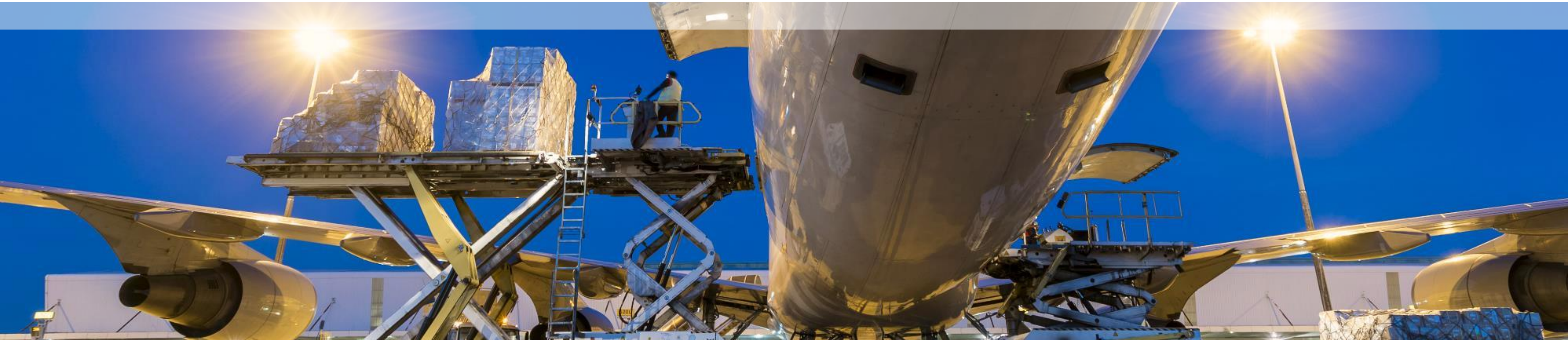
Boeing Market Spotlight for Cargo Facts Symposium 2022

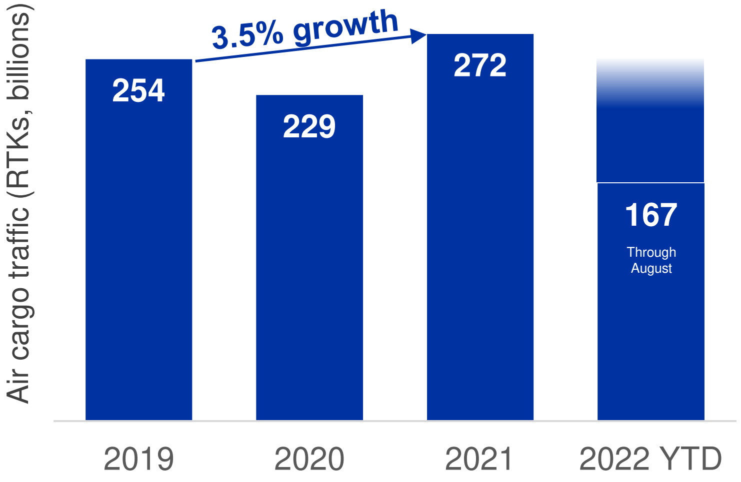
Tom Crabtree | Market Analysis
Boeing Commercial Airplanes

21 October 2022

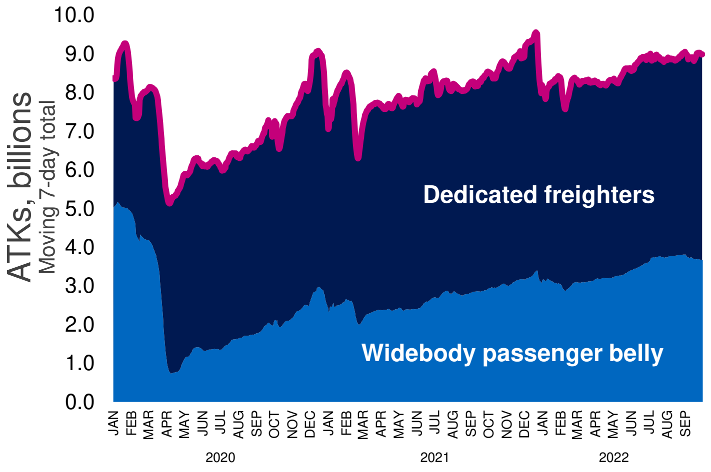
Pandemic disruptions boosting near-term freighter demand



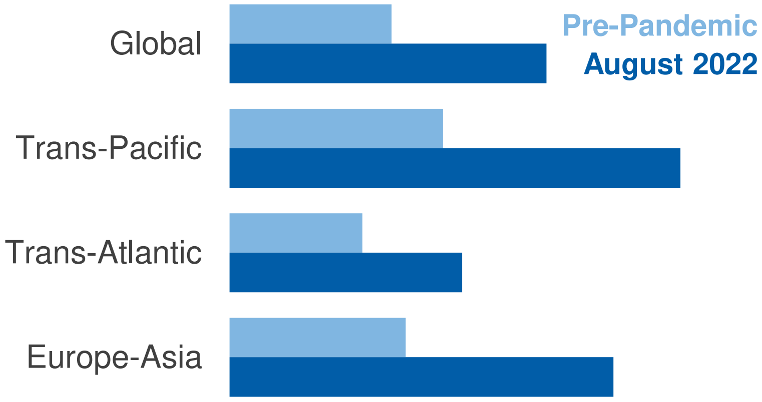
2021 traffic historically high, 2022 traffic lower



