JETNET iQ PULSE

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1 Editorial
2 Outlook
3 A Look at 2030
6 Business Conditions
7 Pre-Owned Business Jet Transactions – Large Jets Only
8 Business Jet Flight Distances – U.S. Part 91 Large Jets Only
9 Business Jet Flight Distances – U.S. Part 91K Large Jets Only
10 Business Jet Flight Distances – U.S. Part 135 Large Jets Only
11 The Importance of Being ~~Earnest~~ Healthy
12 About JETNET iQ
13 Appendix

Rollie Vincent
JETNET iQ Creator/Director

In the Air Tonight

Long-lived assets have a way of recreating themselves to stay fresh, relevant and active. English drummer and singer-songwriter Phil Collins' iconic *In the Air Tonight* was an instant hit when it was released as part of his initial solo album in 1981. It is hard to fathom that this timeless classic is now aged almost 40 years, and that it has reentered the music charts. Since July 2020, when 22-year-old twins Tim and Fred Williams recorded their reactions on YouTube to hearing the song for the first time, more than 7.8 million views (and counting) have already been logged. There is something heartwarming and refreshingly magical about a new generation rediscovering a joy that an earlier generation has already embraced.

Such is the case with large-cabin business jets, a staple of the business and general aviation industry for many years. The trailblazer was the Rolls-Royce Spey-powered Grumman Gulfstream G-II, the first of the long-range, flat-floor, walkaround cabin class of aircraft that are so popular today. A total of 214 G-II jets were built from 1967 through 1979. Despite their rather advanced age, forty-nine G-II aircraft are still in service today, with 80% of these jets based in just 2 countries – Mexico and the United States – as per JETNET. A Stage 3 noise mandate in the U.S. impacting older jets with MTOW less than 75,000 lbs. came into effect after December 31, 2015. This effectively grounded the non-compliant fleet until so-called "hush kits" could be installed or forced these aircraft into international markets where such standards were not in effect.

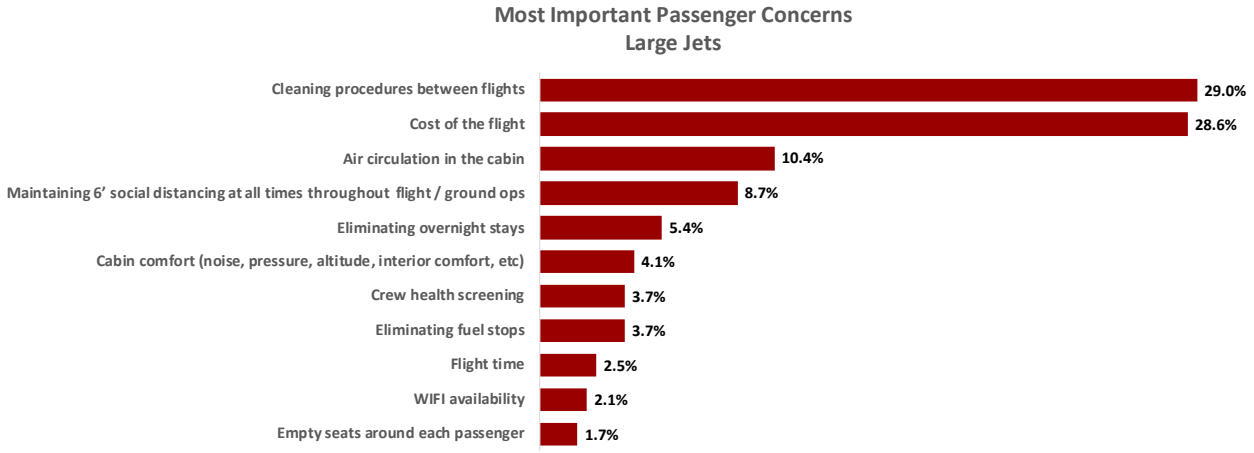
Amongst aero-engine OEMs, Rolls-Royce has been the most consistently successful in being selected as sole-source powerplant provider on the world's large cabin business jets. Beginning with the G-II and continuing today with the Gulfstream G700 and Global 5500 / 6500 models, Rolls-Royce has a commanding share of the installed fleet of large cabin business jets. In 2019, 57% of all factory-delivered large cabin business jets came with Rolls-Royce powerplants. Over the last several years, inroads by GE Aviation and Pratt & Whitney Canada with the Global 7500 and G500 / G600 program wins have heated up this competitive space like an afterburner at the top of the market. Typically occurring under the industry radar, these sole-source supplier selections have long-term implications for aero-engine aftermarket revenues and, most importantly, margins from "power-by-the-hour"-type parts and services programs.

