



DOT

Report AV2023009
December 19, 2022

DOT's Tracking of Aviation Imports and Potential Impacts of Disruptions



DOT's Tracking of Aviation Imports and Potential Impacts of Disruptions

Requested by Ranking Members of the House Committee on Transportation and Infrastructure and its Aviation Subcommittee

Department of Transportation | AV2023009 | December 19, 2022

What We Looked At

The Coronavirus Disease 2019 (COVID-19) pandemic has highlighted the importance of developing and maintaining resilient supply chains in essential industries. Citing the significance of the aviation industry to the Nation's economy, the Ranking Members of the House Committee on Transportation and Infrastructure and its Subcommittee on Aviation asked us to assess how the Department of Transportation (DOT) tracks the amount of critical aircraft and unmanned aircraft systems (UAS) imports. They also asked for the amount of critical aviation parts that are manufactured in and imported exclusively or near-exclusively from one or two countries. Accordingly, our audit objectives were to (1) determine how DOT is tracking imported aviation products and (2) identify potential impacts on the U.S. aviation industry's supply chains if imported aviation products are unavailable in the future.

What We Found

DOT and the Federal Aviation Administration (FAA) do not track aviation imports or their associated supply chains because there is no requirement to do so. FAA does have access to country of origin information for aviation imports but relies on aviation manufacturers to oversee their suppliers to ensure products are in a condition for safe operation. Other Government agencies collect data on imported aviation parts; however, no agency currently maintains visibility into aviation supply chains, including for UAS. The National Aeronautics and Space Administration is in the early stages of working with FAA and other Federal agencies to identify data needed to track aviation supply chains. We identified several vulnerabilities that increase the risk of aviation supply chain disruptions, including the lack of visibility into supply chains, dependence on sole-source or limited suppliers, and lack of access to rare earth metals and elements. Furthermore, COVID-19 led to a significant decrease in the demand for air travel and a corresponding decrease in the need for aviation products, causing additional supply chain disruptions. Disruptions included loss of suppliers, labor shortages, and congestion at shipping ports. Federal legislation has mitigated some of the impact of supply chain challenges on the aviation industry.

Our Recommendations

This report is informational and meant to be responsive to the congressional request. We are not making recommendations.

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For inquiries about this report, please contact our Office of Government and Public Affairs at (202) 366-8751.

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Memorandum

Date: December 19, 2022

Subject: ACTION: DOT's Tracking of Aviation Imports and Potential Impacts of Disruptions
| Report No. AV2023009

From: Nelda Z. Smith
Assistant Inspector General for Aviation Audits

To: Deputy Secretary



The Coronavirus Disease 2019 (COVID-19) pandemic has highlighted the importance of developing and maintaining resilient supply chains in industries that are essential to the Nation's economic vitality, national security, and public health. The aviation industry is one of the largest employers in the United States and relies on global supply chains to import critical parts and components for manufacturing aircraft and aircraft engines.

Citing the significance of the aviation industry to the Nation's economy, the Ranking Members of the House Committee on Transportation and Infrastructure and its Subcommittee on Aviation asked us to assess how the Department of Transportation (DOT), working with other Federal agencies,¹ tracks the amount of imported critical aircraft, aircraft engines, and other aviation parts and components. The request also inquired about parts and components for unmanned aircraft systems (UAS) and the amount of critical aviation parts that are manufactured in and imported exclusively or near-exclusively from one or two countries. In particular, the request sought to determine the U.S. aviation industry's dependency on China and India. Accordingly, our audit objectives were to (1) determine how DOT is tracking imported aviation products and (2) identify potential impacts on the U.S. aviation industry's supply chains if imported aviation products are unavailable in the future.

We conducted this audit in accordance with generally accepted Government auditing standards. Exhibit A details our scope and methodology. Exhibit B lists

¹ DOT collaborates with the Department of State and other Federal agencies on international trade and aviation issues. These issues include reducing trade barriers and facilitating the export of domestic transportation goods and services.

the organizations we visited or contacted, and exhibit C lists the acronyms used in this report.

We appreciate the courtesies and cooperation of DOT representatives during this audit. If you have any questions concerning this report, please contact me or Jay Borwankar, Program Director.

cc: The Secretary
DOT Audit Liaison, M-1
FAA Audit Liaison, AAE-100

Results in Brief

DOT and FAA are not required to track aviation imports.

DOT and the Federal Aviation Administration (FAA) do not track aviation imports or their associated supply chains, because there is no requirement to do so. In executing its mission to provide the safest, most efficient aerospace system in the world, FAA has access to country of origin information for imported aviation products but does not maintain a database with this information. Instead, FAA relies on aviation manufacturers to oversee their suppliers and ensure each product conforms to its approved design for safe operation. Other Government agencies collect a variety of data on imported aviation parts. According to Census Bureau² data, China and India combined represent a relatively small percentage of imported aviation products. However, no agency currently maintains visibility into aviation supply chains, including for UAS. Concerns over aviation supply chain resiliency have prompted the National Aeronautics and Space Administration (NASA) to work with FAA, Department of Commerce (DOC), Department of Defense (DoD), and other Federal agencies to identify data needed to track aviation supply chains. However, this effort is still in early stages.

Vulnerabilities in supply chains increase the risk of disruptions to the U.S. aviation industry.

Our review identified several preexisting and continuing vulnerabilities that increase the risk of aviation supply chain disruptions. These vulnerabilities include the lack of visibility into supply chains, dependence on sole-source or limited suppliers, and lack of access to rare earth metals and elements. Furthermore, COVID-19 led to a significant decrease in the demand for air travel and a corresponding decrease in the need for aviation products, causing several additional supply chain disruptions. Some of these disruptions were loss of suppliers, labor shortages, and congestion at shipping ports. However, Federal legislation, such as the Coronavirus Aid, Relief, and Economic Security (CARES) Act of 2020³ and American Rescue Plan Act of 2021,⁴ has helped mitigate some of the impact of supply chain challenges on the aviation industry.

As the data gathered in this report are informational and meant to be responsive to the congressional request, we are not making recommendations.

² The Census Bureau collects data on the people and economy of the United States, including data on transportation-related imports.

³ Pub. L. No. 116-136 (2020).

⁴ Pub. L. No. 117-2 (2021).

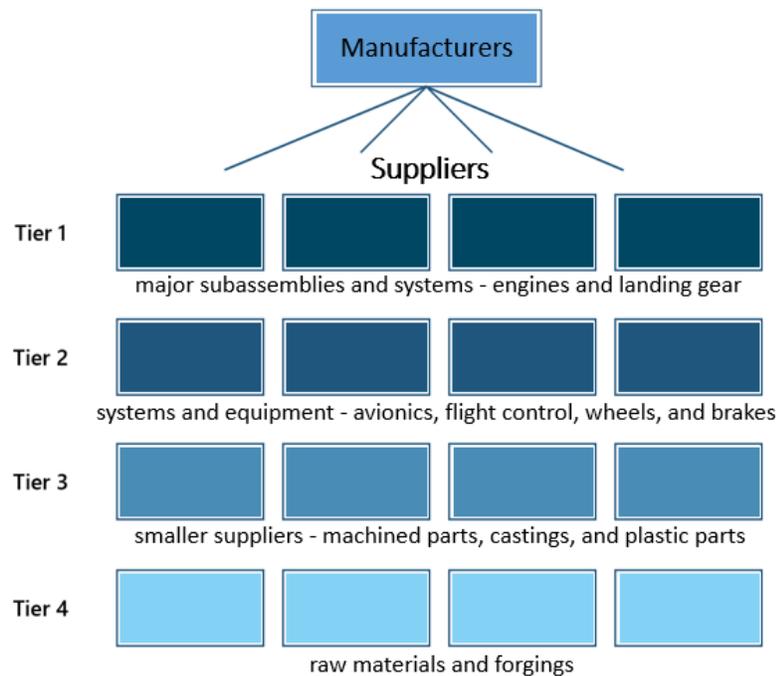
Background

DOT's mission is to ensure our Nation has the safest, most efficient, and modern transportation system in the world and increases the productivity and competitiveness of American workers and businesses. As part of that mission, the Department seeks to improve aviation economic competitiveness within the U.S. airline industry and aviation trade policy and negotiations. In addition, FAA's mission is to provide the safest, most efficient aerospace system in the world. The Agency issues and enforces regulations and minimum standards covering manufacturing, operating, and maintaining aircraft. It also has the responsibility to evaluate and approve production activities of manufacturers and their suppliers, even in foreign countries, when under FAA's regulatory authority.

Aviation imports are often part of long, complex, international supply chains with multiple tiers that fall under FAA's safety oversight. The number of tiers can vary based on the component and manufacturer. There are four primary levels or tiers for suppliers (see figure 1).

- Tier 1 suppliers provide major subassemblies and systems, such as engines and landing gear.
- Tier 2 suppliers provide systems and equipment, such as avionics, flight control systems, wheels, and brakes.
- Tier 3 suppliers tend to be smaller, specialized shops that provide machined parts, castings, and plastic parts.
- Tier 4 suppliers provide raw materials and forgings.

Figure 1. Aircraft Manufacturer Supply Chain Tiers



Source: OIG analysis of Air Force and Bank of America data

FAA defines "critical parts" as aircraft parts that perform such a significant function their failure would degrade the airworthiness of the aircraft and preclude continued safe flight or landing. FAA has three safety categories for critical parts.

- Category 1 failures could prevent continued safe flight or landing due to reduced safety margins and degraded performance or capability. For example, landing gear system failures.
- Category 2 failures would not prevent continued safe flight or landing but would reduce the aircraft's capability or the crew's ability to cope with adverse operating conditions or subsequent failures. For example, passenger oxygen systems failures.
- Category 3 failures have no effect on continued safe flight and landing of the aircraft. For example, broken tray tables.

The traditional definition of "imports" is all goods physically brought into one country from another. However, FAA defines the term as the receipt of an aviation product from the regulatory jurisdiction of another civil aviation authority. For example, FAA does not consider an engine manufactured in Europe and sent to the United States, solely under FAA's oversight authority, an import. Conversely, the Agency does consider an engine that is already in the United

States and has its oversight authority transferred from the European Union Aviation Safety Agency to FAA to be an import.

In addition, Executive Order 14017 on America's Supply Chains⁵ reflects the Administration's increased interest in understanding and protecting critical supply chains. The order emphasizes the Nation's need for resilient, diverse, and secure supply chains to ensure its economic prosperity and national security. Responding to the order, DOT issued a supply chain assessment⁶ that addressed longer-term resiliency challenges facing the American transportation industrial base and supply chains. The assessment also made policy recommendations to strengthen these systems. FAA started compiling its own report on aviation supply chains based on discussions with DOT; however, FAA has stopped working on the report and no longer plans to issue it.

DOT and FAA are Not Required To Track Aviation Imports

DOT has a role in promoting aviation industry trade and economic competitiveness, and FAA ensures imported aviation products meet safety requirements. However, neither are required to track aviation supply chains or the industry's dependency on aviation imports. Further, FAA does not have requirements related to visibility into the aviation supply chain, the supply chain's country of origin, sole sourcing, product availability, or resiliency. According to DOT, these areas are not part of FAA's safety oversight mandate. Finally, according to import data, China and India represent a relatively small percentage of aviation imports to the United States.

DOT and FAA Do Not Track Aviation Imports

DOT and FAA are not required to track aviation imports, their associated supply chains, or the industry's dependency on aviation imports. According to DOT, these areas are not part of FAA's safety oversight mandate. Thus, FAA defines terms like critical parts and imports in terms of safety, not supply chains. FAA, in its safety oversight role, has access to country of origin information for imported products as part of its authority to audit suppliers but does not maintain a

⁵ The White House, *Executive Order on America's Supply Chains*, February 24, 2021. It directs DOT to prepare a report, within a year, on the supply chains supporting the Nation's transportation industrial base.

⁶ DOT, *Supply Chain Assessment of the Transportation Industrial Base: Freight and Logistics*, February 2022.

database with this information. FAA relies on aviation manufacturers, or Production Approval Holders (PAH),⁷ to oversee their suppliers and ensure each product conforms to its approved design for safe operation. The Agency currently oversees over 1,400 PAHs. Each PAH is responsible for ensuring that any parts or components they import from foreign countries or jurisdictions meet approved design and safety requirements. Also, FAA has over 200 inspectors that perform audits on PAHs and their suppliers using a risk-based approach. PAHs review manufacturer procedures; assess the manufacturing processes; and examine whether parts and materials, supplied by outside sources, meet FAA safety requirements. It can take 1–2 years for a PAH to add or change suppliers.

While other Government agencies collect a variety of data on imported aviation parts, no agency currently tracks aviation products for visibility into supply chains. For example, the International Trade Administration tracks imported parts in dollar values and uses these data to keep track of major trading partners, import statistics, and global competitiveness. While these data have other applications, they are not used to track aviation supply chains or proactively identify risks to supply chains.

NASA is working with FAA, DOC, and DoD to identify missing data needed to track aviation supply chains due to concerns over resiliency and international competitiveness. NASA is conducting initial steps for a comprehensive needs assessment for the supply chain to identify current challenges, gaps in data, and future needs. NASA plans to identify bottlenecks in supply chains, detect potential product and raw materials shortages, and protect the industry and economy. The needs assessment is expected to be completed by 2024 and the rest of the initiatives by 2028.

Data Show the U.S. Imports Few Aviation Products From China and India

China and India represent a relatively small percentage of aviation imports to the United States compared to other trading partners. To determine the amount of aviation imports and the industry's dependency on other countries, we reviewed Census Bureau data. Depicted in the table below is the amount of aviation products from 2016 through 2020 in dollars.

⁷ PAHs are aviation manufacturers that produce an FAA-approved aviation product or control the design and quality of a product or part. PAHs are responsible for ensuring suppliers throughout their supply chain, including foreign sources, adhere to requirements.

Table. Top 10 Countries From Which the U.S. Imports Aviation Products (in Billions of Dollars)

Country	2016	2017	2018	2019	2020	5-Year Total	Percent of Total Imports to U.S.
France	\$11.1	\$12.0	\$12.3	\$16.4	\$10.9	\$62.7	24%
Canada	\$8.4	\$8.3	\$9.1	\$9.9	\$8.1	\$44.0	17%
Japan	\$6.4	\$6.0	\$6.3	\$5.9	\$3.8	\$28.4	11%
Germany	\$5.0	\$5.1	\$5.1	\$5.6	\$4.0	\$24.8	10%
United Kingdom	\$2.8	\$2.9	\$3.8	\$5.1	\$3.4	\$18.0	7%
Brazil	\$3.4	\$2.7	\$2.2	\$2.7	\$1.8	\$12.9	5%
Mexico	\$1.9	\$2.1	\$2.5	\$3.0	\$1.9	\$11.4	4%
Singapore	\$1.9	\$2.0	\$2.3	\$1.9	\$1.8	\$9.8	4%
Italy	\$1.2	\$1.4	\$2.2	\$1.9	\$1.1	\$7.7	3%
China	\$1.0	\$1.1	\$1.2	\$1.2	\$0.7	\$5.2	2%
Top 10 Total	\$43.1	\$43.6	\$47.0	\$53.6	\$37.5	\$224.9	87%
World Total	\$49.2	\$50.7	\$54.7	\$62.1	\$43.4	\$260.0	100%

Source: OIG analysis of Census Bureau data provided by the International Trade Administration

The data track 74 different aviation products, such as engines, electrical instruments, tires, and brakes, for identifying trade balances imported from 204 countries. Census Bureau data show that, of the total aviation products imported to the United States from 2016 through 2020:

- 62 percent are from France, Canada, Japan, and Germany;
- 21 percent are from Canada and Mexico;
- 2 percent are from China, making it only 10th on the list of the United States' top aviation import countries; and
- Less than 0.5 percent are from India, so it is not a significant aviation product direct supplier.

The Census Bureau does not have historical data on UAS imports. Before January 2022, there were no import codes for UAS components. However, these codes may have limited value since UAS manufacturers rely more on commodity parts that are used by other industries. Experts and industry representatives stated China dominates the UAS industry with an estimated 90 percent of the market. China also has technological and cost advantages in the UAS industry over the United States.

Vulnerabilities in Supply Chains Increase the Risk of Disruptions to the U.S. Aviation Industry

We identified several preexisting and continuing vulnerabilities that increase the risks of aviation supply chain disruptions. These vulnerabilities include the lack of visibility into supply chains, dependence on sole-source or limited suppliers, and lack of access to rare earth metals and elements. Also, COVID-19 caused a significant decrease in air travel, resulting in a reduced demand for aviation products and disruptions of aviation supply chains. Still, Federal programs helped mitigate the impact of these disruptions on the aviation industry.

Preexisting Vulnerabilities Pose Risks to Aviation Supply Chains

Based on our interviews with aviation supply chain experts,⁸ trade associations, and aviation manufacturers and their suppliers, we identified three vulnerabilities to U.S. aviation manufacturers that have caused disruptions to aviation supply chains and continue to pose risks.

1. **Visibility.** Lack of visibility into supply chains, for some aviation parts, can make it tougher for manufacturers to identify and resolve issues if there is a disruption. Manufacturers have varying levels of visibility into their supply chains, which raises potential concerns about unanalyzed supply chain risks. Additionally, manufacturers may not have a contractual relationship with suppliers further down their supply chain tiers; thus, they do not have visibility into the source of their materials.
2. **Sole-source or Limited Suppliers.** Supply chains can be vulnerable because they depend on sole-source or a limited group of suppliers. A manufacturer's dependence on these suppliers is partly because developing and testing new aviation parts and components, along with the process to obtain FAA's safety approval, can cost over \$1 million and take several years to complete. Additionally, the manufacturer's monetary and time investments are averaged over relatively few aircraft—compared to other industries such as automobile manufacturing—meaning the investment is more expensive and risky per part. As a result, it is difficult for the manufacturers to change suppliers when there are supply chain issues.

⁸ We interviewed supply chain experts from Government agencies and private institutions.

3. **Access to Rare Earth Metals and Elements.** Manufacturing aviation components often requires rare earth metals and elements, and lack of access to these materials makes supply chains vulnerable. According to supply chain experts we met with, U.S. environmental regulations limit the mining and processing of rare earth metals and elements required for manufacturing aviation parts. Consequently, manufacturers are often dependent on foreign sources for obtaining the materials. The United States depends on China for low-cost materials and parts used in aviation, including plastics, some metals, and battery cells that would be difficult to produce domestically due to costs, capacity, and environmental regulations. Additionally, geopolitical conflicts can impact the aviation supply chain and manufacturers' access to rare earth metals and elements. For example, the recent Russian invasion of Ukraine has inflated the prices for titanium.

These vulnerabilities can also occur in combination with each other, increasing the risks and difficulty for manufacturers to maintain their supply chains. For example, one large manufacturer was unaware that its engine suppliers all sourced their engine casings from a single company. When that company experienced problems supplying the casings, the manufacturer experienced delays in aircraft production across all of its models and lacked a quick fix.

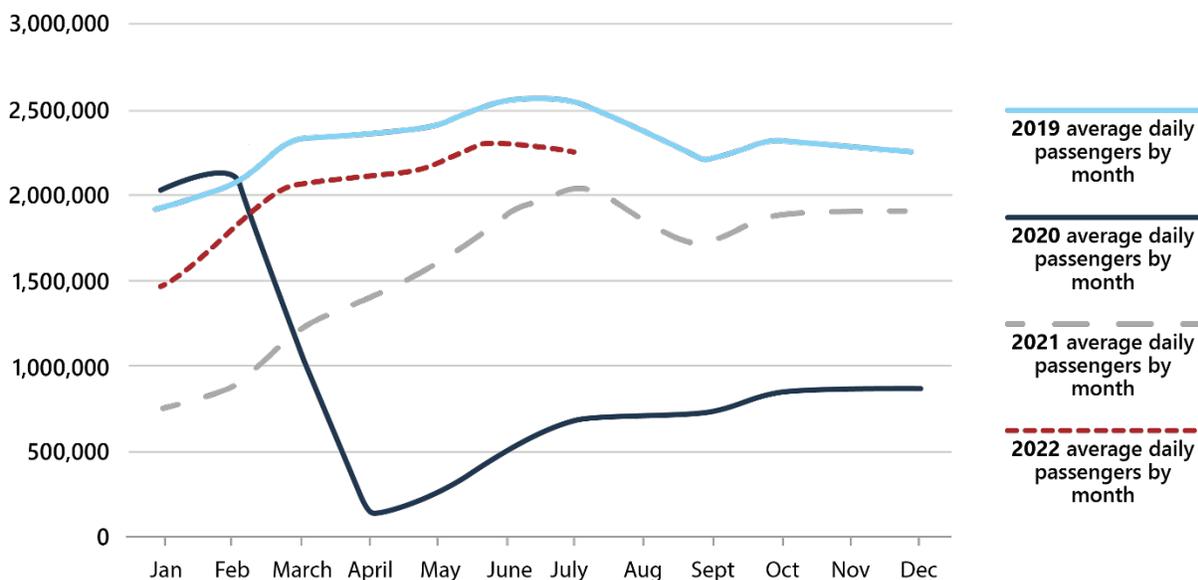
Moreover, these vulnerabilities can cause significant disruptions to manufacturer supply chains. For example, a major aircraft manufacturer had a brake supplier that experienced delays because it had an issue acquiring raw materials several tiers down its own supply chain. Due to a lack of visibility into its own supply chain, the manufacturer had to expend significant time and effort to identify and diagnose the issue. Ultimately, the manufacturer helped its raw material supplier to source and stockpile enough raw materials to manufacture brakes for 2 years.