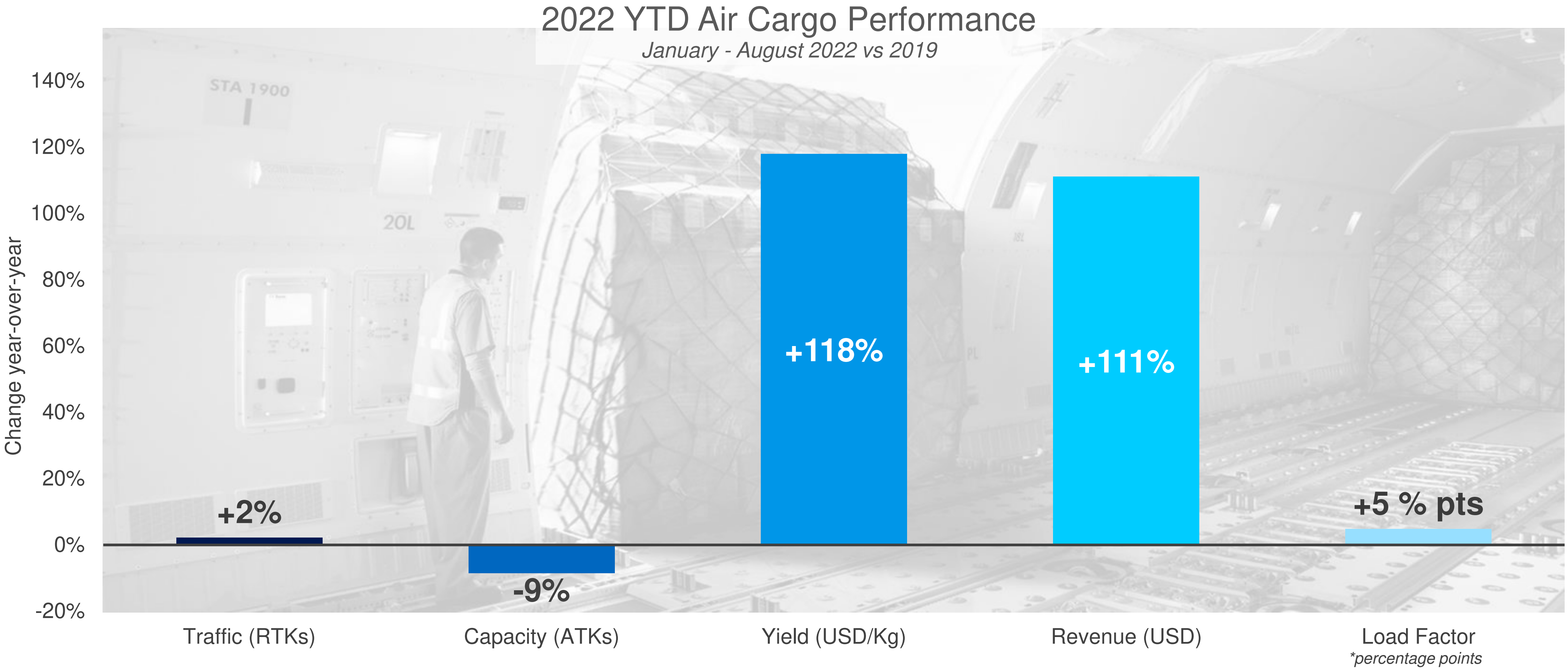
Belly capacity (ATKs) still down by ~30%



Pricing double

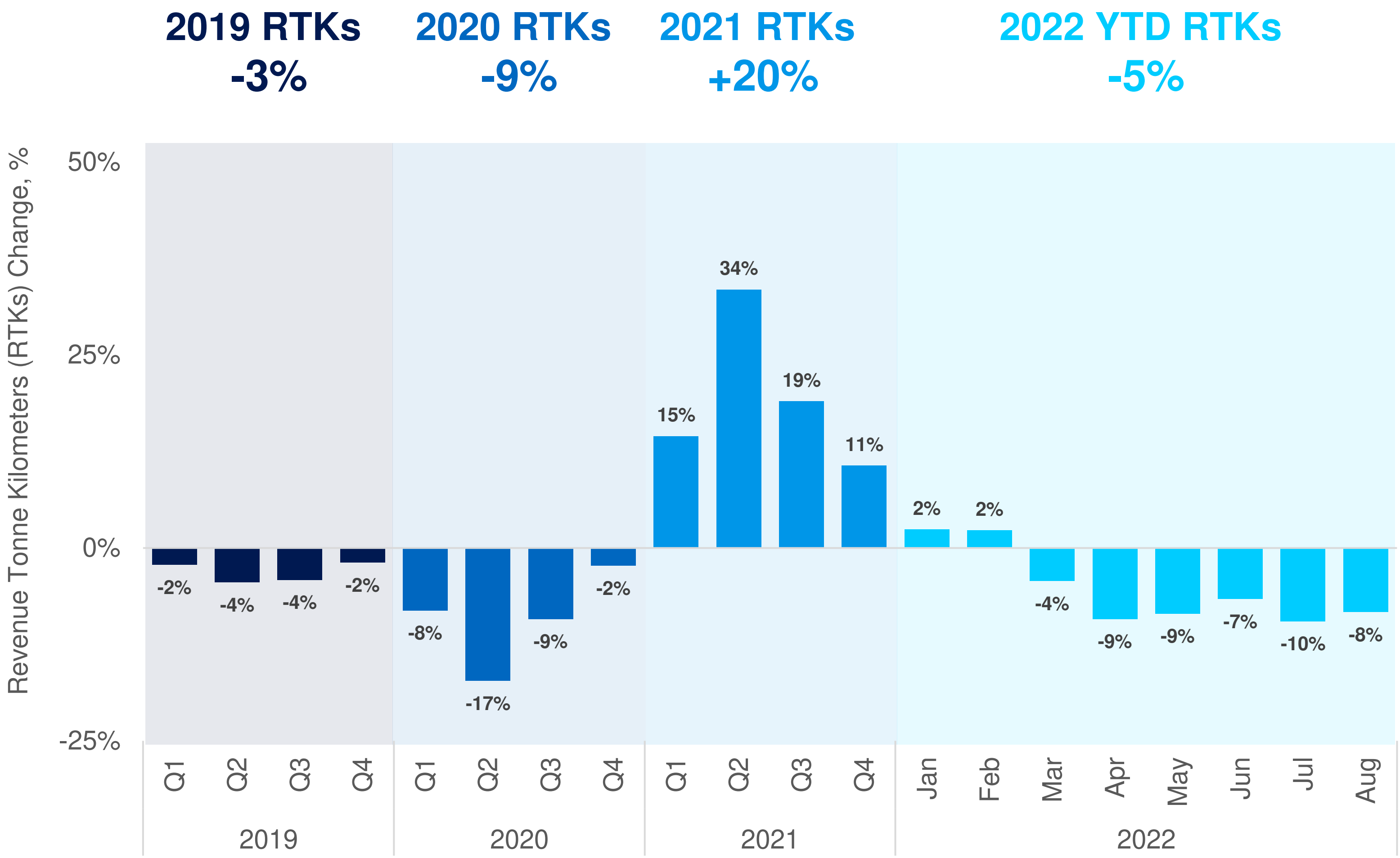


Air cargo capacity below pre-pandemic levels, yields and revenues remain elevated