Dean Roberts, one of the industry's top market analysts and forecasters, joins us in this issue of JETNET iQ PULSE for an intriguing look forward into the Year 2030. Although it may be difficult to focus on the future when the issues of today seem paramount, Dean's insights into "What's next?" for the business aviation sector make for intriguing and thought-provoking reading.

Outlook

While election ballots continue to be counted (and re-counted), and anxiety levels mount on both sides of a divided United States, the world continues to revolve in its orbit and the tough work still lies before all of us – getting safely through the pandemic, rebuilding trust in our institutions, growing business and consumer confidence, and reinvigorating investment, job opportunities and global economic growth. And did we mention tackling climate change, with powerful concoctions like behavioral change, technology innovation, and international cooperation? If there is one thing most of us could all use right now (beyond a good book, a smile and a laugh, and big hugs from Mom), it may be some fresh perspective on what is truly important. For many of us, the limited interactions with family and friends have been amongst the most incalculable of the coronavirus costs. Missed moments lost to the COVID-19 pandemic – summer vacations, back-to-school and graduation events, birthdays and celebrations of lives – are painful and permanent. These costs and opportunities lost are nothing short of tragic, with the coronavirus continuing to be the true enemy of nations. With many countries now fighting off a 2nd or even 3rd wave of COVID-19 infections, what has seemingly changed is our frustration level at not knowing what to do. Unfortunately, time, health, and lives are the victims of a dangerous and invisible foe against which we have few effective defense mechanisms other than the lowly face mask, anti-social distancing, and the occasional squirt of hand sanitizer. Discouragingly, these simple procedures have not been as widely adopted in the general public as health and infectious disease experts have advised, which they warn is a major contributing factor to the perpetration of the virus into far corners of our societies.

In business aviation, we thankfully see clear evidence of a more careful and prudent approach to ensuring a healthy end-to-end experience for air travelers. Nevertheless, our recently completed JETNET iQ Q3 2020 Survey of business aircraft owners and operators identified a host of concerns that business aircraft passengers have today, many of which have become a focus for the aircraft operating community since the onset of the COVID-19 pandemic. Paramount amongst these passenger concerns are aircraft cleaning procedures, cabin air circulation, and continuous social distancing on the ground and in the air. Customer preferences to limit overnight stays and en-route refueling stops, and to fly shorter distances, are already driving significant changes in flight operations, fuel sales, ground handling, and overnight hangaring, with important implications for FBOs and their many service partners. While flight cycles across most sectors of business aviation have rebounded quite smartly relative to commercial airlines, stage lengths have been constrained by preferences to stay closer to home, particularly in the face of on-going border closures and quarantine procedures that have dampened the demand for international travel. Until a vaccine (or more likely, a series of vaccines) is widely available, administered, and proven effective, health-related passenger concerns are sure to linger. The combination of these new concerns with more chronic issues such as flight cost and on-board WiFi availability will likely constrain the industry's growth outlook for the foreseeable future.



Source: JETNET iQ

* For aircraft size category definitions, please refer to the Appendix

A Look at 2030

Dean C. Roberts
Market Analysis Executive, Business Aviation
Rolls-Royce

The exciting future for business aviation

When Rollie invited me to write this article, he asked me to talk about the longer-term outlook. I was immediately reminded of a quip from a respected mentor about the popularity of market forecasters within organisations: "Good forecasters are downbeat when the market is reaching a peak and optimistic in the depths of the downturn. They tend to be unpopular people!" With that worrisome thought in mind, I still plan to address here the exciting future for business aviation amidst a challenging market due to the impact of the COVID-19 pandemic.

The impact of the COVID-19 pandemic on business aviation has been different on the two main markets. For the operators and the pre-owned market there is sense of transitioning back to normalcy although a second wave of infection may delay this. In response to their passenger's yearning to get back on the road, operators are chafing at the bit to return to flying. There is scant evidence that business aviation users are moving fundamentally to video conferencing, implying that face-to-face interaction still counts. This is also reflected in the remarkably resilient pre-owned market. While transactions are slightly down, deals are getting done and aircraft are changing hands. In contrast, the market for new aircraft is more uncertain due to the major disruption of the economy by the pandemic. In addition, there are some significant economic structural changes on the horizon to consider, like the impact of climate change. On balance these provide exciting possibilities for our industry, so let us explore these further.

