FROST & SULLIVAN

The Personal Aviation Market:

An Industry Report

for

CIRRUS AIRCRAFT

For and on behalf of
Frost & Sullivan Limited

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Final Report
June 2024

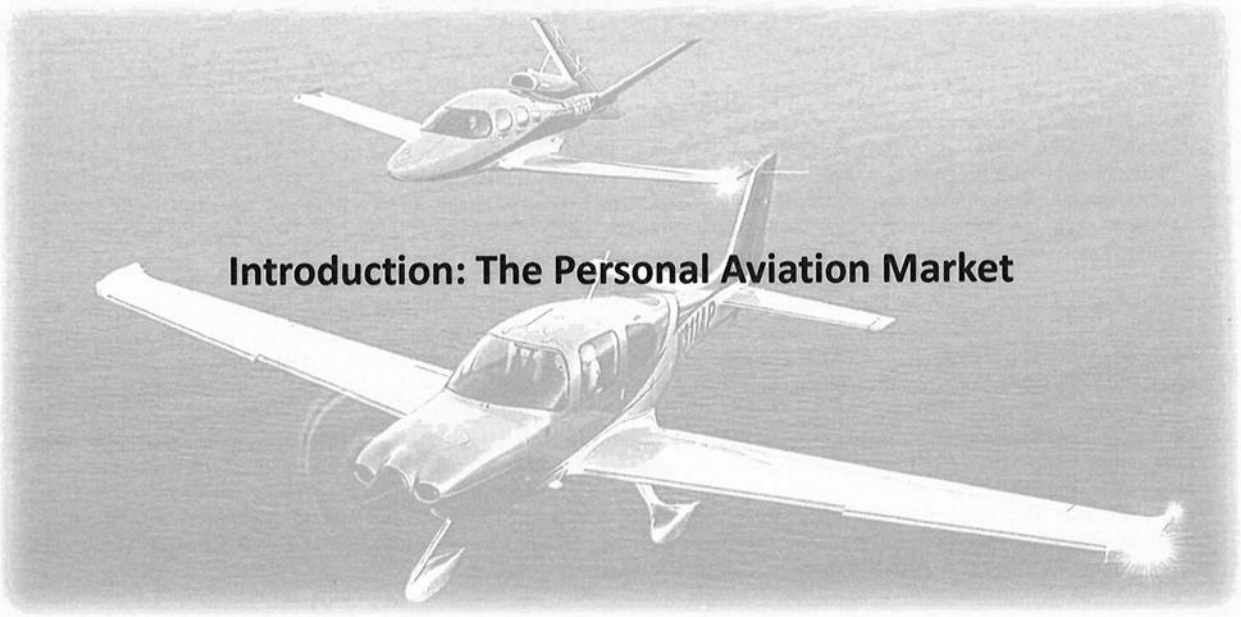
The Personal Aviation Market:
An Industry Report for Cirrus Aircraft

The Personal Aviation Market:
An Industry Report for Cirrus Aircraft (cont.)

Executive Summary

Cirrus Aircraft is an innovative and pioneering force in Personal Aviation. With DNA rooted in advanced technology and ergonomic design, the game-changing SR Series aircraft introduced more than 20 years ago is deeply established as the foundation of the most successful family of Personal Aircraft in the market. With more than 9,000 SR Series deliveries since entry in service in 1999, the Cirrus family has grown to include higher-performing piston models and the innovative Cirrus Vision Jet, the world's first single-engine jet expressly designed to meet the needs and expectations of a demanding Personal Aviation clientele. By most measures, Cirrus Aircraft is the exception to the rule that new aircraft industry entrants cannot succeed against seemingly impregnable barriers to entry.

This Industry Report provides rich details and insights into the Personal Aviation market, which encompasses the non-commercial operation of general aviation aircraft, including the lucrative owner-flown and much-in-demand flight training segments. Cirrus Aircraft is the far and away market and technology leader in Personal Aviation. Operating in growing and defensible segments of the market, Cirrus Aircraft is poised for growth. Fueled by enthusiastic and engaged team members and a world-class leadership team, Cirrus Aircraft is deeply committed to its mission to deliver an aviation experience that is the pinnacle of innovation, quality and safety to its lifelong-loyal customers who eagerly embrace the Cirrus Life.



Introduction: The Personal Aviation Market

For the purposes of this Personal Aviation Market Industry Report, we segment the addressable market into two primary segments corresponding with Cirrus Aircraft's existing product line and that of its primary competition. These segments are:

- ***Piston Aircraft Segment*** - including single- and twin-engine models; and
- ***Turbine Aircraft Segment*** - including single-engine pressurized turboprop and single- and twin-engine Personal Jet and Very Light Jet models.

This report includes both an historical review and forecast, specifically:

- 5-Year Historical: 2018-2022;
- Base Year: 2022; and
- 5-Year Forecast: 2023-2027.

For additional information, including definitions of world regions and aircraft size categories as used in this report, please refer to the Appendix.

UPDATED

What is General Aviation?

General Aviation is the largest aviation market in the world based on units delivered. The worldwide general aviation fleet, which includes both fixed- and rotary-wing designs, included approximately 440,000 aircraft at the end of 2022. While the general aviation fleet is very widely distributed geographically, about 47% of aircraft were based in the United States and 30% in Europe at the end of 2022. In the calendar year 2022, general aviation factory shipments totaled 3,750 new aircraft valued at more than $U.S. 27 Billion. Fully three-quarters of global shipments in the year 2022 were fixed-wing aircraft (2,818 units), representing an estimated 84% of total delivery value based on manufacturer published list prices.

General aviation encompasses both professional and personal aviation. Professional aviation involves a range of activities, including corporate services, charter services, agricultural operations, fire protection, disaster relief and environmental conservation. Personal aviation refers to the non-commercial operation of fixed-wing general aviation aircraft, including activities such as owner-flown and flight instruction. The main types of aircraft used in personal aviation include piston engine aircraft and turbine aircraft.

The General Aviation Manufacturers Association (GAMA), an industry trade group, defines general aviation as "all aviation other than military and scheduled commercial airlines." The industry includes aircraft, aero-engine, and avionics manufacturers, aerospace components and systems suppliers, aircraft owners and operators (including those operating private / corporate, on-demand charter, fractional ownership, membership, and managed aircraft businesses), and a broad spectrum of aviation service providers. These service organizations include aircraft maintenance / repair / overhaul (MRO), fixed-based operations (FBO), pilot and maintenance training, aviation fuel suppliers, and aircraft transactions services.

Sources: General Aviation Manufacturers Association (GAMA); National Business Aviation Association (NBAA)

The Economic Impact of General Aviation

While there is no single source of information on the global general aviation industry, GAMA reported that general aviation manufacturers supported $U.S. 247 billion in economic activity and 1.2 million jobs both directly and indirectly in the United States in 2019.

The U.S. Federal Aviation Administration (FAA) estimates that the U.S.-based general aviation and on-demand fleet of aircraft grew 7.8% in the 5-year period from 2017 through 2021. Flight activity reached 26.4 million flight hours in 2021, up 6.5% over the same 5-year period.

One of the many benefits of general aviation aircraft is their ability to operate at smaller airports closer to the ultimate destinations of their owners and operators. In 2021, scheduled airlines served just 430 U.S. airports across the contiguous United States*, a number that has changed little over the years as airlines have focused their services at larger hub airports and reduced their regional and point-to-point flying. In 2021, the general aviation aircraft fleet operated across a spectrum of more than 5,100 public-use airports throughout the United States, providing essential air services that helped to connect communities, shorten overall travel times, increase productivity, and stimulate economic activity.

Sources: General Aviation Manufacturers Association (GAMA); FAA 2021 General Aviation Survey; Regional Airlines Association (RAA) Annual Report 2022; * "Contiguous United States" excludes Alaska, Hawaii, Guam, Puerto Rico, and the U.S. Virgin Islands

What is Personal Aviation?

Personal Aviation involves the non-commercial operation of general aviation aircraft and includes owner-flown and flight instruction activities. Personal Aviation customers tend to be highly engaged in the aircraft purchase process, and very loyal to a brand when they have been well served. Personal Aviation customers value the unique spectrum of benefits that they derive from their aircraft, which often becomes an extension of their professional and personal lives, shared with family, friends, and colleagues. Just as personal electronic devices revolutionize the way people work, communicate, and stay informed, Personal Aircraft are the ultimate air mobility devices.

Cirrus Aircraft has pioneered advancements in technology that enable some of the world's most successful and entrepreneurial individuals, their families, friends, and colleagues to experience Personal Aviation – safely, securely, privately, economically. Cirrus Aircraft has established an enviable reputation as an innovative leader in the advancement of a Personal Aviation ecosystem. The company is recognized as an industry pioneer in developing and delivering premium products and services for some of the world's most demanding customers. Cirrus Aircraft's success to date is reflected in its commanding market share in the segments where it chooses to compete – specifically in 2023, the single-engine piston and turbine aircraft segments with new purchase prices below $7 million.

Source: Cirrus Aircraft Business (consolidated) Prospectus – 30 March 2023

Why is Personal Aviation a Lucrative Market to Serve?

Cirrus Aircraft is a globally recognized, technology-driven aircraft company that enables unique lifestyle experiences for customers, owners, and operators. While known worldwide as 'the plane with a parachute,' Cirrus aircraft designs and innovative customer-facing services have been refreshingly disruptive in an industry populated by a number of more traditional competitors.

Cirrus Aircraft has succeeded in building strong brand loyalty and allegiance amongst a passionate and worldwide customer base, which reflects in Cirrus' strong, steady market share growth in single-engine piston and turbine aircraft segments priced below $7M. The Cirrus SR20/SR22/SR22T family achieved more than 2,000 total deliveries worldwide from 2018 through 2022, while growing annual delivery unit market share from 79% to a remarkable 81% in the certified single-engine fixed-wing piston aircraft category. The Cirrus Vision Jet SF50, the world's first single-engine Personal Jet, achieved almost 400 total deliveries worldwide from 2018 through 2022, while growing delivery unit market share from 43% to 61% in the single- and twin-engine Personal Jet and Very Light Jet categories.

Source: Cirrus Aircraft Business (consolidated) Prospectus – 30 March 2023 & GAMA

Cirrus Aircraft: The Global Leader in Personal Aviation

Cirrus Aircraft provides a comprehensive ecosystem of innovative personal aviation products and services that captivate, serve, and support customers throughout the entire lifecycle of their aircraft ownership and operations experience. With a world-class workforce with DNA and deep roots in the general aviation industry, Cirrus Aircraft delivers a personal aviation experience that is at the pinnacle of innovation, quality and safety in the industry. With more than 9,000 single-engine piston aircraft production deliveries since entry-in-service in 1999, Cirrus Aircraft has created a solid foundation of products and services that appeals to customers and encourages them to enter, stay, and migrate upwards within the Cirrus Personal Aviation family and ecosystem. Cirrus is a recognized industry leader in aircraft innovation.

Demand Drivers

While there are numerous underlying factors which encourage the demand for Personal Aviation, the most fundamental of these is ***economic growth*** as measured by the rate of change in real Gross Domestic Product (GDP). From 2013 through 2022, the World's economies grew at 2.55% CAGR, somewhat faster than the world jet fleet. A recent GDP forecast* predicts that there will be a considerable regional variation in economic expansion over the next 10 years, led by Asia Pacific:

- Asia Pacific: 4.04%
- Africa: 3.86%
- Latin America & Caribbean: 2.78%
- Middle East: 2.55%
- Former Soviet Union: 2.38%
- North America: 1.81%
- Europe: 1.51%
- World: 2.79%

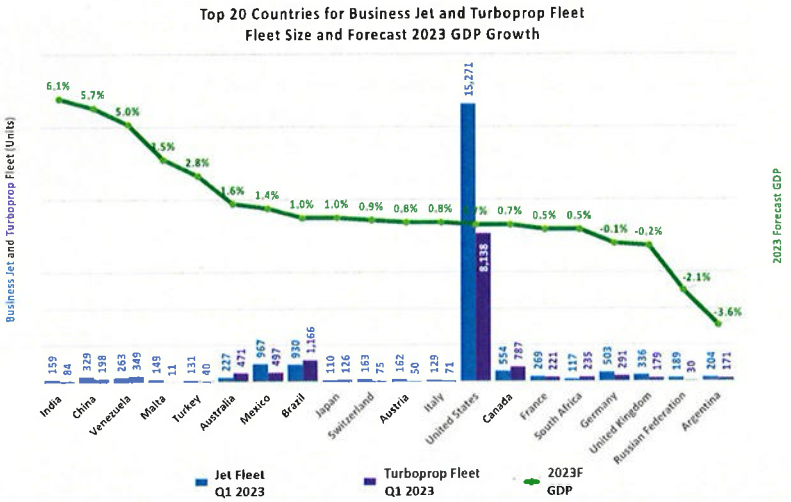
Jet Fleet[1]

Region	10 Years Historical Real GDP Annual Growth Rate CAGR 2013 - 2022	10 Years Historical Jet Fleet Annual Growth Rate CAGR 2013 - 2022	Ratio of Fleet-to-GDP Annual Growth Rate CAGR
Africa	2.80%	-0.39%	-0.14
Asia Pacific	4.33%	3.24%	0.75
Europe	1.41%	4.22%	2.99
Former Soviet Union	0.32%	3.57%	11.14
Latin America & Caribbean	0.97%	0.44%	0.45
Middle East	2.55%	2.66%	1.04
North America	2.09%	1.80%	0.86
World	2.55%	1.93%	0.76

Source: *U.S. Economic Research Service – November 15, 2022; CAGR = Compound Annual Growth Rate; Jet fleet includes all business jet categories from Very Light Jets through Ultra Long Range Jets and Business Jet Airliners; fleet excludes regional and mainline commercial airliners

Demand Drivers

In 2023, GDP growth rates are expected to be modest across many of the largest country markets for General and Personal Aviation. With most new aircraft orders from customers who already own their own aircraft, industry demand is largely dependent upon economic conditions and sentiment where the fleets are largest. Nowhere is this more evident than in the United States, where ~60% of the fleet is currently based.



Sources: Ebaa – JETNET as of March 31, 2023; 2023 Forecast GDP Growth – The Economist – April 22, 2023; International Monetary Fund (IMF) World Economic Outlook – April 2023; References to China's business aircraft fleet include aircraft registered / based in Mainland China, Hong Kong & Macau (excluding Taiwan); "OEM" = Original Equipment Manufacturer (an aircraft manufacturer)

Demand Drivers

The world turboprop fleet, which included almost 16,000 aircraft at the end of 2022, consists of a wide variety of both unpressurized and pressurized models. Much of the current fleet consists of older aircraft, including those delivered at or around the market's historic peak in 1978-1982. By the end of 2022, the average age of the world turboprop fleet was almost 24 years, ~6 years older than the jet fleet. While much of the demand for turboprops today is for ***replacement due to aircraft aging***, almost all fleet growth in the past 10 years has occurred outside of North America. While the efficiency and utility of turboprops is widely recognized, aircraft buyers in some regions – most notably, in the U.S., Middle East, and Russia – demonstrate a strong ***jet preference***.

Turboprop Fleet*

Region	10 Years Historical Real GDP Annual Growth Rate CAGR 2013 - 2022	10 Years Historical Turboprop Fleet Annual Growth Rate CAGR 2013 - 2022	Ratio of Fleet-to-GDP Annual Growth Rate CAGR
Africa	2.80%	1.75%	0.62
Asia Pacific	4.33%	3.73%	0.86
Europe	1.41%	3.40%	2.41
Former Soviet Union	0.32%	3.47%	10.82
Latin America & Caribbean	0.97%	1.67%	1.72
Middle East	2.55%	2.65%	1.04
North America	2.09%	0.14%	0.07
World	2.55%	1.05%	0.41

Source: U.S. Economic Research Service – November 15, 2022; JETNET; BVA analysis; *Includes all categories of turboprops (pressurized and unpressurized) except twin-engine unpressurized utility turboprops and pressurized regional turboprops; Note that the percentage growth rates for the Former Soviet Union and Middle East are less meaningful due to small fleet numbers.

Demand Drivers

New product development investments – all-new designs upgrades, and refreshes – stimulate customer interest and the demand for Personal Aviation aircraft. Cirrus Aircraft has been one of the industry leaders in designing and certifying new and improved aircraft that capture the attention of Personal Aviation customers.

Worldwide, the fleet of in-production turbine aircraft in the segments where Cirrus competes grew at an 11% CAGR from 2013-2022, representing a 4.3x multiple to GDP growth worldwide. This multiple was an even higher 5.2x in North America where 87% of the Cirrus Vision Jet SF50 fleet is based.

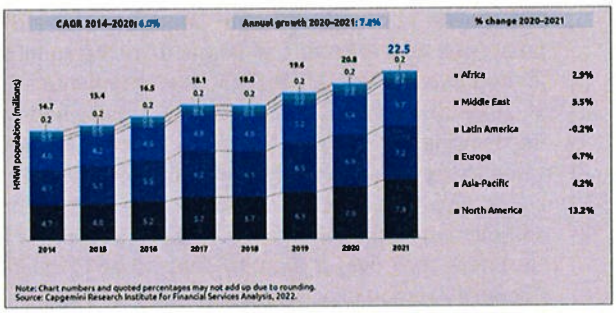
Select Turboprop and Jet Fleets*

Region	10 Years Historical Real GDP Annual Growth Rate CAGR 2013 - 2022	10 Years Historical Select Turboprop and Business Jet Fleet Annual Growth Rate CAGR 2013 - 2022	Ratio of Fleet-to-GDP Annual Growth Rate CAGR
Africa	2.80%	3.34%	1.19
Asia Pacific	4.33%	9.54%	2.20
Europe	1.41%	14.99%	10.63
Former Soviet Union	0.32%	*nm*	*nm*
Latin America & Caribbean	0.97%	9.30%	9.57
Middle East	2.55%	*nm*	*nm*
North America	2.09%	10.98%	5.24
World	2.55%	10.96%	4.30

Source: *U.S. Economic Research Service – November 15, 2022; JETNET; BVA analysis; * Includes in-production pressurized single-engine turboprops, Personal Jets, and Very Light Jets only – i.e., turbine-powered segments in which Cirrus Aircraft directly competes; Note that the percentage growth rates for the Former Soviet Union and Middle East are not meaningful (nm) due to small fleet numbers.

Demand Drivers

Another driver of demand is growth in ***High Net-Worth Individual (HNWI)**** populations and wealth. Research conduced by Capgemini suggests that there were 22.5 million HNWIs worldwide at the end of 2021. As a group, the world's HNWI population grew at 6.4% CAGR worldwide from 2016 though the end of 2021, fully 6x faster than the world's population. Notably, HNWI wealth as measured by investable assets grew at a similar 6.3% CAGR.



While HNWIs typically have relatively easy ***access to capital***, other factors such as ***historically low interest rates*** and ***accelerated depreciation rules*** have facilitated aircraft sales and the timing of demand, particularly in the United States.

Sources: Capgemini World Wealth Report 2022; United Nations Population Report - 2022; U.S. Federal Reserve; European Central Bank; *HNWI is defined as a person with investable assets of $U.S. 1 million or more, excluding primary residence, collectibles, consumables, and consumer durables

Demand Drivers

By country, the largest HNWI populations are in the U.S., Japan, Germany and China. The 10 largest national populations of HNWIs account for 77% of the world's total HNWI population. Notably, these same 10 countries are home base for 70% of the world's business aircraft fleet of high-end business pistons, turboprops, and jets.

Rank	Country	HNWIs ('000)	% of World HNWI Total	# of Aircraft	Aircraft per 1000 HNWI
1	United States	7,460	33.2%	26,702	3.58
2	Japan	3,652	16.3%	291	0.08
3	Germany	1,633	7.3%	889	0.54
4	China	1,535	6.8%	533	0.35
5	France	775	3.5%	556	0.72
6	United Kingdom	609	2.7%	545	0.89
7	Switzerland	479	2.1%	256	0.53
8	Canada	439	2.0%	1,469	3.35
9	Netherlands	328	1.5%	114	0.35
10	Italy	322	1.4%	210	0.65
	10 Largest HNWI Populations	**17,232**	**76.7%**	**31,565**	**1.83**

When we evaluate the populations of HNWIs and business aircraft at a national level, just two countries – the U.S. and Canada – stand out as having relatively large fleets. They share a common border, extensive networks of airports, limited high-speed passenger rail networks, and vast distances – all of which encourage an air-minded culture.

Sources: Capgemini World Wealth Report 2022; United Nations Population Report - 2022; "HNWI" = a person with investable assets of $U.S. 1 million or more, excluding primary residence, collectibles, consumables, and consumer durables; JI INET; RVA analysis; National fleets include high-end piston, turboprop, and jet aircraft as recorded by JI INET at the end of 2022; Fleet includes all business jet categories from Personal Jets through Ultra Long Range Jets and Business Jet Airliners; fleet excludes regional and mainline commercial airliners

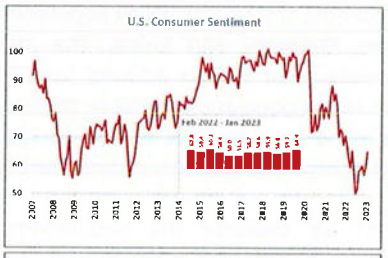
Demand Drivers

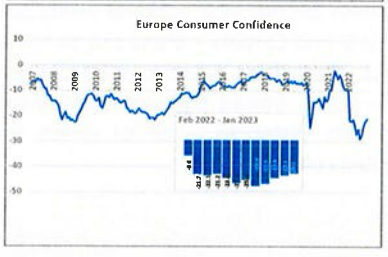
The growth in the ***aircraft pilot population***, fueled by the number of student pilots in training, influences and reflects the demand for Personal Aviation aircraft. After many years of very limited growth, The U.S. student pilot population grew at a CAGR of 12.5% from 197.7 thousand in 2019 to 316.5 thousand in 2023, which bodes well for sales of general aviation aircraft. Recognizing the value in helping customers to become licensed to fly the SR Series and type-rated in the Vision Jet, Cirrus Aircraft recently opened its Vision Center Campus in Knoxville, TN and a network of factory-owned training centers in Texas, Florida, Arkansas, and Arizona. These complement global networks of training partners and instructor pilots to reach customers closer to where they live, a strategy that helps to build Cirrus brand loyalty early in a customer's Personal Aviation experience.

Source: U.S. Federal Aviation Administration – U.S. Civil Airmen Statistics 2022

Demand Drivers

Consumer spending, also referred to as private consumption, is the most significant component of many country's national accounts. ***Consumer sentiment*** is therefore of paramount interest to policymakers and business leaders as it is a good predictor of future consumption patterns in the short term. In 2022, consumer spending accounted for 68% of GDP in the U.S. and 52% of GDP in the Euro Area. Changes in consumer confidence – and by association, in expected spending patterns – are amongst the many factors that economists consider when analyzing markets for evidence of shifting demand signals. The recent downturn in consumer confidence in the U.S. and Euro Area portends a period of slower consumption in the near term.

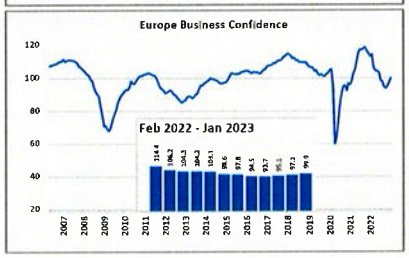




Sources: University of Michigan – Survey of Consumers; European Commission – Consumer Confidence Index (CCI) – Business & Consumer Surveys; Euro Area (EA19), or Eurozone, is a group that includes Austria, Belgium, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Portugal, Slovakia, Slovenia, and Spain

Demand Drivers

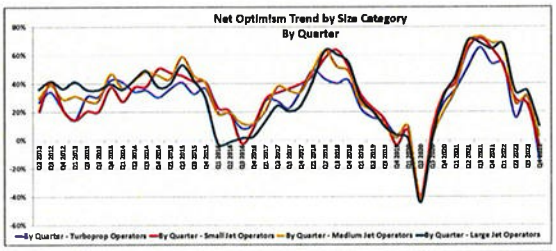
Business confidence indicators in the U.S. and the 19-country Euro Area provide early signals of changes in economic activity. The U.S. Purchasing Managers Index (PMI) measures new orders, production, employment, supplier deliveries, and inventories. A PMI above 50 indicates a growing U.S. manufacturing sector, while a PMI below 50 indicates contraction. The European Economic Sentiment Indicator (ESI) is a broad-based composite indicator based on a monthly survey of manufacturers, services, retail trade, construction services, and consumers. Both the PMI and ESI metrics have steadily declined recently, reflecting slowdowns in economic activity.

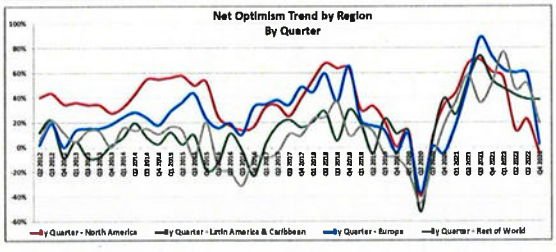


Sources: Institute for Supply Management PMI Composite Index; European Commission – Economic Sentiment Indicator (ESI) – Business & Consumer Surveys; Euro Area (EA19), or Eurozone, is a group that includes Austria, Belgium, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Portugal, Slovakia, Slovenia, and Spain.

Demand Drivers

Since 2011, JETNET iQ Global Business Aviation Surveys have been monitoring ***aircraft owner/operator sentiment*** amongst the turboprop and jet aircraft fleet. Net Optimism is a metric that ranges from +100% to -100%; the higher the value, the more optimistic is the owner / operator community about where the industry is in the current business cycle. As with consumer and business confidence indices, the metric reveals levels of confidence as well as the direction and rate of change. Net Optimism peaked most recently at the end of 2021, a period of very strong aircraft orders and pre-owned aircraft retail sales despite surging prices, historically tight pre-owned inventory, and lengthening OEM backlogs. Net Optimism dropped quite steeply in North America in Q2 2022, leading a global trend downwards, signaling a slower aircraft sales period in the near term.





Source: JETNET iQ Global Business Aviation Surveys of fixed wing turbine aircraft owners and operators. Note: "Net Optimism Scores" refer to the net difference between the percentage of respondents who believe that the industry is past the low point in the current business cycle minus the percentage of respondents who believe that we have not yet reached the low point.

Demand Drivers

While difficult to measure with precision, one of the most fundamental drivers of demand for Personal Aviation is the realization of the precious ***value of personal time***. Such realizations were accelerated by the forced isolations, quarantines, and restrictions of COVID. Pent-up demand for air travel and for Personal Aviation was released post-COVID, resulting in surging manufacturer order backlogs and book-to-bill performance.

Since mid-2020, HNWIs have been investing in Personal Aviation like never before, whether for charter, fractional ownership, or whole aircraft ownership. Most aircraft manufacturers are reporting that they have booked 2 or more years of orders that are held in backlog at unprecedentedly strong prices. Today, a temporary slowdown in the frenetic pace of new Personal Aircraft orders should provide OEMs with additional time to repair their extensive supply chains and focus on on-time, on-quality, on-cost product and service delivery. In our opinion, the Year 2023 is a time of rebalancing demand and supply forces in preparation for structurally higher demand going forward.

Market Segmentation

Cirrus Aircraft competes in two distinct segments of the General Aviation / Personal Aviation marketplace. For the purposes of this report, we will identify these simply as ***Piston Aircraft*** and ***Turbine Aircraft***. Manufacturers tend to compete based on aircraft size, price, engine type, mission performance, design features, brand reputation, and customer service.

Relevant Piston Aircraft Segment

The ***Relevant Piston Aircraft Segment*** includes both high-performance single- and twin-engine models with new list prices ($U.S. 2022) between $500,000 and $1.6M with 4-7 seats. The company's SR Series family of 4-seat models – the SR20, SR22, SR22T – participates in competition with various models from Textron Aviation (Cessna and Beechcraft), Piper Aircraft, and Diamond Aircraft. Today's Cessna, Beechcraft, and Piper aircraft are traditional sheet-metal designs based on updated legacy platforms originally developed in the 1950s, 1960s, and 1970s. The Diamond Aircraft DA62 is a more modern twin-engine diesel-powered composite design with retractable gear that has been in production since 2015.

Cirrus SR22T

Note: For the purpose of this report, new aircraft equipped list prices, performance, and attributes are based on Business & Commercial Aviation Purchase Planning Handbook data (2022); Photo: Cirrus Aircraft

Market Segmentation

Relevant Turbine Aircraft Segment

Cirrus Aircraft created the single-engine Personal Jet segment with the advent of the Cirrus Vision Jet SF50, which entered service in 2016. Despite numerous attempts, no other aircraft company has successfully developed and certified a single-engine turbofan aircraft to compete against the $3M SF50. For the purposes of this report, we group the Vision Jet with various pressurized Single-Engine Turboprop and twin-turbofan Very Light Jet designs priced between $2.6M to $6M based on $U.S. 2022 equipped list prices. We call this grouping the ***Relevant Turbine Aircraft Segment***. These include the following:

Single-Engine Turboprops

- Piper M500 / M600
- Daher TBM 910 / 960
- Epic E1000
- Pilatus PC-12
- Beechcraft Denali (in development)

Very Light Jets

- Embraer Phenom 100
- HondaJet
- Cessna Citation M2

Cirrus Vision Jet SF50

Note: For the purpose of this report, new aircraft equipped list prices, performance, and attributes are based on Business & Commercial Aviation Purchase Planning Handbook data (2022); Photo: Cirrus Aircraft

Market Segmentation

Although there are some exceptions, most Personal Aviation aircraft are flown for non-commercial purposes and without a paid professional pilot at the controls. Personal Aircraft owners appreciate the time-savings convenience, schedule flexibility, simplicity, privacy, and security of having access to and operating their own aircraft.

Compared to most commercially-flown aircraft, overall annual utilization of Personal Aircraft is quite low, averaging between 100 to 300 flight hours (FH) per year for most owners / operators. Typical trips or missions are 1 to 2.5 hours in flight duration. Typically, not all seats are occupied, with 2-3 people on-board being very common. As with every aircraft, payload range is a constant consideration, with the pilot in command responsible for flight planning, navigation and communication with air traffic control, fuel purchase, and the safe operation of the aircraft. Cirrus Aircraft has been amongst the most innovative OEMs is advancing the science and art of Personal Aviation safety, pioneering and certifying technologies including intuitive glass cockpits, airframe parachutes, and emergency Autoland systems.

Note: For the purpose of this report, new aircraft equipped list prices, performance, and attributes are based on Business & Commercial Aviation Purchase Planning Handbook data (2022); Photos: Cirrus Aircraft

Market Segmentation

Based on available information for the turbine aircraft segment, the Cirrus Vision Jet SF50 fleet flew an average of 111 flights and 151 FH per aircraft in 2022.* Average distance flown was 329 nautical miles (nm) with average flight time of 70-90 minutes.

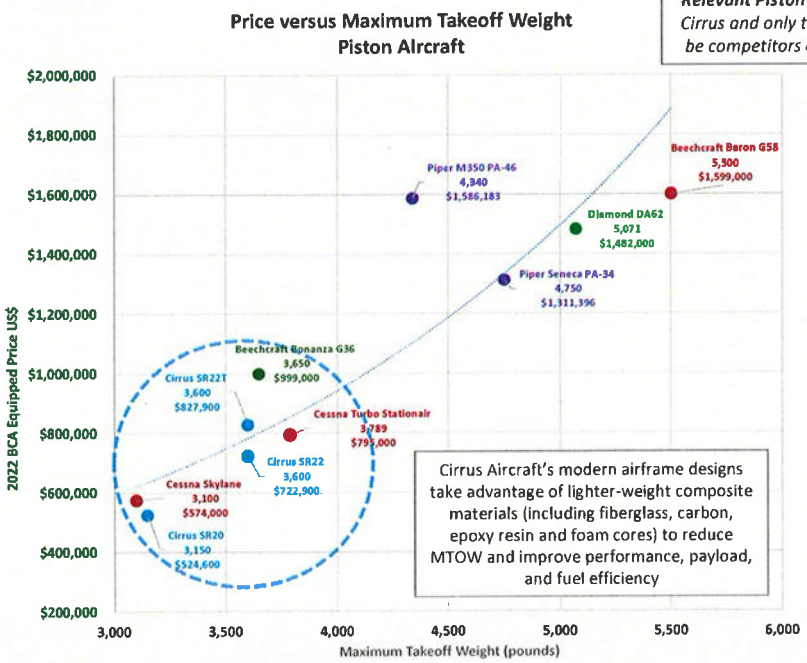
The following table summarizes fleet utilization patterns in the Year 2002 for Cirrus and the primary turbine aircraft competition. Note that some aircraft fleets – including the Pilatus PC-12 and HondaJet – have substantial numbers of aircraft flown in higher-utilization charter and fractional ownership programs, particularly in the U.S. and Europe. It is noteworthy that all jet competitors to the Cirrus Vision Jet and the PC-12 offer private lavatories. Although rarely used in-flight, these provide peace-of-mind especially for longer-range flight planning and are a common consideration in the aircraft purchase decision.