SOURCES: IATA Monthly Tracker, IATA CargoIS Data and Boeing Analysis

Headwinds slowing air cargo traffic since 1Q 2022



SOURCE: IATA Monthly Statistics

2019

Global trade and production weakness

2020

Global economic downturn due to COVID-19

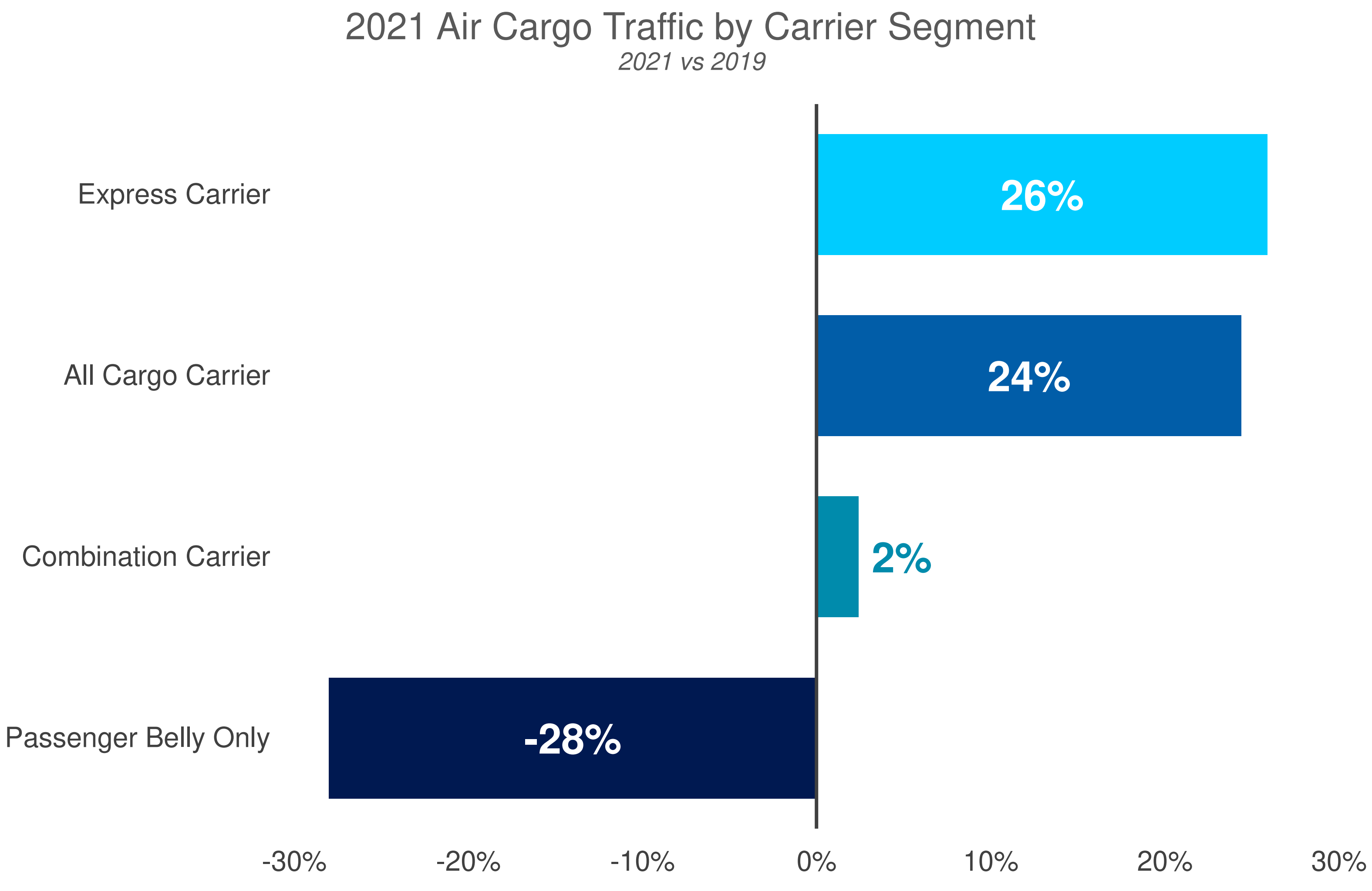
2021

Snap back in demand paired with global supply chain disruption boosted air cargo

2022

China COVID restrictions, war in Ukraine and threat of a global recession affecting both cargo traffic demand and capacity

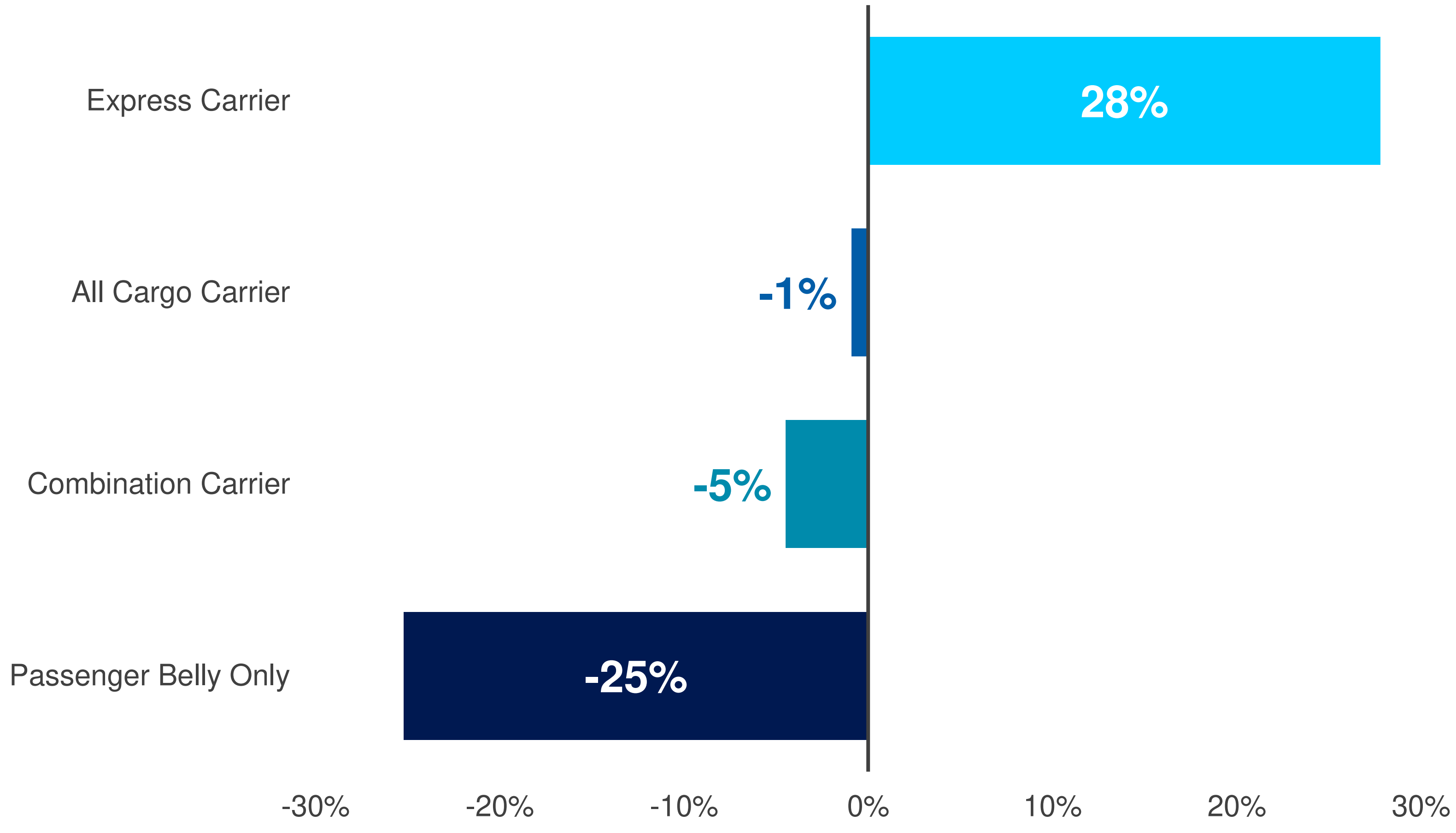
Freighter operators were beneficiaries of 2021 traffic rebound