Normally for this type of article I would focus on the existing business and extend time out and consider incremental developments. With COVID-19 the world that we had assumed has changed so we ought to use a different framework. Firstly, let us describe the future further out in time – for this analysis, I have chosen the year 2030. We then consider the implications of that future by developing a view of what customers will value and how market dynamics will work.

Why choose 2030? The key is to focus on a time that is distant enough to stretch our thinking but not to be so far off that it is utterly un-relatable. The year 2030 was chosen because market demand will have changed – geography, age cohorts, and the rich. Global warming will be much more pressing an issue than it is today, and technologies will be maturing – electric, hybrid, and sustainable fuel.

"Why choose 2030? …market demand will have changed….global warming will be much more pressing an issue…and technologies will be maturing"

Key themes in 2030

Despite COVID-19's profound impact on air travel over the next few years, today's pandemic will have less relevance by 2030. Its most important legacy will be its accelerating of economic and technological developments. This leads to three themes to focus our thinking:

1. Continued economic growth with a large component of world trade.

2. Continued urbanisation will occur driving economic growth but also creating its own problems of traffic congestion. There are good reasons for urbanisation due to what economists call agglomeration effects; innovation needs people close to one another.

3. Global warming and its effects on demand and economics will stimulate the need for air transport solutions with different energy sources (i.e. electric, hybrid, or sustainable fuel).

A Look at 2030 (cont.)

What is the outlook for two key sectors ?

Long Range Business Jets

In 2030 the basic tenants of economic growth will not have fundamentally changed. The benefits of interconnectedness, innovation and cooperation will win over the recent trend of economic isolationism. By 2030 world trade is likely to be transitioning from purely manufacturing to an increasing services component. This will lead to a continued growing population of rich individuals and companies that operate on a global scale. The market for long-range aircraft is assured and the market case for a supersonic business jet is remarkably strong.

"The market for long-range aircraft is assured and the market case for a supersonic business jet is remarkably strong."

On the environmental aspects the challenge for electrical propulsion is the fundamental drawback of its low power density so sustainable aviation fuels will be in widespread use with long-range aircraft.

Small Aircraft

This will be an incredibly fascinating sector and it is very difficult to decide how it will play out. If the very short-range urban air mobility (UAM) sector materializes, I believe our business aviation clientele will be the first users. Business aviation users are comparatively price inelastic and are willing to pay for speed – i.e. they are ideal customers for a new technology that saves time.

"If the very short-range urban air mobility (UAM) sector materializes, I believe our business aviation clientele will be the first users."

On the operator side I am intrigued by the new business models being deployed by the industry consolidators and membership/on-demand companies. Coupled with new propulsion concepts and the growing importance of Millennials, I cannot help thinking this sector will see some profound changes.

When we look back from 2030, we will see that 2020 was a pivotal year in many respects. For us in business aviation we will have seen the reaffirmation of the purpose and resilience of our industry. In addition, we will reflect back and see it was the year that new concepts started becoming a reality in earnest.

Disclaimer: The views expressed herein are for informational purposes only and are those of the author and do not necessarily reflect the views of Rolls-Royce. All opinions are subject to change without notice.

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Business Conditions

GDP

The Economist's **GDP forecasts** for the U.S. and Euro Area economies for 2020 are -4.6% and -8.4% respectively in 2020; U.K.'s 2020 growth rate is -10.6%; China is the only major business aviation economy expected to grow in 2020, but by only 1.9%

Business jet cycles (take-offs and landings) from Oct. 1-31, 2020 were down by -30% YOY for U.S. Part 91, but up by 12% YOY for U.S. Part 135, and up by 26% YOY for U.S. Part 91K

The **Dow Jones Index** (U.S.) was down 6.7% YTD from January 2 to November 2, 2020, and down 2.0% YOY; The **FTSE 100** (U.K.) was down 25.6% YTD from January 2 to November 2, 2020, and down by 23.3% YOY

U.S. Index of **Consumer Sentiment** was 81.2 in Oct. 2020, versus 80.4 in Sept. 2020 and 95.5 in Oct 2019 YOY; Euro Area **Economic Sentiment Indicator** was 91.1 in Sept. 2020, up from 90.9 in Sept. but down from 103.4 in Feb. 2020 at the onset of COVID-19

U.S. initial **unemployment claims** were 65.9 million in the 32 weeks ending October 24, 2020; U.S. unemployment rate (SA) was 7.9% in September 2020 (representing ~12.6 million people)

U.S. **Purchasing Manager Index** (Manufacturing PMI) was 59.3% in Oct. 2020, up from 55.4% in Sept. 2020; Euro Area **Business Climate Indicator** was -0.7 in Oct. 2020, up from -1.2 in Sept. 2020

