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Rollie Vincent
JETNET iQ Creator/Director



The Heat is On

Glenn Frey, a founding member and front man for the hugely successful rock band The Eagles, hit #2 on the Billboard Hot 100 charts in March 1985 with his solo recording of *The Heat is On*. And so it is - many of us experiencing the heat and wildfires of Northern Hemisphere summer will not be surprised to learn that the World Meteorological Organization just predicted that July 2023 was the hottest month ever recorded.

While the Ukraine-Russia war rages on, leaders across the business and general aviation industry are concurrently battling less tangible but nonetheless dangerous adversaries. In 2023, sporadic and noisy opposition to the industry has accelerated, with small groups of well-organized antagonists seizing opportunities to place “private jets” in the media’s bad-boy crosshairs. European policymakers are being urged to ban the use of private jets or at least single-out the sector for punitive treatments based on the industry’s comparatively high carbon footprints per passenger. In June 2023, transport ministers from Austria, France, and the Netherlands urged the European Union to implement operating restrictions on private jets across the region. Some environmental activists are going so far as seeking to sour the public’s opinion of all-things aviation - even calling for special taxes on airline frequent flyers, who they say are the 1% of the world population responsible for 50% of all aviation emissions.

If anything should be clear in the oppressive heat and smoky haze of the Summer of '23, it is high time to lower the temperature of these types of confrontations. While progress on the environmental sustainability of entire industries is being made at varying speeds, civil aviation is no couch potato – and business aviation is surely amongst the technological innovators. Reaching a target of net-zero greenhouse gas

emissions by 2050 is a lofty but achievable industry goal to avert the worst impacts of climate change.

“...civil aviation is no couch potato – and business aviation is surely amongst the technological innovators.”

In business and general aviation, this will require a wide combination of investments and actions, including new technologies (propulsion systems, aircraft, and sustainable aviation fuels - SAF), more efficient airport and enroute operations and market mechanisms such as levies, emissions trading, book & claim, and carbon offsetting. R&D investments in next-generation business and general aviation aircraft, engines, and related technologies will continue to propel the industry forward towards its greener and more sustainable future powered by new hybrid, electric, and hydrogen propulsion systems. Business aviation’s track record of innovation is surely no assurance of future performance, but our optimism is grounded in the fact that technical progress is what has always defined and competitively differentiated the industry.

While few seek the hot seat in what has become an emotional debate between industry antagonists and advocates, there is some irony in the realization that public attention might be just what we need to galvanize our attention around the imperative to accelerate green tech investments. With timelines stretching to bring new aircraft and powerplants to market, and a fleet of ~40,000 long-lived turbine business aircraft already in service, it is high time to push the throttles full-forward into our future.



Outlook

Despite numerous positive macroeconomic indicators, our on-going tracker of customer sentiment in the business aviation industry has settled at a relatively muted level. The overall global result of -1.2% (on a scale from +100% to -100%) is the 2nd lowest we have recorded in more than 12 years of our quarterly JETNET iQ Surveys. The global result masks the fact that there is considerable regional disparity in the sentiment scores. Sentiment in Europe and Rest of World was in the +35-40% range in Q2 2023, while Latin America & Caribbean was a respectable +22%. Sentiment amongst North American owners / operators has fallen steadily over the past 4 quarters and was at -17% in Q2 2023. Peeling the onion further, sentiment appears to be correlated with aircraft size, with light jet owner / operator respondents were considerably more pessimistic than those with large cabin business jets. We suspect that this may reflect concerns about rising interest rates and high inflation, the latter represented by the U.S. Consumer Price