SOURCES: IATA Monthly Statistics and Boeing analysis (international only; ACMI carriers and domestic markets are NOT included)

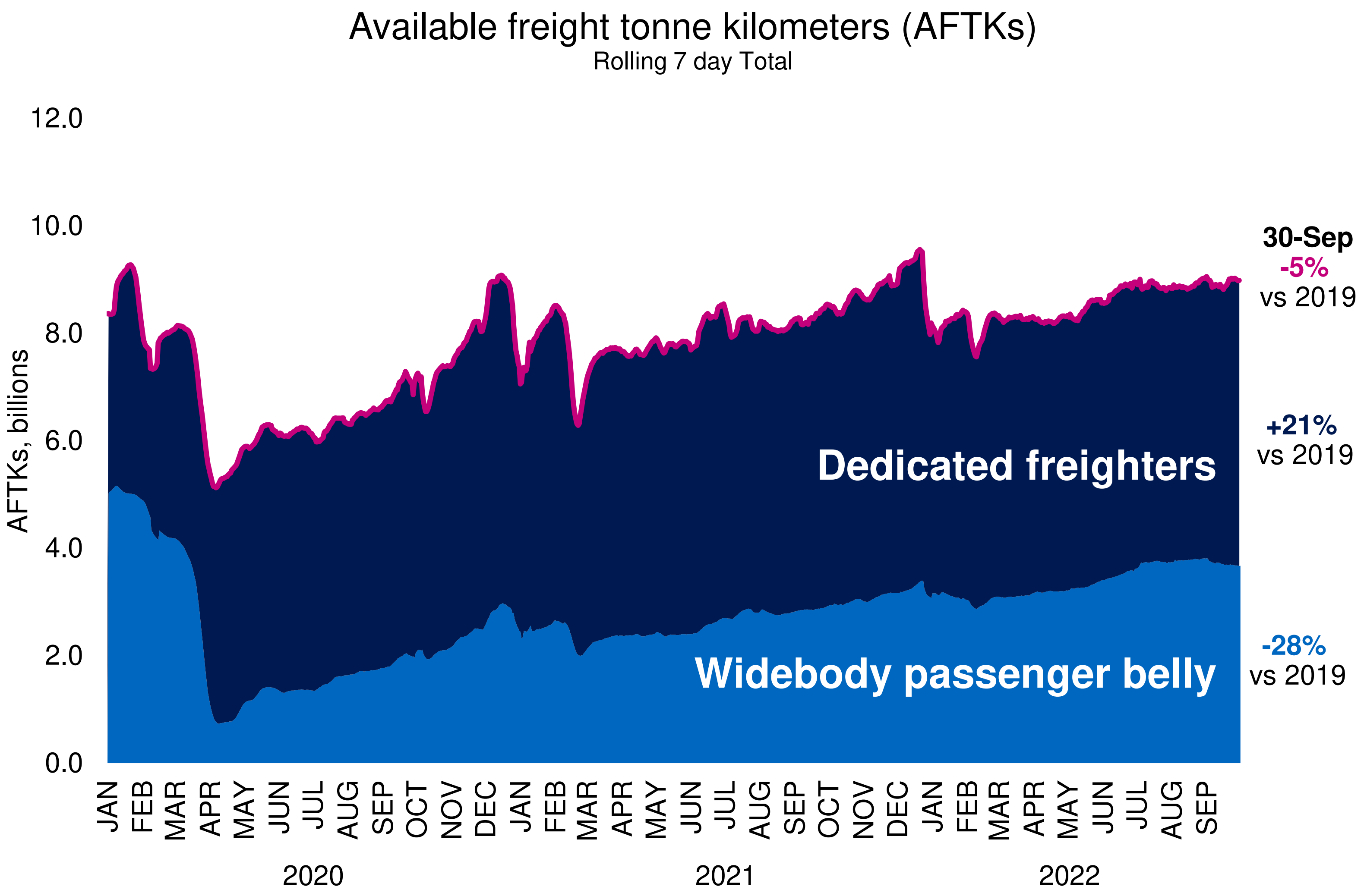
Demand slow down starting to impact growth of the general cargo carriers

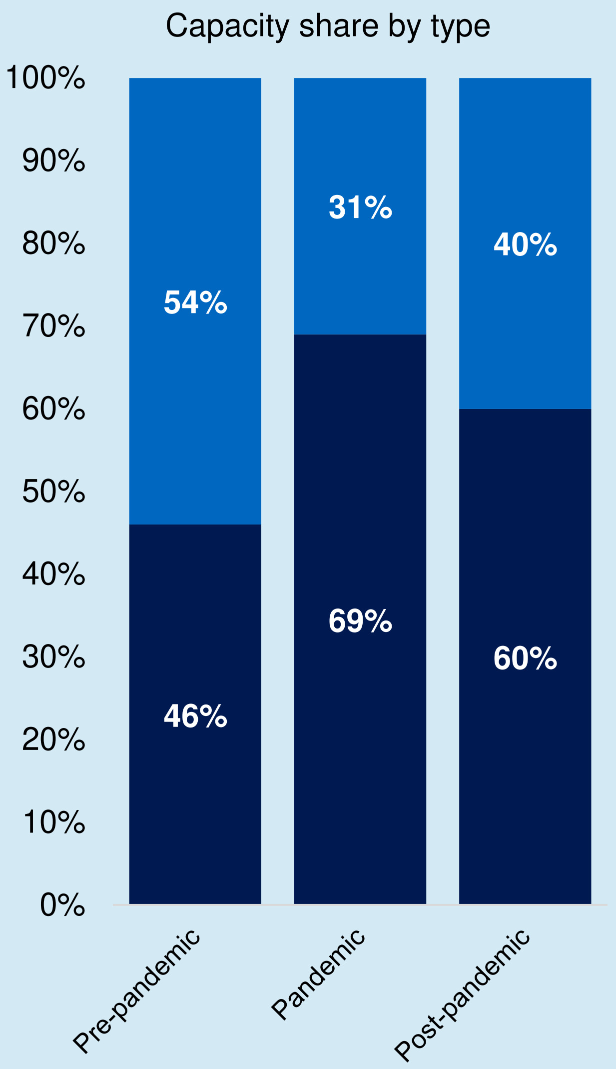
2022 YTD Air Cargo Traffic by Carrier Segment
January-August vs 2019



SOURCES: IATA Monthly Statistics and Boeing analysis (international only; ACMI carriers and domestic markets are NOT included)

Cargo capacity recovery cools as the Northern Hemisphere summer comes to an end





SOURCES: BR&T-E ADAPT/FlightRadar24 **(pre-pandemic = 4/1/2019 to 2/28/2020, pandemic=3/1/2020 to 2/28/2022, post-pandemic = 3/1/2022 to present)**