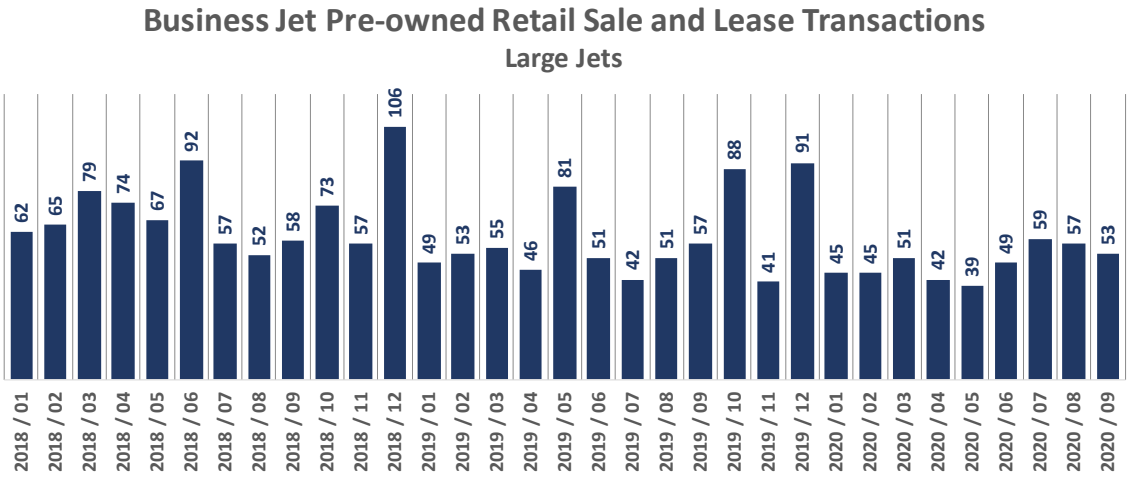
Transactions of pre-owned business jets (retail sales & leases) in September 2020 were up 6% YOY to 215; days-on-market were down 10% YOY to 240 days; transactions in Q3 2020 were up 12.4% YOY to 664

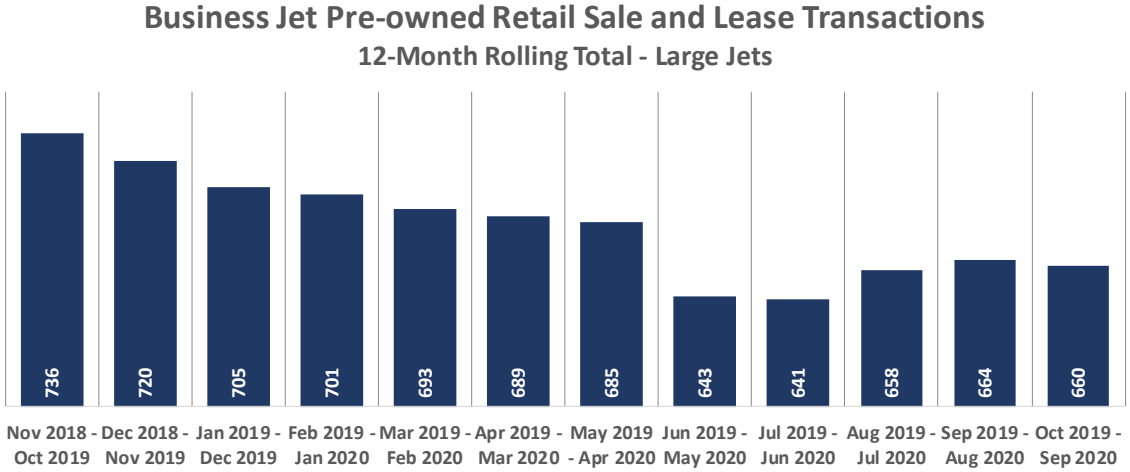
Business aircraft deliveries YTD as of Nov. 2 were 380 jets (including Cirrus, Boeing, Airbus) and 185 turboprops according to JETNET; we forecast 2020 shipments to be off ~25-30% YOY

Pre-Owned Business Jet Transactions – Large Jets Only

January through September 30 – 2018 Through 2020

In the first 9 months of the calendar year, worldwide retail sales and leases of pre-owned Large Jets have slipped by 9% YOY and are down 27% versus 2018 (a year that ended with almost 850 transactions). Intelligence from the aircraft broker / dealer community suggests that actual transaction prices have slipped by ~15% on average in 2020 versus 2019, with the possibility of some additional softness as year end approaches. Given the public health and economic crises facing our economies and societies since the onset of the pandemic, it is truly a testament to the attractiveness of business aviation that pre-owned jet sales have continued to be as strong as they are.