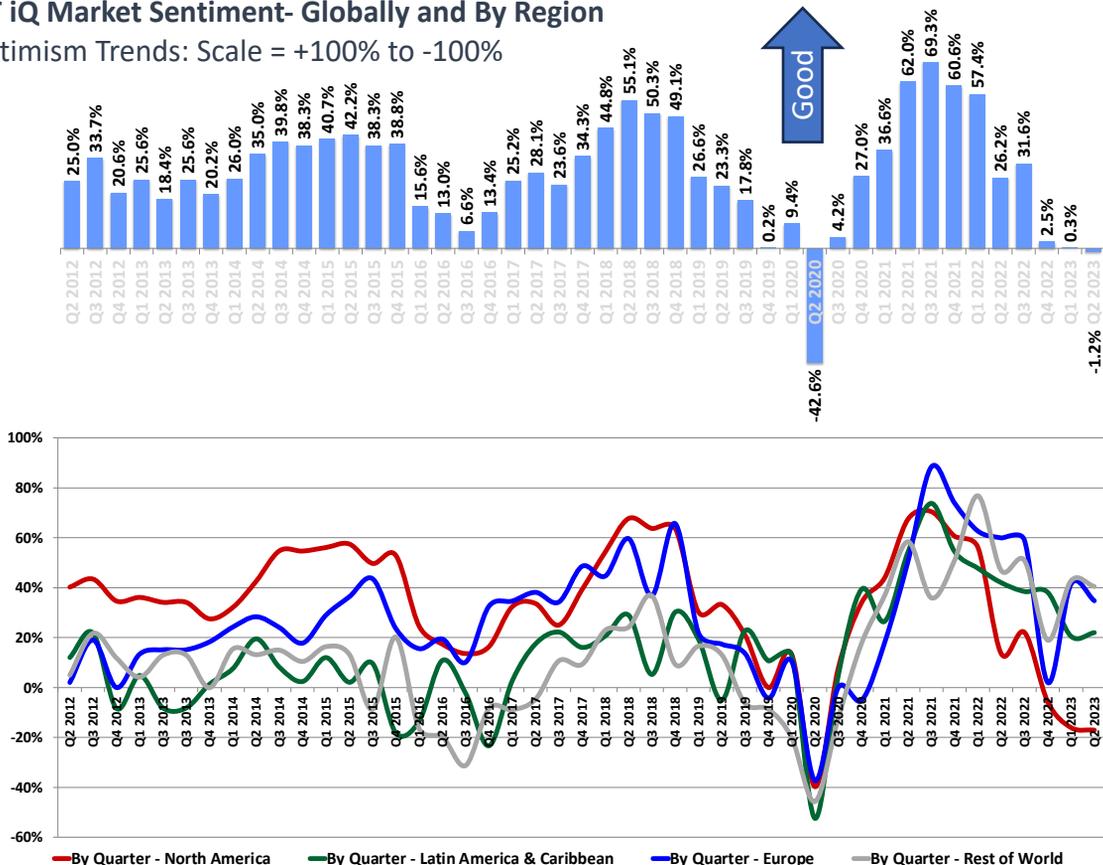
Index, which peaked at 9.1% on an annualized basis in June 2022. In March 2022, the U.S. Federal Reserve decided to raise for the first time since January 2019.

How does North America, home to almost 2/3rds of the business aircraft fleet, accelerate out of its current funk? How do attract much more and diverse talent? How do we improve our image on Main Street? The outlook for the industry will be front-and-center on September 13-14, 2023, at the spectacular fly-in / fly-out TWA Hotel at New York's JFK International Airport. The 12th JETNET iQ Global Business Aviation Summit is your opportunity to be in the room with some of the industry's most respected thought leaders and speakers.

<https://www.jetnet.com/summit/>

JETNET iQ Market Sentiment- Globally and By Region

Net Optimism Trends: Scale = +100% to -100%



Source: JETNET iQ

Business Conditions

GDP

The Economist's **GDP growth forecasts** for 2023 are: U.S. +2.3%, Euro Area +0.8%, U.K. +0.3%, Mexico +2.1%, Brazil +2.4%, Canada +1.2%, China +5.5%, Australia +1.5%, and Russia -1.6%



Business jet cycles (take-offs and landings) in Jul. 2023 were down by 21% YOY for U.S. Part 91, down by 1.7% YOY for U.S. Part 91K, down by 6.2% YOY for U.S. Part 135, and down by 15% for European operations



Dow Jones Index (U.S.) was up 8%, **FTSE 100** (U.K.) was up 1%, **CAC 40** (France) was up 12%, and **DAX 30** (Germany) was up 17% YOY on Aug. 7, 2023