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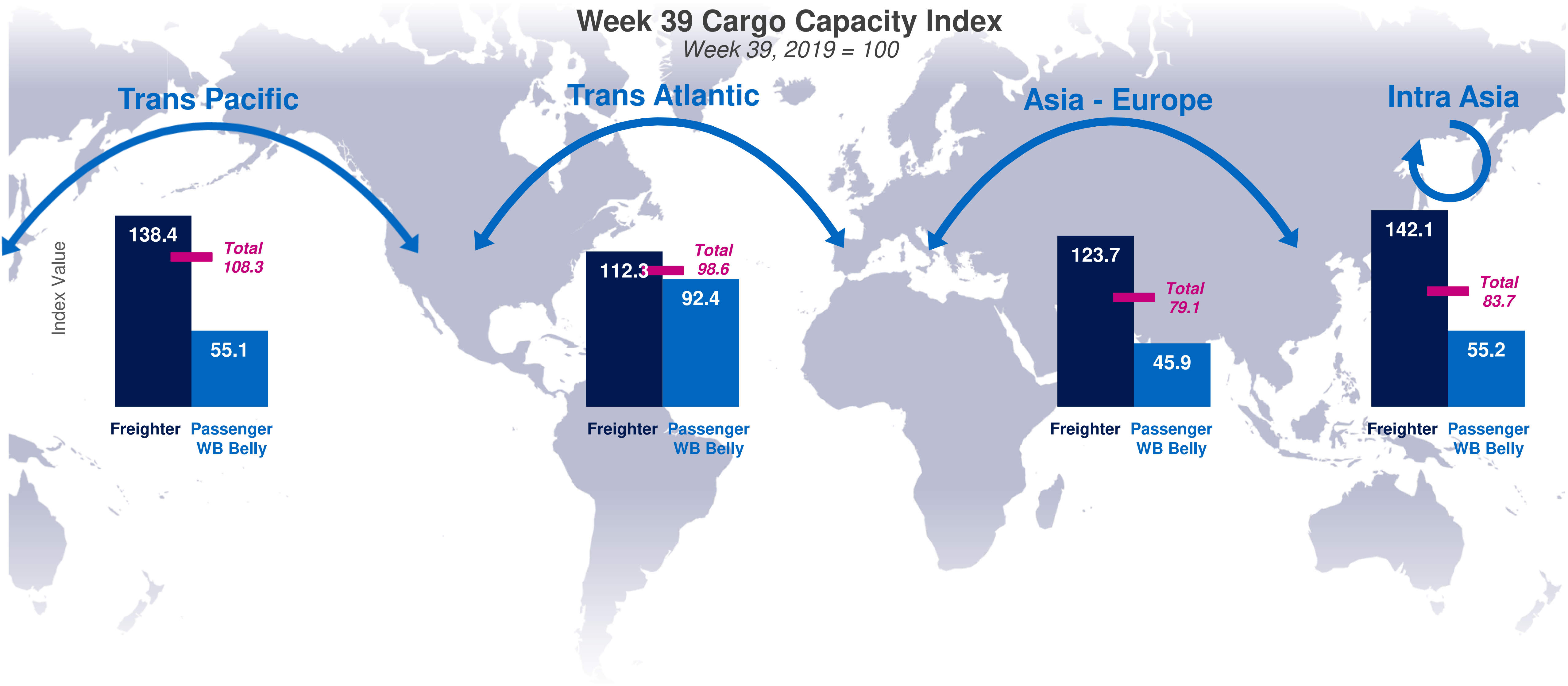
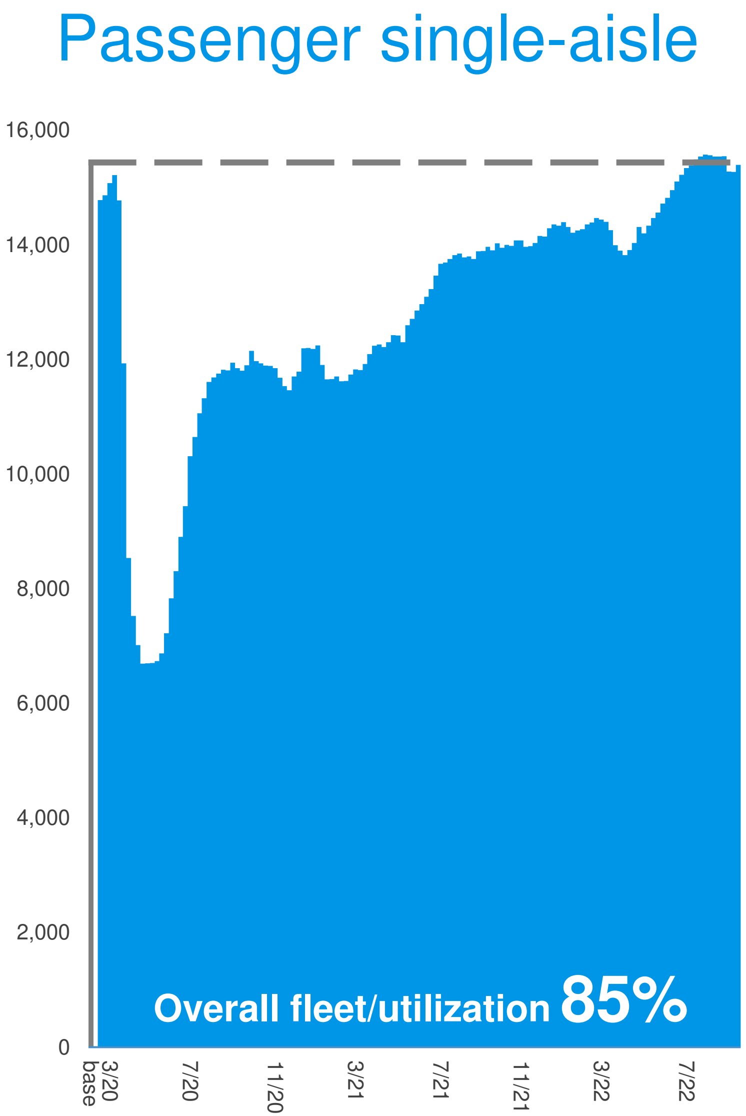
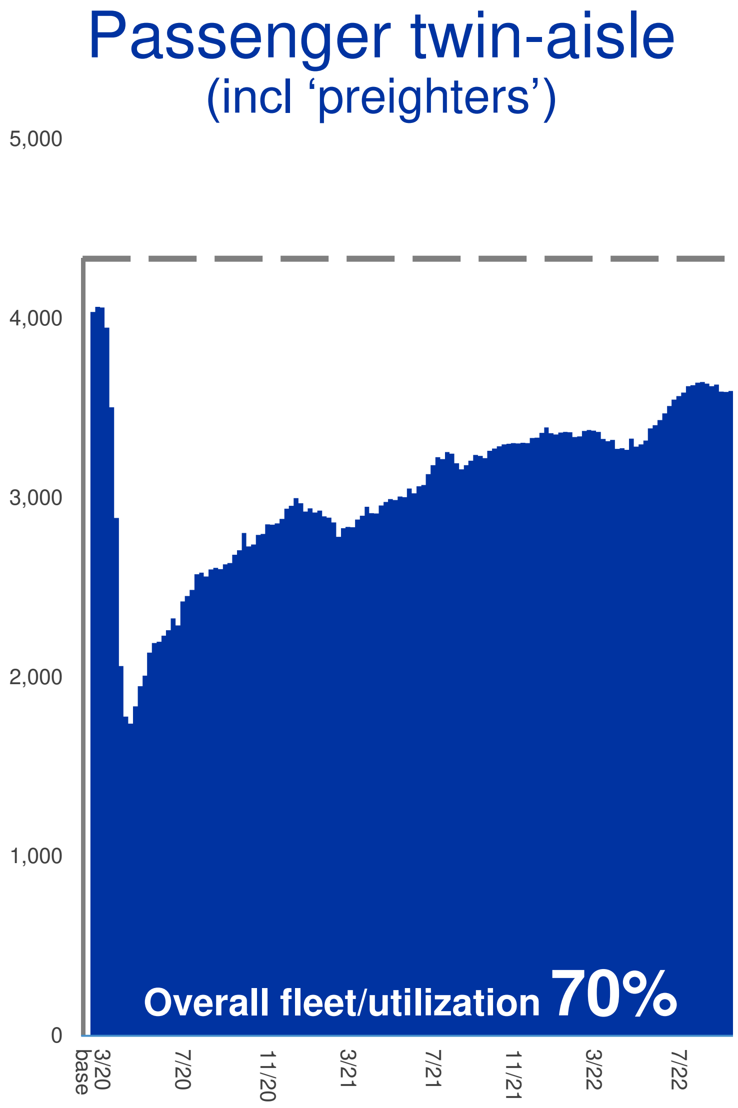
Trans Atlantic passenger belly capacity nearing pre-pandemic levels

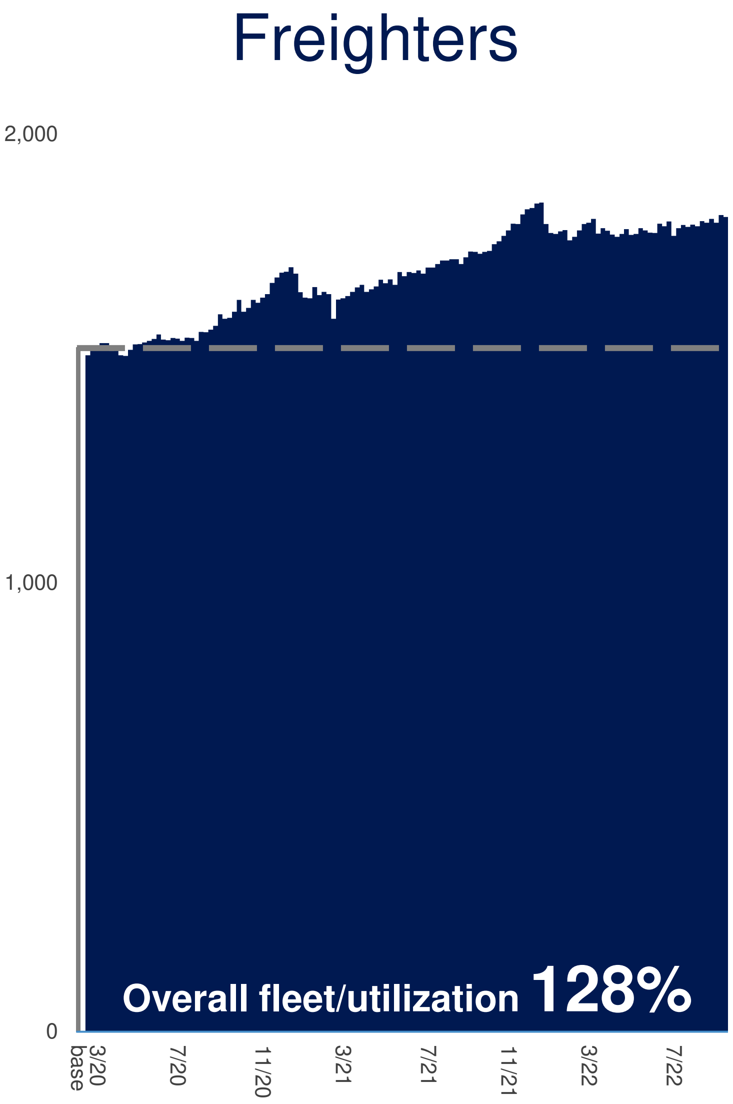


SOURCES: BR&T-E ADAPT/FlightRadar24

Freighter fleet and utilization have increased to fill void left by reduced passenger services



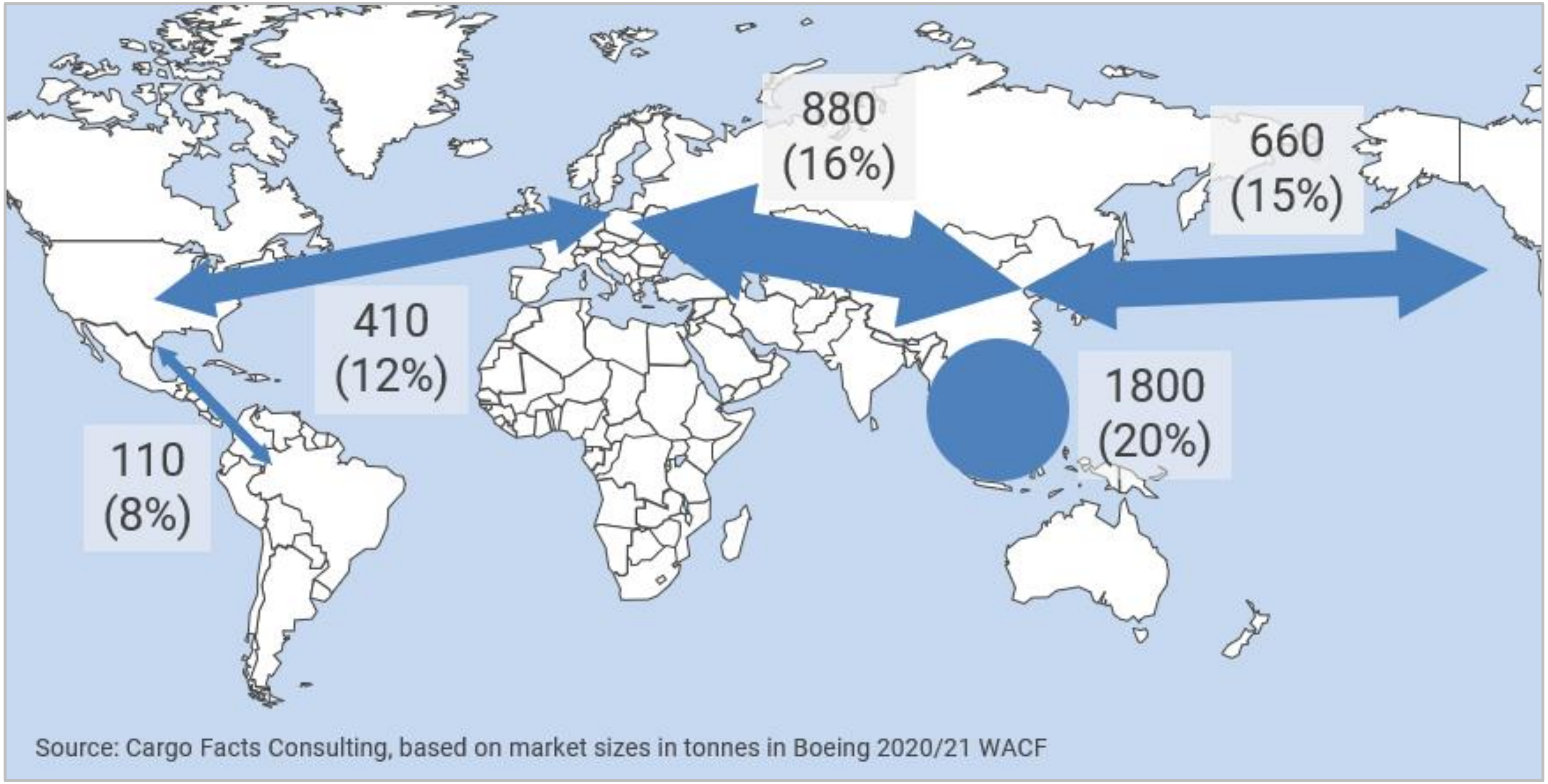




SOURCES: FlightRadar24 for jets only, BR&T Europe, Boeing, Data through Week 39 (9/18 - 9/24), normalized with 2019 schedule and FR24 operations

About 18 percent of world air cargo traffic is comprised of e-commerce

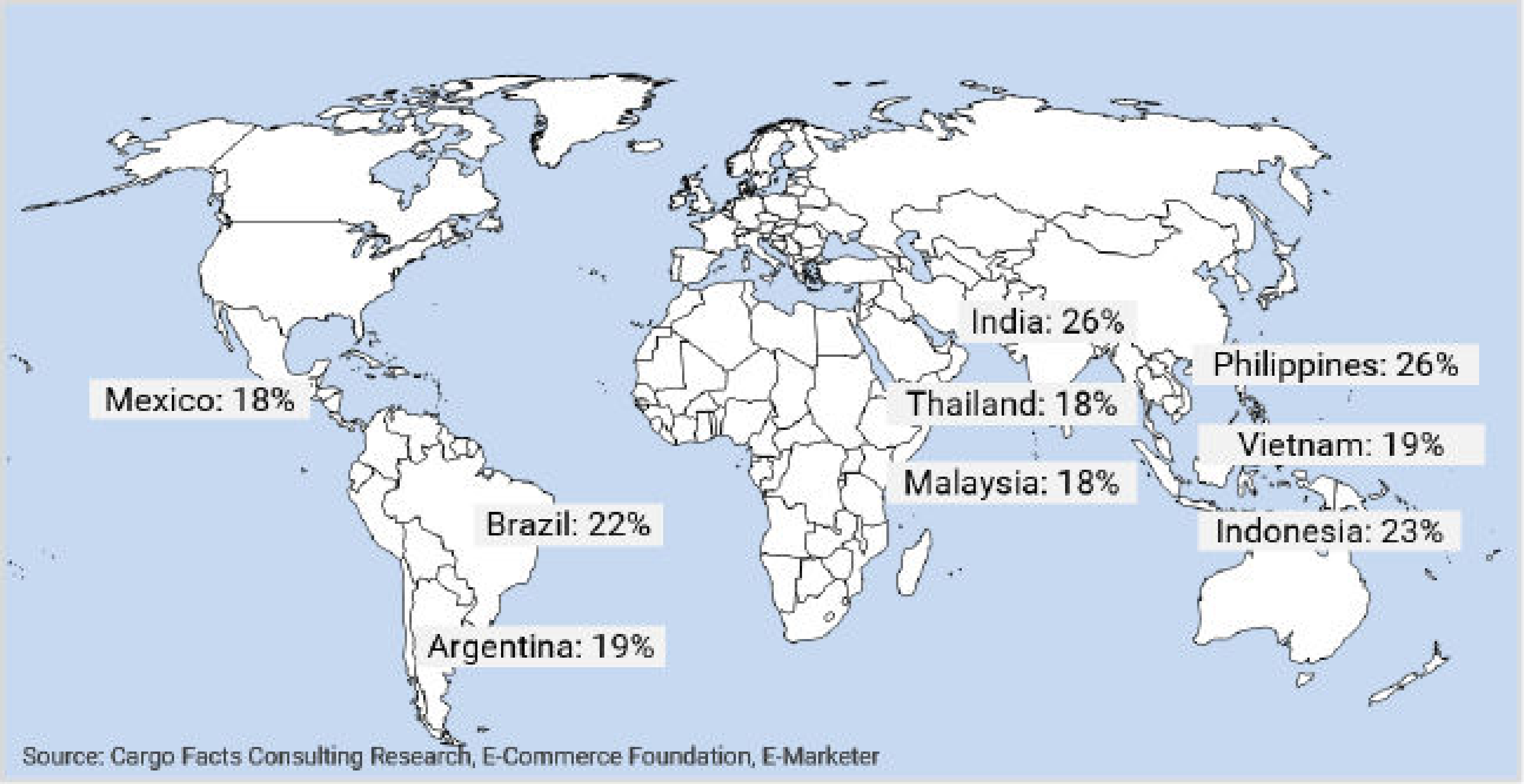
Thousands of metric tons flown (share of the overall region-to-region market flow)



SOURCE: Cargo Facts Consulting

Considerable e-commerce growth potential remains untapped

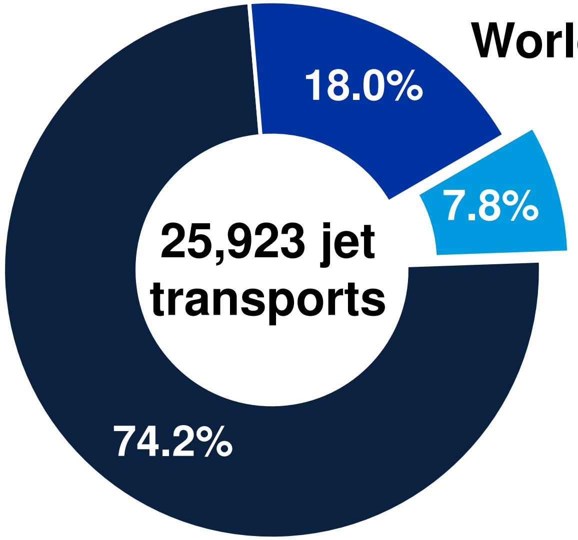
Largest e-commerce revenue growth markets 2022