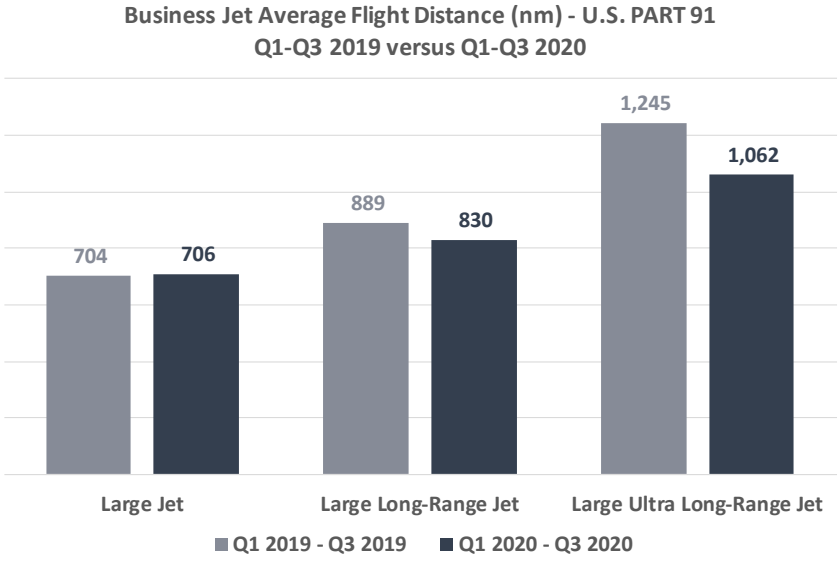
Source: JETNET iQ

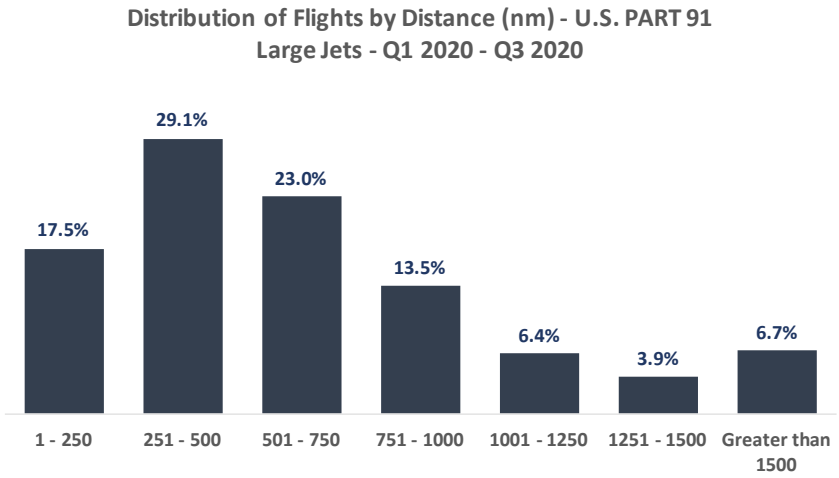
* For aircraft size category definitions, please refer to the Appendix

Business Jet Flight Distances

U.S. Part 91 Large Jets Only

U.S. Part 91 (private / corporate) cycles have been the most curtailed of the 3 major flight operations categories since the onset of the COVID-19 pandemic. In the first 9 months of 2020, Part 91 Large Jets recorded an average distance flown of 862 nm. With border and quarantine restrictions in effect throughout much of Q1-Q3 2020 period, 95.3% of all Large Jets flights operations were domestic U.S., up from 91.2% in the same period in 2019. Almost 70% of Large Jet Part 91 flight operations in the Q1-Q3 2020 period were for missions of 750 nm distance or less, even though this class of aircraft can operate non-stop missions in excess of 4,000 nm+.