U.S. Index of **Consumer Sentiment** was 71.6 in Jul. 2023 vs. 64.4 in Jun. 2023 and 51.5 in Jul. 2022 YOY; Euro Area **Economic Sentiment Indicator** was 94.5 in Jul. 2023 vs. 95.3 (revised) in Mar. 2022 and 98.9 in Jul. 2022 YOY



U.S. unemployment rate (seasonally adjusted) was 3.5% in Jul. 2023 representing 5.8 million unemployed people, essentially unchanged from Jun. 2023 (3.6%)



U.S. **Purchasing Manager Index** (Manufacturing PMI) was 46.4 in Jul. 2023 vs. 46.0 in Jun. 2023 and 52.8 in Jul. 2022 YOY; Euro Area **Business Climate Indicator** was -.09 in Jul. 2023 vs. .06 in Jun. 2023 and 1.13 in Jul. 2022 YOY



Transactions of pre-owned business aircraft in the first 6 months of 2023 were 1,024 jets and 557 turboprops, down respectively 36% and 33% YOY (JETNET as of August 1, 2023; whole retail transactions only)

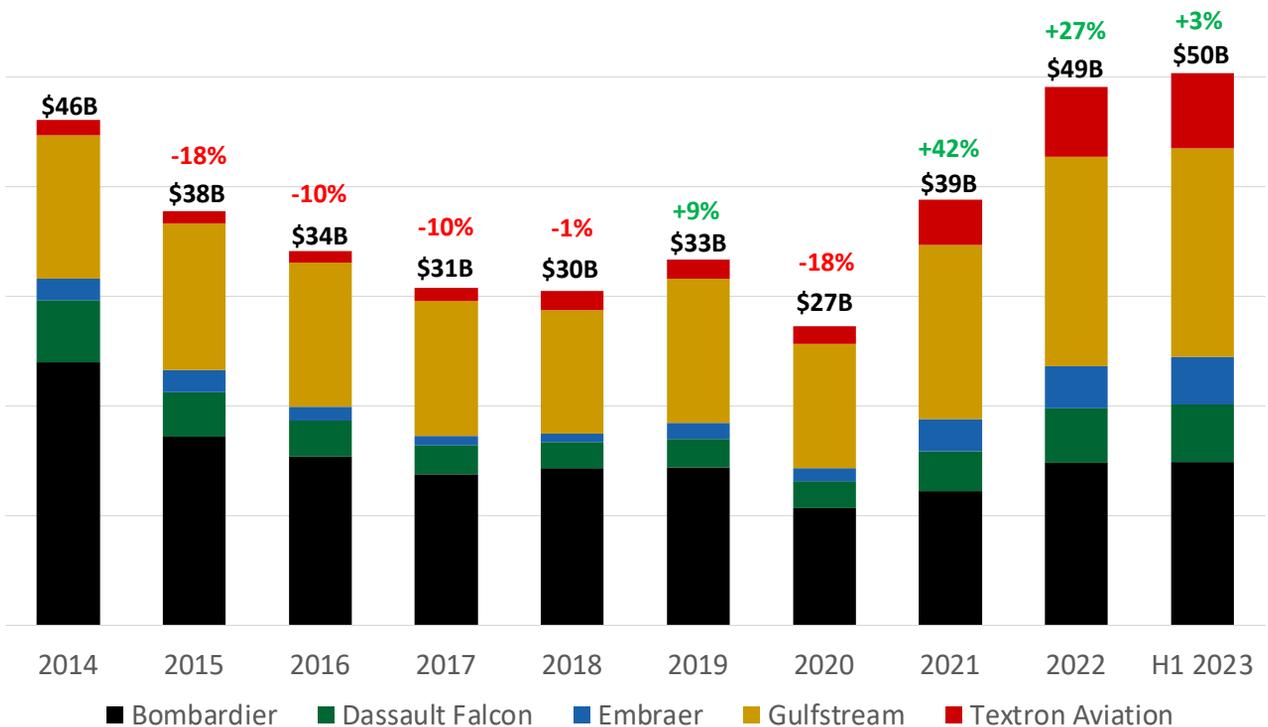


Business aircraft deliveries in 2023 YTD were 313 jets (including Cirrus and Boeing / Airbus single-aisle) and 172 turboprops (Source: JETNET through Aug. 8, 2023)

