model, even if Japan elects to bring a claim for joint liability against the United States and Canada collectively, the bilateral

¹⁶¹ GLOBAL SPACE GOVERNANCE: AN INTERNATIONAL STUDY, *supra* note 7, at 130.

¹⁶² Largely because space objects are, at the earliest, only required to register days after their launch, not prior to or immediately following a launch. *E.g.*, 14 C.F.R. § 417.19(b) (2019).

¹⁶³ Liability Convention, *supra* note 127, art. II.

¹⁶⁴ U.S.-Canada ASA, *supra* note 58, arts. 14.3, 21–22.

agreement would provide, in effect, an indemnification clause whereby Canada, as the State in which Vehicle X is registered, would indemnify the United States. The proposed framework therefore circumvents the ongoing debate regarding delimitation and the overlapping regimes of air and space law, by compelling States to contractually resolve such issues.

Alternatively, if X accidentally collides with a passing aircraft upon re-entry—or for example, an Aeromexico flight—then Canada would be absolutely liable to Mexico for damage caused by its space object under Article II of the Liability Convention.¹⁶⁵ The same would be true if X caused damage while returning from the United States back to Canada. In such a situation, traditional space law would deem both the United States and Canada as joint launching States since X would have been “launched” from U.S. territory; however, the proposed amendments to the existing bilateral treaty would ensure only Canada is considered a launching State.

Incorporating a clause in the bilateral agreement which requires that the suborbital vehicle be registered in a single State, and further, that such registration amounts to a State’s status as the sole launching State for purposes of liability, will thus clearly identify which entities would be internationally liable in case of damage. Indeed, the amended bilateral agreement could include provisions related to indemnity, where one State (the registering State) would be obliged to indemnify the other in certain cases of damage.

The suggested approach of amending existing bilateral agreements may have the overall appearance of adhering to the functionalist perspective.¹⁶⁶ However, it is pertinent to note that this approach would not contradict a spatialist view that requires drawing a physical boundary,¹⁶⁷ as the suborbital vehicle would still comply with aviation laws while it traverses airspace and comply with international space law for the duration it is in the domain of outer space. For instance, if a 100-kilometer boundary is indeed declared as the official demarcation at UNCOPUOS, the Authors’ suggested clause regarding damage while the craft is in outer space would still apply to any damage occurring beyond 100 kilometers. The consequence of such a demarcation would be that the State in which the suborbital

¹⁶⁵ Liability Convention, *supra* note 127, art. II.

¹⁶⁶ See DEMPSEY, *supra* note 47, at 946–50.

¹⁶⁷ *Id.* at 940–41.

craft is registered would be considered the sole launching State, to the exclusion of all other traditional launching States.

V. AMENDING THE EXISTING U.S.–CANADA BILATERAL

Having established that a bilateral agreement can address preliminary regulatory incongruities, it is suggested that rather than negotiating an entirely new agreement, States simply amend their existing bilateral air services agreements to accommodate the regulation of suborbital flights. The U.S.–Canada Air Services Agreement¹⁶⁸ has been identified as a case study for three reasons. First, both States are spacefaring nations with suborbital capabilities.¹⁶⁹ Second, as mentioned above, the United States has adopted domestic legislation to clarify certain technical aspects of suborbital flights.¹⁷⁰ Third, a bilateral approach to suborbital flights would be mutually beneficial to both States and provide them each a competitive advantage, as evidenced below.

A. THE U.S.–CANADA BILATERAL AIR SERVICES AGREEMENT

While the United States has continued to pursue open skies agreements with other nations to liberalize the aviation market,¹⁷¹ Canada maintains its own “Blue Sky Policy,” which entails negotiating agreements exclusively on a case-by-case basis.¹⁷² Therefore, while the United States and Canada have a bilateral agreement that amounts to an open skies agreement, Canada does not accord the same flexibility to its other international air services agreements.¹⁷³ Although Canada has a more protectionist policy as compared to the United States, this form of treaty-making appears to correspond with the growing preference for individual national space laws rather than wide-sweeping international agreements.¹⁷⁴ Furthermore, Canada’s approach for

¹⁶⁸ U.S.–Canada ASA, *supra* note 58.

¹⁶⁹ See *International Cooperation*, NASA (last updated Feb. 28, 2019), https://www.nasa.gov/mission_pages/station/cooperation/index.html [https://perma.cc/55BN-XKEH].

¹⁷⁰ See Part II.B.6, *infra*.

¹⁷¹ Press Release, U.S. White House, Commemorating the 25th Anniversary of the U.S. Open Skies Policy and 10th Anniversary of the U.S.–EU Open Skies Agreement (July 10, 2017), <https://www.state.gov/commemorating-the-25th-anniversary-of-the-u-s-open-skies-policy-and-10th-anniversary-of-the-u-s-eu-open-skies-agreement/> [https://perma.cc/VF7U-C852].

¹⁷² See *The Blue Sky Policy: Made in Canada, for Canada*, *supra* note 59.

¹⁷³ *Id.*

¹⁷⁴ See *Creating Opportunities Through Open Skies Agreements*, UNITING AVIATION (July 18, 2018), <https://unitingaviation.com/news/economic-development/crea>

specific agreements, as opposed to a universal format for all agreements, may be more suitable to accommodate the interests of individual States and the nuances of their respective aerospace sectors, particularly in the context of regulating suborbital flights.

In March 2007, the United States and Canada entered into a new bilateral open skies agreement (USCASA), which remains in force.¹⁷⁵ The agreement includes an exchange of fifth freedom rights (enabling carriers to serve points in third countries),¹⁷⁶ seventh freedom rights (related to cargo),¹⁷⁷ and provisions related to competitive pricing.¹⁷⁸ Through this agreement, carriers in both States can operate scheduled air transport services between any point(s) in the United States and Canada.¹⁷⁹ Provisions of the USCASA that would be relevant to cross-border suborbital flights are briefly outlined below.

Article 12 of the USCASA requires that a State's airlines entering, exiting, or conducting operations within the territory of the receiving State comply with all laws relating to operation and navigation of aircraft of the receiving State.¹⁸⁰ By extending this clause to apply similarly to suborbital vehicles, a Canadian suborbital flight destined for the United States would, in addition to Canadian domestic law, therefore be obligated to comply with U.S. domestic laws on safety and security related to suborbital flights as the vehicle would land in American territory.

Further, Article 13 of the USCASA pertains to safety, mandating both parties to recognize certificates and licenses of the other Party, with a condition requiring that such certificates or licenses "at least equal the minimum standards that may be established pursuant to the [Chicago] Convention."¹⁸¹ The clause simultaneously grants each party the right to refuse recognition of such documents granted to or validated for its own nationals, for the purposes of flight above its own territory.¹⁸² Although there are no standards in place for suborbital vehicles, inserting a new Article 13 provision that grants permission to suborbital

ting-opportunities-through-open-skies-agreements/ [https://perma.cc/63X4-2Z4C].

¹⁷⁵ See U.S.-Canada ASA, *supra* note 58.

¹⁷⁶ See *id.* at annex III.

¹⁷⁷ See *id.* art. 11.7.

¹⁷⁸ See *id.* art. 6.

¹⁷⁹ See *id.* at annex III.

¹⁸⁰ *Id.* art. 12.

¹⁸¹ *Id.* art. 13.

¹⁸² *Id.*

vehicles upon the inspection and approval of the other State's domestic aerospace authorities would address this gap. This would allow, for example, the FAA to conduct a safety inspection of a suborbital vehicle from a Canadian company, until such time that the suborbital industry grows sufficiently large enough to culminate in the creation of internationally recognized standards.

Article 14 of the USCASA concerns security procedures for aviation and reaffirms compliance with international conventions already in place: i.e., the Tokyo Convention of 1963, Hague Convention of 1970, Montreal Convention of 1999, and Montreal Protocol of 1988.¹⁸³ Similar to the previous clause on safety, Article 14 requires conformity with SARPs and mandatory notification to ICAO of any non-conformity.¹⁸⁴ This clause also provides for the mutual observance of the other State's security procedures when entering, exiting, or operating in that State.¹⁸⁵ Notably, there is also a provision for "sympathetic consideration" to a request from the other Party to enter into reciprocal administrative arrangements permitting the domestic authorities of one Party to assess security measures in respect of flights destined to its territory.¹⁸⁶ This provision could be amended to apply the same security procedures to both passengers and payloads on suborbital vehicles, as States would likely desire conformity with domestic security protocols when an international suborbital flight enters its territory.

VI. CONCLUSION

The regulation of suborbital flights has been hindered by interminable discussions regarding the delimitation between airspace and outer space and the applicability of air or space law.¹⁸⁷ This Article proposes the amendment of existing bilateral air services agreements between States as a first step towards the development of regulatory standards applicable to international suborbital flights. This conclusion is based on the established benefits of a bilateral agreement, which include approved routes and frequency, in addition to minimum standards for safety and security. The bilateral agreement could promote transparency

¹⁸³ *Id.* art. 14.

¹⁸⁴ *Id.*

¹⁸⁵ *Id.*

¹⁸⁶ *Id.*

¹⁸⁷ GLOBAL SPACE GOVERNANCE: AN INTERNATIONAL STUDY, *supra* note 7, at 36.

by specifying the information required to be shared with the other State, such as the technical features of the craft, coordinates and route, and the duration in which it would operate in the receiving party's airspace. Further, the bilateral agreement could introduce a provision mandating registration of the vehicle, which would clearly identify which State is liable in case of damage under the Outer Space Treaty and the Liability Convention.

In the proposed manner, bilateral agreements would dovetail with parallel discussions regarding the delimitation of airspace and outer space. Therefore, even if a demarcation is eventually introduced, bilateral agreements regulating suborbital flights would not be significantly affected.

A considerable advantage to bilateral agreements is not only the likelihood of acceptance, but also the competitive benefits accorded to certain States. Specifically, with respect to the United States and Canada for instance, the USCASA could be amended to remove the prohibition on transport of passengers or cargo between two points in the other State's territory, and instead integrate the North American region into a consolidated aerospace market, similar to that of the EU.¹⁸⁸ If such an integration were to occur, the commercial space markets of both States would benefit from greater access to routes, technological support, and information-sharing.¹⁸⁹

Finally, bilateral agreements may subsequently culminate in the creation of minimum standards regarding aspects of international suborbital transport, such as safety and security. Eventually this may lead to a global consensus on uniform standards, either by way of a multilateral agreement, or under the auspices of ICAO and its annexes to the Chicago Convention.

¹⁸⁸ U.S.-Canada ASA, *supra* note 58, art. 2; *see also id.* pmb. (“[r]ecognizing . . . the geographic situation of the two countries, including the location of their main centers of population,” and further noting that “the close relationship between their two peoples create a situation unique in international civil aviation.”).

¹⁸⁹ It may also be true that the traditional commercial aviation markets of both States would similarly benefit.

**FEDERAL DOLLARS FOR ALL HUMANKIND:
USING PROCUREMENT LAW TO INCREASE DIVERSITY
IN THE SPACE INDUSTRY**

NICOLE WILLIAMSON*

ABSTRACT

This Article explores how to employ federal government contracting programs to increase gender and racial diversity within the space industry. Part II of the Article touches briefly on the importance of diversity generally and examines the underrepresentation of women and minorities within the \$325 billion industry surrounding outer space activities. Part III provides a high-level overview of federal government contracting, in particular focusing on Small Business Administration programs intended to benefit small businesses, minority-owned businesses, and women-owned businesses. Part IV concentrates on contracting within the space industry. Part V offers three suggestions to increase contract awards to women and minority business owners, thereby advancing toward the ultimate goals of encouraging women and minorities to start small businesses, directing capital toward disadvantaged groups, and increasing mission success through diverse perspectives and involvement.

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I. INTRODUCTION

IN FISCAL YEAR 2019, National Aeronautics and Space Administration (NASA) procurement obligations totaled over \$19.5 billion¹ as the agency worked with private partners to advance its vision of reaching for new heights and revealing the unknown for the benefit of humankind.² Of the billions of contracting dollars the agency awarded, a significant portion went to large, established businesses such as the approximate \$1.7 billion, \$1.3 billion, and \$915 million awarded to The Boeing Company (Boeing), Lockheed Martin Corporation (Lockheed Martin), and Jacobs Technology, Inc. (Jacobs), respectively.³ Even beyond contract awards to long-time government contractors, newer space industry actors have increasingly sought out and won NASA's heart and dollars. For example, in 2019, NASA awarded \$914 million in contracting dollars to Space Exploration Technologies (SpaceX),⁴ the unconventional recent entrant to the federal contracting world, whose work with NASA has solidified into a formidable partnership.

Indeed, in 2019 alone, NASA's work with SpaceX included a considerable number of contracts to advance some of the agency's most awe-inspiring missions. NASA entered into a \$50.3 million contract with SpaceX to provide launch services for the Imaging X-Ray Polarimetry Explorer (IXPE) mission, which seeks to measure polarized X-rays from some of the universe's most mysterious and fascinating phenomena like black holes and neutron stars.⁵ The agency also entered into a similar launch services contract of \$69 million for the Double Asteroid

¹ *Fiscal Year 2019*, 2019 NASA ANN. PROCUREMENT REP. 1, 6 [hereinafter *NASA FY19 Procurement Report*], https://www.nasa.gov/sites/default/files/atoms/files/annual_procurement_report_2019_final.pdf [https://perma.cc/UH2P-76BD].

² *Our Mission and Values*, NASA, <https://www.nasa.gov/careers/our-mission-and-values> [https://perma.cc/FV3X-23KJ].

³ *NASA FY19 Procurement Report*, *supra* note 1, at 20.

⁴ *Id.*

⁵ Press Release, Nat'l Aeronautics & Space Admin., NASA Awards Launch Services Contract for Groundbreaking Astrophysics Mission (July 8, 2019), <https://www.nasa.gov/press-release/nasa-awards-launch-services-contract-for-ground-breaking-astrophysics-mission> [https://perma.cc/ZH5P-4RUP].

Redirection Test (DART) mission.⁶ Each additional launch services contract award rests on the existing baseline of a \$3.1 billion commercial crew partnership to send astronauts to the International Space Station (ISS) directly from U.S. soil,⁷ among several other ongoing agreements.

Yet beyond massive dollar awards to aerospace industry giants and newer innovators, NASA contracts with no shortage of small businesses—in fact, forty-nine small business firms feature amongst the agency's top 100 contractors by dollar value.⁸ In the same one-year period that NASA deepened its launch services partnership with SpaceX, the agency also entered into 12,914 contract actions with small businesses.⁹ NASA's relationships with small businesses, including minority-owned small businesses (MOSBs) and women-owned small businesses (WOSBs), provide enormous benefits to both the agency and to individual business owners seeking opportunities for investment and experience. For example, NASA's Ames Research Center has worked with woman-owned Earth Resources Technology for earth science data modeling and analysis, geospatial data management, and safety engineering.¹⁰ Glenn Research Center benefits from the services of Logical Innovations, Inc., a minority-owned and economically disadvantaged small business providing strategic operational support, training, and software development.¹¹ Similarly, in 2014, WOSB MORI Associates, Inc. was awarded a ten-year, \$200 million contract to provide IT infra-

⁶ Press Release, Nat'l Aeronautics & Space Admin., NASA Awards Launch Services Contract for Asteroid Redirect Test Mission (Apr. 11, 2019), <https://www.nasa.gov/press-release/nasa-awards-launch-services-contract-for-asteroid-redirect-test-mission> [<https://perma.cc/H7BD-J7RA>].

⁷ Jeff Foust, *The Long Countdown to Commercial Crew's Liftoff*, SPACE NEWS (July 5, 2020), <https://spacenews.com/the-long-countdown-to-commercial-crews-liftoff/> [<https://perma.cc/H8W6-AAHR>]. Since the retirement of the Space Shuttle program in 2011, the United States had not sent astronauts directly to the ISS from U.S. soil—American astronauts traveled on Russia's Soyuz vehicle—until recently. Press Release, Nat'l Aeronautics & Space Admin., NASA Astronauts Launch from America in Historic Test Flight of SpaceX Crew Dragon (May 30, 2020), <https://www.nasa.gov/press-release/nasa-astronauts-launch-from-america-in-historic-test-flight-of-spacex-crew-dragon> [<https://perma.cc/PMS7-AURQ>]. In May 2020, SpaceX successfully launched U.S. astronauts from NASA Kennedy Space Center in Florida to the ISS. *Id.*

⁸ NASA FY19 Procurement Report, *supra* note 1, at 20.

⁹ *Id.* at 16.

¹⁰ NASA OFF. SMALL BUS. PROGRAMS, NASA OSBP SPOTLIGHT: WOMEN-OWNED SMALL BUSINESSES 10 (2014), https://osbp.nasa.gov/docs/OSBP_WOSB_SPOTLIGHT_Rev2-TAGGEDv2.pdf [<https://perma.cc/Z897-KY8P>].

¹¹ *Id.* at 12.

structure support to the NASA Jet Propulsion Laboratory.¹² Moreover, NASA investment helps businesses grow. After seeking advice from NASA in March 2011 with a company of only two employees, Kegman, Inc. founder Susan “Susie” Glasgow was able to win her first NASA contract in September 2011 to support the Kennedy Space Center Doppler Radar Wind Profiler.¹³ Through performance of this government contract, Glasgow expanded her business to sixteen employees and, in the last few years, secured four prime contracts to revenues of \$1 million.¹⁴ In this way, NASA contracts often contribute to the growth of a significant number of MOSBs and WOSBs.

Given the enormity of NASA’s \$19 billion in yearly contracting dollars, allocated to both large corporations and a variety of small businesses, the agency has a considerable opportunity to shape investment in the space industry. This raises important questions: how does NASA award contracting dollars, and how can those dollars be allocated with social policy in mind to support and uplift various actors in the space industry? To what extent might the potential to secure government contracts encourage women, minorities, and others traditionally underrepresented in outer space work to become more involved with NASA and the space industry?

This Article seeks to increase the involvement of women and minority business owners in the space industry by encouraging NASA and other agencies procuring space technology to employ existing “affirmative action” government contracting programs more frequently and efficiently. Part II highlights the lack of gender and racial diversity in the space field. It notes the concerning low involvement of women in private aerospace work—just over 24% women—and the underrepresentation of women and minorities at NASA in scientific, mission-driven positions and top leadership. Part III provides a primer on the legal framework regulating contracts with the federal government and the general mechanics of agency contract awards. The section provides brief background on the Small Business Administration (SBA) and its small business contracting programs, examining in particular the WOSB program and the SBA 8(a) Business Development Program (8(a) Program) for socially and economically disadvantaged business owners. Part IV examines

¹² *Id.* at 9, 14.

¹³ *Id.* at 15.

¹⁴ *Id.*

these contracting programs within the context of the space industry, analyzing how agencies such as NASA and the Department of Defense (DoD) have met, or at times have fallen short of, government-wide goals for contracting with WOSBs and MOSBs. Finally, Part V proposes potential solutions to increase the number of women-owned businesses (WOBs) and minority-owned businesses (MOBs) to which NASA awards procurement dollars, from improving on SBA program inefficiencies to implementing legislation intended to increase diversity in science, technology, engineering, and mathematics (STEM) fields more generally.

II. DEFINING THE PROBLEM: THE IMPORTANCE OF DIVERSITY

It is indisputable that diversity matters.¹⁵ Both private employers¹⁶ and the federal government¹⁷ recognize that diverse workplaces form an essential part of a successful enterprise. Though diversity remains difficult to define, diversity is, at its core, “the collective amount of differences among members within a social unit.”¹⁸ Within a work environment, scholars define workplace diversity as “variation of social and cultural identities among people existing together in an employment or market setting.”¹⁹ Most essential is that the term refers to the collective—“[a]n individual cannot be diverse, but groups of individuals (e.g., the

¹⁵ CARY FUNK & KIM PARKER, WOMEN AND MEN OFTEN AT ODDS OVER WORKPLACE EQUITY 72 (2018), <https://www.pewsocialtrends.org/2018/01/09/diversity-in-the-stem-workforce-varies-widely-across-jobs/> [<https://perma.cc/Y99H-6B4J>]. Eight in ten Americans say it is at least somewhat important to have racial and ethnic diversity in today’s workplaces, including around half who categorize this as “extremely” (26%) or “very” important (27%). *Id.*

¹⁶ See generally Matti F. Dobbs, *Managing Diversity: Lessons from the Private Sector*, 25 PUB. PERSONNEL MGMT. 351 (1996).

¹⁷ The federal government has recognized the importance of diversity in federal workplaces, including the military. See Hugh B. McClean, *The Diversity Rationale for Affirmative Action in Military Contracting*, 66 CATH. U. L. REV. 745, 749 (2017) (“The U.S. Supreme Court recognized that a racially integrated military is a matter of national security.”).

¹⁸ GEORGE GOTSIS & ZOE KORTEZI, CRITICAL STUDIES IN DIVERSITY MANAGEMENT LITERATURE: A REVIEW AND SYNTHESIS 1 (2015) (quoting David A. Harrison & Hock-Peng Sin, *What is Diversity and How Should it Be Measured?*, in MARGARET S. STOCKDALE & FAYE J. CROSBY, THE PSYCHOLOGY AND MANAGEMENT OF WORKPLACE DIVERSITY 3–30 (2006)).

¹⁹ *Id.* at preface.

scientific research workforce) can possess diversity.”²⁰ Promoting full inclusion means that workplaces must include employees from backgrounds that are traditionally underrepresented as well as those backgrounds that are already well represented in the field.²¹

A. WHY PURSUE WORKPLACE DIVERSITY?

There are untold benefits to workplace and industry diversity across a multitude of measures. Perhaps most important for the success of space missions is the increase in creative thinking. Scientific research often involves group problem-solving.²² As researchers have noted, “the ability to see the problem differently, not simply ‘being smart,’ often is the key to a breakthrough.”²³ Individuals of varying backgrounds do, on average, tend to “approach work and problem solving differently”—differences which spur the innovation needed to drive advancement.²⁴ Sixty-five leading American businesses, as amici in the Supreme Court case *Grutter v. Bollinger*,²⁵ stressed that diverse workplaces result in greater creativity, which often presents more unique and effective solutions to the new problems that arise in a quickly growing marketplace, achieved by integrating different perspectives.²⁶

In addition to increased creativity and innovation, diverse workspaces take better advantage of the presumed natural distribution in talent across racial, ethnic, and gender lines, amongst other identities. Research reveals no evidence that brilliant, scientific minds are unequally represented across socially constructed lines of identity.²⁷ By maintaining a system that discourages women and minorities from entering certain fields, such as STEM, in addition to the gross underrepresentation of

²⁰ Kenneth Gibbs, Jr., *Diversity in STEM: What It Is and Why It Matters*, SCI. AM. (Sept. 10, 2014), <https://blogs.scientificamerican.com/voices/diversity-in-stem-what-it-is-and-why-it-matters/> [<https://perma.cc/W9QL-FES2>].

²¹ *See id.*

²² *Id.*

²³ *Id.*

²⁴ *Id.*

²⁵ 539 U.S. 306 (2003). The Supreme Court upheld the narrowly tailored use of race in admissions decisions, noting the benefits of educational diversity. *Id.* at 343.

²⁶ Brief for Amici Curiae 65 Leading American Business in Support of Respondents, *Grutter*, 539 U.S. 306 (Nos. 02-241, 02-516), 2003 WL 399056, at *7.

²⁷ Gibbs, *supra* note 20 (quoting Francis Collins, Director, National Institute of Health).

women and minorities in many career fields, industries lose access to top talent.²⁸ Former National Institute of Health Director Francis Collins described such underrepresentation as resulting in an “inescapable conclusion that we are missing critical contributors to our talent pool.”²⁹

For the private sector, workplace diversity also drives profit. A McKinsey & Company study found that “[c]ompanies in the top quartile for racial and ethnic diversity are 35 percent more likely to have financial returns above their respective national industry medians.”³⁰ Gender wise, “[c]ompanies in the top quartile for gender diversity are 15 percent more likely” to see higher financial returns.³¹ In addition to company-wide diversity, a diverse leadership team matters³²—a finding of particular interest for this Article’s study of businesses owned by women or minorities. Diversity plays as an essential part of competing in today’s marketplace and an increasingly diverse nation.³³

The increased creativity, talent, and profit derived from diverse workplaces creates stronger contractors that can build better products through ingenuity and reinvestment of profit into research and design. The government in turn reaps the benefits of efficiency and better products or services, which drive overall mission success. Such ingenuity is all the more crucial when applied to the creative thinking necessary to plan for the vast unknowns of space. Given the importance of diversity, the next sections examine diversity statistics within the space industry and in the NASA workforce.³⁴

²⁸ *Id.*

²⁹ *Id.*

³⁰ Vivian Hunt, Dennis Layton & Sara Prince, *Why Diversity Matters*, MCKINSEY & CO. (Jan. 1, 2015), <https://www.mckinsey.com/business-functions/organization/our-insights/why-diversity-matters> [<https://perma.cc/2FH5-5K64>].

³¹ *See id.* (“More diverse companies . . . are better able to win top talent and improve their customer orientation, employee satisfaction, and decision making, and all that leads to a virtuous cycle of increasing returns.”).

³² *See id.* (“[F]or every 10 percent increase in racial and ethnic diversity on the senior-executive team, earnings before interest and taxes (EBIT) rise 0.8 percent.”).

³³ Brief for Amici Curiae 65 Leading American Business in Support of Respondents, *supra* note 26, at *2.

³⁴ This Article addresses diversity in a variety of environments, from industry-wide diversity (the gender and racial diversity of the space industry at large) to workplace diversity (the percentage of women and minority employees at NASA, by job function and seniority) and programmatic diversity (the success of SBA initiatives in ensuring appropriate diversity in the federal government contracting arena). The Author recognizes that these environments are not analogous—comparisons do not fully account for the complexity of addressing

B. DIVERSITY IN THE SPACE INDUSTRY

What is the space industry, and why does it struggle with diversity? How do challenges in involving diverse voices differ in the private and public sectors? At its core, the “space industry” refers to “the economic sector providing goods and services related to space.”³⁵ Many limit the definition to its “purest” form, the narrower subset of space actors providing hardware (typically “launchers and satellites”), ground equipment, or sub-components for those items.³⁶ More broadly, the space industry rests within the overall *aerospace industry*—the “assemblage of manufacturing concerns that deal with vehicular flight within and beyond Earth’s atmosphere”³⁷—and the *space economy*, which can include any private or public actor providing space-enabled products and services, from space hardware to space tourism.³⁸ This Article will adopt a broad conception of the space industry, with a slight focus on scientific and technical positions over the business, marketing, legal, creative, and other skills and positions crucial to driving the overall space economy.

Overall, aerospace suffers from a lack of gender diversity. Studies indicate that only 24% of aerospace employees are women, with little change in recent years.³⁹ While several prominent women lead major space industry entities—for example, Gwynne Shotwell, President and Chief Operating Officer for SpaceX, and Leanne Caret, head of Boeing’s defense and space division⁴⁰—the industry as a whole still faces immense challenges. As lamented by an influential woman in space:

diversity in such disparate environments, and the extent to which the meaning and goal of “diversity” vary in each environment.

³⁵ EUROPEAN SPACE POLICY INST., YEARBOOK ON SPACE POLICY 2008/2009: SETTING NEW TRENDS 49 (Kai-Uwe Schrogl, Wolfgang Rathgeber, Blandina Baranes & Christophe Venet eds., 2011).

³⁶ *Id.*; see also Jeff Foust, *What is the “Space Industry?”*, SPACE REV. (July 14, 2003), <https://www.thespacereview.com/article/34/1> [<https://perma.cc/7XNX-AH9N>].

³⁷ Stanley I. Weiss, *Aerospace Industry*, ENCYCL. BRITANNICA (July 26, 1999), <https://www.britannica.com/technology/aerospace-industry> [<https://perma.cc/S5GV-LHX6>] (including the full range of vehicles from balloons, airplanes, missiles, space launch vehicles, and spacecraft).

³⁸ See generally *id.*

³⁹ Christian Davenport, *At NASA, 2019 Was the Year of the Woman, Yet Women are Still a Big Minority at the Space Industry*, WASH. POST (Nov. 26, 2019), <https://www.washingtonpost.com/technology/2019/11/26/nasa-was-year-woman-yet-women-still-are-big-minority-space-agency/> [<https://perma.cc/L66C-FRDZ>].

⁴⁰ *Id.*

“[a]erospace is still heavily male and white, and we’re not moving very quickly.”⁴¹

Given the crux of space activity—the need for expertise in STEM fields to build space hardware and orchestrate complex, technical operations for space missions—much of core space industry work requires some experience with STEM. However, women are vastly underrepresented in STEM fields overall.⁴² While women fill close to half the total “college-educated workforce” in the U.S. economy, in 2017 women held less than 30% of STEM jobs,⁴³ which is approximately “half as many women [] working in STEM jobs as one might expect if gender representation in STEM professions mirrored the overall workforce.”⁴⁴ For women of color in academia, despite earning a higher percentage of doctorates in science than minority men, only 3% of minority women were employed in STEM academic positions in 2006.⁴⁵ Out of “7,000 computer-science doctoral faculty in 2006, only sixty were African American women,” and “numbers for Hispanic and Native American women were too low to [even] report.”⁴⁶ Beyond mere statistics on underrepresentation, women in male-dominated fields often experience a host of negative experiences, such as isolation, harassment, or bullying, which serve to dissuade entry or continued work in the field—further worsening representation.⁴⁷ The lack of women in STEM serves as one cause of low female involvement in the space industry: women are vastly underrepresented in STEM overall.

⁴¹ *Id.* (quoting Mary Lynne Dittmar, President and Chief Executive Officer of the Coalition for Deep Space Exploration).

⁴² *Quick Take: Women in Science, Technology, Engineering, and Mathematics (STEM)*, CATALYST (Aug. 4, 2020) [hereinafter *Catalyst Data*], <https://www.catalyst.org/research/women-in-science-technology-engineering-and-mathematics-stem/> [<https://perma.cc/TC6E-XZSA>].

⁴³ *Id.* In terms of scientific research and development, women worldwide accounted for only 29.3% of those employed in 2016. *Id.*

⁴⁴ DAVID BEEDE, TIFFANY JULIAN, DAVID LANGDON, GEORGE MCKITTRICK, BEETHIKA KHAN & MARK DOMS, U.S. DEP’T OF COM. ECON. & STA. ADMIN., ESA ISSUE BRIEF NO. 04-11, WOMEN IN STEM: A GENDER GAP TO INNOVATION 2 (2011).

⁴⁵ Marcy H. Towns, *Where are the Women of Color? Data on African American, Hispanic, and Native American Faculty in STEM*, 39 J. COLL. SCI. TEACHING, Mar. 2010, at 8.

⁴⁶ See CATHERINE HILL, CHRISTIANNE CORBETT & ANDRESSE ST. ROSE, WHY SO FEW? WOMEN IN SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS 15–17 (2010).

⁴⁷ *Id.* at 24 (“Women cited feelings of isolation, an unsupportive work environment, extreme work schedules, and unclear rules about advancement and success as major factors in their decision to leave.”).

Racial and ethnic minorities are similarly underrepresented in STEM. Hispanic employees comprise 16% of the total U.S. workforce but only 7% of STEM workers; for African Americans, only 9% are employed in STEM out of a total of 11% of the U.S. workforce.⁴⁸ For sectors of the STEM workforce requiring a bachelor's degree or higher, only 6% are Hispanic and 7% are Black.⁴⁹ In contrast, Asian-Americans are overrepresented at 13% of the STEM workforce, which is above their 6% share of the workforce overall.⁵⁰ For occupations particularly relevant to space research and development, Black and Hispanic STEM majors are most underrepresented: the two populations represent *together* “only 14% of chemists and materials scientists, 10% of atmospheric and space scientists, . . . and 6% of astronomers and physicists.”⁵¹ Apart from Asian Americans, the low employment figures for minority employees in STEM fields give rise to concern, indicating that racial minorities face untold barriers to entering into STEM occupations, including those positions underlying much of the work in the space industry. In addition to hindering the opportunities of individual employees, low female and minority representation dampens the overall creativity of STEM workforces.⁵²

C. DIVERSITY AT NASA

NASA has demonstrated a commitment to diversity. As NASA's Goddard Space Flight Center expressed, “[i]n order to remain at the forefront of scientific research, we need diversity of thinking, education, skills, and cultural backgrounds to effec-

⁴⁸ FUNK & PARKER, *supra* note 15, at 8. The overall STEM data from this study may be somewhat skewed given a broader definition of STEM encompassing a large number of health fields. *Id.* at 3. For example, the data includes health technician and nursing jobs, amongst which Black and Hispanic employees are overrepresented—37% of licensed nurses are Black or Hispanic. *Id.* at 34. Figures for physical sciences demonstrate much lower minority employment. *Id.*

⁴⁹ *Id.* at 24.

⁵⁰ *Id.* at 34–35.

⁵¹ *Id.*

⁵² See Vann Newkirk III, *Boosting Science with Diversity*, PBS (Mar. 3, 2016), <https://www.pbs.org/wgbh/nova/article/stem-diversity/> [https://perma.cc/GQH5-HB4M]. “Collective knowledge productivity depends on people knowing different things and seeing things different ways. . . . [T]he questions that scientists ask and the tools they use are a product of their background and personality. . . . [D]iversity improves scientific productivity, discovery, and fairness of results.” *Id.* (internal quotations and citations omitted).

tively compete in this global marketplace.”⁵³ Indeed, NASA recognizes that “[d]iversity is a business imperative and is crucial to our continued success.”⁵⁴ However, today’s vision for diversity notwithstanding, NASA has a long history of discrimination in hiring and promoting women and minorities, from science positions to its astronaut class.⁵⁵ Employment figures for the agency demonstrate that diversity issues persist even as NASA official policy seeks out and encourages diversity.

As measured in NASA’s 2017 Diversity Report, women account for 34% of NASA’s workforce.⁵⁶ Yet women make up only 23% of scientific employees (those in NASA’s science and engineering labor force), and half of NASA’s female employees are employed in professional administrative positions.⁵⁷ In terms of minorities, African Americans account for 11.6% of the total NASA workforce,⁵⁸ which does not immediately suggest underrepresentation.⁵⁹ However, Black employees account for only 1.3% of *combined* senior level and senior scientific and professional employees.⁶⁰ Furthermore, while Black employees comprise 10% of the overall federal STEM workforce, at NASA, only

⁵³ Sharon Wong, *Diversity—Making Space for Everyone at NASA/Goddard Space Flight Center Using Dialogue to Break Through Barriers*, 47 HUM. RES. MGMT. 389, 390 (2008).

⁵⁴ *Id.*

⁵⁵ See generally Kim McQuaid, “Racism, Sexism, and Space Ventures”: *Civil Rights at NASA in the Nixon Era and Beyond*, in SOCIETAL IMPACT OF SPACEFLIGHT 421 (Steven J. Dick & Roger D. Launius eds., 2007); Devlin Healey, Note, *There are No Bras in Space: How Spaceflight Adapted to Women and How Women Adapt to Spaceflight*, 19 GEO. J. GENDER & L. 593 (2018); Marina Koren, *Why Women Weren’t Allowed to be Astronauts*, ATLANTIC (Mar. 10, 2017), <https://www.theatlantic.com/science/archive/2017/03/women-in-space/498833/> [https://perma.cc/YYY6-LK2M]. This section’s discussion of NASA’s need for more gender and racial diversity is not intended to diminish the impact of the groundbreaking hard work by women and minorities at NASA over the years. Black women have been a fundamental part of NASA’s history and success. See, e.g., MARGOT LEE SHETTERLY, *HIDDEN FIGURES: THE AMERICAN DREAM AND THE UNTOLD STORY OF THE BLACK WOMEN WHO HELPED WIN THE SPACE RACE* (2016).

⁵⁶ *FY17 Annual Report and Update*, 2017 NASA OFF. OF DIVERSITY & EQUAL OPPORTUNITY STRATEGIC PLAN: FY2017-19, at 1, 4 [hereinafter *NASA FY17 Diversity Report*], https://www.nasa.gov/sites/default/files/atoms/files/fy_2018_nasa_mdl-715_report_508.pdf [https://perma.cc/CD7C-BHD2].

⁵⁷ *Id.*

⁵⁸ *Id.* at 3.

⁵⁹ Typically, underrepresentation is measured by a difference of two percentage points, “regardless of statistical significance,” between the percent of the minority in the overall U.S. population and the percent of employees. *Id.*

⁶⁰ *Id.*

6% of science and engineering employees are Black.⁶¹ Instead, most Black employees are concentrated in professional administrative positions.⁶²

Hispanic and Asian Americans are slightly better situated in the NASA workforce, but both groups still face significant challenges. Though NASA's 7% Hispanic employees in scientific and engineering positions matches the overall federal STEM workforce, Hispanics face major barriers when it comes to securing senior leadership positions.⁶³ Only 3.8% of senior level and senior scientific and professional employees are Hispanic, and the minority group accounts for only 5.5% of NASA supervisors.⁶⁴ Asians, often highly represented in STEM, indeed make up 7.5% of NASA's workforce; however, challenges remain in securing appropriate representation in leadership, with only 5% representation in NASA senior executive service positions.⁶⁵ This data suggests that women and minorities face challenges in obtaining employment with NASA, encounter setbacks in receiving promotions to leadership positions, and may face negative externalities associated with underrepresentation in the workplace.

The workplace diversity of a federal agency matters not only for the agency's own productivity and work environment, but also because agency diversity has been shown to have a measurable impact on the award of contracts to WOSBs and MOSBs. A recent study analyzed data from the Small Business Innovation Research and Small Business Technology Transfer programs, which NASA often uses to award research and development grants to startups engaging in feasibility studies (Phase I) that hopefully lead to implementation awards (Phase II).⁶⁶ The study found that the "likelihood of a Phase II transition for all Phase I awardees is increased by about 10 and 8% for every 1% increase in racial/ethnic and gender diversity, respectively, at the agency-level."⁶⁷ An agency like NASA's racial, ethnic, and gender diversity "exhibits a consistently positive and highly significant rela-

⁶¹ *Id.*

⁶² *Id.* ("[F]ifty-seven percent are in [professional administrative] positions.").

⁶³ *Id.*

⁶⁴ *Id.*

⁶⁵ *Id.*

⁶⁶ Amol M. Joshi, Todd M. Inouye & Jeffrey A. Robinson, *How Does Agency Workforce Diversity Influence Federal R&D Funding of Minority and Women Technology Entrepreneurs? An Analysis of the SBIR and STTR Programs, 2001–2011*, 50 *SMALL BUS. ECON.* 499 (2018).

⁶⁷ *Id.* at 512.

tionship with the likelihood of successful transition from Phase I to Phase II for all grantee firms. This means that all else being equal, Phase I awardees are more likely to obtain follow-on Phase II funding if the granting agency is more diverse.⁶⁸ Therefore, agency diversity matters significantly for whether or not WOBs or MOBs are selected for future work.

While the present Article's proposed approach to improving diversity in government contracting might not directly impact employment figures at NASA, an overall increase in space industry diversity could have incidental effects on NASA employment figures. For example, private companies that secure lucrative government contracts may have increased hiring needs to fulfill their contract obligations. The availability of these new private space industry employment opportunities, which are likely to be well-paying, stable jobs, might encourage more minority undergraduates to pursue degrees in STEM. More minorities interested in STEM would also increase the number of minorities in the candidate pool from which NASA selects employees. Furthermore, these private sector job opportunities might allow minorities more room for advancement. NASA data indicates that women and minorities have a harder time securing promotions than their white male counterparts,⁶⁹ and only half of NASA employees agree that promotions in their work are based on merit.⁷⁰ Smaller, innovative companies might provide more room for advancement,⁷¹ permitting NASA to later hire these seasoned employees into higher-level positions. Government contracts thus have the potential to diversify the entire space industry, both public and private.

⁶⁸ *Id.* at 513.

⁶⁹ *NASA FY17 Diversity Report*, *supra* note 56, at 17 tbls.2–4.

⁷⁰ *Id.* at 16.

⁷¹ *See Ready for Liftoff: The Importance of Small Businesses in the NASA Supply Chain: Hearing Before the Subcomm. on Agric., Energy, and Trade of the H. Comm. on Small Bus.*, 114th Cong. 12 (2016) [hereinafter *2016 NASA Small Business House Hearing*] (statement of George Davis, President and Founder, Emergent Space Technologies) (“Aerospace is a very top-down, military style chain of command . . . [but at a small business,] I can just go walk into the president’s office and have a conversation with him.”). Greater opportunities for interpersonal interactions and individualized attention, combined with a more collaborative workstyle, suggests a higher likelihood of advancement. *See id.*

III. PROCUREMENT LAW PRIMER: UNDERSTANDING GOVERNMENT CONTRACTS AND SMALL BUSINESS ADMINISTRATION CONTRACTING PROGRAMS

As Part II indicated, the space industry has historically struggled with a lack of diversity, with few women and minorities holding traditional STEM jobs at the heart of the industry. Given that diverse workforces yield more creative solutions and greater profits,⁷² and also help to remedy past discrimination,⁷³ diversifying the space workforce is crucial to building a stronger and more inclusive industry. Government contracts have immense potential to serve this diversifying function.

A. WHY GOVERNMENT CONTRACTS?

Historically, socially disadvantaged businesses (socially DBs) faltered on the path to prosperity “not . . . solely because of lack of size or other competitive disadvantages, but also because of racial discrimination.”⁷⁴ Government contracting programs can partially alleviate the longstanding impact of discrimination. Through government contracting programs, minority business enterprises gain experience, industry expertise, and opportunities for expansion stemming from government investment.⁷⁵ This experience also increases the likelihood of success in the private sector: minority businesses that “excel and prosper in public procurement are arguably more likely to be successful in the private market because of the similar skills required in both fields.”⁷⁶ In fact, studies show that the strongest and most competitive WOBs are ones that have contracted with the federal government.⁷⁷ In turn, these newly strengthened businesses go on to support their communities by hiring minority employees

⁷² See Brief for Amici Curiae 65 Leading American Business in Support of Respondents, *supra* note 26, at *7.

⁷³ The government itself has affirmed that there may be benefits to remedying past discrimination. See, e.g., McClean, *supra* note 17, at 746–47. For example, the government defends the SBA 8(a) program, discussed in Part III.D, on remedial grounds, arguing that the SBA 8(a) program “eliminates barriers to business development created by past discrimination.” *Id.*

⁷⁴ Trent Taylor, Note, *The End of an Era? How Affirmative Action in Government Contracting Can Survive After Rothe*, 39 PUB. CONT. L.J. 853, 872 (2010).

⁷⁵ *Id.* at 855.

⁷⁶ *Id.* at 869.

⁷⁷ Kathleen Mee, Note, *Improving Opportunities for Women-Owned Small Businesses in Federal Contracting: Current Efforts, Remaining Challenges, and Proposals for the Future*, 41 PUB. CONT. L.J. 721, 727 (2012); see also Denise Benjamin Sirmons, *Federal*

and sourcing from minority suppliers, multiplying the effects of government investment.⁷⁸ Overall, diversity in government contracting serves to increase public trust in the government's ability to support its citizens' success,⁷⁹ achieve efficiency and best value in procurement,⁸⁰ and yield better and more creative solutions. The remainder of this section provides an overview of federal government contracting mechanics and how federal programs aimed at small businesses can help develop WOSBs and MOSBs.

B. GOVERNMENT CONTRACTS OVERVIEW

“The U.S. government is the largest customer in the world.”⁸¹ The federal government spends approximately 40% of its “discretionary spending” on contracts for goods and services supporting its vast multitude of projects—a total of over \$586 billion in fiscal year 2019.⁸² Moreover, federal government spending continues to increase,⁸³ with total spending increasing

Contracting with Women-Owned Businesses: An Analysis of Existing Challenges and Potential Opportunities, 33 PUB. CONT. L.J. 725, 733 (2004).

⁷⁸ Taylor, *supra* note 74, at 870.

⁷⁹ *Id.* at 869–70.

The amicus curiae brief of several former high-ranking officers and civilian leaders of the Army, Navy, Air Force, and Marine Corps also argued for greater diversity in the military forces. The officers asserted that greater diversity in leadership roles results in greater “public confidence in the fairness and integrity of public institutions” and enhances “their ability to perform their vital functions and missions.” Accordingly, diversity in public procurement not only will increase diversity among government contractors, but also will lead to greater public trust of the Government because of the Government’s demonstrated commitment to diversity and equality.

Id. (quoting Brief of Amici Curiae of Lt. Gen. Julius W. Becton, Jr., et al. in Support of Respondents at 1, *Grutter v. Bollinger*, 539 U.S. 306 (2003) (No. 02-241)).

⁸⁰ *Id.* at 869 (“Unique approaches in problem solving and product design are essential to achieving efficiency and the best value in procurement. Creativity is especially important in proposals involving competitive negotiations, which seek the proposal that offers the best solution and is by far the most preferred method of fixed-price contracting.”).

⁸¹ *Contracting Guide*, U.S. SMALL BUS. ADMIN., <https://www.sba.gov/federal-contracting/contracting-guide> [<https://perma.cc/ZB78-FDWQ>].

⁸² *A Snapshot of Government-wide Contracting for FY 2019 (Infographic)*, U.S. GOV'T ACCOUNTABILITY OFF.: WATCHBLOG (May 26, 2020) [hereinafter *Federal Government Contracting for FY 2019*], <https://blog.gao.gov/2020/05/26/a-snapshot-of-government-wide-contracting-for-fy-2019-infographic/> [<https://perma.cc/76TJ-B9X4>].

⁸³ *Compare id.* (depicting government spending), with *Federal Government Contracting for Fiscal Year 2018 (Infographic)*, U.S. GOV'T ACCOUNTABILITY OFF.: WATCHBLOG (2019) [hereinafter *Federal Government Contracting for FY 2018*], <https://>

by \$100 billion between 2015 and 2018.⁸⁴ Overall, this renders federal government contracting an enormous endeavor in terms of scope, dollar amounts, and complexity.

Several statutes regulate how the government acquires goods and services. The primary and most fundamental set of regulations is the Federal Acquisition Regulation (FAR), which went into effect in April 1984.⁸⁵ The FAR, intended to establish uniform, government-wide procurement procedures, governs all purchases by federal executive agencies, unless otherwise excluded.⁸⁶ The regulations enable the government “to deliver on a timely basis the best value product or service . . . maintaining the public’s trust and fulfilling public policy objectives.”⁸⁷ Applicable FAR provisions “are incorporated into every federal government procurement contract and have the same effect as if they were set forth in the contract itself,” with contract terms that legally bind both parties.⁸⁸ Beyond this 53-part regulatory system, many agencies also have their own FAR supplements, such as the NASA FAR Supplement or the DoD FAR Supplement.⁸⁹ With each agency’s supplement included, the total FAR exceeds 5,000 pages.⁹⁰

Contracting officers (COs), agency officials with the authority and responsibility to contract for goods and services,⁹¹ retain sole authority to enter into, sign, modify, or terminate contracts on behalf of the government.⁹² COs oversee the major phases of the acquisition process: “(1) acquisition planning and market research; (2) solicitation of offers and selection of sources . . . ;

blog.gao.gov/2019/05/28/federal-government-contracting-for-fiscal-year-2018-infographic/ [<https://perma.cc/M9DX-K2FU>] (depicting government spending lower than that of fiscal year 2019).

⁸⁴ *Federal Government Contracting for FY 2018*, *supra* note 83; U.S. GOV’T ACCOUNTABILITY OFF., GAO-17-244SP, CONTRACTING DATA ANALYSIS: ASSESSMENT OF GOVERNMENT-WIDE TRENDS 5 (2017), <https://www.gao.gov/assets/690/683273.pdf> [<https://perma.cc/7DH9-UWM9>].

⁸⁵ Stephen W. Feldman, *Federal Acquisition Regulation*, 4 GOV’T CONT. GUIDEBOOK, at § 2:12 (Oct. 2019), Westlaw GCGUIDE.

⁸⁶ *Id.*

⁸⁷ FAR 1.102(a) (2020).

⁸⁸ Feldman, *supra* note 85, § 2:12.

⁸⁹ Richard D. Lieberman & Jason D. Morgan, *The Basics of Government Contracts—A Primer*, 47 CONT. MGMT. Aug. 2007, at 33.

⁹⁰ *Id.*

⁹¹ FAR 2.101.

⁹² FAR 1.601(a), 43.202, 52.249-2(a).

and (3) contract performance and administration.”⁹³ In particular, COs play a major role in ensuring FAR provisions are closely followed in the award of government contracts.⁹⁴

Federal statutes stipulate that most contracts be awarded competitively. Per the Competition in Contracting Act of 1984 (CICA), all government contracts are subject to full and open competition through the use of competitive procedures, apart from certain exceptions.⁹⁵ The two primary competitive procedures include (1) sealed bidding through an invitation for bids; or (2) negotiated procurement using a request for proposals.⁹⁶ Exceptions arise in situations such as sole source procurements, where the good or service is only available from a single vendor (or a limited number of vendors), emergency situations, “or where full and open competition would compromise national security.”⁹⁷ The small business set aside programs discussed below also receive exemption from CICA.⁹⁸

⁹³ See Anna S. Molina, *The Sisyphean Course of Combatting Gender Discrimination in the Federal Marketplace for Prime Contracts: Rolling the Boulder of Small Business Size*, 22 *CARDOZO J.L. & GENDER* 109, 115 (2015) (citing FAR 2.101).

⁹⁴ FAR 1.602-2.

⁹⁵ 41 U.S.C. § 253; see also FAR 6.101. CICA intended for all procurements to be competed as full and open so that any qualified company would be able to submit an offer. 41 U.S.C. § 253(a)(1)(A). CICA aimed to increase competition for procurements to enable cost reduction and increased opportunities for small businesses to win federal contracts. *Id.* § 253(b)(1)(A).

⁹⁶ Lieberman & Morgan, *supra* note 89, at 35, 37. “Sealed bidding is employed when an agency is able to articulate all of the specifications, terms, and conditions of the contract in the IFB, except for price. In this method, contractors provide the missing term—price—in the form of a sealed bid.” *Id.* In contrast,

[n]egotiated procurements are used where the procuring agency seeks “best value,” meaning that the agency will award the contract on the basis of evaluation factors, including but not limited to price. . . . Once the CO receives the initial proposals from offerors, he or she will then conduct an evaluation using the evaluation factors and may make an award, if it is the best value. Otherwise, the CO will whittle the field to a “competitive range” of three to four contractors.

Id.

⁹⁷ *Id.* at 35.

⁹⁸ See FAR 6.203–207 (permitting the award of contracts on a basis other than full and open competition for small business and minority set aside programs).

C. THE SMALL BUSINESS ADMINISTRATION AND SMALL BUSINESS CONTRACTING PROGRAMS

The Small Business Act of 1953 (SBAAct) established the SBA.⁹⁹ The SBAAct recognized the imperative need to assure American economic security and well-being through the encouragement and development of small business activity.¹⁰⁰ In support of this initiative, Congress declared it sound policy for the government to:

aid, counsel, assist, and protect, insofar as is possible, the interests of small-business concerns in order to preserve free competitive enterprise, to insure that a fair proportion of the total purchases and contracts or subcontracts for property and services for the Government . . . be placed with small-business enterprises, to insure that a fair proportion of the total sales of Government property be made to such enterprises, and to maintain and strengthen the overall economy of the Nation.¹⁰¹

The SBA helps American small businesses¹⁰² by securing access to funding, providing counseling and training on proper business management, and advocating for small business concerns through research, policy analysis, and congressional testimony.¹⁰³ In terms of government contracting, the SBA oversees the federal agency-wide goal of awarding 23% of federal government prime contract awards to small businesses each fiscal year, as mandated by Congress.¹⁰⁴ The agency in turn advises, encour-

⁹⁹ *About SBA: Organization*, U.S. SMALL BUS. ADMIN., <https://www.sba.gov/about-sba/organization> [<https://perma.cc/6M46-YTZ7>].

¹⁰⁰ *See* Small Business Act of 1953, Pub. L. 85-536, § 2, 67 Stat. 232, 232 (codified at 15 U.S.C. § 631).

¹⁰¹ *Id.*

¹⁰² There is no uniform definition for what constitutes “small.” *See Federal Contracting Guide: Size Standards*, U.S. SMALL BUS. ADMIN., <https://www.sba.gov/federal-contracting/contracting-guide/size-standards> [<https://perma.cc/6DYS-55BQ>]. Instead, the SBA sets size standards, which “define the largest size a business can be to participate in government contracting programs and compete for contracts reserved or set aside for small businesses. Size standards vary by industry and are generally based on the number of employees or the amount of annual receipts the business has.” *Id.*

¹⁰³ *See About SBA: Organization*, *supra* note 99.

¹⁰⁴ *Id.*; U.S. SMALL BUS. ADMIN., FY 2019 GOALING GUIDELINES 3 (2018), https://www.sba.gov/sites/default/files/resources_articles/FY19_Small_Business_Goaling_Guidelines_Draft_2018-08_Final.pdf [<https://perma.cc/6NJK-UEUB>].

ages, and monitors all federal agencies in meeting this benchmark.¹⁰⁵

1. *Small Business Set Asides*

Small businesses benefit from SBA programs that permit COs to give priority to small businesses when procuring goods and services. This preferential consideration, termed a “small business set-aside[],”¹⁰⁶ is a competitive award reserved “exclusively” for participation by “small business concerns.”¹⁰⁷ With few exceptions, contracts with an anticipated dollar value between \$10,000 and \$250,000 are automatically set aside for small businesses.¹⁰⁸ This restriction offers smaller companies a unique opportunity to secure government contracts without competition from larger businesses that, based on size, might be better equipped to spread costs to undercut a small business’s proposal. For acquisitions over \$250,000, a CO shall set aside an acquisition provided that certain conditions are met, most fundamentally when: (1) the CO has a “reasonable expectation that: (1) [o]ffers will be obtained from at least two responsible small business concerns; and (2) [the a]ward will be made at fair market prices.”¹⁰⁹ Where a total set-aside is not appropriate for a given acquisition, the contracting officer also is expected to set aside only a portion of the acquisition—in essence, leaving room for small businesses where it would not otherwise be feasible to award the whole contract to a smaller entity.¹¹⁰

¹⁰⁵ *See id.* (“Every Federal agency with procurement authority is responsible for contributing towards meeting the Federal government-wide small business procurement goals. Each agency must provide the maximum practicable opportunity to small businesses to win awards and must work to improve its procurement processes to meet the goals.”).

¹⁰⁶ *See* FAR 19.203(e) (“Small business set asides have priority over acquisitions using full and open competition.”).

¹⁰⁷ FAR 19.501(a)(1).

¹⁰⁸ FAR 2.101, 19.502–2(a). Contracts valued between \$10,000 and \$250,000 are automatically reserved exclusively for small business concerns and “shall be set aside for small business unless the contracting officer determines there is not a reasonable expectation of obtaining offers from two or more responsible small business concerns that are competitive in terms of fair market prices, quality, and delivery.” *Id.*

¹⁰⁹ FAR 19.502–2(b).

¹¹⁰ Partial set-asides exclude construction contracts. FAR 19.502–3(a).

2. *Social Policy-Oriented Small Business Set-Asides: The HUBZone, SDVOSB, WOSB, and SBA 8(a) Programs*

The federal government has made a commitment to employing government contracts to better support and empower certain groups. To that end, it is government policy to:

provide maximum practicable opportunities in its acquisitions to small business, veteran-owned small business [VOSB], service-disabled veteran-owned small business [SDVOSB], HUBZone small business [HUBZone], small disadvantaged business [small DB], and [WOSB] concerns. Such concerns must also have the maximum practicable opportunity to participate as subcontractors in the contracts awarded by any executive agency, consistent with efficient contract performance.¹¹¹

The SBA veteran and “affirmative action” small business programs, like the general small business program, allow for set-asides that exempt acquisitions from “full and open competition.”¹¹² These set-asides permit consideration of minority business concerns before considering more generalized small business concerns: COs use their discretion to utilize any of the above-mentioned programs before the traditional small business set-aside.¹¹³ However, there is parity amongst the programs, meaning that COs assign no automatic “order of precedence” in deciding which program to employ.¹¹⁴ Instead, an agency chooses amongst the four programs based on market research (a determination of whether there are any “socioeconomic firms capable of satisfying the agency’s requirement”) and current progress in advancing toward contracting goals for each program.¹¹⁵

Each of the SBA’s four programs effectuates different, important policy goals through relatively similar mechanisms. The HUBZone set-aside program, established through the Small Business Reauthorization Act of 1997, “limits competition for certain contracts to businesses in historically underutilized business

¹¹¹ FAR 19.201(a).

¹¹² FAR 19.203(d).

¹¹³ FAR 19.203; U.S. SMALL BUS. ADMIN., WOMEN OWNED SMALL BUSINESS (WOSB) PROGRAM—A PRIMER FOR CONTRACTING OFFICERS (SUPP. WORKBOOK) (Nov. 2013), https://www.sba.gov/sites/default/files/2018-02/cowosb_workbook.pdf [<https://perma.cc/2UKA-RRZQ>].

¹¹⁴ FAR 19.203(a).

¹¹⁵ FAR 19.203(d).

zones.”¹¹⁶ The goal of the program is “to provide federal contracting assistance . . . to increase employment opportunities, investment, and economic development in such areas,”¹¹⁷ which are typically geographic areas with low income levels, high poverty, high levels of unemployment, disaster areas, or qualified Indian lands.¹¹⁸ In July 2020, there were 7,461 actively certified firms in the HUBZone program.¹¹⁹ The current federal goal is for each agency to award 3% of prime contracts to HUBZone businesses.¹²⁰ The SDVOSB set-aside program serves a similar set-aside function for VOSBs and requires at least 51% business ownership by a service-disabled veteran.¹²¹ The government seeks to award at least 3% of all annual federal contracting dollars to SDVOSBs.¹²² The WOSB and SBA 8(a) Programs, of chief importance for this paper, are discussed more thoroughly below.

D. WOMEN-OWNED SMALL BUSINESS PROGRAM

There are over 11 million WOBs in the United States.¹²³ In fact, “[i]f all the women-owned businesses in the United States were their own country, they would have the fifth largest gross domestic product (GDP) in the world, preceding France, Italy, and the United Kingdom.”¹²⁴ “Women own a quarter of all non[-]farm businesses in the United States,”¹²⁵ employing nearly 9 million people.¹²⁶ As changing cultural factors have permitted

¹¹⁶ FEDERAL CONTRACTING ASSISTANCE PROGRAMS: HUBZONE PROGRAM, U.S. SMALL BUS. ADMIN., <https://www.sba.gov/federal-contracting/contracting-assistance-programs/hubzone-program> [<https://perma.cc/HK9U-S8JS>]; *see also* U.S. SMALL BUS. ADMIN., CONG. RSCH. SERV., R41268, HISTORICALLY UNDERUTILIZED BUSINESS ZONE EMPOWERMENT CONTRACTING (HUBZONE) PROGRAM (July 7, 2020) [hereinafter SBA HUBZONE PROGRAM], <https://fas.org/sgp/crs/misc/R41268.pdf> [<https://perma.cc/9FZ2-SSB2>].

¹¹⁷ 13 C.F.R. § 126.100 (2019).

¹¹⁸ SBA HUBZONE PROGRAM, *supra* note 116, at 1, 8.

¹¹⁹ *Id.* at 15.

¹²⁰ *Id.* at 20.

¹²¹ *Service-Disabled Veteran-Owned Small Business Program*, U.S. SMALL BUS. ADMIN., <https://www.sba.gov/federal-contracting/contracting-assistance-programs/service-disabled-veteran-owned-small-businesses-program> [<https://perma.cc/Z5JJ-A8AX>].

¹²² SBA HUBZONE PROGRAM, *supra* note 116, at 20.

¹²³ AM. EXPRESS, THE 2017 STATE OF WOMEN-OWNED BUSINESSES REPORT 3 (2017) (defining a WOB as one that is “at least 51% owned, operated, and controlled by one or more females.”).

¹²⁴ Mee, *supra* note 77, at 723.

¹²⁵ *Id.* at 724.

¹²⁶ AM. EXPRESS, *supra* note 123, at 3.

women greater autonomy and access to education and employment, women have increasingly taken on business ownership roles. From 1997–2017, the number of WOBs grew by 114%—a growth rate 70% higher than the 44% national growth rate for all businesses.¹²⁷ The growth rates for women of color are substantially higher, with the number of firms owned by women of color expanding by 467% during that same period.¹²⁸ While the largest industry area for women-owned firms is in services such as hair salon or pet care services, about 1.5 million women-owned firms engage in services ranging from law to accounting, public relations, or scientific functions.¹²⁹

Despite dramatic increases in business ownership by women, significant challenges remain. Women face a marked disadvantage based on gender discrimination that prevented women from owning or growing businesses throughout history.¹³⁰ When women have started businesses, barriers often render attaining the same level of revenue generation as men more difficult—on average, WOBs generate just a quarter of the sales of male-owned businesses.¹³¹ Studies on the survival of new businesses have found that “over a four-year period, seventy-two percent of men-owned firms survived compared to only sixty-six percent of WOBs.”¹³² Figures for WOBs demonstrate that while ownership is a first step, more work needs to be done to ensure WOBs enjoy the same access to capital, opportunities, and continued growth as male-owned businesses.

Based on this need, women stand to greatly benefit from government contracting opportunities. However, government contracting with women has historically been severely lacking: “WOBs comprise 28.7% of all the nonfarm businesses in the United States, but they only represent 8.3% of all federal prime

¹²⁷ *Id.*

¹²⁸ *Id.* at 5.

¹²⁹ *Id.* at 8. About 2.8 million, or 23% of all women owned firms, are in the “other services” category, which includes services like hair and nail salons or pet care businesses. *Id.* This is the top industry area for women. *Id.* Approximately 12% of women-owned firms are in the professional, scientific, or technical services category. *Id.* Currently, the most rapidly growing industry for WOBs is the construction business. *Id.*

¹³⁰ See generally Wendy Gamber, *A Gendered Enterprise: Placing Nineteenth-Century Businesswomen in History*, 72 *BUS. HIST. REV.* 188 (1998); S. COMM. ON SMALL BUS. ENTREPRENEURSHIP, 113TH CONG., 21ST CENTURY BARRIERS TO WOMEN’S ENTREPRENEURSHIP (rev. ed. 2014) (Maj. Rep.) (authored by Maria Cantwell, Comm. Chairwoman).

¹³¹ Mee, *supra* note 77, at 725.

¹³² *Id.*

contractors and they are awarded less than 2.5% of all federal prime contracting dollars.”¹³³ The sections below examine the slow start of the federal WOSB program and the government’s inadequate efforts to achieve WOSB contracting goals.

1. *History of WOSB Federal Government Contracting*

Despite a long history of gender discrimination in the United States, women were not the original focus of SBA affirmative action programming. When Congress first amended the SBA Act to create the SBA 8(a) Program, the primary focus was on “socially and economically disadvantaged individuals”—which tacitly included women of color, but did not explicitly include women on the whole.¹³⁴ In 1979, President Carter signed Executive Order 12138 requiring federal agencies to “take affirmative action in support of women’s business enterprise,”¹³⁵ which included federal procurement.¹³⁶ Yet, women did not truly receive support in securing federal procurement dollars until the Federal Acquisition Streamlining Act of 1994 (FASA).¹³⁷ The FASA established the goal of awarding at least 5% of all federal prime contracting dollars to WOSBs each fiscal year.¹³⁸ This 5% goal was sorely needed—in 1989, only 1% of federal contracting dollars were being awarded to WOSBs.¹³⁹

While the FASA was a legislative victory, it did not do much to actually implement improvements in contracting awards to WOSBs. Even after five years with FASA’s 5% contracting goal for WOSBs in place, in 2000, WOSBs only received 2.3% of what was at the time \$200 billion in annual federal contract awards.¹⁴⁰ FASA’s initial enactment left COs with no tools or guidance to meet the 5% goal and no true incentive.¹⁴¹

Instead, legislation in 2000 and subsequent rulemaking in 2010 went further to advance opportunities for WOSBs.¹⁴² Congress enacted the Equity in Contracting for Women Act

¹³³ *Id.* at 727.

¹³⁴ *See* Molina, *supra* note 93, at 124.

¹³⁵ Exec. Order No. 12138 § 1-101(b), 3 C.F.R. § 393 (1979).

¹³⁶ Molina, *supra* note 93, at 124.

¹³⁷ *Id.*; Federal Acquisition Streamlining Act of 1994, Pub. L. No. 103-355 § 7106(a)(2)(A), 108 Stat. 3243, 3375 (codified as amended at 15 U.S.C. § 644).

¹³⁸ Molina, *supra* note 93, at 125.

¹³⁹ *Id.* at 124–25.

¹⁴⁰ Patricia A. Meagher, *The Women-Owned Small Business Federal Contracting Program: Ten Years in the Making*, 46 *PROCUREMENT LAW.*, Winter 2011, at 17.

¹⁴¹ Mee, *supra* note 77, at 729.

¹⁴² *Id.* at 729, 732.

(ECWA) in 2000, which amended the SBAct to create a WOSB program.¹⁴³ The ECWA called for the SBA to first conduct a study to identify which industries most sorely suffered from underrepresentation of WOBs.¹⁴⁴ It then authorized COs to set aside contracts for the WOSB program specifically in those industries the SBA had previously identified as lacking in WOSB representation.¹⁴⁵ The success of the ECWA's passage, however, was diminished with a change in presidential administration and new priorities for the SBA.¹⁴⁶ While the SBA did conduct an initial study in 2001 to identify in which industry areas WOSBs were underrepresented, this study was never published.¹⁴⁷ A study by the RAND Corporation, commissioned by the SBA several years later, now serves as the basis for measuring representation of WOSBs in industry areas.¹⁴⁸

The SBA's 2010 rulemaking, which finally implemented the WOSB program ten years after its initial creation, was a hard-fought victory that finally increased opportunities for women.¹⁴⁹ The final rule¹⁵⁰ sets out eighty-three industries in which WOSBs

Unlike other small business programs in which Contracting Officers (COs) were enabled to reserve (or "set aside") some contracts for specific types of businesses, no similar program existed with regard to WOSBs. The House Committee recognized that without a specifically targeted WOSB program, the Government would never achieve the five percent goal. In light of this recognition, the legislature drafted and enacted the ECWA.

Id. at 730.

¹⁴³ Equity in Contracting for Women Act, Pub. L. No. 106-554, app. I § 302, 114 Stat. 2763, 2763A-684 (codified at 15 U.S.C. § 637(d)(3)(C)); *see also* FAR 19.1500(a).

¹⁴⁴ Meagher, *supra* note 140, at 17.

¹⁴⁵ *Id.*

¹⁴⁶ *See id.*

¹⁴⁷ *Id.* In 2003, SBA sought an independent review, and in 2005, the National Academy of Sciences declared the SBA study flawed based on poor methodology. *Id.*

¹⁴⁸ *Id.*

¹⁴⁹ *Id.* Spurred in part by a 2004 meeting with the SBA administrator who purportedly declared the ECWA's goals (helping women-owned businesses) "meaningless," the U.S. Women's Chamber of Congress sued the SBA for the undue delay in implementing the program. *See id.* The final rule was issued by SBA on October 7, 2010. *Id.* at 18; 75 Fed. Reg. 62,258 (Oct. 7, 2010).

¹⁵⁰ In the SBA's 2007 proposed rule, the agency set out only a small set of industries/NAICS codes to which the WOSB program would apply. *See* Lillian F. McManus, Note, *The Anatomy of a Helping Hand: Women-Owned Small Businesses and Federal Contract Procurement*, 18 WM. & MARY J. WOMEN & L. 625, 632 (2012). Senator John Kerry "called it 'a slap in the face to women business owners' and accused the SBA of 'cherry picking data' in order to create a highly exclusive program." *Id.* (quoting Sharon McLoone, *SBA Upsets Lawmakers with Contracting*

are either underrepresented or substantially underrepresented, measured by both the share of contracting dollars awarded and the share of total contracts awarded to WOSBs.¹⁵¹ At the time the rule took effect on February 4, 2011, the WOSB Program was generally well received.¹⁵²

2. Current WOSB Program Functioning

The WOSB Program helps meet the federal government-wide goal of awarding 5% of all prime contracting dollars to WOSBs each year.¹⁵³ Program regulations distinguish between awards to economically disadvantaged WOSBs (EDWOSBs) or WOSBs, for which COs may set aside acquisitions when the acquisition is “assigned a [North American Industry Classification System (NAICS)] code in which SBA has determined that WOSB concerns are *underrepresented* in Federal procurement,” and for those businesses, for which COs may set aside acquisitions when the acquisition is assigned a NAICS code for which “WOSB concerns are *substantially underrepresented*.”¹⁵⁴ The WOSB Program also permits COs to award WOSB sole source set-asides before considering other small business set-asides, provided certain conditions are met.¹⁵⁵

Two shortcomings limit the ability of the WOSB Program to fully support the needs of women business owners. First, the fed-

Plan, WASH. POST. (Dec. 28, 2007), http://voices.washingtonpost.com/small-business/2007/12/sba_upsets_lawmakers_with_cont.html [<https://perma.cc/HT8E-E3JL>]).

¹⁵¹ Women-Owned Small Business Federal Contract Program, 75 Fed. Reg. 62,258, 62,258 (Oct. 7, 2010) (codified at 13 C.F.R. pts. 121, 124, 125, 126, 127, 134).

In the 2010 final rule, the SBA identified eighty-three North American Industry Classification System (NAICS) codes that would be eligible for the WOSB federal contracting program. Of these industries, forty-five were identified as industries in which WOSBs were underrepresented and thirty-eight were identified as industries in which WOSBs were substantially underrepresented. This rule took effect on February 4, 2011, and since then COs overseeing contracts that fall within one of the eighty-three NAICS codes identified by the rule have been able to implement the WOSB federal contracting program.

Mee, *supra* note 77, at 732–33 (citing Women-Owned Small Business Federal Contract Program, 75 Fed. Reg. at 62,258, 62,262); *see also* Meagher, *supra* note 140, at 18.

¹⁵² Meagher, *supra* note 140, at 18.

¹⁵³ *Id.*

¹⁵⁴ FAR 19.1505(a)(2) (emphasis added).

¹⁵⁵ *See* FAR 19.1505(c).

eral government has consistently fallen short of actually meeting the 5% WOSB contracting goal.¹⁵⁶ Though the government overall has come close, for example reaching 4.75% of contracts in 2018,¹⁵⁷ in an entire decade (2009–2019) the government only met its WOSB contracting goal in a single year—2015.¹⁵⁸ This significantly shortchanges WOSBs,¹⁵⁹ as even a 1% increase in award of contracting dollars would mean an additional approximately \$5.5 billion allocated to women business owners.¹⁶⁰ Second, the WOSB Program only permits set-asides for EDWOSBs and WOSBs in certain NAICS-coded industries.¹⁶¹ Many commenters to the original rule criticized¹⁶² the selection processes for the NAICS codes under which WOSBs may receive set-asides, and “expressed their desire for the SBA to include all, or at least more, NAICS codes in the program instead of only

¹⁵⁶ Jessie Bur, *Agencies Improved on Small Business Goals, But Can Do More*, FED. TIMES (June 26, 2019), <https://www.federaltimes.com/acquisition/2019/06/26/small-businesses-get-a-fair-share-of-contracts-but-improvements-remain/> [<https://perma.cc/NQB5-JZ6R>].

¹⁵⁷ U.S. SMALL BUS. ADMIN., GOVERNMENT-WIDE PERFORMANCE FY18 SMALL BUSINESS PROCUREMENT SCORECARD (2019), https://www.sba.gov/sites/default/files/2019-06/G_W.pdf [<https://perma.cc/WG59-3JYG>].

¹⁵⁸ Bur, *supra* note 156.

¹⁵⁹ It is worth noting, however, that often individual agencies will meet their contracting goal. *See* Molina, *supra* note 93, at 134. For example, in 2014, twenty-two out of twenty-four federal agencies met their 5% WOSB goal; however, the DoD, the “largest buyer in the executive branch,” did not, skewing the overall agency-wide contracting goal. *Id.* In fact, the DoD decreased overall contract awards to small businesses while awarding significantly higher value contracts, suggesting that the agency is procuring large contracts from large companies—leaving little room for small business empowerment goals. *Id.* As DoD procurements often source from aerospace industry actors, this holds significance in terms of diversifying the space industry. *See* Molina, *supra* note 93, at 134; *Top 10 Defense Contractors*, BLOOMBERG GOV. (June 26, 2020), <https://about.bgov.com/top-defense-contractors/> [<https://perma.cc/P7R5-HLQB>] (listing major aerospace industry actors, such as Boeing and Lockheed Martin).

¹⁶⁰ In fiscal year 2018, the federal government spent \$550 billion on contracts. *Federal Government Contracting for FY 2018*, *supra* note 83. One percent of \$550 billion is \$5.5 billion.

¹⁶¹ *Federal Contracting Assistance Programs: Women-Owned Small Business Federal Contracting Program*, U.S. SMALL BUS. ADMIN., <https://www.sba.gov/federal-contracting/contracting-assistance-programs/women-owned-small-business-federal-contracting-program> [<https://perma.cc/8TAC-CXZL>].

¹⁶² The SBA itself acknowledged that “dozens of comments” supported a “dramatic expansion of the list.” McManus, *supra* note 150, at 632. Such an expansion would put the WOSB on equal footing with the SBA’s other affirmative action programs. *Id.* (quoting Women-Owned Small Business Federal Contract Program, 75 Fed. Reg. at 62,259).

the specified eighty-three codes.”¹⁶³ Limiting set-asides to only specific industry areas impedes COs from considering a WOSB set-aside even when the industry area may still effectively need the support of the WOSB Program. These shortcomings indicate the need for further work to implement the WOSB Program and strengthen its impact.

E. CONTRACTING WITH MINORITIES: SOCIALLY AND
ECONOMICALLY DISADVANTAGED BUSINESSES AND THE
SBA 8(A) BUSINESS DEVELOPMENT PROGRAM

1. *History*

The U.S. federal government has a long history of affirmative action in government contracting, having first set out the 8(a) Program in the SBA Act of 1953.¹⁶⁴ This section gave the SBA the “authority to enter into subcontracts with small businesses for the acquisition of goods and services ‘whenever it determines such action necessary.’”¹⁶⁵ Support for minorities coalesced in 1968 when President Johnson urged the SBA to create a program under its SBA Act 8(a) authority that would assist minority businesses, known as those owned by “‘socially or economically disadvantaged’ persons.”¹⁶⁶ Based on this missive, in 1969 the SBA transformed the 8(a) Program from one focused mostly on stimulating low-income areas to one aimed at assisting disadvantaged business owners.¹⁶⁷ The goal was to help “small concerns owned by disadvantaged persons to become self-sufficient, viable businesses capable of competing effectively in the market place.”¹⁶⁸

After the establishment of support for minorities in the 1960s, the SBA 8(a) Program grew throughout the 1970s and 80s. In 1971, executive orders by President Nixon prompted implementation of additional policies, including technical and management assistance to relevant firms and coordination across

¹⁶³ Mee, *supra* note 77, at 734.

¹⁶⁴ 15 U.S.C. § 637(a).

¹⁶⁵ Lynn Ridgeway Zehrt, *A Decade Later: Adarand and Croson and the Status of Minority Preferences in Government Contracting*, 21 NAT’L BLACK L.J. 1, 3 (2009) (quoting 15 U.S.C. § 637(a)(1)).

¹⁶⁶ *Id.* (quoting 13 C.F.R. § 124.8–1(c)(1)(7) (1997)).

¹⁶⁷ Antoine Marshall, *Pathways for Procurement: Operating Minority Business Programs After Rothe*, 6 S. REGION BLACK STUDENTS ASS’N L.J. 1, 9 (2012).

¹⁶⁸ *Id.* (quoting 13 C.F.R. § 124.8–1(b) (1970)).

federal agencies.¹⁶⁹ Congress built upon these changes in 1978 amendments to both the SBAct and the Small Business Investment Act. The amendments reformatted the 8(a) Program to concentrate on set-asides to “socially and economically disadvantaged small business concerns,” and set a goal of awarding 5% of the total value of all contracts to small DBs.¹⁷⁰

Presently, much of the debate about the 8(a) Program concerns its constitutionality following several court opinions: in particular, *City of Richmond v. J.A. Croson Co.*,¹⁷¹ *Adarand Constructors, Inc. v. Peña*,¹⁷² and *Rothe Development Corp. v. Department of Defense*.¹⁷³ These cases suggest that for affirmative action programs in federal government contracting to survive strict scrutiny, the government must produce evidence of discrimination to justify a present need in each industry in which it awards contracts.¹⁷⁴ Though the legal landscape remains unclear post-*Rothe*, for now affirmative action contracting programs withstand con-

¹⁶⁹ Christopher R. Noon, *The Use of Racial Preferences in Public Procurement for Social Stability*, 38 PUB. CONT. L.J. 611, 613 (2009) (citing Exec. Order No. 11,625, 3 C.F.R. § 213 (1971); Exec. Order No. 11,458, 3 C.F.R. §§ 779, 780 (1969)).

¹⁷⁰ Patricia C. Bradley, *Affirmative Action or Passive Participation in Perpetuating Discrimination? The Future of Race-Based Preferences in Government Contracting*, 2008 ARMY LAW., Feb. 2008, at 25–26 (quoting An Act to Amend the Small Business Act and the Small Business Investment Act of 1958, Pub. L. No. 95-507, 92 Stat. 1757 (1978) (codified as amended in scattered sections of 15 U.S.C.)).

¹⁷¹ 488 U.S. 469 (1989). In *Croson*, the Court applied strict scrutiny in evaluating state and local contracting programs that considered race in awarding contracts. *See id.* at 493, 508, 511. The Court “essentially abolished most minority preference business programs for public contracting at the state and local levels that were in effect at the time of the decision.” *See* Marshall, *supra* note 167, at 16.

¹⁷² 515 U.S. 200 (1995). *Adarand* extended the *Croson* strict scrutiny analysis for race-based contracting programs to federal programs. *See id.* at 221–22, 238–39. After *Adarand*, Congress revised the SBA to survive the Court’s strict scrutiny review. Zehrt, *supra* note 165, at 12–14. Most Circuits have since concluded that “Congress had a strong evidentiary basis in deciding that remedial action was necessary to eradicate the effects of race discrimination in government contracting.” *Id.* at 16.

¹⁷³ 545 F.3d 1023 (Fed. Cir. 2008). The Federal Circuit struck down an act that set a 5% goal for awarding defense contracting dollars to socially and economically disadvantaged individuals each year and permitted awarding contracts to this group at prices 10% above fair market cost. *See id.* at 1026–27. The court’s criticism of the statute concerned the quality and means of gathering evidence of necessity. *See* Taylor, *supra* note 74, at 862–63.

¹⁷⁴ McClean, *supra* note 17, at 747–48 (“If the government fails to meet its evidentiary burden . . . it risks exposure to Equal Protection challenges. While the [8(a) Program] remains constitutional on its face, the risk of as-applied challenges stalled its use in particular industries [and] reduced its overall effectiveness.”).

stitutionality provided proof exists as to the necessity of the program and the narrow tailoring of its design and use.¹⁷⁵

2. *Current Functioning*

Section 8(a) of the SBAct authorizes the SBA “to enter into [prime] contracts with other [federal] agencies and award sub-contracts for performing those contracts to firms eligible for program participation.”¹⁷⁶ The 8(a) Program functions by empowering the SBA to work with agencies to match agency “requirements with the capabilities of 8(a) participants.”¹⁷⁷ The program permits “set-asides, partial set-asides, and reserves of Multiple Award Contracts” for the 8(a) Program, and awards may be either sole source or competitive.¹⁷⁸ Competition is required where there is a reasonable expectation that two eligible participants will submit offers, and where the anticipated dollar award, for non-construction contracts, exceeds \$4 million.¹⁷⁹ Qualification for the program, which involves certification as an 8(a) participant by the SBA, requires firms to be small businesses and at least 51% owned and controlled by U.S. citizens who are economically¹⁸⁰ and socially disadvantaged,¹⁸¹ among other requirements.¹⁸² The regulations presume that members of designated racial groups are socially disadvantaged.¹⁸³ Once

¹⁷⁵ Marshall, *supra* note 167, at 28.

¹⁷⁶ FAR 19.800(a).

¹⁷⁷ FAR 19.803.

¹⁷⁸ 13 C.F.R. § 124.501(a)–(b) (2019).

¹⁷⁹ *Id.* § 124.506(a)(2).

¹⁸⁰ *Id.* § 124.104(a) (“Economically disadvantaged individuals are socially disadvantaged individuals whose ability to compete in the free enterprise system has been impaired due to diminished capital and credit opportunities as compared to others in the same or similar line of business who are not socially disadvantaged.”).

¹⁸¹ *Id.* § 124.103(a) (“Socially disadvantaged individuals are those who have been subject to racial or ethnic prejudice or cultural bias within American society because of their identities as members of groups and without regard to their individual qualities. The social disadvantage must stem from circumstances beyond their control.”).

¹⁸² *Federal Contracting Assistance Programs: 8(a) Business Development Program*, U.S. SMALL BUS. ADMIN. (2020), <https://www.sba.gov/federal-contracting/contracting-assistance-programs/8a-business-development-program> [<https://perma.cc/A236-4M5Z>].

¹⁸³ 13 C.F.R. § 124.103(b) sets out a rebuttable presumption that certain individuals are socially disadvantaged, including Black-Americans, Hispanic-Americans, Native-Americans, Asian Pacific-Americans, Subcontinent Asian-Americans, and “members of other groups designated from time to time by SBA.” *Id.* § 103(b)(1). An individual not a member of these groups may “establish individ-

admitted, businesses may remain in the program for up to nine years.¹⁸⁴

Generally, efforts to support MOBs have been more effective than several of the other affirmative action contracting programs, including the WOSB program. For example, in fiscal year 2018 the federal government as a whole exceeded its goal of awarding 5% of contracting dollars to small DBs by awarding \$46.5 billion, or 9.65%, of prime contracts to small DBs.¹⁸⁵ There is a large disparity in which agencies meet the federal 5% SBA 8(a) goal, in part based on the number of small business-eligible actions agencies have available.¹⁸⁶ For example, in 2018 the Department of Energy awarded only 0.79% of procedure dollars to SBA 8(a) businesses; the Department of Education only 1.65%, and the Social Security Administration only 2.28%.¹⁸⁷ The most successful agencies have been the SBA itself, the Department of the Interior, the Nuclear Regulatory Commission, and the Department of Housing and Urban Development.¹⁸⁸ Notably, the DoD, the nation's largest contracting agency, awarded only 3.4% to the SBA 8(a) Program in 2018, though at \$10.1 billion, the dollar value was relatively high.¹⁸⁹ In any case, each agency must strive to meet yearly program goals for the program to be most effective.

The federal government has for years developed programs intended to benefit WOBs and MOBs to remedy historical disadvantage, empower business owners, and stimulate the economy

ual social disadvantage by a preponderance of the evidence." *See id.* § 124.103(c)(1).

¹⁸⁴ *Id.* § 124.2.

¹⁸⁵ Press Release, U.S. Small Bus. Admin., Federal Government Achieves Small Business Contracting Goal for Sixth Consecutive Year with Record-Breaking \$120 Billion to Small Businesses (June 25, 2019), <https://www.sba.gov/about-sba/sba-newsroom/press-releases-media-advisories/federal-government-achieves-small-business-contracting-goal-fifth-consecutive-year-record-breaking> [<https://perma.cc/DE7G-AK4W>]; U.S. SMALL BUS. ADMIN., *supra* note 157. All SBA 8(a) certified firms are socially DBs, but not all socially DBs are SBA 8(a) certified. *See* U.S. SMALL BUS. ADMIN., *supra* note 157. Generally, agency figures are higher for small DBs, the broader category, than for the SBA 8(a) program specifically. *Id.* This figure is for the broader category. *Id.*

¹⁸⁶ *8a Application Package "Bestseller"*, EZ8A, <https://www.ez8a.com/8a-certification-package.aspx> [<https://perma.cc/AL4W-9ZNV>].

¹⁸⁷ *Id.*

¹⁸⁸ *Fact Sheet: Small Disadvantaged Business Federal FY 2018 Prime Contracting*, U.S. SMALL BUS. ADMIN. (2020), <https://www.sba.gov/document/support-small-disadvantaged-business-federal-prime-contracting-factsheet> [<https://perma.cc/4EMR-QEH4>].

¹⁸⁹ *8a Application Package "Bestseller"*, *supra* note 187.

by providing more opportunities for small businesses. These programs, part of the immense set of regulations controlling the complex government contracting system, provide essential financial assistance to deserving businesses. Greater use of SBA affirmative action programs within industries such as the space industry could provide the financial investment needed to attract more women and minorities to an industry in dire need of diversity.

IV. GOVERNMENT CONTRACTS AND THE SPACE INDUSTRY

The government engages in an astronomical amount of contracting each fiscal year and manages both to abide by a uniform set of regulations in engaging in diverse, complex procurements, and to concentrate on social policy-oriented affirmative action goals in the process. How does this government contracting framework unfold in the space industry? This section examines government contracts within the space industry and how NASA in particular conducts procurements.

A. SPACE PROCUREMENTS GENERALLY

1. *Unique Landscape*

Fulfilling a government contract for any activity involving outer space presents unique challenges for both COs and contractors themselves. COs face two issues: acquiring products that will withstand the unforgiving and ever-mysterious environment of outer space itself,¹⁹⁰ and the practical difficulties that arise from such large acquisitions.¹⁹¹ From a technological standpoint, space acquisitions involve a high degree of technical complexity.¹⁹² Space systems also grow more complicated than

¹⁹⁰ This includes “the harsh launch environment (i.e., shock and vibration) and space environment (i.e., thermal, radiation, and vacuum).” YOOL KIM, ELLIOT AXELBAND, ABBY DOLL, MEL EISMAN, MYRON HURA, EDWARD G. KEATING, MARTIN C. LIBICKI, BRADLEY MARTIN, MICHAEL E. MCMAHON, JERRY M. SOLLINGER, ERIN YORK, MARK V. ARENA, ARV BLICKSTEIN & WILLIAM SHELTON, *ACQUISITION OF SPACE SYSTEMS: PAST PROBLEMS AND FUTURE CHALLENGES VOLUME 7*, at 41–43 (2015).

¹⁹¹ *See id.* at 39 (“The[se] include low-quantity buys, the limited industrial base, very stringent standards for components (e.g., space qualified), high technological complexity, and inability to repair hardware on-orbit cost-effectively.”).

¹⁹² *See id.* at 42. Technological

[c]omplexity in space systems may be attributed to the fact that space system hardware cannot be repaired once launched. . . . But other complexities result from immature technologies, a high de-

terrestrial projects given “that space system hardware cannot be repaired once launched”¹⁹³—rendering stringent standards for components and rigorous testing before launch all the more important.¹⁹⁴ The nature of the acquisition process itself, such as the practice of making expensive but low-volume purchases, means that contractors producing space equipment often lack the benefit of repeated production to improve research and design—a so-called “learning curve” benefit.¹⁹⁵ Thus, the high complexity and infrequent purchasing contribute to a small industrial base,¹⁹⁶ making the inclusion of new or small businesses more difficult.

Despite the difficulties of product development for space activity, contracting with private actors will likely dramatically increase given the privatization trend within the space industry. Today, the vast majority of space activity is “driven by governments with private industries acting as contractors.”¹⁹⁷ Rather than the model employed during the height of the Space Race, whereby NASA employees themselves drove the scientific innovation behind most launches and programs, or even more recent models of the agency procuring goods as a “customer,”

gree of integration with other complex components, subsystems, and systems, and complex failure modes. As a result, complex systems can be more difficult to integrate, model, and test than less-complex systems.

Id.

¹⁹³ *Id.*

¹⁹⁴ *See id.* at 43 (“High reliability . . . requires high engineering margins and rigorous testing.”).

¹⁹⁵ *Id.* at 40.

Purchasing in low volumes [means] there is little learning curve benefit. The last of the production run, although less costly than the first, will not have the cost reduction that accompanies large runs. Second, low volumes make it hard to break out all or even major parts of the design for competition or second-sourcing as a way to reduce cost, because the learning cost of a new contractor cannot be absorbed in a small production run.

Id.

¹⁹⁶ *Id.* at 41.

The high qualification standards required for space system parts have limited the growth of supplier base and competition, particularly when the qualification process itself requires special infrastructure. Quality requirements for government satellites can be more demanding than those for commercial satellites to ensure high reliability and hence long life for increasingly complex parts.

Id.

¹⁹⁷ ALESSANDRA VERNILE, *THE RISE OF PRIVATE ACTORS IN THE SPACE SECTOR*, at xxv (Eur. Space Pol’y Inst. ed., 2018).

NASA now has shifted “from their position of almighty customer having full control of all the details of the development of systems, to a position of consumer, making extensive use of all readily-available capacities developed in full autonomy by industry.”¹⁹⁸ This framework has notable advantages: the government benefits from substantial cost savings; in turn, private industry benefits from lucrative government funding while maintaining full control of design and product development.¹⁹⁹ Given the ever-increasing use of private companies to fulfill agency goals, contracting between space companies and agencies such as NASA and DoD will likely remain the framework for space industry activity, and thus merits additional scrutiny on how and to whom federal contracting dollars are awarded.

2. *Space Actors*

As the *New York Times* articulated,

our day-to-day lives depend on the herds of satellites occupying orbital space, the world community’s commons. They are integral to communications, social media, business transactions, military operations and surveillance, surveys for charting world resources and climate and the G.P.S. devices that help us keep track of ourselves and others.²⁰⁰

Given the multitude of benefits outer space provides, it is no wonder that a wide variety of federal agencies regulate and oversee outer space actors.

The space industry is best “understood as a tripartite structure with civilian, military, and commercial components.”²⁰¹ For non-commercial space activity, three main government agencies design and operate spacecraft: (1) the DoD, which operates space craft for military purposes;²⁰² (2) NASA, which controls all civilian governmental space activities; and (3) the National Oceanic and Atmospheric Administration (NOAA), which operates envi-

¹⁹⁸ *Id.* at 10.

¹⁹⁹ *Id.*

²⁰⁰ John Noble Wilford, *3, 2, 1, and the Last Shuttle Leaves an Era Behind*, N.Y. TIMES (July 8, 2011), <https://www.nytimes.com/2011/07/09/science/space/09wilford.html> [<https://perma.cc/X37Z-JUWW>].

²⁰¹ Gabrielle Daley, Note, *Building a Ladder to the Stars: A Competition Policy for the New Space Race*, 17 COLO. TECH. L.J. 339, 343 (2019).

²⁰² MATTHEW J. KLEIMAN, *THE LITTLE BOOK OF SPACE LAW*, at xv (2014). These purposes include “communications, reconnaissance, early warning [technology], and meteorology.” *Id.*

ronmental and weather monitoring satellites.²⁰³ Each agency receives sizable appropriations from Congress to procure and launch satellites for their missions.²⁰⁴ Numerous other agencies also oversee and regulate space activity, such as (1) the Federal Aviation Administration, which “regulates the launch and reentry of commercial spacecraft”; (2) the Federal Communications Commission, which “licenses and coordinates usage of the radio frequency spectrum by private satellites”; and (3) other agencies, such as those that regulate environmental protection, intellectual property, or export control.²⁰⁵ As NASA and DoD most frequently engage in space procurements, DoD procurements are discussed briefly in this section, and NASA procurements below in Part IV.B.

The DoD has the largest space budget of any federal agency.²⁰⁶ In 2008, DoD investment in major space programs totaled \$6.1 billion: \$3.2 billion allocated for research, development, test, and evaluation; \$1.2 billion directed towards procurement of space products; and \$1.6 billion spent on launch activity.²⁰⁷ Given the military’s need for particular capabilities, the DoD frequently procures more complex and unique products than any other agency, resulting in acquisition requirements unlike any products in the commercial sector.²⁰⁸ Therefore, DoD satellite acquisitions typically involve developing new technologies to meet the agency’s “stringent needs.”²⁰⁹ Due to this particularity, the DoD rarely enters into firm, fixed-price contracts, as such contracts require advance knowledge of satellite design and cost, which is more typical of mature technologies than prototypes.²¹⁰ Instead, the agency pursues cost-reimbursement contracts that more flexibly accommodate

²⁰³ *Id.* at xv–xvi.

²⁰⁴ *E.g.*, Comm. on Appropriations Together with Minority Views, Department of Defense Appropriations Bill, 2020, H.R. REP. NO. 116–84, at 156, 187, 226, 236, 251–52, 273, 276 (2020).

²⁰⁵ KLEIMAN, *supra* note 202, at xvi.

²⁰⁶ *Id.* at xv.

²⁰⁷ U.S. GOV’T ACCOUNTABILITY OFF., GAO-10-315R, BRIEFING ON COMMERCIAL AND DEPARTMENT OF DEFENSE SPACE SYSTEM REQUIREMENTS AND ACQUISITION PRACTICES 12 (2010), <https://www.gao.gov/new.items/d10315r.pdf> [<https://perma.cc/CQ6Z-M3UJ>].

²⁰⁸ *Id.* at 2.

²⁰⁹ *Id.*

²¹⁰ *Id.* at 3.

launch delays, changing needs, and the diverse array of other organizations involved.²¹¹

As the agency with the federal government's largest budget, the DoD is well situated to direct federal procurement dollars towards WOSBs and MOSBs in the space industry. In fact, in fiscal year 2018, DoD prime contract awards to small businesses represented 59% of all federal small business contracting awards.²¹² In terms of diversity, the DoD has, as a general trend, increasingly awarded more of its contracting dollars to small businesses, WOSBs, and socially DBs.²¹³ In 2018, the DoD received an "A" on its SBA scorecard.²¹⁴ Overall, the agency has historically done better in terms of race than gender. For example, the agency exceeded its 2018 goal of awarding 5% of contracting dollars to small DBs, with 8.76%, or \$26.1 billion, awarded.²¹⁵ However, the DoD failed to meet its 5% goal for WOSBs, totaling only 4.1%, or \$12.2 billion.²¹⁶ While shortcomings in supporting WOSBs may in part stem from inefficiencies in the WOSB program itself, the DoD can certainly do more to improve awards to WOSBs. Meeting goals for both WOSBs and MOSBs would better foster diversity amongst DoD space industry contractors.

B. NASA AND GOVERNMENT CONTRACTS

NASA is no stranger to government contracts. With 35,929 procurement actions in fiscal year 2019,²¹⁷ NASA ranks fifth amongst civilian federal agencies for most contracting dollars awarded.²¹⁸ Since 2015, NASA's obligations have grown steadily, leading to total obligations that have expanded from \$21 billion

²¹¹ *Id.*

²¹² Press Release, Dep't of Def., DoD Achieves Small Business Contracting Goal for Fifth Consecutive Year (Dec. 4, 2019), <https://www.businessdefense.gov/News/News-Display/Article/2031580/dod-achieves-small-business-contracting-goal-for-fifth-consecutive-year/> [<https://perma.cc/AN6N-7EXV>].

²¹³ *Small Business Program: Goals and Performance*, DEP'T OF DEF., <https://business.defense.gov/About/Goals-and-Performance/> [<https://perma.cc/387X-MMYA>].

²¹⁴ U.S. SMALL BUS. ADMIN., DEP'T OF DEF.: FY18 SMALL BUSINESS PROCUREMENT SCORECARD (2019), <https://business.defense.gov/Portals/57/Documents/Scorecard%20FY2018.pdf> [<https://perma.cc/A2AG-EFRW>].

²¹⁵ *Id.* The agency fell below its subcontracting goal of 5% to small DBs at only 4.10%. *Id.*

²¹⁶ *Id.* The agency did meet its goal of directing 5% of subcontracting dollars to WOSBs with 5.1% awarded in 2018. *Id.*

²¹⁷ See *NASA FY19 Procurement Report*, *supra* note 1, at 6.

²¹⁸ See *Federal Government Contracting for FY 2018*, *supra* note 83.

in 2015 to \$35.9 billion in 2019.²¹⁹ As NASA plans to return to the Moon and eventually travel to Mars,²²⁰ the agency faces new procurement needs to tackle the scientific feats that will carry humans to new frontiers. How has NASA typically involved small businesses, women-owned, and minority-owned small businesses in contracting?

1. *Small Businesses*

NASA has committed to promoting and integrating “all small businesses into the competitive base of contractors that pioneer the future of space exploration, scientific discovery, and aeronautics research.”²²¹ In practice, NASA has in fact incorporated numerous small businesses—awards to small business firms totaled over \$3.1 billion in fiscal year 2019,²²² of which the agency awarded \$1.6 billion through the set-aside program.²²³ NASA’s top 100 contractors in 2019 included 49 small business firms, of which “21 were disadvantaged firms at the time of the award.”²²⁴ Furthermore, NASA awards contracts to entities in all fifty states, which allows for widespread support of local economies.²²⁵

Each award to a small business provides an enormous support to that business’s growth and development. Historically, long-term, large-scale NASA projects provided small businesses the opportunity to build upon their initial research to provide secondary technologies to the commercial market.²²⁶ For example, a small business that originally developed LED chips to grow plants on the International Space Station later transformed these chips for use in a handheld medical device that provided relief for muscle and joint pain.²²⁷ Initial government contracts therefore provided small businesses with innovative, marketable

²¹⁹ *NASA FY19 Procurement Report*, *supra* note 1, at 6.

²²⁰ Press Release, Nat’l Aeronautics & Space Admin., NASA’s Moon to Mars Plans, Artemis Lunar Program Gets Fast Tracked in 2019 (2019), <https://www.nasa.gov/press-release/nasa-s-moon-to-mars-plans-artemis-lunar-program-gets-fast-tracked-in-2019> [<https://perma.cc/2VT9-CG49>].

²²¹ *OSBP Vision & Mission*, NASA OFF. SMALL BUS. PROGRAMS, <https://www.osbp.nasa.gov/vision.html> [<https://perma.cc/4XAR-H9MW>].

²²² *NASA FY19 Procurement Report*, *supra* note 1, at 16.

²²³ *Id.* at 17.

²²⁴ *Id.* at 20.

²²⁵ See 2016 *NASA Small Business House Hearing*, *supra* note 71, at 1 (statement of Rep. Carlos Curbelo, Comm. Chairman).

²²⁶ *E.g.*, *id.* at 2 (statement of Rep. Grace Meng).

²²⁷ *Id.*

technology that constituted a new revenue source for sustained business growth.²²⁸

However, while NASA has committed to, and remains actively involved in, contracting with small businesses, opportunities may be shrinking. Small businesses testifying before Congress noted “a diminishing supply of small business set-asides.”²²⁹ These smaller companies testified to shrinking opportunities given NASA’s increasing reliance on large, private sector partners, many of whom perform manufacturing themselves rather than sub-contracting to smaller businesses,²³⁰ and concern over NASA’s budget, which fluctuates based on Congress’s perception of NASA mission success.²³¹ Moreover, awards to small businesses amounted to 21% of total dollars awarded in 2018²³² and 22% in 2019;²³³ while these figures demonstrate that NASA has met its small business contracting goals in recent years, this success indicates that opportunities remain for NASA to set more ambitious goals, such as setting a goal closer to the federal government-wide goal of allocating 23% of awards to small businesses.²³⁴ In sum, NASA has evoked a commendable commitment to working with small businesses, but work remains to uphold this stated vision.

2. NASA and the SBA 8(a) and WOSB Programs

NASA has generally made progress towards supporting women and racial minorities through SBA contracting programs. Through the SBA 8(a) Program, NASA awarded \$698 million to small DBs in fiscal year 2019.²³⁵ This amounts to an increase over 2015’s \$551 million.²³⁶ Through the WOSB program, NASA awarded \$783 million to WOSB firms, including \$410 million to women-owned small DBs (those typically owned by mi-

²²⁸ *Id.*

²²⁹ *Id.*

²³⁰ *Id.*

²³¹ *Id.*; see also U.S. GOV’T ACCOUNTABILITY OFFICE, GAO-19-262SP, NASA: ASSESSMENT OF MAJOR PROJECTS 5, 9–10 (2019), <https://www.gao.gov/assets/700/699373.pdf> [<https://perma.cc/9B2K-TWGH>].

²³² NAT’L AERONAUTICS & SPACE ADMIN., NASA PROCUREMENT ANNUAL REPORT: FY 2018, at 14 (2018), https://www.nasa.gov/sites/default/files/atoms/files/annual_procurement_report_2018_final.pdf [<https://perma.cc/MV8M-JHUG>].

²³³ NASA FY19 Procurement Report, *supra* note 1, at 16.

²³⁴ U.S. SMALL BUS. ADMIN., *supra* note 157.

²³⁵ NASA FY19 Procurement Report, *supra* note 1, at 17.

²³⁶ *Id.* at 19.

nority women).²³⁷ NASA's investment in these small businesses provides much needed capital to develop companies and ensure their continued survival.

In addition to supporting WOBs and MOBs through contract awards, NASA has developed its own mentorship program designed to improve minority contracting. The NASA Mentor-Protégé Program (MPP)

encourages NASA prime contractors to assist eligible Protégés, thereby enhancing the Protégés' capabilities to perform on NASA contracts and subcontracts, fostering the establishment of long-term business relationships between these entities and NASA prime contractors, and increasing the overall number of these entities that receive NASA contract and subcontract awards.²³⁸

Eligible protégés include firms participating in SBA programs for minorities, women, and veterans (small DBs, HUBZone, WOSBs, and VOSBs/SDVOSBs), Historically Black College or Universities (HBCUs), minority institutions, and a small handful of other firm categories.²³⁹ This program, which operates separately from any other federal program, provides a unique opportunity for small businesses to enhance their opportunities to win contracts and subcontracts, and demonstrates NASA's support of these firms.

Space industry procurements are amongst the most complicated and lucrative of government contracts. NASA and the DoD spend billions of dollars on procurement in support of their missions. On the whole, both agencies fare well in terms of awarding contracting dollars to WOSBs and MOSBs and in implementing programs to support these businesses their contracting efforts. However, both agencies fall short of contracting with WOBs, suggesting that further efforts must be undertaken to improve program success.

²³⁷ *Id.* at 17.

²³⁸ *Business Development and Technology: Mentor-Protégé Program (MPP)*, NASA OFF. SMALL BUS. PROGRAMS, <https://osbp.nasa.gov/mpp/index.html> [<https://perma.cc/WRW7-N4KJ>].

²³⁹ *Id.*

V. THREE SUGGESTIONS FOR IMPROVING DIVERSITY IN THE SPACE INDUSTRY THROUGH CONTRACT AWARDS

A. COMBATTING FRAUD TO ENSURE PROGRAMS TRULY AID TARGETED POPULATIONS

Though the majority of SBA program participants qualify for assistance programs and truthfully pursue contracts with the government, SBA programs do experience significant instances of fraud and abuse.²⁴⁰ In particular, contractors may commit fraud by falsely certifying as a woman-owned business, by inducing the SBA to erroneously award SBA 8(a) Program certification, or by claiming small business status when a business exceeds size eligibility.²⁴¹ These practices direct valuable contracting dollars away from intended program beneficiaries,²⁴² and therefore constitute one major area where the SBA and space procurement agencies could institute reforms to reserve more contract awards for women and minority business owners.

1. *New Changes to WOSB Certification Stand to Help WOSBs*

To qualify as a WOSB, firms must satisfy three requirements: (1) “be a small business”; (2) “be at least 51% owned and controlled by women who are U.S. citizens”; and (3) have women managing “day-to-day operations” and “making long-term decisions.”²⁴³ Economically disadvantaged WOSBs must meet the same requirements, and must also demonstrate that the owner’s net worth, gross adjusted income, and personal assets fall below a certain dollar amount.²⁴⁴

²⁴⁰ Sarah Westwood, *Feds Gave \$400 Million in Contracts to Ineligible Firms*, WASH. EXAM’R (Sept. 28, 2014), <https://www.washingtonexaminer.com/feds-gave-400-million-in-contracts-to-ineligible-firms> [<https://perma.cc/BHZ5-6FHG>]; Press Release, Dep’t of Justice, Dist. Colo., \$3.6 Million Settlement Resolves Procurement Fraud Investigation Against Colorado and Maryland Construction Companies Involved with SBA’s Minority Disadvantaged Business Development Program (Feb. 6, 2019), <https://www.justice.gov/usao-co/pr/36-million-settlement-resolves-procurement-fraud-investigation-against-colorado-and> [<https://perma.cc/J6FK-KVPX>].

²⁴¹ U.S. SMALL BUS. ADMIN. OFF. INSPECTOR GEN., FY2018 CONGRESSIONAL BUDGET JUSTIFICATION 5, 16–18 (2017), https://www.sba.gov/sites/default/files/2019-08/SBA_OIG_FY_2018_CBJ_5-17-17.pdf [<https://perma.cc/MP5J-2WW5>].

²⁴² *Id.*

²⁴³ *Federal Contracting Assistance Programs: Women-Owned Small Business Federal Contracting Program*, *supra* note 161.

²⁴⁴ *Id.*

Historically, the WOSB program was not an SBA certification program—that is, the SBA did not investigate into WOSB eligibility and did not certify firms as eligible participants in the program. WOSBs could certify their eligibility in two ways: by self-certifying through providing documentation or by obtaining certification from a third-party certification company approved by the SBA.²⁴⁵ After self-certifying, the process merely required COs seeking to award contracts to WOSBs to verify that the entity was (1) registered in the System for Award Management; (2) had listed its self-certification in the system; and (3) had submitted documents verifying its eligibility by the time of initial offer.²⁴⁶ This method of self-certification absolved the SBA of any responsibility for determining eligibility for the program by instead taking program applicants at their word—a highly trusting method easily abused by dishonest firms.²⁴⁷ Self-certification was thus an easy means for contractors to fraudulently assert WOSB eligibility and deprive the program of funds for bona fide WOSB firms.²⁴⁸

However, the SBA recently, and at long last, implemented changes to WOSB certification that should address many of the infirmities plaguing self-certification. Based on program modifications enacted by Congress in the National Defense Authorization Act of 2015, the SBA announced in January 2020 that it was developing new regulations.²⁴⁹ The SBA's new WOSB regulations, published in May 2020 and initially implemented in July

To qualify as an economically disadvantaged business within the women's contracting program, a business must: meet all the requirements of the women's contracting program; be owned and controlled by one or more women, each with a personal net worth less than \$750,000; be owned and controlled by one or more women, each with \$350,000 or less in adjusted gross income averaged over the previous three years; and be owned and controlled by one or more women, each \$6 million or less in personal assets.

Id.

²⁴⁵ FAR 19.1503(b), (c)(1).

²⁴⁶ FAR 19.1503(b).

²⁴⁷ U.S. SMALL BUS. ADMIN. OFF. INSPECTOR GEN., REP. NO. 18-18, AUDIT REPORT: SBA'S WOMEN-OWNED SMALL BUSINESS FEDERAL CONTRACTING PROGRAM 4 (2018), <https://www.sba.gov/sites/default/files/oig/SBA-OIG-Report-18-18.pdf> [<https://perma.cc/YA2Y-6QBH>].

²⁴⁸ *Id.*

²⁴⁹ Press Release, U.S. Small Bus. Admin., SBA Issues New Regulations for Women-Owned Small Business Federal Contracting Program (May 11, 2020), <https://www.sba.gov/about-sba/sba-newsroom/press-releases-media-advisories/sba-issues-new-regulations-women-owned-small-business-federal-contracting-program> [<https://perma.cc/W485-BTKZ>].

2020, end self-certification.²⁵⁰ Instead, the regulations allow for WOSB or EDWOSB program-eligible firms to use either the SBA's free online certification platform or SBA-approved third-party certifiers.²⁵¹

The elimination of self-certification addresses major flaws in the program.²⁵² A 2015 SBA Inspector General report on WOSB set-asides “found that from a sample of thirty-four set-aside awards, ‘[nine] of these [thirty-four] were awarded to firms that did not provide required documentation to prove they were eligible for WOSBP.’”²⁵³ In particular, “[twelve] firms did not provide sufficient documentation to prove that a woman or women controlled the day-to-day operations of the firm.”²⁵⁴ Overall, “tens of millions of dollars” have likely been allocated to WOSBs that were technically ineligible, but whose eligibility was not monitored by the SBA.²⁵⁵ The proposed regulations implementing a new certification regime stand to help eligible WOSBs win contracts that might have otherwise gone to ineligible businesses.

As the SBA's new certification process takes effect in 2020, making self-certification less of a concern, the SBA must take care to ensure that businesses do not continue to evade program goals by making false statements to the agency or its partners. The revised regulations continue to rely on third-party certifiers, which have been in use since soon after the start of the WOSB program.²⁵⁶ However, the U.S. Government Accountability Office (GAO) reports indicate that the SBA performed

²⁵⁰ *Id.* The SBA announced the regulations would take effect in July 2020 and October 2020. *Id.*

²⁵¹ *Federal Contracting Assistance Programs: Women-Owned Small Business Federal Contracting Program*, *supra* note 161.

²⁵² Mee, *supra* note 77, at 735. When the SBA issued its 2010 rule implementing the WOSB program, self-certification was controversial. *See id.* (“Commenters disagreed as to the certification procedures set forth in the rule. Many commenters believed that self-certification should not be allowed because they feared it would be too easy to take advantage of the program.”).

²⁵³ Matthew Layman, Note, *Mistake, Fraud, and Waste: Mass Inefficiencies in Small Business Programs That Allow Self-Certification*, 46 PUB. CONT. L.J. 167, 176–77 (2016) (quoting U.S. SMALL BUS. ADMIN. OFF. INSPECTOR GEN., NO. 15-10, EVALUATION REPORT: IMPROVEMENTS NEEDED IN SBA'S MANAGEMENT OF THE WOMEN-OWNED SMALL BUSINESS FEDERAL CONTRACTING PROGRAM 4 (2015), https://www.sba.gov/sites/default/files/2019-07/Report_15-10_Improvements_Needed_in_SBAs_Management_of_WOSBP.pdf [<https://perma.cc/4372-GFBY>]).

²⁵⁴ *Id.* at 177.

²⁵⁵ *Id.*

²⁵⁶ *Federal Contracting Assistance Programs: Women-Owned Small Business Federal Contracting Program*, *supra* note 161.

little oversight of these third-party certifiers since implementation of their use.²⁵⁷ As third-party certification remains in use under the new regulations, the SBA must provide sufficient oversight to ensure consistent and strict application of the program requirements.²⁵⁸ Similarly, the SBA must investigate further into claims made by WOSBs. For example, one means of manipulating the SBA program has been to establish simple WOSB ownership rather than true control.²⁵⁹ In a 2013 report,

NASA's Office of Inspector General (OIG) found that, out of twenty contracts awarded to WOSBs, seven, or thirty-five percent, "were awarded to [six] different firms that may not have met the criteria for a woman-owned small business." Specifically, those six firms appeared to be run by the male spouse of the woman who owned the business, violating the control requirements set forth by the SBA.²⁶⁰

These evasions of program rules matter. The goal of the WOSB program is to redress years of discrimination against women business owners and to empower women to grow and develop their enterprises. Such opportunities are limited and should remain with the intended beneficiaries. Therefore, despite the significant progress made through new SBA rulemaking, the agency must continue to be vigilant as it now undertakes review of WOSB program participants.

2. SBA 8(a) Business Development Program Fraud

The SBA 8(a) Program provides exceptional benefits to 8(a) certified small businesses. Perhaps because of this substantial assistance, some firms have engaged in program fraud by falsely asserting eligibility in terms of economic status, socially disad-

²⁵⁷ Layman, *supra* note 253, at 176 (citing U.S. GOV'T ACCOUNTABILITY OFF., GAO-15-54, WOMEN-OWNED SMALL BUSINESS PROGRAM: CERTIFIER OVERSIGHT AND ADDITIONAL ELIGIBILITY CONTROLS ARE NEEDED 7 (2014)).

²⁵⁸ The SBA has noted that, to ensure consistency between its review and third-party certifiers, "SBA is the final authority for all of the certification processes. . . . [T]he foundation for all the processes is SBA's Program eligibility requirements." Women-Owned Small Business and Economically Disadvantaged Women-Owned Small Business Certification, 85 Fed. Reg. 27650, 27651 (May 11, 2020).

²⁵⁹ See, e.g., Layman, *supra* note 253, at 177.

²⁶⁰ *Id.* ("In total, the OIG estimated that these firms were awarded 'approximately \$74.5 million in contract obligations during fiscal year 2010 from 54 unique Federal procurement organizations,' which as a result 'may have overstated progress toward meeting woman-owned business contracting goals by the same amount.'").

vantaged status, or small business size.²⁶¹ For example, a 2010 GAO report “identified fourteen ineligible firms participating in the 8(a) Program, that received \$325 million of 8(a) contracts. Eligibility issues included under reporting of net worth and salary, the principal’s false claim of racial ethnicity, . . . [and] management by [a] non-disadvantaged individual.”²⁶² These attempts to deceive SBA program officers occurred despite the SBA’s direct review and certification of SBA 8(a) firms—unlike the WOSB program, SBA 8(a) has not permitted self-certification.²⁶³

Based on GAO recommendations, the SBA implemented changes to the 8(a) regulations in 2011 to combat instances of fraud.²⁶⁴ Such changes included consideration of SBA 8(a) applicants’ spouses’ financial assets and determination of whether an individual’s immediate family member has previously participated in the SBA 8(a) Program.²⁶⁵ Other changes recommended by the GAO included fraud detection tools and verification through third-party data sources.²⁶⁶ These improvements go far to help curb erroneous awards to ineligible firms.

Other fraud detection tools include regulations that permit protests to challenge businesses’ SBA 8(a) certification. However, protests themselves cannot fully combat fraud given limitations to what aspects of SBA 8(a) certification may be protested. For example, another offeror, the contracting officer, or the SBA District Director *may* launch a size protest alleging that a successful offeror for a competitive SBA 8(a) award does not meet size specification to qualify as a small business.²⁶⁷ Yet the overall “eligibility of an [SBA] 8(a) participant for a sole source or competitive 8(a) requirement *may not* be challenged by another 8(a) participant or any other party, either to SBA or any administrative forum as part of a bid or other contract protest.”²⁶⁸ There are certainly valuable reasons not to question an individual’s socially disadvantaged status or to require concrete proof of such status, which would force individuals to prove

²⁶¹ *E.g.*, Jeffrey F. Pan, *Preventing Small Business Fraud, Including Small Business Contracting Fraud Prevention Act*, 11 FLA. ST. U. BUS. REV. 13 (2012).

²⁶² *Id.* at 21–22.

²⁶³ *Id.* at 15.

²⁶⁴ *Id.* at 14.

²⁶⁵ *Id.* at 22.

²⁶⁶ *Id.*

²⁶⁷ FAR 19.813(c), 19.814.

²⁶⁸ FAR 19.813(a) (emphasis added).

their racial or ethnic background at the request of disgruntled, unsuccessful offerors. However, insufficient means exist to ensure eligibility requirements are met, and further tools to verify proper eligibility would go far to reduce fraud and create more opportunities for true socially and economically DBs.

The SBA should consider further study into 8(a) Program abuse and the efficacy of protest mechanisms. The agency might also consider increasing the availability and clarity of guidance on non-SBA 8(a) opportunities so that ineligible firms have clear alternative avenues to government funding. Additionally, the government could decrease fraud by establishing stricter sentencing guidelines for punishing the exploitation of government contracting programs—in essence, raising the stakes for wrongdoing.²⁶⁹ These improvements to SBA 8(a) Program functioning might serve to preserve valuable government contracting opportunities for the SBA 8(a) Program's intended beneficiaries.

B. EMPLOYING NASA'S OTHER TRANSACTIONAL AUTHORITY

In the National Aeronautics and Space Act of 1958 (Space Act), which created NASA, Congress endowed the agency with the authority to enter into “other transactions as may be necessary in the conduct of its work and on such terms as it may deem appropriate.”²⁷⁰ The “founding father” of this authority, Space Act drafter and former NASA General Counsel Paul Dembling, intended the phrase “other transactions” to be a “‘catchall phrase’ [that would] provide NASA freedom from traditional

²⁶⁹ Section 2B1.1 of the Federal Sentencing Guidelines covers “economic crimes” like fraud and forgery, and prescribes offense level calculations dependent in part on a calculation of loss. See Michael Sabo, Note, *Affirmatively Ambiguous: Reforming the Fraud Federal Sentencing Guidelines Rules in “Affirmative Action” Government Contracts*, 43 SETON HALL LEGIS. J. 157, 161–62 (2019). Currently, many circuit courts use the “general loss rule,” which mitigates loss by factoring in benefits the government received. *Id.* at 159. In contrast, under a “government benefits rule,” often reserved for entitlement programs, the loss for sentencing purposes is the entire total of the grant or contract awarded without any mitigation for legitimate services rendered. *Id.* Resolving the current circuit split in favor of a government benefits rule would create a harsher punishment for government contracting fraud. Sabo argues that contract programs should be considered government benefits and that the U.S. Sentencing Commission should revise the sentencing rules to ensure that those “who illegally exploit government programs are held accountable for the full amount of money awarded by the government regardless of any benefits or services provided.” *Id.* at 187.

²⁷⁰ National Aeronautics and Space Administration Act of 1958, Pub. L. 111-314, § 20113(e), 124 Stat. 3328, 3334 (1958).

procurement regulations and flexibility to structure agreements in line with commercial business practices.”²⁷¹ Presently, this authority, termed “other transaction[al] authority” (OTA), equips NASA with flexible, additional contracting authority outside typical regulatory or contractual constraints,²⁷² as “OTAs are legally binding instruments [different and separate from] contracts, grants, or cooperative agreements.”²⁷³ Since first envisioned at NASA’s establishment, the authority to enter into other agreements as necessary has been extended to eleven other agencies, subject to additional agency regulations.²⁷⁴ The DoD, the federal government’s largest procurer of goods and services,²⁷⁵ employs OTAs more than any other agency,²⁷⁶ often for its research and development work.²⁷⁷

OTAs stand to greatly benefit WOBs and MOBs by providing an easier, more flexible means of contracting with the government that bypasses some of the regulatory hurdles imposed by contracting regulations. For example, OTAs circumvent regula-

²⁷¹ Nathaniel E. Castellano, *Other Transactions are Government Contracts, and Why It Matters*, 48 PUB. CONT. L.J. 485, 487 (2019).

²⁷² Annejanette Heckman Pickens & Daniel J. Alvarado, *Other Transaction Agreements: An Analysis of the Oracle Decision and Its Potential Impact on the Use of OTAs*, 54 PROCUREMENT LAW., Fall 2018, at 1, 18.

There is a list of notable statutes that do not apply to OTAs, a few of which are the Competition in Contracting Act, the Contract Disputes Act, and the Buy American Act. Most notably excluded from application is the Bayh-Dole Act, which governs patent rights and intellectual property (IP) for certain government-funded inventions.

Id.

²⁷³ *Id.*

²⁷⁴ *Id.* NASA has broad OTA authority without any preconditions, as opposed to the DoD. Castellano, *supra* note 271, at 502.

²⁷⁵ *Federal Government Contracting for FY 2018*, *supra* note 83 (showing that the DoD had \$358.3 billion in procurement obligations in 2018).

²⁷⁶ Pickens & Alvarado, *supra* note 272, at 17 (“[B]etween FY 2015 and FY 2017 DoD spent nearly \$21 billion through 148 OTAs.”).

²⁷⁷ Victoria Dalcourt Angle, *Innovation in Government Contracting: Increasing Government Reliance on Other Transaction Agreements Mandates a Clear Path for Dispute Resolution*, 49 PUB. CONT. L.J. 87, 95 (2019). The DoD often uses OTAs for research and development purposes. *Id.* The agency has “authority to enter into two types of other transactions: OTAs for basic, applied, and advanced research and development projects and OTAs for prototype projects.” *Id.* “Prototype OTAs have the potential to turn into follow-on production OTAs.” *Id.* In the FY18 National Defense Authorization Act, Congress announced “a ‘preference’ for the use of OTAs for prototypes and research and development projects under 10 U.S.C. § 2371b and 10 U.S.C. § 2371.” *Id.* at 98 (quoting National Defense Authorization Act for Fiscal Year 2018, Pub. L. No. 115-91, § 867, 131 Stat. 1283, 1495 (2017)).

tions such as the FAR, the CICA, and the Cost Accounting Standards, and provide the “freedom to negotiate intellectual property rights outside the [constraints] of the Bayh-Dole Act.”²⁷⁸ OTAs allow agencies to craft unique, individualized agreements with a diversity of actors to meet agency needs. Traditionally, this authority has permitted “agencies to more readily attract nontraditional contractors, such as commercially focused technology companies, to research and development projects.”²⁷⁹ It allows for agency partnerships “with firms that infrequently participate in government contracting due to industry perception that government contract regulations are overly burdensome.”²⁸⁰ Despite these typical uses, OTAs can be used for a variety of means—in fact, a survey of federal agencies found that the main reason for their use is for the “flexibility” the agreements provide.²⁸¹

There are certainly benefits for women and minorities to abiding by the FAR. FAR provisions set forth the very SBA programs that are key to ensuring WOSBs and MOSBs even receive consideration for prime contracts. However, OTAs can supplement these contracting programs by allowing for additional, non-traditional means of involving small businesses. For example, NASA Kennedy Space Center entered into a non-reimbursable agreement, under its OTA, with WOSB Craig Technologies to take over the remains of the NASA Shuttle Logistics Depot.²⁸² This OTA provided Craig Technologies “the opportunity to house and maintain the manufacturing equipment for a period of 5 years and utilize it for any commercial purpose.”²⁸³ The agreement, under which no money was exchanged, “was purely an entrepreneurial opportunity” that provided an enormous benefit to a WOSB.²⁸⁴ In fact, founder Carol Craig explained that the profits secondarily derived from the agreement enabled her to expand the business to include an aerospace solution di-

²⁷⁸ Castellano, *supra* note 271, at 488.

²⁷⁹ Pickens & Alvarado, *supra* note 272, at 19.

²⁸⁰ Angle, *supra* note 277, at 91.

²⁸¹ Pickens & Alvarado, *supra* note 272, at 19 (quoting U.S. GOV'T ACCOUNTABILITY OFF., GAO-16-209, FEDERAL ACQUISITIONS: USE OF “OTHER TRANSACTION” AGREEMENTS LIMITED AND MOSTLY FOR RESEARCH AND DEVELOPMENT ACTIVITIES 12 (2016)).

²⁸² 2016 NASA Small Business House Hearing, *supra* note 71, at 9 (statement of Carol Craig, President and CEO of Craig Technologies).

²⁸³ *Id.*

²⁸⁴ *Id.*

vision.²⁸⁵ These types of flexible arrangements, which in the present example required relatively little burden or financial expenditure on NASA's part, can be transformational for small businesses seeking experience and resources.

Recent case law regarding OTAs does stand to somewhat limit their use by decreasing agencies' discretion to enter into these agreements. In 2018, the GAO ruled in Oracle America Inc.'s bid protest²⁸⁶ that "(1) GAO will review a timely protest that an agency is improperly using its OTA authority and (2) GAO will sustain a protest where an agency does not comply with statutory requirements for the award of follow-on production work without competition."²⁸⁷ As a result of the GAO's ruling, agencies must be more careful and adhere to stricter parameters when entering into OTAs.²⁸⁸ Otherwise, GAO will review the agency's OTA use if "entered into without complying with [] statutory requirements," a decision likely to increase bid protests and scrutiny of OTAs.²⁸⁹ Despite these new parameters, OTAs present a viable alternative option to traditional contracting under the FAR, and could help encourage agencies to find new solutions to increase contractor diversity.

C. SUPPORT FOR MINORITIES IN STEM

To even address improving the gender and racial diversity of federal contract awardees requires a body of qualified WOBs and MOBs in the first place. One source of the lack of diverse companies contracting with NASA and other space-adjacent agencies stems from the underrepresentation of women and minorities in STEM fields as a whole.²⁹⁰ As discussed in Part II, women make up less than 30% of U.S. STEM employees.²⁹¹ Racial minorities also face underrepresentation given that STEM employees with bachelor's degrees are only 6% Hispanic and 7% Black compared to a total U.S. workforce that is 16% Hispanic and 11% Black.²⁹² Given these barriers, representation could be improved by (1) supporting minorities by building

²⁸⁵ *Id.*

²⁸⁶ Oracle Am., Inc., B-416061, 2018 WL 2676823, at *1 (Comp. Gen. May 31, 2018).

²⁸⁷ Pickens & Alvarado, *supra* note 272, at 22.

²⁸⁸ Angle, *supra* note 277, at 91 & n.26.

²⁸⁹ Pickens & Alvarado, *supra* note 272, at 22.

²⁹⁰ See *supra* Part II (describing the lack of diversity in STEM fields).

²⁹¹ See *Catalyst Data*, *supra* note 42.

²⁹² See FUNK & PARKER, *supra* note 15.

upon existing programs assisting minority-serving institutions; and (2) supporting women by enacting legislation meant to improve conditions for women in STEM.

1. *HBCU & Minority-Serving Institution Programs*

Building strong and supportive academic departments at minority-serving institutions (MSIs)²⁹³ would encourage students to enter STEM majors, better educate those students to ensure their success in competitive job markets, and attract high-caliber faculty to improve instruction and mentorship. NASA and the DoD have designed programs to support minority institutions, both of which have the capacity to improve diversity in STEM.

NASA's Office of Small Business Programs manages the NASA HBCU/MSI Program, which directs funds towards Hispanic-serving institutions, Tribal colleges or universities, Alaska Native-serving or Native Hawaiian-serving institutions, predominantly Black institutions, Asian American and Native American Pacific Islander-serving institutions, and Native American-serving non-tribal institutions.²⁹⁴ NASA's policy "is to attain an Agency-wide goal of one percent of total contract value of prime and subcontracting awards for acquisitions to [HBCUs] and [MSIs]."²⁹⁵ Attaining this 1% goal, and setting even more ambitious goals moving forward, would help drive resources towards minority institutions. Overall, NASA awarded \$1.87 billion to educational institutions in 2019; however, not one of the ten institutions receiving the greatest percentage of educational contracting awards were HBCUs or MSIs.²⁹⁶ Investing more in university research programs has enormous potential to drive more STEM

²⁹³ *Small Business Programs: Historically Black Colleges and Universities (HBCUs) / Minority Serving Institutions (MSIs)*, NASA OFF. SMALL BUS. PROGRAMS, <https://osbp.nasa.gov/hbcu-mi/index.html> [<https://perma.cc/VR2A-NGF3>].

"Minority Serving Institution" must be an institution of higher education whose enrollment of a single minority or a combination of minorities . . . exceeds 50 percent of the total enrollment. Minority is defined, in 20 U.S.C. § 1067k, as American Indian, Alaskan Native, Black (not of Hispanic origin), Hispanic (including persons of Mexican, Puerto Rican, Cuban, and Central or South American origin), Pacific Islander or other ethnic group underrepresented in science and engineering.

Id.

²⁹⁴ *Id.*

²⁹⁵ NAT'L AERONAUTICS & SPACE ADMIN., OFFICE OF PROCUREMENT: NASA FAR SUPPLEMENT § 1826.302 (2015), <https://www.hq.nasa.gov/office/procurement/regs/NFS.pdf> [<https://perma.cc/V2HT-A5JZ>].

²⁹⁶ *NASA FY19 Procurement Report*, *supra* note 1, at 24.

majors to these schools or to foster an interest in majoring in STEM amongst current students.

The DoD's programs serve similar goals, with the agency demonstrating an interest in and commitment to supporting minorities in STEM. The DoD's HCU and MSI Research and Education program

enhances work in scientific and engineering disciplines critical to the national security functions of DoD, improves the capacity of HBCUs/MSIs to participate in DoD research programs and activities and increases the number of graduates, including underrepresented minorities, in the fields of science, technology, engineering, and mathematics important to the defense mission.²⁹⁷

In 2019, the DoD awarded \$23.2 million to 59 MSIs to support the acquisition of research equipment, which benefitted "24 HBCUs, 34 MSIs, and one Tribal College."²⁹⁸ Continuing to support academic institutions, and prioritizing these institutions by providing research support, awarding contracts, and hiring recent graduates, could help diversify the pool of STEM majors and yield new STEM graduates interested in forming businesses and contracting with the government.

2. *STEM Legislation*

Given the notorious challenges for women working in STEM professions, legislation aimed at improving working conditions would help encourage women to enter into and stay in the field.²⁹⁹ For example, in 2019 Congress passed the Building Blocks of STEM Act (Building Blocks Act), which modifies National Science Foundation (NSF) grant programs that support

²⁹⁷ Press Release, Dep't of Def., Defense Department Announces Fiscal Year 2019 Research Equipment Awards to Minority-Serving Institutions (Oct. 23, 2019), <https://www.defense.gov/Newsroom/Releases/Release/Article/1996576/defense-department-announces-fiscal-year-2019-research-equipment-awards-to-mino/> [https://perma.cc/5YYP-ANYD].

²⁹⁸ *Id.*

²⁹⁹ Beyond the legislation discussed in this section, other recent legislation includes attempts to deal with "cultural and institutional barriers to expanding the academic and federal STEM workforce." STEM Opportunities Act of 2019, H.R. 2528, 116th Cong. § 7 (2019). Section 7 requires the director of the NSF to develop written best practices for institutions of higher education and federal laboratories to conduct periodic climate surveys of STEM departments and divisions "with a particular focus on identifying any cultural or institutional barriers to the recruitment, retention, or advancement of women, racial and ethnic minorities, and other groups historically underrepresented in STEM studies and careers." *Id.* § 7(a)(1).

STEM education.³⁰⁰ Specifically, the Building Blocks Act encourages participation of underrepresented populations in STEM fields by prescribing research into whether and how teachers encourage or discourage participation of female students in STEM activities in their classrooms, and what types of activities would prompt more girls to consider STEM.³⁰¹ This research makes an important stride towards determining how and at what point women begin to feel discouragement from entering into these fields in the first place.

Despite the progress legislation like the Building Blocks Act represents in encouraging participation of women in the field, more must be done. Proposed legislation, such as the Combating Sexual Harassment in Science Act of 2019, would make considerable strides towards addressing toxic environments and behavior that render working in STEM unbearable for many women.³⁰² The bill seeks “to provide for research on the causes, consequences and prevalence of, as well as interventions for preventing, sexual harassment in the STEM workforce. The bill also directs coordination among Federal science agencies efforts to address sexual harassment involving federally funded researchers.”³⁰³ It includes important protections for victims, such as by directing “the Office of Science and Technology Policy to consider policy guidelines for all federal science agencies . . . to help victims reenter the workforce after being the target of harassment.”³⁰⁴ Congress should devote serious attention to this bill, and similar initiatives, as an important means of improving the STEM profession. Given the high prevalence of sexual harassment within science fields,³⁰⁵ greater protection for employees and better accommodations for survivors could provide the

³⁰⁰ Building Blocks of STEM Act, Pub. L. 116-102 §§ 2(1), 4(3), 133 Stat. 3263, 3263–64.

³⁰¹ *Id.* § 4(3)(A).

³⁰² Combating Sexual Harassment in Science Act of 2019, H.R. 36, 116th Cong. § 2 (2019).

³⁰³ H.R. REP. NO. 116-153, pt. 2, at 6 (2019).

³⁰⁴ Press Release, Congresswoman Lizzie Fletcher, Congresswoman Lizzie Fletcher Supports Passage of Bill Combatting Sexual Harassment in STEM (July 23, 2019), <https://fletcher.house.gov/news/documentsingle.aspx?DocumentID=2159> [<https://perma.cc/QPR2-EJNS>].

³⁰⁵ NAT'L ACADEMIES OF SCIENCES, ENG'G AND MED., SEXUAL HARASSMENT OF WOMEN: CLIMATE, CULTURE, AND CONSEQUENCES IN ACADEMIC SCIENCES, ENGINEERING, AND MEDICINE 65 (Paula A. Johnson, Sheila E. Widnall & Frazier F. Benya eds., 2018). “Greater than 50 percent of women faculty and staff and 20-50 percent of women students encounter or experience sexually harassing conduct in academia.” *Id.* These rates are similar to other workplaces. *Id.* at 1–2. Women in

support needed to ensure women feel comfortable remaining and succeeding in the profession.

The three proposed solutions—fraud reduction, increased use of other transaction authority, and improvements to the pipeline through educational investment and legislation—scarcely represent the only or best means by which to improve diversity in government contracting for the space industry. However, the solutions do provide the government with options, both within and outside the scope of the FAR and SBA programs, to better include disadvantaged American business owners in the work government agencies undertake.

VI. CONCLUSION

Diversity matters. From a historical perspective, women and racial minorities faced significant barriers and discrimination on the path to business ownership; from a forward-looking perspective, wealth generation and the strengthening of minority communities through financial investment remains crucial for lifting up disadvantaged groups. The space industry, notoriously dominated by white, male voices, stands to benefit immensely from diverse perspectives and greater inclusivity. Government contracting provides one means by which the industry might diversify. Federal socioeconomic programs provide solid guidance to COs as to how to allocate more federal resources to WOBs and MOBs. These programs, in turn, help diverse business owners create, innovate, and expand, and may lead to more diverse subcontracting as well. With improvements to the system such as better WOSB and SBA 8(a) Program functioning, utilization of unique contracting opportunities, and greater investment in and support of women and minorities in STEM, federal government contracting programs could greatly improve the makeup and inclusivity of the space industry.

STEM endure the highest rate of sexual harassment of any profession outside the military. *Id.*

Comments



**BIOMETRICS TAKES OFF—FIGHT BETWEEN PRIVACY
AND AVIATION SECURITY WAGES ON**

ALEXA N. ACQUISTA*

ABSTRACT

In the last two decades, the Department of Homeland Security (DHS) has implemented a variety of new screening and identity verification methods in U.S. airports through its various agencies such as the Transportation Security Administration (TSA) and Customs and Border Protection (CBP). In particular, biometric technology has become a focal point of aviation security advances. TSA, CBP, and even private companies have started using fingerprint, iris, and facial scans to verify travelers' identities, not only to enhance security but also to improve the travel experience.

This Comment examines how DHS, its agencies, and private companies are using biometric technology for aviation security. It then considers the most common privacy concerns raised by the expanded use of biometric technology: data breaches, function creep, and data sharing. As biometric technology is new and continually developing, the scope and extent of privacy threats cannot be completely quantified. However, a combination of new legislation, technological solutions, and independent oversight may be an effective way to protect both biometric data and traveler privacy while maintaining the benefits of enhanced security.

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I. INTRODUCTION

AIR TRAVEL IS AN increasingly common way to travel. In 2018, the Transportation Security Administration (TSA) screened more than 804 million aviation passengers—a 5% increase from the previous year.¹ Millions of those Americans have been willing to trade their biometric information for the prom-

¹ *About Face: Examining the Department of Homeland Security’s Use of Facial Recognition and Other Biometric Technologies: Hearing Before the H. Comm. on Homeland Sec., 116th Cong. 33 (2019)* (prepared statement of Austin Gould, Assistant Administrator, Requirements and Capabilities Analysis), <https://www.tsa.gov/news/press/testimony/2019/07/10/use-biometric-technology-department-homeland-security> [<https://perma.cc/ZUQ6-2UKG>] [hereinafter *Biometric Technology Hearing*].

ise of shorter airport security lines, safer flights, and a better flying experience.² However, biometric data collection raises serious questions about data security and traveler privacy.

Biometrics is the science used to identify or verify an individual's identity "using physiological or behavioral characteristics."³ Biometric technology is not limited to government use. Many companies have started integrating biometric technology into their products for both security and convenience.⁴ The consumer industry integrated biometrics into Americans' everyday lives.⁵ For example, iPhone users can now unlock their phones with their fingerprint or their face instead of a traditional alphanumeric password.⁶

While increased use of biometric security measures can benefit airports in a multitude of ways, the rapid expansion of biometric technology has raised privacy concerns from both sides of the political aisle.⁷ Privacy advocates question the government's storage and use of biometric data.⁸ However, privacy and security are not mutually exclusive—Congress and the private sector can strike the proper balance between security and privacy. An effective solution might include federal legislation, improved technological protections, increased independent oversight, or more effective opt-out procedures.

² See Press Release, U.S. Transp. Sec. Admin., TSA PreCheck Reaches Milestone With 10 Million Members (Mar. 2, 2020), <https://www.tsa.gov/news/press/releases/2020/03/02/tsa-prechecktm-reaches-milestone-10-million-members> [<https://perma.cc/N7CU-M27K>].

³ JOHN R. VACCA, *BIOMETRIC TECHNOLOGIES AND VERIFICATION SYSTEMS* 589 (2007).

⁴ Nasir Memon, *How Biometric Authentication Poses New Challenges to Our Security and Privacy*, 34 *IEEE SIGNAL PROCESSING MAG.*, July 11, 2017, at 194, 196, <https://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=7974880&tag=1> [<https://perma.cc/64M2-CCA2>].

⁵ *Id.* at 196.

⁶ *Id.*; Samuel Gibbs & Alex Hern, *Apple Unveils iPad Air and iPad Mini With Touch ID Fingerprint Scanner*, *GUARDIAN* (Oct. 16, 2014), <https://www.theguardian.com/technology/2014/oct/16/apple-unveils-new-powerful-ipad-air-ipad-mini-touch-id-fingerprint-scanner> [<https://perma.cc/75DA-KWAC>]; Sam Rutherford, *Touch ID Will Reportedly Return to iPhones in 2021 With Apple's New In-Screen Fingerprint Sensor*, *GIZMODO* (Aug. 5, 2019), <https://gizmodo.com/touch-id-will-reportedly-return-to-iphones-in-2021-with-1836973588> [<https://perma.cc/NWE5-B9E8>].

⁷ See, e.g., Letter from Sen. Edward Markey and Sen. Mike Lee to Kevin McAleenan, Acting Sec'y of Homeland Sec. (July 26, 2019), <https://www.markey.senate.gov/imo/media/doc/DHS%20Biometric%20Report.pdf> [<https://perma.cc/LV3P-PM6K>].

⁸ *Id.*

Part II of this Comment will discuss biometrics generally and the Department of Homeland Security's (DHS) application of biometric technology to aviation security. Part III will summarize the federal laws authorizing the use of biometric technology and the federal data privacy laws limiting these technologies. Part IV will discuss the primary privacy concerns biometric security technology poses, and Part V will analyze solutions that promote security while preserving privacy.⁹

II. HISTORY

A. GENERAL HISTORY OF BIOMETRIC TECHNOLOGY

The U.S. government has been collecting Americans' biometric data since the early 1900s.¹⁰ Law enforcement agencies first started biometric collection by manually recording physical characteristics, often called "soft biometrics,"¹¹ "such as hair color, eye color, height and weight."¹² Eventually, law enforcement began using fingerprinting to identify criminal suspects.¹³ The Federal Bureau of Investigation's (FBI) national fingerprint collection program dates back to 1924,¹⁴ and its database contains "almost 72 million criminal fingerprints, more than 50 million civil fingerprints, [and] more than 51 million facial images."¹⁵ Biometric data is now largely automated¹⁶ and includes everything from "fingerprints, DNA samples, iris or retinal scans, [and] voice recordings, [to] walking gait, typing pattern of the fingers, 3D facial scans, and other forms of hand geometry data."¹⁷ In wide-scale public use applications, the best

⁹ The possible constitutional implications of biometric technology are outside the scope of this Comment.

¹⁰ ELS J. KINDT, *PRIVACY AND DATA PROTECTION ISSUES OF BIOMETRIC APPLICATIONS: A COMPARATIVE LEGAL ANALYSIS* 18 (Pompeu Casanovas & Giovanni Sartor eds., 2013).

¹¹ *Id.* at 35 & n.75.

¹² Haydn Evans, *The State of Biometrics Technology: The Uses, the Concerns*, LAW360 (Aug. 8, 2017), <https://www.law360.com/articles/950365/the-state-of-biometrics-technology-the-uses-the-concerns> [<https://perma.cc/ZA3T-FQJ2>].

¹³ *Id.*

¹⁴ Carra Pope, Comment, *Biometric Data Collection in an Unprotected World: Exploring the Need For Federal Legislation Protecting Biometric Data*, 26 J.L. & POL'Y 769, 774–75 (2018) (citing *Fingerprints and Other Biometrics*, FED. BUREAU OF INVESTIGATION, <https://www.fbi.gov/services/cjis/fingerprints-and-otherbiometrics/> [<https://perma.cc/FQ45-HMR8>]).

¹⁵ U.S. DEP'T OF JUSTICE, CRIM. JUSTICE INFO. SERVS., *CJIS ANNUAL REPORT 2016*, at 16 (2017).

¹⁶ KINDT, *supra* note 10, at 18.

¹⁷ Pope, *supra* note 14, at 773–74.

biometric identifiers are “accurate, non-invasive, capable of accommodating large amounts of information, and accepted by the general public.”¹⁸ Because these characteristics are “universal” to all human beings, “persistent” and unchanging over time, and “unique” or distinctive to each individual, biometrics are an incredibly useful security tool.¹⁹

1. *How Biometric Systems Work*

Biometric data can be used for either verification or identification.²⁰ All biometric systems, however, “start with an enrollment stage followed by a matching stage.”²¹ Enrollment involves a person presenting an identifier (such as a passport) and linking a biometric identifier (like a fingerprint) to that identity.²²

Verification—also called a “one-to-one comparison”²³—uses a person’s presented biometric identifier to verify his claimed identity by matching it to a previously submitted and stored biometric template in a database.²⁴ Essentially, verification confirms a person is who he says he is.²⁵ This process can take only a few seconds.²⁶ Although biometric databases can contain data “from dozens to millions of enrolled templates[, they] are always predicated on matching an individual’s presented biometric against his or her reference template.”²⁷ Thus, biometric data systems can verify one’s identity almost instantaneously.

By contrast, identification—also called a “one-to-many” comparison²⁸—compares a person’s presented biometric identifier “with all previously submitted and stored biometric characteristic[s] in one or more database(s) through a search.”²⁹ A

¹⁸ Eric P. Haas, Comment, *Back to the Future? The Use of Biometrics, Its Impact on Airport Security, and How This Technology Should Be Governed*, 69 J. AIR L. & COM. 459, 475 (2004).

¹⁹ KINDT, *supra* note 10, at 20–23.

²⁰ *Id.* at 36–37.

²¹ U.S. GOV’T ACCOUNTABILITY OFF., GAO-04-785T, AVIATION SECURITY: CHALLENGES IN USING BIOMETRIC TECHNOLOGIES 3 (2004).

²² *Id.*

²³ KINDT, *supra* note 10, at 36.

²⁴ *Id.* at 36–37.

²⁵ *Id.*; Paul Rosenzweig, Alane Kochems & Ari Schwartz, *Report: Biometric Technologies: Security, Legal, and Policy Implications*, HERITAGE FOUND. (June 21, 2004), <https://www.heritage.org/homeland-security/report/biometric-technologies-security-legal-and-policy-implications> [<https://perma.cc/H6Y7-LRPA>].

²⁶ KINDT, *supra* note 10, at 732.

²⁷ U.S. GOV’T ACCOUNTABILITY OFF., *supra* note 21, at 4.

²⁸ Rosenzweig et al., *supra* note 25.

²⁹ KINDT, *supra* note 10, at 37.

“[p]ositive identification system” is used “to ensure [a person’s] biometric *is* enrolled in the [particular] database.”³⁰ In contrast, a “[n]egative identification system” is used “to ensure a person’s biometric information is *not* present in a [certain] database³¹—like the No Fly List, for example.³²

Identification systems and verification systems have different databases. For identification to work, a database of stored biometric data is always necessary.³³ With verification, storage of only a single biometric characteristic is necessary.³⁴ The biometric data may be stored in a database or stored locally³⁵—for example, on an identification card.

2. *The Government’s Database*

Biometric data collection is “only as useful as” the government’s ability to organize and access it quickly; thus, the effectiveness—and invasiveness—of this data collection “is directly correlated to . . . the underlying database.”³⁶ The Office of Biometric Identity Management (OBIM) maintains DHS’s biometric database.³⁷ OBIM “supplies the technology for matching, storing, and sharing biometric data.”³⁸ OBIM’s database, the Automated Biometric Identification System (IDENT), is the “largest biometric repository in the U.S. government.”³⁹ According to DHS, IDENT currently holds over 260 million “unique identities and processes more than 350,000 biometric transactions per day.”⁴⁰ State and local law enforcement submit many of these transactions.⁴¹ The stored information is used for a variety of

³⁰ U.S. GOV’T ACCOUNTABILITY OFF., *supra* note 21, at 4 (emphasis added).

³¹ *Id.*

³² U.S. DEP’T OF HOMELAND SEC., REPORT ON EFFECTS ON PRIVACY AND CIVIL LIBERTIES 4–5 (2006).

³³ KINDT, *supra* note 10, at 37–38.

³⁴ *Id.* at 38–39.

³⁵ *Id.* at 37–38.

³⁶ John J. Brogan, *Facing the Music: The Dubious Constitutionality of Facial Recognition Technology*, 25 HASTINGS COMM. & ENT. L.J. 65, 69 (2002); Haas, *supra* note 18, at 478.

³⁷ U.S. DEP’T HOMELAND SEC., 2019 PRIVACY OFFICE ANNUAL REPORT TO CONGRESS (FOR THE PERIOD JULY 1, 2018–JUNE 30, 2019) 23, 47 (2019), https://www.dhs.gov/sites/default/files/publications/dhs_privacy_office_2019_annual_report-final-10-22-2019.pdf [<https://perma.cc/ZD5V-YSRP>].

³⁸ *Biometrics*, U.S. DEP’T HOMELAND SEC., <https://www.dhs.gov/biometrics> [<https://perma.cc/EA3F-4T9V>].

³⁹ *Id.*

⁴⁰ *Id.*

⁴¹ Pope, *supra* note 14, at 778.

purposes: “national security, law enforcement, immigration and border management, intelligence, and other background investigative purposes.”⁴² Further, IDENT allows interoperability and data sharing between various federal agencies including the Department of Defense (DoD), Department of Justice (DoJ), Department of State (State Department), and other agencies within DHS including TSA and Customs and Border Protection (CBP).⁴³

B. BIOMETRIC TECHNOLOGY IN AVIATION SECURITY

The DoD’s use of biometric technology for aviation security is relatively new, and technology is still developing in this area. TSA itself was created less than twenty years ago in response to the September 11, 2001 (9/11) terror attacks.⁴⁴ TSA is the DHS agency primarily responsible for airline safety,⁴⁵ however, CBP also employs biometric technology in its programs for travelers exiting and entering the United States.⁴⁶ Additionally, TSA and CBP are currently working together to bring facial recognition to airports across the nation.⁴⁷ Private companies also play a role in biometric aviation security by establishing their own biometric authentication systems or partnering with DHS on existing programs.⁴⁸ This Part will discuss the various aviation security programs that currently utilize biometric data.

1. TSA PreCheck

TSA PreCheck (PreCheck) is one of TSA’s “Trusted Traveler” programs.⁴⁹ It is a voluntary, “expedited screening program” for

⁴² U.S. GOV’T ACCOUNTABILITY OFF., GAO-18-46, TSA MODERNIZATION: USE OF SOUND PROGRAM MANAGEMENT AND OVERSIGHT PRACTICES IS NEEDED TO AVOID REPEATING PAST PROBLEMS 24 (2017).

⁴³ *Biometrics*, *supra* note 38; Pope, *supra* note 14, at 777 n.40.

⁴⁴ Chase Hilton, Comment, *Fingerprints: A New Means of Identification in Airport Security Screening*, 81 J. AIR L. & COM. 561, 567 (2016).

⁴⁵ *Id.* at 590.

⁴⁶ *See infra* Part II.B.4.

⁴⁷ *Biometrics Technology*, U.S. TRANSP. SEC. ADMIN., <https://www.tsa.gov/biometrics-technology> [<https://perma.cc/SAH9-R5VS>].

⁴⁸ *See infra* Part II.B.5.

⁴⁹ DHS offers several other Trusted Traveler programs similar to PreCheck that allow expedited screening for air and land travel. *Trusted Traveler Programs*, U.S. DEP’T OF HOMELAND SEC., <https://tp.dhs.gov/> [<https://perma.cc/ST6R-LC5C>]. Global Entry allows expedited entry into the United States from international locations, NEXUS allows expedited entry to the United States from Canada, and Sentri allows expedited entry into the United States from Mexico. *Id.*

“known and trusted travelers”⁵⁰ that, according to TSA, serves the dual purpose of enhancing security and providing “a better travel experience.”⁵¹ TSA introduced PreCheck in 2011,⁵² and currently, seventy-three airlines and over two hundred airports participate in the program.⁵³ Air travelers can apply for PreCheck by filling out an online application, paying an \$85 application fee, and providing personal identification documentation (such as a passport) and their fingerprints.⁵⁴ The traveler’s biometrics—fingerprints—are then linked to their identity.⁵⁵ After approval, travelers are issued a “known traveler number,” which they can add to their flight reservations.⁵⁶ This in turn prints a PreCheck indicator on the traveler’s boarding pass, and grants the traveler access to expedited boarding lanes.⁵⁷

Travelers’ fingerprints are not only used for background checks at for enrollment, however. The fingerprints collected are also enrolled in IDENT, and according to DHS, will be used for “recurrent immigration, law enforcement, and intelligence checks,” which includes checking enrolled prints against prints associated with unsolved crimes.⁵⁸ Further, the personally identifiable information collected, including fingerprints, may also be shared with “other federal, state and local government, and private sector entities.”⁵⁹

⁵⁰ *Transportation Security Timeline*, U.S. TRANSP. SEC. ADMIN., <https://www.tsa.gov/timeline> [<https://perma.cc/RE4X-KZRU>].

⁵¹ *TSA PreCheck Factsheet*, U.S. TRANSP. SEC. ADMIN., https://www.tsa.gov/sites/default/files/resources/tsaprecheck_factsheet.pdf [<https://perma.cc/YX67-5S2M>].

⁵² *Transportation Security Timeline*, *supra* note 50.

⁵³ *TSA PreCheck Factsheet*, *supra* note 51.

⁵⁴ *TSA PreCheck FAQ*, U.S. TRANSP. SEC. ADMIN., <https://www.tsa.gov/precheck/faq> [<https://perma.cc/D558-B8PM>].

⁵⁵ U.S. DEP’T OF HOMELAND SEC., DHS/TSA/PIA-041(A), PRIVACY IMPACT ASSESSMENT UPDATE FOR THE TSA PRE✓[®] APPLICATION PROGRAM 4 (2016), <https://www.dhs.gov/sites/default/files/publications/privacy-pia-041-a-tsa%20precheck%20application%20program-february2016.pdf> [<https://perma.cc/7QMB-9THZ>].

⁵⁶ *TSA PreCheck FAQ*, *supra* note 54.

⁵⁷ *Id.*

⁵⁸ U.S. DEP’T OF HOMELAND SEC., *supra* note 55, at 4.

⁵⁹ U.S. DEP’T OF HOMELAND SEC., DHS/TSA/PIA-041, PRIVACY IMPACT ASSESSMENT FOR THE TSA PRE✓[™] APPLICATION PROGRAM 8 (2013), https://www.dhs.gov/sites/default/files/publications/privacy_pia_041_tsa%20precheck%20application%20program_september%202013_0.pdf [<https://perma.cc/AEB9-3X8N>].

2. *Traveler Verification Service*

In 2018, TSA partnered with CBP to implement a number of pilot programs in airports across the country to test the Traveler Verification Service (TVS).⁶⁰ TVS is a biometric entry and exit program that uses facial recognition technology to verify passengers' information as they enter or exit the country.⁶¹ TVS works by checking "traveler[s'] live facial scans against their passport photo to ensure they match."⁶² If a traveler is verified as a U.S. citizen, that person is "removed from the exit screening and their photo is to be removed from the file."⁶³ However, DHS does not disclose exactly how long it retains the facial data.⁶⁴ CBP says that "the photo is discarded after a short period of time,"⁶⁵ as the agency is "committed to protecting the privacy of all travelers."⁶⁶ But some critics point out that because regulation is lacking, "there is no guarantee that the government will destroy the biometric data in a timely manner, or at all."⁶⁷

According to DHS, private companies, airlines, and airport authorities, in partnership with DHS, may use their own technology to "facilitate identity verification."⁶⁸ The agency claims that it does not allow these private companies to save the photos collected, and it requires that the photos are deleted immediately after "transmittal and identity verification."⁶⁹ However, DHS allows partners to elect to take photos with their own equipment, so long as the photos are not retained "for their own business purposes"⁷⁰ and so long as the company provides

⁶⁰ *Biometric Technology Hearing*, *supra* note 1; Pope, *supra* note 14, at 778; *see also Biometric Exit Frequently Asked Questions (FAQs)*, U.S. CUSTOMS & BORDER PROT., <https://www.cbp.gov/travel/biometrics/biometric-exit-faqs> [<https://perma.cc/M5UJ-KXTS>].

⁶¹ U.S. DEP'T OF HOMELAND SEC., DHS/CBP/PIA-056, PRIVACY IMPACT ASSESSMENT FOR THE TRAVELER VERIFICATION SERVICE (TVS) 1, 15 (2018), https://www.dhs.gov/sites/default/files/publications/privacy-pia-cbp030-tvs-november-2018_2.pdf [<https://perma.cc/6DVZ-CTKJ>].

⁶² Pope, *supra* note 14, at 778.

⁶³ *Id.*

⁶⁴ *Id.*

⁶⁵ Press Release, U.S. Customs & Border Prot., CBP Deploys Biometric Exit Technology to Chicago O'Hare International Airport (July 11, 2017), <https://www.cbp.gov/newsroom/national-media-release/cbp-deploys-biometric-exit-technology-chicago-o-hare-international> [<https://perma.cc/B2MG-4A47>].

⁶⁶ *Id.*

⁶⁷ Pope, *supra* note 14, at 778.

⁶⁸ *Biometric Exit Frequently Asked Questions (FAQs)*, *supra* note 60.

⁶⁹ *Id.*

⁷⁰ *Id.*

“a separate public notice, such as signage, which does not link that particular process to CBP.”⁷¹ While TVS and private partnerships are still in their early stages, DHS is focused on rapid expansion of facial recognition technology—in April 2019, the agency said it intends to scan 97% of departing passengers’ faces within the next four years.⁷²

3. *Secure Flight*

Secure Flight and the No Fly List are TSA-created lists that operate together to track individuals deemed to be a threat to national security by U.S. intelligence agencies.⁷³ The No Fly List is an actual compilation of names of individuals who cannot fly because they are deemed a security risk.⁷⁴ Secure Flight is a “watchlist match[ing]” program that prevents “the misidentification of passengers who have names similar to actual people on the government watchlists,” such as the No Fly List.⁷⁵ As of July 2019, TSA reported that it was assessing the benefits of combining the facial recognition identification results from TVS with Secure Flight to “further improve the identity verification process.”⁷⁶

4. *Arrival and Departure Information System*

The Arrival and Departure Information System (ADIS) is another government database maintained by CBP that matches biographic and biometric data to entry and exit information in order to catch visa overstays,⁷⁷ although the agency has since expanded the program “for all traveler encounters regardless of citizenship.”⁷⁸ In 2003, DHS created the United States Visitor

⁷¹ *Id.*

⁷² U.S. DEP’T OF HOMELAND SEC., FISCAL YEAR 2018 ENTRY/EXIT OVERSTAY REPORT 4 (2018), https://www.dhs.gov/sites/default/files/publications/19_0417_fy18-entry-and-exit-overstay-report.pdf [<https://perma.cc/3X8G-4TQC>].

⁷³ Hilton, *supra* note 44, at 567.

⁷⁴ *Id.*

⁷⁵ *Id.* at 567–68 (citing Bob Burns, *Secure Flight: TSA Now Performing 100% Watchlist Matching for Domestic Flights*, TRANSP. SEC. ADMIN. BLOG (June 11, 2010), <http://blog.tsa.gov/2010/06/secure-flight-tsa-now-performing-100.html> [<https://perma.cc/PD4A-NFUX>]).

⁷⁶ *Biometric Technology Hearing*, *supra* note 1.

⁷⁷ U.S. GOV’T ACCOUNTABILITY OFF., GAO-19-269R, DEPARTMENT OF HOMELAND SECURITY: REVIEW OF THE FISCAL YEAR 2017 ENTRY/EXIT OVERSTAY REPORT 18 (2019).

⁷⁸ U.S. DEP’T OF HOMELAND SEC., DHS/CBP/PIA-024(C), PRIVACY IMPACT ASSESSMENT FOR ARRIVAL AND DEPARTURE INFORMATION SYSTEM (ADIS) 1 (2020),

and Immigrant Status Indicator Technology (US-VISIT) program that collected digital photos and fingerprints of all persons entering and exiting the United States—not only at border crossings but also at airport terminals.⁷⁹ US-VISIT managed ADIS until 2013, when OBIM replaced US-VISIT.⁸⁰ ADIS compiles information from “a variety of federal systems to create a complete travel profile of an individual using his or her travel history.”⁸¹ IDENT provides biometric information to populate an ADIS record that includes fingerprints and facial images.⁸²

5. *Private Companies*

CLEAR is a company that offers a biometric authentication system similar to PreCheck. In 2010, DHS first certified the privately-held CLEAR under the Safety Act to implement its system in airports around the country.⁸³ CLEAR professes to replace travelers’ “ID[s] with [their] eyes and fingertips.”⁸⁴ During enrollment, CLEAR collects travelers’ personal information and biometric data (images of travelers’ faces, irises, and fingerprints) and transforms it into a unique “encrypted code.”⁸⁵ Then, at the airport, passengers bypass the TSA document checkpoint using the CLEAR system that matches their live fingerprints and irises to their “unique code” to verify their identity.⁸⁶ CLEAR and PreCheck are separate systems that can be used together: “CLEAR speeds up the travel document check process, [and]

<https://www.dhs.gov/sites/default/files/publications/privacy-pia-024c-adis-january2020.pdf> [<https://perma.cc/5CNM-ULGQ>].

⁷⁹ Pope, *supra* note 14, at 776.

⁸⁰ U.S. DEP’T OF HOMELAND SEC., *supra* note 78, at 2.

⁸¹ *Id.*

⁸² *Id.* at 4–5.

⁸³ *Approved Technologies*, SAFETY ACT, <https://www.safetyact.gov/lit/at/aa> (search in keyword bar for “Alclear, LLC”) (last visited Oct. 12, 2020). The Safety Act is part of the Homeland Security Act. Support Anti-terrorism by Fostering Effective Technologies Act of 2002, Pub. L. No. 107-296, 116 Stat. 2238 (2002). The goal of the Safety Act is to “encourage the development and deployment of effective anti-terrorism products and services by providing liability protections” for providers of Qualified Anti-Terrorism Technologies. SAFETY ACT, <https://www.safetyact.gov/lit/h/p> [<https://perma.cc/8HCN-XTHV>].

⁸⁴ *How Does CLEAR Work?*, CLEAR ME, <https://www.clearme.com/support/getting-started/how-does-clear-work> [<https://perma.cc/P7SP-MLD5>].

⁸⁵ *How It Works*, CLEAR ME, <https://www.clearme.com/how-it-works> [<https://perma.cc/3RLJ-EFXU>].

⁸⁶ *Id.*

TSA PreCheck expedites the physical screening process.”⁸⁷ After CLEAR verifies a traveler’s identity, that traveler may enter the PreCheck line for expedited screening.⁸⁸ Although it is unclear how the program’s database is operated and protected, CLEAR’s privacy policy maintains that it protects biometric data with “encryption, firewalls, and intrusion detection and prevention systems.”⁸⁹

Airports around the country are also using biometric identification to regulate employees’ access. Both San Francisco International Airport and Ohio’s Toledo Airport have used hand geometry devices to protect access to certain secure areas of the airport.⁹⁰ The Federal Aviation Administration (FAA) has been testing biometric access control in airports since the late 1990s.⁹¹ And TSA also administers the Transportation Worker Identification Credential, which is a “common credential for all transportation workers requiring . . . access to secure areas of the national transportation system,” including airports.⁹² Use of this technology does not come without legal risk to employers, however. Major airline companies, including Southwest Airlines and United Airlines, have recently faced lawsuits by airline employees for improperly storing and collecting their biometric data without their consent in violation of state privacy laws.⁹³

III. CURRENT STATE OF THE LAW

A. LEGAL AUTHORIZATION OF BIOMETRIC TECHNOLOGY

After 9/11, Congress took a variety of measures to enhance aviation security, passing a myriad of laws and creating TSA and DHS.⁹⁴ However, several laws dating back to 1996 authorize the various programs that allow DHS to collect biometric information at the border and at airports.⁹⁵ For example, the Illegal Im-

⁸⁷ *How Does CLEAR Work With TSA PreCheck?*, CLEAR ME, <https://www.clearme.com/support/tsa-precheck/how-does-clear-work-with-tsa-precheck> [https://perma.cc/E2DS-TUG3].

⁸⁸ *Id.*

⁸⁹ *Privacy Policy*, CLEAR ME, https://www.clearme.com/privacy_policy [https://perma.cc/L3R9-DKNX].

⁹⁰ U.S. GOV’T ACCOUNTABILITY OFF., *supra* note 21, at 14.

⁹¹ *Id.*

⁹² *Id.*

⁹³ Dave Embree, *Southwest Airlines Latest Company to Face Suit Over Use of Biometric Data*, 35:21 WESTLAW J. AVIATION 4, at *1 (2017), Westlaw WJAVIA.

⁹⁴ Haas, *supra* note 18, at 459.

⁹⁵ These laws include: Illegal Immigration Reform and Immigrant Responsibility Act, Pub. L. No. 104-208, 110 Stat. 3009-546 (1996); Enhanced Border Security

migration Reform and Immigrant Responsibility Act (IIRIRA), passed in 1996, was one of the first laws that authorized federal agencies to collect biographical information on persons entering and exiting the country.⁹⁶ IIRIRA authorization was supplemented in 2004 by the Intelligence Reform and Terrorism Prevention Act, which integrated biometric technology for the first time.⁹⁷ Further, the Homeland Security Act of 2002 (Homeland Security Act) gave DHS broad authority to collect and analyze personally identifiable information and to share this intelligence information with other federal agencies.⁹⁸ However, some question the government's authority to use its facial recognition programs on American citizens at the border.⁹⁹ One report notes that "Congress has passed legislation at least nine times concerning authorization for the collection of biometric data from foreign nationals, but no law directly authorizes DHS to collect the biometrics of *Americans* at the border."¹⁰⁰

More recently, President Trump added to DHS's biometric mandate by signing two executive orders urging DHS to make biometrics a priority and to expedite biometric development in an entry-exit tracking system.¹⁰¹ Additionally, in 2018, Congress

and Visa Entry Reform Act, Pub. L. No. 107-173, 116 Stat. 543 (2002); Intelligence Reform and Terrorism Prevention Act of 2004, Pub. L. No. 108-458, 118 Stat. 3638 (2004); Implementing Recommendations of the 9/11 Commission Act of 2007, Pub. L. No. 110-53, 121 Stat. 266 (2007). U.S. DEP'T OF HOMELAND SEC., *supra* note 61, at 1 & nn.1-4.

⁹⁶ Mark Skerry, Note, *Protect America by Being Unique: How Changes in Biometric Data Collection Procedures Can Improve US-VISIT*, 2 CASE W. RESERVE J.L. TECH. & INTERNET 71, 73 (2011).

⁹⁷ *Id.* at 74.

⁹⁸ Laura K. Donohue, *Technological Leap, Statutory Gap, and Constitutional Abyss: Remote Biometric Identification Comes of Age*, 97 MINN. L. REV. 407, 465 n.323 (2012) (citing 6 U.S.C. § 121(a)-(d)).

⁹⁹ HARRISON RUDOLPH, LAURA M. MOY & ALVARO M. BEDOYA, GEO. L. CTR. ON PRIVACY & TECH., NOT READY FOR TAKEOFF: FACE SCANS AT AIRPORT DEPARTURE GATES 2 (2017), https://www.airportfacescans.com/sites/default/files/Biometrics_Report_Not_Ready_For_Takeoff.pdf [<https://perma.cc/EB4D-GFJ6>].

¹⁰⁰ *Id.* at 7.

¹⁰¹ Christopher Reynolds, *Airport Facial Recognition Tech Sparks Privacy Concerns*, GOVTECH (Aug. 23, 2019), <https://www.govtech.com/data/Airport-Facial-Recognition-Tech-Sparks-Privacy-Concerns.html> [<https://perma.cc/WX75-YJME>]; Exec. Order No. 13,769, 82 Fed. Reg. 8977 § 7 (Jan. 27, 2017); *see also* U.S. DEP'T OF HOMELAND SEC., *supra* note 61, at 1; Exec. Order No. 13,780, 82 Fed. Reg. 13209 § 8 (Mar. 6, 2017); Press Release, U.S. Customs & Border Prot., CBP Meets with Privacy Groups to Discuss Biometric Exit (Feb. 2, 2018), <https://www.cbp.gov/newsroom/national-media-release/cbp-meets-privacy-groups-discuss-biometric-exit-0> [<https://perma.cc/YZ2G-9ZTQ>].

passed the FAA Reauthorization Act,¹⁰² which incorporated the TSA Modernization Act.¹⁰³ The TSA Modernization Act not only included authority for biometrics expansion but also added reporting and compliance requirements, placing a limit on such expansion.¹⁰⁴ Although some argue that lack of funding will be the real constraint on biometric technology's expansion¹⁰⁵ because the recent congressional mandates impose new costs without supplying extra funding, TSA will not be able to roll out this technology as fast as they would otherwise like.¹⁰⁶ Further, "the new law requires considerable evaluation of the efficacy, privacy issues, and expanded use of biometrics by TSA which must first be detailed in reports to Congress—meaning Congress will be the final arbiter of TSA's biometric deployment plans, and what gets fully funded or doesn't."¹⁰⁷

B. FEDERAL DATA PRIVACY LAWS

Four major federal laws provide the privacy framework for agency biometric data collection: (1) the Privacy Act of 1974 (Privacy Act);¹⁰⁸ (2) the E-Government Act of 2002 (E-Government Act);¹⁰⁹ (3) the Freedom of Information Act of 1966 (FOIA);¹¹⁰ and (4) the Implementing the Recommendations of the 9/11 Commission Act of 2007 (9/11 Commission Act).¹¹¹ This Section summarizes the relevant parts of each statute and discusses how each relates to the government's use of biometric technology.

¹⁰² FAA Reauthorization Act of 2018, Pub. L. No. 115–254, 132 Stat. 3186 (2018).

¹⁰³ *Id.* § 1901; Anthony Kimery, *TSA's 'Biometric Roadmap' May Need More Funding Under New Law, Former Deputy Administrator Says*, BIOMETRIC UPDATE (Oct. 23, 2018), <https://www.biometricupdate.com/201810/tsas-biometric-roadmap-may-need-more-funding-under-new-law-former-deputy-administrator-says> [https://perma.cc/5CAG-ED4Q].

¹⁰⁴ Kimery, *supra* note 103.

¹⁰⁵ *Id.* (quoting John Halinski, Former TSA Deputy Administrator).

¹⁰⁶ *Id.*

¹⁰⁷ *Id.*

¹⁰⁸ Pub. L. No. 93-579 (1974) (codified at 5 U.S.C. § 552a).

¹⁰⁹ Pub. L. No. 107-347, 116 Stat. 2899 (2002).

¹¹⁰ Pub. L. No. 89-487, 80 Stat. 250 (1966) (codified at 5 U.S.C. § 552).

¹¹¹ Pub. L. No. 110-53, 121 Stat. 266 (2007).

1. *Privacy Act of 1974*

Currently, DHS, TSA, and CBP are operating under the Privacy Act,¹¹² which is the only comprehensive federal data privacy protection law; however, the Privacy Act does not explicitly cover biometric data.¹¹³ Rather, it regulates federal agencies' "collection, use, dissemination, and maintenance"¹¹⁴ of personally identifiable information, which has been interpreted to apply to biometric information including fingerprints and facial scans.¹¹⁵ This law is the closest applicable law to regulating the government's collection of biometric data. Otherwise, the use of "biometrics data . . . is largely unregulated"¹¹⁶ and is "one of the most unprotected areas of our personal identity."¹¹⁷

The Privacy Act has four main requirements applicable to biometric technology. First, it mandates that each agency publish in the Federal Register a system of records notice for each database of personally identifiable information it maintains.¹¹⁸ A description of the character, categories, and uses of the information collected is required.¹¹⁹ However, this requirement only applies to data contained in a "system of records"—defined as "a group of any records under the control of any agency from which information is retrieved by the name of the individual or by some . . . other identifying particular assigned to the individual."¹²⁰ Second, the Privacy Act limits the circumstances under which agencies can share personally identifiable information with other agencies and third parties by requiring an agency to identify a particular enumerated condition of disclosure and state the authority that authorizes "the solicitation of the information and whether disclosure of such information is mandatory or voluntary."¹²¹ However, the enumerated conditions are relatively broad—information may be disclosed for routine agency use,

¹¹² 5 U.S.C. § 552a(a), (e).

¹¹³ Michael Monajemi, *Privacy Regulation in the Age of Biometrics That Deal With a New World Order of Information*, 25 U. MIA. INT'L & COMP. L. REV. 371, 395 (2018).

¹¹⁴ *Id.*

¹¹⁵ See U.S. GOV'T ACCOUNTABILITY OFF., *supra* note 21, at 23.

¹¹⁶ Evans, *supra* note 12.

¹¹⁷ Pope, *supra* note 14, at 770.

¹¹⁸ Katie Cristina, Comment, *The TSA's New PreCheck is Beginning to Look a Lot Like CAPPS II: The Privacy Implications of Reviving the Tenets of the Failed Predecessor*, 78 J. AIR L. & COM. 617, 635 (2012); Donohue, *supra* note 98, at 470.

¹¹⁹ Cristina, *supra* note 118, at 635 (citing 5 U.S.C. § 552a(e)(4)).

¹²⁰ 5 U.S.C. § 552a(5); Donohue, *supra* note 98, at 469.

¹²¹ 5 U.S.C. § 552a(b)(4)–(5), (e)(3)(A); Margaret Hu, *The Ironic Privacy Act*, 96 WASH. U. L. REV. 1267, 1278–79 (2019).

civil or criminal law enforcement purposes, or to achieve other administrative objectives.¹²² Third, every time an agency changes its system of records or wants to use its system in a new way, the Privacy Act mandates that the agency publish a notice in the Federal Register and allow interested persons an opportunity to submit comments to the agency.¹²³ Finally, the Privacy Act provides civil remedies and authorizes civil lawsuits against the government for violations.¹²⁴

Privacy advocates argue that the Privacy Act does not adequately protect citizens' biometric data because it contains several broad exemptions.¹²⁵ First, it does not regulate state or local governments, so the Privacy Act does not protect any biometric information they collect.¹²⁶ Second, the Privacy Act does not apply to private entities or private companies.¹²⁷ This is potentially problematic for two reasons: "First, there is no uniform federal statute directed toward a private entity's collection, use, and storage of biometric information."¹²⁸ Second, DHS has partnerships with private companies, but it "has not published any guidelines for or agreements with its private partners."¹²⁹ Nonetheless, DHS and its agencies acknowledge that the Privacy Act remains the primary statute protecting government-collected biometric data.

2. *E-Government Act of 2002*

The E-Government Act requires any agency "collecting personal information [to] issue a [Privacy Impact Assessment (PIA)] prior to developing or procuring technologies that collect, maintain, or disseminate personally identifiable information from or about members of the public."¹³⁰ Each time DHS

¹²² Hu, *supra* note 121, at 1278–79 (citing 5 U.S.C. § 552a(b)(1), (3), (7)).

¹²³ *Id.* at 1279 (citing § 552a(e)(4), (11)).

¹²⁴ *Id.* at 1278 (citing § 552a(g)(1)(D), (g)(4)(A)).

¹²⁵ CLIFFORD S. FISHMAN & ANNE T. MCKENNA, *WIRETAPPING & EAVESDROPPING* § 31:26, Westlaw (database updated Nov. 2019); Donohue, *supra* note 98, at 470–71.

¹²⁶ Donohue, *supra* note 98, at 471 (citing 5 U.S.C. § 552a(d)(2)(A)).

¹²⁷ *Id.* (citing 5 U.S.C. § 552a(a)(2)).

¹²⁸ See Natasha Kohne, Isabelle Gold & Kamran Salour, *Unique Biometric Data Creates Unique Privacy Concerns*, N.Y. L.J. (Feb. 22, 2016), <https://www.law.com/newyorklawjournal/almID/1202749996053/Unique-Biometric-Data-Creates-Unique-Privacy-Concerns/?slreturn=20200919124114> [https://perma.cc/HZU7-STPY].

¹²⁹ RUDOLPH ET AL., *supra* note 99, at 14–15.

¹³⁰ Donohue, *supra* note 98, at 476.

creates a new program, it must issue a new PIA.¹³¹ PIAs are required to describe the “nature and source” of the collected information, the reasons for collection, and the “intended use” of data collected.¹³² PIAs must also address how the information will be shared, whether individuals may consent, and whether the initiative falls under the Privacy Act.¹³³ However, like the Privacy Act, the E-Government Act contains exemptions—one of the most notable being that “public dissemination of the PIA” may be protected as classified or suspended for national security reasons.¹³⁴

3. *Freedom of Information Act*

The FOIA works in conjunction with the Privacy Act. In the biometric data context, airline passengers may file complaints or seek access to records about themselves to ensure the accuracy of the information collected.¹³⁵ One goal of the Privacy Act is to ensure that individuals can verify the accuracy of their records.¹³⁶ To that end, the Privacy Act allows an individual to request their own records through FOIA.¹³⁷ However, insofar as the Privacy Act relies on such requests to refine biometric records, the process has been underutilized—from June 2018 to June 2019, DHS received only thirty-one total requests.¹³⁸

4. *Implementing the Recommendations of the 9/11 Commission Act of 2007*

The Homeland Security Act created the “first statutorily created privacy office in the Federal Government,”¹³⁹ headed by a Chief Privacy Officer (CPO), who is appointed by the Secretary.¹⁴⁰ The Homeland Security Act was amended by the 9/11 Commission Act “to give new authorities to the Chief Privacy Officer.”¹⁴¹ The CPO is responsible for DHS’s privacy policy, which includes ensuring compliance with the Privacy Act, coor-

¹³¹ *Id.*

¹³² *Id.* at 477.

¹³³ *Id.*

¹³⁴ *Id.*

¹³⁵ U.S. DEP’T OF HOMELAND SEC., *supra* note 59, at 9.

¹³⁶ *See* 5 U.S.C. § 552a(d)(1).

¹³⁷ *Id.* § 552a(d)(2).

¹³⁸ U.S. DEP’T HOMELAND SEC., *supra* note 37, at 47 fig.6.

¹³⁹ *Id.* at 8.

¹⁴⁰ *Id.*

¹⁴¹ *Id.* at 5.

dinating with the Officer for Civil Rights and Civil Liberties to address privacy concerns, and ensuring Congress receives reports on civil liberties and privacy considerations.¹⁴² This office is also responsible for responding to complaints submitted by employees, other agencies, and the public.¹⁴³ The CPO is also responsible for DHS's FOIA policy.¹⁴⁴ According to DHS's 2019 Privacy Report, DHS's FOIA Program "receives the largest number of FOIA requests of any federal department or agency, more than 40 percent of all requests within the Federal Government."¹⁴⁵

IV. PRIVACY CONCERNS

Biometric characteristics themselves are privacy neutral and have been accepted for years; however, privacy concerns arise in how biometrics are used and how technological advancement affects such use.¹⁴⁶ DHS promises passengers that it is "ensuring appropriate privacy and cybersecurity safeguards are in place."¹⁴⁷ However, the rapid expansion of biometric technology in the last decade has raised serious concerns among privacy critics about how biometric data is stored and safeguarded. Unaddressed privacy concerns even have some airports banning the use of facial recognition technology until proper privacy policies are created and implemented.¹⁴⁸ Privacy advocates have generally focused their concern in three major areas (1) data breaches; (2) "function creep"; and (3) data sharing.¹⁴⁹

A. DATA BREACHES

In the last decade, the number and scale of cyberattacks have been on the rise—"more than doubling between 2006 and 2012

¹⁴² 6 U.S.C. § 142(a)(2), (5), (6).

¹⁴³ U.S. DEP'T HOMELAND SEC., *supra* note 37, at 45.

¹⁴⁴ *Id.* at 54.

¹⁴⁵ *Id.* at 55.

¹⁴⁶ Steven C. Bennett, *Privacy Implications of Biometrics*, 53:3 PRAC. LAW. 13, 13 (2019), Westlaw PRACLAW.

¹⁴⁷ *Biometric Technology Hearing*, *supra* note 1, at 34 (prepared statement of Austin Gould, Assistant Administrator, Requirements and Capabilities Analysis).

¹⁴⁸ Christopher Reynolds, *LAX Embraces Facial Recognition Tech, But Sea-Tac Airport Hits the Brakes*, L.A. TIMES (Dec. 12, 2019), <https://www.latimes.com/travel/story/2019-12-12/lax-airports-facial-recognition-seattle-ban> [<https://perma.cc/S7XK-8HH4>].

¹⁴⁹ See U.S. GOV'T ACCOUNTABILITY OFF., *supra* note 21, at 23. Fourth Amendment and other generalized constitutional privacy concerns are beyond the scope of this Comment.

and leveling since.”¹⁵⁰ The frequency of cyber breaches is approximate because so many are either “undetected or . . . intentionally unreported.”¹⁵¹ Data breaches have a variety of causes, including “accidental publication; insider jobs; lost or stolen computers or media; and patently malfunctioning security measures.”¹⁵² However, hacking has proved to be the most common and most damaging cause of breaches, as hacking “results in more stolen or compromised records than all other categories combined.”¹⁵³

The threat of a biometric data breach is not just a hypothetical fear—it is reality. In 2015, the Office of Personnel Management (OPM) suffered a data breach where 5.6 million employees’ fingerprints were stolen.¹⁵⁴ In June 2019, CBP suffered a similar data breach where “hackers had stolen an undisclosed number of license-plate images and travelers’ ID photos from a subcontractor.”¹⁵⁵ *Vice*, a Canadian-American magazine, and *The Register*, a United Kingdom outlet, reported finding “traveler data on the dark web in the hours after that breach, including financial information, photos, and location information.”¹⁵⁶ According to an official, this breach, unlike the OPM breach,¹⁵⁷ did not involve a foreign actor.¹⁵⁸ The CBP breach prompted Senators Mike Lee and Edward Markey to write to

¹⁵⁰ Marian K. Riedy & Barłomiej Hanus, *Yes, Your Personal Data is at Risk: Get Over It!*, 19 SMU SCI. & TECH. L. REV. 3, 11 (2016); see also *2015 Data Protection & Breach Readiness Guide*, INTERNET SOC’Y (May 16, 2016), <https://www.internetsociety.org/resources/ota/2016/2015-data-protection-breach-readiness-guide/> [<https://perma.cc/XK95-AQKG>] (“Victims included nearly every segment of the population including consumers, government employees, and children.”).

¹⁵¹ Riedy & Hanus, *supra* note 150, at 11.

¹⁵² *Id.* at 12–13.

¹⁵³ *Id.* at 13, 15 (“[H]acking accounts for . . . an estimated 70% of all breaches.”).

¹⁵⁴ Pope, *supra* note 14, at 770.

¹⁵⁵ Sidney Fussell, *This Is Exactly What Privacy Experts Said Would Happen*, ATLANTIC (June 11, 2019), <https://www.theatlantic.com/technology/archive/2019/06/travelers-images-stolen-attack-cbp/591403/> [<https://perma.cc/C8U7-5HXE>].

¹⁵⁶ *Id.*

¹⁵⁷ Evan Perez, *FBI Arrests Chinese National Connected to Malware Used in OPM Data Breach*, CNN (Aug. 24, 2017), <https://www.cnn.com/2017/08/24/politics/fbi-arrests-chinese-national-in-opm-data-breach/index.html> [<https://perma.cc/YLB7-CMH2>].

¹⁵⁸ Drew Harwell & Geoffrey A. Fowler, *U.S. Customs and Border Protection Says Photos of Travelers Were Taken in a Data Breach*, WASH. POST (June 10, 2019), <https://www.washingtonpost.com/technology/2019/06/10/us-customs-border-protection-says-photos-travelers-into-out-country-were-recently-taken-data-breach/> [<https://perma.cc/QL7R-D2FR>].

DHS requesting the immediate issuance of a “report to Congress on the viability of DHS’s biometric identification technology.”¹⁵⁹ Both Senators had previously called for DHS to “pause” progress on biometric technology until DHS issued “formal rules that address critical privacy and security concerns” including who has access to the data, how long it will be held, and how it will be safeguarded.¹⁶⁰

Biometric data security is also a concern across the globe. India has one of the world’s largest national biometric databases, Aadhaar, which contains the biometric identifiers of more than one billion people.¹⁶¹ Enrollment in the database is required for citizens to receive government benefits, and India even requires citizens to link their bank accounts to the database.¹⁶² In 2017, the database was breached, and according to reports, approximately 130 million Indians’ Aadhaar numbers were exposed,¹⁶³ highlighting the vulnerabilities of these systems. Similarly, in Argentina, hackers gained access to the Argentina Federal Police’s database and leaked 700 gigabytes (GB) of data, which included the biometric information of numerous police officers.¹⁶⁴

These few examples highlight the reality of the risk to all databases, not only from bad actors of foreign governments but also from sophisticated cybercriminals who seek to exploit data for financial gain.¹⁶⁵ DHS itself has recognized that the aggregation of information located in IDENT makes it an attractive target.¹⁶⁶ However, the potential uses of stolen biometric data are largely unknown, as this technology is still in its beginning

¹⁵⁹ Letter from Sen. Edward Markey and Sen. Mike Lee to Kevin McAleenan, Acting Sec’y of Homeland Sec., *supra* note 7, at 1.

¹⁶⁰ *Id.*

¹⁶¹ Pope, *supra* note 14, at 786.

¹⁶² *Id.*

¹⁶³ Dell Cameron, *130 Million at Risk of Fraud After Massive Leak of Indian Biometric System Data*, GIZMODO (May 3, 2017), <https://gizmodo.com/130-million-at-risk-of-fraud-after-massive-leak-of-indi-1794856154> [<https://perma.cc/62D4-7AJC>].

¹⁶⁴ Eugenia Lostri, *Hackers Leaked Sensitive Government Data in Argentina—And Nobody Cares*, LAWFARE (Aug. 21, 2019), <https://www.lawfareblog.com/hackers-leaked-sensitive-government-data-argentina-and-nobody-cares> [<https://perma.cc/YS7Q-QNLP>].

¹⁶⁵ Riedy & Hanus, *supra* note 150, at 15.

¹⁶⁶ U.S. DEP’T OF HOMELAND SEC., PRIVACY IMPACT ASSESSMENT FOR THE AUTOMATED BIOMETRIC IDENTIFICATION SYSTEM (IDENT) 4 (2006), https://www.dhs.gov/xlibrary/assets/privacy/privacy_pia_usvisit_ident_final.pdf [<https://perma.cc/3BW9-PPQ4>].

stages.¹⁶⁷ In the aftermath of the OPM breach, OPM stressed that it believed “the ability to misuse fingerprint data [was] limited,” but recognized that “this probability could change over time as technology evolves.”¹⁶⁸ Besides identity theft, some have suggested that a person who has had their biometric data exposed or stolen in a breach “could be discriminated against or lose out on a job opportunity because their information cannot be considered secure.”¹⁶⁹ The consequences of a massive breach are potentially far-reaching and damaging, but it is ultimately too soon to tell.

Finally, in the event of a data breach, the remedies available to those impacted are limited—some have attempted to sue the federal government for violating the Privacy Act; however, these actions are largely unsuccessful and cannot satisfy the standing requirement due to the difficulty of proving actual harm.¹⁷⁰

B. FUNCTION CREEP

Another common concern of critics and privacy advocates is commonly referred to as “function creep.”¹⁷¹ Function creep is the possibility of misuse or re-use of collected information—an agency using data for purposes other than for which it was originally collected.¹⁷² This too is no hypothetical fear—there are examples of function creep already taking place. For example, IDENT was created in 1994 as a system for the Immigration and Naturalization Service (INS), and DHS itself says that “the intended use of IDENT has expanded beyond that for which it was initially designed.”¹⁷³ Further, according to its 2018 Biometrics Roadmap, TSA plans to expand the use of fingerprints by “supplement[ing] data of currently enrolled” PreCheck travelers with that of other Trusted Traveler programs, including CBP

¹⁶⁷ Allison Grande, *OPM Fingerprint Hack Exposes Liabilities in Biometric Data*, LAW360 (Sept. 24, 2015), <https://www.law360.com/articles/707030/opm-fingerprint-hack-exposes-liabilities-in-biometric-data> [<https://perma.cc/K4XH-6WEA>].

¹⁶⁸ Press Release, U.S. Off. of Personnel Mgmt., Statement by OPM Press Secretary Sam Schumach on Background Investigations Incident (Sept. 23, 2015), <https://www.opm.gov/news/releases/2015/09/cyber-statement-923/> [<https://perma.cc/67VF-8XPJ>].

¹⁶⁹ Grande, *supra* note 167.

¹⁷⁰ *Id.*

¹⁷¹ KINDT, *supra* note 10, at 377.

¹⁷² *Id.*

¹⁷³ U.S. DEP’T OF HOMELAND SEC., *supra* note 166, at 2.

and State Department data.¹⁷⁴ In the private, nongovernment context, CLEAR has now expanded its services to sports venues.¹⁷⁵ Spectators can now use their “face or fingerprints” as their ticket to enter select baseball stadiums.¹⁷⁶ These are only a few of many examples of how function creep can easily morph one application of data into another.

While the advancement of biometric technology potentially keeps aviation safer and technological advancement is generally a good thing, practical concerns remain. As biometric technology improves, there is a concern that DHS could go beyond its legislative mandate by expanding particular uses of biometric technology without explicit congressional authorization.¹⁷⁷ For instance, a report by Georgetown University’s Center on Privacy and Technology suggests that the TVS biometric entry and exit program may be beyond the scope of DHS’s mandate; although Congress has authorized the collection of biometric data from foreign nationals, it “has never explicitly authorized biometric collections from Americans at the border.”¹⁷⁸ Thus, the report argues that DHS needs a new congressional mandate granting express permission before it may collect data in new ways and from American citizens.¹⁷⁹

C. DATA SHARING

The federal government’s collection of biometric data through a number of federal agencies—not limited to DHS—raises concerns about how these agencies share information, not only with each other but also with private contractors.

First, data sharing between agencies, or interoperability, has been emphasized by both Congress and the Executive.¹⁸⁰ A fragmented system of incomplete information hurts the ultimate purpose of biometric systems—enhanced security—and leaves agencies unable to “connect the dots” in intelligence data. However, even DHS recognizes that a system with so many sharing

¹⁷⁴ U.S. TRANSP. SEC. ADMIN., TSA BIOMETRICS ROADMAP FOR AVIATION SECURITY & THE PASSENGER EXPERIENCE 13 (Sept. 2018), https://www.tsa.gov/sites/default/files/tsa_biometrics_roadmap.pdf [<https://perma.cc/NYH3-VGS7>].

¹⁷⁵ *You Are Your Ticket*, CLEAR ME, <https://www.clearme.com/ticketing> [<https://perma.cc/9K3V-NWD3>].

¹⁷⁶ *Id.*

¹⁷⁷ RUDOLPH ET AL., *supra* note 99, at 7.

¹⁷⁸ *Id.*

¹⁷⁹ *Id.* at 16.

¹⁸⁰ *See* Donohue, *supra* note 98, at 454.

partners presents a risk of data sharing with entities that do not have appropriate authority or an actual need for the data.¹⁸¹ For example, IDENT users include CBP; Immigration and Customs Enforcement; the U.S. Coast Guard; U.S. Citizenship and Immigration Services; the State Department; the DoD; the DoJ; federal, state, and local investigative agencies; and even “[f]oreign government law enforcement, intelligence, and criminal agencies, as well as international entities (such as the International Criminal Police Organization (INTERPOL)).”¹⁸² One of the main criticisms of interoperability is that it “reflects diffuse accountability . . . [because] no one committee is tasked with considering the implications of the overall system.”¹⁸³ Thus, overall accountability is lacking.

Interoperability also increases the probability that the application of biometric systems will be expanded—by “link[ing] bits and pieces of behavioral information about individuals enrolled in widely different applications.”¹⁸⁴ Some argue that, already, without this biometric information, the government has the resources to monitor citizens in their daily lives with “omnipresent video cameras; extensive databases replete with medical, financial, and criminal information; and facial matching technology.”¹⁸⁵ Adding biometric data to this list presents additional concerns to those who already fear an eventual surveillance state.¹⁸⁶

Second, in expanding its use of biometric technologies, DHS has increasingly relied on private contractors, leaving travelers vulnerable to tracking and data misuse by private companies. For an example of these partnerships, the biometric entry and exit program relies on “airlines and technology vendors for central components” of the program.¹⁸⁷ To operate biometric exit for JetBlue flights, DHS partnered with JetBlue and a private air travel vendor.¹⁸⁸ And while DHS entered into a Memorandum

¹⁸¹ U.S. DEP’T OF HOMELAND SEC., PRIVACY IMPACT ASSESSMENT FOR THE AUTOMATED BIOMETRIC IDENTIFICATION SYSTEM (IDENT) 8 (2012), <https://www.dhs.gov/sites/default/files/publications/privacy-pia-nppd-ident-december2012.pdf> [<https://perma.cc/Y2LB-3B9M>].

¹⁸² *Id.* at 3–5.

¹⁸³ Donohue, *supra* note 98, at 454.

¹⁸⁴ DAVIDE MALTONI, DAVIO MAIO, ANIL K. JAIN & SALIL PRABHAKAR, HANDBOOK OF FINGERPRINT RECOGNITION 46 (2006).

¹⁸⁵ Brogan, *supra* note 36, at 67.

¹⁸⁶ Rosenzweig et al., *supra* note 25.

¹⁸⁷ RUDOLPH ET AL., *supra* note 99, at 14.

¹⁸⁸ *Id.* at 15.

of Understanding with JetBlue, neither the memorandum “nor any other agreement governing private entities’ use of biometric exit data has been made public.”¹⁸⁹ Congress encourages these partnerships—the TSA Modernization Act required TSA to partner with at least two private sector entities to provide enrollment services for Precheck.¹⁹⁰ It is unclear what impact these partnerships have on data privacy; however, TSA says that private systems will be reviewed “to ensure they meet the latest cybersecurity requirements.”¹⁹¹ Data stolen in the CBP breach was taken from a CBP subcontractor, making concerns about agency partnerships with subcontractors a reality.¹⁹²

V. STRIKING THE SECURITY–PRIVACY BALANCE: POSSIBLE SOLUTIONS

The choice between security and privacy is not binary. The United States can strike a balance between privacy and security with the right measures. Among the possible solutions to this balance are (1) technological solutions; (2) legislative solutions; (3) independent oversight; and (4) an increased focus on traveler notice and consent. A combination of these solutions may also be the most effective. This Part first considers the preliminary question of whether biometric systems are actually keeping the skies safer. It then considers each of the possible solutions to the data privacy concerns and the possible efficacy of each.

A. EFFICACY OF BIOMETRIC SYSTEMS

There is strong evidence that the biometric technology keeps Americans safer. For example, CBP’s biometric exit, facial recognition “technology has enabled CBP to interdict more than 200 individuals who illegally attempted to enter the United States by using the genuine travel documents of persons whom they resemble.”¹⁹³ One of the biggest threats to aviation security

¹⁸⁹ *Id.*

¹⁹⁰ Press Release, U.S. Transp. Sec. Admin., Additional Vendors to Provide TSA PreCheck™ Enrollment for Travelers (Jan. 9, 2020), <https://www.tsa.gov/news/press/releases/2020/01/09/additional-vendors-provide-tsa-prechecktm-enrollment-travelers> [<https://perma.cc/MT3U-PZBG>].

¹⁹¹ *Id.*

¹⁹² Fussell, *supra* note 155.

¹⁹³ Press Release, U.S. Customs & Border Prot., CBP and Privacy Groups Discuss Biometric Entry-Exit Mandate (Dec. 4, 2019) [hereinafter CBP Press Release], <https://www.cbp.gov/newsroom/national-media-release/cbp-and-privacy-groups-discuss-biometric-entry-exit-mandate> [<https://perma.cc/HWG5-5RST>].

is allowing falsely identified passengers through TSA security, and there is evidence to suggest that people's—more specifically, TSA agents'—ability to correctly match an individual to a presented photo identification is “incredibly fallible with error rates between 10 and 20 percent under ideal laboratory-induced conditions.”¹⁹⁴ Thus, facial recognition technology is a promising way to reduce that error rate and increase security.

However, Senator Mike Lee of Utah and others have expressed concerns about the accuracy of facial recognition technology, arguing that even if this technology works 96% of the time, one in twenty-five travelers would still be misidentified.¹⁹⁵ A growing fear is that “gender and ethnicity increase the likelihood of being improperly flagged.”¹⁹⁶ DHS has recognized these concerns, and claims that “[t]he accuracy of facial recognition systems has improved significantly in recent years”; according to a 2018 report by the National Institute of Standards and Technology, “with good quality portrait photos, the most accurate algorithms have ‘error rates below 0.2%.’”¹⁹⁷ Congress should keep in mind the efficacy of biometric technology and its important role in aviation security while addressing privacy concerns.

¹⁹⁴ Hilton, *supra* note 44, at 564 (quoting Matthew Pryce, *Dr. Megan Papesh, Louisiana State University – Flaws of Facial Recognition Tech*, WAMC NORTHEAST PUB. RADIO (June 3, 2014), <https://www.wamc.org/post/dr-megan-papesh-louisiana-state-university-flaws-facial-recognition-tech> [<https://perma.cc/34WL-MG6B>]).

¹⁹⁵ Mike Lee, *Invasive New Airport Screenings May Put Privacy at Risk*, DAILY SIGNAL (Dec. 28, 2017), https://www.dailysignal.com/2017/12/28/invasive-new-airport-screenings-may-put-privacy-risk/?mc_cid=d4c99ccc1c&mc_eid=7f301efaba [<https://perma.cc/4U3X-KNDL>].

¹⁹⁶ *Id.*; see also Larry Hardesty, *Study Finds Gender and Skin-Type Bias in Commercial Artificial-Intelligence Systems*, MIT NEWS (Feb. 11, 2018), <http://news.mit.edu/2018/study-finds-gender-skin-type-bias-artificial-intelligence-systems-0212> [<https://perma.cc/NDA5-MLX2>]; Drew Harwell, *Amazon Facial-Identification Software Used By Police Falls Short on Tests for Accuracy and Bias, New Research Finds*, WASH. POST (Jan. 25, 2019), <https://www.washingtonpost.com/technology/2019/01/25/amazon-facial-identification-software-used-by-police-falls-short-tests-accuracy-bias-new-research-finds/> [<https://perma.cc/5S5F-HW88>].

¹⁹⁷ DATA PRIV. & INTEGRITY ADV. COMM., U.S. DEP'T HOMELAND SEC., REP. 2019-01, PRIVACY RECOMMENDATIONS IN CONNECTION WITH THE USE OF FACIAL RECOGNITION TECHNOLOGY 8 (2019), https://www.dhs.gov/sites/default/files/publications/Report%202019-01_Use%20of%20Facial%20Recognition%20Technology_02%2026%202019.pdf [<https://perma.cc/32ER-PNMP>] (quoting PATRICK GROTH, MEI NGAN & KAYEE HANAOKA, NAT'L INST. OF STANDARDS & TECH., 8238, ONGOING FACE RECOGNITION VENDOR TEST (FRVT) PART 2: IDENTIFICATION 2 (2018), <https://nvlpubs.nist.gov/nistpubs/ir/2018/NIST.IR.8238.pdf> [<https://perma.cc/MS9E-2G2X>]).

B. TECHNOLOGICAL SOLUTIONS

Blockchain-based systems may be one way DHS can improve its data storage to address hacking concerns.¹⁹⁸ Companies such as International Business Machines (IBM)¹⁹⁹ and Zamna,²⁰⁰ a blockchain startup, have already posed blockchain systems as a solution. Zamna explains that the blockchain acts as a middleman between data sources and allows passengers' biometric information to be verified without having to share the data with third parties.²⁰¹ Blockchain alone would not address all privacy concerns; however, a blockchain system could be part of a larger plan to address hacking and some data sharing concerns.

Currently, DHS is in the process of moving its biometric data from IDENT to a new system: the Homeland Advanced Recognition Technology System (HART).²⁰² This new system will be located within Amazon Web Services' GovCloud; other agencies, such as the DoD, Central Intelligence Agency, and the National Aeronautics and Space Administration, already use HART to store some of the government's most sensitive data.²⁰³ Part of the reason for this switch is "perceived security improvements"²⁰⁴ over the original IDENT system, which is now almost twenty-five years old.²⁰⁵ To put that into perspective, the first

¹⁹⁸ Jeremy Epstein, *A Massive Biometric Breach Is Only a Matter of Time*, VENTUREBEAT (Mar. 16, 2019), <https://venturebeat.com/2019/03/16/a-massive-biometric-breach-is-only-a-matter-of-time/> [https://perma.cc/47KT-SFTB].

¹⁹⁹ Kalonji Bankole, *Implement an Automated Airport Security Control System*, IBM DEVELOPER (May 13, 2019), <https://developer.ibm.com/patterns/blockchain-implement-automated-airport-security-control-system/> [https://perma.cc/HW2Y-UBTK].

²⁰⁰ Mike Butcher, *Zamna Raises \$5M to Automate Airport Security Checks Between Agencies Using Blockchain*, TECHCRUNCH (Oct. 26, 2019), <https://techcrunch.com/2019/10/26/zamna-raises-5m-to-automate-airport-security-checks-between-agencies-using-blockchain/> [https://perma.cc/VG4B-H5VB].

²⁰¹ *Id.*

²⁰² Jack Corrigan, *DHS to Move Biometric Data on Hundreds of Millions of People to Amazon Cloud*, NEXTGOV (June 19, 2019), <https://www.nextgov.com/it-modernization/2019/06/dhs-move-biometric-data-hundreds-millions-people-amazon-cloud/157837/> [https://perma.cc/LP9D-ZQ4E].

²⁰³ *Id.*

²⁰⁴ *Id.*; see also Jack Corrigan, *CIA Official: Cloud Is More Secure Than Old Tech, Less 'Soul-Crushing'*, NEXTGOV (June 22, 2018), <https://www.nextgov.com/it-modernization/2018/06/cia-official-cloud-more-secure-old-tech-less-soul-crushing/149211/> [https://perma.cc/3WJ9-DCRK].

²⁰⁵ Jack Corrigan, *Legacy Systems Held DHS' Biometrics Programs Back. Not Anymore.*, NEXTGOV (Oct. 3, 2019), <https://www.nextgov.com/it-modernization/2019/10/legacy-systems-held-dhs-biometrics-programs-back-not-anymore/160347/> [https://perma.cc/G9UP-FTQT].

iPhone was released thirteen years ago, and since then there have been transformative updates, demonstrating how rapidly technology changes.²⁰⁶ To keep Americans safe and protect their privacy and civil liberties, the government must keep its biometric technology and its security mechanisms up to date with modern-day capabilities.

C. LEGISLATIVE SOLUTIONS

Although the Privacy Act covers the personally identifiable information collected by the government, there is no law that regulates how private companies may use and store biometric data.²⁰⁷ In the absence of such legislation, many states have enacted their own biometric data privacy protection statutes.²⁰⁸ While a comprehensive federal law regulating private companies' use of biometric data may alleviate some concerns surrounding the federal government's partnerships with private companies, federal legislation may not be the most efficient or useful solution. Even the most comprehensive data privacy statute would almost certainly be inapplicable to regulate informa-

²⁰⁶ Compare Press Release, Apple, Apple Reinvents the Phone with iPhone (Jan. 9, 2007), <https://www.apple.com/newsroom/2007/01/09Apple-Reinvents-the-Phone-with-iPhone/> [<https://perma.cc/Z6TY-7HJD>] (describing the first iPhone with a two megapixel (MP) camera and up to eight GBs of storage), with Press Release, Apple, Apple Announces iPhone 12 and iPhone Mini: A New Era for iPhone with 5G (Oct. 13, 2020), <https://www.apple.com/newsroom/2020/10/apple-announces-iphone-12-and-iphone-12-mini-a-new-era-for-iphone-with-5g/> [<https://perma.cc/UK9Z-GV26>] (describing the latest iPhone with professional-grade twelve MP photography and video systems and up to 256 GBs of storage).

²⁰⁷ Ashley Deeks & Shannon Togawa Mercer, *Facial Recognition Software: Costs and Benefits*, LAWFARE (Mar. 27, 2018), <https://www.lawfareblog.com/facial-recognition-software-costs-and-benefits> [<https://perma.cc/5VQY-64C2>]; Frank Ready, *Privacy Laws Could Provide Blueprint for Approach to Facial Recognition Legislation*, L. TECH. NEWS (Dec. 12, 2018), <https://www.law.com/legaltechnews/2018/12/12/privacy-laws-could-provide-blueprint-for-approach-to-facial-recognition-legislation/> [<https://perma.cc/P6LM-Z7JZ>].

²⁰⁸ Illinois, Texas, Washington, California, New York, and Arkansas have biometric data legislation. Natalie A. Prescott, *The Anatomy of Biometric Laws: What U.S. Companies Need to Know in 2020*, NAT'L L. REV. (Jan. 15, 2020), <https://www.natlawreview.com/article/anatomy-biometric-laws-what-us-companies-need-to-know-2020> [<https://perma.cc/2RU7-UTG4>]. There are several other states (and even one municipality—New York City) considering passing laws of their own including Florida, Massachusetts, and Arizona. Molly K. McGinley, Kenn Brotman & Erinn L. Rigney, *The Biometric Bandwagon Rolls On: Biometric Legislation Proposed Across the United States*, NAT'L L. REV. (Mar. 25, 2019), <https://www.natlawreview.com/article/biometric-bandwagon-rolls-biometric-legislation-proposed-across-united-states> [<https://perma.cc/W7YN-UZES>].

tion collected for intelligence or national security purposes.²⁰⁹ Instead, clear legislative standards for data sharing between the government and private companies should be pursued to allow the government to partner with private companies for innovative advancements while protecting privacy and increasing confidence in the system. Further, renewed—and more specific—authorization from Congress for new biometric programs involving American citizens may prove to be an effective component of future reform, as it could require Congress to gather and study more information on data privacy measures.²¹⁰

D. INDEPENDENT OVERSIGHT

In order to guard against misuse, all biometric systems, and the federal government's use of these programs as a whole, should have stronger audit and oversight protections.²¹¹ Several oversight mechanisms within DHS are responsible for issuing reports on the various DHS programs and the privacy impact of those programs. These include: (1) the Privacy Officer created by the Homeland Security Act; (2) the E-Government Act's public PIA requirement, which also invites notice and comment; and (3) the Privacy Act's System of Records Notice requirements.²¹² The Office of Management and Budget (OMB) assumes the primary "responsibility for overseeing implementation of the Privacy Act and the PIAs."²¹³ However, the OMB "has been extremely deferential to agencies exercising their powers of exemption," and there is no recourse to the courts.²¹⁴ Therefore, the public may benefit from an increased oversight role by independent committees or agencies. However, Congress should not overburden DHS and its agencies with excessive reporting and oversight requirements.

There are two independent bodies not located within DHS that currently provide some oversight. The first is the Privacy

²⁰⁹ Deeks & Mercer, *supra* note 207.

²¹⁰ See RUDOLPH ET AL., *supra* note 99, at 17 ("[The program] may implicate serious privacy concerns. . . . If DHS persists with the program, significant reforms are vitally necessary.").

²¹¹ Rosenzweig et al., *supra* note 25.

²¹² See *supra* Part III; Lee Kair, *Biometrics Can Protect our Borders—Along With Our Privacy*, HILL (May 9, 2019), <https://thehill.com/opinion/national-security/442722-biometrics-can-protect-our-borders-along-with-our-privacy> [<https://perma.cc/X5GK-5WAY>].

²¹³ Donohue, *supra* note 98, at 477.

²¹⁴ *Id.* at 477–78.

and Civil Liberties Oversight Board (PCLOB).²¹⁵ The PCLOB is an independent executive agency, established by the 9/11 Commission Act and composed of a bipartisan five-member board. Current oversight activities are limited, however.²¹⁶ In June 2019, the PCLOB voted to begin a new oversight project that will examine “the use of facial recognition and . . . biometric technologies in aviation security.”²¹⁷ As of October 2019, the PCLOB is also planning to review the pilot program at the Las Vegas McCarran International Airport.²¹⁸ This could be an important step toward meaningful privacy protections due to the independent and bipartisan nature of the PCLOB.

Second, the Government Accountability Office (GAO), a legislative agency within Congress, has issued a number of reports and has previously found that the FBI—another federal law enforcement agency that uses biometric technology—had insufficient oversight over its use of facial recognition technology.²¹⁹ However, the GAO covers a wide range of issues from fiscal policy to healthcare and energy.²²⁰ Thus, oversight by a more focused entity like the PCLOB may yield the most promising results.

E. NOTICE AND CONSENT

Some argue that an increased focus on notice and consent may be more effective than new legislation or oversight.²²¹ This approach emphasizes the importance of putting travelers on notice that their biometric information is being collected and stored, as well as providing meaningful opportunities for travelers to withhold consent. While some programs like PreCheck

²¹⁵ *History and Mission*, PRIV. & C.L. OVERSIGHT BD., <https://www.pcllob.gov/About/HistoryMission> [<https://perma.cc/Q89Y-FZ7P>].

²¹⁶ *Id.*

²¹⁷ Press Release, Priv. & C.L. Oversight Bd., “From Booking to Baggage Claim:” Privacy and Civil Liberties Oversight Board to Examine Use of Facial Recognition and Other Biometric Technologies in Aviation Security (June 26, 2019), https://documents.pcllob.gov/prod/Documents/EventsAndPress/eb140554-4fc7-4700-88d2-197d7fe45770/New%20projects%20announcement%20June_25_%202019%20Final.pdf [<https://perma.cc/MX26-ZHKE>].

²¹⁸ Mick Akers, *Facial Recognition Technology Tested At Las Vegas Airport*, LAS VEGAS REV. J. (Sept. 29, 2019), <https://www.reviewjournal.com/local/local-las-vegas/facial-recognition-technology-tested-at-las-vegas-airport-1859441/1/> [<https://perma.cc/WW4R-SM2X>].

²¹⁹ Deeks & Mercer, *supra* note 207.

²²⁰ *Key Issues*, U.S. GOV’T ACCOUNTABILITY OFF., https://www.gao.gov/key_issues/overview#t=1 [<https://perma.cc/L7AV-M8YG>].

²²¹ Ready, *supra* note 207.

are voluntary, withholding consent of the facial recognition at the airport may not even be possible. At best, “[o]pting out is complicated” because there are multiple checkpoints at airports: airlines use facial recognition “as a boarding pass,” CBP uses facial recognition when a traveler exits the country, and TSA uses facial recognition to verify photo identification.²²² At worst, an opt-out feature may render the security purpose of biometric technology inoperable; therefore, some argue that it is necessary for DHS to make biometric data collection a condition for participation.²²³ On the other hand, increased notice to participants could be a valuable oversight method—the value of an informed citizenry and the power of public opinion should not be discounted.

F. LOOKING OUTSIDE BIOMETRICS

Biometric security may not be the only way forward for aviation security. Others have even suggested that the United States look in a completely new direction for airport security.²²⁴ Israel, a country that faces a significant number of terrorist threats, uses “behavioral profiling,” which involves questioning passengers at airports to isolate those exhibiting suspicious behavior.²²⁵ Those passengers are then subjected to a more “targeted interrogation and search.”²²⁶ This “profiling” is “conducted in a neutral manner” and “focuses on data such as how a passenger bought their ticket, their past travels, recent actions, and behaviors.”²²⁷ However, some argue that volume, costs, and concerns about ethnic and religious profiling prevent this from being an effective alternative security solution.²²⁸

²²² Jason Kelley, *Fighting Back Against Face Surveillance in the Skies: 2019 Year in Review*, ELEC. FRONTIER FOUND. (Dec. 27, 2019), <https://www EFF.ORG/deeplinks/2019/12/fighting-back-against-face-surveillance-skies-year-review-2019> [<https://perma.cc/7SZ7-3LE4>].

²²³ Rosenzweig et al., *supra* note 25.

²²⁴ Cole Antolak, Comment, *Airport Security: Over-Reaching New Heights*, 18 U. PITT. J. TECH. L. & POL'Y 59, 77 (2018).

²²⁵ *Id.*

²²⁶ *Id.*

²²⁷ *Id.*

²²⁸ Ariel Schalit, *Our View on Airport Screening: Why Israel's Air Security Model Wouldn't Work in the USA*, USA TODAY (Dec. 22, 2010), https://usatoday30.usatoday.com/news/opinion/editorials/2010-12-22-editorial22_ST_N.htm [<https://perma.cc/3D3U-CW3P>].

VI. CONCLUSION

The concerns posed by privacy advocates about data sharing, function creep, hacking, and inaccuracies are serious and reasonable concerns. DHS appears to take those privacy concerns seriously—it has issued numerous, detailed PIAs for its various programs that use biometric information. It has also begun a series of meetings with privacy and industry experts to discuss the biometric exit mandate, and these meetings have already resulted in CBP instituting new privacy measures.²²⁹ However, DHS and Congress ought to look beyond internal reporting requirements and institute additional measures either through technology or independent oversight to strengthen and bolster privacy protections and increase government accountability.

Even though biometric technology seems to be the way of the future, it is still in its infancy. The scope and severity of the consequences of mass biometric data collection are yet unknown. Biometric technology, and the government's implementation of such, may be moving faster than privacy solutions can keep up. Biometric technology has the potential to revolutionize aviation security; however, more study and consideration should be given to the privacy implications and possible solutions in order to protect data privacy adequately.

²²⁹ CBP Press Release, *supra* note 193.



BET ON THE FIELD: WHY FIELD PREEMPTION SHOULD APPLY TO THE FEDERAL AVIATION ACT

JACK MILLIGAN*

ABSTRACT

One of the primary challenges facing the American aviation industry is the issue of federal preemption. Although Congress has a long history of heavy involvement in regulating the aviation industry, the Federal Aviation Act (FAAct) does not include an express preemption provision, leaving states, courts, and industry members with little guidance about the proper reach of federal and state regulations. The circuit courts are sharply divided on their approaches and answers to this question. The issue of preemption is especially important in the context of aviation manufacturing, where the federal government has prescribed a litany of different safety standards, but state law product liability claims continue to be governed by state law standards of care. Manufacturers are therefore subjected to a variety of potential requirements across each state, which is problematic for a number of reasons.

Exacerbating the issue, the Supreme Court recently declined to hear two cases regarding FAAct preemption, each from a different side of the circuit split. Until this split is resolved, in the interest of uniformity and certainty, undecided circuits should adopt the Second Circuit's field preemption approach and reject the Third Circuit's conflict preemption approach. Field preemption is more consistent with both the intended purpose of the FAAct and the unique nature of the aviation industry.

This Comment will analyze the differing approaches taken by the circuit courts and will make the argument that the federal design regulations establish a standard of care which should be integrated into various state law claims. Uniformity is necessary

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for the aviation industry given its interconnection with interstate commerce and will provide clarity for both manufacturers and courts. Finally, this Comment will explain why and how other circuit courts should adopt the field preemption approach while awaiting Supreme Court guidance.

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I. INTRODUCTION

THE AVIATION INDUSTRY IS a vital sector of interstate commerce in America, transporting millions of people and products across the country every day. Although inherently national in scale, the industry is still subject to a variety of state laws and regulations, particularly within the field of aviation safety. Circuit courts are currently split on the issue of whether the Federal Aviation Act (FAAct) preempts only conflicting state laws or the entire field of aviation safety.¹ While the Third Circuit applied principles of conflict preemption to the FAAct, the Second Circuit held that the FAAct preempts the entire field of state aviation safety.² The Supreme Court has declined to hear either case,³ adding further uncertainty to the aviation industry. The Court will likely resolve the issue within the near future, but in the meantime, other circuits must choose between the two competing approaches to FAAct preemption. Because the Second Circuit's decision in *Tweed* allows for a uniform federal standard of care for aircraft manufacturers, other circuits should follow suit and hold that the FAAct impliedly preempts the entire field

¹ Compare *Sikkelee v. Precision Airmotive Corp.*, 822 F.3d 680, 708–09 (3d Cir. 2016), *cert. denied*, 137 S. Ct. 495 (2016) (limiting the FAA rules application), with *Tweed-New Haven Airport Auth. v. Tong*, 930 F.3d 65, 75 (2d Cir. 2019), *cert. denied*, 140 S. Ct. 2508 (2020) (finding the FAA's determination overruled state law).

² See *Sikkelee*, 822 F.3d at 708–9; *Tweed*, 930 F.3d at 75.

³ *Tweed-New Haven Airport Auth.*, 140 S. Ct. 2508; *Sikkelee*, 137 S. Ct. 495.

of aviation safety. This Comment will begin by explaining the historical background of both federal aviation regulation and preemption law in Part II. Next, Part III discusses the current state of federal preemption law with respect to the FAA Act and its amendments and analyzes the circuit split over the FAA Act's preemption powers. Part IV begins by explaining why the FAA Act should be interpreted to preempt the entire field of aviation safety and concludes by explaining how other circuit courts should incorporate *Tweed* into their own preemption analyses.

II. HISTORICAL BACKGROUND

A. FEDERAL AVIATION REGULATION

The federal government's history of aviation regulation began in 1926 with the passage of the Air Commerce Act.⁴ This legislation gave the Department of Commerce oversight over (1) air commerce; (2) issuance and enforcement of traffic rules; (3) licensing and certification; and (4) airway control.⁵ Over the next decade, as air travel became more prevalent, it became clear that the federal government needed to exercise more control over aviation safety.⁶

In 1938, President Roosevelt signed the Civil Aeronautics Act, which established both the Civil Aeronautics Authority (CAA) and later the Civil Aeronautics Board (CAB).⁷ The CAA was responsible for air traffic control, certifications, safety enforcement, and airway development—making it the predecessor of the modern Federal Aviation Administration (FAA).⁸ The Second World War ushered in significant improvements in aviation technology, such as jet engines, making aviation safety even more of a pressing concern for the federal government.⁹ Although air traffic had more than doubled in the decade follow-

⁴ Air Commerce Act of 1926, Pub. L. No. 69-254, 44 Stat. 568 (1926).

⁵ *Id.* §§ 2–3, 5.

⁶ *A Brief History of the FAA*, FED. AVIATION ADMIN. (Jan. 4, 2017), https://www.faa.gov/about/history/brief_history/ [<https://perma.cc/W4AV-PKWN>]. Interestingly, the death of legendary Notre Dame football coach Knute Rockne was one of the primary catalysts for the sweeping changes made in the aviation safety field. *Id.* Rockne was killed in a plane crash in 1931, and the resulting public outcry prompted the federal government to take its oversight of aviation more seriously. *Id.*

⁷ *Id.*; see 49 U.S.C. § 1131. CAB was the predecessor to the National Transportation Safety Board and was largely responsible for accident investigation, administrative rulings, and economic regulation. *A Brief History of the FAA*, *supra* note 6.

⁸ *A Brief History of the FAA*, *supra* note 6.

⁹ *Id.*

ing World War II, “little had been done to mitigate the risk of midair collisions.”¹⁰

The Federal Aviation Agency (FAAgency) was established in 1958 with the passage of the FAAAct.¹¹ In creating the FAAgency, Congress stated that its intention was “to create a Federal Aviation Agency, to provide for the regulation and promotion of civil aviation in such manner as to best foster its development and safety, and to provide for the safe and efficient use of the airspace by both civil and military aircraft.”¹² In a later amendment, the FAAgency was also given “exclusive sovereignty of airspace of the United States.”¹³ As the Second Circuit noted several years into the FAAgency’s existence, the agency’s purpose was to “centraliz[e] in a single authority—indeed, in one administrator—the power to frame rules for the safe and efficient use of the nation’s airspace.”¹⁴ The FAAgency was transferred to the newly created Department of Transportation (DoT) in 1966, and was renamed the FAA.¹⁵ Its role has only expanded since then, and today, the FAA is responsible for many aspects of aviation safety.¹⁶ Among other duties, the FAA currently oversees aircraft licensing and certification; airport regulations; air traffic control; aircraft noise control and other environmental programs; commercial space regulation; aviation research; and the testing and training of personnel across the industry.¹⁷

For the purposes of this Comment, it is necessary to explain the FAA’s regulatory control over aircraft manufactures. Under the FAAAct, aircraft manufacturers must first obtain three certificates: a type certificate,¹⁸ a production certificate,¹⁹ and an airworthiness certificate.²⁰ The type certificate certifies that the design of an aircraft or its parts performs properly and meets the safety standards defined in FAA regulations.²¹ The FAA has a baseline standard for certification for each type of product,

¹⁰ *Id.*

¹¹ Federal Aviation Act of 1958, Pub. L. No. 85-726, 72 Stat. 731 (1958).

¹² *Id.* pmbl.

¹³ 49 U.S.C. § 40103(a)(1).

¹⁴ *Air Line Pilots Ass’n, Int’l v. Quesada*, 276 F.2d 892, 894 (2d Cir. 1960).

¹⁵ *A Brief History of the FAA*, *supra* note 6.

¹⁶ *Id.*

¹⁷ *Id.*

¹⁸ 14 C.F.R. §§ 21.11–.55 (2020).

¹⁹ *Id.* §§ 21.131–.150.

²⁰ *Id.* §§ 21.171–.199; 49 U.S.C. §§ 44704(d), 44711(a)(1).

²¹ 49 U.S.C. § 44704(a); 14 C.F.R. § 21.31.

which designates all of the regulations and safety standards required to receive the type certification—essentially a standard of care for manufacturers.²² Once a manufacturer has received a type certificate for an aircraft or component, it must receive a production certificate, certifying that a duplicate of the aircraft or part will conform to the design certified in the type certificate.²³ Finally, the FAA issues an airworthiness certificate for each aircraft, which certifies that the aircraft conforms to its design and is safe for flight.²⁴

The FAA also maintains regulatory control over the safety of an aircraft for the duration of its operational life, which is accomplished primarily in three ways. First, the FAA regulates the training and certification of mechanics and other maintenance personnel.²⁵ Second, manufacturers who have been issued a type certificate cannot deviate from the certified design without FAA approval.²⁶ Third, if the FAA becomes aware of an unsafe condition on a previously certified aircraft, it may correct the problem by issuing an “airworthiness directive,” which manufacturers must comply with.²⁷

B. FEDERAL PREEMPTION

The doctrine of preemption allows Congress to avoid conflicts between federal and state laws and is a vital part of ensuring that the federal system runs smoothly. Preemption is widely assumed to be rooted in the Supremacy Clause in Article VI of the Constitution, although this assumption has been disputed.²⁸ Though written about less frequently than other constitutional law topics, it is perhaps the most commonly used constitutional law doc-

²² See 14 C.F.R. §§ 21.16–.17.

²³ *Id.* §§ 21.131–.150.

²⁴ *Id.* § 21.183.

²⁵ *Id.* § 65.81.

²⁶ *Id.* §§ 21.91–.101.

²⁷ *Id.* § 39.5.

²⁸ U.S. CONST. art. VI., cl. 2; see also Stephen A. Gardbaum, *The Nature of Preemption*, 79 CORNELL L. REV. 767, 768 (1994).

This Constitution, and the Laws of the United States which shall be made in Pursuance thereof; and all Treaties made, or which shall be made, under the Authority of the United States, shall be the supreme Law of the Land; and the Judges in every State shall be bound thereby, any Thing in the Constitution or Laws of any State to the Contrary notwithstanding.

U.S. CONST. art. VI., cl. 2. Gardbaum argues that preemption is not a product of the Supremacy Clause, but rather a means of effectuating Congress’s enumerated powers under the Necessary and Proper Clause. Gardbaum, *supra*, at 781–82.

trine in practice.²⁹ Congress can preempt state laws either expressly or implicitly by indicating its intent to occupy a given field to the exclusion of state or local laws, which is known as field preemption.³⁰ Such intent can be inferred when the pervasiveness of federal regulation precludes additional regulation by the states, when the federal government's interest in the field is sufficiently dominant, or when the objective of federal regulation aligns with the character of the obligations it imposes.³¹ The Constitution's Tenth Amendment creates a presumption against preemption in areas of the law which states have traditionally occupied, and in the absence of a clear and manifest intent to occupy an entire field of the law, the Supreme Court has stated that state police powers should not be superseded by federal law.³² Even absent a showing of intent, Congress can preempt state laws which conflict with federal law, either by making it impossible to comply with both laws or by creating an obstacle to the accomplishment of a congressional objective.³³ Unsurprisingly, congressional intent is the cornerstone of any preemption analysis, and preemption cases often involve intense scrutiny of the legislative history behind the statute in question.³⁴ Courts will also look at the language, structure, and purpose of a statute or regulation in order to develop an understanding of Congress's intent.³⁵

The FAA Act employs both express and implied preemption. For example, Section 41713 states,

Except [for certain Alaskan intrastate air transportation], a State, political subdivision of a State, or political authority of at least 2 States may not enact or enforce a law, regulation, or other provision having the force and effect of law related to a price, route, or service of any air carrier that may provide air transportation under this [subchapter IV].³⁶

The General Aviation Revitalization Act, codified in an official note to the Federal Aviation Act, provides for an eighteen-year statute of repose for product liability claims against aircraft and

²⁹ Gardbaum, *supra* note 28, at 768.

³⁰ *Schneidewind v. ANR Pipeline Co.*, 485 U.S. 293, 299–300 (1988).

³¹ *Id.* at 300.

³² *Medtronic, Inc. v. Lohr*, 518 U.S. 470, 485 (1996); *see* U.S. CONST. amend. X.

³³ *Schneidewind*, 485 U.S. at 300.

³⁴ *See, e.g., Abdullah v. Am. Airlines*, 181 F.3d 363, 366 (3d Cir. 1999); *US Airways, Inc. v. O'Donnell*, 627 F.3d 1318, 1324 (10th Cir. 2010).

³⁵ *See Medtronic*, 518 U.S. at 486.

³⁶ 49 U.S.C. § 41713(b)(1).

aircraft component manufacturers.³⁷ Finally, the FAA Act contains a “savings clause” designed to preserve state law remedies: “Nothing contained in this Act shall in any way abridge or alter the remedies now existing at common law or by statute, but the provisions of this Act are in addition to such remedies.”³⁸ Due to the FAA Act’s narrow express preemption provisions, its implied preemption powers are much more meaningful to the federal government. Any preemption of state aviation law outside of these provisions must be implied by courts.

An important distinction to understand is the difference between preemption of a standard of care and preemption of a claim. For example, there are four elements to a typical state law negligence claim: standard of care, breach, causation, and damages.³⁹ In FAA Act cases, preemption has recently centered around the standard of care.⁴⁰ Thus, while the standard of care may be preempted by federal regulations, the remaining three elements are still governed by state law.⁴¹ In a negligence claim, the FAA has prescribed a standard of care, which courts have generally found to preempt any applicable state standard of care.⁴² Similarly, the requirements for receiving a type, production, or airworthiness certificate create a standard of care which theoretically governs in product liability or defective design claims.⁴³ In practice, however, courts disagree about the extent to which these standards actually preempt any parallel state law standards.⁴⁴

The Supreme Court has never spoken on the issue of negligence or products liability in an aviation law case. However, in *City of Burbank v. Lockheed Air Terminal*, the Court provided a framework through which lower courts could analyze FAA Act preemption cases.⁴⁵ In *City of Burbank*, the Court held that a city

³⁷ General Aviation Revitalization Act, Pub. L. No. 103-298, § 3(3), 108 Stat. 1552, 1553 (1994).

³⁸ Federal Aviation Act of 1958, Pub. L. No. 85-726, § 1106, 72 Stat. 731 (1958).

³⁹ See, e.g., *V & M Star Steel v. Centimark Corp.*, 678 F.3d 459, 465–66 (6th Cir. 2012).

⁴⁰ Alexander T. Simpson, *Standard of Care vs. Claim Preemption Under the Federal Aviation Act*, 27 AIR & SPACE L. 4, 4 (2014).

⁴¹ *Id.*

⁴² See 14 C.F.R. § 91.13(a) (“No person may operate an aircraft in a careless or reckless manner so as to endanger the life or property of another.”).

⁴³ See Simpson, *supra* note 40, at 4.

⁴⁴ See, e.g., *Sikkelee v. Precision Airmotive Corp.*, 822 F.3d 680, 690 (3d Cir. 2016); *Abdullah v. Am. Airlines*, 181 F.3d 363, 365 (3d Cir. 1999).

⁴⁵ *City of Burbank v. Lockheed Air Terminal*, 411 U.S. 624 (1973).

noise prevention ordinance, which banned aircraft from taking off between 11 p.m. and 7 a.m., was preempted by the FAA Act, as amended by the Noise Control Act of 1972.⁴⁶ Although noise prevention was an environmental regulation traditionally left to states, the Court acknowledged the pervasive nature of the FAA's own aircraft noise regulation scheme and thus inferred congressional intent to occupy the entire area of the law.⁴⁷ The Court stated that the FAA Act required "a delicate balance between safety and efficiency,"⁴⁸ and "[t]he interdependence of these factors requires a uniform and exclusive system of federal regulation if the congressional objectives underlying the Federal Aviation Act are to be fulfilled."⁴⁹ While the FAA Act contained no express preemption provision on this subject, its legislative history coupled with the pervasiveness of the federal regulatory scheme led the Court to conclude it was intended to preempt state law.⁵⁰

III. CURRENT STATE OF THE LAW

There are two competing views on how the FAA Act interacts with state aviation safety laws under the doctrine of implied preemption. A court's view of the FAA Act's preemption powers depends largely on its interpretation of the Act's legislative history—some see a clear intent to exclude state regulations from the aviation safety field, while others see Congress exercising restraint.⁵¹ The way a court defines the term "aviation safety" will also factor into its analysis.⁵² The Second, Sixth, Ninth, and Tenth Circuits have each held that the FAA Act impliedly preempts the entire field of aviation safety law,⁵³ while both the

⁴⁶ *Id.* at 633.

⁴⁷ *Id.*

⁴⁸ *Id.* at 638.

⁴⁹ *Id.* at 639.

⁵⁰ *Id.* at 636–37. The Senate version of the Noise Control Act contained an express preemption provision, but was never presented to the House. *Id.* at 636. Instead, the House version was presented with amendments. *Id.* (citing 18 CONG. REC. 35,886 (1972)). However, Rep. Harley Staggers, Chairman of the House Committee on Interstate and Foreign Commerce, argued on the floor, "We have evidence that across America some cities and States are trying to pass noise regulations. Certainly, we do not want that to happen. It would harass industry and progress in America." *Id.* at 636–37 (citing 18 CONG. REC. 37,083 (1972)).

⁵¹ Compare *Abdullah v. Am. Airlines*, 181 F.3d 363, 371 (3d Cir. 1999), with *Sikkelee v. Precision Airmotive Corp.*, 822 F.3d 680, 683 (3d Cir. 2016).

⁵² See, e.g., *Elassaad v. Indep. Air, Inc.*, 613 F.3d 119, 127 (3d Cir. 2010).

⁵³ *Tweed-New Haven Airport Auth. v. Tong*, 930 F.3d 65, 75 (2d Cir. 2019), cert. denied, 140 S. Ct. 2508 (2020); *US Airways, Inc. v. O'Donnell*, 627 F.3d 1318,

Third and Eleventh Circuits have held that the Act only preempts conflicting state laws.⁵⁴

Ironically, the Third Circuit is also the source of one of the most influential opinions applying field preemption to the FAA Act.⁵⁵ In *Abdullah v. American Airlines*, the Third Circuit found that the FAA Act impliedly preempted the entire field of aviation safety law, applying the federal standard of care to an aviation negligence claim brought under state law.⁵⁶ Although federal law preempted the state law standard of care, the court held that state damage remedies still existed for the violation of the federal standard of care.⁵⁷ The court determined that Congress intended for the FAA Act to occupy the field of aviation safety law to the exclusion of the states, basing its conclusion on both legislative history and persuasive authority from its sister circuits.⁵⁸ The court noted that Congress enacted the FAA Act in response to a series of “fatal air crashes between civil and military aircraft *operating under separate flight rules*.”⁵⁹ Further, Senate Reports indicated that Congress intended to vest authority for aviation safety solely in the FAA, not in the states.⁶⁰ The court went on to cite a number of cases in which other circuits found that the FAA Act preempted state or local regulations in a certain area, which it felt indicated the pervasiveness of the federal government’s regulatory control.⁶¹ *Abdullah* also established that the federal standard of care in aviation-related claims preempted any state or

1322 (10th Cir. 2010); *Montalvo v. Spirit Airlines*, 508 F.3d 464, 468 (9th Cir. 2007); *Greene v. B.F. Goodrich Avionics Sys., Inc.*, 409 F.3d 784, 795 (6th Cir. 2005).

⁵⁴ See *Sikkelee*, 822 F.3d at 683; *Pub. Health Tr. v. Lake Aircraft, Inc.*, 992 F.2d 291, 295 (11th Cir. 1993).

⁵⁵ See *Abdullah*, 181 F.3d at 364–65.

⁵⁶ *Id.*

⁵⁷ *Id.* at 365.

⁵⁸ *Id.* at 367.

⁵⁹ *Id.* at 368 (citing *United States v. Christensen*, 419 F.2d 1401, 1404 (9th Cir. 1969)).

⁶⁰ S. REP. NO. 85-1811, at 5 (1958).

[A]viation is unique among transportation industries in its relation to the Federal Government—it is the only one whose operations are conducted almost wholly within the Federal jurisdiction, and are subject to little or no regulation by States or local authorities. Thus, the Federal Government bears *virtually complete responsibility* for the promotion and supervision of this industry in the public interest.

Id. (emphasis added).

⁶¹ See *Abdullah*, 181 F.3d at 369–71 (citing *Air Line Pilots Ass’n, Int’l. v. Quesada*, 276 F.2d 892 (2d Cir. 1960); *Kohr v. Allegheny Airlines, Inc.*, 504 F.2d

local standards of care.⁶² The court noted that FAA regulations created a catch-all standard of care in the operation of aircraft, and that it would be “illogical” for federal law to preempt state law in matters such as pilot licensing, but not regulations relating to flight itself.⁶³

The Third Circuit later clarified the extent of *Abdullah*'s holding in *Elassaad v. Independence Air, Inc.*⁶⁴ In *Elassaad*, a passenger who was injured while disembarking from a plane brought a state law negligence claim,⁶⁵ which the court held was not preempted by the FAA Act.⁶⁶ *Abdullah*'s holding was not that common law negligence claims themselves were preempted, only that the state law standards of care used in those claims were preempted.⁶⁷ The court noted that the regulations cited in *Abdullah* established a standard of care for the operation of aircraft, but the injury in *Elassaad* occurred while disembarking after the plane had landed.⁶⁸ The court admitted that the FAA Act was designed to reduce accidents in air transportation, and that the FAA “has sole discretion in regulating *air safety*,” but limited the definition of air safety in *Abdullah* to in-flight operations.⁶⁹ Because federal regulations did not establish a standard of care for negligence outside of the operation of the aircraft either in-flight or while taxiing on the runway, the state law standard of care was not preempted.⁷⁰

In *Tweed*, the Second Circuit recognized at the outset of its analysis that the FAA Act impliedly preempts all state aviation safety laws, then turned to whether the state law in question fell

400 (7th Cir. 1974); *British Airways Bd. v. Port Auth. of N.Y.*, 558 F.2d 75 (2d Cir. 1977); *French v. Pan Am Express, Inc.*, 869 F.2d 1 (1st Cir. 1989).

⁶² *Abdullah*, 181 F.3d at 372.

⁶³ *Id.* at 371; 14 C.F.R. § 91.13(a) (2020).

⁶⁴ 613 F.3d 119, 121 (3d Cir. 2010).

⁶⁵ *Id.* at 122.

⁶⁶ *Id.* at 131.

⁶⁷ *Id.* at 125.

⁶⁸ *Id.* at 131.

⁶⁹ *Id.* at 126 (internal citations and quotations omitted).

⁷⁰ *Id.* at 127.

No person may operate an aircraft, other than for the purpose of air navigation, on any part of the surface of an airport used by aircraft for air commerce (including areas used by those aircraft for receiving or discharging persons or cargo), in a careless or reckless manner so as to endanger the life or property of another.

14 C.F.R. § 91.13(b).

within the scope of the FAA's preemption.⁷¹ The state law at issue limited the length of an airport's runway, preventing the airport from attracting new airlines.⁷² The airport claimed that the statute was preempted by the FAA, but was denied a declaratory judgment invalidating the statute by the district court.⁷³ The Second Circuit reversed, finding that a statute limiting the length of an airport's runway did fall within the scope of federal preemption "because of its direct impact on air safety."⁷⁴ The court found "localized, state-created limitation[s]" like the runway statute to be "incompatible with the FAA's objective of establishing a 'uniform and exclusive system of federal regulation' in the field of air safety."⁷⁵

The Tenth Circuit employed a two-pronged preemption approach in *O'Donnell*, concluding that a state law regulating alcohol service on aircraft was preempted by the FAA.⁷⁶ Like the Second Circuit in *Tweed*, the court began its analysis with the presumption that the FAA impliedly preempts the entire field of aviation safety based on the pervasiveness of the federal regulatory scheme.⁷⁷ The first prong of the court's field preemption analysis was to identify the legislative field that the state law implicated.⁷⁸ While the district court viewed the state law as only regulating alcoholic beverage service on airplanes, the Tenth Circuit recognized that it "necessarily implicate[d] the field of airline safety."⁷⁹ The second prong of the test was to evaluate whether Congress intended to occupy that field to the exclusion of state regulations, and the court determined it did.⁸⁰ Sidestepping a prior ruling that the FAA did not preempt state tort remedies because they were not named in the Act's express preemption provision, the court acknowledged that such a provision does not exclude the possibility of implied preemption as well.⁸¹ The court found that both the pervasiveness of the

⁷¹ *Tweed-New Haven Airport Auth. v. Tong*, 930 F.3d 65, 74 (2d Cir. 2019), *cert. denied*, 140 S. Ct. 2508 (2020).

⁷² *Id.* at 69.

⁷³ *Id.*

⁷⁴ *Id.* at 74.

⁷⁵ *Id.* (quoting *Air Transp. Ass'n v. Cuomo*, 520 F.3d 218, 224 (2d Cir. 2008)).

⁷⁶ *US Airways, Inc. v. O'Donnell*, 627 F.3d 1318, 1325–26 (10th Cir. 2010).

⁷⁷ *Id.* at 1325.

⁷⁸ *Id.*

⁷⁹ *Id.*

⁸⁰ *Id.* at 1325–27.

⁸¹ *Id.* at 1326 (discussing *Cleveland v. Piper Aircraft Corp.*, 985 F.2d 1438, 1444 (10th Cir. 1993)).

FAAct's regulations and its legislative history indicated a clear intent to regulate the aviation safety field exclusively, preempting the state alcohol regulations in question.⁸²

In *Greene v. B.F. Goodrich Avionics Systems, Inc.*, the Sixth Circuit held that federal aviation standards preempted a state law duty to warn claim in a products liability case.⁸³ Like the Tenth Circuit in *O'Donnell* and the Third Circuit in *Abdullah*, the Sixth Circuit relied on the legislative history and pervasiveness of the FAAct, determining that it was intended to preempt the entire field of aviation safety.⁸⁴ The plaintiffs in *Greene* argued that the manufacturer breached its duty to warn aircraft users about manufacturing defects by failing to maintain a database tracking potential equipment malfunctions.⁸⁵ However, the plaintiffs made no claims under federal laws or regulations, and were unable point to any federal standard requiring a manufacturer to maintain such a database.⁸⁶ Therefore, the court found that the additional state-imposed duty to warn of manufacturing defects was invalid.⁸⁷

The Third Circuit's more recent decision in *Sikkelee* is seemingly incompatible with *Abdullah*'s holding that additional state-imposed standards of care in aircraft-related negligence cases are preempted by the FAAct.⁸⁸ In *Sikkelee*, the Third Circuit held that field preemption does not apply to state law aircraft products liability claims and that the FAAct did not preempt state-imposed standards of care in such claims.⁸⁹ Instead, the court determined that in aviation products liability cases, the FAAct only preempted conflicting state laws and regulations.⁹⁰ Like in *Elassaad*, the court drew a line between "in-air operations" and the issuance of safety certificates to aircraft manufacturers, once again limiting *Abdullah*'s broad holding.⁹¹ The court pointed out that the regulations cited in *Abdullah* related only to actually operating an aircraft (i.e., flight), not its design or manufacture,

⁸² *Id.* at 1327.

⁸³ *Greene v. B.F. Goodrich Avionics Sys., Inc.*, 409 F.3d 784, 795 (6th Cir. 2005).

⁸⁴ *Id.* at 794.

⁸⁵ *Id.*

⁸⁶ *Id.*

⁸⁷ *Id.*

⁸⁸ *See Abdullah v. Am. Airlines, Inc.*, 181 F.3d 363, 372 (3d Cir. 1999).

⁸⁹ *Sikkelee v. Precision Airmotive Corp.*, 822 F.3d 680, 683 (3d Cir. 2016).

⁹⁰ *Id.*

⁹¹ *Id.* at 689.

which was at issue in *Sikkelee*.⁹² The driving factor behind this distinction was the way the federal standard of care in *Abdullah* was articulated.⁹³ The in-flight negligence regulation in *Abdullah* sounded in common law tort, which the court felt made it comprehensive and practical to incorporate into state law claims.⁹⁴ The design and manufacture regulations, on the other hand, were much more technical and part-specific, making them “exceedingly difficult to translate into a standard of care that could be applied to a tort claim.”⁹⁵ In *Elassaad*, the Third Circuit noted that most of the FAA regulations concerned aspects of safety associated with flight, specifically mentioning the certification and airworthiness requirements for aircraft components.⁹⁶ This makes the court’s conclusion that the FAA certification process was unrelated to in-flight safety even more confusing. Although certification and airworthiness requirements may not govern in-flight operations, they clearly concern in-flight safety, which the court identified as the purpose of the FAA in *Elassaad*.⁹⁷ The folly of *Sikkelee*’s holding was further proven on remand, where the district court found the plaintiff’s state law claims to be conflict preempted, as it would be impossible for the manufacturer to comply with both state and federal regulations.⁹⁸

Sikkelee formed the basis of a similar decision by the Washington Supreme Court, which held that the FAA created only minimum standards of care for aircraft manufacturers⁹⁹ and that state law remedies exceeding that standard of care were not preempted by the Act.¹⁰⁰ In *Estate of Becker*, the estate of a plane crash victim brought a state law design defect claim against the

⁹² *Id.*

⁹³ *Id.* at 694.

⁹⁴ *Id.* at 695.

⁹⁵ *Id.*

⁹⁶ See *Elassaad v. Independence Air, Inc.*, 613 F.3d 119, 128 (3d Cir. 2010).

⁹⁷ See *id.* at 126.

⁹⁸ *Sikkelee v. AVCO Corp.*, 268 F. Supp. 3d 660, 665 (M.D. Pa. 2017). However, the Third Circuit reversed on appeal, holding that federal law did not conflict preempt the state law claims. *Sikkelee v. Precision Airmotive Corp.*, 907 F.3d 701, 704 (3d Cir. 2018), *cert. denied*, 140 S. Ct. 860 (2020). The court also reaffirmed its prior holding that the FAA certification process does not establish a federal standard of care for aircraft manufacturers. *Id.* at 717.

⁹⁹ 48 U.S.C. § 44701(a)(1) (“The Administrator of the Federal Aviation Administration shall promote safe flight of civil aircraft in air commerce by prescribing . . . minimum standards required in the interest of safety for appliances and for the design, material, construction, quality of work, and performance of aircraft, aircraft engines, and propellers.”).

¹⁰⁰ *Estate of Becker v. AVCO Corp.*, 387 P.3d 1066, 1069 (Wash. 2017).

manufacturer of a fuel system component in the aircraft.¹⁰¹ The manufacturer claimed preemption as a defense, arguing that fuel system manufacturing was pervasively regulated by the federal government.¹⁰² The court rejected the preemption argument, holding that the regulation in question was not designed to replace state law, but only to establish a minimum design standard.¹⁰³

Like the Third Circuit, the Ninth Circuit has also issued conflicting opinions about the reach of the FAA's preemption powers.¹⁰⁴ In *Montalvo*, the court held that the FAA impliedly preempted the entire field of aviation safety, dismissing the plaintiffs' consolidated failure to warn claims brought under state law.¹⁰⁵ Fourteen plaintiffs each brought negligence claims against various airlines for failure to warn passengers about the risk of deep-vein thrombosis, which airlines were under no federal obligation to do.¹⁰⁶ The court recognized that in the absence of federal preemption of passenger warnings, each state could mandate a different set of warnings, which could lead to absurd outcomes.¹⁰⁷ In *Martin*, however, the Ninth Circuit limited *Montalvo*'s holding to cases in which the federal regulations in the field are pervasive.¹⁰⁸ In *Martin*, the plaintiff brought a design defect claim against an aircraft manufacturer, claiming that the aircraft's stairs were defectively designed because they only had one handrail.¹⁰⁹ In comparison to the FAA's pervasive regulations on passenger warnings, the only federal regulation

¹⁰¹ *Id.* at 1067.

¹⁰² *Id.* at 1068.

¹⁰³ *Id.* at 1069.

¹⁰⁴ *Montalvo v. Spirit Airlines*, 508 F.3d 464, 468 (9th Cir. 2007); *see also Martin ex rel. Heckman v. Midwest Exp. Holdings, Inc.*, 555 F.3d 806, 811–12 (9th Cir. 2009).

¹⁰⁵ *See Montalvo*, 508 F.3d at 468.

¹⁰⁶ *Id.* at 467–68.

¹⁰⁷ *Id.* at 473.

Congress could not reasonably have intended an airline on a Providence-to-Baltimore-to-Miami run to be subject to certain requirements in, for example Maryland, but not in Rhode Island or Florida. It is equally as doubtful that Congress would have intended the sufficiency of the Airlines' warnings to hinge on where each passenger on each flight was likely to file suit.

Id. (internal citations omitted).

¹⁰⁸ *See Martin*, 555 F.3d at 811.

¹⁰⁹ *Id.* at 808.

of aircraft stairs prohibited designing them in a way which might block emergency exits.¹¹⁰

The Eleventh Circuit's analysis in *Lake Aircraft* was similar to that of the Tenth Circuit in *Cleveland*, relying almost exclusively on the FAA's express preemption provision.¹¹¹ The court determined that Congress did not intend for the FAA to preempt state laws on matters unrelated to airline rates, routes, or services, and therefore, the Act did not preempt state law design defect claims.¹¹² *Lake Aircraft* was one of the earliest cases on the subject, and circuit courts' preemption analyses have since centered around either the Second Circuit's field preemption approach or the Third Circuit's newer conflict preemption approach.¹¹³

IV. ANALYSIS

A. THE CASE FOR FIELD PREEMPTION

Of all the industries regulated by the federal government, aviation is arguably the most in need of a uniform set of laws and regulations. The aviation industry is so integral to interstate commerce¹¹⁴ that it would be counterintuitive for it not to be governed by a uniform set of laws and regulations. The alternative to field preemption, in which aviation manufacturers are potentially subject to a patchwork of different state regulations and standards of care, is simply incompatible with the industry's structure.¹¹⁵ There are several arguments to be made in favor of field preemption. First, the FAA's legislative history and purpose indicate a clear intent to exclude states from regulating

¹¹⁰ *Id.* at 812. "It's hard to imagine that any and all state tort claims involving airplane stairs are preempted by federal law. Because the agency has not comprehensively regulated airstairs, the FAA has not preempted state law claims that the stairs are defective." *Id.*

¹¹¹ Compare *Pub. Health Tr. v. Lake Aircraft, Inc.*, 992 F.2d 291, 295 (11th Cir. 1993), with *Cleveland v. Piper Aircraft Corp.*, 985 F.2d 1438, 1447 (10th Cir. 1993).

¹¹² *Lake Aircraft, Inc.*, 999 F.2d at 295.

¹¹³ See *Tweed-New Haven Airport Auth. v. Tong*, 930 F.3d 65, 75 (2d Cir. 2019), *cert. denied*, 140 S. Ct. 2508 (2020); *Sikkelee v. Precision Airmotive Corp.*, 822 F.3d 680, 709 (3d Cir. 2016).

¹¹⁴ See generally *Data & Statistics*, AIRLINES FOR AM., <https://www.airlines.org/data/> (last visited Oct. 30, 2020).

¹¹⁵ See *Montalvo v. Spirit Airlines*, 508 F.3d 464, 473 (9th Cir. 2007). "Aviation transportation requires more national coordination than any other public transportation and also poses the largest risks. Regulation on a national basis is required because air transportation is a national operation." *Id.* (internal citations omitted).

aviation safety.¹¹⁶ Second, field preemption allows for a uniform federal standard of care without necessarily preempting state law claims and remedies.¹¹⁷ Finally, field preemption is more consistent with related Supreme Court precedent and the preemption doctrine's constitutional roots.¹¹⁸

As previously mentioned, legislative intent is highly determinative of a federal law or regulation's preemption powers.¹¹⁹ In addition to legislative history, congressional intent to occupy an entire field of law can be implied when federal regulation is sufficiently pervasive, when the federal interest in the field is sufficiently dominant, or when the objective of the federal regulation and the character of its obligations show such a purpose.¹²⁰ The sheer amount of regulations that the FAA has promulgated within the aviation safety field makes it difficult to understand how a court could view the FAA's regulations as anything but pervasive.¹²¹ Another rule, which some courts seem to have ignored, is often cited to when arguing that the FAA only establishes a minimum standard for design and manufacture.¹²² Section 44701(e) governs the FAA's acceptance of airworthiness directives issued by foreign governments, yet makes no mention of state governments.¹²³ The FAA may accept foreign airworthiness directives only in the event that its foreign counterpart has a certification system requiring an equivalent level of safety as the FAA does.¹²⁴ Allowing foreign aviation safety agencies, but not states, to certify airworthiness seems to indicate that Congress intended to create a system in which there are only two possible arbiters of aircraft safety—the FAA or its foreign counterpart.¹²⁵

Legislative intent is further clarified by looking at the legislative history associated with the FAA Act. Congress emphasized the unique nature of the aviation industry, which naturally made it a federal concern:

¹¹⁶ See *Abdullah v. Am. Airlines, Inc.*, 181 F.3d 363, 371 (3d Cir. 1999).

¹¹⁷ See *Tweed*, 930 F.3d at 75.

¹¹⁸ See *supra* Part III.B.

¹¹⁹ See *supra* notes 30–35 and accompanying text.

¹²⁰ See *Schneidewind v. ANR Pipeline Co.*, 485 U.S. 293, 300 (1988).

¹²¹ See 14 C.F.R. §§ 1–1399.

¹²² 49 U.S.C. § 44701(e).

¹²³ *Id.*

¹²⁴ *Id.* § 44701(e)(5)(A)(iii).

¹²⁵ *Id.* § 41302.

[A]viation is unique among transportation industries in its relation to the Federal Government—it is the only one whose operations are conducted almost wholly within the Federal jurisdiction, and are subject to little or no regulation by States or local authorities. Thus, the Federal Government bears virtually complete responsibility for the promotion and supervision of this industry in the public interest.¹²⁶

The circumstances prompting the FAA's creation are also consistent with an intent to establish a uniform federal regulatory system. Congress passed the FAA in response to a series of "fatal air crashes between civil and military aircraft *operating under separate flight rules*."¹²⁷ It would make little sense for Congress to go to the trouble of passing such a comprehensive piece of legislation only to leave the very problem it sought to address unaddressed. In *City of Burbank*, the Supreme Court afforded significant weight to the legislative history of the FAA, which it felt was clearly designed to establish uniform regulations.¹²⁸ That the Court reached this conclusion even after acknowledging that noise control regulation was traditionally a state police power speaks volumes about the weight of the FAA's legislative history.¹²⁹

One of the primary concerns with field preemption the Third Circuit expressed in *Sikkelee* was that it "would have the perverse effect of granting complete immunity from design defect liability to an entire industry."¹³⁰ However, because state law claims should still be available in conjunction with the FAA under field preemption, this fear is misguided. The majority of circuit courts have held that the federal standard of care in the operation of aircraft preempts any state law standards of care, while leaving remedies for state law claims intact.¹³¹ Significantly, the FAA's savings clause states that "[n]othing contained in this [chapter] shall in any way abridge or alter the remedies now existing at common law or by statute, but the provisions of this [chapter] are in addition to such remedies."¹³² The language

¹²⁶ S. REP. NO. 85-1811, at 5 (1958).

¹²⁷ *United States v. Christensen*, 419 F.2d 1401, 1404 (9th Cir. 1969) (emphasis added).

¹²⁸ *City of Burbank v. Lockheed Air Terminal*, 411 U.S. 624, 634–40 (1973).

¹²⁹ *See id.* at 638.

¹³⁰ *Sikkelee v. Precision Airmotive Corp.*, 822 F.3d 680, 695 (3d Cir. 2016).

¹³¹ *See, e.g., Abdullah v. Am. Airlines, Inc.*, 181 F.3d 363, 365 (3d Cir. 1999).

¹³² Federal Aviation Act of 1958, Pub. L. No. 85-726, § 1106, 72 Stat. 731, 798 (1958).

here necessarily implies the existence of state law claims, as a remedy could not exist without a claim.

Once again, it is important to remember the distinction between preempting a state law claim and a state law standard of care. As the Ninth Circuit noted in *Abdullah*, federal law can preempt the standard of care while leaving state tort remedies intact:

[W]e find no irreconcilable conflict between federal and state standards. Nor do we find that imposition of a . . . standard in a damages action would frustrate the objectives of the federal law. Quite to the contrary, it is evident in both the savings and the insurance clauses of the [FAAct] that Congress found state damage remedies to be compatible with federal aviation safety standards. The savings clause provides that a remedy under this part is in addition to any other remedies provided by law. Clearly, Congress did not intend to prohibit state damage remedies by this language.¹³³

In *Ventress v. Japan Airlines*, the Ninth Circuit held that a plaintiff's state law claims were preempted by the FAAct, but did so in a manner consistent with the reasoning set forth in *Abdullah*.¹³⁴ In *Ventress*, the plaintiff failed to allege a violation of any applicable federal aviation safety standard, pleading only state law unlawful retaliation and constructive termination claims in response to his termination.¹³⁵ The court acknowledged that while state law claims and remedies were hypothetically available under *Abdullah's* holding, the plaintiff's failure to allege a claim under any applicable federal standard warranted preemption.¹³⁶ Similarly, the Sixth Circuit in *Greene* invalidated the entire failure to warn claim brought under state law because it hinged on the existence of a federal standard requiring manufacturers to maintain a malfunction database.¹³⁷ Had there been both federal and state law standards requiring such a database, the federal standard would have preempted the state standard. Even absent a federal equivalent, the state law standard was preempted because it was supplementary to the federal regulatory scheme.¹³⁸ In *Sikkelee*, the Third Circuit framed the issue as

¹³³ *Abdullah*, 181 F.3d at 375 (internal quotations omitted).

¹³⁴ *Ventress v. Japan Airlines*, 747 F.3d 716, 723 n.7 (9th Cir. 2014).

¹³⁵ *Id.* at 719–20.

¹³⁶ *Id.* at 723 n.7.

¹³⁷ See *Greene v. B.F. Goodrich Avionics Sys., Inc.*, 409 F.3d 784, 794–95 (6th Cir. 2005).

¹³⁸ *Id.* at 795.

whether the FAA Act preempted state law product liability *claims*, rather than just the standard of care.¹³⁹ However, the court also rejected arguments that federal regulations established an applicable standard of care for aircraft design and manufacturing.¹⁴⁰ Its primary reasoning was that the design certification process—type, production, and airworthiness certificates—only established the procedures for federal approval of aircraft and their components, lacking the comprehensiveness to supply the standard of care in a products liability case.¹⁴¹

The federal certification process does exactly that, however. The FAA's design safety standard is actually set forth through the type certification process.¹⁴² In addition to type certificates, the FAA may issue special conditions to manufacturers if its standard regulations are inadequate for a product, such as a component the administration is unfamiliar with.¹⁴³ The standard for issuing a type certificate is exacting on manufacturers, and the language within the regulation purports to establish a standard for design:

Upon examination of the type design, and after completing all tests and inspections, that the type design and the product meet the applicable noise, fuel venting, and emissions requirements of this subchapter, and further finds that they meet the applicable airworthiness requirements of this subchapter or that any airworthiness provisions not complied with are compensated for by factors that provide an equivalent *level of safety*.¹⁴⁴

Prior to this testing phase, an applicant for a type certificate must also show compliance with all applicable requirements.¹⁴⁵ Even if not explicitly, 14 C.F.R. §§ 21.20–21 seem to establish an across-the-board standard for aircraft design and manufacture. Had the Third Circuit recognized this distinction, it could have simply applied this federal standard of care to the state law claim, rather than relying on a state law standard requiring additional design considerations.

The Supreme Court has held that federal regulations establish a uniform standard of care in the design and manufacture

¹³⁹ See *Sikkelee v. Precision Airmotive Corp.*, 822 F.3d 680, 692 (3d Cir. 2016).

¹⁴⁰ *See id.* at 694.

¹⁴¹ *Id.*

¹⁴² Lauren L. Haertlein & Justin T. Barkowski, *Applying a Federal Standard of Care in Aviation Product Liability Actions*, 82 J. AIR L. & COM. 743, 760 (2017).

¹⁴³ *Id.*

¹⁴⁴ 14 C.F.R. § 21.21 (2020) (emphasis added).

¹⁴⁵ *Id.* §§ 21.20–21.

of oil tankers, which is governed by a regulatory scheme similar to that of the aviation industry.¹⁴⁶ In *Ray*, a Washington state law established safety standards exceeding those required by the Ports and Waterways Safety Act of 1972 (PWSA).¹⁴⁷ Much like the FAA, the DoT oversaw a pervasive regulatory system including certification of oil tanker design and inspections for ongoing compliance under the PWSA.¹⁴⁸ Especially significant is how the Court addressed the issue of “minimum standards” in the PWSA.¹⁴⁹ Courts that reject field preemption argue that federal regulations establish only a minimum standard for design and manufacture.¹⁵⁰ In *Ray*, however, the Court found that the pervasive nature of the PWSA regulatory scheme established more than just a minimum standard.¹⁵¹ The Court noted that in addition to the power to promulgate safety standards, the PWSA gave the federal government authority to ensure compliance through certificates and inspections, prompting its conclusion that the PWSA preempted the entire field of marine safety regulations.¹⁵²

This indicates to us that Congress intended uniform national standards for design and construction of tankers that would foreclose the imposition of different or more stringent state requirements. In particular, as we see it, Congress did not anticipate that a vessel found to be in compliance with the Secretary’s design and construction regulations . . . would nevertheless be barred by state law from operating in the navigable waters of the United States on the ground that its design characteristics constitute an undue hazard.¹⁵³

The similarities between the two federal regulatory schemes are readily apparent: both establish a comprehensive certification process in design and manufacture, and federal control of American waters is analogous to federal control of American air-

¹⁴⁶ See *Ray v. Atlantic Richfield Co.*, 435 U.S. 151, 163 (1978).

¹⁴⁷ *Id.* at 154.

¹⁴⁸ *Id.* at 161–62.

¹⁴⁹ *Id.* at 161. The Court noted the PWSA requires promulgation of “comprehensive minimum standards of design, construction, alteration, repair, maintenance, and operation” for certain vessels. *Id.*

¹⁵⁰ See *Sikkelee v. Precision Airmotive Corp.*, 822 F.3d 680, 694 (3d Cir. 2016); *Estate of Becker v. AVCO Corp.*, 387 P.3d 1066, 1069 (Wash. 2017).

¹⁵¹ *Ray*, 435 U.S. at 163.

¹⁵² *Id.* at 162–63.

¹⁵³ *Id.* at 163–64.

ways.¹⁵⁴ Much like the Court observed in *Ray*, it would make little sense for aircraft meeting federal design standards to be subject to liability in certain states with more stringent standards. The Court cited the legislative history of the PWSA, which also indicated an intent to preempt state law: “The original Tank Vessel Act, amended by Title II, sought to effect ‘a reasonable and uniform set of rules and regulations concerning ship construction.’”¹⁵⁵ The FAA’s parallel aircraft certification system should therefore indicate an equal intent. The FAA Act and PWSA also mirror each other in their acceptance of foreign safety certifications.¹⁵⁶ The PWSA contains a nearly identical provision allowing the federal government alone to accept the safety certifications of foreign vessels,¹⁵⁷ which the Court also felt indicated congressional intent to preempt the entire field of maritime safety law.¹⁵⁸

Given that the federal design certification process establishes a standard of care for design and manufacture, it is much harder to reconcile the Third Circuit’s distinction between in-air operations and pre- or post-flight regulations. The court noted in *Sikkelee* that the examples of the pervasive regulations it had cited in *Abdullah* only applied to in-air operations, leaving certain regulations, such as those applying to type certificates, outside the reach of the FAA Act’s preemption powers.¹⁵⁹ According to the court, the design regulations governing type certificates were not as comprehensive as those governing pilot certification and other aspects of in-flight operations, therefore the FAA Act established only minimum safety standards rather than a catch-all standard of care for design and manufacture.¹⁶⁰ Naturally, the court pointed out that the FAA Act grants the FAA the authority to prescribe “*minimum standards*” required “in the interest of safety” and “necessary for safety.”¹⁶¹ The existence of “minimum” federal standards, however, does not necessarily imply that states have the power to supplement those standards. Rather, the use of the word “minimum” was intended to strike

¹⁵⁴ Thomas J. McLaughlin, Mary P. Gaston, & Jared D. Hager, *Navigating the Nation’s Waterways and Airways: Maritime Lessons for Federal Preemption of Airworthiness Standards*, 23 AIR & SPACE LAW. no. 2, 2010, at 5, 9.

¹⁵⁵ *Ray*, 435 U.S. at 165–66 (quoting H.R. REP. NO. 74-2962, at 2 (1936)).

¹⁵⁶ McLaughlin, *supra* note 154, at 9.

¹⁵⁷ 46 U.S.C. § 3303.

¹⁵⁸ *See Ray*, 435 U.S. at 163.

¹⁵⁹ *See Sikkelee v. Precision Airmotive Corp.*, 822 F.3d 680, 689 (3d Cir. 2016).

¹⁶⁰ *Id.*

¹⁶¹ *Id.* at 693; 49 U.S.C. § 44701(a) (emphasis added).

an optimal balance between adequately ensuring safety in aircraft design and manufacturing, and facilitating economic growth by avoiding overly burdensome regulations.¹⁶² It would make little sense for the federal government to prescribe inadequate safety regulations and allow each state to decide whether to supplement them. If that were the case, Congress would be knowingly risking the lives of passengers on aircraft designed or manufactured in a state which declined to supplement the minimum federal standard of care. Such a result would be clearly inconsistent with Congress's stated goal of ensuring "maximum possible safety and efficiency" through the FAA Act.¹⁶³

Field preemption is necessary in order to establish a uniform federal standard of care for aircraft manufacturers. This is the primary problem with the Third Circuit's holding in *Sikkelee*—the FAA Act does not prevent plaintiffs in product liability claims from also bringing state law claims supplying their own standards of care.¹⁶⁴ Allowing plaintiffs to bring tort claims under state laws applying different standards of care subjects aircraft manufacturers to a patchwork of different standards, making it impracticable—if not impossible—to realistically comply with each of them.¹⁶⁵ Because aircraft manufacturers have essentially zero control over where an aircraft goes after its sale, forcing them into compliance with both a federal design standard and potentially fifty different state standards is simply unreasonable.¹⁶⁶ Allowing state law to govern the standard of care in an aviation products liability claim is also problematic because it displaces the expertise of the FAA. The FAA employs a highly technical certification process which governs manufacture and design throughout the life of the aircraft.¹⁶⁷ In contrast, state standards of care developed through litigation allow the FAA's complex certification process to be second-guessed by expert witnesses, judges, and juries.¹⁶⁸

Applying the federal standard of care to state law product liability claims provides more predictability for aircraft manufacturers, while also ensuring a more accurate outcome in each case. Under state law, the standard of care in a negligence claim

¹⁶² See Haertlein & Barkowski, *supra* note 142, at 759.

¹⁶³ H.R. REP. NO. 85-2360, at *3747 (1958).

¹⁶⁴ See *id.*

¹⁶⁵ *Montalvo v. Spirit Airlines*, 508 F.3d 464, 473 (9th Cir. 2007).

¹⁶⁶ See Haertlein & Barkowski, *supra* note 142, at 757.

¹⁶⁷ *Id.* at 758.

¹⁶⁸ *Id.*

would be established primarily through expert testimony and a strict liability claim would hinge on whether the jury finds a design defect.¹⁶⁹ This usually involves weighing the feasibility of alternative designs, which may or may not be relevant to the specific issue being litigated.¹⁷⁰ A jury verdict against a manufacturer thus means that the product design was unsafe for operation, even though the design was approved by the FAA when it issued a type certificate.¹⁷¹ Thus, the court supersedes the FAA's role in certifying aircraft and imposes a duty on the manufacturer to comply with a design standard which may be inconsistent with those prescribed by the FAA.¹⁷² This lack of uniformity increases litigation costs due to the reliance on expert witnesses, while forcing manufacturers to spend more on insurance to protect themselves from such inconsistent standards.¹⁷³ Manufacturers will ultimately pass these higher costs along to consumers, negatively impacting both sides of the market.¹⁷⁴

By integrating the federal standard of care set forth through the certification process into state law claims, the focus at trial instead becomes whether the product met the FAA's standards, rather than those established by expert witnesses.¹⁷⁵ The issuance of a type certificate would constitute prima facie evidence that no defect exists, shifting the burden to the plaintiff to show that the manufacturer failed to comply with the basis of its certification in that instance.¹⁷⁶ Although this may present a hurdle for plaintiffs, the federal standard of care provides a more accurate definition of a product defect, while also giving manufacturers more certainty from state to state.

As a starting point in any future Supreme Court case on the issue, the presumption against federal preemption should not be so powerful. The presumption primarily applies to the extent that Congress attempts to preempt state law in an area that the

¹⁶⁹ *Id.* at 765–66.

¹⁷⁰ *Id.* at 766.

¹⁷¹ *Id.*

¹⁷² *Id.*

¹⁷³ See Geoffrey M. Hand, *Should Juries Decide Aircraft Design?* *Cleveland v. Piper Aircraft Corp. and Federal Preemption of State Tort Law*, 29 U.S.F. L. REV. 741, 743 (1995).

¹⁷⁴ *Id.*

¹⁷⁵ See *id.* at 785–86.

¹⁷⁶ *Id.* at 802.

states have traditionally occupied.¹⁷⁷ This concern is typical to preemption cases, but is likely irrelevant in the aviation context. The Supreme Court has already acknowledged that the presumption against preemption does not apply to federal maritime safety regulation,¹⁷⁸ a field with a similar history of federal control. The Third Circuit in *Sikkelee* somehow failed to find a significant history of federal involvement in aviation safety regulation, stating that “aviation torts have been consistently governed by state law” before citing an aviation safety case decided under state law—in 1914.¹⁷⁹ While the court then cites to additional cases decided under state law, this line of jurisprudence—on its own—could hardly be considered convincing evidence that aviation law is an area of traditional state occupation. The federal government did not begin regulating aviation safety until 1926,¹⁸⁰ primarily because it was a fledgling industry. Since 1926, however, Congress has exhibited a marked interest in regulating American airways, and its regulatory schemes have shown an intent to exclude states from further regulation.¹⁸¹

From a constitutional perspective, when applied to the FAA Act, field preemption is more appropriate than conflict preemption. Regardless of the doctrine’s source—the Supremacy Clause or the Necessary and Proper Clause—field preemption seems to be the clear choice. The Supremacy Clause route is rather simple: Congress has spoken on the issue, therefore excluding states from further regulation. Under the Supremacy Clause, the Constitution and federal laws are the supreme law of the land.¹⁸² If the FAA purports to establish standards for aircraft manufacture and design, as it has through its detailed certification system,¹⁸³ states should naturally be excluded from imposing additional standards. The FAA’s multi-level certification system establishes a comprehensive safety standard for not only the aircraft, but each of its components as well.¹⁸⁴ Therefore, allowing standards

¹⁷⁷ See John C. Nettels, Jr. & Jerrick L. Irby, *Standard of Care Preemption in Aviation Litigation: Halting Steps to a Coherent Analysis*, 76 J. AIR. L. & COM. 327, 335 (2011).

¹⁷⁸ *United States v. Locke*, 529 U.S. 89, 108 (2000) (“An assumption of nonpreemption is not triggered when the State regulates in an area where there has been a history of significant federal presence.”).

¹⁷⁹ *Sikkelee v. Precision Airmotive Corp.*, 822 F.3d 680, 690 (3d Cir. 2016).

¹⁸⁰ See Air Commerce Act, Pub. L. No. 69-254, 44 Stat. 568 (1926).

¹⁸¹ See *A Brief History of the FAA*, *supra* note 6.

¹⁸² U.S. CONST. art. VI, cl. 2.

¹⁸³ See *supra* Part II.A.

¹⁸⁴ Haertlein & Barkowski, *supra* note 142, at 764.

of care defined by states to govern in aviation product liability cases would undermine the federal regulatory scheme, which has already established a standard of care for aircraft design and manufacturing.¹⁸⁵ Relying on principles of conflict preemption would provide little clarity in comparison with the current regime—although federal law may preempt conflicting state statutes, it would be up to the courts to decide when exactly this preemption has occurred, which could lead to inconsistent outcomes.¹⁸⁶

Though the Supreme Court has often stated that preemption is rooted in the Supremacy Clause,¹⁸⁷ preemption can also be viewed as a product of the Necessary and Proper Clause, as Professor Stephen A. Gardbaum argues.¹⁸⁸ The crux of his argument is that the supremacy of federal law means that when both state and federal law within a certain area are valid, the federal law overrides the state law.¹⁸⁹ Therefore, under the Supremacy Clause, state law still has full effect provided it avoids conflicting with federal law.¹⁹⁰ Preemption, on the other hand, means that states have *no* power to act in the given field, regardless of whether they conflict with any federal laws.¹⁹¹ Gardbaum argues that under the Necessary and Proper Clause, preemption is simply a means of allowing Congress to effectively exercise its enumerated powers.¹⁹² This often requires a uniform set of laws or regulations to accomplish, especially when regulating interstate commerce.¹⁹³ Aviation safety is no exception—as an integral part of interstate commerce,¹⁹⁴ it should be governed by a uniform set of laws and regulations. Aviation is a fundamental interstate industry which was quite literally invented to travel across state and national borders, making it uniquely suited for federal regulation. This is precisely what the Supreme Court made clear in *City of Burbank*: if the congressional objectives underlying the FAA Act are to be fulfilled, balancing safety and efficiency requires

¹⁸⁵ *Id.*

¹⁸⁶ See *supra* Part II.B.

¹⁸⁷ See, e.g., *Abdullah v. Am. Airlines, Inc.*, 181 F.3d 363, 366 (3d Cir. 1999).

¹⁸⁸ U.S. CONST. art. I, § 8; Gardbaum, *supra* note 28, at 781–82.

¹⁸⁹ Gardbaum, *supra* note 28, at 770.

¹⁹⁰ *Id.*

¹⁹¹ *Id.* at 771.

¹⁹² *Id.* at 782.

¹⁹³ *Id.* at 781.

¹⁹⁴ *Data & Statistics*, *supra* note 114.

a uniform and exclusive system of federal regulation.¹⁹⁵ However one chooses to interpret the source of preemption, field preemption is more consistent with the Constitution when applied to the field of aviation safety.

B. APPLYING *Tweed* to Other Circuits

Given both the importance of uniform aviation regulation and the degree to which the circuits differ in their analysis of FAAAct preemption, the Supreme Court will likely speak on the issue in the near future. Although the denial of certiorari for *Tweed* was certainly disappointing for the aviation industry, the silver lining is that a future decision may provide more clarity than one tailored to *Tweed's* facts. The Second Circuit was clear in its view that the FAAAct was intended to preempt the entire field of aviation safety, but it never indicated whether that included the applicable standard of care for design and manufacture.¹⁹⁶ Thus, a Supreme Court decision in *Tweed* may have been limited to the runway statute at issue in the case rather than addressing the broader question of the FAAAct's overall preemption power.¹⁹⁷ Although *Tweed* will not be heard before the Supreme Court, its preemption analysis should guide other circuit courts.

The preemption analysis in *Tweed* is also much simpler than the Third Circuit's approach in *Sikkelee*, making it easier for other circuit courts to apply. The Second Circuit began by acknowledging its own precedent that the FAAAct impliedly preempted the entire field of aviation safety.¹⁹⁸ Thus, the question became whether the statute fell within the scope of preemption by having a direct impact on air safety.¹⁹⁹ The Third Circuit had also previously held that the FAAAct preempted the entire field of aviation safety in *Abdullah*,²⁰⁰ but limited "aviation safety" to in-

¹⁹⁵ See *City of Burbank v. Lockheed Air Terminal, Inc.*, 411 U.S. 624, 638–39 (1973).

¹⁹⁶ See *Tweed-New Haven Airport Auth. v. Tong*, 930 F.3d 65, 75 (2d Cir. 2019), *cert. denied*, 140 S. Ct. 2508 (2020).

¹⁹⁷ See *Petition for a Writ of Certiorari, Tweed*, 930 F.3d 65 (No. 19-375). The question presented to the Court was "[d]oes the Federal Aviation Act preempt a state law limiting the length of an airport runway, thereby depriving a State from determining the size and nature of a local airport?" *Id.* at ii.

¹⁹⁸ See *Tweed*, 930 F.3d at 74 (citing *Goodspeed Airport, LLC v. E. Haddam Inland Wetlands & Watercourses Comm'n*, 634 F.3d 206, 210–11 (2d Cir. 2011)).

¹⁹⁹ See *id.*

²⁰⁰ See *Abdullah v. Am. Airlines, Inc.*, 181 F.3d 363, 376 (3d Cir. 1999).

flight operations in *Elassaad* and *Sikkelee*.²⁰¹ This narrow definition of aviation safety requires courts to perform a preemption analysis for any aviation safety law not directly governing in-flight operations. Under the *Tweed* approach, a court has only one question to answer: does the law directly impact aviation safety?

Of course, circuits yet to decide on the issue have little directly applicable precedent with which to start their FAAAct preemption analysis. In the interest of uniformity, these circuits should adopt the majority view that the FAAAct impliedly preempts the entire field of aviation safety law. These courts could undertake their own preemption analysis or simply side with the weight of persuasive authority, which the Second Circuit did in *Goodspeed*.²⁰² After adopting the majority view, the court need only determine whether the law in question falls within that field.

This simpler analysis is preferable for several reasons. First, analyzing aviation safety laws under the presumption of field preemption ensures more consistent application of the law nationwide. Analyzing congressional intent and the pervasiveness of regulation in every subset of aviation safety law runs the risk of contradicting the federal government's interest in uniformity. Second, the requirement that a state law must directly affect aviation safety in order to fall within the scope of preemption provides more certainty to state and local authorities about the extent of their regulatory power. This is especially important in the absence of a Supreme Court decision, as it will conserve state and local government resources which might otherwise be spent litigating preemption challenges brought by private parties. Finally, agreement among circuits will benefit the aviation industry by providing more geographic uniformity for manufacturers regarding design and manufacturing standards.

The *Tweed* analysis is also compatible with establishing a uniform federal standard of care for aircraft design and manufacturing. Preempting additional state-based standards of care would require proving that the federal regulations directly impact aviation safety, which is not too high a burden. FAA type certificate regulations require that aircraft and their compo-

²⁰¹ *Sikkelee v. Precision Airmotive Corp.*, 822 F.3d 680, 689 (3d Cir. 2016); *Elassaad v. Indep. Air, Inc.*, 613 F.3d 119, 127 (3d Cir. 2010).

²⁰² *See Goodspeed*, 634 F.3d at 210 n.5.

nents meet a “level of safety,”²⁰³ which seems to be an obvious case for preemption under *Tweed*. Imposing a uniform federal standard of care does not prevent plaintiffs from bringing product liability or design defect claims under state law. Rather, only state law standards of care would be preempted by the FAA regulations, as they directly impact aviation safety. The focus at trial then shifts from establishing a design defect through expert testimony to proving that the manufacturer failed in that instance to comply with the requirements of its FAA certification.²⁰⁴ This should allow for a more accurate determination of whether a design defect actually exists. This also ensures aircraft manufacturers will not be subjected to different standards of care based on where an accident occurs, which is almost entirely out of their control.

V. CONCLUSION

The American aviation industry requires a set of uniform laws and regulations in order to operate at maximum efficiency. As it stands, aircraft manufacturers are subject to a wide variety of safety standards governed by state tort law—a system which is simply incompatible with the nature of the aviation industry. Field preemption is more consistent with both the intended purpose of the FAA Act and the unique nature of the aviation industry. Unique as it is, the industry’s regulatory scheme is also very comparable to regulations on maritime safety, which has proven to be an industry suited for uniform federal control. Courts that have declined to apply field preemption to the FAA Act have done so in a misguided manner, either misinterpreting the purpose of the FAA Act or misunderstanding the nature of the aviation industry.

Integrating federal design and manufacturing standards into state law tort claims is the optimal regulatory approach for the aviation industry, as it would provide clarity and certainty for manufacturers while also simplifying the trial process in negligence and products liability claims. Insulating manufacturers from the patchwork of different standards of care will lower

²⁰³ 14 C.F.R. § 21.21(b)(1). The FAA may issue a type certificate if it “finds that they meet the applicable airworthiness requirements of this subchapter or that any airworthiness provisions not complied with are compensated for by factors that provide an equivalent *level of safety*.” *Id.* (emphasis added); see also *id.* § 21.21(b)(2) (requiring “that no feature or characteristic makes [an aircraft] unsafe”).

²⁰⁴ See Hand, *supra* note 173, at 743.

both their litigation and insurance costs, savings which can be passed onto consumers. Uniform federal standards would also ensure that the subject matter experts, not judges and juries, decide whether an aircraft or component met the applicable design standards in each case.

Ideally, the Supreme Court will step in and resolve the circuit split in the near future. Until then, the Second Circuit's decision in *Tweed* should serve as a template for other circuit courts that have yet to decide on the issue. This will ensure maximum possible uniformity in federal aviation regulation and will benefit the judicial system, state and local governments, the aviation industry, and ultimately, the consumer.



**WHOSE RIGHTS ARE THEY ANYWAY? SOLVING THE
PROBLEM OF EXTRATERRITORIAL ASSERTIONS OF
AUTHORITY IN THE AVIATION INDUSTRY**

JOHN L. SASSO*

ABSTRACT

The lack of a clear and consistent federal standard across the country harms both airline carriers and aviation employees—carriers who grapple with a myriad of regulations and airline employees who are unsure of their rights and how to exercise them. As states with expansive labor laws continue to assert extraterritorial authority to enforce their laws on airline workers who may only temporarily pass through their borders, the confusing thicket of conflicting state and federal laws only worsens. There is a clear need for an updated federal framework that takes into account the airline industry and the needs of workers in the present day; while the Railway Labor Act of 1926 (RLA) may have served its purpose in stabilizing the nascent airline industry in the 1930s, the aviation industry has outgrown its usefulness. To replace the RLA and standardize the labor rights of workers in the aviation industry, this Comment proposes amending Title 49 of the U.S. Code (Title 49) to include a chapter on labor. Because of the direct impact of the labor rights of airline workers on the safety of the aviation industry, legislation dealing with these rights falls squarely within the purview of the Federal Aviation Administration (FAA). Through the proposed amendment, the aviation industry will be made safer, workers will receive greater protections, and the squandering of judicial economy through needless litigation over the thicket of conflicting local, state, and federal law will cease.

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I. INTRODUCTION

FOR MOST EMPLOYEES, the question “Where do I work?” is not one that ever comes to mind. But for some workers, particularly those in the airline industry, a thicket of conflicting local, state, and federal laws, along with work that regularly takes them across state lines, raises serious questions about where exactly the work is being performed—and more importantly, what rights and protections apply. While workers can be certain that some federal laws like the Fair Labor Standards Act of 1938 (FLSA) or Railway Labor Act of 1926 (RLA) apply to them no

matter where they work in the country, the applicability of state and local labor laws that provide additional protections like California's wage and hour laws or New York City's paid sick leave law is much less certain. This confusion has only been magnified by some states' recent assertions of extraterritorial authority to apply their wage and hour laws to workers located outside of their borders. In light of this uncertainty and the growing number of cases stemming from it, there exists a clear need for legislative intervention to preempt conflicting state and local labor laws and to bring uniformity to the field.

Part II of this Comment provides the historical background of federal wage and labor law, with a particular focus on how it has developed for workers in the railway industry, and how that history shaped the field of airline labor law. Part III examines the current state of the conflicting federal, state, and local laws, the recent cases arising out of such conflict, and the assertions of extraterritorial authority. Part IV advocates for nationwide uniformity in labor law for aviation workers, divorcing the labor rights of airline workers from the RLA, and outlines the policy implications of letting the current thicket of conflicting laws worsen. Part V proposes an amendment to Title 49 of the U.S. Code (Title 49) that would grant the Federal Aviation Administration (FAA) the authority to regulate the labor of airline workers and establish a comprehensive framework of labor and wage laws that will preempt state and local regulations.

II. HISTORICAL BACKGROUND

Though the development of labor law in the United States has a long and storied history dating back to the slave trade, the modern statutory framework finds its roots in several critical pieces of legislation in the early twentieth century. Prior to the passage of these seminal pieces of legislation, courts around the country were striking down protections for workers as unconstitutional, including laws limiting the number of hours an employee could work in 1905,¹ prohibiting conditioning employment on an agreement to not join a union in 1915,² prohibiting child labor in 1918,³ and establishing minimum wage standards for women and children in 1923.⁴ Subsequent

¹ *Lochner v. New York*, 198 U.S. 45, 64 (1905).

² *Coppage v. Kansas*, 236 U.S. 1, 26 (1915).

³ *Hammer v. Dagenhart*, 247 U.S. 251, 276 (1918).

⁴ *Adkins v. Children's Hospital*, 261 U.S. 525, 561–62 (1923).

acts like the National Labor Relations Act of 1935 (NLRA)⁵ and the FLSA⁶ were radical grants of rights and protections to employees in a legal environment that had previously been inimical to them. These two acts built on the foundations of others like the RLA,⁷ which provided much needed protections only to workers in certain industries—that is, the railroad industry, and later, airline industry. These acts, and the subsequent court decisions upholding them, signaled a sea change in American jurisprudence toward protecting the rights of workers and, to this day, serve as the foundation of labor law in the United States.

A. FOUNDATIONS OF AIRLINE WORKERS' RIGHTS IN THE UNITED STATES: THE INHERITED HISTORY OF RAILWAY WORKERS' COLLECTIVE BARGAINING

One of the first instances of collective bargaining and its subsequent suppression by the judiciary came out of Pennsylvania in the late 1700s. There, a group of shoemakers formed a proto-union to respond to the increasing labor hardships of an industrializing society and to secure fair wages for its members.⁸ This union, however, did not have a long lifespan, and after just ten years, a suit was brought against members of the union for the criminal charge of conspiracy in *Commonwealth v. Pullis*.⁹ Eight of the union's leaders were found guilty of the crime of illegally conspiring to raise their wages, effectively criminalizing unions in Pennsylvania.¹⁰ The result of *Pullis* left the legal status of unions in question in other parts of the country, and there were at least eighteen other instances of early union members being prosecuted for conspiracy over the course of the next three decades.¹¹

It would not be until 1842 that a court would declare that labor unions were in fact legal enterprises and not criminal conspiracies.¹² That case, *Commonwealth v. Hunt*, coincidentally also dealing with shoemakers, set the stage for the legality of collec-

⁵ National Labor Relations Act, 29 U.S.C. §§ 151–69.

⁶ Fair Labor Standards Act, 29 U.S.C. §§ 201–03.

⁷ Railway Labor Act, 45 U.S.C. §§ 151–88.

⁸ Walter Nelles, *The First American Labor Case*, 41 YALE L.J. 165, 166–67 (1931).

⁹ 3 Doc. Hist. 59 (Phila. Mayor's Ct. 1806); Omar Swartz, *Defending Labor in Commonwealth v. Pullis: Contemporary Implications for Rethinking Community*, 8 HOLY CROSS J.L. & PUB. POL'Y 79, 80 n.10 (2004).

¹⁰ *Id.* at 80.

¹¹ Edwin E. Witte, *Early American Labor Cases*, 35 YALE L.J. 825, 826 (1926).

¹² *Commonwealth v. Hunt*, 45 Mass. 111, 136 (1842).

tive bargaining in the United States,¹³ and Chief Justice Shaw's majority opinion is widely regarded as "the Magna [Carta] of American trade-unionism."¹⁴ In *Hunt*, Chief Justice Shaw made the distinction between the mere *concept* of a combination of workers seeking to use collective bargaining to regulate their wages—a union—and the *methods* a union might employ to secure higher wages or other protections.¹⁵ By drawing such a line, Chief Justice Shaw reframed the debate from whether a union itself amounted to an illegal conspiracy to whether the objectives sought by the union and methods used to accomplish such objectives were themselves legal.¹⁶ Though the debate over the precise demarcation of when union action crosses into illegal territory continues to this day, Chief Justice Shaw's formulation would prove highly influential, with only three conspiracy cases in the subsequent twenty years brought against workers.¹⁷ Though Chief Justice Shaw laid the groundwork for the legality of unions and their ability to strike lawfully, his opinion would do little to stem oncoming tides of conflict between workers and their employers in an increasingly industrial society.¹⁸

Strikes would prove to be the tool of choice for American workers in combatting poor working conditions, low wages, and overall governmental hostility to the interests of workers.¹⁹ The tensions between workers and their employers came to a head in 1877, when workers—frustrated with repeated pay cuts, shouldering the burden of an economic depression, and the efforts of employers to stifle the potency of unions—staged what would be the first nationwide strike in American history, with estimates of nearly 500,000 workers walking out from their jobs in July 1877.²⁰ Characterized as the "Great Strike" or the "Great Insurrection," the strikes of July 1877 began along America's extensive railroad system.²¹ No longer constrained to a mere local group of disgruntled shoemakers like the unions in *Pullis* and *Hunt*, the Great Strike involved workers of the railroad corpora-

¹³ *Id.*

¹⁴ LEONARD LEVY, *THE LAW OF THE COMMONWEALTH AND CHIEF JUSTICE SHAW* 183 (1957).

¹⁵ Witte, *supra* note 11, at 828.

¹⁶ *Id.*

¹⁷ LEVY, *supra* note 14, at 206.

¹⁸ Witte, *supra* note 11, at 828.

¹⁹ MICHAEL A. BELLESILES, *1877: AMERICA'S YEAR FOR LIVING VIOLENTLY* 144 (2010).

²⁰ *Id.* at 145.

²¹ *Id.*

tions—some of the largest and most influential corporations in America at the time—the same corporations that played a critical role in America’s rapid industrialization.²²

The increased stakes and heightened impacts of the railway worker strikes resulted in an increase in the severity of the response—this time, rather than taking the striking unions to court, corporate leaders resorted to force almost immediately.²³ When local police forces and state militias—many of them holding sympathies to the cause of the striking workers²⁴—were unable or *unwilling* to enact the will of corporate leaders, the leaders turned to recently inaugurated President Rutherford B. Hayes.²⁵ Indebted to the corporate leaders who had supported his presidential campaign, President Hayes authorized federal troops to suppress the strikes—a rarely used option—and the Great Strike marked the first time federal troops were used on a nationwide scale to quash a strike.²⁶

President Hayes’s decision to acquiesce to the demands of railway corporations and authorize the use of federal force would ultimately end the strikes, but not without bloodshed,²⁷ destruction of property,²⁸ and the garnering of much public support for the unions.²⁹ The victory of the corporations would prove to be a Pyrrhic one, as the landscape of labor relations had been forever changed.³⁰ It had become clear to the workers that they could not rely on the current governmental institutions to side with their interests over those of the wealthy railway owners,³¹ and it had become clear to the nation’s elite that the influence and power of a unified working class could have devastating results for the country.³²

Responses to the new landscape were mixed; some industrialists raised wages in order to keep their workers happy and loyal,³³ while others like Andrew Carnegie saw only the dangerous aspects of unions and conditioned hiring workers on their

²² *Id.* at 145–46.

²³ *Id.* at 145.

²⁴ *Id.* at 149.

²⁵ *Id.* at 146.

²⁶ *Id.* at 145–46.

²⁷ *Id.* at 175.

²⁸ *Id.* at 155–58.

²⁹ *Id.* at 156.

³⁰ *Id.* at 190.

³¹ *Id.* at 179.

³² *Id.* at 175.

³³ *Id.* at 168.

agreement to not join one³⁴—a practice that would later become known as a “yellow-dog contract.”³⁵ Workers who had lost faith in elected public officials turned to the ballot box in order to secure their rights.³⁶ And, having witnessed the existential threat that a striking railway workforce imposes on the country’s economy,³⁷ it became imperative for the political leaders to prevent such a massive strike from occurring again. The federal government’s early attempts to mediate the interests of the railway owners and workers would take place through a series of failed legislation that ultimately culminated in the still extant RLA in 1926.³⁸

B. THE LEAD UP TO MODERN LAW GOVERNING AIRLINE EMPLOYEES: BACKGROUND TO THE RAILWAY LABOR ACT

Still hot on the heels of the Great Strike of 1877, political leaders in state governments had great incentive to encourage harmonious resolution of disputes between unions and employers. To facilitate such resolution, several states began passing legislation to arbitrate labor disputes as early as 1878, though the state statutes ultimately proved to be feckless.³⁹ However, these statutes provided the groundwork for a federal statute’s inception. Given the recent history of railway strikes and the railway industry’s susceptibility to such strikes, the impact those strikes had on the national economy, and the fact that railways were clearly engaged in interstate commerce, it is of little surprise that the first federal law on labor arbitration would arise in the context of railway labor disputes.⁴⁰ As a result, President Grover Cleveland signed into law the Arbitration Act of 1888 (Arbitration Act), which provided an arena for voluntary arbitration of railway labor disputes.⁴¹ However, much like the previously ineffective state laws, voluntary arbitration failed to solve the disagreements between the unions and railway owners: in the Arbitration Act’s ten-year lifespan, voluntary arbitration was

³⁴ *Id.* at 154.

³⁵ Joel I. Seidman, *The Yellow Dog Contract*, 46 Q.J. ECON. 348, 348 (1932).

³⁶ BELLESILES, *supra* note 19, at 187–88.

³⁷ *Id.* at 175.

³⁸ Dennis R. Nolan & Roger I. Abrams, *American Labor Arbitration: The Early Years*, 35 U. FLA. L. REV. 373, 386 (1983).

³⁹ *Id.* at 380–81.

⁴⁰ *Id.* at 382.

⁴¹ *Id.*; Arbitration Act of 1888, Pub. L. No. 64-252, 39 Stat. 721 (1888) (repealed 1898).

not used once.⁴² The Arbitration Act's requirement of impartial and disinterested mediators, slow-moving bureaucracy, and inability to bring both sides to the table resulted in a wholly ineffective piece of legislation, which was quickly replaced.⁴³

The Arbitration Act's follow-up, the Erdman Act of 1898 (Erdman Act),⁴⁴ sought to correct the deficiencies of the Arbitration Act.⁴⁵ The Erdman Act removed the requirement of having impartial mediators and established a permanent commission with the power to prevent strikes and firings during an investigation.⁴⁶ With the exception of a single failed attempt to invoke an arbitration proceeding, the Erdman Act was not used at all during the first eight years of its existence.⁴⁷ But this changed beginning in 1906, and it was invoked in sixty cases from 1906 to 1913.⁴⁸ The most important change was perhaps the ability to appeal arbitration awards to federal courts.⁴⁹ Unfortunately, the increased use resulted in increased disapproval of the Erdman Act, as decisions affecting millions of dollars and thousands of workers were often made by an outside mediator with little to no knowledge of the industry.⁵⁰ Eventually, dissatisfaction with the mediators' decisions led to both unions and railway leaders refusing to use the Act, and threats of an incoming strike galvanized Congress to pass yet another version of the bill.⁵¹

The 1913 edition of the legislation, the Newlands Labor Act (Newlands Act),⁵² again sought to correct perceived deficiencies in the previous versions, this time establishing a permanent three-member board of remediation and conciliation utilizing mediators from within the industry.⁵³ This version received more use than previous iterations, handling seventy-one disputes between 1913 and 1917, though it ran into an impasse in 1916 after unions asserted that their demand for an eight-hour

⁴² Nolan & Abrams, *supra* note 38, at 382.

⁴³ *Id.* at 383.

⁴⁴ Erdman Act of 1898, ch. 370, 30 Stat. 424 (1898) (repealed 1913).

⁴⁵ Nolan & Abrams, *supra* note 38, at 383.

⁴⁶ *Id.*

⁴⁷ *Id.*

⁴⁸ *Id.* at 383–84.

⁴⁹ *Id.* at 385.

⁵⁰ *Id.* at 384.

⁵¹ *Id.*

⁵² Mediation, Conciliation, and Arbitration Between Carriers and Employees, ch. 6, 38 Stat. 103 (1913) (repealed 1926).

⁵³ Nolan & Abrams, *supra* note 38, at 384–85.

workday was not a question suitable for the three-member board to resolve.⁵⁴

With the threat of yet another strike mounting, Congress passed the Adamson Eight-Hour Act of 1916 (Adamson Act),⁵⁵ which established an eight-hour workday and overtime pay for railway workers.⁵⁶ Fervently contested by railway owners, the Adamson Act was litigated all the way up to the Supreme Court, and, in 1917, the Supreme Court upheld the ability of Congress to regulate the workday and overtime compensation for interstate railway workers,⁵⁷ a surprising change of pace for a Court that had struck down New York's attempt to limit the amount of hours worked in a bakery to ten hours a day as unconstitutional just twelve years prior.⁵⁸

While the goings-on of the railway industry had largely been an insular affair, in 1918, the mounting need for a nationally unified railway entity due to the demands of World War I resulted in the nationalization of the railway industry under the Railway Administration Act.⁵⁹ The nationalization of the country's railway system would last a few years, until 1920, when the railways returned to private ownership.⁶⁰ However, the relative harmony in which railways operated for the years of nationalization signaled that improvements still could be made to the Newlands Act, and as a result, Congress passed yet another version, the Transportation Act of 1920 (Transportation Act).⁶¹

The Transportation Act, however, largely regressed from the improvements made in previous iterations, with both labor unions and railway executives seeking to replace the legislation.⁶² The Transportation Act mandated use of arbitration proceedings, but the decisions were ultimately toothless because they were not legally enforceable.⁶³ However, contrary to prior laws, the Transportation Act was widely used, and the newly established board was inundated with nearly 14,000 cases over its five-

⁵⁴ *Id.* at 385.

⁵⁵ Adamson Eight-Hour Act, Pub. L. No. 64-252, 39 Stat. 721 (1916) (current version at 49 U.S.C. §§ 28301-02).

⁵⁶ Nolan & Abrams, *supra* note 38, at 385.

⁵⁷ *Wilson v. New*, 243 U.S. 332, 359 (1917).

⁵⁸ *Lochner v. New York*, 198 U.S. 45, 63-64 (1905).

⁵⁹ Railway Administration Act, Pub. L. No. 65-107, 40 Stat. 451 (1918) (repealed 1920); Nolan & Abrams, *supra* note 38, at 385.

⁶⁰ *Id.*

⁶¹ *Id.*; Transportation Act, Pub. L. No. 66-152, 41 Stat. 456 (1920).

⁶² Nolan & Abrams, *supra* note 38, at 386.

⁶³ *Id.* at 385.

year lifespan.⁶⁴ The dissatisfaction from both railway owners and union officials led the parties to begin drafting their own version of the law, which was then proposed to Congress.⁶⁵ That version was ultimately passed in 1926 as the RLA.⁶⁶

The RLA, further amended in 1934 to fix some deficiencies and again in 1936 to include the airline industry within the Act's purview, remains the governing law over labor relations in both the railway and airline industries to this day.⁶⁷ The RLA governs the handling of disputes within the industries, utilizing a single organization, the National Railroad Adjustment Board (Board).⁶⁸ As a result of comprehensive negotiations, the RLA contains significant concessions for both sides: labor unions largely gave up their ability to strike without first going through the Board, but gained the ability to sue employers in federal court for violations of the RLA.⁶⁹ The ability to bring suits for violation of the RLA on their own volition distinguishes railway and airline workers from most other employees in the country, who are subject to the NLRA of 1935, which gives the National Labor Relations Board exclusive standing to sue.⁷⁰ This right is a direct result of the long-fought history of railway workers in the early stages of an industrializing United States.

While the 1934 amendments sought to correct several deficiencies of the original Act, the 1936 amendments were added to extend the Act to the fledgling airline industry.⁷¹ The RLA was extended to the airline industry for a myriad of reasons: similar to the railway industry, the airline industry dealt with inter-

⁶⁴ *Id.*

⁶⁵ *Id.* at 386.

⁶⁶ *Id.*; Railway Administration Act, Pub. L. No. 69-257, 44 Stat. 577 (1926) (current version at 45 U.S.C. §§ 151-88).

⁶⁷ Nolan & Abrams, *supra* note 38, at 386.

⁶⁸ *Id.* at 387.

⁶⁹ *Id.* at 387-88.

⁷⁰ See National Labor Relations Act, 29 U.S.C. § 152(2).

The term "employer" includes any person acting as an agent of an employer, directly or indirectly, but shall not include the United States or any wholly owned Government corporation, or any Federal Reserve Bank, or any State or political subdivision thereof, or any person subject to the Railway Labor Act as amended from time to time, or any labor organization (other than when acting as an employer), or anyone acting in the capacity of officer or agent of such labor organization.

Id. (emphasis added).

⁷¹ A. J. Harper II, *Major Disputes Under the Railway Labor Act*, 35 J. AIR L. & COM. 3, 3 (1969).

state commerce, making it ripe for federal legislation, and the airline industry had an immediate need for thorough and effective regulations, which the RLA could provide.⁷² By doing so, it established uniformity between the industries.⁷³ Additionally, by 1936, nearly every other facet of the airline industry was subject to close regulation, and there was no compelling reason to exclude labor from the norm.⁷⁴ However, while the RLA undoubtedly provided a much-needed framework at the industry's emergence, the airline industry has continued to be burdened by a system that was not designed with its needs in mind.⁷⁵ As will be discussed in Part IV.A, the modern needs of the airline industry have only exacerbated its growing pains within the framework of the RLA, and either an amendment to existing federal frameworks or a new statute is required to adequately respond to the current landscape.

C. NON-UNION LABOR LAW DEVELOPMENTS: THE RISE AND FALL OF THE *LOCHNER* ERA

While the development of the RLA was largely a fifty-year process of iterative legislation insulated from other labor developments in the United States, the modern rights of both railway and airline workers are further enmeshed in a broader net of protections, combining the RLA, Supreme Court precedent, and other federal legislation such as the FLSA of 1938.

Around the same time that the Supreme Court upheld the Adamson Act in 1917, limiting the working day of railway employees to eight hours, the Court had been consistently striking down other extensions of protections to workers.⁷⁶ Dubbed the “*Lochner* era” after the Court’s ruling in *Lochner v. New York* (striking down a state law limiting the working day to ten hours), the Court’s decisions in this era were characterized by a laissez-faire approach to the labor market.⁷⁷ Strictly protecting the principle that individuals were free to enter into contracts of

⁷² *Id.*

⁷³ *Id.*

⁷⁴ James B. Frankel, *Judicial and Regulatory Decisions*, 18 J. AIR L. & COM. 461, 461–62 (1951).

⁷⁵ *Id.* at 477–79.

⁷⁶ *See supra* Part II.

⁷⁷ Stephen A. Siegel, *Lochner Era Jurisprudence and the American Constitutional Tradition*, 70 N.C. L. REV. 1, 15–17 (1991).

their choice, the *Lochner* Court rejected the idea of a “paternal government” interfering with the liberty of contract.⁷⁸

However, the *Lochner* era began on shaky ground, as it was not fully supported by precedent, and it would be a mere three decades before the *Lochner* jurisprudence fully collapsed in 1937.⁷⁹ The laissez-faire principles undergirding the *Lochner* era stood at odds with an earlier ruling in *Holden v. Hardy*, which upheld regulations preventing individuals from contracting in ways that harmed themselves.⁸⁰ In fact, it would only be twelve years before *Lochner*’s specific holding regarding the validity of maximum hours legislation would be overruled, though the pernicious logic behind its reasoning would persist.⁸¹ In *Bunting v. Oregon*, the Court upheld a state law limiting the working day to ten hours and providing time-and-a-half overtime for hours worked past the limit, overruling the particular holding in *Lochner*.⁸²

Despite *Bunting* overturning *Lochner*, the era would continue with some of its most notorious decisions in the years to come. Just a year after *Bunting*, the Court struck down a federal law prohibiting the sale of products made by child labor in interstate commerce in *Hammer v. Dagenhart*.⁸³ The decision in *Adkins v. Children’s Hospital* soon followed, where the Court struck down another federal law providing protections for workers, this time mandating a minimum wage for female employees in the District of Columbia.⁸⁴ Grasping at straws to distinguish the decision from that of *Bunting*, the Court focused on the difference between laws regulating wages and those regulating hours as sufficient grounds to differentiate it from *Bunting*.⁸⁵ The *Lochner* era’s tenuous grasp of logic would soon lead to its downfall, and the overruling of *Adkins* sounded the death knell of the era. In 1937, the Court heard yet another case regarding the minimum wage, and in *West Coast Hotel Co. v. Parrish*, the Court struck the killing blow to the *Lochner* jurisprudence and upheld a minimum wage.⁸⁶

⁷⁸ *Id.* at 9.

⁷⁹ *Id.* at 52.

⁸⁰ *Id.* at 19.

⁸¹ *Id.* at 19–20.

⁸² *Id.* at 19–20, 19 n.78; *Bunting v. Oregon*, 243 U.S. 426, 439 (1917).

⁸³ 247 U.S. 251, 276 (1918).

⁸⁴ *Adkins v. Children’s Hosp.*, 261 U.S. 525, 560–61 (1923).

⁸⁵ *Id.* at 550–51.

⁸⁶ *W. Coast Hotel Co. v. Parrish*, 300 U.S. 379, 400 (1937).

With the looming threat of the Court striking down labor regulations finally over, hardly a year elapsed between the fall of the *Lochner* era and the passage of a comprehensive set of federal labor regulations. The FLSA established a national base level minimum wage, prohibited the employment of children, capped the work week at forty-four hours, and provided time-and-a-half overtime pay on work past the cap—a monumental expansion of worker protections, and one that President Franklin D. Roosevelt characterized as the most important piece of New Deal legislation next to the Social Security Act.⁸⁷ The FLSA would be challenged shortly after on the grounds that it could not proscribe child labor given the precedent of *Hammer v. Dagenhart*, and the Supreme Court was given a chance to strike down the FLSA. However, in *United States v. Darby Lumber Co.*, the Court unanimously upheld the FLSA, abolishing the last vestiges of the *Lochner* era and overturning *Hammer*.⁸⁸ While the FLSA has been amended many times since its passage, the core of the legislation nonetheless persists as the national bare minimum of worker rights and protections for employees engaged in interstate commerce.

III. CURRENT STATE OF THE LAW

Bolstered by both the RLA and the FLSA, in addition to applicable state and local laws, it would seem at first glance that airline workers must be some of the most protected workers in the country. While airline workers benefit in some areas from the years of collective labor bargaining that led to the passing of the RLA, the RLA was written with railway workers in mind, and it continues to be a poor fit for the airline industry. For employees in the airline industry, the multi-jurisdictional nature of their work, combined with conflicting state and local laws and the lack of a uniform federal standard to preempt such laws, subjects airline workers to a confusing thicket of inconsistent laws that can obfuscate their rights.

⁸⁷ Howard D. Samuel, *Troubled Passage: The Labor Movement and the Fair Labor Standards Act*, MONTHLY LAB. REV. Dec. 2000, at 32, 32, 36; see also Jared Bernstein & Ross Eisenbrey, *Eliminating the Right to Overtime Pay*, ECON. POL'Y INST. (June 25, 2003), https://www.epi.org/publication/briefingpapers_flsa_jun03/ [<https://perma.cc/V49R-7LTK>].

⁸⁸ *United States v. Darby Lumber Co.*, 312 U.S. 100, 116–17 (1941).

At odds with the age-old legal maxim of *ubi jus ubi remedium* (where there is a right, there is a remedy),⁸⁹ there can be no remedy if a worker does not know that she has that right to begin with. Especially given the fact that federal legislation like the RLA or FLSA merely sets out the bare minimum protections that are often exceeded by state and local laws like California's wage and hour law⁹⁰ or Washington's Paid Sick Leave Act (PSLA),⁹¹ an airline worker uncertain of her rights may in fact end up with fewer protections than a worker who never leaves the city or state and is certain of her rights.

A. THE BARREN FIELD: A LACK OF CLEAR FEDERAL PREEMPTION

A critical issue for a worker in determining her rights is the lack of clarity on what laws apply when and the overall absence of unambiguous federal protections. On the whole for workers outside of the airline industry, the lack of federal preemptive standards tends to benefit workers given the bare minimum standards presented in the federal statutes and the additional protections workers receive through more comprehensive state and local laws. Many states have passed higher wage and hour rates than the FLSA base level, with twenty-nine states (plus Washington, D.C., Guam, and the Virgin Islands) exceeding the federal minimum wage.⁹² The ability of states to pass higher standards was clearly an intentional feature of the FLSA and is laid out in § 218(a) of the Act. Colloquially referred to as the "savings clause," the FLSA states that "[n]o provision of this Act or of any order thereunder shall excuse noncompliance with any Federal or State law or municipal ordinance" establishing a higher minimum wage or shorter maximum work week.⁹³ As has been held by the Third Circuit, "the statute's plain language evinces a clear intent to *preserve rather than supplant* state law."⁹⁴ The savings clause allows states and local municipalities to ex-

⁸⁹ Donald H. Zeigler, *Rights, Rights of Action, and Remedies: An Integrated Approach*, 76 WASH. L. REV. 67, 71, 78 n.47 (2001).

⁹⁰ CAL. CODE REGS. tit. 8, § 11090 (2020).

⁹¹ WASH. REV. CODE § 49.46.210 (West 2020).

⁹² See *Consolidated Minimum Wage Table*, U.S. DEP'T OF LAB.: WAGE & HOUR DIV. (Jan. 1, 2020), <https://www.dol.gov/agencies/whd/mw-consolidated> [<https://perma.cc/5YX7-RP4X>].

⁹³ 29 U.S.C. § 218(a).

⁹⁴ *Knepper v. Rite Aid Corp.*, 675 F.3d 249, 262 (3d Cir. 2012) (emphasis added); see also *Spoerle v. Kraft Foods Glob., Inc.*, 614 F.3d 427, 430 (7th Cir. 2010) ("According to § 218(a), . . . state law supersedes the collective bargaining agreement.").

tend greater protections to workers in their jurisdiction than would otherwise be available through the FLSA.

Though the RLA does not have a corollary to the savings clause, the Supreme Court has repeatedly instructed that RLA preemption “extends only as far as necessary to protect the role of labor arbitration in resolving [collective bargaining agreement] disputes.”⁹⁵ In line with this precedent, the RLA only preempts state law when a state law claim arises entirely from or requires construction of a collective bargaining agreement.⁹⁶ As such, the RLA does not preempt state law claims to enforce rights independent of a collective bargaining agreement, such as minimum labor standards.⁹⁷

Since neither the FLSA nor the RLA preempt state law in the vast majority of circumstances, this would ordinarily simplify the analysis—a worker is subject to the standards in the RLA or FLSA, then any standards in the state or municipality of her job that exceed the federal baseline. However, this analysis is confounded when an employee does work in multiple jurisdictions, such as an employee who spends most of her time working in Dallas, Texas, but who attends a trade conference in Los Angeles, California. In that scenario, the labor laws of both Dallas and Texas would apply to the worker as she does her work in Dallas, but when she arrives in Los Angeles, she becomes subject to the laws and protections of California and local laws of Los Angeles. As the Supreme Court has held, “[a] basic principle of federalism is that each state may make its own reasoned judgment about what conduct is permitted or proscribed within its borders.”⁹⁸ This principle was upheld in *Sullivan v. Oracle*, where the California Supreme Court held that the California Labor Code’s overtime protections applied to work performed in California by out-of-state plaintiffs on short-term trips.⁹⁹

However, dealing with airline employees who can potentially cross hundreds of state borders in each pay period pushes this scenario to its logical extreme, with potentially multiple different and conflicting labor standards applying to employees

⁹⁵ *Alaska Airlines, Inc. v. Schurke*, 898 F.3d 904, 913–14 (9th Cir. 2018) (en banc), cert. denied, 139 S. Ct. 1445 (2019); see also *Hawaiian Airlines, Inc. v. Norris*, 512 U.S. 246, 262–64 (1994); *Lingle v. Norge Div. Magic Chef, Inc.*, 486 U.S. 399, 413 (1988).

⁹⁶ *Matson v. United Parcel Serv., Inc.*, 840 F.3d 1126, 1132–33 (9th Cir. 2016).

⁹⁷ *Norris*, 512 U.S. at 256.

⁹⁸ *State Farm Mut. Auto. Ins. Co. v. Campbell*, 538 U.S. 408, 422 (2003).

⁹⁹ *Sullivan v. Oracle Corp.*, 254 P.3d 237, 241 (Cal. 2011).

within a span of minutes. This issue is only confounded further by states that then assert extraterritorial jurisdiction to apply their wage and hours laws to workers who are neither residents of the state nor employees of a resident employer. The RLA's inability to deal with this problem through federal preemption only furthers the need to divorce the airline industry from this outdated and ill-fitting piece of legislation.

B. THE STICKY HAND: EXTRATERRITORIAL ASSERTION OF STATE WAGE AND HOURS LAWS

Some states have begun to apply their wage and hour statutes to employees who live or work outside of the state's jurisdiction. Unlike the FLSA, which expressly limits its application to work performed within the United States and its territories,¹⁰⁰ many state wage and hour statutes hold no such geographic limitations. There have been four categories of these laws being applied extraterritorially to: (1) "out-of-state employees working in-state for resident employers"; (2) "out-of-state employees working out-of-state for resident employers"; (3) "resident employees working in-state for out-of-state employers"; and (4) "resident employees working out-of-state for resident employers."¹⁰¹

First, in terms of laws being applied extraterritorially to out-of-state employees working in-state for resident employers, California,¹⁰² Illinois,¹⁰³ and Massachusetts¹⁰⁴ have extended their protections to all instances of work performed in the state,

¹⁰⁰ 29 U.S.C. § 213(f).

Employment in foreign countries and certain United States territories: The provisions of sections 206, 207, 211, and 212 of this title shall not apply with respect to any employee whose services during the workweek are performed in a workplace within a foreign country or within territory under the jurisdiction of the United States other than the following: a State of the United States; the District of Columbia; Puerto Rico; the Virgin Islands; outer Continental Shelf lands defined in the Outer Continental Shelf Lands Act . . . ; American Samoa; Guam; Wake Island; Eniwetok Atoll; Kwajalein Atoll; and Johnston Island.

Id.

¹⁰¹ Deborah F. Buckman, Annotation, *Extraterritorial Application of State Wage and Hours Laws*, 29 A.L.R. 7th, art. 7 (2017).

¹⁰² *Maez v. Chevron Texaco Corp.*, No. C 04-00790 JSW, 2005 WL 1656908, at *2, *8-9 (N.D. Cal. July 13, 2005) (rejecting Defendant's argument that California law was inapplicable); *Sullivan v. Oracle Corp.*, 254 P.3d 237, 243 (Cal. 2011).

¹⁰³ *Adams v. Catrambone*, 359 F.3d 858, 863 (7th Cir. 2004) (applying Illinois law).

¹⁰⁴ *Dow v. Casale*, 989 N.E.2d 909, 913 (Mass. App. Ct. 2013).

regardless of the resident status of the employee. Second, for out-of-state employees working out-of-state for resident employers, Kansas,¹⁰⁵ Kentucky,¹⁰⁶ and Washington¹⁰⁷ have held that their state wage and hour statutes may apply to protect employees who may never have even set foot in the state as long as their employer was based in that state. Third, instances of resident employees working in-state for out-of-state employers and having access to the wage and labor laws of the state have been found in some capacity in Connecticut,¹⁰⁸ Delaware,¹⁰⁹ and Massachusetts.¹¹⁰

The fourth category, and perhaps the most relevant category for workers within the airline industry, deals with the extraterritorial assertion of wage and labor laws for resident employees working out-of-state for a resident employer. So far, California,¹¹¹ New York,¹¹² Pennsylvania,¹¹³ and Washington¹¹⁴ have extended such rights in some capacity. *Bernstein*, out of the Northern District of California, dealt precisely with the issue of whether flight attendants, who are based in California but spend only about a quarter of their time in the state, have access to the broad protections provided by California's wage and labor laws.¹¹⁵ The court held that the workers fell under the protec-

¹⁰⁵ *Harlow v. Sprint Nextel Corp.*, 574 F. Supp. 2d 1224, 1226–27 (D. Kan. 2008) (applying Kansas law).

¹⁰⁶ *Himmelheber v. ev3, Inc.*, No. 3:07-CV-593-H, 2008 WL 360694, at *11 (W.D. Ky. Feb. 8, 2008) (applying Kentucky law).

¹⁰⁷ *Woods v. Mitchell Bros. Truck Line, Inc.*, No. 3304-6-II, 2008 WL 496803, at *2 (Wash. Ct. App. Feb. 26, 2008).

¹⁰⁸ *Goldberg v. Goodwill Indus.*, No. CV054009642, 2006 WL 224124, at *14–15 (Conn. Super. Ct. Jan. 3, 2006).

¹⁰⁹ *Redick v. E Mortg. Mgmt., LLC*, No. 11-1260-GMS-CJB, 2013 WL 1089710, at *1–2, *41–42 (D. Del. Mar. 15, 2013).

¹¹⁰ *Taylor v. E. Connection Operating, Inc.*, 988 N.E.2d 408, 409 (Mass. 2013).

¹¹¹ *Bernstein v. Virgin Am., Inc.*, 227 F. Supp. 3d 1049, at 1055–56, 1063–64 (N.D. Cal. 2017) (applying California law); *Tidewater Marine W., Inc. v. Bradshaw*, 927 P.2d 296, 309 (Cal. 1996).

¹¹² *Heng Guo Jin v. Han Sung Sikpoom Trading Corp.*, No. 13-CV-6789 CBA LB, 2015 WL 5567073, at *25–26 (E.D.N.Y. Sept. 21, 2015) (denying summary judgment on Defendant's extraterritoriality argument because "[n]either party has briefed the choice of law analysis").

¹¹³ *Truman v. DeWolff, Boberg & Assocs., Inc.*, No. 07-01702, 2009 WL 2015126, at *10–11 (W.D. Pa. July 7, 2009) (noting that "[n]othing within the language of the statute implies that work performed in a foreign country by a Pennsylvania resident does not deserve the same protections as work performed within Pennsylvania by the same resident and for the same company").

¹¹⁴ *Bostain v. Food Exp., Inc.*, 153 P.3d 846, 858 (Wash. 2007); *Miller v. Farmer Bros. Co.*, 150 P.3d 598, 606 (Wash. Ct. App. 2007).

¹¹⁵ *Bernstein*, 227 F. Supp. 3d at 1060.

tion of California's laws and rejected the idea that "job situs [is] the dispositive factor to determine whether California's wage and hour laws apply."¹¹⁶ This view, read in conjunction with the California Supreme Court precedent coming out of *Sullivan v. Oracle*, covers both those who are based in the state but perform the majority of their work outside the state, and those based outside the state who perform some work within the state.¹¹⁷

The holdings in *Bernstein* and *Sullivan* were reinforced in *Goldthorpe v. Cathay*, which dealt with pilots who were based in California but spent the majority of their time either in federal airspace or outside the country.¹¹⁸ The court held that the pilots were still under the protection of California's wage and hours laws, reasoning that there was:

no categorical rule that California's wage and hour protections can only apply if most of an employee's work is performed within the state, and the presumption against extraterritorial application does not prevent the application of California wage and hour law to transportation workers based in California who travel interstate. Absent such a categorical rule, and absent the presumption against extraterritorial application, it is difficult to think of a reason why California law should not apply in this situation. After all, California's wage and hour laws . . . were designed to protect workers, and to prevent employers from exploiting their bargaining advantage by denying workers fair wages and tolerable working conditions. Courts must construe these laws "with an eye towards the purposes [they] were meant to serve, and the type of person they were meant to protect."¹¹⁹

While this bodes well for airline workers who live or frequently work in California, what of airline workers across the country?

For airline workers in Washington, the question is much more complicated, and they only receive the benefits of Washington's PSLA if they are a "Washington-based" employee.¹²⁰ This is an ad hoc determination and considers a multitude of factors such as: (1) where the employment agreement was made; (2) the employee's domicile; (3) the location of the employer's base of operations; (4) the location of the employee's base of operations;

¹¹⁶ *Id.* at 1059–60.

¹¹⁷ *Sullivan v. Oracle Corp.*, 254 P.3d 237, 243 (Cal. 2011).

¹¹⁸ *Goldthorpe v. Cathay Pac. Airways*, 279 F. Supp. 3d 1001, 1005 (S.D. Cal. 2018).

¹¹⁹ *Id.* at 1004–05 (internal citations omitted).

¹²⁰ *Air Transp. Ass'n Am. v. Wash. Dep't Lab. & Indus.*, 410 F. Supp. 3d 1162, 1168 (W.D. Wash. 2019).

(5) whether the employer maintains a work site in Washington; (6) whether the employee leaves Washington as part of the job; (7) where work assignments come from; (8) where supervisors are located; (9) the amount of work done in Washington; and (10) the length of the contract to work in Washington.¹²¹ Though Washington is willing to give less weight to certain factors depending on the circumstances, e.g., “[f]or flight crew, who do not spend very much time working in any one place, [Washington Department of Labor & Industries] has indicated that location of work is given less weight,” even a seemingly dispositive factor like being domiciled at a Washington airport would not be enough to grant flight crew protections under the law without satisfying other factors.¹²² Given the relative stringency of Washington’s determination for granting protections compared to the leniency of California’s, it does not take much to imagine a scenario in which an airline worker whose base of operations is out of a Washington airport and who is a resident of Washington, but whose employer is based out of California and who frequently travels to California as a result, receives much greater protections under California labor laws than those of her own home state of Washington.

Thus arises the problem of extraterritorial jurisdiction—though California is seeking to increase the rights and protections of workers, the thought that an out-of-state domiciled and working employee would have greater protections in California than in her home state runs contrary to common sense. And a right without the knowledge that one has it is hardly a right at all.

Additionally, this confusion harms employers as well as employees. While employees may not know their rights, the only thing they lose for that ignorance is their ability to exercise the right. However, the stakes are much higher for airline corporations, who can rack up massive civil liability to their employees if found to have violated provisions of either the FLSA or state law.¹²³ In the case of *Bernstein*, Virgin Airlines racked up over \$85 million in backpay and civil and statutory liabilities.¹²⁴ Employers are stuck wading through the murk to try to figure out

¹²¹ *Id.*

¹²² *Id.*

¹²³ E.g., John Petrick, *Virgin America Calls Bid for \$85M in Wage Case ‘Excessive’*, LAW360 (Nov. 15, 2018), <https://www.law360.com/articles/1102248> [<https://perma.cc/7SZM-6PN7>].

¹²⁴ *Id.*

which laws are applicable to their employees, which quickly becomes a Sisyphean task as their workers may work in any number of states in a single pay cycle. The only recourse airlines have against potential wage and hour violations would be to adopt the highest standard of all the jurisdictions where they do business, which could become a financially ruinous undertaking.

C. THE COVERAGE GAP: INADEQUACIES IN THE FEDERAL AVIATION ADMINISTRATION ACT

At approximately 9:00 a.m. on June 30, 1956, United Airlines Flight 718 and Trans World Airlines Flight 2, both regularly scheduled passenger flights to the Midwest, took off from Los Angeles International Airport.¹²⁵ A mere hour and a half later, the two planes collided over the Grand Canyon, destroying both aircraft and resulting in the deaths of all passengers and crew, with 128 lives lost.¹²⁶ Both pilots followed the existing protocol and reported to communication stations that they would be flying over the Grand Canyon at the same altitude at the same time, but the flight controller with that information was under no obligation to inform the pilots of their impending crash course.¹²⁷ In the pre-FAA world, it was the responsibility of the pilots alone to keep clear of other aircraft.¹²⁸ This crash went down in history as the deadliest commercial aviation collision at the time and marked the first instance of a commercial airline collision resulting in more than 100 deaths.¹²⁹ However, the deaths were not completely in vain, as public outrage over the outdated and ineffective air traffic control system that resulted in the crash would galvanize the creation of the Federal Aviation Agency (later known as the FAA).¹³⁰

¹²⁵ NAT'L TRANSP. SAFETY BD., REP. NO. SA-320/1-0090 MIDAIR COLLISION, ACCIDENT INVESTIGATION REPORT, TRANS WORLD AIRLINES LOCKHEED 1049A N6902C AND UNITED AIR LINES DOUGLAS DC-7 N6324C, OVER THE GRAND CANYON, ARIZONA, JUNE 30, 1956, ¶¶ 2, 7 (1957), https://www.fss.aero/accident-reports/look.php?report_key=1251 [<https://perma.cc/L3DP-QTAL>].

¹²⁶ *Id.* ¶ 1.

¹²⁷ *1956 Grand Canyon Airplane Crash a Game-Changer*, CBS NEWS (July 8, 2014), <https://www.cbsnews.com/news/1956-grand-canyon-airplane-crash-a-game-changer/> [<https://perma.cc/N4XY-RF8P>].

¹²⁸ *Id.*

¹²⁹ *Grand Canyon Collision Declared a National Historic Landmark*, GRAND CANYON VISITOR CTR. (May 1, 2014), <https://explorethecanyon.com/grand-canyon-collision-declared-a-national-historic-landmark/> [<https://perma.cc/ZMV3-59HN>].

¹³⁰ *Id.*

Just two years after the 1956 Grand Canyon collision, President Dwight D. Eisenhower signed the Federal Aviation Act of 1958 (FAAct) into law.¹³¹ The FAAct's purpose was to regulate the safety and efficiency of the airways, providing a comprehensive series of regulations that covered most aspects of the airline industry.¹³² The agency would later become known as the FAA when it was consolidated into the Department of Transportation (DoT) in 1967, and the FAA continues to be the governing body for commercial airline regulation and standards.¹³³

The field of airline safety was uniquely ripe for federal regulation because air travel takes place almost entirely within federal jurisdiction, requires more coordination than any other form of public transportation, and poses the largest risk to safety when done carelessly.¹³⁴ “Regulation on a national basis is required because air transportation [itself] is a national operation.”¹³⁵ As the court in *Montalvo* held, “[t]he FAA, together with federal air safety regulations, establish complete and thorough safety standards for interstate and international air transportation that are not subject to supplementation by, or variation among, states.”¹³⁶ In other words, the FAA is used to preempt the entire field of aviation safety—“[f]ield preemption occurs if federal law ‘thoroughly occupies’ the ‘legislative field’ in question, i.e., the field of aviation safety. . . . Such a purpose properly may be inferred . . . where the federal interest in the field is sufficiently dominant.”¹³⁷ The Third Circuit succinctly summarized it as follows: “[F]ederal law establishes the applicable standards of care in the field of air safety, generally, thus preempting the entire field from state and territorial regulation.”¹³⁸ Despite the FAA's broad authority in the field of air safety, the administration is entirely silent on the issue of wage and labor laws for employees within its industry.

¹³¹ *A Brief History of the FAA*, FED. AVIATION ADMIN. (Jan. 4, 2017), https://www.faa.gov/about/history/brief_history/#birth [<https://perma.cc/9QAN-7B9V>].

¹³² Federal Aviation Act, Pub. L. No. 85-726, pmb., 72 Stat. 731, 731 (1958).

¹³³ *A Brief History of the FAA*, *supra* note 131.

¹³⁴ *Montalvo v. Spirit Airlines*, 508 F.3d 464, 473 (9th Cir. 2007).

¹³⁵ *Id.*

¹³⁶ *Id.* at 474.

¹³⁷ *Abdullah v. Am. Airlines, Inc.*, 181 F.3d 363, 367 (3d Cir. 1999).

¹³⁸ *Id.*

IV. THE NEED FOR REFORM IN AIRLINE LABOR LEGISLATION

In an industry where nearly every facet is now closely regulated on a federal level, the thicket of conflicting and confusing law surrounding airline labor rights is truly an anomaly. This Comment proposes adding federal legislation that would expressly preempt state wage and hour laws. The current system fits poorly within the RLA, causes needless litigation, and obfuscates the rights of workers. A uniform legislative framework will better provide for the needs of workers, increase the overall safety of the industry, and minimize litigation between workers and airlines over disagreements about pay and rights.

A. TAKING THE TRAINING WHEELS OFF: THE AIRLINE INDUSTRY HAS OUTGROWN THE RLA

Though the RLA may have provided a useful legal framework for the airline industry in the 1930s, changes in society, new technological advancements, and the growth of the industry as a whole have evinced a need for an updated legal framework tailored to the needs of the airline industry. Two critical factors interfere with the RLA's ability to serve the needs of the airline industry: its bespoke past and its age.

Not only have there been massive changes to the industry in the interim, but the 1936 amendment to the RLA bundled the rights of airline workers into an act "designed by and for the railroad industry."¹³⁹ As discussed in Part II, the RLA was the particular product of half a century of railway strikes, negotiations between railway unions and owners, and legislative attempts to balance the interests of the parties, and the final draft of the RLA itself was written *by* the railway unions and owners together.¹⁴⁰ The unique past of the RLA makes it especially unsuitable for application to a new industry, and whether it actually provided a benefit to the nascent aviation field is subject to some controversy, as other transportation industries developed labor protections without the need of specialized treatment like the railroad industry.¹⁴¹ Because the RLA was drafted to deal with the specific intricacies of railway labor relations, it contains several oddities that were the result of concessions made in ne-

¹³⁹ James B. Frankel, *Airline Labor Policy: The Stepchild of the Railway Labor Act*, 18 J. AIR L. & COM. 461, 461 (1951).

¹⁴⁰ *Id.* at 466-67.

¹⁴¹ *Id.* at 471.

gotiations between unions and owners. For example, as early as 1952, commentators were concerned with the RLA's inapplicability to a fledgling industry:

the lack of a remedial forum for both employees and employers that can expertly administer the relationships intended by the [RLA] and both interpret and enforce its provisions is a basic weakness. . . . Such a framework would not seem to be conducive to the development of the most sensible labor-management relations in a new and growing industry, however satisfactory in the more stabilized railroad industry.¹⁴²

Second, not only was the RLA drafted to deal specifically with the railway industry, but it was drafted close to a century ago with few amendments. The airline industry of the modern-day shares little in common with its predecessor in 1936—it has faced changing levels of regulation and deregulation, has encountered technological developments, and has struggled to deal with bankruptcies and mergers.¹⁴³ In addition, the impact of the September 11th terror attacks permanently changed the landscape of the airline industry, with air carriers being forced to shoulder many of the costs of compliance with increased safety regulations.¹⁴⁴ These changes have reached the critical point where “the RLA is no longer adequate to ensure protection for airline employees.”¹⁴⁵

This is not a problem that is necessarily unique to the RLA—the need to respond to changes in the rapidly evolving aviation field spurred the Montreal Convention of 1999 (Montreal Convention). With striking similarities to the need to replace the outdated RLA and standardize labor rights for workers throughout the country, the Montreal Convention supplanted the outdated Warsaw Convention of 1929 (Warsaw Convention) and standardized the field of airline liability on international flights.¹⁴⁶ The Montreal Convention was an acknowledgement that the concerns that faced the start of the airline industry in the early twentieth century—at the Warsaw Convention, the

¹⁴² Malcolm A. Macintyre, *The Railway Labor Act—A Misfit for The Airlines*, 19 J. AIR L. & COM. 274, 288 (1952).

¹⁴³ Lisa Catherine Tulk, *The 1926 Railway Labor Act and the Modern American Airline Industry: Changes and Chaos Outline the Need for Revised Legislation*, 69 J. AIR L. & COM. 615, 627 (2004).

¹⁴⁴ *Id.* at 628.

¹⁴⁵ *Id.* at 645.

¹⁴⁶ Convention for the Unification of Certain Rules for International Carriage by Air preamble, *opened for signature* May 28, 1999, T.I.A.S. 13038, 2242 U.N.T.S. 309.

concern was limiting liability in order to foster growth of the nascent industry¹⁴⁷—were not the same concerns that faced the present industry. For many of the same reasons that the RLA needs to be updated or replaced, calls to ratify the Montreal Convention over the Warsaw Convention focused on the present system of fractured and disparate laws depending on the jurisdiction, and the ability of a uniform standard to “simplify, clarify and expedite the fair resolution of [disputes].”¹⁴⁸

And, much like the Warsaw Convention, the RLA’s inadequacies have led to a fractured field of law because there is no unifying authority. The RLA only preempts state law when a state law claim arises entirely from or requires construction of a collective bargaining agreement.¹⁴⁹ As such, the RLA does not preempt state law claims to enforce rights independent of a collective bargaining agreement, such as minimum wage standards or sick leave.¹⁵⁰

Nearly a century old, the RLA simply cannot do enough to support the modern-day aviation industry, and ought to be replaced. Part V proposes new legislation that would supplant the RLA and bring the labor rights of workers in the aviation industry into the twenty-first century.

B. THE INTERSECTION OF LABOR LAWS AND PASSENGER SAFETY:
INCREASED PROTECTIONS FOR AIRLINE WORKERS WILL
DIRECTLY TRANSLATE INTO INCREASED SAFETY
FOR PASSENGERS

The airline industry is uniquely situated as one of the most closely regulated industries in the country, and the vast majority of its operations are conducted within federal jurisdiction—the airspace. Airlines are heavily regulated by the FAA, which was formed in order to have a single, uniform system for regulating airline safety after a series of fatal crashes between civilian and military aircraft.¹⁵¹ The catastrophic impact of mismanaged flights was the key impetus in forming the FAA, and the Supreme Court has characterized FAA regulations as striking “a delicate balance between the safety and efficiency” of planes in

¹⁴⁷ E. Airlines, Inc. v. Floyd, 499 U.S. 530, 546 (1991).

¹⁴⁸ David E. Rapoport & Hans Ephraimson-Abt, *A 73-Year Odyssey: The Time Has Come for a New International Air Liability System*, 2002 ISSUES AVIATION L. & POL’Y 22,151, 22,171 (2002).

¹⁴⁹ Matson v. United Parcel Serv., Inc., 840 F.3d 1126, 1132 (9th Cir. 2016).

¹⁵⁰ Hawaiian Airlines, Inc. v. Norris, 512 U.S. 246, 256 (1994).

¹⁵¹ Montalvo v. Spirit Airlines, 508 F. 3d 464, 471 (9th Cir. 2007).

the sky and maintaining protections for persons on the ground.¹⁵² This delicate balance and the interdependence of the safety of persons in the sky and on the ground justified the requirement of a “uniform and exclusive system of federal regulation if the congressional objectives underlying the [FAAct] are to be fulfilled.”¹⁵³

However, one facet of airline safety has slipped through the cracks and has not been regulated by the FAA—sick days and vacation days of airline staff. While perhaps not what immediately comes to mind when one thinks of airplane safety—considering devices such as oxygen masks, parachutes, and chairs that function as floatation devices—pilot fatigue represents “one of the biggest threats to air safety.”¹⁵⁴ Hardly a decade has passed since the tragic crash of Continental Flight 3407 outside of Buffalo, New York in 2009.¹⁵⁵ Fatigue was cited as a cause of the crew’s failure to adequately respond to the rapidly declining plane, which ended up stalling and plunging into a house—killing the pilots, flight attendants, all the passengers, and a man on the ground—resulting in fifty deaths overall.¹⁵⁶ While the odds of a commercial flight crashing are extremely low, “figures show that 80% are a result of human error, with pilot fatigue accounting for 15–20% of human error in fatal accidents.”¹⁵⁷ In the accident report conducted on the crash, the National Transportation Safety Board compared fatigue impaired performance with alcohol impairment:

[S]leep loss is at least as potent as ethanol in its performance-impairing effects and two hours of sleep loss equates to a breath ethanol concentration of approximately .05% . . . correlat[ing] prolonged wakefulness with impairment, such that being awake for 16 hours is equivalent to a .05 [blood alcohol content].¹⁵⁸

Despite the clear link between crew fatigue and increased risk of harm, the FAA has not stepped in to guarantee sufficient time

¹⁵² *City of Burbank v. Lockheed Air Terminal, Inc.*, 411 U.S. 624, 638–39 (1973).

¹⁵³ *Id.* at 639.

¹⁵⁴ Keith Moore, *Pilot Fatigue ‘One of the Biggest Threats to Air Safety’*, BBC NEWS (Oct. 11, 2012), <https://www.bbc.com/news/health-19837178> [<https://perma.cc/85FJ-4FFE>].

¹⁵⁵ *Id.*

¹⁵⁶ *Id.*

¹⁵⁷ *Id.*

¹⁵⁸ NAT’L TRANSP. SAFETY BD., NTSB/AAR-10/01, PB2010-910401, ACCIDENT REPORT, LOSS OF CONTROL ON APPROACH COLGAN AIR, INC. OPERATING AS CONTINENTAL CONNECTION FLIGHT 3407, at 3 (2009).

off for airline crews. This leaves states and municipalities to fight with airline corporations over the amount of leave allowed.

Dispute over Washington's PSLA centered around this concern.¹⁵⁹ In addition to the risk presented by fatigue, the district court in Washington also considered how the airline's unforgiving time-off policies led to the increased spread of germs, as "flight attendants have attested to working while sick to avoid acquiring [demerits]."¹⁶⁰ This led to "research show[ing] that flight attendants' interactions with passengers make them both the most likely source and recipient of disease on flights."¹⁶¹ And, in past attempts to alleviate this problem during the 2009 H1N1 "Swine flu" outbreak, the Association of Flight Attendants (AFA) raised concerns with the FAA and the House Subcommittee on Aviation that airline carriers should be required to "allow flight attendants with flu-like symptoms themselves to call in sick without risk of discipline."¹⁶² The AFA turned to seeking federal intervention due to its concern that "airline management [was] more concerned with the appearance of flight attendants than with the health of the public and the flight crew."¹⁶³ Without a definite federal standard to guarantee labor protections for workers, history has shown that airline carriers will sacrifice the health of passengers and crew if it benefits their bottom line.

In Washington, though the airlines described being forced to comply with the PSLA as an unreasonable burden, evidence from when airlines were first subjected to New York City's Earned Sick Time Act (ESTA), which has similar provisions to the Washington law, showed that "for the first two years after Virgin began complying with ESTA, cabin crew delays only increased by .16 percentage points, an amount that is almost irrelevant compared to the Airlines' overall delay rates of 15 to 20 percent."¹⁶⁴ With empirics showing that the airlines' argument of the unreasonable burden to comply was without merit, the

¹⁵⁹ *Air Transp. Ass'n Am. v. Washington Dep't Lab. & Indus.*, 410 F. Supp. 3d 1162, 1166 (W.D. Wash. 2019).

¹⁶⁰ *Id.* at 1177.

¹⁶¹ *Id.*

¹⁶² Courtney Clegg, *The Aviation Industry and the Transmission of Communicable Disease: The Case of H1N1 Swine Influenza*, 75 J. AIR L. & COM. 437, 460–61 (2010) (citing *Aviation Consumer Issues: Emergency Contingency Planning and Outlook for Summer Travel: Hearing Before the Subcomm. on Aviation of the H. Comm. on Transp. and Infrastructure*, 111th Cong. 22–24 (2009) (statement of Patricia A. Friend, International President, AFA)).

¹⁶³ *Id.* at 461.

¹⁶⁴ *Air Transp. Ass'n Am.*, 410 F. Supp. 3d at 1176.

court in Washington held that airline workers were under the protection of its PSLA.¹⁶⁵ This same debate rages on in New York City over the city's ESTA, as both Delta¹⁶⁶ and American Airlines¹⁶⁷ fight against complying with it.

Without federal intervention through legislation, airline carriers have shown they will continue putting the health and safety of crew, passengers, and people on the ground at risk. Airline carriers will go to any measure to maximize profits at the cost of safety with no hesitation. The FAA is primed to combat this type of profit-over-safety mindset, and a congressional grant of authority to amend Title 49 to include some sort of provision in line with either Washington's PSLA or New York's ESTA would end the debate over the amount of leave given to workers, increase safety, decrease the spread of germs, and combat the issue of pilot fatigue.

C. NAVIGATING THE MAZE: THE CURRENT THICKET OF CONFUSING AND CONTRADICTING STATE AND LOCAL LAW RESULTS IN NEEDLESS LITIGATION COSTS

The litigation in *Bernstein* is a quintessential example of litigation as deadweight loss—an economic term describing an inefficient allocation of resources that results in a cost to society as a whole.¹⁶⁸ That is to say, it is a needless waste of time, money, and judicial economy. Embroiled in a multi-year class action wage lawsuit with its former flight attendants for failure to pay for all hours worked, overtime or provide accurate wage statements, and waiting time penalties to discharged employees, Virgin Airlines (Virgin) continued to rack up costs as it (1) paid its own legal fees; (2) was sanctioned to pay the legal fees of the class action plaintiffs as a result of its misconduct in discovery;¹⁶⁹ and, ultimately, (3) paid approximately \$77 million to members of the class—nearly double from the starting amount of \$45.4 mil-

¹⁶⁵ *Id.* at 1177.

¹⁶⁶ Linda Cheim, *NYC Insists Paid Sick Leave Law Doesn't Harm Delta*, LAW360 (May 1, 2020), <https://www.law360.com/articles/1269513> [<https://perma.cc/K9NF-NGKZ>].

¹⁶⁷ Reenat Sinay, *American Airlines Challenges NYC Paid Sick Leave Law*, LAW360 (Aug. 1, 2019), <https://www.law360.com/articles/1184444/american-airlines-challenges-nyc-paid-sick-leave-law> [<https://perma.cc/Z7WH-9KFQ>].

¹⁶⁸ Alicia Tuovila, *Deadweight Loss*, INVESTOPEDIA (Sept. 24, 2019), <https://www.investopedia.com/terms/d/deadweightloss.asp> [<https://perma.cc/4D4V-W9P5>].

¹⁶⁹ *Bernstein v. Virgin Am., Inc.*, No. 15-cv-02277-JST, 2018 U.S. Dist. LEXIS 201712, at *14 (N.D. Cal. Nov. 28, 2018).

lion in damages and restitution for wage and hour violations as a result of civil and statutory penalties.¹⁷⁰ And while these costs were mostly avoidable—namely, if Virgin had paid its employees legally, or at the least complied in the discovery process—Virgin ultimately will not be the party responsible for paying the fees, as that cost gets passed on to society through increased costs to consumers.

While it is certainly plausible that Virgin was genuinely mistaken as to the correct amount to pay its flight attendants who worked in California as a result of the thicket of overlapping and conflicting law discussed in Part III.B, that does not excuse the bad faith dealing the business engaged in over the course of the lawsuit. However, in a world with a clear, uniform, federally preemptive statute instead of the hodgepodge of state regulations, this lawsuit may have not existed at all. Virgin is far from the first corporation embroiled in a suit like this, however—wage and hour class action suits are an increasingly common tool for low wage employees to fight back against predatory employers and are by far the most common type of class action claim filed in federal court.¹⁷¹ In 2017, employers paid out over \$1.2 billion in wage and hour lawsuits,¹⁷² and while Virgin's \$77 million judgment may seem like a paltry amount in comparison to the total, it represents nearly one-fifteenth of the total amount paid out by all employers across the country that year.

Federally preemptive legislation can be used to stem the increasing tide of wage and hour class action lawsuits. With a clear and national uniform standard, employers are aware of the exact amount that will be owed to each employee without having to figure out the different wage and hour calculations for employees in each state. And, under a clear and uniform standard, employees know exactly how much they should be earning, allowing them to monitor their income for discrepancies and notify their employer as soon as a discrepancy is noticed, thereby alleviating the need for massive class-action lawsuits. Increased information would only serve to benefit both parties, more effi-

¹⁷⁰ *Bernstein v. Virgin Am., Inc.*, 365 F. Supp. 3d 980, 985, 993 (N.D. Cal. 2019).

¹⁷¹ Daniel V. Dorris, *Fair Labor Standards Act Preemption of State Wage-and-Hour Law Claims*, 76 U. CHI. L. REV. 1251, 1251–52 (2009).

¹⁷² *Wage and Hour Claims: 2018's Top Litigation Risk For Employers*, THATCHER L. FIRM BLOG (Feb. 9, 2018), <https://www.thatcherlaw.com/blog/2018/02/wage-and-hour-claims-2018s-top-litigation-risk-for-employers.shtml> [<https://perma.cc/V2MR-X5PY>].

ciently putting wages back in the workers' pockets to begin with, saving employers money that would otherwise go to fighting wage-and-hour class actions, and keeping price lower for consumers as a result.

V. PROPOSED AMENDMENT TO TITLE 49

This Comment proposes an amendment to Title 49, which governs transportation laws, establishes the DoT,¹⁷³ and is the current source of the FAA's authority.¹⁷⁴ Given the FAA's wide control of all aspects of aviation safety, and the massive safety implications of labor standards in the industry, as discussed in Part IV.B, an amendment to Title 49 will solve the current gap in the FAA's coverage of safety regulations. Placing labor under the ambit of Title 49 falls squarely within its policy goal of "assigning, maintaining, and enhancing safety and security as the highest priorities in air commerce."¹⁷⁵ This Comment proposes adding a new chapter to Title 49 (Transportation), Subtitle VII (Aviation Programs), Subpart III (Safety). The following proposed amendment is modeled after Washington's PSLA,¹⁷⁶ with modifications made to align it with the language in Title 49.

Chapter 455—Paid Sick Leave (§§ 45501–45504)

§ 45501. Paid Sick Leave—Every air carrier¹⁷⁷ must provide each of its airmen¹⁷⁸ or flight attendants¹⁷⁹ paid sick leave as follows:

¹⁷³ 49 U.S.C. §§ 101–727. Subtitle I of Title 49 establishes the DoT, its goals, and its duties. *Id.*

¹⁷⁴ 49 U.S.C. §§ 40101–50105. Subtitle VII of Title 49 sets out regulations for the aviation industry. *Id.*

¹⁷⁵ 49 U.S.C. § 40101(d)(1).

¹⁷⁶ WASH. REV. CODE ANN. § 49.46.210 (West 2020).

¹⁷⁷ 49 U.S.C. § 40102(a)(2) (defining "air carrier" as "a citizen of the United States undertaking by any means, directly or indirectly, to provide air transportation.").

¹⁷⁸ 49 U.S.C. § 40102(a)(8). Title 49 defines "airman" as an individual—

- (A) in command, or as pilot, mechanic, or member of the crew, who navigates aircraft when under way;
- (B) except to the extent the Administrator of the Federal Aviation Administration may provide otherwise for individuals employed outside the United States, who is directly in charge of inspecting, maintaining, overhauling, or repairing aircraft, aircraft engines, propellers, or appliances; or
- (C) who serves as an aircraft dispatcher or air traffic control-tower operator.

Id.

- (a) An airman or flight attendant accrues at least one hour of paid sick leave for every forty hours worked as an airman or flight attendant. An air carrier may provide paid sick leave in advance of accrual provided that such front-loading meets or exceeds the requirements of this section for accrual, use, and carryover of paid sick leave.
- (b) An airman or flight attendant is authorized to use paid sick leave for the following reasons:
 - (1) An absence resulting from an airman's or flight attendant's mental or physical illness, injury, or health condition; to accommodate the airman's or flight attendant's need for medical diagnosis, care, or treatment of a mental or physical illness, injury, or health condition; or an airman's or flight attendant's need for preventive medical care;
 - (2) To allow the airman or flight attendant to provide care for a family member with a mental or physical illness, injury, or health condition; care of a family member who needs medical diagnosis, care, or treatment of a mental or physical illness, injury, or health condition; or care for a family member who needs preventive medical care; and
 - (3) When the airman's or flight attendant's place of business has been closed by order of a public official for any health-related reason, or when an airman's or flight attendant's child's school or place of care has been closed for such a reason.
- (c) An airman or flight attendant is authorized to use paid sick leave for absences as a result of domestic violence as defined in Title 34 of the United States Code.¹⁸⁰

¹⁷⁹ 9 U.S.C. § 44728(g) (defining "flight attendant" as "an individual working as a flight attendant in the cabin of an aircraft that has twenty or more seats and is being used by an air carrier to provide air transportation.").

¹⁸⁰ See 34 U.S.C. § 12291(a)(8).

The term "domestic violence" includes felony or misdemeanor crimes of violence committed by a current or former spouse or intimate partner of the victim, by a person with whom the victim shares a child in common, by a person who is cohabitating with or has cohabitated with the victim as a spouse or intimate partner, by a person similarly situated to a spouse of the victim under the domestic or family violence laws of the jurisdiction receiving grant monies, or by any other person against an adult or youth victim who is protected from that person's acts under the domestic or family violence laws of the jurisdiction.

Id.

- (d) An airman or flight attendant is entitled to use accrued paid sick leave beginning on the ninetieth calendar day after the commencement of his or her employment.
- (e) Air carriers are not prevented from providing more generous paid sick leave policies or permitting use of paid sick leave for additional purposes.
- (f) An air carrier may require airmen or flight attendants to give reasonable notice of an absence from work, so long as such notice does not interfere with an airman or flight attendant's lawful use of paid sick leave.
- (g) For absences exceeding three days, an air carrier may require verification that an airman or flight attendant's use of paid sick leave is for an authorized purpose. If an air carrier requires verification, verification must be provided to the air carrier within a reasonable time period during or after the leave. An air carrier's requirements for verification may not result in an unreasonable burden or expense on the airman or flight attendant and may not exceed privacy or verification requirements otherwise established by law.
- (h) An air carrier may not require, as a condition of an airman or flight attendant taking paid sick leave, that the airman or flight attendant search for or find a replacement worker to cover the hours during which the airman or flight attendant is on paid sick leave.
- (i) For each hour of paid sick leave used, an airman or flight attendant must be paid the greater of the minimum hourly wage rate established in this chapter or his or her normal hourly compensation. The air carrier is responsible for providing regular notification to airmen or flight attendants about the amount of paid sick leave available to the airman or flight attendant.
- (j) Unused paid sick leave carries over to the following year, except that an air carrier is not required to allow an airman or flight attendant to carry over paid sick leave in excess of forty hours.
- (k) This section does not require an air carrier to provide financial or other reimbursement for accrued and unused paid sick leave to any airman or flight attendant upon the airman or flight attendant's termination, resignation, retirement, or other separation from employment. When there is a separation from employment and the airman or flight attendant is rehired within twelve months of separa-

tion by the same air carrier, whether at the same or a different business location of the air carrier, previously accrued unused paid sick leave must be reinstated and the previous period of employment must be counted for purposes of determining the airman or flight attendant's eligibility to use paid sick leave under subsection 45501(d) of this section.

§ 45502. Family Member Defined—For purposes of this chapter, “family member” means any of the following:

- (a) A child, including a biological, adopted, or foster child, stepchild, or a child to whom the airman or flight attendant stands in loco parentis, is a legal guardian, or is a de facto parent, regardless of age or dependency status;
- (b) A biological, adoptive, de facto, or foster parent, stepparent, or legal guardian of an airman or flight attendant or the airman or flight attendant's spouse or registered domestic partner, or a person who stood in loco parentis when the airman or flight attendant was a minor child;
- (c) A spouse;
- (d) A registered domestic partner;
- (e) A grandparent;
- (f) A grandchild; or
- (g) A sibling.

§ 45503. Limitations on Policies—An air carrier may not adopt or enforce any policy that counts the use of paid sick leave time as an absence that may lead to or result in discipline against the airman or flight attendant.

§ 45504. Air Carrier Retaliation—An air carrier may not discriminate or retaliate against an airman or flight attendant for his or her exercise of any rights under this chapter including the use of paid sick leave.

VI. CONCLUSION

The lack of a clear and consistent federal standard across the country harms both airline carriers and aviation employees—carriers as they grapple with a myriad of regulations and airline employees who are unsure of their rights and how to exercise them. There is a clear need for an updated federal framework that takes into account the airline industry and the needs of workers in the present day; the RLA served its purpose in stabilizing the nascent airline industry in the 1930s, but the aviation industry has outgrown its usefulness. To replace the RLA and

standardize the labor rights of workers in the aviation industry, this Comment proposes amending Title 49 to include a chapter on labor. Because of the direct impact of the labor rights of airline workers on the safety of the aviation industry, legislation dealing with these rights falls squarely within the purview of the FAA. Through the proposed amendment, the aviation industry will be made safer, workers will receive greater protections, and the squandering of judicial economy through needless litigation over the thicket of conflicting local, state, and federal law will cease.



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