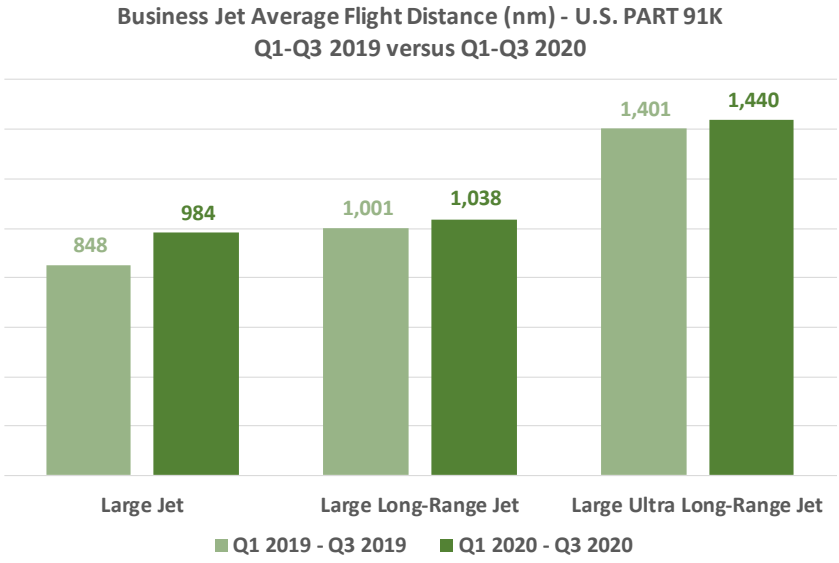
Source: JETNET iQ

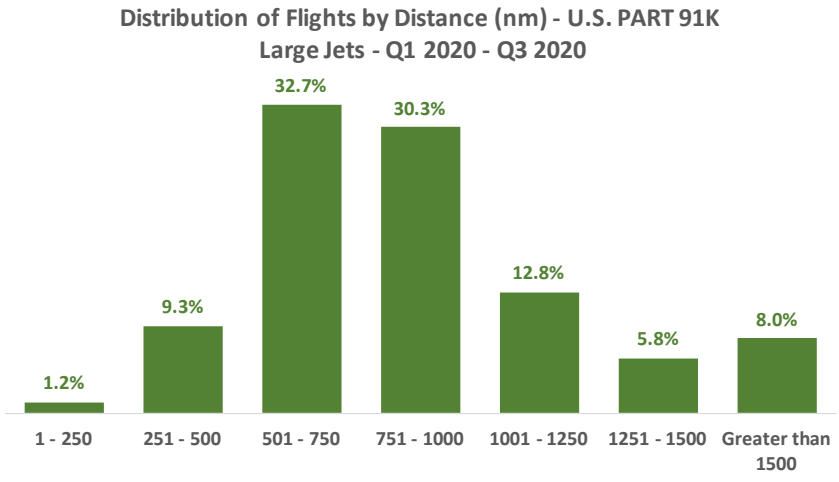
* For aircraft size category definitions, please refer to the Appendix

Business Jet Flight Distances

U.S. Part 91K Large Jets Only

Part 91K (fractional program) Large Jet flight distances averaged 1,130 nm in the Q1-Q3 2020 months of 2020. U.S. domestic flights accounted for 95.3% of all Large Jet Part 91K flying in the first 9 months of 2020, up slightly from 94.2% YOY. Very few Large Jet missions were operated at stage lengths of 250 nm or below in Q1-Q3 2020, likely reflecting minimum taxi- and flight-time charges that fractional owners incur for each flight.