	Average Flights per Year	Average Annual Utilization (FH/Year)	Average Distance Flown (nm)	Average Flight Time (hours)
Piper M600	82	120	305	1.46
Daher TBM 940	108	159	358	1.47
Pilatus PC-12 NGX	185	224	265	1.21
Cirrus Vision Jet SF50	**111**	**151**	**329**	**1.36**
Embraer Phenom 100	166	206	343	1.24
HondaJet	209	280	403	1.34
Cessna Citation M2	141	177	367	1.26

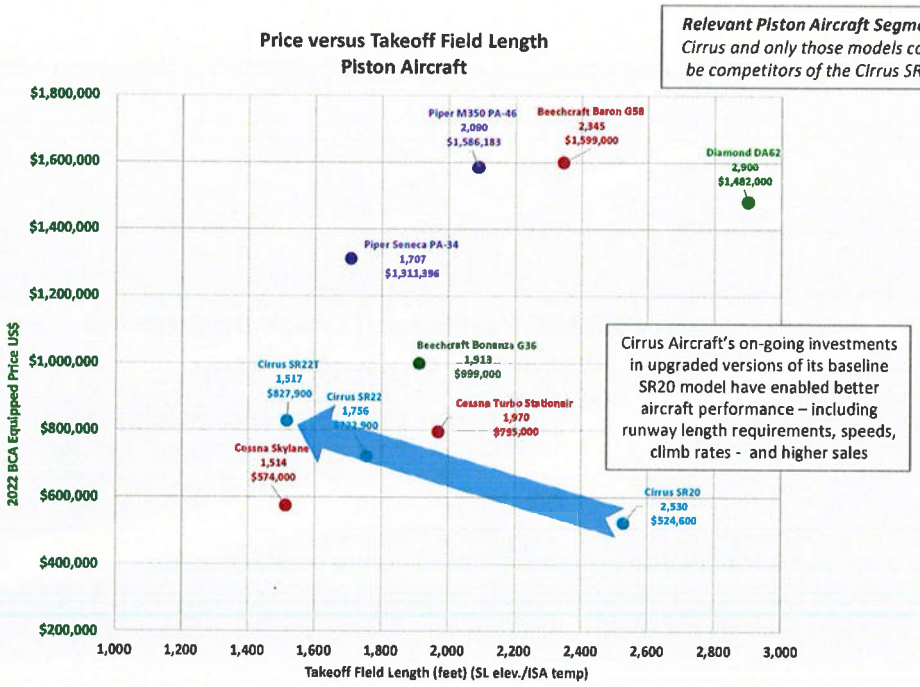
Note: For the purpose of this report, new aircraft equipped list prices, performance, and attributes are based on Business & Commercial Aviation Purchase Planning Handbook data (2022); * Flight utilization data from ICHET – April 30, 2023; Photos: Cirrus Aircraft

Relevant Piston Aircraft Segment: Market Segmentation

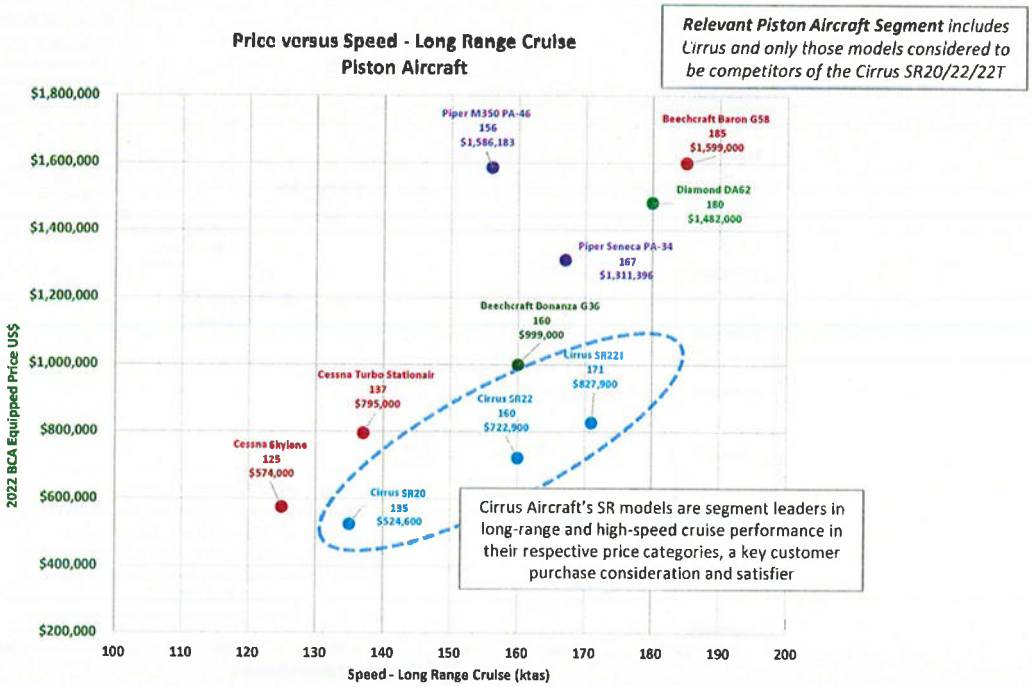
Relevant Piston Aircraft Segment *includes Cirrus and only those models considered to be competitors of the Cirrus SR20/22/22T*



Source: Business & Commercial Aviation 2022; MTOW = Maximum Takeoff Weight



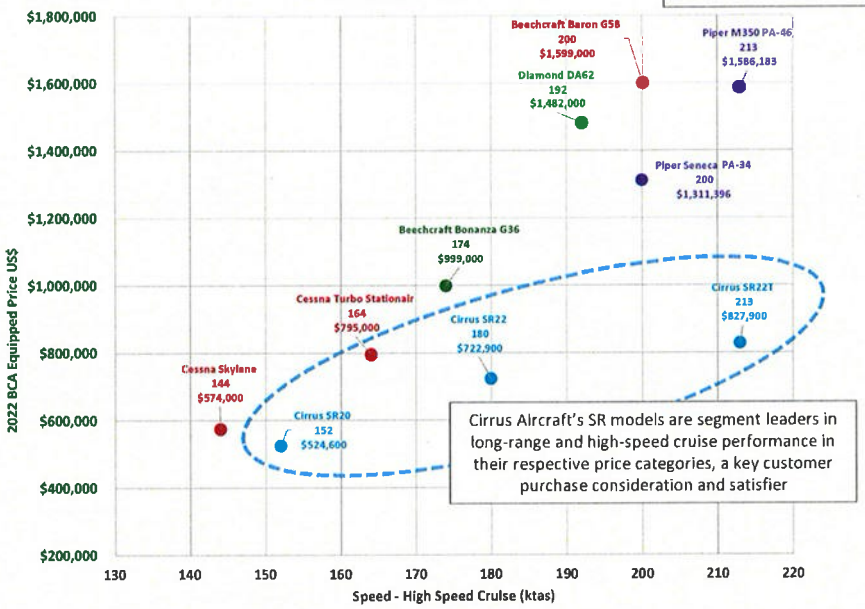
Source: Business & Commercial Aviation 2022



Source: Business & Commercial Aviation 2022

Relevant Piston Aircraft Segment *includes Cirrus and only those models considered to be competitors of the Cirrus SR20/22/22T*

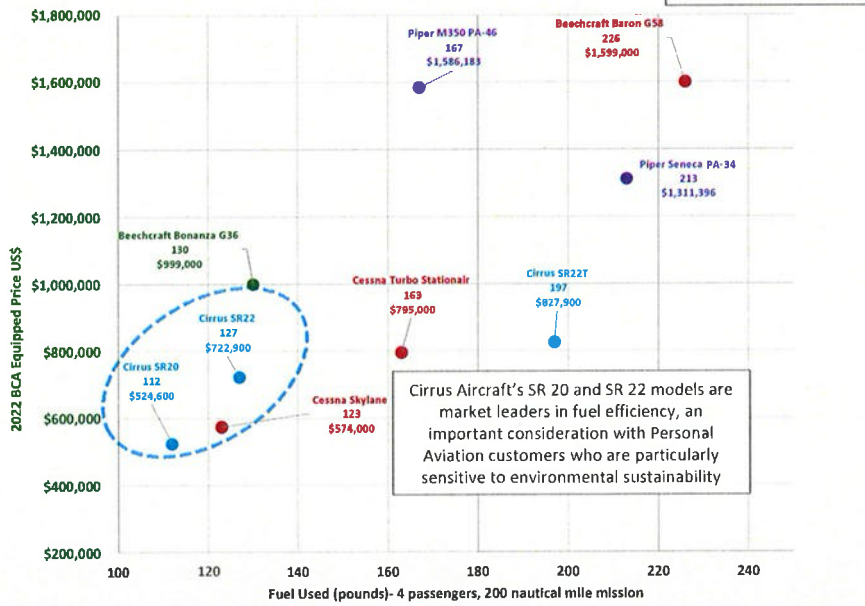
Price versus Speed - High Speed Cruise
Piston Aircraft



Source: Business & Commercial Aviation 2022

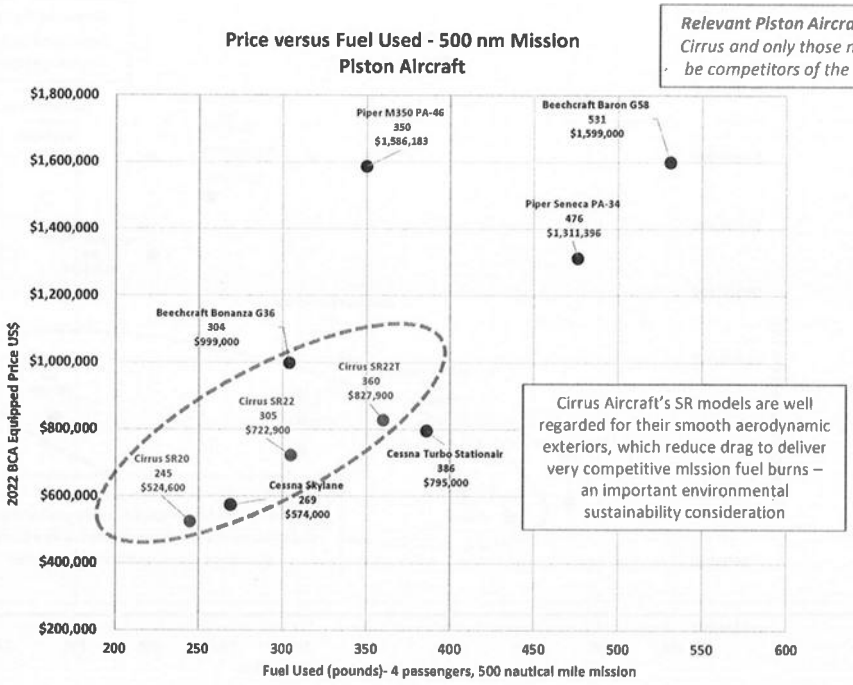
Relevant Piston Aircraft Segment *includes Cirrus and only those models considered to be competitors of the Cirrus SR20/22/22T*

Price versus Fuel Used - 200 nm Mission
Piston Aircraft



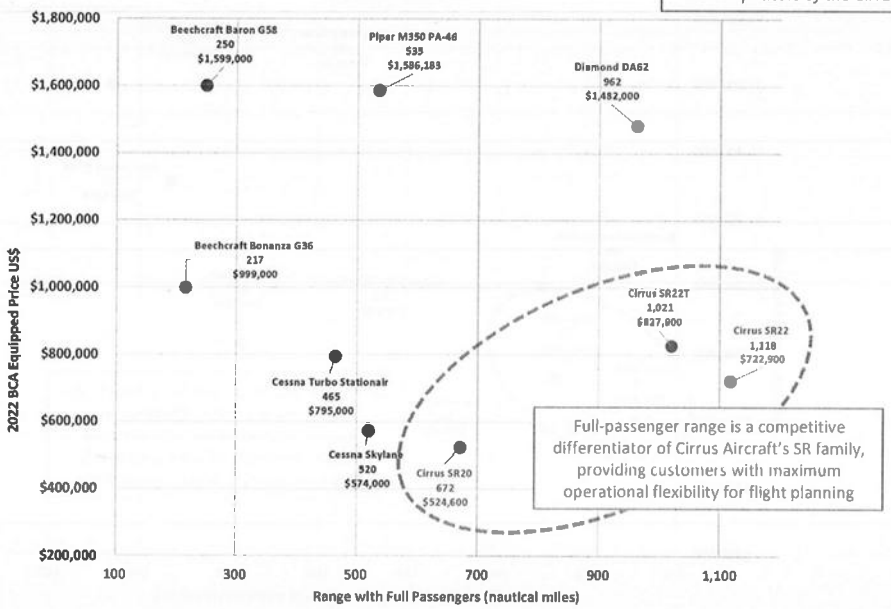
Source: Business & Commercial Aviation 2022

Relevant Piston Aircraft Segment includes Cirrus and only those models considered to be competitors of the Cirrus SR20/22/22T



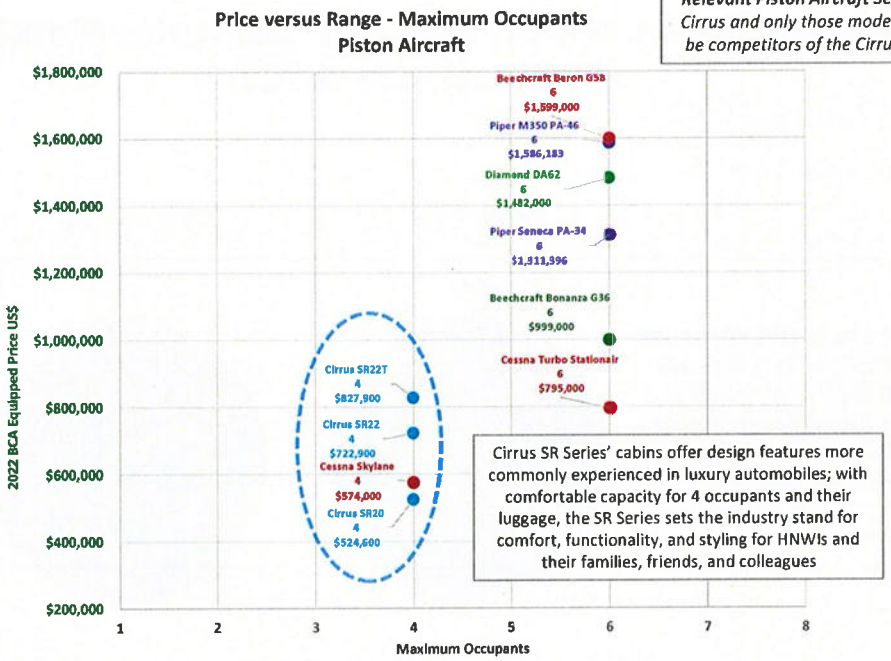
Source: Business & Commercial Aviation 2022

Relevant Piston Aircraft Segment includes Cirrus and only those models considered to be competitors of the Cirrus SR20/22/22T



Source: Business & Commercial Aviation 2022

Relevant Piston Aircraft Segment *includes Cirrus and only those models considered to be competitors of the Cirrus SR20/22/22T*



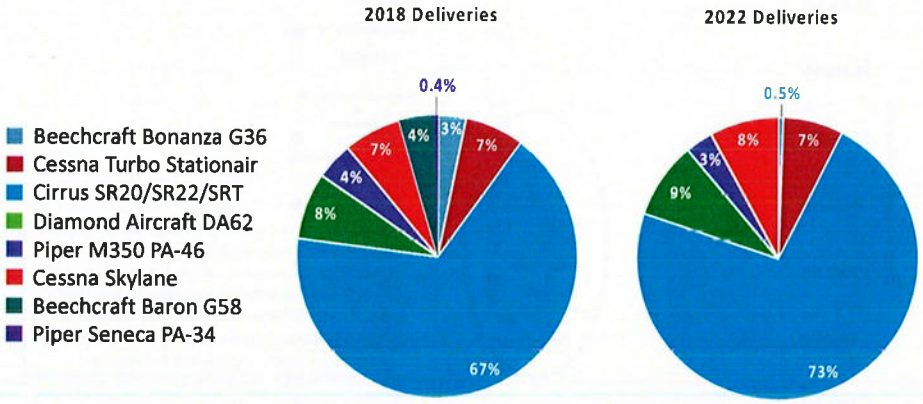
Cirrus SR Series' cabins offer design features more commonly experienced in luxury automobiles; with comfortable capacity for 4 occupants and their luggage, the SR Series sets the industry stand for comfort, functionality, and styling for HNWIs and their families, friends, and colleagues

Source: Business & Commercial Aviation 2022

Relevant Piston Aircraft Segment: Deliveries Market Share

Historical (2018 and 2022)

Relevant Piston Aircraft Segment *includes Cirrus and only those models considered to be competitors of the Cirrus SR20/22/22T*

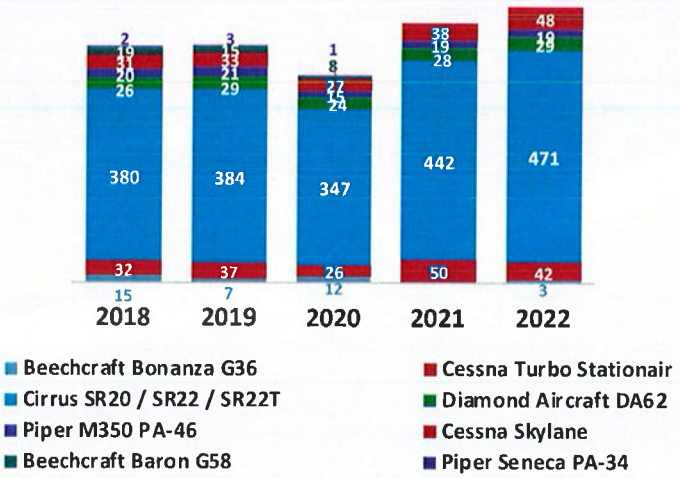


Source: Historical deliveries for the Years 2018 and 2022 from General Aviation Manufacturers Association (GAMA)

Relevant Piston Aircraft Segment: Deliveries (Units)

Historical (2018 – 2022)

Relevant Piston Aircraft Segment *includes Cirrus and only those models considered to be competitors of the Cirrus SR20/22/22T*

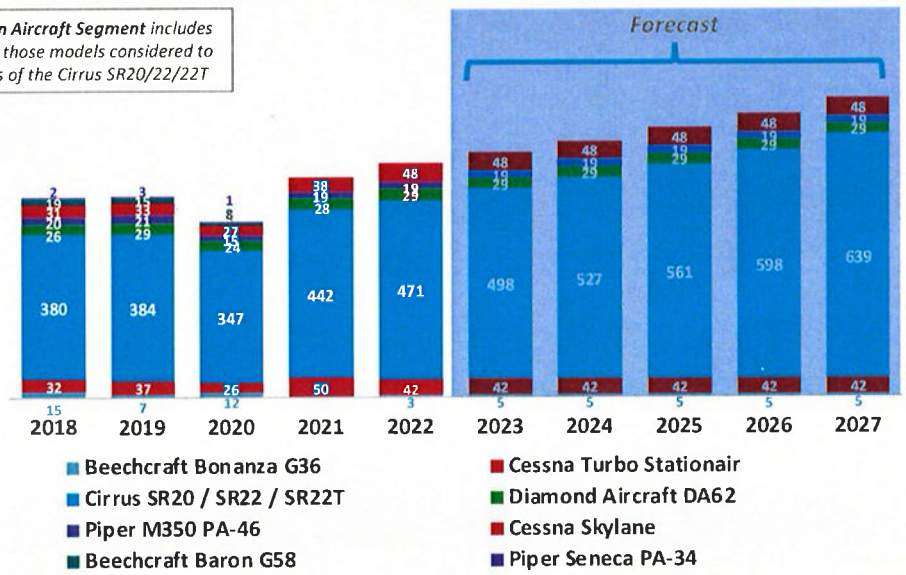


Source: Historical deliveries for the Years 2018-2022 from General Aviation Manufacturers Association (GAMA)

Relevant Piston Aircraft Segment: Deliveries (Units)

Historical (2018 – 2022) and Forecast (2023 – 2027)

Relevant Piston Aircraft Segment *includes Cirrus and only those models considered to be competitors of the Cirrus SR20/22/22T*

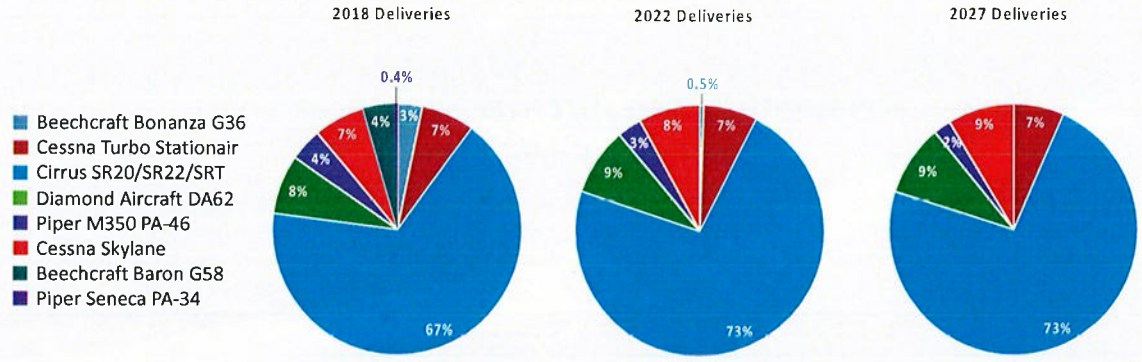


Source: Historical deliveries for the years 2018-2022 from General Aviation Manufacturers Association (GAMA); Forecast deliveries for the years 2023-2027 from Rolland Vincent Associates (RVA)

Relevant Piston Aircraft Segment: Deliveries Market Share

Historical (2018 and 2022) and Forecast (2027)

Relevant Piston Aircraft Segment includes Cirrus and only those models considered to be competitors of the Cirrus SR20/22/22T

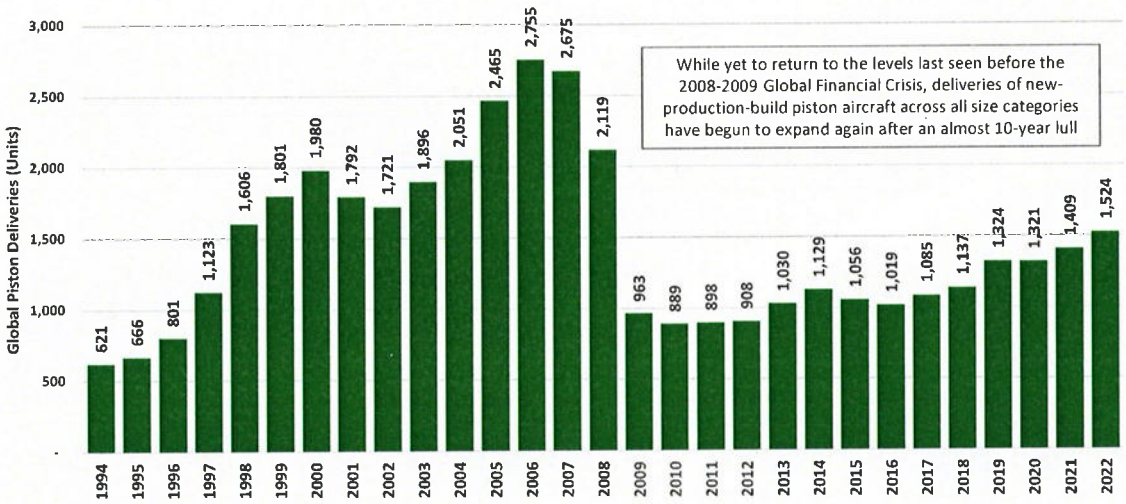


Sources: Historical deliveries for the Years 2018 and 2022 from General Aviation Manufacturers Association (GAMA); Forecast deliveries for the Year 2027 from Rolland Vincent Associates (RVA)

All Piston Aircraft: Historical Deliveries

All Piston Aircraft: Deliveries (Units)

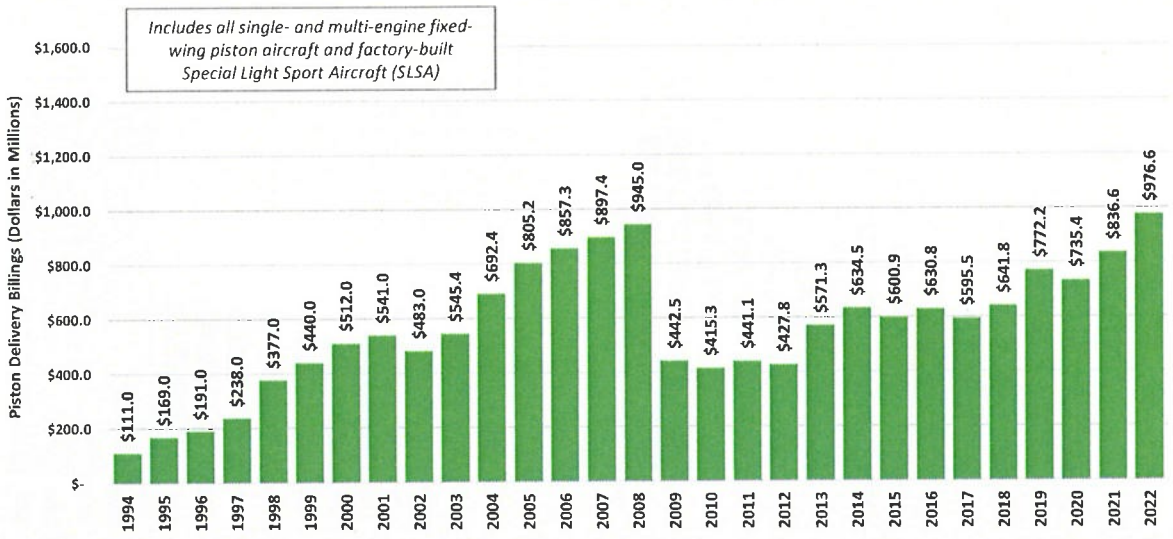
Historical (1994 – 2022)



Source: General Aviation Manufacturers Association (GAMA); includes single- and multi-engine fixed wing aircraft and factory-built Special Light Sport Aircraft (SLSA)

All Piston Aircraft: Delivery Billings (Dollars)

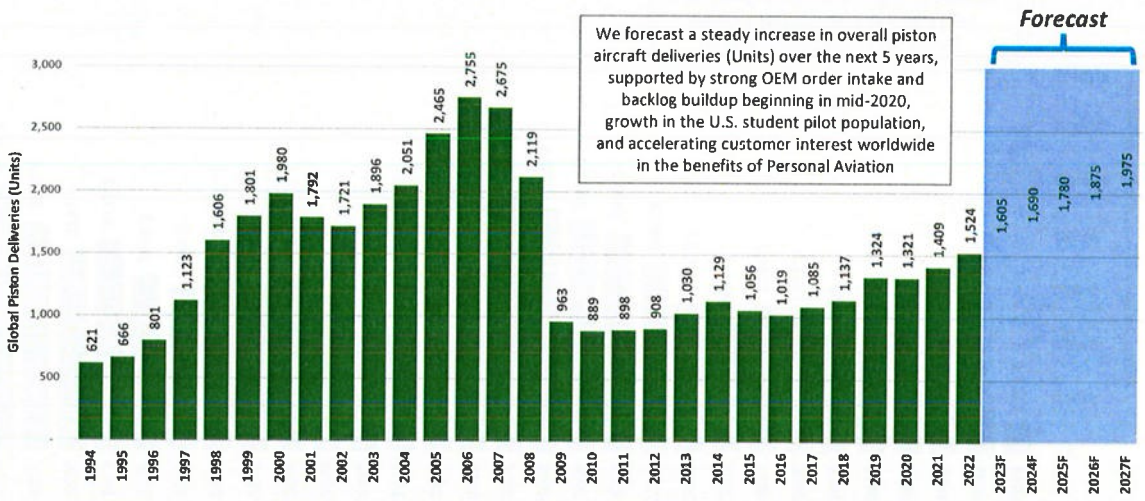
Historical (1994 – 2022)



Source: General Aviation Manufacturers Association (GAMA); includes single- and multi-engine fixed wing aircraft and factory-built Special Light Sport Aircraft (SLSA); historical data includes estimates due to non-reporting

All Piston Aircraft: Deliveries (Units)

Historical (1994 – 2022) and Forecast (2023 – 2027)



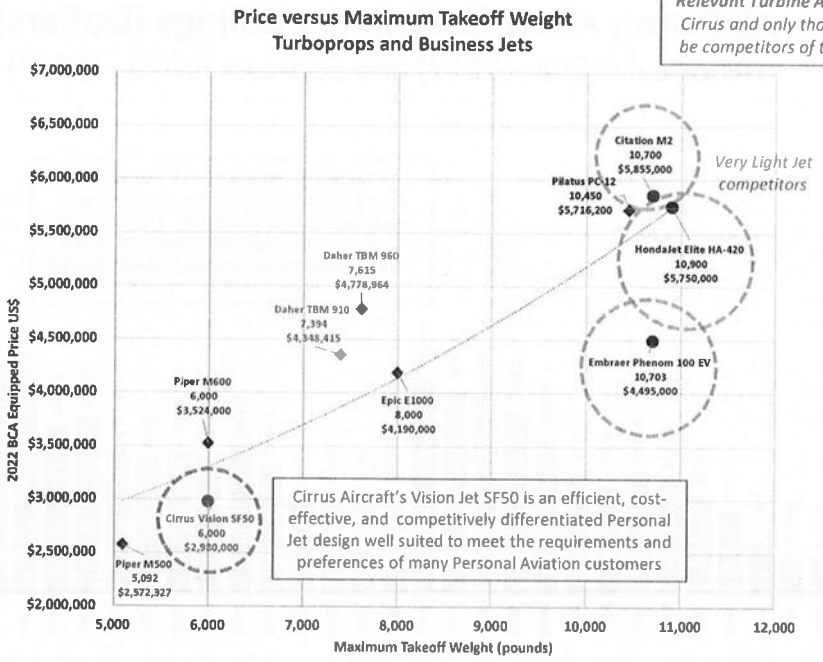
Source: Historical: General Aviation Manufacturers Association (GAMA); Forecast: Rolland Vincent Associates (RVA); Includes single- and multi-engine fixed wing aircraft and factory built Special Light Sport Aircraft (SLSA)

All Piston Aircraft: Delivery Billings (Dollars)

Historical (1994 – 2022) and Forecast (2023 – 2027)

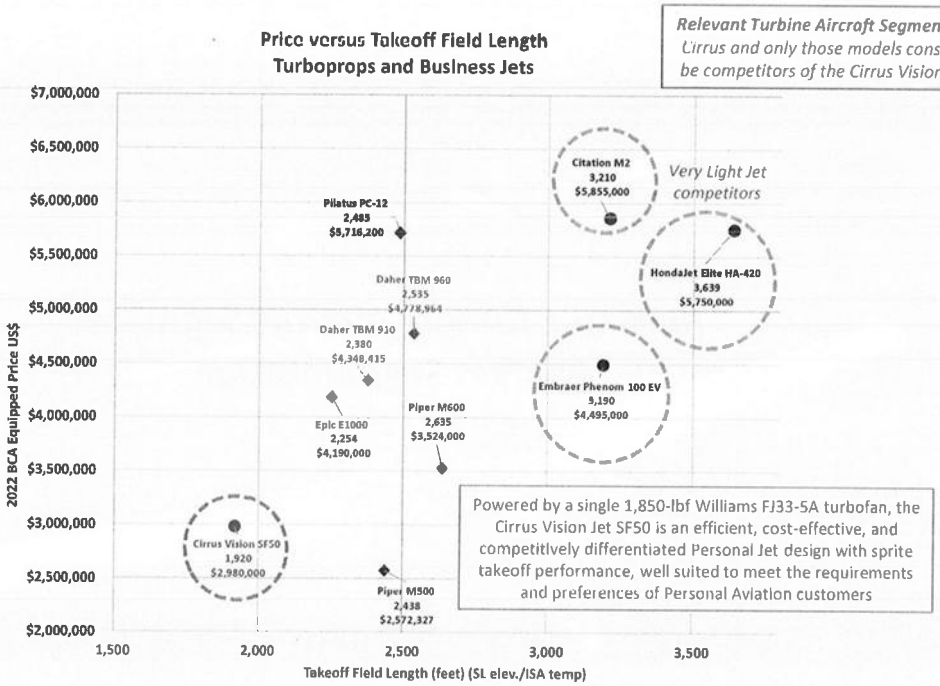
Source: Historical: General Aviation Manufacturers Association (GAMA); Includes single- and multi engine fixed wing aircraft and factory built Special Light Sport Aircraft (SLSA); historical data includes estimates due to non reporting; Forecast: Rolland Vincent Associates (RVA)

Relevant Turbine Aircraft Segment includes Cirrus and only those models considered to be competitors of the Cirrus Vision Jet SF50



Source: Business & Commercial Aviation 2022

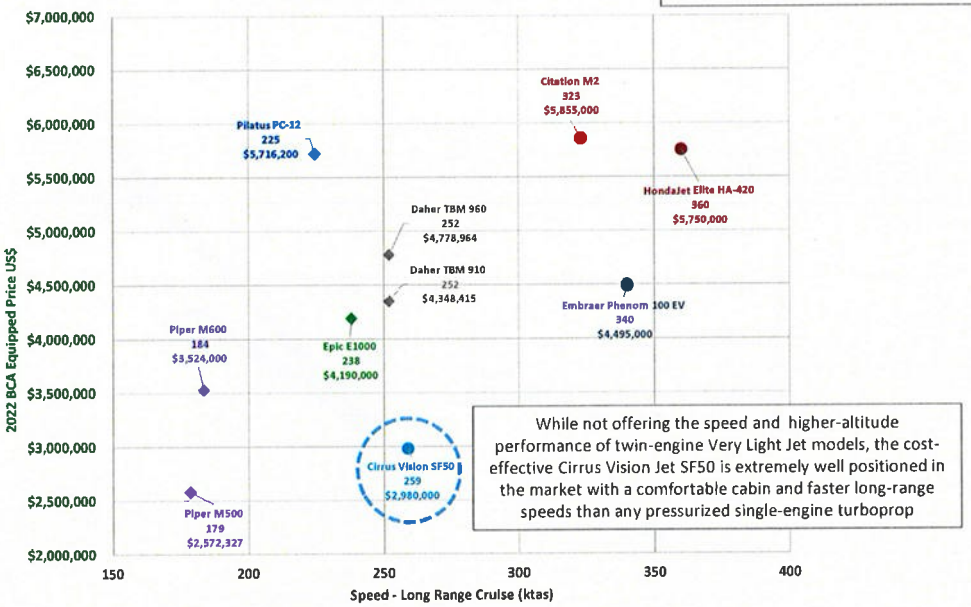
Relevant Turbine Aircraft Segment includes Cirrus and only those models considered to be competitors of the Cirrus Vision Jet SF50



Source: Business & Commercial Aviation 2022

Relevant Turbine Aircraft Segment *includes Cirrus and only those models considered to be competitors of the Cirrus Vision Jet SF50*

Price versus Speed - Long Range Cruise
Turboprops and Business Jets

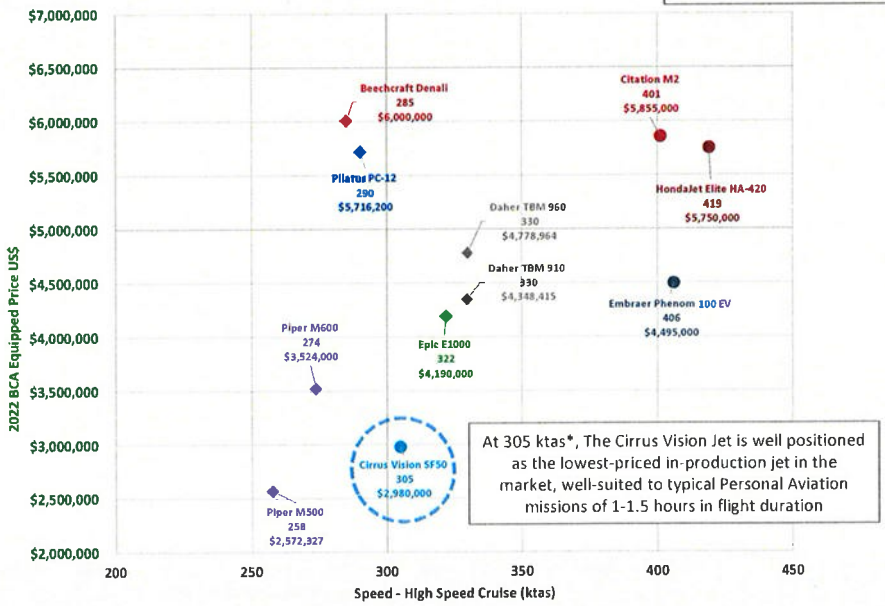


While not offering the speed and higher-altitude performance of twin-engine Very Light Jet models, the cost-effective Cirrus Vision Jet SF50 is extremely well positioned in the market with a comfortable cabin and faster long-range speeds than any pressurized single-engine turboprop

Source: Business & Commercial Aviation 2022

Relevant Turbine Aircraft Segment *includes Cirrus and only those models considered to be competitors of the Cirrus Vision Jet SF50*

Price versus Speed - High Speed Cruise
Turboprops and Business Jets

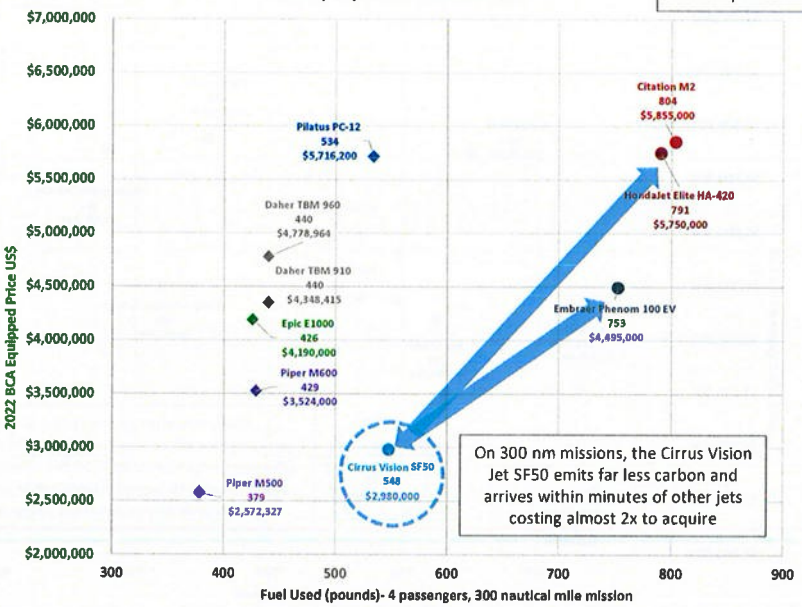


At 305 ktas*, The Cirrus Vision Jet is well positioned as the lowest-priced in-production jet in the market, well-suited to typical Personal Aviation missions of 1-1.5 hours in flight duration

Source: Business & Commercial Aviation 2022; ktas = Knots True Airspeed

Price versus Fuel Used - 300 nm Mission
Turboprops and Business Jets

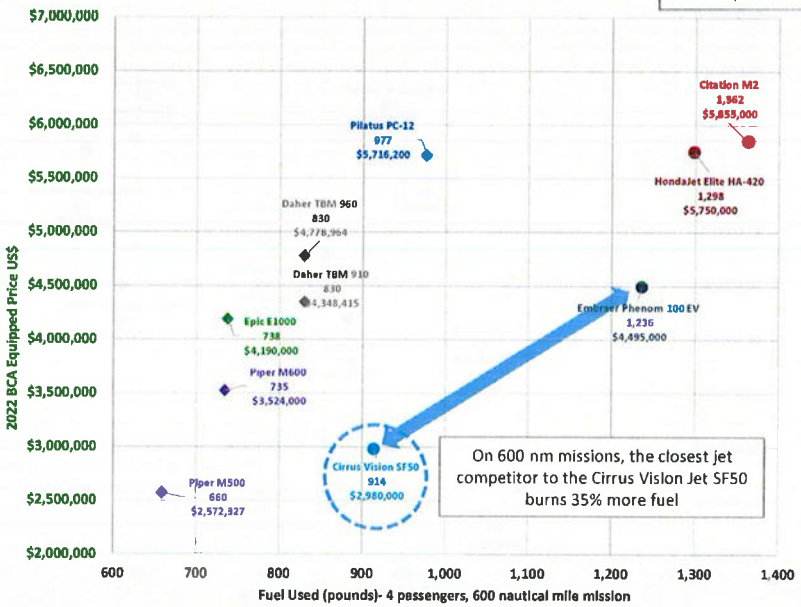
Relevant Turbine Aircraft Segment *includes Cirrus and only those models considered to be competitors of the Cirrus Vision Jet SF50*



Source: Business & Commercial Aviation 2022

Price versus Fuel Used - 600 nm Mission
Turboprops and Business Jets

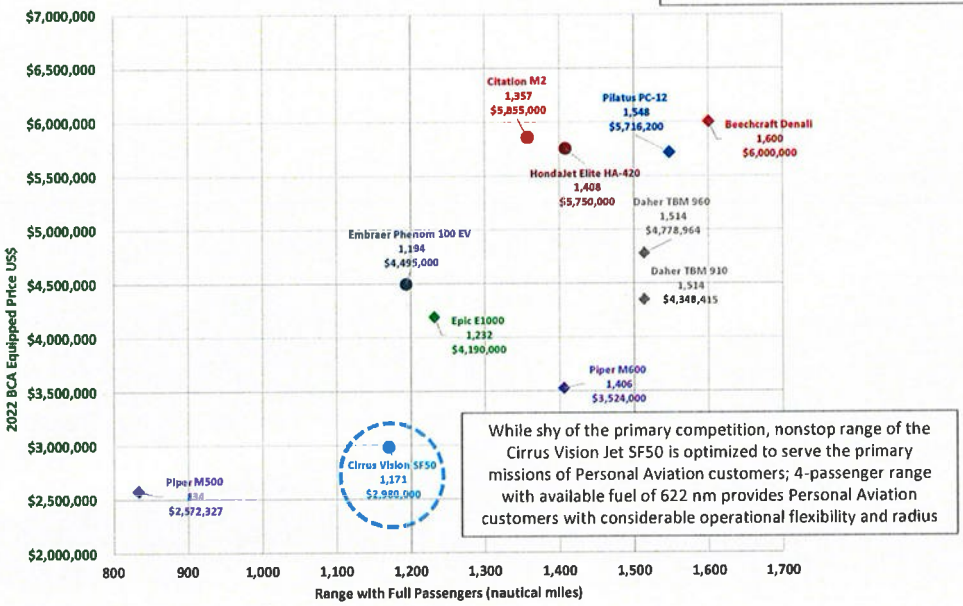
Relevant Turbine Aircraft Segment *includes Cirrus and only those models considered to be competitors of the Cirrus Vision Jet SF50*



Source: Business & Commercial Aviation 2022

Price versus Range - Full Passengers Turboprops and Business Jets

Relevant Turbine Aircraft Segment *includes Cirrus and only those models considered to be competitors of the Cirrus Vision Jet SF50*

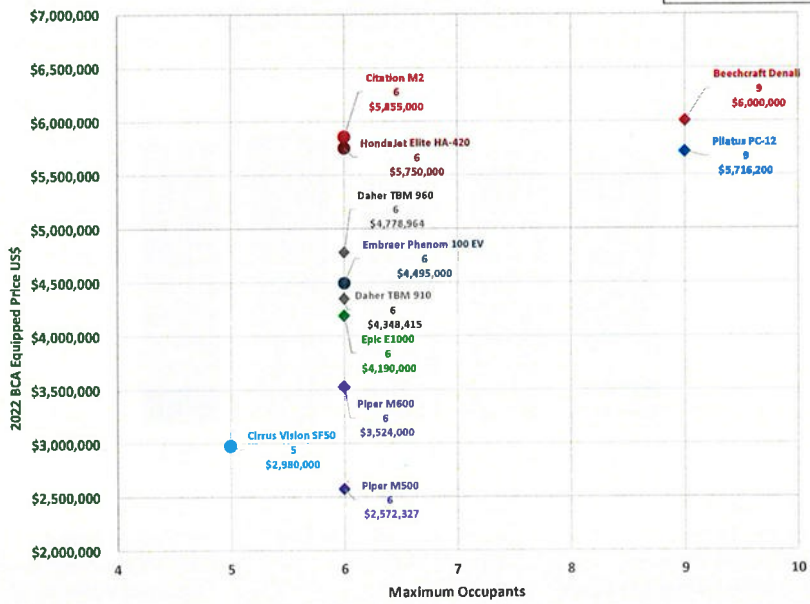


While shy of the primary competition, nonstop range of the Cirrus Vision Jet SF50 is optimized to serve the primary missions of Personal Aviation customers; 4-passenger range with available fuel of 622 nm provides Personal Aviation customers with considerable operational flexibility and radius

Source: Business & Commercial Aviation 2022

Price versus Range - Maximum Occupants Turboprops and Business Jets

Relevant Turbine Aircraft Segment *includes Cirrus and only those models considered to be competitors of the Cirrus Vision Jet SF50*



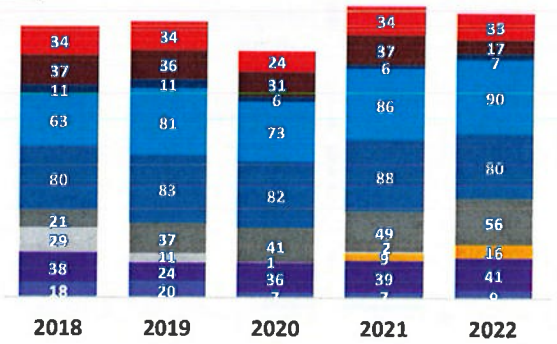
Source: Business & Commercial Aviation 2022

Relevant Turbine Aircraft Segment: Historical Deliveries

Relevant Turbine Aircraft Segment: Deliveries (Units)

Historical (2018 – 2022)

Relevant Turbine Aircraft Segment *includes Cirrus and only those models considered to be competitors of the Cirrus Vision Jet SF50*



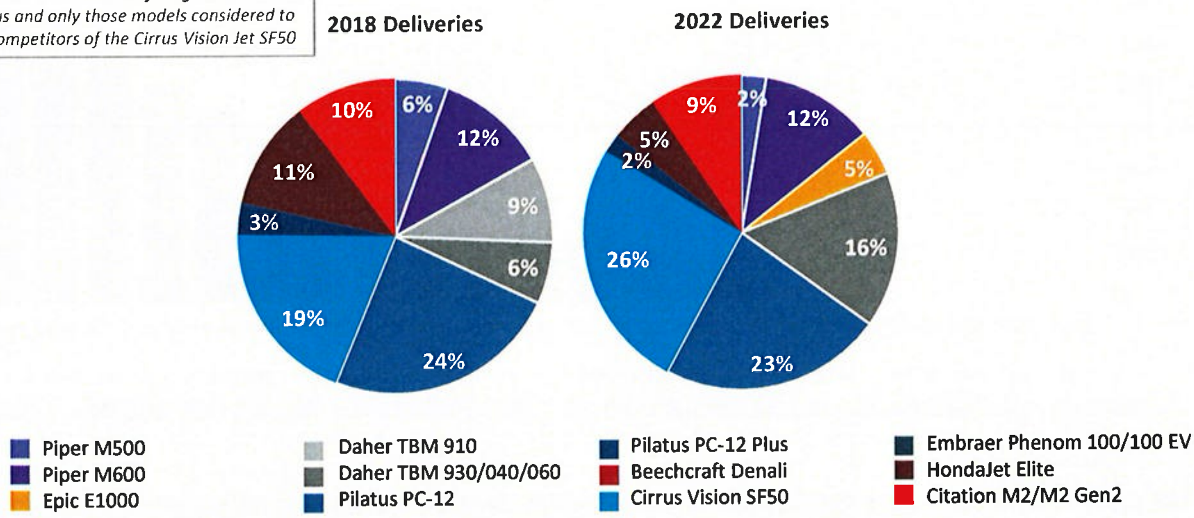
- Piper M500
- Piper M600
- Epic E1000
- Daher TBM 910
- Daher TBM 930 / 940 / 960
- Pilatus PC-12 NGX
- Pilatus PC-12 NG Plus
- Beechcraft Denali
- Cirrus Vision SF50
- Embraer Phenom 100/100 EV
- HondaJet Elite
- Citation M2/M2 Gen2

Source: Historical deliveries for the years 2018-2022 from General Aviation Manufacturers Association (GAMA)

Relevant Turbine Aircraft Segment: Deliveries Market Share

Historical (2018 and 2022)

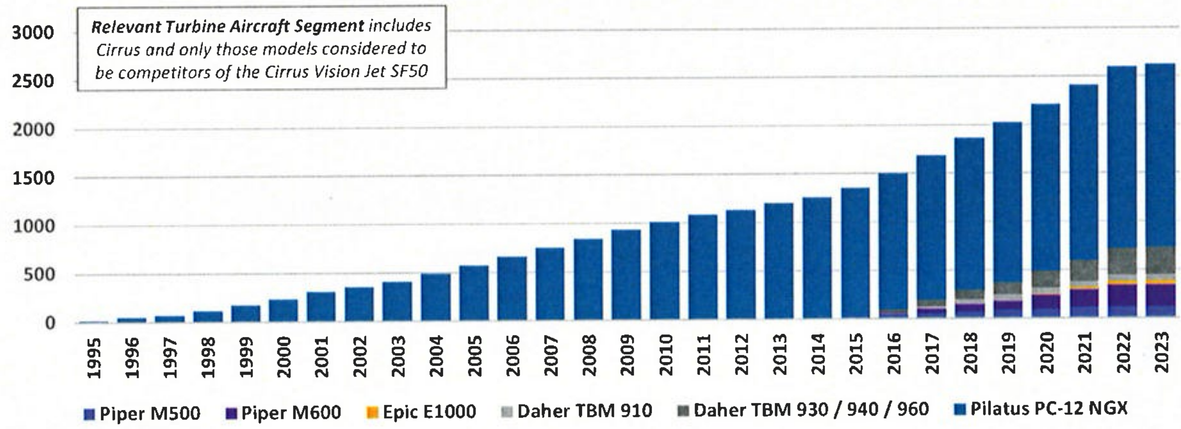
> ***Relevant Turbine Aircraft Segment** includes Cirrus and only those models considered to be competitors of the Cirrus Vision Jet SF50*



Source: Historical deliveries for the Years 2018 and 2022 from General Aviation Manufacturers Association (GAMA)

Relevant Turbine Aircraft Segment: Turboprop Fleet

Historical (1995 - End of Q1 2023)

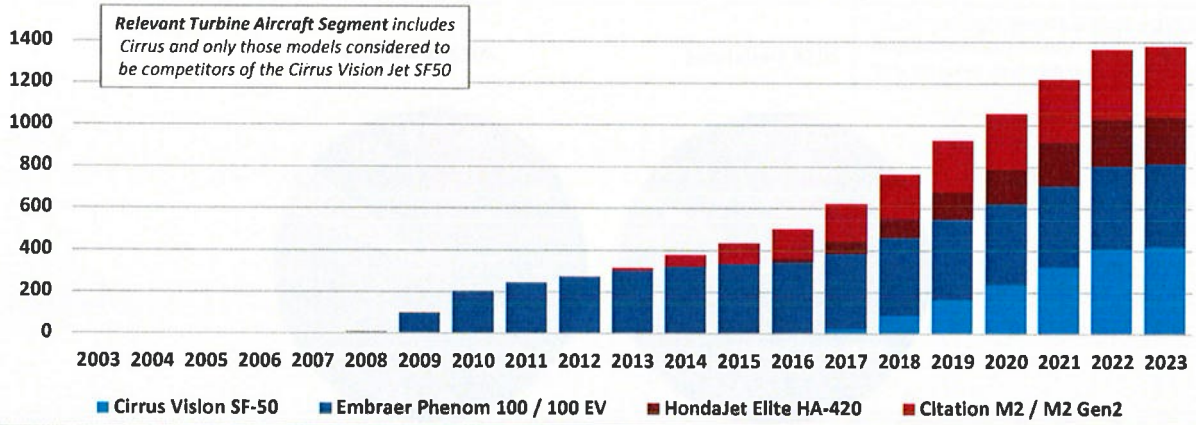


Summary of Historical Fleet	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Piper M500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	22	37	47	65	83	91	103	109	109
Piper M600	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	15	50	80	97	150	190	231	236
Epic E1000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	17	33	35
Daher TBM 910	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	27	57	68	69	69	69	69
Daher TBM 930 / 940 / 960	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	37	66	89	121	168	219	273	277
Pilatus PC-12 NGX	22	54	74	121	173	239	313	358	411	492	575	666	755	845	940	1,014	1,086	1,133	1,202	1,259	1,330	1,416	1,498	1,578	1,660	1,730	1,814	1,887	1,897
Total	22	54	74	121	173	239	313	358	411	492	575	666	755	845	940	1,014	1,086	1,133	1,202	1,261	1,354	1,505	1,688	1,869	2,029	2,214	2,412	2,602	2,623

Source: JETNET – April 2023; RVA analysis

Relevant Turbine Aircraft Segment: Jet Fleet

Historical (1995 - End of Q1 2023)



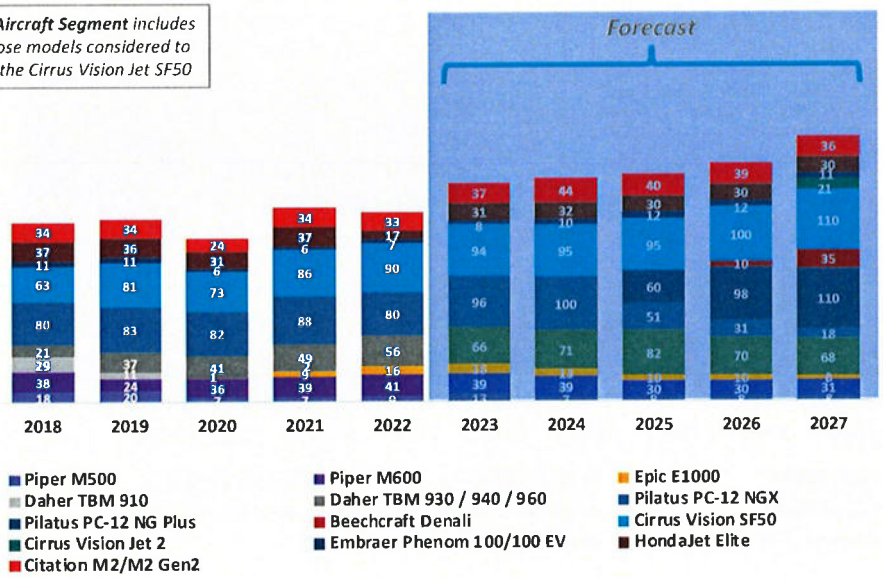
Summary of Historical Fleet	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Cirrus Vision SF-50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23	86	166	235	318	407	418
Embraer Phenom 100 / 100 EV	0	0	0	0	1	6	95	201	242	271	300	320	332	338	359	371	381	386	390	396	398
HondaJet Elite HA-420	1	1	1	1	1	1	1	1	1	1	1	1	3	23	62	94	134	166	208	225	225
Citation M2 / M2 Gen2	0	0	0	0	0	0	0	0	0	0	12	54	99	138	178	212	245	269	304	335	338
Total	1	1	1	1	2	7	96	202	243	272	313	375	434	499	622	763	926	1056	1220	1363	1379

Source: JETNET– April 2023; RVA analysis

Relevant Turbine Aircraft Segment: Deliveries (Units)

Historical (2018 – 2022) and Forecast (2023 – 2027)

Relevant Turbine Aircraft Segment *includes Cirrus and only those models considered to be competitors of the Cirrus Vision Jet SF50*

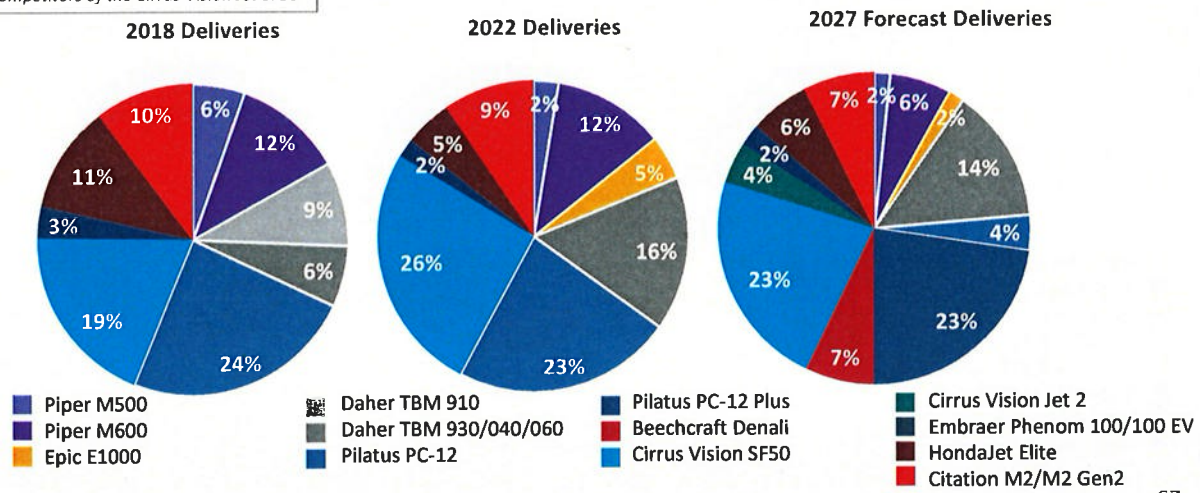


Source: Historical deliveries for the Years 2018-2022 from General Aviation Manufacturers Association (GAMA); Forecast deliveries for the Years 2023-2027 from Rolland Vincent Associates (RVA)

Relevant Turbine Aircraft Segment: Deliveries Market Share

Historical (2018 and 2022) and Forecast (2027)

Relevant Turbine Aircraft Segment *includes Cirrus and only those models considered to be competitors of the Cirrus Vision Jet SF50*

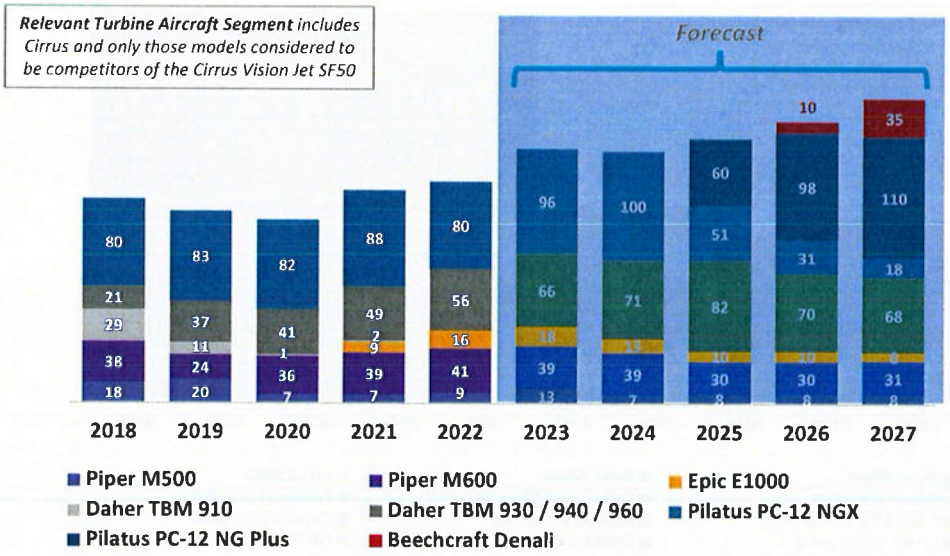


Source: Historical deliveries for the Years 2018 and 2022 from General Aviation Manufacturers Association (GAMA); Forecast deliveries for the Year 2027 from Rolland Vincent Associates (RVA)

Relevant Turbine Aircraft Segment: Turboprop Deliveries (Units)

Historical (2018 – 2022) and Forecast (2023 – 2027)

Relevant Turbine Aircraft Segment *includes Cirrus and only those models considered to be competitors of the Cirrus Vision Jet SF50*

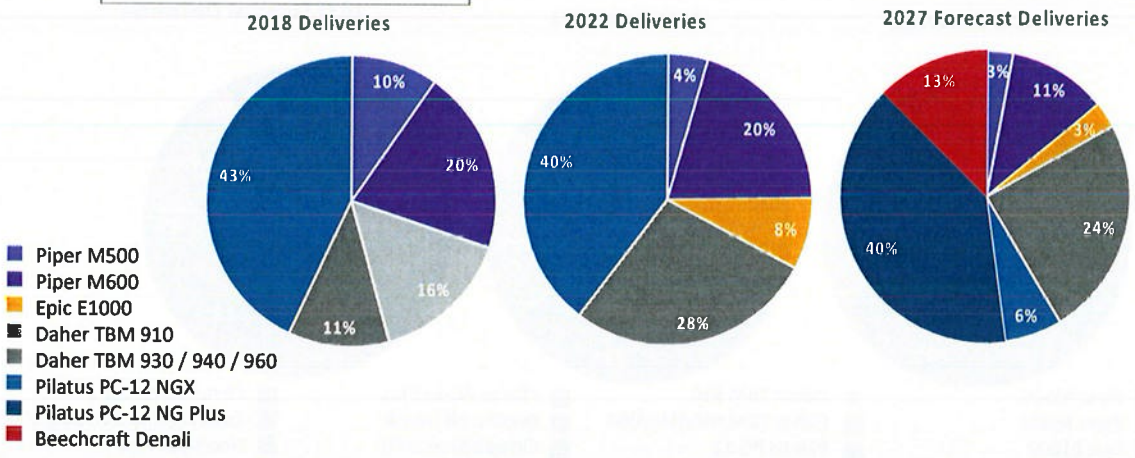


Source: Historical deliveries for the Years 2018-2022 from General Aviation Manufacturers Association (GAMA); Forecast deliveries for the Years 2023-2027 from Rolland Vincent Associates (RVA)

Relevant Turbine Aircraft Segment: Turboprop Deliveries Market Share

Historical (2018 and 2022) and Forecast (2027)

Relevant Turbine Aircraft Segment *includes Cirrus and only those models considered to be competitors of the Cirrus Vision Jet SF50*

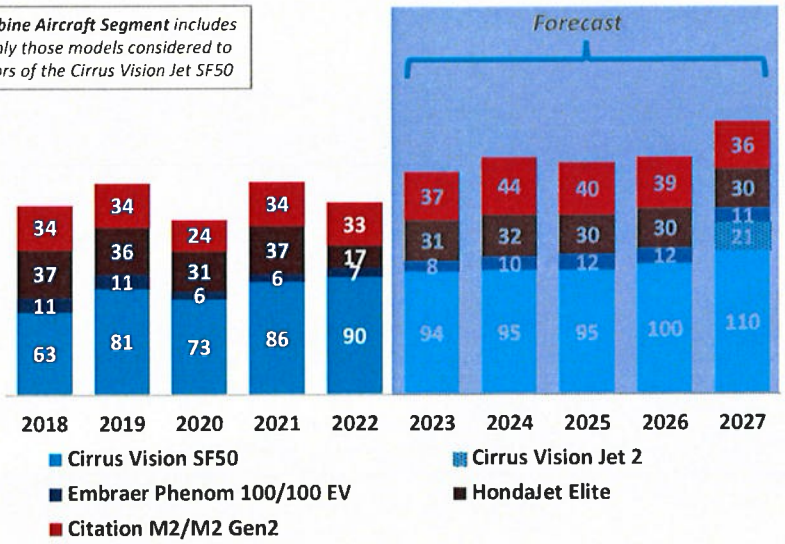


Source: Historical deliveries for the Years 2018 and 2022 from General Aviation Manufacturers Association (GAMA); Forecast deliveries for the Year 2027 from Rolland Vincent Associates (RVA)

Relevant Turbine Aircraft Segment: Jet Deliveries (Units)

Historical (2018 – 2022) and Forecast (2023 – 2027)

Relevant Turbine Aircraft Segment *includes Cirrus and only those models considered to be competitors of the Cirrus Vision Jet SF50*

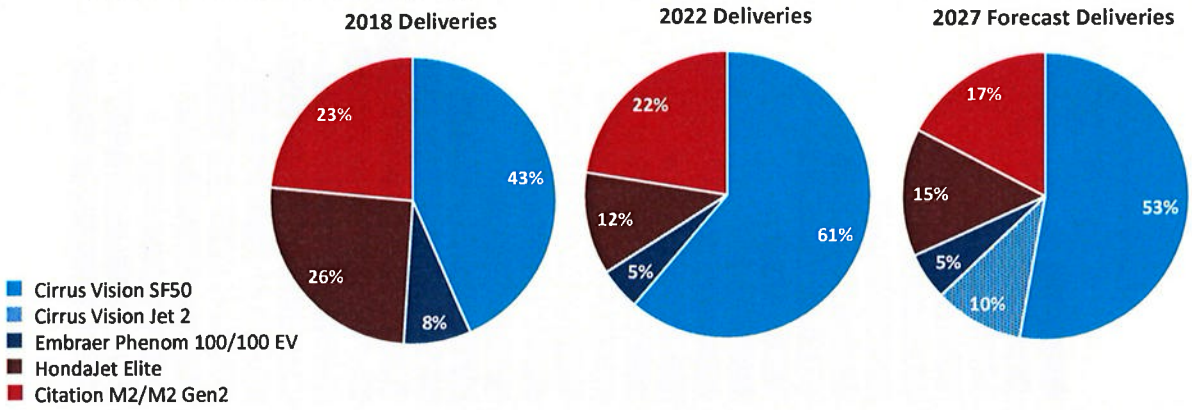


Source: Historical deliveries for the Years 2018-2022 from General Aviation Manufacturers Association (GAMA); Forecast deliveries for the Years 2023-2027 from Rolland Vincent Associates (RVA)

Relevant Turbine Aircraft Segment: Jet Deliveries Share

Historical (2018 and 2022) and Forecast (2027)

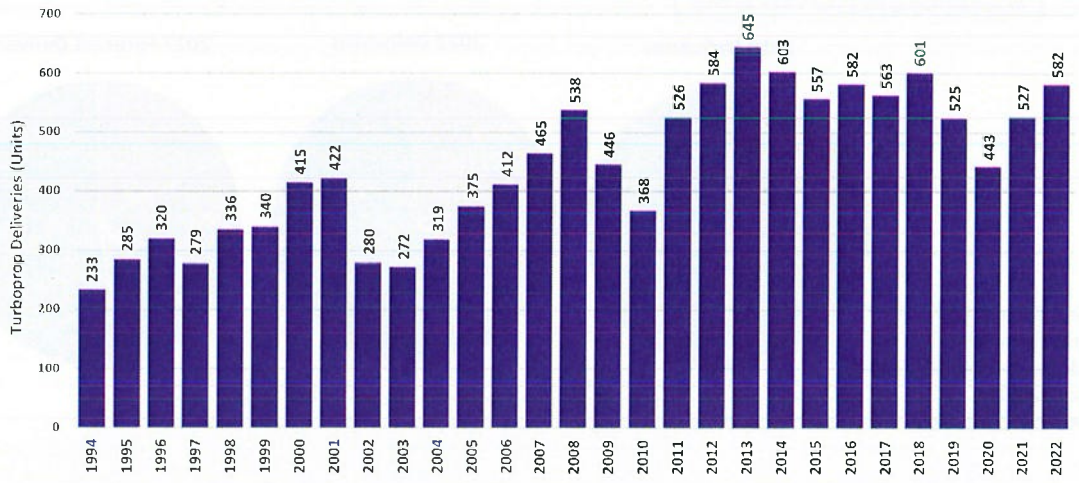
Relevant Turbine Aircraft Segment *includes Cirrus and only those models considered to be competitors of the Cirrus Vision Jet SF50*



Source: Historical deliveries for the Years 2018 and 2022 from General Aviation Manufacturers Association (GAMA); Forecast deliveries for the Year 2027 from Rolland Vincent Associates (RVA)

All Turboprop Aircraft: Deliveries (Units)

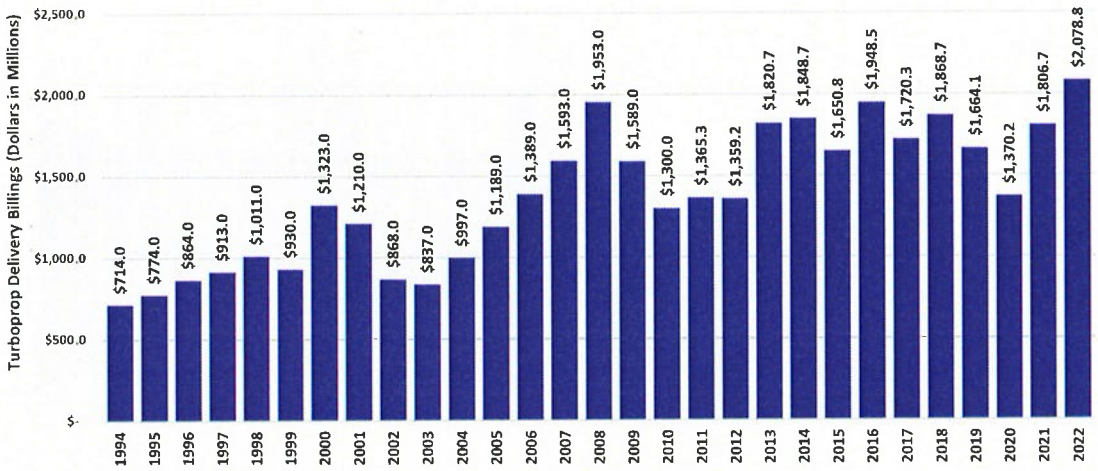
Historical (1994 – 2022)



Source: General Aviation Manufacturers Association (GAMA); includes all categories of turboprop aircraft, including unpressurized and pressurized single- and multi-engine models; excludes regional aircraft

All Turboprop Aircraft: Billings (Dollars in Millions)

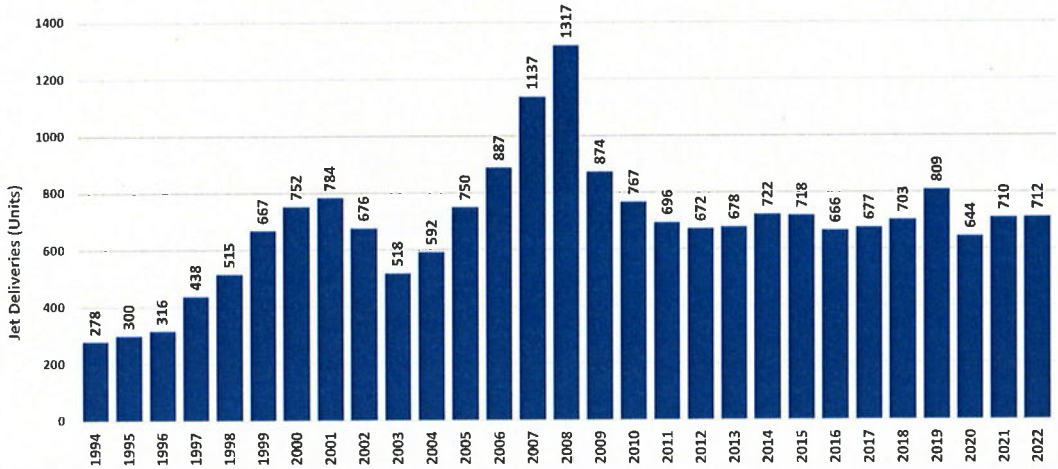
Historical (1994 – 2022)



Source: General Aviation Manufacturers Association (GAMA); Includes all categories of turboprop aircraft, including unpressurized and pressurized single- and multi-engine models; excludes regional aircraft

All Jet Aircraft: Deliveries (Units)

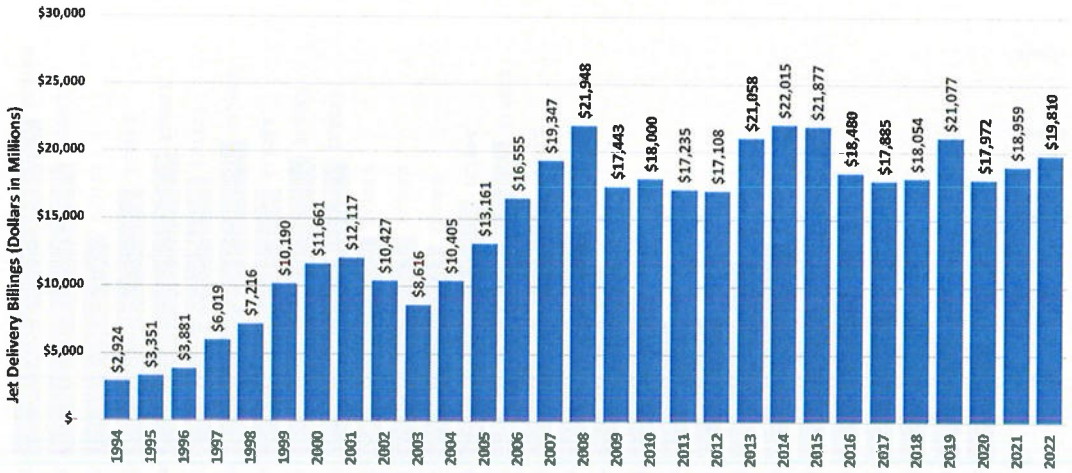
Historical (1994 – 2022)



Source: General Aviation Manufacturers Association (GAMA); Includes all business jet size categories, from Personal Jets to Large Ultra Long Range Jets and Airliner Business Jets

All Jet Aircraft: Billings (Dollars in Millions)

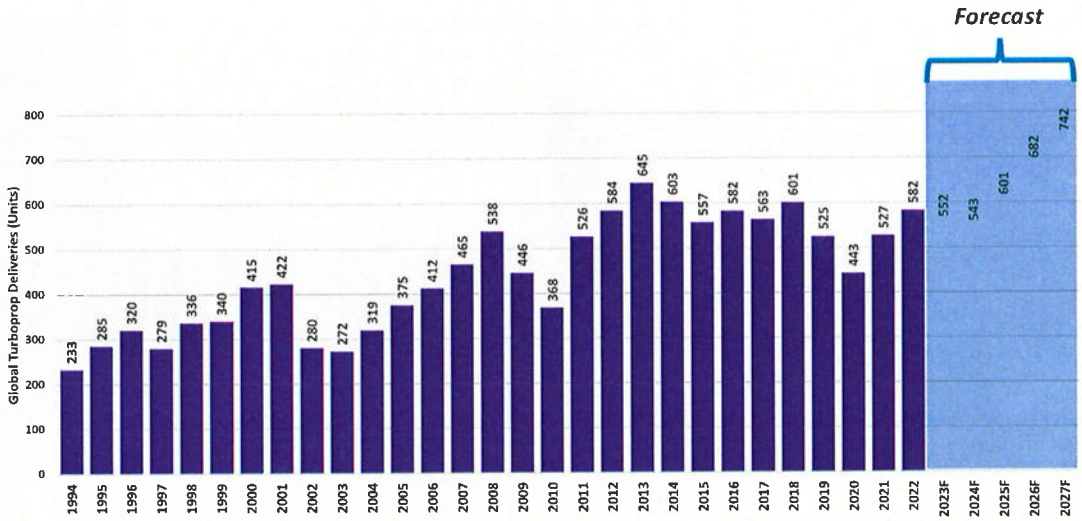
Historical (1994 – 2022)