Business Aircraft OEM Backlogs

Business aircraft manufacturers have collectively and individually experienced a market surge in interest for their products and services, fueled by a realization amongst customers that business and private aviation is an unmatched value proposition. Order backlogs at the 5 largest business aircraft OEMs reached an estimated \$50B at the mid-point in 2023, typically representing ~18-24-month lead times for customers to take delivery of their new aircraft. This lead time provides OEMs with somewhat of a cushion against the continuing challenges they are facing

with their slow-to-recover supply chains, decimated after production shutdowns were announced in the immediate aftershock of the COVID pandemic in March / April 2020. A multitude of factors - lingering supplier challenges constraining deliveries, new aircraft certification delays, and expectations of large fleet deals to be announced at NBAA-BACE – we believe that backlogs continue their upwards YOY trend at year-end 2023.

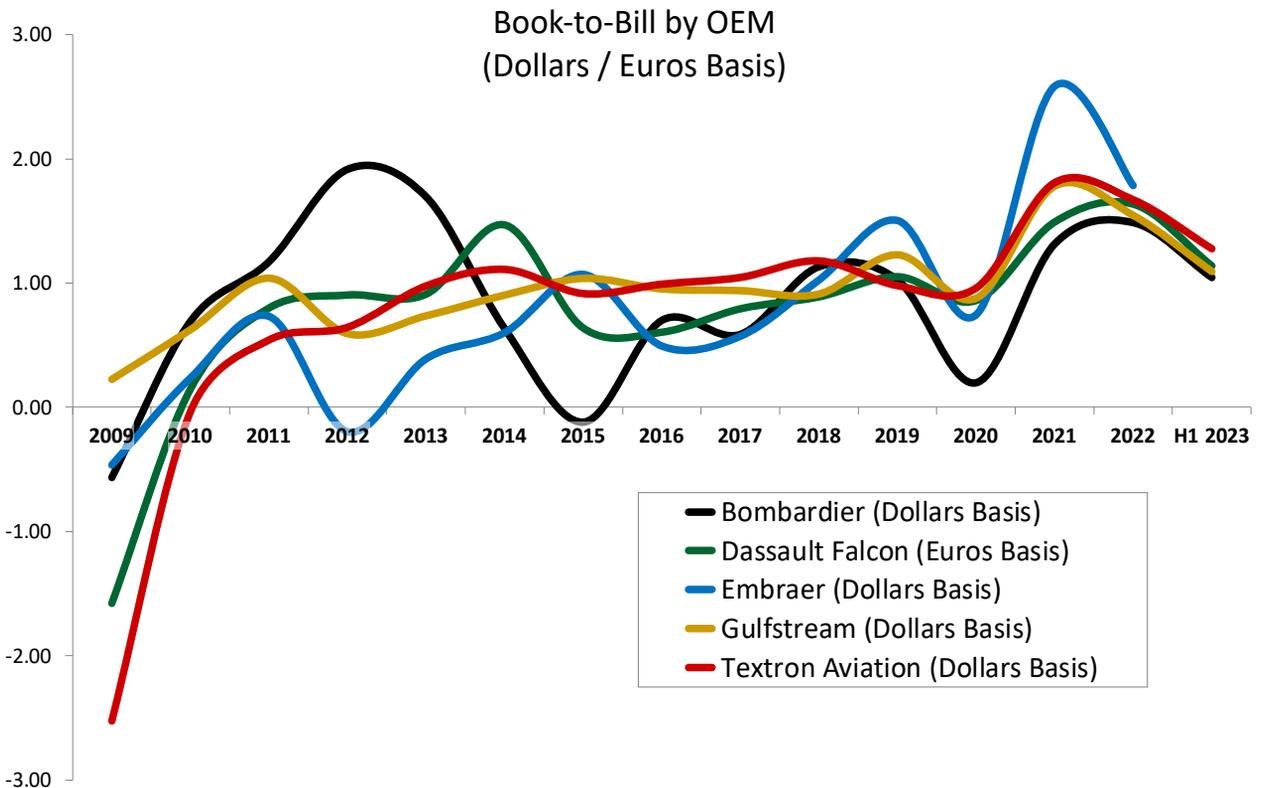


Source: Company reports, JETNET IQ analysis and estimates; OEM = Original Equipment Manufacturers

Business Aircraft OEM Book-to-Bills

Book-to-bill performance at the 5 largest business aircraft OEMs surged in 2021, led by Embraer, Textron Aviation, and Gulfstream. The dispersion in performance that characterized the market in 2021 has since diminished, falling in the 1.0 to 1.3 range, a healthy range that OEM leadership is targeting. A book-to-bill of 1.0-to-1 implies that an OEM's orders are well matched with its aircraft deliveries. Given the long lead times needed to procure

parts, assemblies, and systems to feed aircraft production lines, the 1-2 combination of >1-to-1 book-to-bill rates and relatively strong order backlogs is a welcome tailwind in today's tight labor market.



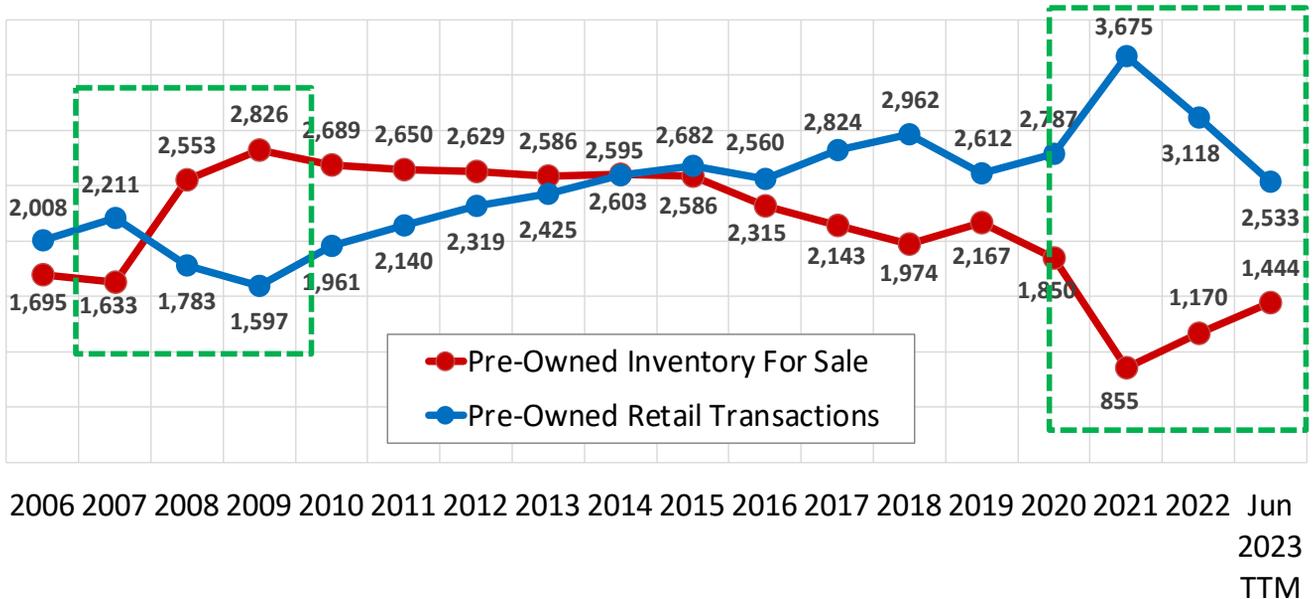
Source: Company reports, JETNET iQ analysis and estimates; OEM = Original Equipment Manufacturers

Pre-Owned Business Jet Market Evolution

After going temporarily silent in early-to-mid 2020, pre-owned business jet markets surged forward, reaching a new historical transactions peak in 2021. Retail deals slipped 15% in 2022 but were still strong enough to register the 2nd highest result on record in the JETNET database. Transactions through the end of June 2023 have since declined another 19% on a trailing 12-months basis, as the post-pandemic fury of activity subsides. While 4th quarter surge in deal-making is a characteristic of the pre-owned business jet market, a comparison of the 1st six months of 2023 with the same period last year reveals that pre-owned volumes are off 36% YOY. Inventory listed as “for sale” on JETNET included 1,444 jets at the mid-point of this year, up

23% since the end of 2022. As the market power continues to shift towards a more balanced buyer / seller relationship, market prices and valuations of aircraft are reacting as expected. Buyers beware? Buyers who elected to forego pre-purchase inspections in the frenetic days of the recent past may already be facing a significant maintenance event and a mark-to-market value adjustment that have them wondering about their best options going forward. As before, we counsel that engaging professionals who have been to this rodeo before is always recommended.

**Pre-Owned Business Jet Inventory
and Pre-Owned Whole Retail Transactions - Worldwide**



Source: JETNET / JETNET iQ analysis; TTM = Trailing Twelve Months; YOY = Year-over-Year

Pre-Owned Business Aircraft Inventory

As we discussed in our last issue – before our JETNET iQ publishing hiatus in May 2022 – buyers entering the business aircraft marketplace who were seeking fire-sale prices needed to look elsewhere. Pre-owned business aircraft inventory was at historic lows at that time, hovering between 2-5% of the fleet depending upon the segment of interest. Note that these data points only reflect “on-market” aircraft listed on JETNET. Strong deal flow has been sustained in the post-pandemic market by “off-market” aircraft that were transacted so quickly as to be not recorded in JETNET databases.

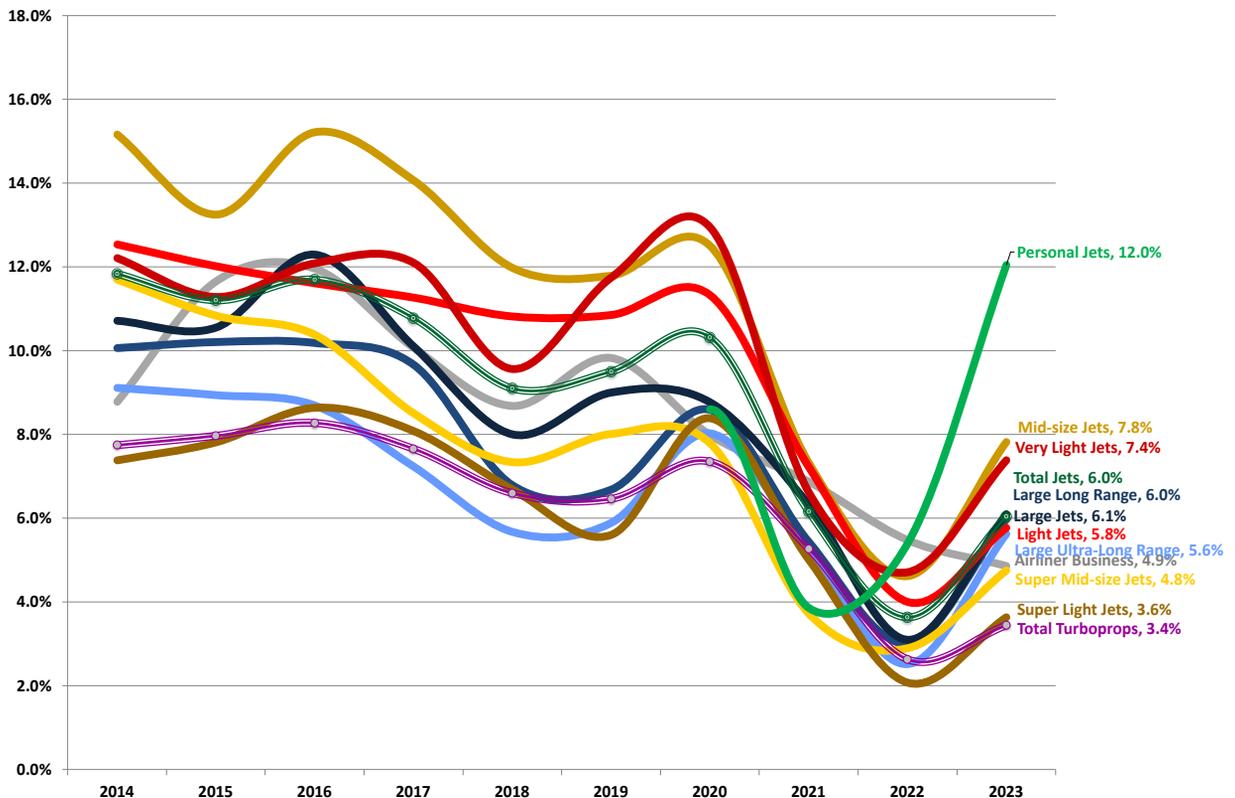
As of June 30, 2023, there were 1,444 business jets listed for sale on JETNET, representing 6.0% of the in-service fleet. Of these totals, ~12% were originally delivered new to customers since the beginning of 2017. This compares with ~8% one year ago, reflecting the changing marketplace. For

buyers with specific requirements – model, age, registration, specification, paint and interior – more choice is becoming available with a range of pedigrees and pricing that should prove to be more enticing than witnessed for the past several years. Softness has been quite noticeable in the Personal Jet and Very Light Jet segments, and with older vintage aircraft.

JETNET databases included 552 for-sale turboprops as of June 30, 2023, representing 3.4% of the in-service fleet. About 10% of these aircraft were delivered new since the beginning of 2017. By most measures – inventory for sale, prices, valuations, and utilization - the turboprop segment has remained quite resilient to the otherwise softening business aircraft market, experiencing less peak-to-trough variation than evidenced in business jet markets.

Business Aircraft Inventory For Sale Trends

As of June 30 - From 2014 to 2023



Source: JETNET / JETNET iQ analysis

About JETNET iQ

JETNET iQ is a business aviation market research, analysis and forecasting service consisting of three main elements:

- **JETNET iQ Reports** are the definitive analytical reference for business aviation, incorporating quarterly state-of-the-industry analyses, owner / operator surveys, and detailed delivery and fleet forecasts;
- **JETNET iQ Summits** are annual industry thought-leadership conferences providing unique data, insights and networking opportunities; and
- **JETNET iQ Advisory** provides customized research and analysis for clients on a project-by-project basis.

JETNET iQ Reports are available in various formats on a subscription basis, and are published regularly by JETNET LLC, 101 First Street, Utica, NY 13501 - **currently offered at 11 different levels**. JETNET iQ is a partnership between JETNET LLC of Utica, New York and Rolland Vincent Associates, LLC, of Plano, Texas.

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Since late 2010, JETNET has conducted quarterly surveys of the worldwide community of business aircraft owners and operators in order to gauge customer sentiment, brand perceptions, aircraft purchase, selling, and utilization expectations, and other factors. JETNET iQ Global Business Aviation Surveys are password-protected and by invitation-only. Potential respondents are drawn randomly from the JETNET worldwide database of business jet and business turboprop owners and operators; they are initially contacted by telephone and/or e-mail by JETNET's team of multilingual researchers. Target respondents include chief pilots, directors of aviation, and senior management. Each survey includes at least 500 respondents in 50 or more countries each quarter, and respondents closely reflect the worldwide distribution of the business jet and turboprop community.

For more information on JETNET iQ, please contact:

Rolland Vincent, JETNET iQ Creator/Director
Tel: 1-972-439-2069
e-mail: rollie@jetnet.com

To subscribe to JETNET iQ Reports or inquire into sponsorship of JETNET iQ PULSE, please contact:

Paul Cardarelli, JETNET Vice President of Sales
Tel: 315-797-4420, ext. 254
e-mail: paul@jetnet.com

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The Golden Age of aviation is back! 2023 marks our 12th JETNET IQ Summit as we return to the beautifully retro TWA Hotel at JFK, September 13–14th, 2023. Join business aviation's best and brightest to help chart our course for the future. This is truly an event that's not to be missed.

Get more information at jetnet.com/summit

JETNET IQ
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