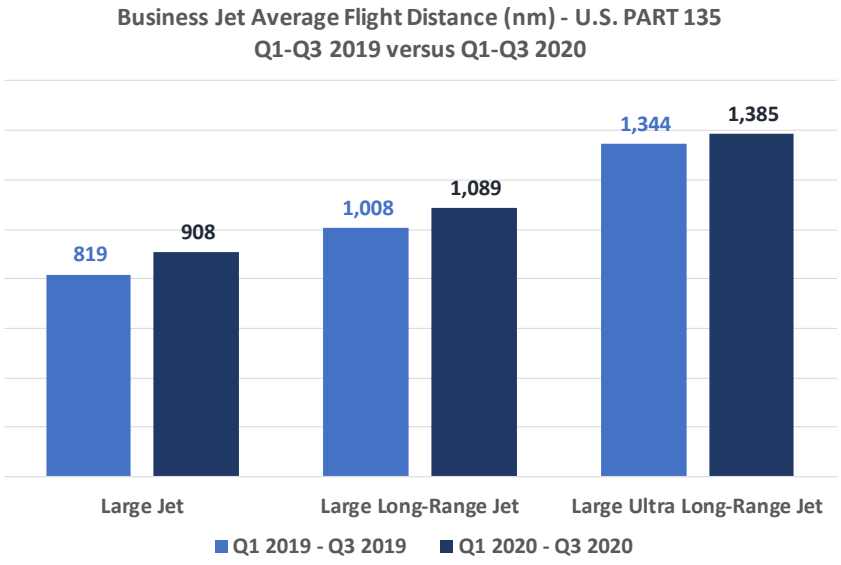
Source: JETNET iQ

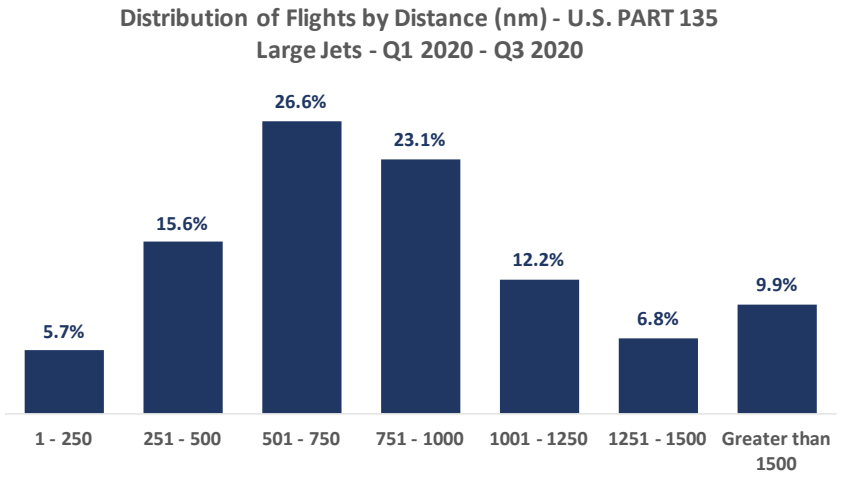
* For aircraft size category definitions, please refer to the Appendix

Business Jet Flight Distances

U.S. Part 135 Large Jets Only

In the first 9 months of 2020, Part 135 (on-demand / charter) Large Jet missions averaged 1,098 nm in distance. In the first 9 months of 2020, 95.2% of Large Jet Part 135 flights were operated domestically, up from 93.9% in the same period in 2019. As with the other operational categories, average mission length grows with aircraft size category, but not to the extent that the long-range capabilities of these aircraft are put to the test. About 10% of Part 135 Large Jet missions were on airport-pairs greater than 1,500 nm apart, the highest of any of the 3 major operational categories. Empirically, there is limited U.S. evidence of an operational requirement for long-range flying, despite the performance capabilities that are designed into today's Large Jets.





Source: JETNET iQ

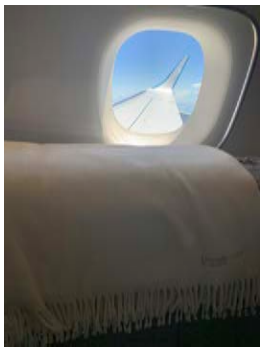
* For aircraft size category definitions, please refer to the Appendix

The Importance of Being ~~Earnest~~ Healthy

JETNET iQ Q3 2020 Global Business Aviation Survey

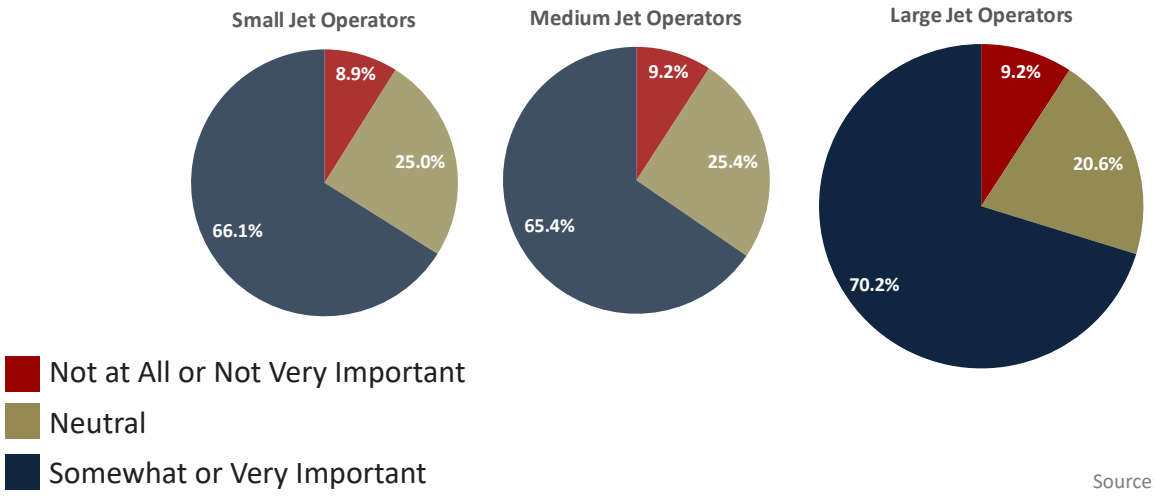
With 515 respondents from 61 countries operating 4,118 fixed-wing turbine business aircraft, JETNET iQ's Q3 2020 Survey provides some deep insights into topics that matter to customers. These surveys are proving to be particularly revealing in the COVID-19 pandemic period, when so much is changing about the way aircraft are being prepared for flight and flown – or not. While healthy cabins are a paramount consideration for customers across all size categories of aircraft, owners and operators of large-cabin business jets* appear to be more sensitized to their business jet cabin environment. This could be due to interior design innovation, adept OEM marketing of the various options available to customers of higher-end models, and the typically longer flights of this class of aircraft.