Source: General Aviation Manufacturers Association (GAMA); includes all business jet size categories, from Personal Jets to Large Ultra Long Range Jets and Airliner Business Jets; historical data includes estimates due to non reporting

All Turboprop Aircraft: Deliveries (Units)

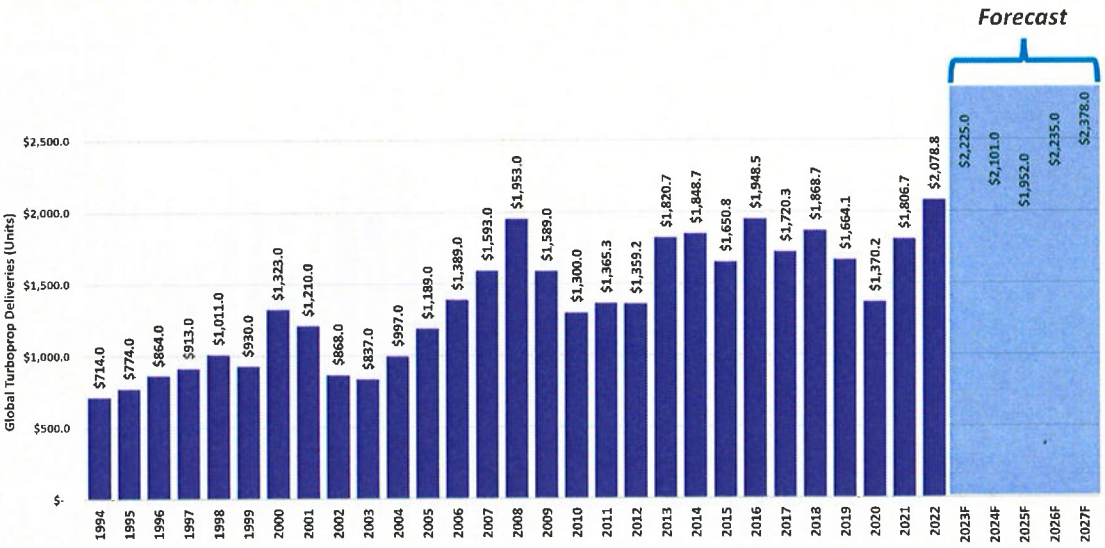
Historical (1994 – 2022) and Forecast (2023 – 2027)



Source: Historical: General Aviation Manufacturers Association (GAMA); Forecast: Rolland Vincent Associates (RVA); includes all business jet size categories, from Personal Jets to Large Ultra Long Range Jets and Airliner Business Jets; historical data includes estimates due to non reporting

All Turboprop Aircraft: Billings (Dollars in Millions)

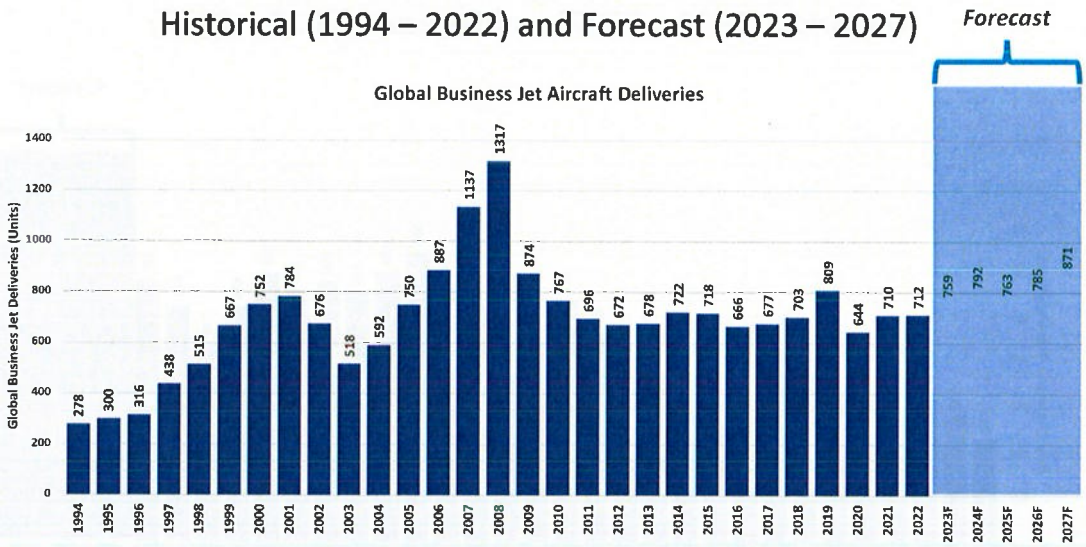
Historical (1994 – 2022) and Forecast (2023 – 2027)



Source: Historical: General Aviation Manufacturers Association (GAMA); Forecast: Rolland Vincent Associates (RVA); includes all business jet size categories, from Personal Jets to Large Ultra Long Range Jets and Airliner Business Jets; historical data includes estimates due to non reporting

All Jet Aircraft: Deliveries (Units)

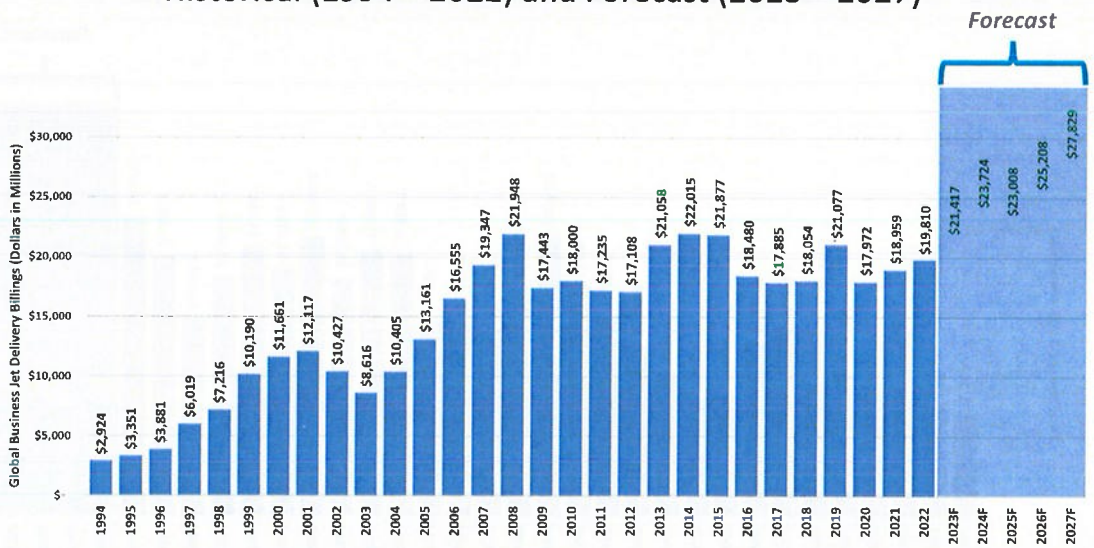
Historical (1994 – 2022) and Forecast (2023 – 2027)



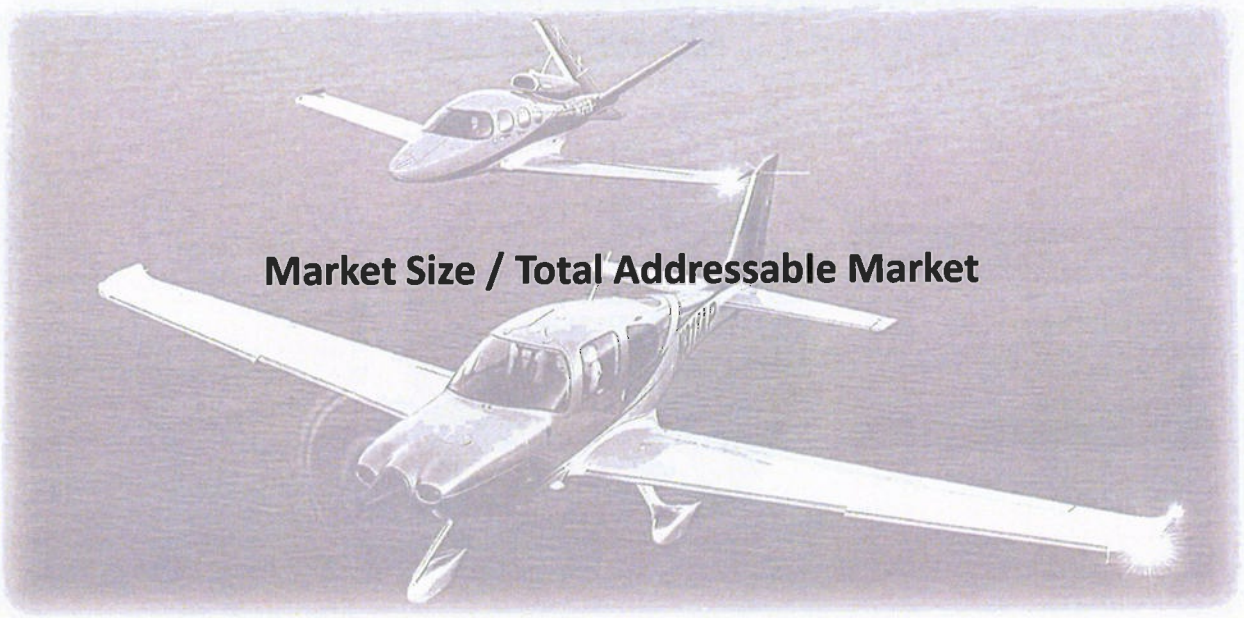
Source: Historical: General Aviation Manufacturers Association (GAMA); Forecast: Rolland Vincent Associates (RVA); includes all business jet size categories, from Personal Jets to Large Ultra Long Range Jets and Airliner Business Jets

All Jet Aircraft: Billings (Dollars in Millions)

Historical (1994 – 2022) and Forecast (2023 – 2027)



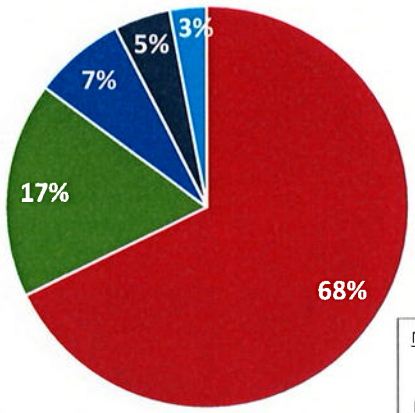
Source: Historical: General Aviation Manufacturers Association (GAMA); Forecast: Rolland Vincent Associates (RVA); includes all business jet size categories, from Personal Jets to Large Ultra Long Range Jets and Airliner Business Jets; historical data includes estimates due to non-reporting



All Piston Aircraft: Fleet by Region

End of Q1 2023

Piston Fleet from JETNET	March 31, 2023
North America	3,708
Latin America & Caribbean	949
Europe	400
Asia Pacific	245
Middle East and Africa	163
Total	**5,465**



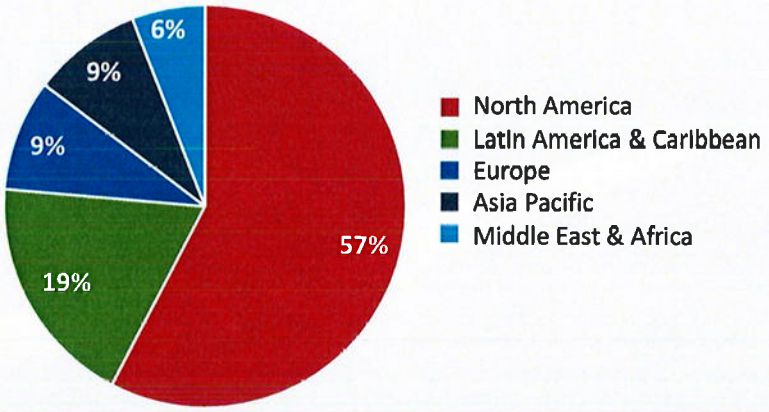
Note: This regional distribution of the piston aircraft fleet is based on only a small number of models tracked by JETNET – including single-engine (Piper M350, Piper Malibu, Piper Matrix and Piper Mirage) and twin-engine piston models (Baron 58, Cessna 414, Cessna 421, Diamond Aircraft DA62)

Source: JETNET – April 2023; BVA analysis; fleet totals and fleet distribution by region are based on only a small number of models tracked by JETNET

All Turboprop Aircraft: Fleet by Region

End of Q1 2023

Turboprop Fleet	March 31, 2023
North America	9,188
Latin America & Caribbean	2,980
Europe	1,421
Asia Pacific	1,405
Middle East and Africa	946
Total	15,940

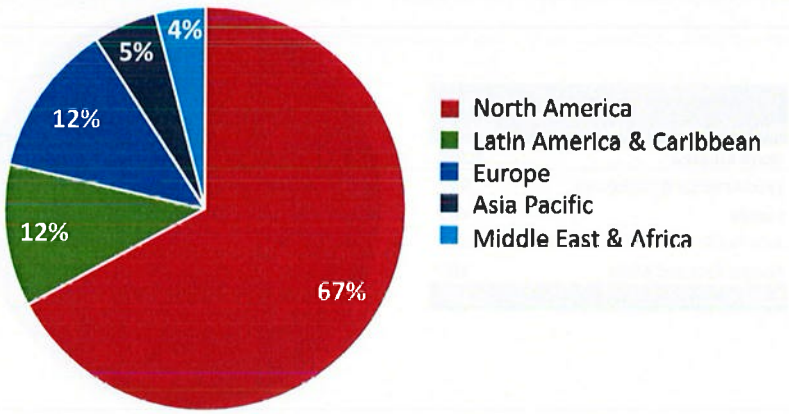


Source: IFTDB – April 2023; BVA analysis

All Jet Aircraft: Fleet by Region

End of Q1 2023

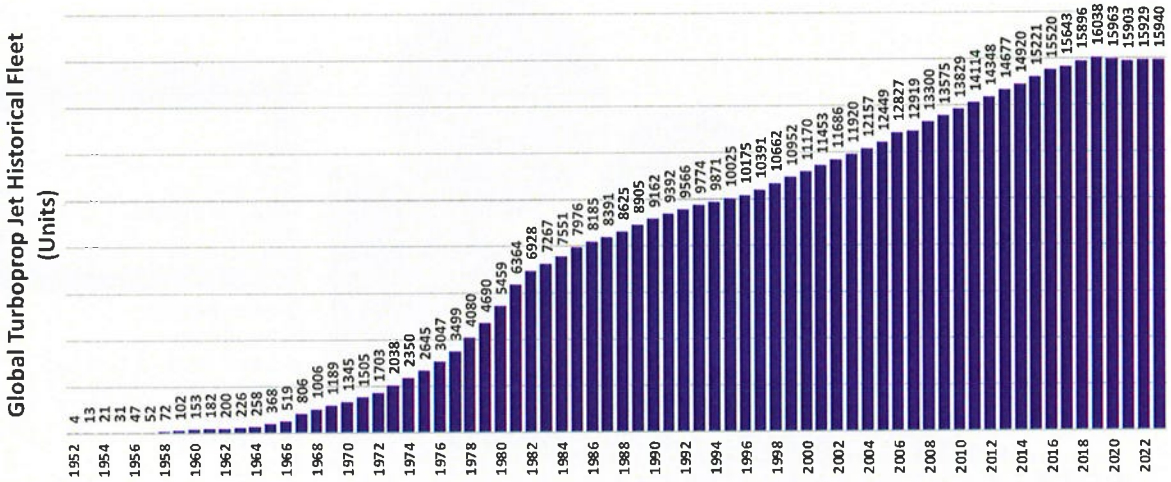
Business Jet Fleet	March 31, 2023
North America	15,825
Latin America & Caribbean	2,687
Europe	2,893
Asia Pacific	1,213
Middle East and Africa	960
Total	23,578



Source: IFTDB – April 2023; BVA analysis

All Turboprop Aircraft: Fleet

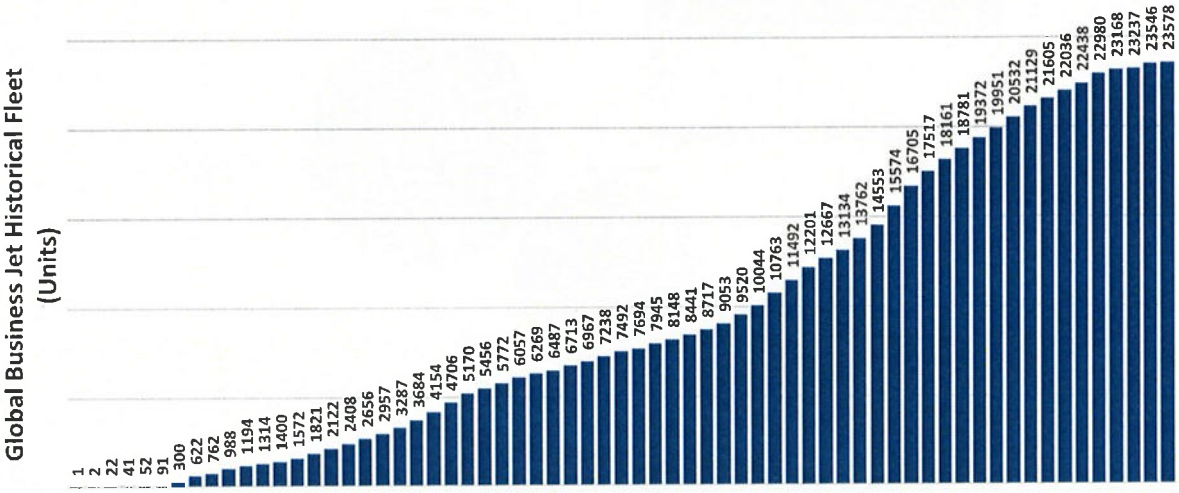
Historical (1952 - End of Q1 2023)



Source: IHIHI – April 2023; BVA analysis

All Jet Aircraft: Fleet

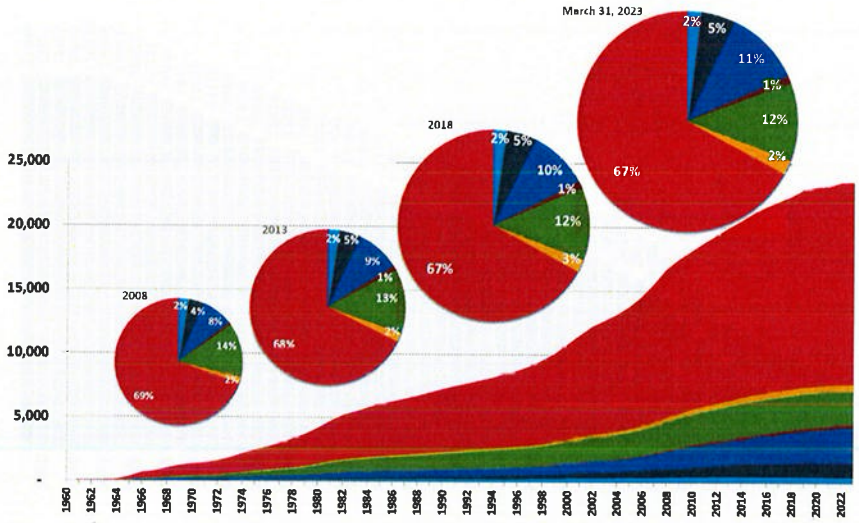
Historical (1957 - End of Q1 2023)



Source: IHIHI – April 2023; BVA analysis

All Jet Aircraft: Fleet Growth by Region

Historical (1960 – Q1 2023)



Business Jet Fleet as of Mar 31 2023	
By Region	Total Fleet
Africa	450
Asia Pacific	1,219
Europe	2,628
Former Soviet Union	265
Latin America & Caribbean	2,687
Middle East	510
North America	15,825
Total	23,578

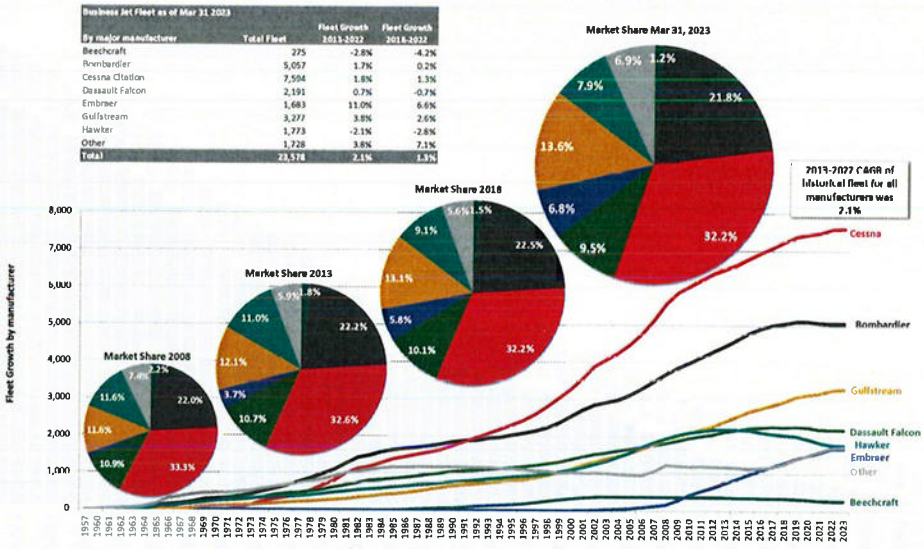
- North America
- Middle East
- Latin America & Caribbean
- Former Soviet Union
- Europe
- Asia Pacific
- Africa

Source: JETNET – April 2023; BVA analysis

All Jet Aircraft: Fleet Growth by Manufacturer

Historical (1960 – Q1 2023)

Business Jet Fleet as of Mar 31 2023			
By major manufacturer	Total Fleet	Fleet Growth 2013-2022	Fleet Growth 2018-2022
Beechcraft	275	-2.8%	-4.2%
Bombardier	5,057	1.7%	0.2%
Cessna Citation	7,504	1.8%	1.3%
Dassault Falcon	2,191	0.7%	-0.7%
Embraer	1,683	11.0%	6.6%
Gulfstream	3,277	3.8%	2.6%
Hawker	1,773	-2.1%	-2.8%
Other	1,728	3.6%	7.1%
Total	23,578	2.1%	1.3%

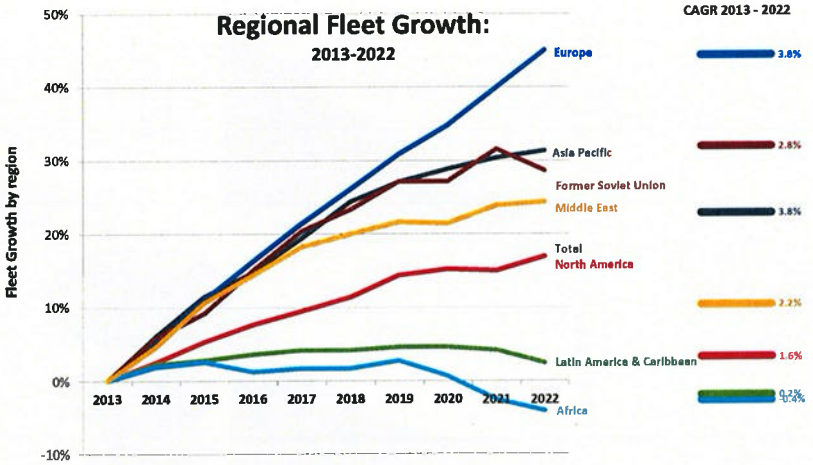


Source: JETNET – April 2023; BVA analysis

All Jet Aircraft: Fleet Growth Rates by Region

Historical (2013 – 2022)

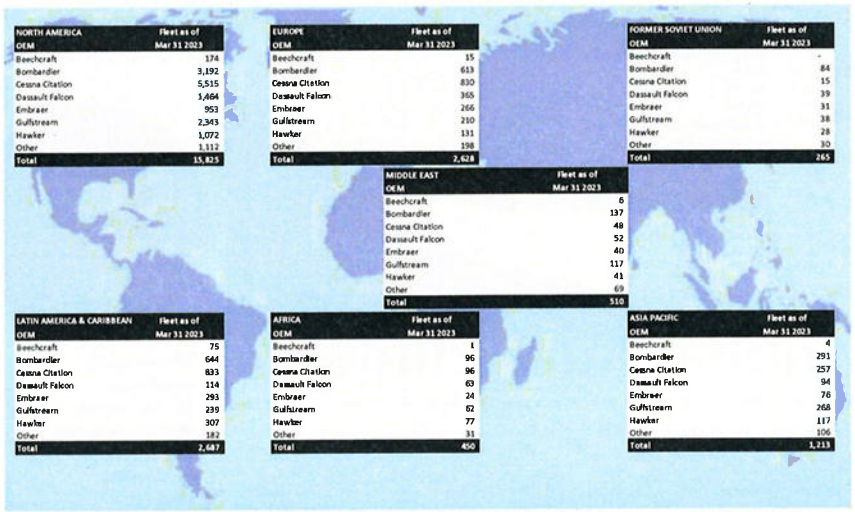
Jet fleet growth rates vary widely by world region, reflecting differing levels of economic development, fleet age, and fleet size. Amongst the larger fleets, Europe, Asia Pacific, and Middle East have been the fastest growing over the past 10 years.



Source: ICTNET– April 2023; RVA analysis; Note: Growth rates for the Former Soviet Union, Africa, and Middle East are from relatively small fleets

All Jet Aircraft: Fleet by Region and Manufacturer

End of Q1 2023



NORTH AMERICA OEM	Fleet as of Mar 31 2023
Beechcraft	174
Bombardier	3,192
Cessna Citation	5,515
Dassault Falcon	1,464
Embraer	953
Gulfstream	2,343
Hawker	1,072
Other	1,112
Total	15,825

EUROPE OEM	Fleet as of Mar 31 2023
Beechcraft	15
Bombardier	613
Cessna Citation	830
Dassault Falcon	365
Embraer	266
Gulfstream	210
Hawker	131
Other	198
Total	2,628

FORMER SOVIET UNION OEM	Fleet as of Mar 31 2023
Beechcraft	-
Bombardier	84
Cessna Citation	15
Dassault Falcon	39
Embraer	31
Gulfstream	38
Hawker	28
Other	30
Total	265

MIDDLE EAST OEM	Fleet as of Mar 31 2023
Beechcraft	6
Bombardier	137
Cessna Citation	48
Dassault Falcon	52
Embraer	40
Gulfstream	117
Hawker	41
Other	69
Total	510

LATIN AMERICA & CARIBBEAN OEM	Fleet as of Mar 31 2023
Beechcraft	75
Bombardier	644
Cessna Citation	833
Dassault Falcon	114
Embraer	293
Gulfstream	239
Hawker	307
Other	182
Total	2,687

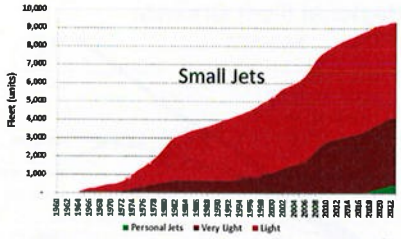
AFRICA OEM	Fleet as of Mar 31 2023
Beechcraft	1
Bombardier	96
Cessna Citation	96
Dassault Falcon	63
Embraer	24
Gulfstream	62
Hawker	77
Other	31
Total	450

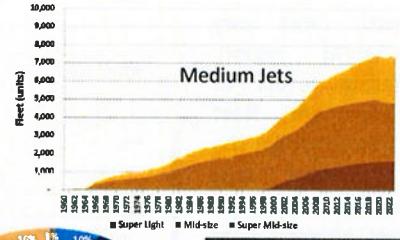
ASIA PACIFIC OEM	Fleet as of Mar 31 2023
Beechcraft	4
Bombardier	291
Cessna Citation	257
Dassault Falcon	94
Embraer	76
Gulfstream	268
Hawker	117
Other	106
Total	1,213

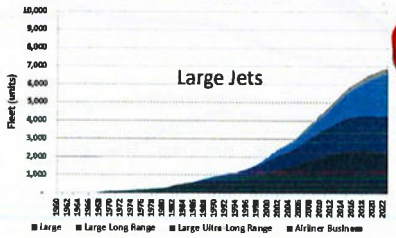
Source: ICTNET– April 2023; RVA analysis

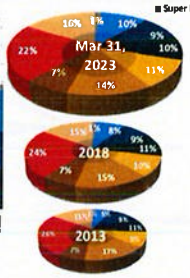
All Jet Aircraft: Fleet by Size Category

Historical (1960 – Q1 2023)









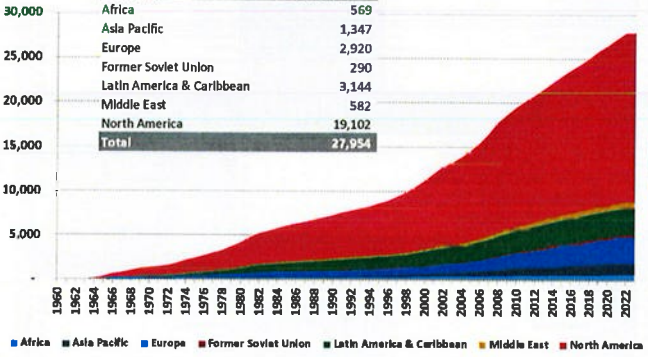
Business Jet Fleet as of March 31, 2023 By size category	
Airliner Business	312
Large Ultra-Long Range	2,316
Large Long Range	2,029
Large Jets	2,223
Super Mid-size Jets	2,542
Mid-size Jets	3,185
Super Light Jets	1,649
Light Jets	5,192
Very Light Jets	3,712
Personal Jets	418
Total	23,578

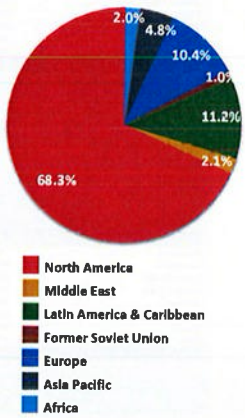
Source: II IHLI– April 2023; RVA analysis

All Jet Aircraft: Deliveries by Size Category

Historical – Ever Delivered (1960 – Q1 2023)

Business Jet Deliveries as of Mar 31 2023 By Region	Deliveries
Africa	569
Asia Pacific	1,347
Europe	2,920
Former Soviet Union	290
Latin America & Caribbean	3,144
Middle East	582
North America	19,102
Total	27,954



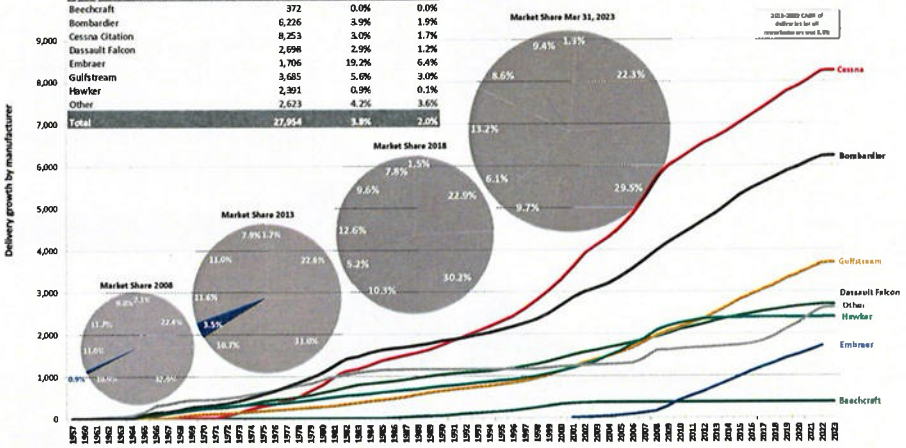


Source: II IHLI– April 2023; RVA analysis

All Jet Aircraft: Deliveries by Manufacturer

Historical – Ever Delivered (1960 – Q1 2023)

Business Jet Deliveries as of Mar 31 2023			
By major manufacturer	Total Delivered	Delivery Growth 2013-2022	Delivery Growth 2018-2022
Beechcraft	372	0.0%	0.0%
Bombardier	6,226	3.9%	1.9%
Cessna Citation	8,253	3.0%	1.7%
Dassault Falcon	2,698	2.9%	1.2%
Embraer	1,706	19.2%	6.4%
Gulfstream	3,685	5.6%	3.0%
Hawker	2,301	0.9%	0.1%
Other	2,623	4.2%	3.6%
Total	27,954	3.8%	2.0%



Source: IETNET – April 2023; BVA analysis

All Jet Aircraft: Deliveries by Manufacturer

Ever Delivered (End of Q1 2023)

NORTH AMERICA	Deliveries as of Mar 31 2023
OEM	
Beechcraft	253
Bombardier	4,087
Cessna Citation	5,981
Dassault Falcon	1,850
Embraer	964
Gulfstream	2,668
Hawker	1,461
Other	1,838
Total	19,102

EUROPE	Deliveries as of Mar 31 2023
OEM	
Beechcraft	31
Bombardier	665
Cessna Citation	907
Dassault Falcon	425
Embraer	267
Gulfstream	220
Hawker	196
Other	219
Total	2,920

FORMER SOVIET UNION	Deliveries as of Mar 31 2023
OEM	
Beechcraft	-
Bombardier	84
Cessna Citation	18
Dassault Falcon	46
Embraer	31
Gulfstream	39
Hawker	41
Other	31
Total	290

MIDDLE EAST	Deliveries as of Mar 31 2023
OEM	
Beechcraft	6
Bombardier	146
Cessna Citation	52
Dassault Falcon	64
Embraer	42
Gulfstream	137
Hawker	48
Other	87
Total	582

LATIN AMERICA & CARIBBEAN	Deliveries as of Mar 31 2023
OEM	
Beechcraft	80
Bombardier	783
Cessna Citation	907
Dassault Falcon	139
Embraer	302
Gulfstream	265
Hawker	381
Other	287
Total	3,144

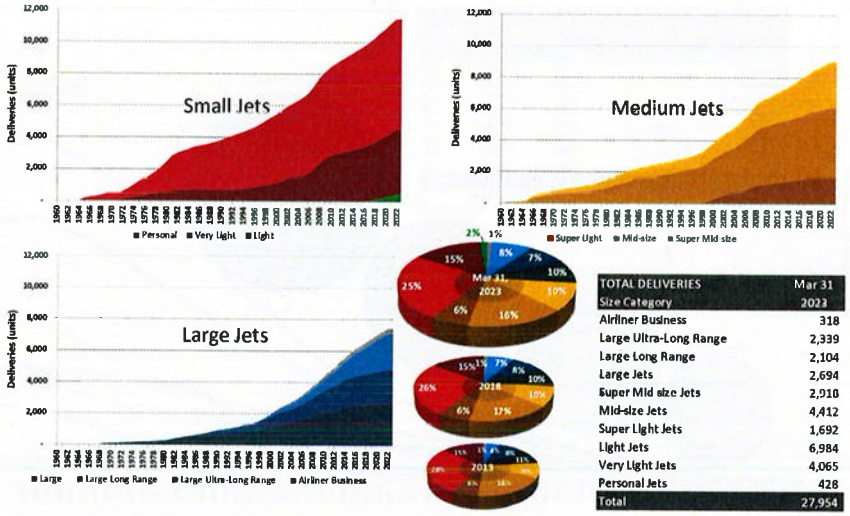
AFRICA	Deliveries as of Mar 31 2023
OEM	
Beechcraft	2
Bombardier	119
Cessna Citation	108
Dassault Falcon	73
Embraer	24
Gulfstream	80
Hawker	122
Other	41
Total	569

ASIA PACIFIC	Deliveries as of Mar 31 2023
OEM	
Beechcraft	10
Bombardier	342
Cessna Citation	280
Dassault Falcon	101
Embraer	76
Gulfstream	276
Hawker	142
Other	120
Total	1,347

Source: IETNET – April 2023; BVA analysis

All Jet Aircraft: Deliveries by Size Category

Ever Delivered (End of Q1 2023)

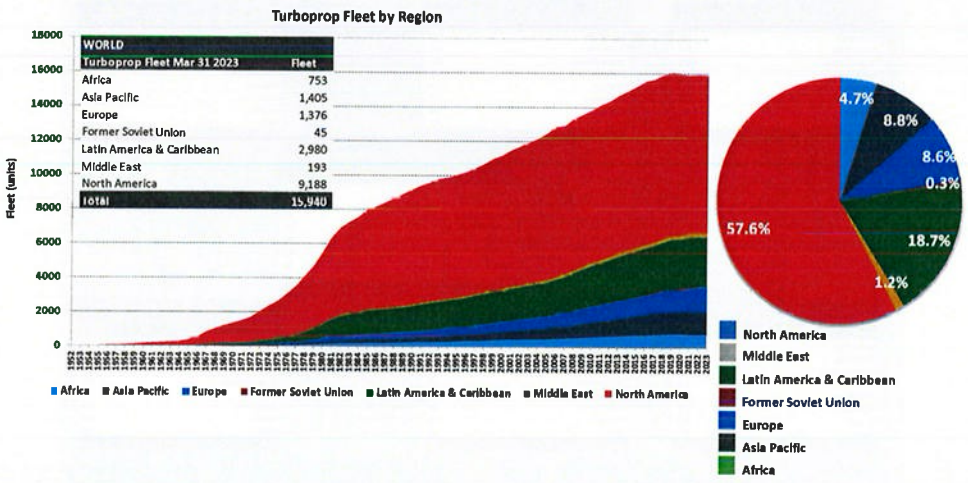


TOTAL DELIVERIES	Mar 31
Size Category	2023
Airliner Business	318
Large Ultra-Long Range	2,339
Large Long Range	2,104
Large Jets	2,694
Super Mid size Jets	2,910
Mid-size Jets	4,412
Super Light Jets	1,692
Light Jets	6,984
Very Light Jets	4,065
Personal Jets	428
Total	27,954

Source: JETNET – April 2023; BVA analysis

All Turboprop Aircraft: Fleet Growth by Region

Historical (1960 – Q1 2023)



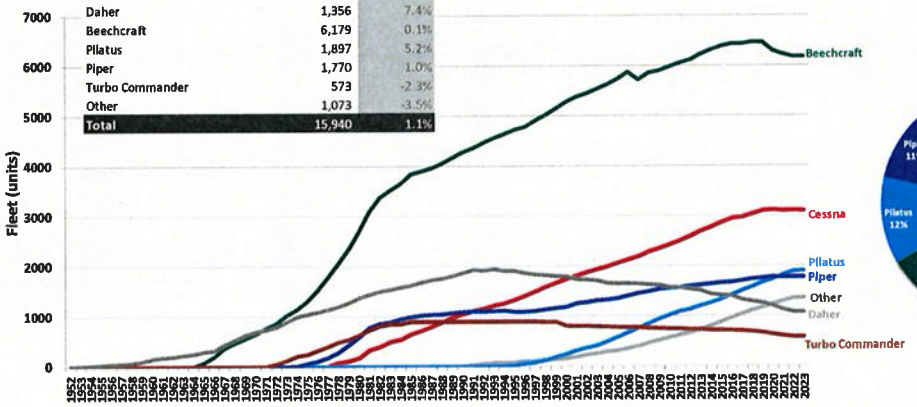
WORLD	
Turboprop Fleet Mar 31 2023	Fleet
Africa	753
Asia Pacific	1,405
Europe	1,376
Former Soviet Union	45
Latin America & Caribbean	2,980
Middle East	193
North America	9,188
Total	15,940

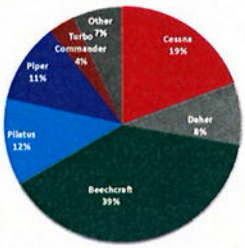
Source: JETNET – April 2023; BVA analysis

All Turboprop Aircraft: Fleet Growth by Manufacturer

Historical (1960 – Q1 2023)

WORLD Turboprop Fleet Mar 31 2023	Fleet	CAGR 2013-2022
Cessna	3,092	1.8%
Daher	1,356	7.4%
Beechcraft	6,179	0.1%
Pilatus	1,897	5.2%
Piper	1,770	1.0%
Turbo Commander	573	-2.3%
Other	1,073	-3.5%
Total	15,940	1.1%





Source: JETNET – April 2023; RVA analysis

All Turboprop Aircraft: Fleet by Region and Manufacturer

End of Q1 2023

NORTH AMERICA Turboprop Fleet Mar 31 2023	Fleet
Cessna	1,105
Daher	1,012
Beechcraft	3,524
Pilatus	1,315
Piper	775
Turbo Commander	248
Other	1,209
Total	9,188

EUROPE Turboprop Fleet Mar 31 2023	Fleet
Cessna	143
Daher	172
Beechcraft	382
Pilatus	250
Piper	185
Turbo Commander	20
Other	224
Total	1,376

FORMER SOVIET UNION Turboprop Fleet Mar 31 2023	Fleet
Cessna	9
Daher	4
Beechcraft	13
Pilatus	8
Piper	4
Turbo Commander	1
Other	6
Total	45

MIDDLE EAST Turboprop Fleet Mar 31 2023	Fleet
Cessna	51
Daher	4
Beechcraft	106
Pilatus	2
Piper	0
Turbo Commander	15
Other	15
Total	193

LATIN AMERICA & CARIBBEAN Turboprop Fleet Mar 31 2023	Fleet
Cessna	486
Daher	70
Beechcraft	1,386
Pilatus	125
Piper	157
Turbo Commander	261
Other	495
Total	2,980

AFRICA Turboprop Fleet Mar 31 2023	Fleet
Cessna	329
Daher	15
Beechcraft	259
Pilatus	69
Piper	11
Turbo Commander	13
Other	57
Total	753

ASIA PACIFIC Turboprop Fleet Mar 31 2023	Fleet
Cessna	512
Daher	79
Beechcraft	509
Pilatus	128
Piper	23
Turbo Commander	15
Other	139
Total	1,405

Source: JETNET – April 2023; RVA analysis

Deliveries by Region – Summary Table

	2018	2018	2018	2018	2018	2018	2019	2019	2019	2019	2019	2019	2020	2020	2020	2020	2020	2020	2021	2021	2021	2021	2021	2021	2022	2022	2022	2022	2022	2022	2018-2022	2018-2022	2018-2022	2018-2022	2018-2022	2018-2022
	Global	North America	Latin America	Europe	Asia Pacific	Middle East & Africa	Global	North America	Latin America	Europe	Asia Pacific	Middle East & Africa	Global	North America	Latin America	Europe	Asia Pacific	Middle East & Africa	Global	North America	Latin America	Europe	Asia Pacific	Middle East & Africa	Global	North America	Latin America	Europe	Asia Pacific	Middle East & Africa	Global	North America	Latin America	Europe	Asia Pacific	Middle East & Africa
Piston Deliveries																																				
Single-Engine and Electric	952	585	103	176	48	39	#####	738	124	142	49	57	#####	700	121	203	24	26	#####	866	145	182	38	29	#####	955	161	133	78	38	5,854	3,934	654	836	237	189
Multi-Engine	185	114	20	34	9	8	213	141	24	27	9	11	157	107	16	27	3	3	148	102	17	21	4	3	158	110	19	15	9	4	801	574	96	124	34	29
Total	#####	699	123	210	57	47	#####	879	148	169	58	68	#####	807	137	230	27	29	#####	968	162	203	42	32	#####	1,065	180	148	87	42	6,715	4,508	750	960	271	218
Turboprop Deliveries																																				
Single-Engine	494	240	64	75	74	36	429	216	55	63	72	23	381	209	55	53	45	19	455	239	56	60	71	29	505	281	54	48	92	29	2,264	1,191	284	299	354	136
Multi-Engine	107	53	14	16	16	8	96	48	12	14	16	5	62	34	9	9	7	3	72	38	9	9	11	5	77	43	8	7	14	4	414	216	52	55	64	25
Total	601	293	78	91	90	44	525	264	67	77	88	28	443	243	64	62	52	22	527	277	65	69	82	34	582	324	62	55	106	33	2,678	1,407	336	354	418	161
Business Jet deliveries	703	458	108	70	41	26	809	543	116	65	48	37	664	425	108	52	46	12	710	468	128	45	42	27	712	481	116	36	44	35	3,578	2,375	576	268	221	137
Total Aircraft	#####	1,456	309	371	188	117	#####	1,686	331	311	194	133	#####	1,565	309	344	125	63	#####	1,713	355	317	166	93	#####	1,870	358	239	237	110	12,971	8,290	1,662	1,582	910	516

	2018	2018	2018	2018	2018	2018	2019	2019	2019	2019	2019	2019	2020	2020	2020	2020	2020	2020	2021	2021	2021	2021	2021	2021	2022	2022	2022	2022	2022	2022	2018-2022	2018-2022	2018-2022	2018-2022	2018-2022	2018-2022
Summarized Deliveries	Global	North America	Latin America	Europe	Asia Pacific	Middle East & Africa	Global	North America	Latin America	Europe	Asia Pacific	Middle East & Africa	Global	North America	Latin America	Europe	Asia Pacific	Middle East & Africa	Global	North America	Latin America	Europe	Asia Pacific	Middle East & Africa	Global	North America	Latin America	Europe	Asia Pacific	Middle East & Africa	Global	North America	Latin America	Europe	Asia Pacific	Middle East & Africa
Piston Single-Engine & Electric	952	585	103	176	48	39	#####	738	124	142	49	57	#####	700	121	203	24	26	#####	866	145	182	38	29	#####	955	161	133	78	38	5,854	3,934	654	836	237	189
Piston Multi-Engine	185	114	20	34	9	8	213	141	24	27	9	11	157	107	16	27	3	3	148	102	17	21	4	3	158	110	19	15	9	4	801	574	96	124	34	29
Turboprop Single-Engine	494	240	64	75	74	36	429	216	55	63	72	23	381	209	55	53	45	19	455	239	56	60	71	29	505	281	54	48	92	29	2,264	1,191	284	299	354	136
Turboprop Multi-Engine	107	53	14	16	16	8	96	48	12	14	16	5	62	34	9	9	7	3	72	38	9	9	11	5	77	43	8	7	14	4	414	216	52	55	64	25
Business Jets	703	458	108	70	41	26	809	543	116	65	48	37	664	425	108	52	46	12	710	468	128	45	42	27	712	481	116	36	44	35	3,578	2,375	576	268	221	137
All Fixed Wing	#####	1,456	309	371	188	117	#####	1,686	331	311	194	133	#####	1,565	309	344	125	63	#####	1,713	355	317	166	93	#####	1,870	358	239	237	110	12,971	8,290	1,662	1,582	910	516

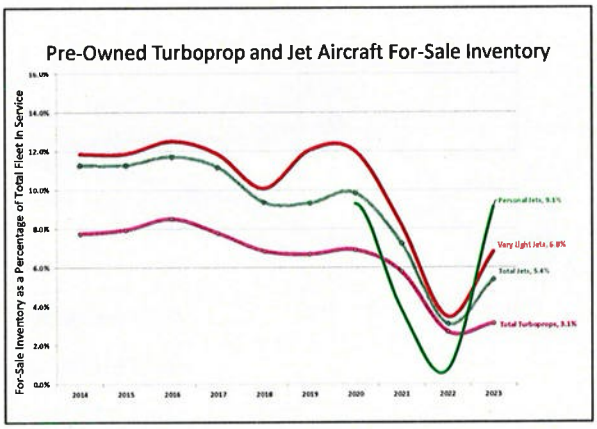
Source: General Aviation Manufacturers Association (GAMA)

Pre-Owned Aircraft Inventory and Transactions

Pre-Owned Turboprop and Jet Aircraft For-Sale Inventory

Historical (2014 – Q1 2023)

For-sale inventory in the ***Relevant Turbine Aircraft Segment*** has begun to rebuild after 2022's historically low levels. While asking and transactions prices remain high, the pre-owned aircraft market has begun to shift from a classical "seller's market" to one where there is better balance between buyers and sellers. Inventory levels representing 10-12% of the fleet are more typical of a balanced aircraft market. An increase in available inventory of young pre-owned aircraft (5 years or less since initial delivery) will introduce a competitive element into new aircraft sales negotiations which has been mostly absent for the past 2+ years. A rebound in inventory signals a period where prices / aircraft values will likely soften from their recent highs.

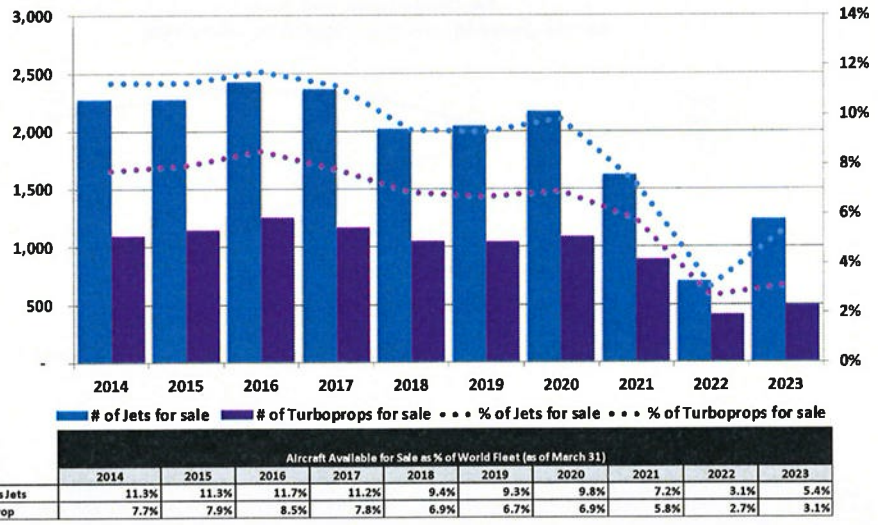


Source: JETNET; BVA analysis; For-Sale Inventory is as of the end of March / end of Q1 for each year

Pre-Owned Turboprop and Jet Inventory

Number of Aircraft and % of In-Service Fleet - Historical (2014 – Q1 2023)

Please refer to page 145-146 for updated information



	Aircraft Available for Sale as % of World Fleet (as of March 31)									
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Business Jets	11.3%	11.3%	11.7%	11.2%	9.4%	9.3%	9.8%	7.2%	3.1%	5.4%
Turboprop	7.7%	7.9%	8.5%	7.8%	6.9%	6.7%	6.9%	5.8%	2.7%	3.1%

Source: JETNET – April 2023; BVA analysis; Inventory as of End of March for the given year

Pre-Owned Jet Aircraft For-Sale Inventory and Retail Transactions

Historical (2014 – Q1 2023)

Sources: JETNET – April 2023; BBA analysis; Includes whole aircraft retail sales and lease to end users including Personal Jets; data through March 31, 2023

Pre-Owned Piston Aircraft Inventory and Retail Transactions

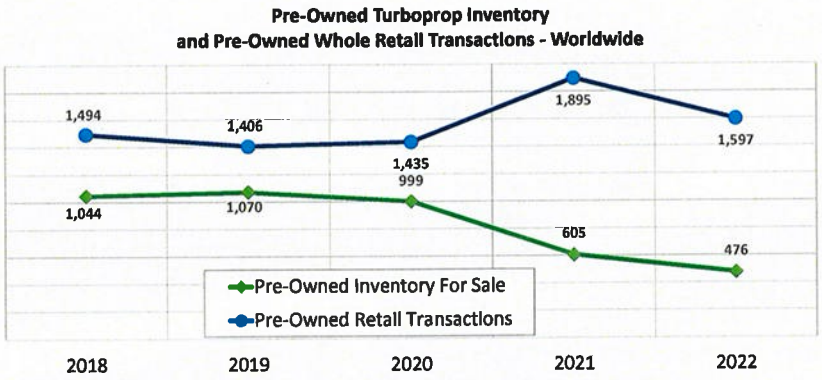
Historical (2018 – 2022)

Note: Piston aircraft inventory and transactions are based on only a small number of models tracked by JETNET – including single-engine (Piper M350, Piper Malibu, Piper Matrix and Piper Mirage) and twin-engine piston models (Baron 58, Cessna 414, Cessna 421, Diamond Aircraft DA62)

Sources: JETNET – April 2023; BBA analysis

Pre-Owned Turboprop Aircraft Inventory and Retail Transactions

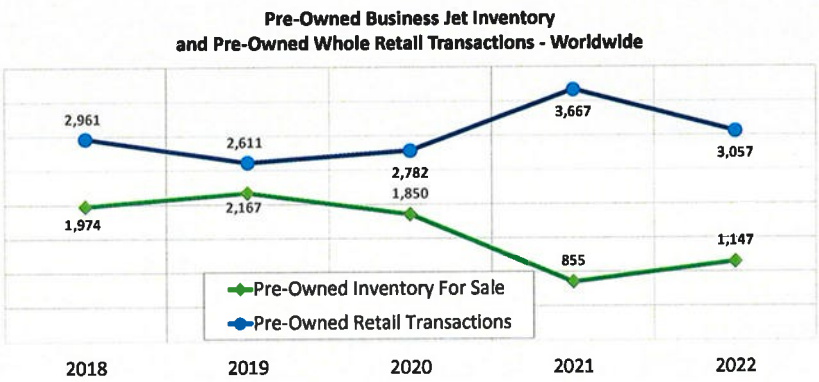
Historical (2018 – 2022)



Source: JETNET – April 2023; RVA analysis

Pre-Owned Jet Aircraft Inventory and Retail Transactions

Historical (2018 – 2022)



Source: JETNET – April 2023; RVA analysis

Turboprop Utilization by Region: 2021-2022

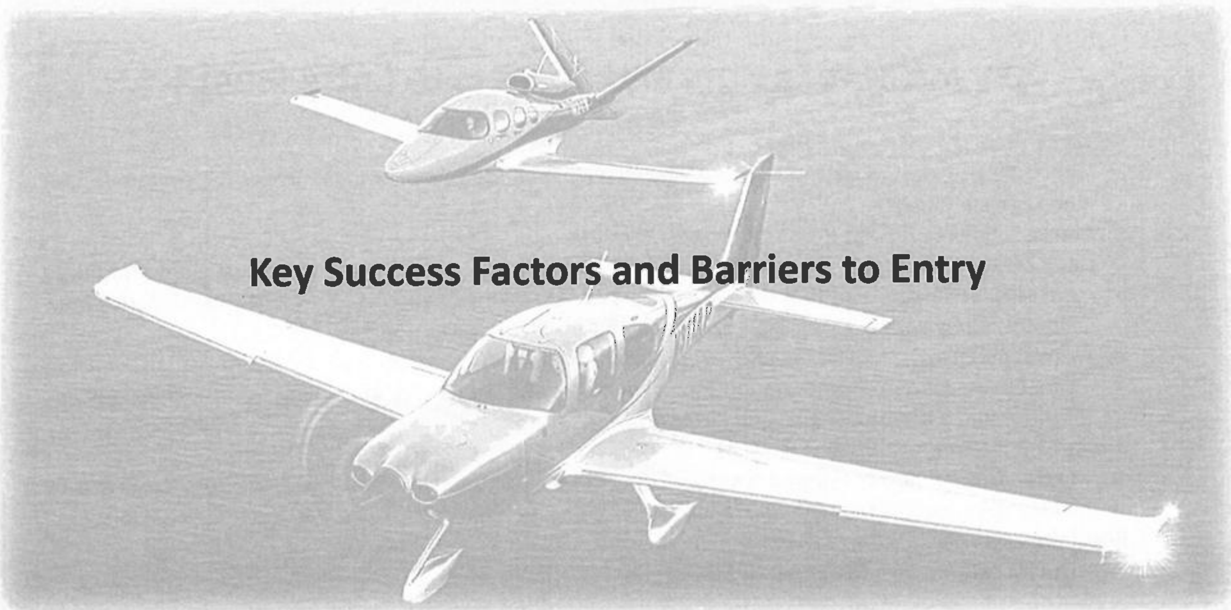
Turboprop Utilization	2021			2022		
Region	Total Flights '000	Total Flight Hours '000	Average hours per flight	Total Flights '000	Total Flight Hours '000	Average hours per flight
Africa	5.2	8.2	**1.57**	6.8	9.7	**1.42**
Asia	6.9	11.4	**1.65**	9.2	14.7	**1.61**
Australia & Oceania	192.6	173.1	**0.90**	198.9	177.4	**0.89**
Europe	91.7	121.5	**1.32**	110.6	140.6	**1.27**
North America	1,135.2	1,380.4	**1.22**	1,146.3	1,407.4	**1.23**
Latin America & Caribbean	24.9	35.4	**1.42**	34.7	45.0	**1.30**
Grand Total	1,457	1,730	1.19	1,506	1,795	1.19

Source: IHS T – April 2023; BVA analysis includes all turboprop models (pressurized and unpressurized)

Business Jet Utilization by Region: 2021-2022

Business Jet Utilization	2021			2022		
Region	Total Flights '000	Total Flight Hours '000	Average hours per flight	Total Flights '000	Total Flight Hours '000	Average hours per flight
Africa	12.2	33.1	**2.71**	13.0	38.1	**2.93**
Asia	54.6	132.8	**2.43**	65.8	165.6	**2.52**
Australia & Oceania	20.8	31.4	**1.51**	28.4	44.9	**1.58**
Europe	367.9	637.4	**1.73**	417.3	712.7	**1.71**
North America	2,443.6	3,899.9	**1.60**	2,554.6	4,143.2	**1.62**
Latin America & Caribbean	41.6	69.9	**1.68**	51.0	85.5	**1.68**
Grand Total	2,941	4,804	1.63	3,130	5,190	1.66

Source: JETNET – April 2023; RVA analysis



Key Success Factors and Barriers to Entry

There are many keys to success in Personal Aviation, and few if any companies have been as successful as Cirrus Aircraft in such a short timeframe. Key success factors include:

- Top-line revenue growth
- Market share (e.g., total aircraft deliveries and the size of the fleet in service)
  - As of early 2023, Cirrus had delivered more than 9,000 SR Series and 450 Vision Jet SF50 aircraft
- Installed base of customers
  - Through 2022, Cirrus delivered 300 or more SR Series per year for the 9th consecutive year; the SR and SF Series are the most delivered aircraft in their respective segments
- Step-up product and service family strategy
  - In the first 3 years of Vision Jet SF50 deliveries, 80% of customers came from the SR Series customer base; in 2022, 50% of customers were also SR Series customers
- Order backlog and book-to-bill (value, units)
  - Cirrus Aircraft has built an order backlog that represents more than 2 years of SR Series and SF Series at current production rates; this gives management excellent visibility into material, supplier, and labor requirements for sales and operations planning

Key Success Factors and Barriers to Entry (cont.)

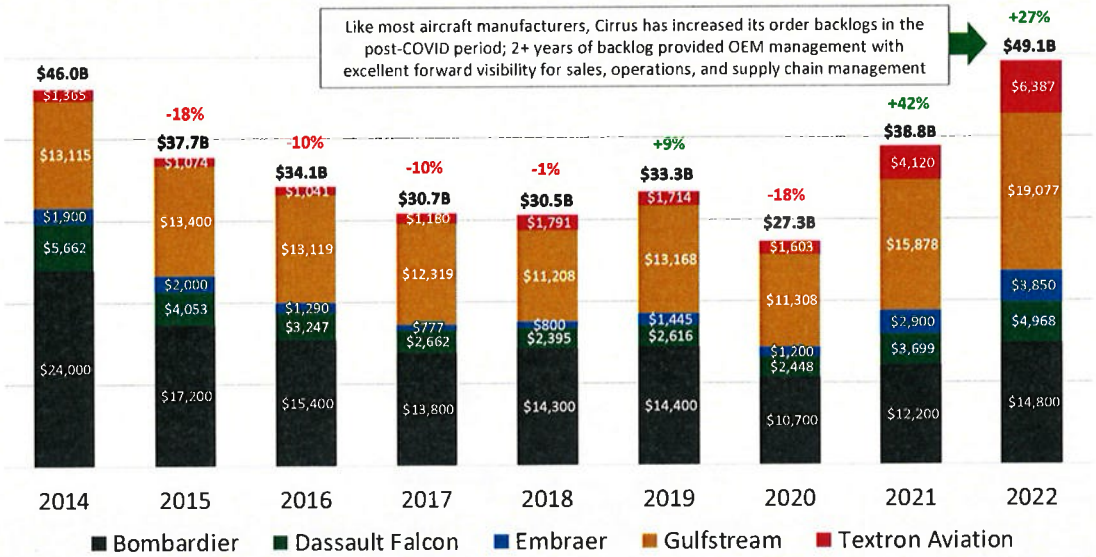
- Customer intelligence / knowledge
  - According to key industry players we interviewed "nobody knows or understands the customer base better than Cirrus."
- Customer satisfaction / Net Promoter Scores / loyalty
  - Although we don't have access to Net Promoter Score or customer satisfaction score data for Cirrus Aircraft, we understand that their customers are brand loyal; about 30% of customers finance their aircraft, many with a 3-year loan, and trade in / up for a newer model
- Brand leadership - awareness / quality / reputation / loyalty
  - The Cirrus Aircraft brand reputation is built around advanced aeronautics, compelling aircraft interior and exterior designs, and aircraft safety
- Aircraft transaction expertise
  - Cirrus Aircraft has developed a unique network of partners who are dedicated to the SR and SF Series sales, support, and flight training
- Regulatory and certification expertise
  - The SR Series is certified in 60 countries

Key Success Factors and Barriers to Entry (cont.)

- Manufacturing and supply chain management expertise
  - Cirrus Aircraft design, engineering, and production is of the highest quality; the company's early adoption of composite designs and construction techniques has enabled very high levels of fit-and-finish quality
- Safety reputation
  - The Cirrus SR Series fleet has surpassed 15 million flight hours, an on-going testament to its designed-in quality, reliability, and durability
- Engineering, design, and innovation leadership
  - The Vision Jet SF50 won the Collier Trophy in 2017 as "the greatest achievement in astronautics or aeronautics in America"
- Access to capital
  - Through AVIC's ownership, Cirrus Aircraft has been able to complete the Vision Jet SF50 development, certification, and production acceleration, and invest in modern design, engineering, IT, production, completion, administration, flight training, and delivery facilities
- Service and support expertise / network
  - Cirrus has already opened 4 factory-owned service centers in the U.S., with plans for on-going geographic expansion in line with customer requirements and fleet growth

Aircraft Manufacturer Order Backlog Value

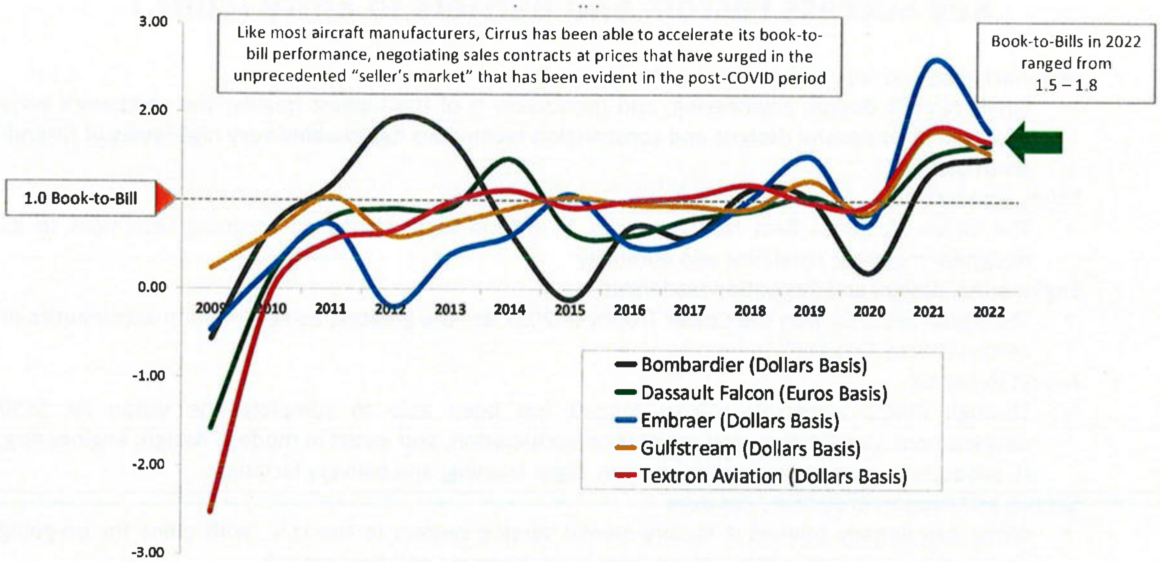
Historical in $U.S. (2014 – 2022)



Sources: Regulatory filings; BVA analysis and estimates; In Millions of U.S. Dollars except column totals which are in Billions

Aircraft Manufacturer Book-to-Bills

By OEMs Historical (2009 – 2022)

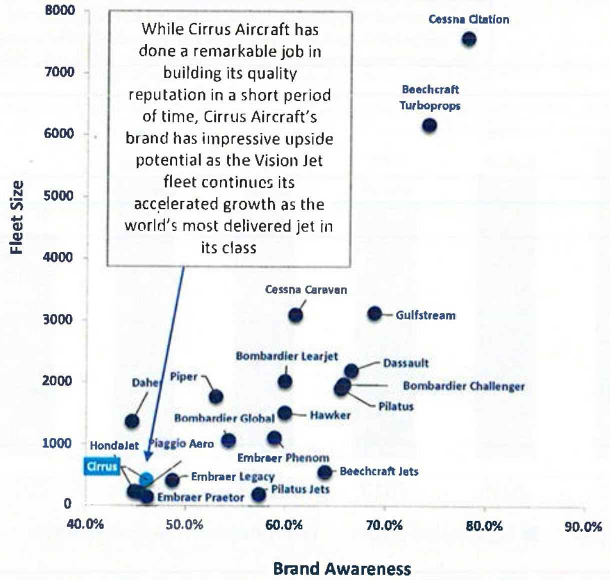


Sources: Regulatory filings; RVA analysis and estimates; Book to Bill is a measure of the value of new orders divided by the value of new deliveries; a 1.0 Book to Bill of 1.0 implies an unchanging order backlog; >1 = backlog growth; <1 = backlog reduction

Aircraft Manufacturer Brand Awareness

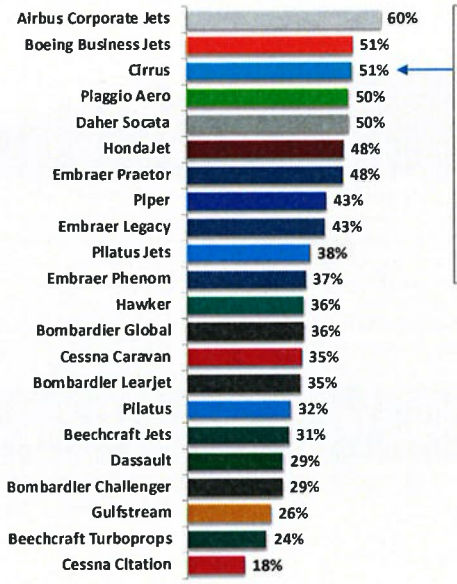
By Size of Jet Fleet – Q1 2023

"Brand Awareness" = % of fixed-wing turbine aircraft owner / operator respondents who provided a 1-to-10 numerical rating for a particular brand



Aircraft Manufacturer Brand "Unawareness"

% of Survey Respondents "Unaware" of Brands – Q1 2023



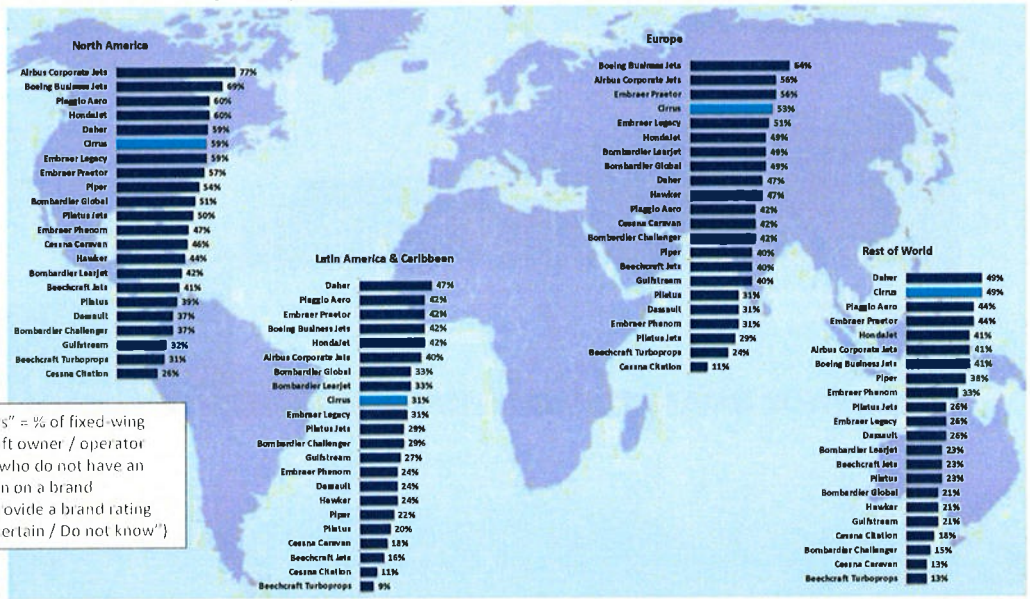
Despite 20+ years of SR Series production deliveries and the advent of the Vision Jet SF50, the Cirrus Aircraft brand remains relatively unknown to many owners and operators of fixed-wing turbine business aircraft; further investments in building the brand – including the development of new, larger, more capable Cirrus designs – will be key to accelerate brand awareness and purchase consideration

"Unawareness" = % of fixed-wing turbine aircraft owner / operator respondents who do not have an opinion on a brand (i.e., did not provide a brand rating or selected "Uncertain / Do not know")

Source: Q1 2023 BLINET iQ Survey

Aircraft Manufacturer Brand "Unawareness"

% of Survey Respondents "Unaware" of Brands – Q1 2023

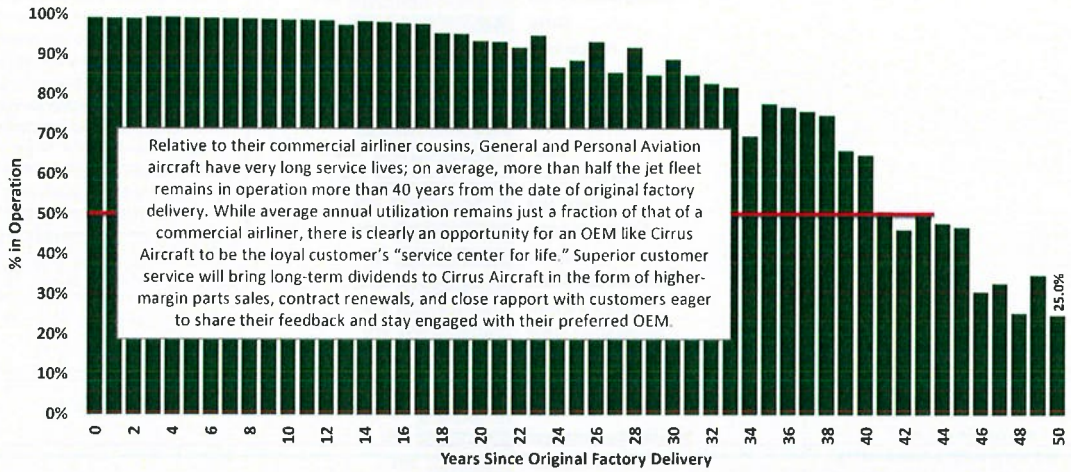


"Unawareness" = % of fixed-wing turbine aircraft owner / operator respondents who do not have an opinion on a brand (i.e., did not provide a brand rating or selected "Uncertain / Do not know")

Source: Q1 2023 BLINET iQ Survey

All Jet Aircraft: Survivor Curve

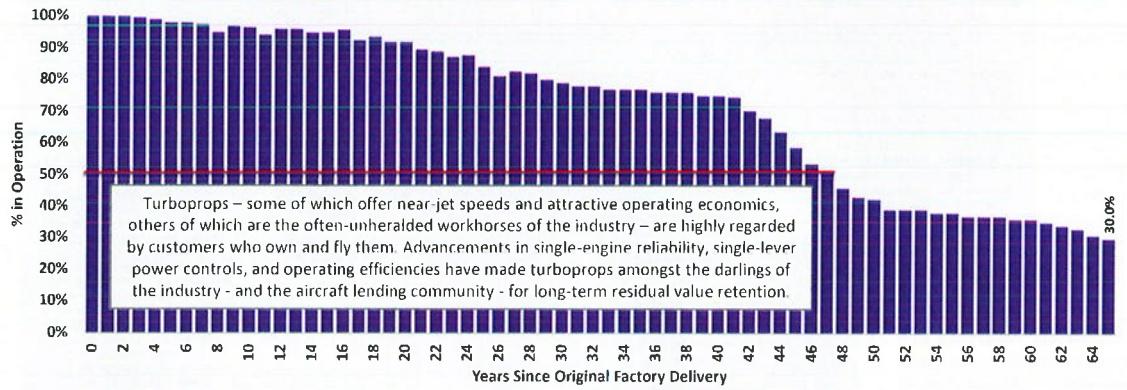
% of Fleet in Operation Since Original Factory Delivery (in Years)



Source: JETNET iQ; BVA analysis

All Turboprop Aircraft: Survivor Curve

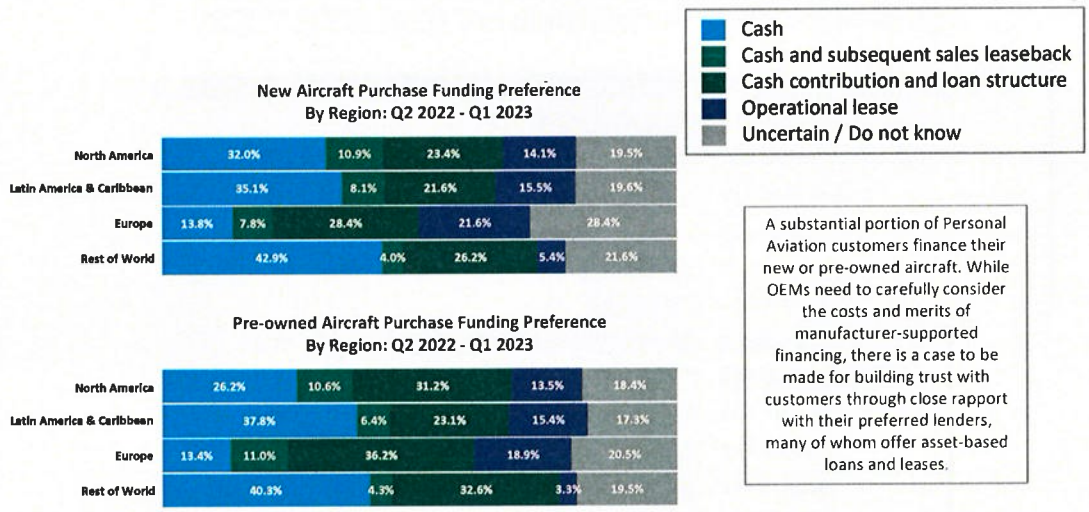
% of Fleet in Operation Since Original Factory Delivery (in Years)



Source: Q4 2022 JETNET iQ Report

Aircraft Financing by Region

Funding Preferences for Next Aircraft Purchase (Q2 2022 – Q1 2023)

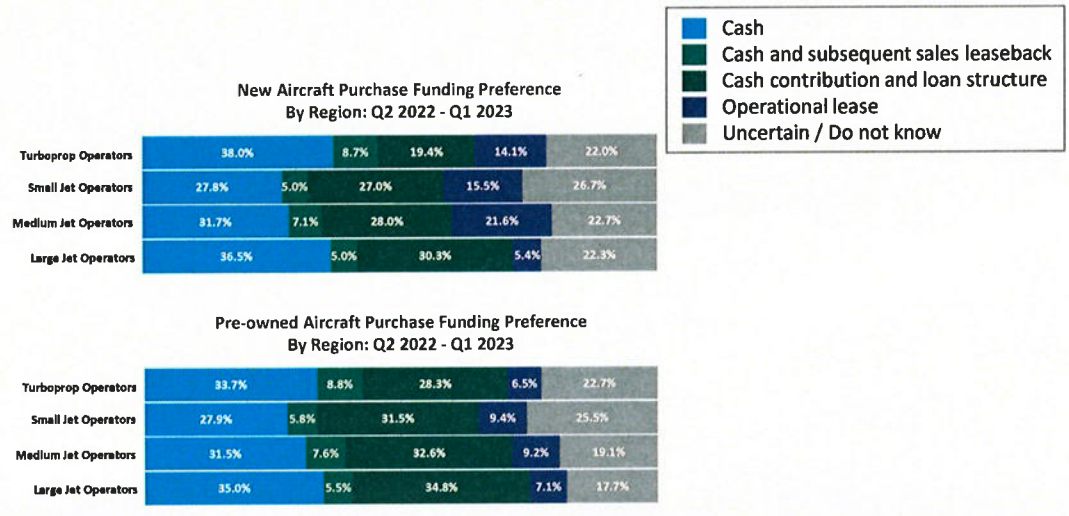


A substantial portion of Personal Aviation customers finance their new or pre-owned aircraft. While OEMs need to carefully consider the costs and merits of manufacturer-supported financing, there is a case to be made for building trust with customers through close rapport with their preferred lenders, many of whom offer asset-based loans and leases.

Sources: Q12 2022 – Q1 2023 JETNET iQ Surveys

Aircraft Financing by Aircraft Size Category

Funding Preferences for Next Aircraft Purchase (Q2 2022 – Q1 2023)

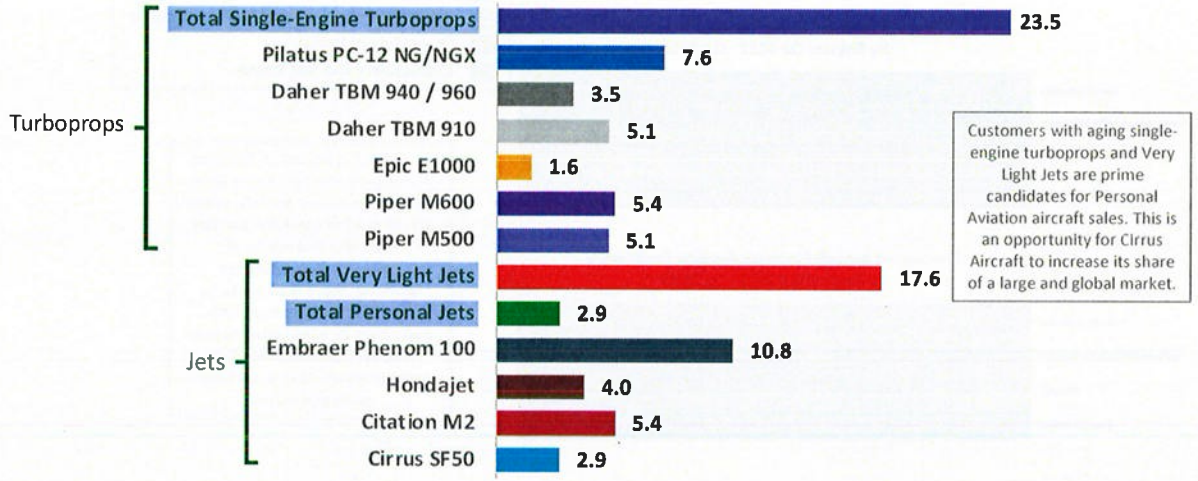


Sources: Q12 2022 – Q1 2023 JETNET iQ Surveys

Turboprop and Jet Fleet Age

By Size Category and For Select Models

Age In Years Since Factory Delivery (End of Q1 2023)



Sources: JETNET; RVA analysis; Note: "Single Engine Turboprops" include pressurized and unpressurized aircraft models

Key Challenges and Opportunities

From an aircraft manufacturer's perspective, the near future presents both challenges to confront and opportunities to seize. Surveys* of aircraft owners / operators suggest that the following are amongst the key challenges the industry faces in the near term:

- Accelerating the recovery of aerospace and aviation supply chains;
- Recruiting, training, and retaining a global talent pool of skilled labor;
- Expanding aviation maintenance, repair, and overhaul services to serve the large installed base of aging aircraft;
- Improving environmental sustainability;
- Working closely with government authorities to ensure efficiency in regulatory oversight and fairness with respect to taxes, fees, and access to airports and airways;
- Improving the public image of the industry;
- Adding capacity at airports and within air navigation systems to enable traffic growth; and
- Ensuring the privacy and security of customers, including their locations, aircraft usage patterns, and confidential information.

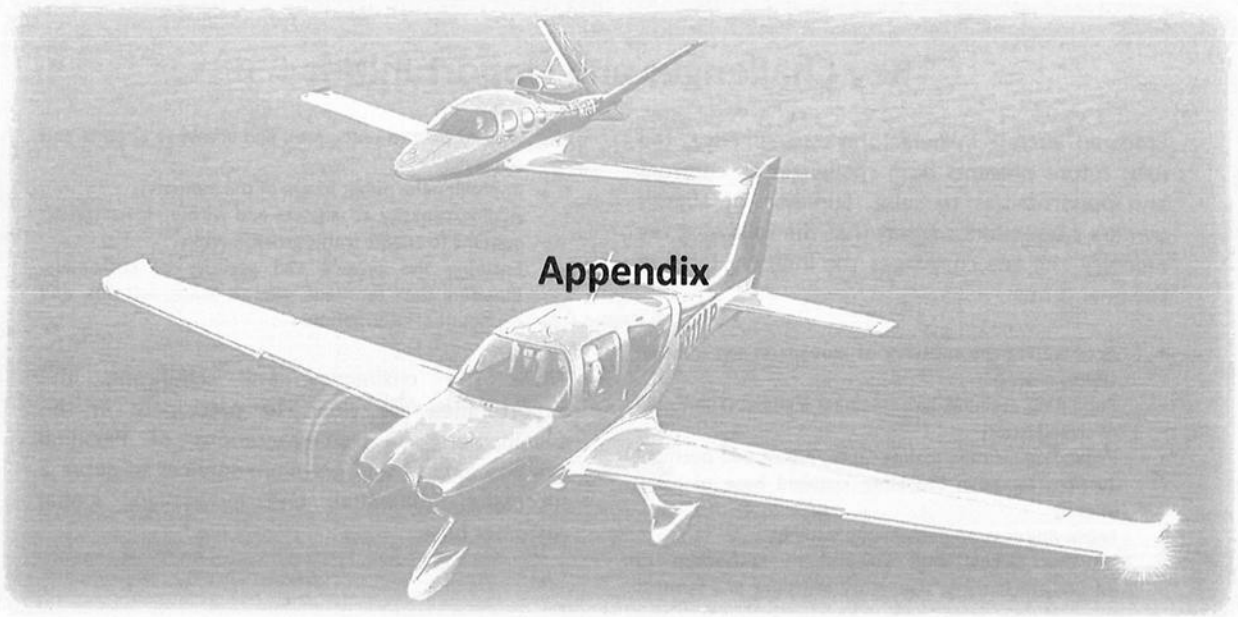
While the challenges are significant, the opportunities are clear: to participate in the development of next-generations of Personal Aviation aircraft and premium services to serve a successful, influential, and increasingly global customer base.

Source: *Q1 2022 JETNET iQ Survey

Most Important Challenges Facing Business Aviation

Next 5 Years – Q4 2022

Source: Q1 2022 JETNET iQ Survey of fixed wing turbine powered aircraft owners and operators worldwide. Graph portrays the "Most Important" of the "Top 3" items expected to challenge the industry over the next 5 years



Aircraft Size Categories

BUSINESS JETS / TURBOPROPS

	Turboprop	Personal Jet	Very Light Jet	Light Jet	Super Light Jet	Mid-Size Jet	Super Mid-Size Jet	Large Jet	Large Long-Range Jet	Large Ultra Long-Range Jet	Airline Business Jet
Airbus											All Models
Beechcraft	King Air		Premier 1A	Beechjet							
Boeing											All Models
Bombardier				Learjet 35 / 35 / 40	Learjet 45	Learjet 55	Challenger 300 / 350	Challenger 850	Global 5000	Global 6000 / 6500	
				Learjet 70	Learjet 75	Learjet 60		Challenger 850	Global 5500	Global 7500	
Cessna	Cessna Caravan Cessna Denali Citation Conquest		Citation M2	Citation V / Ultra / Encore	Citation XLS	Citation III / VII / Sovereign	Citation X				
			Citation I / II / SII / Bravo	Citation C34 / C36			Citation Longitude				
Cirrus		CIRRUS VISION SF50				Citation Latitude					
Daher	TBM 700 / 850 TBM 900 / 910 / 930 / 940										
Dassault				Falcon 10 / 100			Falcon 20 / 200 / 50	Falcon 2000	Falcon 900 Falcon 8X / 7X	Falcon 8X	
Eclipse			EA-550								
Embraer			Phenom 100	Phenom 300		Legacy 450 / Praetor 500	Legacy 500 / Praetor 600	Legacy 600 / 650			Lineage 1000
Gulfstream						Gulfstream G100 / G150 Astra / Westwind	Gulfstream G200 Gulfstream G280	Gulfstream GII / GIII / G350	Gulfstream GIV / GIV-SP / G450 Gulfstream G500	Gulfstream G550 Gulfstream G700 Gulfstream G600/G650	
Hawker					Hawker 700 / 750	Hawker 800 / 900 / 1000	Hawker 4000				
Honda			HondaJet	Hawker 400 XP							
Mitsubishi	MU-2										
Piaggio	P180 Avanti II										
Pilatus	PC-12NG			PC-24							
Piper	Meridian / M600 / M600										
Sabreliner						Sabreliner 65					
Quest	Kodiak 100										

World Regions

Africa	Asia Pacific	Europe	Former Soviet Union	Latin America & Caribbean	Middle East	North America
Algeria	Afghanistan	Albania	Armenia	Antigua and Barbuda	Bahrain	Canada
Angola	American Samoa	Andorra	Azerbaijan	Argentina	Iran	Guam
Benin	Australia	Aruba	Belarus	Bahamas	Iraq	Puerto Rico
Botswana	Bangladesh	Austria	Georgia	Barbados	Israel	U.S. Virgin Islands
Burkina Faso	Bhutan	Belgium	Kazakhstan	Belize	Jordan	United States
Burundi	Brunei Darussalam	Bosnia and Herzegovina	Kyrgyz Republic	Bermuda	Kuwait	
Cabo Verde	Cambodia	Bulgaria	Moldova	Bolivia	Lebanon	
Cameroon	China	Cayman Islands	Russian Federation	Brazil	Oman	
Central African Republic	Democratic People's Republic of Korea	Channel Islands	Tajikistan	Chile	Qatar	
Chad	Fiji	Croatia	Turkmenistan	Colombia	Saudi Arabia	
Comoros	French Polynesia	Curacao	Ukraine	Costa Rica	Syrian Arab Republic	
Congo	Hong Kong SAR, China	Cyprus	Uzbekistan	Cuba	Turkey	
Cote d'Ivoire	India	Czech Republic		Dominica	United Arab Emirates	
Democratic Republic of Congo	Indonesia	Denmark		Dominican Republic	West Bank and Gaza/Palestine	
Djibouti	Japan	Estonia		Ecuador	Yemen	
Egypt	Kiribati	Faeroe Islands		El Salvador		
Equatorial Guinea	Lao People's Democratic Republic	Finland		Grenada		
Eritrea	Macao SAR, China	France		Guatemala		
Ethiopia	Malaysia	Germany		Guyana		
Gabon	Maldives	Greece		Haiti		
Gambia	Marshall Islands	Greenland		Honduras		
Ghana	Micronesia	Hungary		Jamaica		
Guinea	Mongolia	Iceland		Mexico		
Guinea-Bissau	Myanmar	Ireland		Nicaragua		
Kenya	Nepal	Isle of Man		Panama		
Lesotho	New Caledonia	Italy		Paraguay		
Liberia	New Zealand	Kosovo		Peru		
Libya	Northern Mariana Islands	Latvia		St. Kitts and Nevis		
Madagascar	Pakistan	Liechtenstein		St. Lucia		
Malawi	Palau	Lithuania		St. Vincent and the Grenadines		
Mali	Papua New Guinea	Luxembourg		Suriname		
Mauritania	Philippines	Macedonia		Trinidad and Tobago		
Mauritius	Republic of Korea	Malta		Uruguay		
Morocco	Samoa	Monaco		Venezuela		
Mozambique	Singapore	Montenegro				
Namibia	Solomon Islands	Netherlands				
Niger	Sri Lanka	Norway				
Nigeria	Thailand	Poland				
Rwanda	Timor-Leste	Portugal				
Sao Tome and Principe	Tonga	Romania				
Senegal	Tuvalu	San Marino				
Seychelles	Vanuatu	Serbia				
Sierra Leone	Vietnam	Sint Maarten				
Somalia		Slovak Republic				
South Africa		Slovenia				
South Sudan		Spain				
Sudan		St. Martin				
Swaziland		Sweden				
Tanzania		Switzerland				
Togo		Turks and Caicos Islands				
Tunisia		United Kingdom				
Uganda						
Zambia						
Zimbabwe						

NEW

Research Methodology

Frost & Sullivan prepared its report based on its in-house database, independent third party reports and publicly available data from reputable industry organizations. Literature research and market data gathered by conducting interviews with key industry experts and leading industry participants. Where necessary, Frost & Sullivan contacts companies operating in the industry to gather and synthesize information in relation to the market, prices and other relevant information. Frost Sullivan believes that the basic assumptions used in preparing the Frost & Sullivan Report, including those used to make future projections, are factual, correct and not misleading. Frost & Sullivan has independently analyzed the information, but the accuracy of the conclusions of its review largely relies on the accuracy of the information collected. Frost &Sullivan research may be affected by the accuracy of these assumptions and the choice of these primary and secondary sources.

UPDATED

Global General Aviation Aircraft Deliveries, in Units and Dollar Value

General aviation refers to all aviation other than military and scheduled commercial airlines. General aviation is the largest aviation market in the world. In 2023, the general aviation market shipments totalled 3,050 new aircraft valued at more than US$23.4 billion. General aviation encompasses both professional and personal aviation. Professional aviation involves a range of activities, including corporate services, charter services, agricultural operations, fire protection, disaster relief and environmental conservation. Personal aviation refers to the non-commercial operation of fixed-wing general aviation aircraft[1], including activities such as owner-flown and flight instruction. The personal aviation market accounted for 76% of the general aviation market based on the units delivered, with a total number of personal aviation aircraft deliveries of 2,215 units in 2023 valued at approximately US$3.7 billion. The main types of aircraft used in personal aviation include piston engine aircraft[2] and turbine aircraft[3]. Turbine aircraft include turboprop aircraft and jet.

Notes:

1. *Fixed-wing general aviation aircraft refers to aircraft that have wings that are fixed in position and do not move during flight. Fixed-wing general aviation aircraft refers to aircraft that have wings that are fixed in position and do not move during flight. Fixed-wing aircraft generally require a runway for takeoff and landing, while rotary wing aircraft - commonly referred to as helicopters can take off and land vertically. Cirrus' SR2X series and Vision Jet SF50 are fixed-wing aircraft.*
2. *Piston engine aircraft refers to aircraft that are powered by piston engines. These engines use a combination of fuel and air to drive pistons within cylinders, converting the reciprocating motion into rotary motion to power the aircraft's propeller. Cirrus' SR2X series are piston engine aircraft.*
3. *Turbine engine aircraft refers to aircraft powered by gas turbine engines. These engines use a continuous combustion process to generate thrust, providing high levels of power and speed. Vision Jet SF50 is a turbine engine aircraft.*

Global economic growth and an increasing number of HNWIs, technological advancement, increasing availability and accessibility of airport infrastructure and related ancillary services are driving the growth of the general aviation market globally. In 2023, deliveries of general aviation aircraft, including personal aviation aircraft and fixed-wing professional aviation aircraft, reached 3,050 units, an increase from 2,657 units in 2019, representing a CAGR of 3.5%. Going forward, as the global economy recovers from the pandemic, with significant momentum in the growth of wealth among HNWIs, which is expected to lead to an increase in demand for general aviation aircraft as a luxury consumption option, it is expected that total deliveries will reach 3,779 units in 2028, representing a CAGR of 6.2% from 2024 to 2028. Global general aviation aircraft deliveries, measured by dollar value, is also expected to grow at a steady pace in the forecast period and reach US$34.2billion in 2028, an increase from US$27.0 billion in 2024, representing a CAGR of 6.1%.

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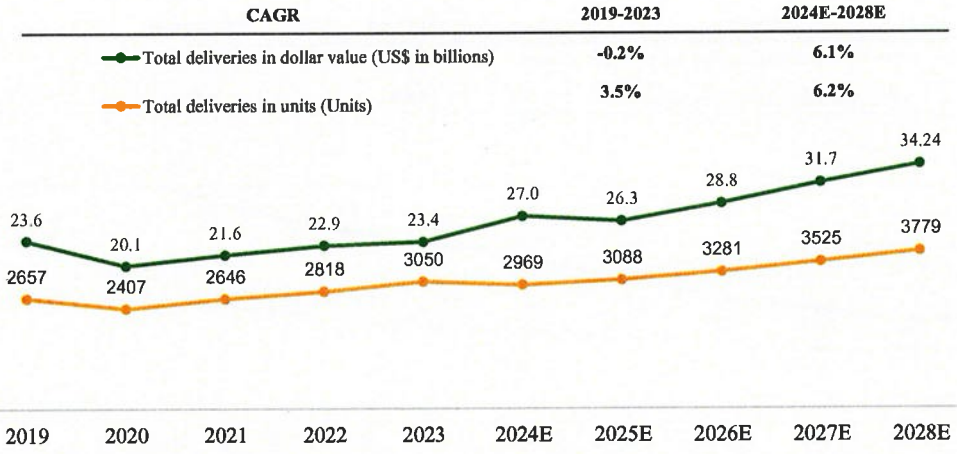
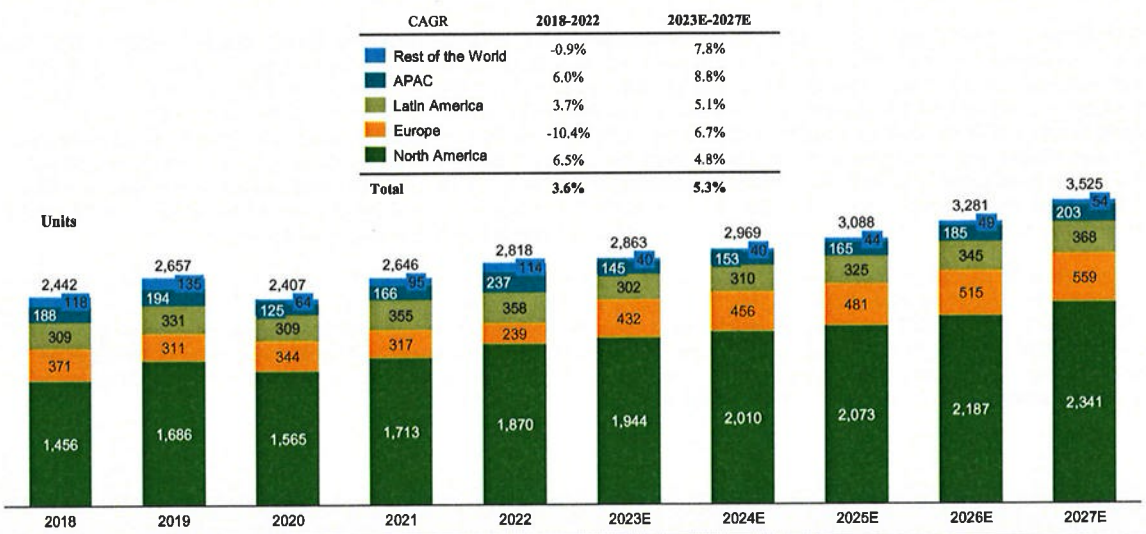
Global General Aviation Aircraft Deliveries, in Units and Dollar Value

Global General Aviation Aircraft Deliveries, in both Dollar Value and Units, 2019-2028E



General Aircraft Deliveries, Breakdown by Region

Global General Aviation Aircraft Deliveries by Region, in Units, 2018-2027E



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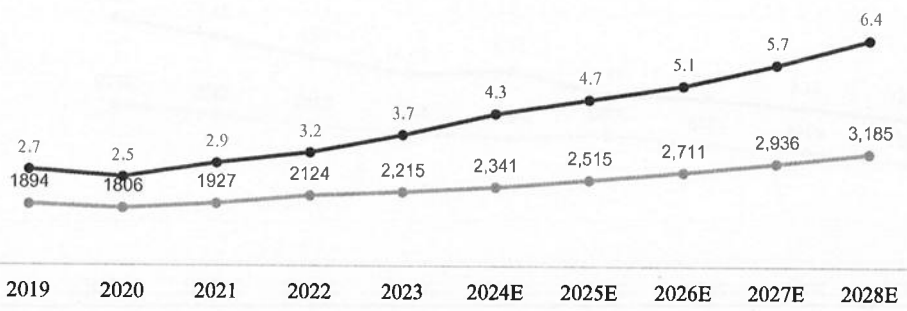
General Aircraft Deliveries, Breakdown by Region

Global Personal Aviation Aircraft Deliveries, in both Dollar Value and Units, 2019-2028E

CAGR	2019-2023	2024E-2028E
Total deliveries in dollar value (US$ in billions)	8.5%	10.7%
Total deliveries in units (Units)	4.0%	8.0%



General Aircraft Deliveries, Breakdown by Region

Regional market overview

North America (United States and Canada) has historically been by far the largest market for general aviation aircraft. In 2022, North America accounted for 66.4% of global deliveries of new fixed-wing piston, turboprop, and turbofan general aviation aircraft. While North America was the fastest growing world region for deliveries from 2018-2022, we expect growth rates over the next 5 years will be more equally balanced across world regions. The mature infrastructure present in North America further enhances the characteristic of general aircraft to provide flexible travel. In the United States, the general aviation aircraft fleet operates across a spectrum of more than 5,100 public-use airports, far more than any other country on an actual and per-capita basis. This wealth of civil aviation airport infrastructure is an important differentiator that encourages the widespread sale and use of general aviation aircraft. These aircraft operate across an extensive network of airports, providing unmatched and essential air services that help to connect communities, shorten overall travel times, increase productivity, and stimulate economic activity.

The growth in the aircraft pilot population in North America, also fueled by the number of student pilots in training, influences and reflects the demand for general aviation aircraft. The U.S. student pilot population grew at a CAGR of 13.5% from 167.8 thousand in 2018 to 280.6 thousand 2022, which bodes well for sales of general aviation aircraft. Greatly contributing to the global general aviation market, the general aviation aircraft deliveries in North America have reached 1,870 units, accounting for 66.4% of the world's total general aviation aircraft deliveries. It is expected that North America will continue to remain by far the foremost region for general aviation aircraft deliveries for the foreseeable future.

General Aircraft Deliveries, Breakdown by Region

In the near future, the North America market is expected to benefit from a lower fuel price relative to other markets, and a significant order backlog due to pent-up demand and an influx of customers who could previously afford personal aviation but, before COVID, could not justify the required investment. Additionally, general aviation is gradually being recognized as an optimal transportation alternative with a noticeably higher return on investment, along with market potential derived from the growth of general aviation market. Based on a confluence of all factors, and a continuation of government policy and regulatory oversight that is broadly supportive of the general aviation industry, the North America market will continue to experience a strong growing momentum in the next five years. It is expected that the general aircraft deliveries in North America will reach 2,341 units by 2027 with a CAGR of 4.8% from 2023 to 2027.

Other than North America, Latin America and Europe are considered regional markets with noticeable growth potential. Despite facing challenges such as relatively immature infrastructure and non-uniform regulations across different countries, general aviation new aircraft delivery market in Latin America and Europe are still considered key geographies outside North America with significant market potential that cannot be overlooked.

Latin America and Europe serve as important transportation hubs connecting different countries and continents, making personal aircraft a more convenient and efficient mode of transportation. Moreover, in the post-COVID period, individuals in both regions are increasingly focused on and prefer using general aircraft for business and leisure travel, and there is also a considerable customer base for general aircraft. European general aviation market was greatly affected by the pandemic, which has resulted in a reduction in market size in the past few years; however, it is anticipated to regain growth potential moving on to the post-pandemic stage upon economic recovery. Therefore, with continuous economic growth and improving infrastructure, Latin America and Europe are expected to experience increasing demand for general aircraft. It is expected that the general aircraft deliveries for Latin America and Europe will reach 368 and 559 by 2027, respectively, with a CAGR of 5.1% and 6.7% from 2023 to 2027.

General Aircraft Deliveries, Breakdown by Region

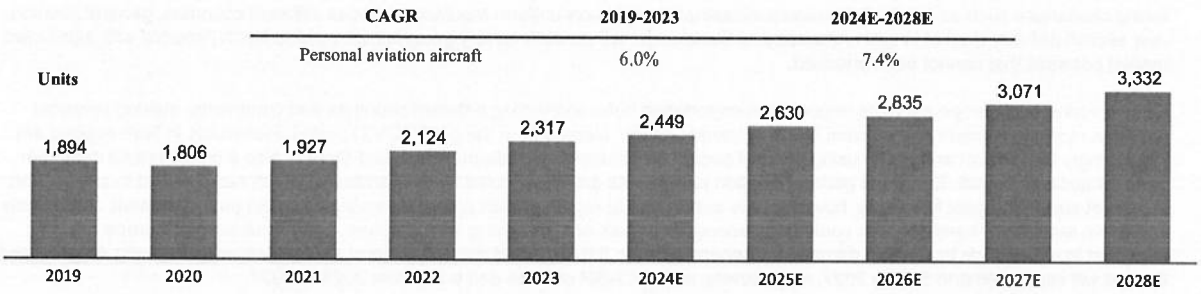
The market scale of other regions worldwide, including the Asia Pacific region, is relatively small in terms of the number of fleets or annual deliveries. However, due to the presence of supportive factors including 1) gradual relaxation of local government policies, 2) increasing consumption level of residents and 3) development of infrastructure and general aviation airports, it is anticipated that regional markets, including the Asia Pacific region, will experience potential market growth in the near future.

UPDATED

Global Personal Aviation Aircraft Deliveries, in Units

Personal aviation aircraft, typically referring to general aviation aircraft with an acquisition price of US$7 million or less, are experiencing accelerated growth in terms of delivery units in comparison to the overall general aviation aircraft. The personal aviation market has benefited from several factors, including the recovery of the global economy in the post-pandemic era, recovering business confidence, and the increase in the number of HNWIs globally. Central to the interest of the expanded HNWI population in personal aviation are the key benefits of personal air mobility, privacy, security, schedule flexibility, and year-round accessibility. The personal aviation market is also expected to gain strong growth momentum in the future by benefiting from the growth in popularity of premium mobility services for customers seeking the finest personalized, customized air transportation solutions. The chart below sets forth the growth of personal aviation aircraft market:

Global Personal Aviation Aircraft Deliveries, in Units, 2019-2028E



Source: GAMA, Frost & Sullivan analysis

Global Comparable and Obtainable Personal Aviation Aircraft Deliveries, in Units

Aircraft manufacturers tend to compete based on aircraft size, price, engine type, mission performance, design features, brand reputation, and customer service. Due to their ease of operation and cost-effective performance, certain personal aircraft have gained popularity and become increasingly attractive as a sub-segment of personal aircraft. Such personal aircraft refers to fixed tricycle gear certified piston aircraft[1], and single pilot pressurized turbine aircraft[2] with acquisition price of US$7 million or less. The chart below sets forth the growth of the Comparable and Obtainable Global Personal Aviation Market, which includes aircraft models manufactured by us and aircraft models of similar product features and functionalities as our aircraft manufactured by our comparable competitors (i.e., fixed tricycle gear certified piston aircraft and US$7 million and below single pilot pressurized turbine aircraft).

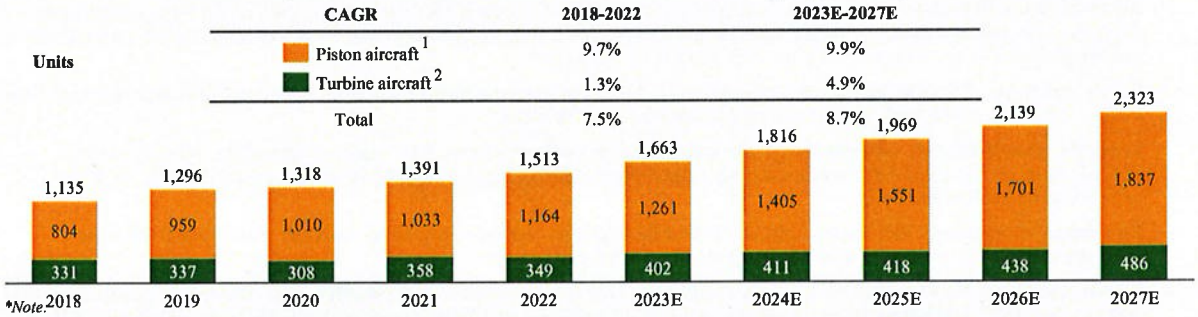
Notes:

1. *Fixed tricycle gear certified piston aircraft refers to aircraft that have a specific landing gear configuration known as a "tricycle gear". In a tricycle gear arrangement, the aircraft features a single wheel at the nose, , and two main wheels located towards the rear of the aircraft. Cirrus SR2X series are fixed tricycle gear certified piston aircraft.*
2. *Single pilot pressurized turbine aircraft are turbine aircraft designed to be operated by a single pilot and equipped with a pressurized cabin. Cirrus Vision SF50 is a single pilot pressurized turbine aircraft.*

Global Comparable and Obtainable Personal Aviation Aircraft Deliveries, in Units

Aircraft manufacturers tend to compete based on aircraft size, price, engine type, mission performance, design features, brand reputation, and customer service. Due to their ease of operation and cost-effective performance, certain personal aircraft have gained popularity and become increasingly attractive as a sub-segment of personal aircraft. Such personal aircraft refers to fixed tricycle gear certified piston aircraft, and single pilot pressurized turbine aircraft with acquisition price of US$7 million or less. The chart below sets forth the growth of the Comparable and Obtainable Global Personal Aviation Market, which includes aircraft models manufactured by us and aircraft models of similar product features and functionalities as our aircraft manufactured by our comparable competitors (i.e., fixed tricycle gear certified piston aircraft and US$7 million and below single pilot pressurized turbine aircraft).

Global Comparable and Obtainable Personal Aviation Aircraft Deliveries by Type, in Units, 2018-2027E



Note:
1. Piston aircraft: Certified produced, single-engine piston powered, tricycle gear piston aircraft.
2. Turbine aircraft: Pressurized turbine, able to be flown single pilot turbine aircraft with acquisition price of $US7 million or less. Source: GAMA, Frost & Sullivan analysis

Global General Aviation Aircraft Service Market

- Services including FBO, MRO, spare parts, upgrades, training, insurance and financing, play an important role in growing general aircraft market.
- For the majority of top-line aviation manufacturing companies, typically with large-scale and aging fleets, relevant services can contribute up to 35% to 40% of revenue. The primary cause or consideration for most original equipment manufacturers ("OEMs") is that they focus on servicing their own aircraft for parts and maintenance, so the installed base or size of their own fleet, aircraft age, and aircraft utilization levels are the primary determinants of market potential.
- In addition, the sales revenue derived from parts tends to be more noticeable than that derived from the new delivery of aircraft, due to the demand for aftersales maintenance services required by end customers. In terms of direct finances or leases, some aircraft OEMs tend to acquire their finance and equipment from banks and equipment lessors to facilitate sales, while utilizing resources in other areas of core competency. Providing aftermarket service can guarantee increasing profit.

Service	Content
FBO	Fixed-base operators provide ground handling, fueling, parking, and other services for general aircraft. They may also offer concierge services, catering, and other amenities for passengers and crew.
MRO	Maintenance, repair, and overhaul. MRO services are crucial for ensuring the safety and airworthiness of general aircraft. They involve routine inspections, repairs, and upgrades to aircraft systems and components.
Spare parts	Components and parts used to replace worn or damaged parts of an aircraft.
Upgrades	Improvements or modifications made to an aircraft's equipment, systems, or design to enhance its performance.
Training	Educational programs and courses that teach pilots, mechanics, and other personnel how to operate aircraft.
Insurance	Protection against financial losses resulting from accidents, damage, theft, or other incidents related to aircraft ownership and operation. This can include liability coverage, hull insurance, and other specialized policies.
Financing	Obtaining funds to purchase or operate an aircraft, often through loans or other financial arrangements.

Global General Aviation Aircraft Service Market

Services are gaining greater importance in personal aviation industry, which are attributable to several aspects of reasons:

- **Increasing demand for general aviation services.** As more individuals and businesses enter the general aviation market, there is a growing need for support services to maintain and upgrade aircraft, as well as provide training, insurance, and financing solutions.
- **Regular maintenance.** Regular maintenance serves as a major component in after-sale services in the general aviation industry, as it not only contributes to optimized operational levels but also further generates new sales opportunities.
- **Advancements in technology.** New technologies are constantly being developed for small aircraft, which require specialized expertise to install, maintain, and repair. General aviation services, such as MRO and spare parts providers, play a critical role in ensuring that these technologies are effectively integrated into aircraft.
- **Safety concerns.** Safety is paramount in the aviation industry, and general aviation services such as training and insurance help ensure that pilots are properly trained and insured against potential risks.
- **Long lifecycle of aircraft.** General aircraft can last for decades with proper maintenance and upgrading. General aviation services such as upgrades and retrofits can help extend the lifespan of an aircraft while keeping it up-to-date with the latest technology and safety standards.
- **Regulatory compliance.** The aviation industry is heavily regulated, and general aviation services must comply with strict regulations and requirements to ensure the safety and reliability of aircraft.
- **Brand reputation.** New users show a greater tendency toward general aviation brands with a more established reputation and well-represented brand image. Brand reputation is crucial in attracting customers to new product offerings and services and further boosting market share for general aviation brands.

UPDATED

Global Pre-owned General Aviation Aircraft Inventory and Transactions

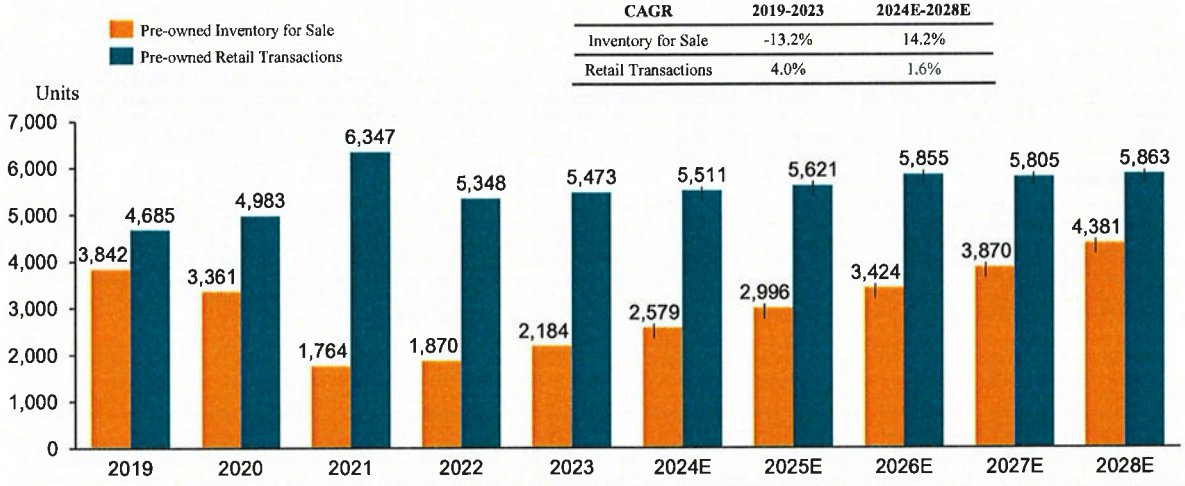
- The global inventory of pre-owned general aviation aircraft has begun to rebuild after historically low levels in 2021. In 2022, the pre-owned turboprop and jet inventory reached 3.1% and 5.4% of the total in-service fleet respectively. As inventory levels representing 10% to 12% of the fleet are more typical of a balanced aircraft market, it is expected that the pre-owned general aviation aircraft inventory will maintain a steady growth in the future.
- At the same time, the rebound in inventory also signals a period where transaction prices will likely soften from their recent highs. The pre-owned aircraft market has begun to shift from a classical "seller's market" to one where there is better balance between buyers and sellers. With the growth of general aviation aircraft registration numbers and relatively lower transaction prices compared to new aircraft, it is expected that the transaction volume of pre-owned general aviation aircraft will reach 5,863 by 2028, with a CAGR of 1.6% from 2024 to 2028.

UPDATED

Global Pre-owned Personal Aviation Aircraft Inventory and Transactions

Global Pre-owned General Aviation Aircraft Inventory and Transactions

CAGR	2019-2023	2024E-2028E
Inventory for Sale	-13.2%	14.2%
Retail Transactions	4.0%	1.6%



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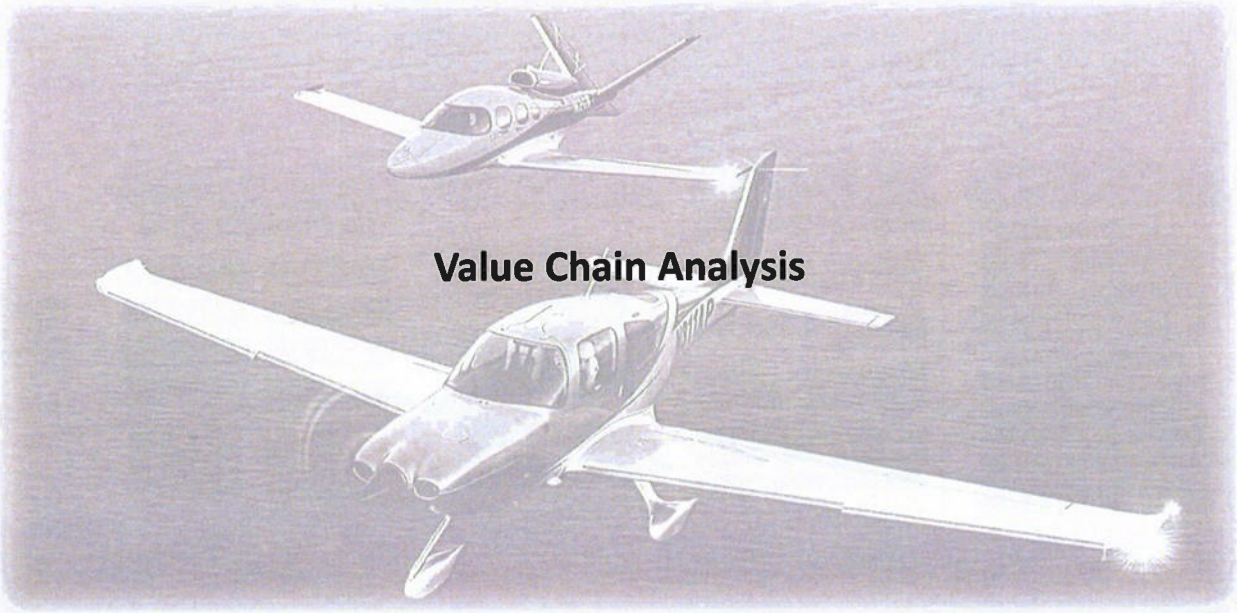


Value chain of personal aviation (1/2)

Upstream Market

- Raw materials and components that serve as the upstream portion of the personal aviation industry include various metals, composites, plastics, electronics, avionics, engines, and other mechanical parts. These materials and components are used in the manufacturing of aircraft, aircraft parts, and related systems. Examples of raw materials used include aluminum alloy, titanium alloy, carbon fiber, and various types of steel. Components such as engines, landing gear, and avionics systems are critical to the operation of the aircraft and require specialized manufacturing processes and expertise.

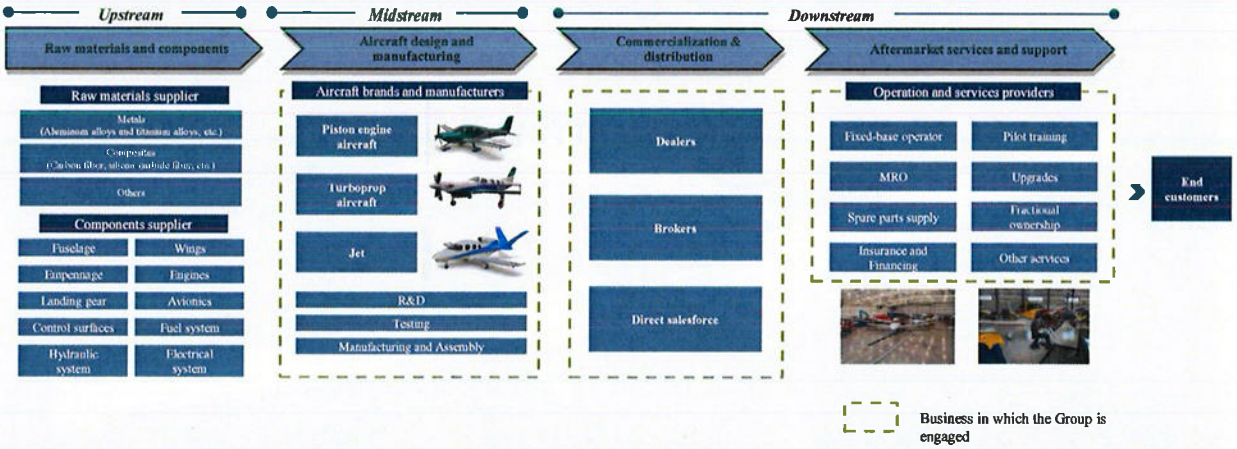
Midstream Market

- Research and development ("R&D") is a crucial midstream activity in the personal aviation industry, which involves the development of new technologies, materials, and systems for aircraft design, testing, and certification. R&D efforts can focus on various areas such as aerodynamics, structural engineering, propulsion systems, avionics, and safety features. These developments aim to enhance aircraft performance, fuel efficiency, safety, reliability, system intelligence and simplicity in operation. Assembly, on the other hand, involves the process of building aircraft or aircraft parts using raw materials, components, and systems developed during the R&D stage. Assembly processes can vary depending on the type and complexity of the aircraft being produced and typically involve a series of stages, including fabrication, assembly, installation, testing, and certification of aircraft systems.

Downstream Market

- During the process of commercialization and distribution, key participants involved in distribution networks of personal aviation include dealers, brokers and direct salesforce. The distribution networks of leading participants in the downstream market include numerous approaches, and among all, the direct salesforce approach is gaining popularity due to its advantage in effective customer relationship maintenance and delivery of core product competence. Personal aircraft are then distributed to end customers, with related aftersales services provided by operation and services providers. Operation and services such as FBO, MRO, pilot training, aircraft management, insurance, financing, and fractional ownership are also an essential part of the downstream value chain of personal aviation. For details of these services, see "Global General Aviation Aircraft Service Market". These operation services are critical for the safe, efficient, and cost-effective operation of personal aircraft. The quality and availability of these services can impact the adoption and growth of the personal aviation industry, and may further deliver value to customers and result in greater new purchases or product upgrades from customers.
- In the downstream portion of the personal aviation industry, there are two main customer segments: enterprise customers and individual customers. Enterprise customers include businesses, and other organizations that use personal aviation aircraft for various purposes such as self-use and commercial operation. These customers often have specific requirements for their aircraft, such as range, speed, payload capacity, and specialized equipment. The aircraft may be owned or leased, and maintenance and operation may be outsourced to third-party service providers. Individual customers include private individuals who own or charter personal aviation aircraft for personal or recreational use, such as air travel, sightseeing, and sports. These customers may also have specific requirements for their aircraft, such as comfort, speed, range, safety, and simplicity in operation. Individual customers may operate their aircraft or hire a pilot to operate it for them. Both enterprise and individual customers are essential for the growth and sustainability of the personal aviation industry.
- Similar to luxury cars and the first class offering of commercial airplanes, personal aviation is an important part of the premium mobility service market and is capable of providing much more flexible, efficient and comfortable mobility services with a high degree of privacy. Personal aviation is gaining wide acceptance as it becomes increasingly accessible and affordable to end customers, while potentially delivering advanced product features.

Value chain of personal aviation (2/2)



Market Driver (1/2)

Global economic growth and increasing number of HNWIs

Extensive domestic and international travel is common for HNWIs, and HNWIs are important consumers for the global personal aircraft market. From 2018 to 2023, the worldwide HNWI population increased from 52.2 million to 73.9 million at a CAGR of 7.2%, and is expected to reach 118.9 million by 2028, representing a CAGR of 10.6% from 2024 to 2028. As an optimized option, personal aircraft is becoming widely chosen by HNWIs for short-distance commuting, sightseeing, and other recreational activities. This could create opportunities for personal aviation service providers to offer customized solutions to meet specific needs. The overall consumer base of personal aviation has increased accordingly.

Post-pandemic global economic recovery driving consumer perception toward privacy and Convenience

The COVID-19 pandemic has disrupted travel and transportation worldwide, leading to increased interest in private air travel as an alternative to commercial airlines. As the economy recovers, individuals and businesses are expected to have more disposable income to spend on leisure and travel. As such, consumers show greater tendency toward enhanced services regarding transportation with a stronger focus on safety and convenience of traveling. During the post-pandemic stage, consumers are motivated to subscribe to premium product and service offerings and an enhanced traveling experience, while prioritizing privacy and convenience. Additionally, businesses may use personal aircraft for corporate travel, as they seek to improve efficiency and premium services.

Technological advancement leading to upgrade in product offering

Contributed by numerous factors, including favorable government policies and investments, increased interest in personal aviation, advancements in technology that have made small aircraft more accessible and affordable. In addition with the development of technology, products are becoming more intelligent, and with increasing simplicity to operate while providing enhanced levels of safety. The improved product offerings have contributed significantly to the growth of the personal aviation industry, making it more accessible and convenient for individuals to own and operate small aircraft for personal use.

Market Driver (2/2)

Increasing availability and accessibility of airport infrastructure and related ancillary services

Airports serve as critical hubs for personal aviation, providing essential services such as fueling, maintenance, and storage for personal aircraft owners. In recent years, there has been a trend towards expanding and upgrading airport infrastructure to support the growing demand for personal aviation services. As a result, there has been a proliferation of small and regional airports across many parts of the world, making it easier for individuals to access personal aviation services. In addition, many airports have upgraded their infrastructure, adding new facilities and services such as FBOs that provide aircraft parking, fueling, maintenance, and catering services. The increasing availability and accessibility of airport infrastructure have contributed significantly to the growth of the personal aviation industry.

Pilot formation and increasing number of qualified personal aviation pilots

Pilots are essential to the operation and growth of the personal aviation industry, and an increase in the number of qualified pilots can help to expand the market for personal aviation services. In the United States, the number of licensed pilots reached approximately 806.9 thousand in 2023, representing a CAGR of 5.0% from 2019, and such number is expected to increase further to approximately 1,046.6 thousand in 2028 at a CAGR of 5.3%, which is attributable to several factors including the availability of affordable flight training programs, government support for pilot training and new technologies such as flight simulators and online learning tools making it easier and more efficient to train pilots.

Favorable policies supporting development of personal aviation

The personal aviation industry has been supported by several favorable policies that have encouraged its growth globally. For example, regulations such as Part 61 and Part 91 by the FAA that make it easier for private pilots to obtain licenses and fly small aircraft for personal use in the United States. The FAA also allows pilots to use a driver's license as medical certification for certain types of flying, such as recreational flying or flight training in a light-sport aircraft.

These policies have created a supportive environment for the personal aviation industry, encouraging growth and innovation in this sector by reducing customer barriers to entry, promoting affordability, and improving airport infrastructure.

Market Trends

Cost-efficient aviation aircraft with higher ownership flexibility options will become more popular and attract a larger customer base.

In recent years, advancements in technology and manufacturing processes have led to a decrease in the cost of personal aircraft. This, coupled with a growing demand for convenient and efficient transportation options, has made personal aircraft more attractive to a larger customer base. Some companies are offering innovative ownership and sharing models, such as fractional ownership and on-demand charter services, which can make personal aircraft more affordable and accessible to a wider range of customers.

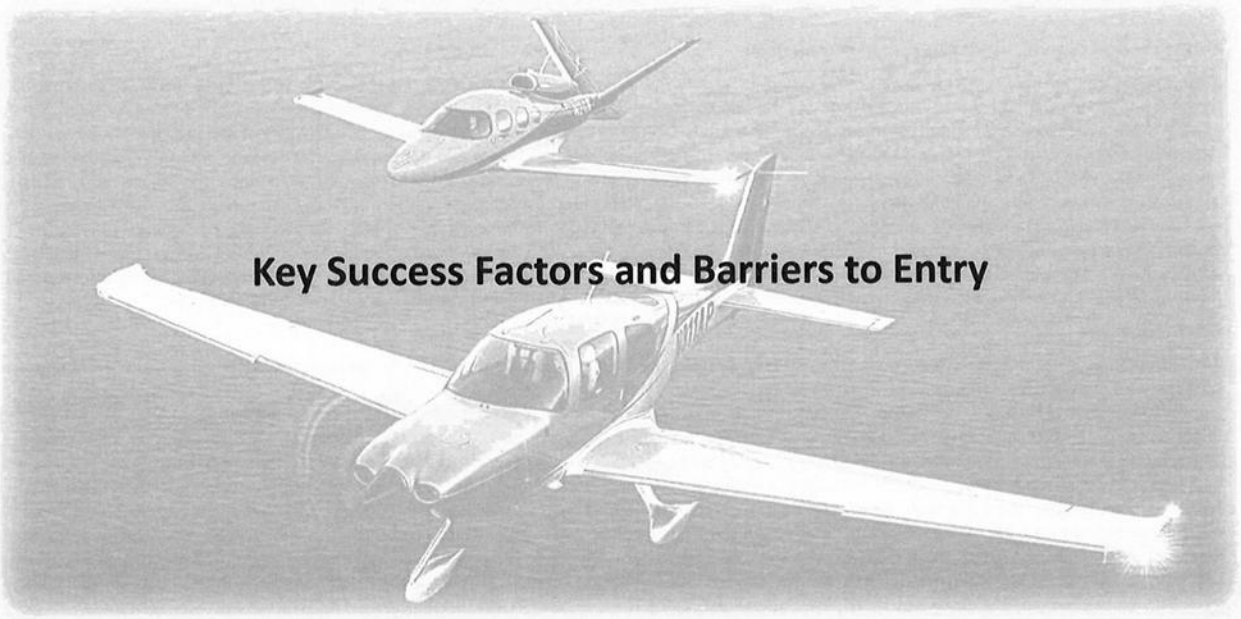
User-friendly features and ease in operation serve as key product features for personal aviation aircraft to become more accessible to growing number of customers.

As personal aviation aircraft gain popularity as an optimal transportation alternative of personal use, future product development could potentially adapt a consumer-centric approach to prioritize the simplicity in operation for end consumers. Changing consumer preferences are also driving the trend towards more commercial applications for personal aviation aircraft. Without any necessary downgrade in functionalities or safety features, it is expected that users will be able to operate newly developed personal aviation aircraft with ease and accessibility.

Advance technological innovation and intelligent product features will be associated with future development of personal aviation products.

In the long run, new technologies such as electric propulsion and airframe parachute system could enable greater flexibility, efficiency, and safety in personal aviation operations, making it more practical for commercial use.

Personal aviation aircraft have the potential to provide a faster and more direct transportation option with lower emissions than traditional air travel, making them an attractive alternative for businesses and individuals seeking to reduce their environmental impact. Overall, personal aviation aircraft are likely to become more widely used in commercial applications and provide on-demand premium mobility services as the personal aviation industry continues to evolve, bringing significant benefits to both consumers and businesses, offering greater convenience, flexibility, speed, and sustainability in air travel.



Entry Barriers (1/3)

Product R&D, step-up product, and service family strategy

Designing and developing a personal aircraft requires a deep understanding of aerodynamics, materials science, electronics, and other specialized fields. This requires a commitment to continuous research and development and a willingness to invest in new technologies and processes. To further enhance product offering, the step-up product and service family strategy involves offering a range of products and services that cater to different segments of the market, from piston aircraft to jet, as well as corresponding MRO services. By offering a comprehensive product and service family, established manufacturers can leverage their brand reputation and customer loyalty to capture a larger share of the market. Existing customers who have purchased one type of aircraft from a particular manufacturer may be more likely to purchase additional models or services from the same supplier, particularly if they are satisfied with the quality and reliability of the existing products. In addition, the step-up product and service family strategy allows manufacturers to benefit from economies of scale and scope. Overall, the step-up product and service family strategy can act as an entry barrier for new aircraft manufacturers. Leading companies with a comprehensive product and service offering have an advantage in terms of brand recognition and customer loyalty, making it more challenging for new entrants to break into the market.

Manufacturing capabilities and supply chain management expertise

Manufacturing a personal aircraft requires specialized knowledge of materials, processes, and technologies, as well as skilled labor. In addition, a strong capability of integrating industry knowledge and skillsets in these fields further serves as a key success factor. Manufacturers must ensure that their production processes are efficient, cost-effective, and meet all necessary quality standards. Additionally, the supply chain for personal aircraft components is often complex and global, requiring strong relationships with suppliers and extensive logistics knowledge. Sourcing high-quality parts and materials can be challenging, as can managing inventory levels to avoid stockouts or excess inventory. Without this expertise, manufacturers may struggle to produce aircraft at scale and control costs, making it difficult to compete in the market. Supply chain management is crucial to personal aviation manufacturers, as disruptions in supply chain could impact production schedules, further delaying time-to-market. In addition, leading manufacturers usually engage in the entire process from raw material quality control to the manufacturing process to ensure high product quality.

Entry Barriers (2/3)

Installed base of customers and value delivered to customers

Established manufacturers with a large and loyal customer base have a significant advantage over new entrants who must build their customer base from scratch. These customers may be loyal to the brand and have established relationships with the manufacturer, making it difficult for new entrants to attract them. In addition, existing customers may be resistant to switching to a new manufacturer due to the high cost and complexity of owning and operating personal aircraft. They may prefer to remain with a trusted brand that they know and are familiar with. To overcome this entry barrier, new entrants must find ways to differentiate themselves from established manufacturers and build their own loyal customer base. Established personal aircraft manufacturers with a long history in the industry and a strong marketing presence have typically built-up higher levels of brand awareness than new entrants. New entrants to the market may struggle to build up a reputation for product quality and reliability without significant investment in product development, marketing, and customer support. Customers, particularly in the aviation industry, prioritize safety above all else. A manufacturer's safety record and reputation can greatly influence customer trust and purchasing decisions. Establishing a strong safety reputation requires a track record of producing safe and reliable aircraft, as well as implementing rigorous quality control and testing processes.

Financial strength

Aircraft manufacturing and service network establishment requires substantial upfront investment in research and development, design, production facilities, and supply chain management. It is also recognized due to the nature of personal aviation market that high initial capital is required to commercialize and build out infrastructure, while it takes time to build out financially viable aircraft. As such, established manufacturers with strong financial performance are often better positioned to weather downturns in the market, maintain high levels of R&D spending, and invest in new technologies that improve their products' competitiveness. Aircraft manufacturing is generally characterized by high fixed costs, which means that new entrants must achieve a significant scale of production to achieve economies of scale and compete on cost with established players. This often requires sustained investments over many years, which may be difficult for new competitors without strong financial backing. Additional financial capabilities are usually required by aircraft manufactures to enable sufficient coverage of sales and aftersales network to enhance service delivery capabilities. Furthermore, the aviation industry is heavily regulated by government agencies, requiring strict adherence to safety standards, environmental regulations, and other compliance requirements. Compliance with these regulations can be expensive and time-consuming. Overall, the financial performance can be a critical entry barrier for new companies looking to enter the market. Established manufacturers with strong financial positions, experienced management teams, and established supply chains are more likely to have the resources and experience necessary to navigate the challenges of aircraft manufacturing successfully.

Entry Barriers (3/3)

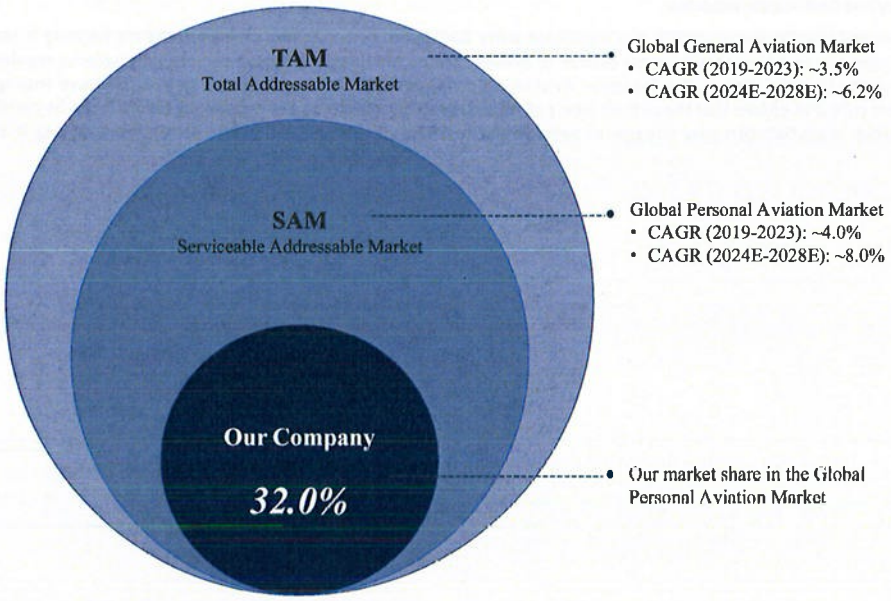
Regulatory and certification expertise

Regulatory and certification expertise is a significant entry barrier for personal aircraft manufacturers because it requires a deep understanding of complex legal and technical requirements related to aviation safety. Manufacturers must comply with rigorous regulations from organizations such as the FAA in the United States or the European Aviation Safety Agency in Europe, which can involve extensive testing and evaluation processes. This expertise is critical to ensure that the aircraft meets all necessary safety standards and regulations before it can be certified for commercial use. Without this expertise, manufacturers may struggle to navigate the regulatory landscape and obtain certification, making it difficult to bring their product to market.

UPDATED

Competitive Landscape

Market Size Breakdown (in units delivered)



Competitive Landscape

According to GAMA, the scale of deliveries of general aviation aircraft globally was 3,050 in 2023. We are the largest general aviation aircraft manufacturer globally with a market share of 23.2% in 2023 based on the number of units delivered.

The development of the personal aviation market is primarily contributed and driven by the capability in new product R&D and upgrades by key market participants. The scale of deliveries of personal aircraft globally was 2,215 in 2023, according to GAMA, which is recognized as the only reliable and authorized trade association in the general aviation industry. Turbine aircraft includes turboprop aircraft and jet. Our market share in the global personal aviation market was 32.0% in 2023 based on number of units delivered.

We are also the largest personal aircraft manufacturer in the global personal aviation market with a market share of 32.0% in 2023 based on number of units delivered or with a market share of 24.9% in 2023 based on sales revenue.

In addition, the below table sets forth a comparison within our Comparable and Obtainable Global Personal Aviation Market. The sum of deliveries of the top three market participants of personal aircraft, including piston and turbine aircraft, was 1,118 units in total in 2022. Among which, the proportion delivered by us was 41.6%. We are clearly positioned as a leading brand in the global personal aviation industry.

UPDATED

Ranking and market share of companies by deliveries of general aviation aircrafts in global personal aviation aircraft (2023)

Ranking	Company	Listing Status (Yes/No)	Deliveries in units	Market share by deliveries	Revenue in Million USD	Market share by revenue
1	Our Company[1]	No	708	23.2%	930.1	4.0%
2	Textron Aviation[2]	Yes	618	20.3%	3,615.6	15.5%
3	Diamond Aircraft[3]	No	273	9.0%	212.6	0.9%
Top three market participants			1,599	52.4%	4,758.3	20.4%
Others			1,451	47.6%	18,618.7	79.6%

Source: GAMA, Frost & Sullivan Analysis

1. Our company is a global personal aircraft manufacturer founded in 1984, primarily designing, producing and selling single-engine piston and jet.
2. Textron Aviation is the general aviation business unit of the conglomerate Textron Inc. (NYSE: TXT) that was formed in 2014. Through acquisition and integration, the company holds Beechcraft, Hawker and Cessna-branded aircraft, and offers a comprehensive product mix, encompassing business jets, turboprops, piston engine aircraft, and trainer aircraft.
3. Diamond Aircraft is a manufacturer of general aviation aircraft based in Austria with facilities in Canada and China and founded since 1981. The company specializes in the production of piston aircraft, including single engine and multi engine piton aircrafts, with majority of its products flown by private pilots, professional flight training operators and institutions.
4. Piper Aircraft Inc and TECNAM Aircraft are also leading general aviation aircraft manufacturers, which have less unit delivery or revenue with limited data availability.

UPDATED

Ranking and market share of companies by deliveries of personal aircrafts in global personal aviation aircraft (2023)

Ranking	Company	Listing Status (Yes/No)	Deliveries in units	Market share by deliveries	Revenue in Million USD	Market share by revenue
1	Our Company[1]	No	708	32.0%	930.1	24.9%
2	Cessna Aircraft[2]	Yes	374	16.9%	564.2	15.1%
3	Diamond Aircraft[3]	No	273	12.3%	212.6	5.7%
Top three market participants			1,355	61.2%	1,706.9	45.8%
Others			860	38.8%	2,022.0	54.2%

Notes: 1. Our company is a global personal aircraft manufacturer founded in 1984, primarily designing, producing and selling single-engine piston and jet.
2. Cessna is an American brand of general aviation aircraft owned by Textron Aviation since 2014. Textron Aviation is listed on the New York Stock Exchange. Cessna has produced a wide range of aircraft, including single-engine piston aircrafts, turboprops, and business jets. Their business scope encompasses designing, manufacturing, and servicing aircraft for various applications, such as personal travel, flight training.
3. Diamond Aircraft is a manufacturer of general aviation aircraft based in Austria with facilities in Canada and China and founded since 1981. The company specializes in the production of piston aircraft, including single engine and multi engine piton aircrafts, with majority of its products flown by private pilots, professional flight training operators and institutions.
4. Piper Aircraft Inc. and TECNAM Aircraft are also leading personal aircraft manufacturers, which have less unit delivery or revenue with limited data availability.
Source: GAMA, Frost & Sullivan Analysis

Ranking and market share of leading companies by deliveries of personal aircraft in Comparable and Obtainable Global Personal Aviation Market (2022)

Ranking	Company	Listing Status (Yes/No)	Deliveries in units	Market share by deliveries
1	Our Company[1]	No	629	41.6%
2	Cessna Aircraft[2]	Yes	274	18.1%
3	Piper Aircraft[3]	No	215	14.2%
Top three market participants			1,118	73.9%
Others			395	26.1%

Notes:
1. Our company is a global personal aircraft manufacturer founded in 1984, primarily designing, producing and selling single-engine piston and jet.
2. Cessna is an American brand of general aviation aircraft owned by Textron Aviation since 2014. Textron Aviation is listed on the New York Stock Exchange. Cessna produces a wide range of aircraft, including single-engine piston aircrafts, turboprops, and business jets. Their business scope encompasses designing, manufacturing, and servicing aircraft for various applications, such as personal travel, flight training.
3. Piper Aircraft is a manufacturer of general aviation aircraft based in the US and owned by the Government of Brunei since 2009. The company specializes in the production of single-engine piston aircraft, including trainers, personal aircraft, and business planes. Piper's business scope encompasses designing and manufacturing personal aircrafts.

Source: GAMA, Frost & Sullivan Analysis

Ranking and market share of leading companies by deliveries of personal aircraft in fixed tricycle gear certified piston aircraft segment (2022)

Ranking	Company	Listing Status (Yes/No)	Deliveries in units	Market share by deliveries
1	Our Company[1]	No	539	46.3%
2	Cessna Aircraft[2]	Yes	241	20.7%
3	Piper Aircraft[3]	No	165	14.2%
4	Diamond Aircraft[4]	No	141	12.1%
5	Tecnam Aircraft[5]	No	46	4.0%
Top five market participants			1,132	97.3%
Others			32	2.7%

Notes:
1. Our company is a global personal aircraft manufacturer founded in 1984, primarily designing, producing and selling single-engine piston and jet.
2. Cessna is an American brand of general aviation aircraft owned by Textron Aviation since 2014. Textron Aviation is listed on the New York Stock Exchange. Cessna produces a wide range of aircraft, including single-engine piston aircrafts, turboprops, and business jets. Their business scope encompasses designing, manufacturing, and servicing aircraft for various applications, such as personal travel, flight training.
3. Piper Aircraft is a manufacturer of general aviation aircraft based in the US and owned by the Government of Brunei since 2009. The company specializes in the production of single-engine piston aircraft, including trainers, personal aircraft, and business planes. Piper's business scope encompasses designing and manufacturing personal aircrafts.
4. Diamond Aircraft, headquartered in Austria with facilities in Canada and China, is an aircraft manufacturer in general aviation founded in 1981.
5. Tecnam Aircraft is an Italian aircraft manufacturer founded in 1948, focusing in producing single-engine, twin engine, and special mission aircraft.

Source: GAMA, Frost & Sullivan Analysis

Ranking and market share of leading companies by deliveries of personal aircraft in US$7 million and below single pilot pressurized turbine aircraft segment (2022)

Ranking	Company	Listing Status (Yes/No)	Deliveries in units	Market share by deliveries
1	Our Company[1]	No	90	25.8%
2	Pilatus Aircraft[6]	Yes	80	22.9%
3	Daher[7]	No	56	16.0%
4	Piper Aircraft[3]	No	50	14.3%
5	Cessna Aircraft[2]	Yes	33	9.5%
Top three market participants			309	88.5%
Others			40	11.5%

Notes:
6. Pilatus Aircraft Ltd is a Swiss aircraft manufacturer founded in 1939 with a strong focus in single-engine, turboprop aircraft.
7. Daher is an aircraft manufacturer and an industry and service equipment supplier initially founded in 1863 in the form of family ownership.

Source: GAMA, Frost & Sullivan Analysis

UPDATED

Comparison

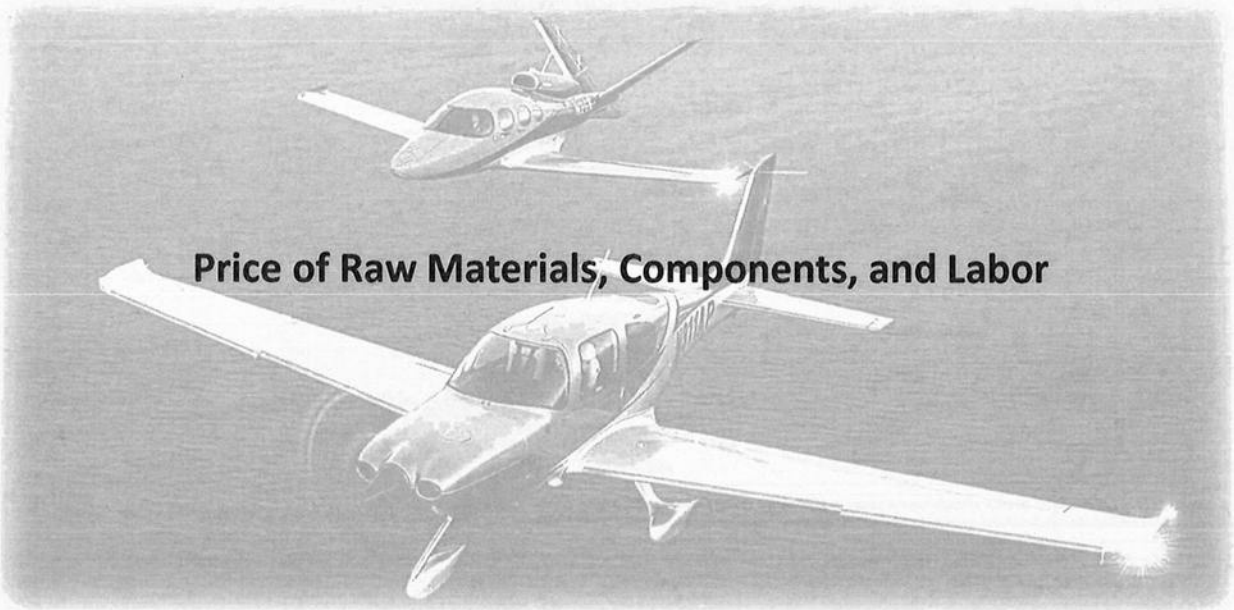
The Company competes with its competitors on the basis of price, performance and specifications as illustrated by the comparison below:

Personal Piston Aircraft Comparison						
Manufacturer	Cirrus	Cirrus	Cirrus	Cessna	Diamond	Piper
Model	SR20	SR22	SR22T	Skylane	DA62	M350 PA-46
Base Price	$626,900	$838,900	$963,900	$574,000	$1,482,000	$1,586,183
Maximum Occupants[1]	5	5	5	4	7	6
Maximum Takeoff Weight (pounds)[2]	3050	3600	3600	3100	5071	4340
Maximum Cruise Speed (ktas)[3]	155	183	213	145	192	213
Useful load (lbs)[4]	1028	1328	1246	1110	1545	1308
Takeoff Distance (ft)[5]	1685	1082	1517	795	1570	2090
Maximum Range (nm)[6]	709	1169	1021	915	1288	1343

Personal Turbine Aircraft Comparison						
Manufacturer	Cirrus	Piper	Epic	Daher	Pilatus	Textron
Model	Vision SF 50	M600-PA-46	E1000	TBM 960	PC-12 NGX	Citation M2
Base Price	$3,240,000	$3,524,000	$4,190,000	$4,778,964	$5,716,200	$5,855,000
Maximum Occupants[1]	7	6	6	6	11	7
Maximum Takeoff Weight (pounds)[2]	6000	6000	8000	n.a.	10450	10700
Maximum Cruise Speed (ktas)[3]	311	274	333	330	290	404
Useful load (lbs)[4]	2450	2400	2860	n.a.	n.a.	3810
Takeoff Distance (ft)[5]	2036	2635	2254	2535	2485	3210
Maximum Range (nautical miles)[6]	1275	1658	1560	1730	1803	1550

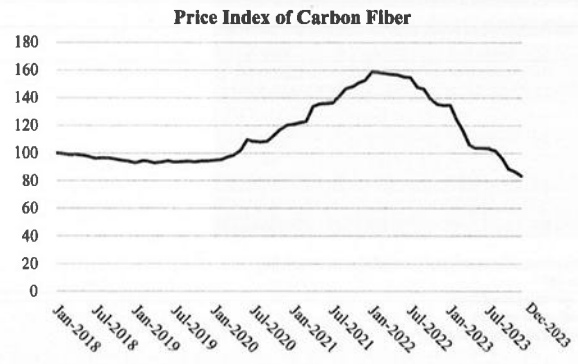
Notes:
1. *Maximum Occupants refers to the maximum number of individuals, including passengers and crew members, that an aircraft is certified to accommodate.*
2. *Maximum takeoff weight refers to the maximum weight at which the pilot is allowed to attempt to take off.*
3. *Max cruise speed refers to the fastest sustainable speed at which an aircraft can be flown in normal operating conditions.*
4. *Useful load refer to the weight of the pilot, copilot, passengers, baggage, usable fuel, and drainable oil of the aircraft.*
5. *Takeoff distance refers to an horizontal distance required to take-off and climb to a specified height above the take-off surface.*
6. *Maximum range refers to the maximum distance an aircraft can fly between takeoff and landing.*

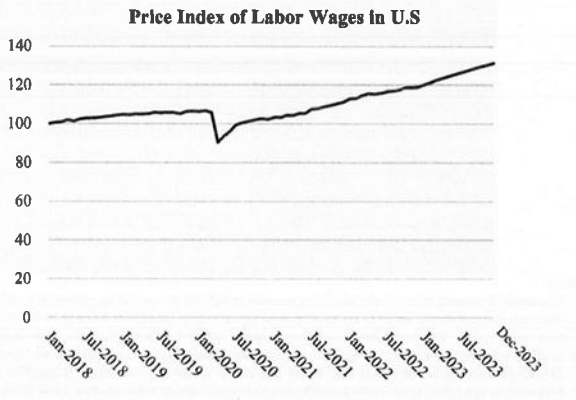
Source: Business & Commercial Aviation, Frost & Sullivan



Price of Raw Materials, Components, and Labor

- Major raw materials used by personal aviation manufacturers include aluminum, titanium, and carbon fiber composites. Carbon fiber is an advanced fiber material used in the production of high-performance composite materials for aircraft. From 2019 to 2021, the increasing demand for carbon fiber in various industrial sectors, combined with disruptions in production and logistics caused by the COVID-19 pandemic, led to a consistent upward trend in carbon fiber prices. However, starting in 2022, the market experienced a shift as carbon fiber supply expanded and the raw material prices for carbon fiber declined, resulting in a downward trend in carbon fiber prices.
- Labor cost is a significant component of overall costs for personal aviation manufactures. Over the past five years, labor wages have demonstrated an upward trend. In early 2020, the outbreak of COVID-19 had a severe impact on economic activity, resulting in a significant decline in labor wages. However, as the impact of the pandemic gradually subsided and economic activity rebounded, labor wages resumed an upward trajectory. By the end of 2023, labor wages had risen by approximately 29% compared to early 2018.





Source: U.S. Department of Labor and Frost & Sullivan Analysis

Appendix
(Common Industry Practices and Competitive Advantage of Cirrus)

Appendix-Common Industry Practices and Competitive Advantage of Cirrus (1/11)

- Airworthiness or similar directives are common in the general aviation industry.
- The COVID-19 pandemic has changed the traditional customer perception to a certain extent and significantly increased the market desire for personal aircraft, further stimulating industry growth.
- The personal aviation industry has seen a growth in terms of market size during the Track Record Period, due in part to the stimulating effects of the COVID-19 pandemic and the increasing demand and consumption preferences of consumers creating a greater incentive to seek enhanced and premium travel options.
- Personal aircraft has become an increasingly attractive option for high net worth individuals.
- It is industry practice to use captive insurance companies in the aviation industry.
- It takes an average of 6-8 years to have an aircraft certified for use.
- In certain circumstances, the registered owners of the aircraft will arrange for payment by other affiliates (such as a company owned by the individual registered owners or another company owned by the corporate registered owners) or designated parties (such as a financial institution financing the purchase or a trust or other individuals designated by the registered owners) which are made through U.S. financial institutions (the "Payment Arrangements"). Such payment arrangements are common in the personal aviation industry in the United States and in other similar retail markets where the purchase amount is more sizeable.
- Third-party payment is commonly applied in the personal aviation industry under specified scenarios.
- Certain types of agreements, such as Type Certificate License Agreement and Service Framework Agreement, are commonly applied in the aviation industry for commercialized procurement of products and services.
- The General Aviation Manufacturers Association (GAMA) is recognized as a reliable and authorized trade association in the general aviation industry, with its mission of promoting the general welfare, safety and better understanding of general aviation manufacturing, maintenance, repair, and overhaul.

Appendix-Common Industry Practices and Competitive Advantage of Cirrus (2/11)

- Cirrus Aircraft is a pioneer and a global market leader in the personal aviation industry.
- Cirrus is a pioneer and a global market leader in the single-engine piston and turbine aircraft segments in the personal aviation industry.
- The SR2X Series aircraft has been the best-selling high-performance single-engine piston model for the last 22 consecutive years in the U.S. and represents 73% of the market share in the piston aircraft segment of the global personal aviation market in 2020; the SF50 Vision Jet is the only single-engine turbofan available across the globe.
- The Cirrus Vision Jet challenges the light turbine aircraft market with a selling price under $6 million, with only the Vision Jet being offered at half the price compared to other aircraft with similar performance with costs between US$4.5 million to US$7 million.
- Vision Jet has been the best-selling business jet under US$7 million for the past 6 consecutive years and accounts for 26% of the market share in 2022.
- Cirrus is the only such company to provide a direct-to-the-customer model in the U.S., competitors such as Honda Jet, Daher, and Pilatus are all adopting dealership model.
- The SR2X Series design includes a premium interior, advanced avionics including high-resolution instrument displays, touch controllers, and a digital autopilot, a multi-function instrument display to provide faster and better access to information, as well as the Cirrus Airframe Parachute System, a whole airframe parachute that is a unique feature in single-engine piston aircraft.
- As of the Latest Practicable Date, Cirrus remains the only company to include a whole airframe parachute as standard equipment in each of the certified aircraft. The Vision Jet is the first jet with a ballistic parachute designed to deploy from the nose of the aircraft.
- Cirrus has the only single-engine aircraft with airbags in the seatbelts.
- The Vision Jet uses carbon fiber technology to provide an advanced monocoque carbon fuselage that is lighter and stronger than typical jets, making it one of the highest performing pressure vessels in its class.
- The SR2X Series aircraft represented 46.3% of the market share in the fixed tricycle gear certified piston aircraft segment of the global aviation market based on delivered units in 2022
- The Vision Jet accounted for 25.8% of the market share in the US$7 million and below single pilot pressurized turbine aircraft segment of the global aviation market based on delivered units in 2022.

Appendix-Common Industry Practices and Competitive Advantage of Cirrus (3/11)

- Composite materials are corrosive resistant, which allow to form weight-efficient and aerodynamic airframes and provide numerous competitive advantages. As for the composite parts, Cirrus can manufacture for a lower cost and at a higher quality as compared to the competitors.
- For the years ended December 31, 2020, 2021 and 2022, Cirrus produced 420, 579, and 636 aircrafts, respectively, significantly higher than the average annual production of the peers.
- Vision Jet is the first and only personal single-engine jet that has been certified and put into production.
- For more than 30 years, Cirrus Aircraft has been building a deep competitive moat and strong foundations for long-term success in the personal aviation industry — a loyal base of customers who are well-served and eager for the latest personal aviation products, services, experiences and technologies. Cirrus focuses on technology, product, and service development and personalized customer experiences is a significant competitive differentiator that continuously reinforces loyalty to the Cirrus brand, drives repeat sales, attracts customers and creates new customer business. It is believed that Cirrus has created and perfected a successful modern personal aviation ecosystem serving a broad spectrum of customers that no other aircraft OEM has been able to replicate. With close to 10,000 aircraft deliveries worldwide, as of the Latest Practicable Date, it is believed Cirrus is well-positioned to continue to capture the growth in the personal aviation industry.
- Cirrus's total accident rate per 100,000 flight hours is three times lower than the general aviation industry average, according to U.S. General Aviation Safety Data Bureau of Transportation Statistics .
- Cirrus has the general aviation's safest accident records in the United States.
- Cirrus Approach and Cirrus Embark, and our engaged community of owners and operators, has allowed us to achieve general aviation's safest accident records in the United States.
- The certification of a new aircraft type can take between five to nine years, while amended type certificates typically take three to five years to be obtained.
- CAPS was the industry's first general aviation parachute system implemented into a FAA-certified aircraft. Cirrus is the first aircraft company to include a whole airframe parachute as standard equipment in each of Cirrus' certified aircraft.
- SR2X Series aircraft are the only single-engine aircraft with airbags in seatbelts.

Appendix-Common Industry Practices and Competitive Advantage of Cirrus (4/11)

- Cirrus retains production of components in-house whenever they have an interest in preserving or developing technological know-how or whenever they believe that outsourcing would impair the efficiency and flexibility of Cirrus's production process such as Cirrus's composite parts, which they can manufacture for a lower cost and at a higher quality as compared to Cirrus's competitors.
- Cirrus has deployed a direct-to-customer model in the United States from the outset. The main competitors in the piston segment have historically primarily relied on dealers to provide aircraft sales and service in the United States.
- It is industry practice to use captive insurance companies in the aviation industry.
- Vision Jet is the first and only jet with a ballistic parachute.
- In 2022, Cirrus were the top manufacturer in the Comparable and Obtainable Global Personal Aviation Market, which includes aircraft models manufactured by us and aircraft models of similar product features and functionalities as our aircraft manufactured by our comparable competitors (i.e., fixed tricycle gear certified piston aircraft and US$7 million and below single pilot pressurized turbine aircraft), in terms of deliveries.
- FAA airworthiness directives or similar directives of this nature are common in the general aviation industry.
- Since establishment in 1987, Cirrus have grown to become a pioneer and a global market leader in the personal aviation industry.
- The Cirrus SR2X Series, currently in its sixth generation with over 9,500 aircraft delivered as of the Latest Practical Date, has been the best-selling high-performance, single-engine piston aircraft for 21 consecutive years in the U.S.
- Initially designed in 1994, the SR20, Cirrus's entry-level model, redefined the single-engine piston aircraft category by bringing modern automotive-like styling and features, all-composite construction, an intuitive flat-panel avionics display with advanced sidestick controls, and the distinctive benefits of a full-airframe parachute to a segment of the market that had long suffered from little research and development and new product investment.
- The use of carbon fiber materials provides numerous competitive advantages such as allowing for a smoother airframe surface, providing improved aesthetics and fit-and-finish, reducing lower production cycle-time, improving first-time production quality, and improving fuel efficiency and lowering carbon emissions by improving aerodynamic drag.

Appendix-Common Industry Practices and Competitive Advantage of Cirrus (5/11)

- Cirrus's SR2X Series aircraft are the only single-engine aircraft with airbags in our seatbelts.
- Composite materials are corrosive resistant, which permits aircraft manufacturers to form weight-efficient and aerodynamic airframes and lends to our competitive advantage
- Personal aviation encompasses the non-commercial operation of general aviation aircraft, including owner-flown and flight instruction activities, and is a subset of general aviation. General aviation is all aviation other than military and scheduled commercial airlines, which is the largest aviation market in the world. Aside from personal aviation, professional aviation within the generation aviation market includes aircraft engaged in agricultural, fire protection, disaster relief, environmental conservation and other activities.
- Among the extensive product portfolio of Cirrus's controlling shareholders for the general aviation business, the AG100 developed by AG Zhejiang is the only product, so a certain extent, that has potential similarities with Cirrus products.
- Cirrus is one of largest general aviation aircraft piston engine manufacturers in the industry.
- The number of licensed pilots in the United States reached approximately 757,000 in 2022. This has contributed to a certain extent to favorably changing the traditional customer perception and significantly increased the market desire for personal aircraft, further stimulating industry growth.
- Composite materials are corrosive resistant, which permits Cirrus to form weight-efficient and aerodynamic airframes and lends to Cirrus competitive advantage.
- Manufacturing companies in the aviation and airline industries face shortages of qualified aircraft mechanics and other personnel.
- Cirrus is a recognized industry leader in aircraft innovation.
- To protect businesses from claims of physical injury or property damage, aviation firms usually combine the aviation commercial general liability insurance, aviation hull insurance and aviation product insurance so as to provide adequate coverage. And the Group' insurance coverage for product and casualty liabilities is in line with the market practice.
- The ecosystem of aviation industry commonly refers to the integration of components within the industry value chain for the delivery of value-adding services to enhance customer experience. For instance, upon distribution of aviation products, aviation manufactures may also choose to provide aftermarket services and support, including but not limited to MRO, upgrades of product feature, parts supply and maintenance, insurance and financing, or even up to customized services inquired by customers.

Appendix-Common Industry Practices and Competitive Advantage of Cirrus (6/11)

- An STC is a type certificate issued when an applicant has received FAA approval to modify an aeronautical product from its original design. The STC, which incorporates by reference the related type certificate, approves not only the modification but also how that modification affects the original design. Under FAA regulation, any individual or company — including a company that does not hold the type certificate for a product — has the ability to apply to the FAA for an STC that authorizes altering that product by introducing a major change in the product's type design. Further, an STC holder may allow another company, including the base type certificate holder, to use the STC to alter the product. Typically, in line with industry practice, the right to use an STC would be inclusive in the price of the relevant component. A STC holder may install, or sell for installation, the modification defined by the STC.
- In particular, these STCs represent (1) certain design changes or modifications that have been adopted in newer generation aircraft where previous generation customers may wish to upgrade their older aircraft with these approved components, and/or (2) aftermarket parts that we sell as upgrades.
- The aviation industry generally involves a wide variety of classification of aviation-related modification or upgrades. STCs do not have to be held by aircraft manufacturers. Many professional aviation component providers and/or aviation solution providers apply for STCs, for example providers of maintenance, repair and overhaul with strong capabilities to carry out aircraft upgrades. This allows them to better serve demand from airline companies and/or individual/ corporate owner of aircraft. There are no specific constraints on the maximum number of STCs that can be issued. Due to these factors, it is common practice for aviation market participants (including manufacturers, as well as solution and components providers not related to aircraft manufacturers) to apply for and hold STCs to supplement or modify aircraft for which the aircraft manufacturer holds the type certificate.
- Aviation gasoline (avgas) is the aviation fuel most commonly used in piston-engine aircraft within the general aviation community. Avgas remains the only transportation fuel in the United States to contain lead. More than 222,600 registered piston-engine aircraft can operate on leaded avgas. The most common and reliable type of avgas is 100 octane Low Lead, also known as 100LL. This leaded fuel contains tetra-ethyl-lead (TEL), which is an additive used to prevent engine damage at higher power settings. Although the FAA does not have direct regulatory responsibility for aviation fuels, it provides the initial certification approval of the aircraft with the fuel it operates on, and it oversees aircraft operators to ensure use of the correct fuel. Therefore, it is valid that the proposals by the EU and the US to phase out 100 low-lead aviation gasoline due to environmental protection purpose would have an industry wide impact affecting aircraft manufacturers and engine manufacturers, so the entire industry would like to find a sustainable solution balancing economic viability, safety, and environmental considerations.

Appendix-Common Industry Practices and Competitive Advantage of Cirrus (7/11)

- The Company's insurance coverage for product and casualty liabilities is in line with the market practice of aviation firms combining aviation commercial general liability insurance, aviation hull insurance and aviation product insurance so as to provide adequate coverage.
- Personal aviation primarily targets individual customers such as private owners, trainers and individual flying enthusiasts, whereas other categories of general aviation generally have a wider range of target customers such as government agencies, medical service providers and energy companies.
- Among the extensive product portfolio of our Controlling Shareholders (excluding our Group) for the general aviation business, AG100 is the only product that has potential similarities with our products to a certain extent, according to Frost & Sullivan.
- Defining business scope by aircraft product line is common in the personal aviation industry, given the substantial amount of time and efforts required to commercialize one single aircraft product line.
- It takes years to commercialize a new aircraft product line, in light of the complicated design, testing and certification processes involved, according to Frost & Sullivan. The design phase of a new aircraft product line is a meticulous process that involves multiple iterations, engineering analyses, and feasibility studies. Once the initial design is completed, aircraft manufacturers build prototypes for testing and evaluation, and make necessary design modifications to address any issues or deficiencies. Then, aircraft certification involves submission of extensive technical documentation, compliance with certification requirements, and successful completion of a series of tests, inspections, and audits.
- Personal aviation industry tends to be associated with a higher gross margin compared to commercial and business jets due to noticeable higher product prices, as consumers are less price-sensitive and rather values advanced product features and value-adding services.
- We operate in a high-end premium personal aviation market where the price and demand of the aircraft reflect the value of our brand. Our customers are highly engaged in the purchase process and are very loyal to their chosen brand, often willing to pay a premium for their personal aircraft.
- In the general aviation industry, it is an industry norm for aircraft manufacturers to use single source suppliers for specific components, especially considering the high cost entry barriers, including the need to obtain FAA certification, and long program development times for alternatives.
- Unlike in the automotive industry, recalls of aircraft are not a common practice in the aviation industry.

Appendix-Common Industry Practices and Competitive Advantage of Cirrus (8/11)

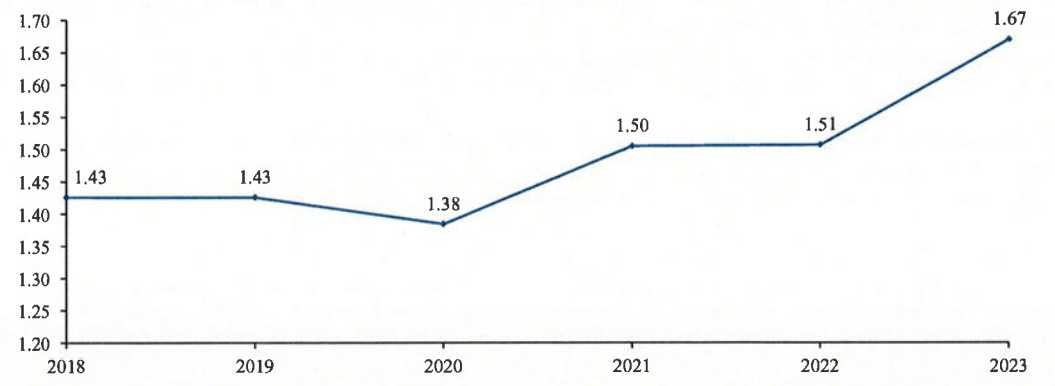
- Defining business scope by aircraft product line is common in the personal aviation industry, given the substantial amount of time and efforts required to commercialize one single aircraft product line.
- It takes years to commercialize a new aircraft product line, in light of the complicated design, testing and certification processes involved. The design phase of a new aircraft product line is a meticulous process that involves multiple iterations, engineering analyses, and feasibility studies. Once the initial design is completed, aircraft manufacturers build prototypes for testing and evaluation, and make necessary design modifications to address any issues or deficiencies. Then, aircraft certification involves submission of extensive technical documentation, compliance with certification requirements, and successful completion of a series of tests, inspections, and audits.
- Personal aviation industry tends to be associated with a higher gross margin compared to commercial and business jets due to noticeable higher product prices, as consumers are less price-sensitive and rather values advanced product features and value-adding services.
- We operate in a high-end premium personal aviation market where the price and demand of the aircraft reflect the value of our brand. Our customers are highly engaged in the purchase process and are very loyal to their chosen brand, often willing to pay a premium for their personal aircraft.
- Such supply chain and labor pool volatility negatively affected production in Grand Forks and Duluth particularly in 2022. The unemployment rate in Grand Forks and Duluth dropped from 2.7% in 2021 to 1.9% in 2022 and from 4.3% in 2021 to 3.4% in 2022, respectively, and the price of carbon fiber was generally higher in 2022 as compared to 2021. The aforementioned supply chain volatility was primarily due to the destabilization of our supply of materials such as raw material components required to manufacture composite materials, in particular carbon fiber, in terms of availability and the lead time to obtain supplies, aggravated by our increased demand for supplies to support our increased backlog, and delays in our production operations. The labor pool volatility was primarily due to the improvement in unemployment in Grand Forks and Duluth, where our existing production lines are based, which lead to our increased turnover in direct labor and the lead time for increasing labor.

Appendix-Common Industry Practices and Competitive Advantage of Cirrus (9/11)

- The average selling price of personal aircraft has slightly increased during the past few years, which was mainly due to the increase in cost of raw material and labor and aircraft manufacturers' success at developing and selling higher-priced models with higher-performance.
- The average selling price of personal aircraft has significantly increased during the past few years, which was mainly due to the increase labor cost and aircraft manufacturers' success at developing and selling higher-priced models with higher-performance. Traditional aviation fuel is derived from petroleum and contributes to greenhouse gas emissions. As pressure mounts to reduce emissions and mitigate climate change, aviation companies may be required to transition to alternative aviation fuels with lower environmental impacts, such as biofuels and synthetic fuels. However, this transition will require significant investment in new technologies and infrastructure, which may be challenging for some companies.

Historical average selling price trends of personal aircraft

Unit: million USD



Source: Frost & Sullivan

Appendix-Common Industry Practices and Competitive Advantage of Cirrus (10/11)

- Global economic growth and increasing number of HNWIs are amongst the most important drivers for personal aviation market. Personal aviation market is generally affected by general macroeconomic conditions, and many factors affect the level of consumer spending on premium and lifestyle products, including the state of the economy as a whole, stock market performance, interest and exchange rates, inflation, political uncertainty, the availability of consumer credit, tax rates, unemployment levels and other matters that influence consumer confidence. Deteriorating general economic conditions may reduce disposable income and consumer wealth as well as the growth of wealth among HNWIs, adversely impacting customer demand, particularly for premium and lifestyle goods. During recessionary periods, higher taxes may be more likely to be imposed on certain premium goods including our aircraft, which may affect our aircraft sales and provision of aircraft services.
- When the FAA issues an airworthiness directive, the FAA assigns responsibility to the owner or operator (not the manufacturer) of an affected aircraft to accomplish certain actions within a certain timeframe to ensure that the aircraft is airworthy. This legal framework differs from a product recall whereby a product is asked to be returned to the manufacturer after the discovery of safety issues or product defects that might endanger the consumer.
- The aforementioned supply chain volatility was primarily due to the destabilization of our supply of materials such as raw material components required to manufacture composite materials, in particular carbon fiber, in terms of availability and the lead time to obtain supplies, aggravated by our increased demand for supplies to support our increased backlog, and delays in our production operations. The labor pool volatility was primarily due to the improvement in unemployment in Grand Forks and Duluth, where our existing production lines are based, which lead to our increased turnover in direct labor and the lead time for increasing labor.

Source: Frost & Sullivan

UPDATED

Appendix-Common Industry Practices and Competitive Advantage of Cirrus (11/11)

- Garmin is the leader in general aviation avionics systems and continues to increase their market share through continued innovative developments and enhancement upgrades to existing systems.
- Williams International is a world leader in turbofan engines, having their largest market in general aviation light jet and very light jet. High cost entry barriers, long program development times, and limited options for alternate jet powerplants make it unlikely Cirrus would diversify from Williams at this time.
- At a global scale, premium air traffic has recovered at a faster pace than total air traffic as a result of the eased traveling restriction and pent-up traveling demand during post-pandemic. This was well-demonstrated in the 86% recovery rate (i.e, the number of air travelers in a given month as a percentage of the number of air travelers in the same month in the prior year) of premium air passengers in February 2023, outweighing that of total air passengers which was at 81%. In Europe and North America, Europe's premium air passenger recovery rate in February 2023 was 93.1%, representing a significant increase from 56.3% in February 2022. whereas in North America, it reached 107.7% in February 2023 as compared to75.3% in February 2022 and surpassed pre-pandemic levels.
- In addition with the development of technology, products are becoming more intelligent with increasing simplicity to operate, while providing enhanced levels of safety such as the innovative development of autonomous navigation and autonomous electric vertical takeoff and landing (eVTOL) technology.
- For instance, the total number of public airports increased from 4,785 in 2018 to more than 5,100 in 2022 in the U.S. In addition, many airports have upgraded their infrastructure.
- In terms of dollar value of aircraft deliveries, the global personal aviation market is expected to grow from US$3.5 billion in 2023 to US$4.0 billion in 2025, representing a CAGR of 6.9%,
- Across the personal general aviation industry, it is common to observe year-on-year ("YoY") fluctuations in the fatal accident rate.
- According to GAMA, business jets are aircraft specifically designed for business transportation, typically offering enhanced speed, range, and comfort compared to commercial airliners. They are used by corporations, individuals, and government entities for efficient travel. Business jets support significant economic activity, providing quick and flexible transportation for business purposes, which can enhance productivity and connectivity globally.

Source: Frost & Sullivan

NEW

Appendix-Common Industry Practices and Competitive Advantage of Cirrus (11/11)

- General aviation encompasses both personal aviation and professional aviation. Personal aviation aircraft market consists of aircraft with an acquisition price lower than US$7 million, targeting individual customers such as private owners, trainers and individual flying enthusiasts; while professional aviation market includes aircraft used for (i) corporate and charter services that are priced above US$7 million and (ii) other professional scenarios (such as agricultural operations, fire protection, disaster relief and environmental conservation). The comparison between personal aviation aircraft (priced below US$7 million and for non-professional scenarios) and professional aviation aircraft (priced above US$7 million or for professional scenarios) sets out several fundamental differences that justify using the US$7 million acquisition price as a threshold for defining personal aviation aircraft. These differences span operational capabilities, market focus, luxury and customization levels, and intended use cases, which collectively distinguish two distinct segments within the general aviation market:

Operational capabilities and range.

- Personal Aviation Aircraft: Designed for short to medium-range flights (i.e. less than 1,000 kilometers), typically equipped with single or twin engines. The main types of aircraft used in personal aviation include piston engine aircraft and turbine aircraft. These aircraft are suitable for personal, non-commercial, and training flights within a relatively limited geographical scope.
- Professional aviation aircraft: Capable of long-range, transcontinental, and intercontinental flights, equipped with advanced technology and multiple engines to support high-speed travel over longer distances; or capable of performing professional tasks such as responding to medical emergencies, transporting logistics, and serving fire protection purposes, usually on short to medium-range flights.

Market Focus and Intended Use

- Personal Aviation Aircraft: Primarily serving individual owners, non-commercial operations, and flight training institutions and targeting individual customers such as private owners, trainers and individual flying enthusiasts, with a focus on accessibility, efficiency, and practicality for personal or small-scale business travel.
- Professional aviation aircraft: Targeting corporate clients, governments, and luxury travel markets, with an emphasis on global reach, speed, and the capacity to accommodate larger groups in luxurious comfort.

Luxury and Customization

- Personal Aviation Aircraft: Offer functional and comfortable interiors with essential amenities, focusing on safety and operational efficiency over opulence.
- Professional Aviation Aircraft: Come in various types, including those used for agricultural, medical emergency, logistics transportation, and fire protection purposes, which may not prioritize luxury but serve specific operational needs. For other types of professional aviation aircraft, they feature spacious and customizable cabins that can be outfitted with high-end luxury amenities. These aircraft cater to the needs and preferences of the most discerning clients, offering a luxurious and comfortable flying experience. They are often used for executive travel, luxury charter flights, and other high-end aviation services

Appendix-Glossary (1/3)

AD	airworthiness directive, legally enforceable rules issued by the FAA to correct an unsafe condition in the following products: aircraft, aircraft engine, propellers and appliances
AOG	aircraft on the ground, a term used in aviation maintenance indicating that a problem is serious enough to prevent an aircraft from flying.
CAPS	Cirrus Airframe Parachute System™, a whole-plane parachute system that is included as standard equipment on all Cirrus aircraft
Certificate of Aircraft Registration	Certificate issued in respect of an aircraft by the aviation regulatory authority of each country (for example, the FAA in the United States) that an aircraft owner is required to obtain before such aircraft can be operated
COS	Cirrus Airframe Parachute System™, a whole-plane parachute system that is included as standard equipment on all Cirrus aircraft.
DARC	Dealer's Aircraft Registration Certificate, issued by the FAA, which allows manufactures and dealers to operate, demonstrate and merchandise aircraft to prospective customers without an individual Certificate of Aircraft Registration for each aircraft produced or sold
ESP	Electronic Stability and Protection system, an avionics system produced by Cirrus in collaboration with Garmin®, which utilizes Garmin's attitude and heading reference system that consists of sensors on three axes to apply a control force to stabilize flights in the event of pitch or roll deviations that exceed recommended limits.
FBO	fixed base operator, a term given to a commercial enterprise that has been granted the right by an airport authority to operate on that airport and provide aviation services, such as ground handling, fueling, parking, and other services for personal aircraft.

Appendix-Glossary (2/3)

FMS	Flight management system, a computer system that automates various in-flight tasks.
ft	feet
Fuel system	A fuel system of an aircraft allows fuel to be pumped, managed, and delivered to the propulsion system (or engine) of an aircraft
Hot and high	a condition of low air-density due to high ambient temperature and high airport elevation.
Kanban Systems	An inventory control system used in just-in-time manufacturing (i.e. manufacturing of items to meet demand, not created in surplus or in advance of need) to track production
KTAS	knots true airspeed, being the airspeed of the aircraft relative to the air mass it is flying through
lbs	pounds
MRO	maintenance, repair and overhaul, activities undertaken by an aircraft maintenance facility which include routine inspections, repairs, and upgrades to aircraft systems and components
nm	nautical miles, one nautical mile being equivalent to 6,076 feet or 1,852 meters
PPL	also known ns a private pilot certificate, which is issued by the civil aviation regulatory authority of each country and allows the holder to take command of an aircraft privately but not for remuneration
Reservation	a booking to purchase a Vision Jet before a specified delivery date is available
Safe return	Safe Return Emergency Autoland System, an emergency auto-landing system that was created by Cirrus in collaboration with Garmin which enables passengers to land an aircraft fitted with the system in the event of a pilot's incapacitation.

Appendix-Glossary (3/3)

SVO	simplified vehicle operations, the flight systems and user interfaces that apply technology to provide assistance to pilots.
Type Certificate	certificate issued by the civil aviation regulatory authority of each country (for example, the FAA in the United States) setting out the airworthiness standard for the aircraft type, model, aircraft engine or aircraft propeller
Type rating	certificate issued by the civil aviation regulatory authority of each country (for example, the FAA in the United States) to pilots who have completed requisite training and testing on a specific type of aircraft

JetNet Delivery Totals	2018	2019	2020	2021	2022	2023
Gulfstream 450	2					
Gulfstream 500	10	19	27	29	22	19
Gulfstream 550	18	23	11	10	4	2
Gulfstream 600		6	29	29	34	33
Gulfstream 650	13	8	2	0	3	19
Gulfstream 650ER	47	57	30	36	38	19
JetNet Total	90	113	99	104	101	92

Source: JetNet

GAMA Gulfstream Deliveries	92	114	105	103	96	89
GAMA Gulstream Models	450/500/550/650/650ER	500/550/600/650/650ER	500/550/600/650/650ER	500/550/600/650/650ER	500/600/650/650ER	500/600/650/650ER
GAMA Vision Jet Deliveries	63	81	73	86	90	96

The sales volume of the individual Gulfstream models G500, G600, G550, G650, and G650ER between 2018 and 2023 according to JetNet is set out below. According to Frost & Sullivan, JetNet is an established and credible service provider which gathers and compiles publicly available data such as aircraft registration information, and JetNet's data is commonly referenced in the aviation industry.

Moreover, according to Frost & Sullivan, Gulfstream G500, G600, G550, G650, and G650ER are distinct aircraft models from a variety of perspectives, including maximum range, maximum high-speed cruise, long-range cruise, cabin length, price range, etc.

There exists minor difference between the sales data of Gulfstream models G500, G600, G550, G650, and G650ER in aggregate as reported by GAMA and JetNet, respectively due to the means of data collection. GAMA compiles data of Gulfstream aircraft based on the aircraft deliveries as disclosed in the annual report of General Dynamics Corp, the holding company of Gulfstream, while JetNet collects data based on publicly available registration data for new aircraft.

Based on the above, the sales volume of Vision Jet has been higher than that of the individual Gulfstream model for the past six consecutive years.

	G650ER	G650	G600	G550	G500
Maximum range (nm)	7,500	7,000	6,000	6,750	5,300
Interior features	Up to 4 living areas with total interior length: 53 ft 7 in	Up to 4 living areas with total interior length: 53 ft 7 in	Up to 4 living areas with total interior length: 51 ft 3 in	Up to 3 living areas with total interior length: 50 ft 1 in	Up to 3 living areas with total interior length: 47 ft 7 in
Engines	Two Rolls-Royce BR725	Two Rolls-Royce BR725	Two Pratt & Whitney PW815GA	Two Rolls-Royce BR710	Two Pratt & Whitney PW815GA

Source: Company's websites