COVID-19 Caused Disruptions to Aviation Supply Chains

COVID-19 caused a severe disruption to the aviation industry and aviation supply chains that impacted suppliers and manufacturers. Specifically, it significantly decreased the demand for air travel (see figure 2), reducing the need for aviation products and impacting the sales of the products' suppliers and manufacturers. In our interviews, many companies revealed they have lower demand for their products and lost revenue. Also, companies have experienced delays obtaining materials, which is further supported by our analysis of the General Aviation Manufacturer's Association's (GAMA) data on aircraft shipments. These data show a decrease in aircraft sold during the period with fewer passengers. There was one exception: some general aviation manufacturers reported an increase in

demand due to passengers' preference for traveling in smaller aircraft during the pandemic.

Figure 2. 2019-2022 Trends in Daily Air Carrier Passenger Traffic



Source: OIG analysis of Transportation Security Administration data

Demand for air travel has since rebounded to close to pre-pandemic levels and most companies we spoke with expect demand for their products to return. Our analysis of the aircraft shipments data shows a corresponding increase in sales; however, COVID-19 continues to be a concern for aviation supply chains.

- **Loss of suppliers due to COVID-19 decreasing the demand for aviation parts.** Some suppliers were not able to stay in business due to the decrease in sales caused by COVID-19. This challenge is more significant for aviation manufacturers than other industries because, as described previously, there are limited suppliers and it is difficult to switch suppliers due to testing and certification requirements for some parts.
- **Labor shortages since the beginning of the COVID-19 pandemic.** The aviation industry had concerns about increased pressure on wages because of pandemic-related inflation. Several companies we spoke with weathered the first year of the pandemic without issue but have recently suffered labor shortages that impacted their supply chains.
- **Congestion at shipping ports due to COVID-19.** The pandemic has caused congestion at shipping ports, which has had a greater impact on aviation manufacturers that import products internationally than those

that mostly source domestically. For example, two companies we met with started transporting their supplies by air to avoid the congested shipping ports. However, several smaller companies we met with did not have to navigate this issue because they source all their supplies domestically or from Canada and Mexico.

COVID-19's disruption of the supply chain had a significant impact on the aviation industry. According to GAMA, 70 percent of their members had to reduce hours, cut pay, furlough employees, or close operations. Further, 86 percent of members reported lost revenue of around 24 percent on average. Seventy percent of members reported that supply chain issues caused slowdowns in production and deliveries. The Aerospace Industries Association also reported that pandemic-related disruptions halted production lines, delayed transportation of materials and goods, and caused financial distress, particularly among small businesses. The disruptions contributed to civil aircraft production falling 40 percent in 2020. Additionally, the U.S. aerospace and defense industry lost over 87,000 employees—64 percent of those losses were attributed to supply chain issues and involved thousands of small businesses across the United States.

Federal programs, including those funded by the CARES Act and the American Rescue Plan Act, have helped limit the disruptions to supply chain caused by COVID-19 related closures and layoffs. These programs provided a source of money for businesses that supported their viability and stability. The CARES Act helped prevent worst-case scenarios in the civil aviation sector; however, the industry's workforce still shrunk. We met with two small manufacturers that used the CARES Act's Paycheck Protection Program, which provided funds to small businesses for payroll costs and benefits. One company representative stated that the Paycheck Protection Program loans "saved our company." Also, the American Rescue Plan Act's Aviation Manufacturing Jobs Protection Program provided funding to pay up to half the compensation for eligible employees. Industry representatives stated that many manufacturers and suppliers took advantage of these Federal programs to keep their operations running.