"We would like to understand market perceptions on "a cabin environment that promotes health". When we talk about a cabin environment that promotes health in business aviation, we are referring to the health benefits offered to passengers via several cabin elements, including natural light through aircraft windows, Circadian lighting systems, fresh air in the cabin and low cabin altitude.

Please rate the importance of a cabin environment that promotes health in aircraft purchase decision-making on a scale of 1 to 5, where 5 = very important and 1 = not at all important."



Source: JETNET iQ

* For aircraft size category definitions, please refer to the Appendix

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 conferences providing unique data, insights and networking opportunities; and
- **JETNET iQ Consulting** 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 8 different levels**. JETNET iQ is a partnership between JETNET LLC of Utica, New York and Rolland Vincent Associates, LLC, of Plano, Texas.

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.

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Appendix

Data sources:

GDP growth forecasts, Unemployment Rate, $U.S. Exchange Rate (2020): The Economist – November 2, 2020
https://www.economist.com/economic-and-financial-indicators/2020/11/02/economic-data-commodities-and-markets
Stock Markets:
Dow Jones Industrial Average: http://ca.spindices.com/indices/equity/dow-jones-industrial-average
London Stock Exchange (FTSE 100) : https://www.londonstockexchange.com/indices/ftse-100
Unemployment: Bureau of Labor Statistics (U.S.); https://www.dol.gov/ui/data.pdf; "SA" = seasonally adjusted
Consumer Confidence: University of Michigan Survey of Consumers (U.S.); http://www.sca.isr.umich.edu
European Commission (Euro Area) – Economic Sentiment Indicator; https://ec.europa.eu/info/sites/info/files/full_bcs_2020_09_en.pdf
Business Confidence: US ISM Manufacturing PMI (U.S.)
https://www.instituteforsupplymanagement.org/about/MediaRoom/newsreleasedetail.cfm?ItemNumber=31182
Eurostat (Euro Area); https://ec.europa.eu/eurostat/databrowser/view/teibs010/default/table?lang=en
https://ec.europa.eu/eurostat/databrowser/view/ei_bsci_m_r2/default/table?lang=en
Business aircraft fleet, deliveries, transactions, days-on-market (DOM), utilization: JETNET; DOM refers to aircraft that were sold / leased
Survey results: JETNET iQ Global Business Aviation Surveys (Quarterly)
Photo credits: Page 1 LHS: QTA; Page 1, RHS: Gulfstream Aerospace; Page 3, 4: Rolls-Royce plc; all other photos: Rolland Vincent Associates, LLC / JETNET iQ

Definitions and Abbreviations:

For the purposes of these Reports, business aircraft may be classified into 4 primary categories, reflecting propulsion, price, performance, and weight class differences. These categories are: Turboprops (Single-Engine Turboprops - SETP and Multi-Engine Turboprops - METP), Small Jets (Personal Jets, Very Light Jets, Light Jets), Medium Jets (Super-Light Jet, Mid-Size Jet, Super Mid-Size Jet), and Large Jets (Large Jet, Large Long-Range Jet, Large Ultra Long-Range Jet, Airline Business Jet). The "Personal Jet" category includes single-engine turbofan-powered models, today represented by the Cirrus Vision Jet.

B&GA: Business & General Aviation
EIS: Entry in Service
FBO: Fixed Base Operator (private air terminal)
GAMA: General Aviation Manufacturers Association
GDP: Gross Domestic Product
FTSE: Financial Times Stock Exchange (London)
MTOW: Maximum Takeoff Weight
NGO: Non-Governmental Organization
OEM: Original Equipment Manufacturer
QOQ: Quarter over Quarter
QTD: Quarter to Date
S&P: Standard & Poor's
TTM: Trailing Twelve Months
YOY: Year over Year
YTD: Year to Date

Disclaimer: