

## **Analyzing the challenges of the growth in the air transportation system through the Covid Pandemic and support from collegiate aviation programs**

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### **ABSTRACT**

The air transportation industry was experiencing massive growth across the globe before the COVID-19 pandemic. At that time, future projections from major forecasting indicators, such as the Boeing Global Forecast and Airbus Market Forecast, predicted a greater than 4% average yearly growth rate over the next twenty years. The Federal Aviation Administration also predicted higher-than-average growth rates in the United States. The Global Covid pandemic brought significant cutbacks and losses to the industry. In 2022, the air transportation industry is bouncing back. With increased aircraft purchases comes the need for thousands of new pilots, managers, cabin crew members, and maintenance technicians. Currently, collegiate aviation is one of the primary producers of qualified candidates in the aviation industry. This paper analyzes the projected growth of the air transportation industry before and after the COVID-19 pandemic and evaluates the status of collegiate aviation programs in supporting that growth worldwide.

Keywords: Collegiate Aviation, Air Transportation, Federal Aviation Administration, Pilot Shortage, Pilot Training

## BACKGROUND

In 2019, Pre-Covid, the aviation industry was experiencing massive growth. The International Air Transport Association (IATA) was forecasting a 3.5% compound annual growth rate (CAGR) for the global air transportation industry in the next 20 years (Passenger numbers to hit 8.2bn by 2037 - IATA report, 2018). According to Forbes, the number of passengers transported by airlines can increase to over eight billion in 2037, up from 7.8 billion in 2036 (Air Travel Projected To Double In 20 Years, But Protectionism Poses Threat, 2018).

Not only in the United States but worldwide, the commercial aviation sector was also soaring. This projected growth can present many problems. However, the biggest is finding aviation-educated individuals to keep up with demand and fill in for retiring industry workers. According to Boeing Global Forecasts, the industry would require 42,000+ new aircraft for replacement and expanded markets in the next 20 years for replacement and expanded markets (Boeing Forecasts Demand for 42,600 New Commercial Jets Over Next 20 years, 2023). They also projected the need for approximately 650,000 commercial pilots, 690,000 maintenance technicians, and 938,000 cabin crew (Boeing Forecasts Demand for 2.3 Million New Commercial Pilots, Technicians and Cabin Crew in Next 20 Years, 2023).

Airports Council International (ACI) also expected significant needs for aviation managers in the next 20 years. ACI- North America states: "Collectively, U.S. airports support more than 11.5 million jobs and account for \$1.4 trillion in economic activity – or more than seven percent of the total U.S. GDP" (Airports Council Releases 2022 North American Airport Traffic Rankings , 2023). According to their website, a pilot license is not required to become an airport manager. However, business and aviation management skills are needed. ACI goes on to list specific college courses that would be helpful in the industry. These courses include aviation management policies, economics, finance, public relations, business law, aviation legislation, and engineering.

Collegiate aviation programs were also helping to keep a healthy pipeline of pilots into the industry. Collegiate aviation program student numbers were on the rise across entering classes.

Post-Covid, air transportation worldwide is forecasted to grow 4% a year for the next 20 years, and the industry faces considerable shortages in recruits. Understanding this shortage, industry employers have created recruiting programs and are partnering with higher education institutions. These partnerships help students obtain jobs upon graduation and bring high exposure to the institutions.

## PROBLEM COVID

The COVID-19 pandemic significantly impacted the airline industry, including the hiring and training of pilots. Pre-pandemic, people seeking an aviation career were on the rise, and we were beginning to see the effects of the pilot shortage. Many professional associations have launched programs to recruit new talent to the aviation industry. One such program was created in 2009. The International Civil Aviation Association (ICAO) launched a worldwide program, Next Generation of Aviation Professionals (NGAP), that ensures enough qualified and

knowledgeable aviation professionals are available to operate, manage, and maintain the future international air transport system (NGAP Programme, 2023). Airlines had also created pathway programs and partnered with collegiate aviation institutions. Potential students from across the globe were being marketed to and encouraged to seek a career in aviation from professional groups to institutions of higher education themselves.

As air travel reached a near standstill during the pandemic, many airlines were forced to reduce their operations, leading to a sharp decrease in the demand for pilots. Consequently, pilot hiring was put on hold or significantly scaled back within the airline industry. From 2020 – 2021, U.S. Scheduled service passenger Annual Net Income lost 37.8 billion dollars and 5.1 billion within Q1 of 2022 (2021 Annual and 4th Quarter U.S. Airline Financial Data , 2022). The airlines faced insurmountable pressures to retain pilots without furloughing during the pandemic. Airlines were prohibited from laying off or cutting the pay rates of employees through September 30, 2020, under the terms of the \$25 billion in federal coronavirus aid (Crippled Airline Industry to Get \$25 Billion Bailout, Part of It as Loans, 2020). However, airlines used the opportunity to shrink their personnel force and save money by offering voluntary separation or leave options. As a result, more than 1,800 workers pilots took buyouts and early retirements at Delta Airlines (Delta plans to furlough nearly 2,000 more pilots as COVID-19 continues to wreak havoc on the airline industry, 2020).

The uncertainty surrounding the industry's recovery further complicated the employment prospects for pilots, as airlines had to navigate financial challenges and reorganization efforts. Airlines are now focusing on hiring new pilots and retraining current pilots to meet the rising demand as travel gradually resumes and the industry rebuilds itself.

## **POST-COVID PROJECTED GROWTH**

After a challenging period brought about by the COVID-19 pandemic, the airline industry witnessed a steep recovery, leading to a resurgence in airline pilot hiring, training, and operations. As travel restrictions eased, airlines experienced an increased growth in passenger demand. The Federal Aviation Administration projected 2018-2038 a 1.9% per year U.S. passenger growth and a 2.3% per year Revenue Passenger Per Mile increase (Transportation Research Board, 2018). This projected growth has prompted a renewed need for pilots, resulting in increased hiring efforts by airlines to fill the gaps left during the COVID-19 pandemic. The U.S. occupational outlook projects "About 18,100 openings for airline and commercial pilots each year over the next decade" (Bureau of Labor Statistics, U.S. Department of Labor, 2022). United Airlines plans to hire more than 2,000 pilots this year alone (United Airlines Plans to Hire 15,000 workers by year-end, 2023). Simultaneously, collegiate, private, and airline pilot training programs are being started and revitalized to accommodate recruits and meet the rising demand. United Airlines, for example, started its own United Aviate Academy flight training program in Goodyear, Arizona, to keep up with pilot hiring demands (United Aviate Academy, 2023). The positive increase is shown in the number of student, private, and commercial pilot certificates issued by the FAA since the pandemic. Student pilot certificates issued increased from 48,477 to 49,933, Private Pilot Certificates increased from 23,756 to 24,155, and Commercial Pilot Certificates increased from 14,179 to 14,442 (How Many Pilot Certificates are Issued Per Year

(Private, Commercial, ATP), 2021). Despite the challenges posed by the COVID-19 pandemic, the industry's malleability and resilience drive it towards a positive recovery and long-term growth.

## SCOPE OF COLLEGIATE AVIATION

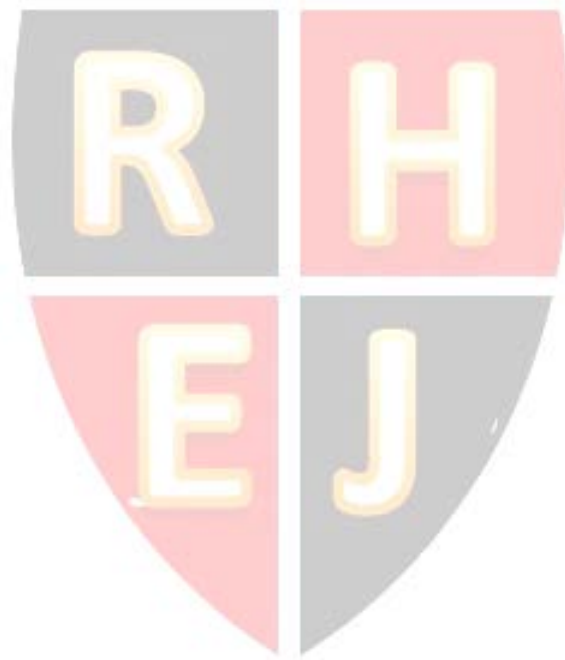
College aviation programs play a crucial role in aiding the pilot pipeline into the airline industry. According to AOPA Flight Training Collegiate Aviation Directory 2018, the United States has approximately 220-230 total aviation programs (2018 Flight Training College Aviation Directory, 2017). This figure includes 2- and 4-year degree programs. These degrees vary between flight training, aviation management, aircraft maintenance, air traffic control, and unmanned aircraft systems.

These collegiate programs provide new pilots with comprehensive training and education, equipping them with the necessary knowledge, skills, and flight hours to gain applicable FAA certification and pursue careers in the aviation industry. According to a collegiate aviation program in the western United States, incoming aviation student numbers were slightly positive throughout COVID-19. Post-pandemic, the program has seen a double-digit percentage increase in student enrollment for the past two years (Kuhlmann, 2023). Additionally, many college aviation programs have established partnerships and collaborations with airlines, allowing students to access internships, mentorship programs, and job placement opportunities. Two legacy carriers, Delta Air Lines and United Airlines, have their own college aviation pathway program, as do most regional and national carriers. These connections facilitate a seamless transition from graduation to entry-level pilot positions within the airline industry. Moreover, college aviation programs often offer specialized curricula to meet the specific requirements of airlines, such as crew resource management (CRM) and jet transition courses. By nurturing talent and fostering industry connections, college aviation programs contribute significantly to the steady flow of pilots into the aviation industry, ensuring a sustainable pilot pipeline for the future.

## CONCLUSIONS

As unfortunate as COVID-19 was globally, its short-lived convergence and impact on the airline industry has only helped to exacerbate the pilot shortage. Hiring and training freezes and buyouts for early retirement as a survival strategy were then fueled with a robust return of the traveling public to flying, creating a gap in the industry that has been tough to catch up on. The pilot shortage is a multi-faceted challenge, with collegiate aviation programs trying to fill the gap, as well as airline flight training programs and pathway programs. Airline flying demand is back and accelerating. Colleges not involved in aviation in the past have started new pilot programs, but it will take time to build these programs and for the pilot supply to catch up with consumer demand. The authors understand that more research is necessary to understand the recent growth of collegiate aviation programs and their potential impacts on helping mitigate further pilot shortages. However, with a collaborative and adaptive environment, the aviation

industry can navigate these challenges and better serve the needs of consumers in this global dynamic industry.



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