Conclusion

The recent COVID-19 pandemic caused major disruptions in the aviation supply chain and highlighted the need for Federal intervention to address associated vulnerabilities. However, no Federal agency, including DOT and FAA, is required to protect the reliability of these vital aviation supply chains beyond ensuring the parts meet safety requirements. While NASA is collaborating with FAA and other agencies to begin addressing some supply chain concerns, its work is in the early stages of development.

Agency Comments and OIG Response

We provided our draft report to DOT and FAA on October 27, 2022. We received their technical comments without a formal written response, on November 28, 2022. This report incorporates their technical comments.

Actions Required

We are not making recommendations and no DOT action is required.

Exhibit A. Scope and Methodology

This performance audit was conducted between May 2021 and October 2022. We conducted this audit in accordance with generally accepted Government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

As requested by the House Committee on Transportation and Infrastructure, our audit objectives were to (1) determine how DOT is tracking imported aviation products and (2) identify potential impacts on the U.S. aerospace industry if imported aviation products are unavailable in the future.

To determine how DOT is tracking imported aviation products, we interviewed DOT officials from the Office of the Secretary of Transportation and FAA's Offices of Aviation Policy and Plans, Aviation Safety, and Aircraft Certification Service. We reviewed FAA's certification policies to determine what information is collected on manufacturers' suppliers. We also broadened our scope beyond DOT to determine if any other Government agencies are tracking imported aviation products. We interviewed officials from NASA, International Trade Administration, and the U.S. Air Force. We reviewed previous OIG, Government Accountability Office, and FAA reports to determine if there were any existing procedures on tracking imported aviation products.

To identify potential impacts on the U.S. aerospace industry if imported aviation products are unavailable, we conducted interviews with NASA, supply chain experts, aviation manufacturers, and aviation associations. We obtained FAA's list of over 1,400 PAHs in order to obtain a universal sample of aviation manufacturers and suppliers to interview. The OIG statistician grouped the PAH list by company size and selected a random sample that the team then selected a judgmental sample from that included a diverse group of companies by size. We interviewed representatives from six aviation manufacturers: Boeing, General Aviation Modifications, Precision Castparts, Rogerson Aircraft Equipment Group, SKF USA Inc., and Textron. The aviation manufacturers varied from large producers to small machine shops. The companies also ranged in aircraft size and type they supplied parts for or manufactured.

In addition to conducting the interviews, we collected and analyzed data on imports, passenger volumes, and aircraft sales. The OIG Statistician assisted in our analysis of Census Bureau data by determining the top 10 countries that import aviation products into the United States, visualizing the Transportation Security Administration (TSA) data on trends of passenger volumes, and visualizing the

trends of aircraft shipments and billings data. We obtained Census Bureau data from the International Trade Administration on all countries importing aviation products into the United States from 2011 through 2020. We analyzed Census Bureau data throughout the 10 years presented. However, the House Committee on Transportation and Infrastructure requested the scope of the audit to cover the last 5 years. Therefore, the analysis and findings in this report only display the period from 2016 through 2020. We also obtained TSA data on passenger volumes at security checkpoints between 2019 through 2021 to determine the impact COVID-19 had on the industry. We also obtained GAMA data on aircraft shipments and billing data from 1994 through 2020 but limited our analysis to 2019 through 2020 to determine the relationship between passenger volumes and demand for aircraft.

Exhibit B. Organizations Visited or Contacted

Federal Organizations

Department of Transportation

Federal Aviation Administration

International Trade Administration

National Aeronautics and Space Administration

U.S. Air Force

Industry Organizations

Aerospace Industries Association

General Aviation Manufacturers Association

Small Unmanned Aviation Vehicle Coalition

Aviation Manufacturers and Suppliers

Boeing

General Aviation Modifications

Precision Castparts

Rogerson Aircraft Equipment Group

SKF USA Inc.

Textron

Exhibit C. List of Acronyms

CARES Act	Coronavirus Aid, Relief, and Economic Security Act
COVID-19	Coronavirus Disease 2019
DOC	Department of Commerce
DoD	Department of Defense
DOT	Department of Transportation
FAA	Federal Aviation Administration
GAMA	General Aviation Manufacturers Association
NASA	National Aeronautics and Space Administration
OIG	Office of Inspector General
PAH	Production Approval Holder
TSA	Transportation Security Administration
UAS	Unmanned Aircraft System

Exhibit D. Major Contributors to This Report

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