SOURCE: Cargo Facts Consulting

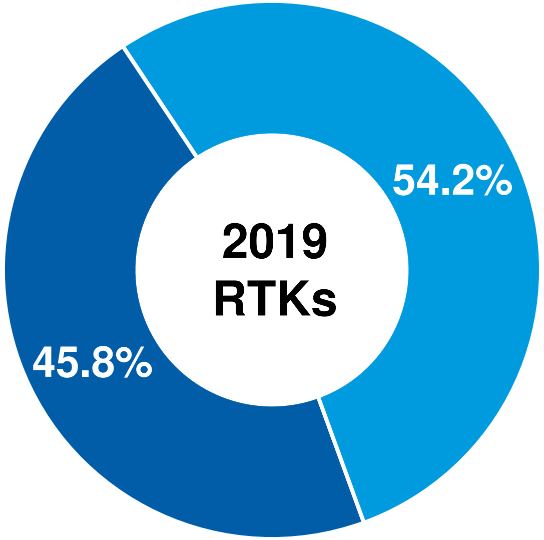
Freighters comprise 7.8% of the world commercial jet transport fleet

World fleet, year-end 2019



- Single-aisle passenger jets
- Widebody passenger jets
- Freighters

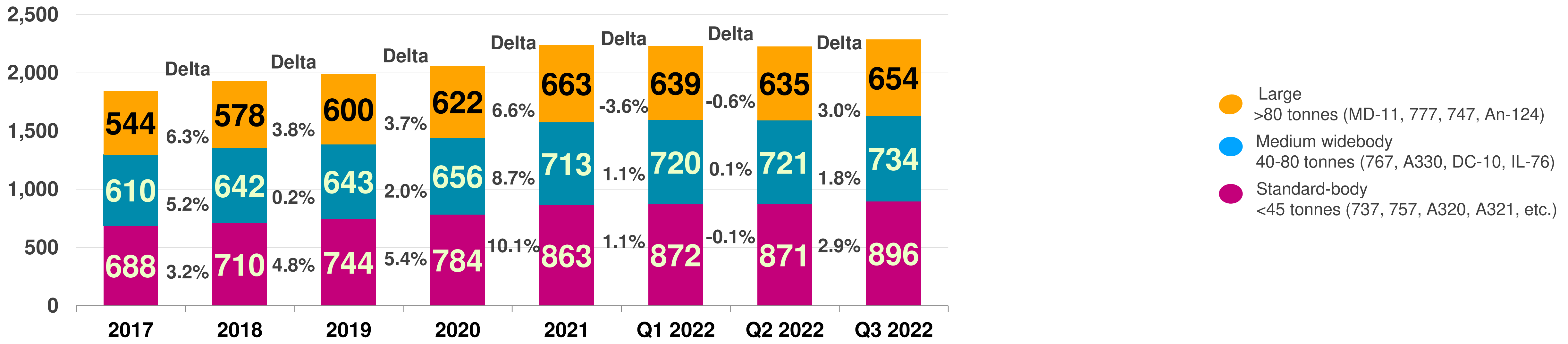
Traffic split, year 2019



- Passenger belly
- Freighters

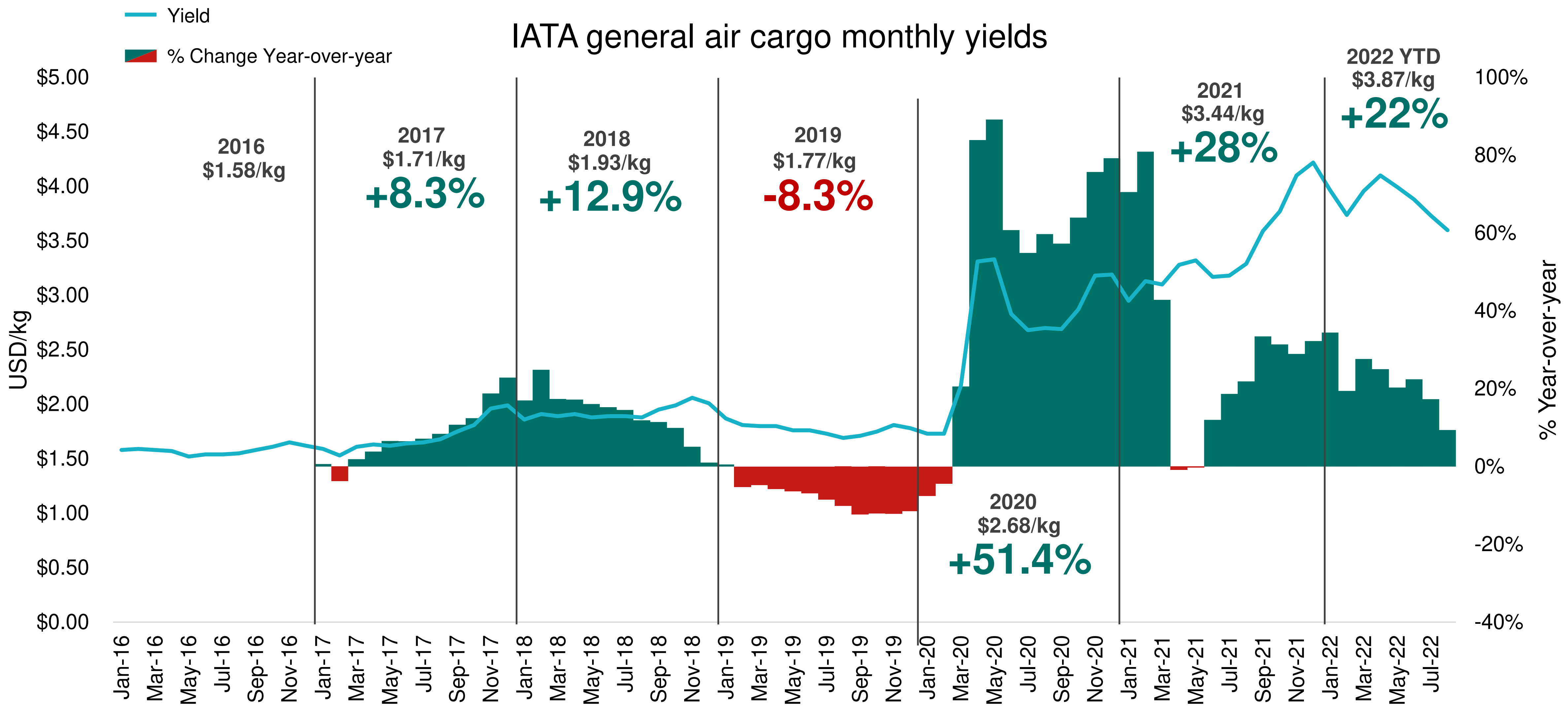
Sources: Cirium, Boeing CMO, WACF

Standard body freighters have led unit growth since 2017



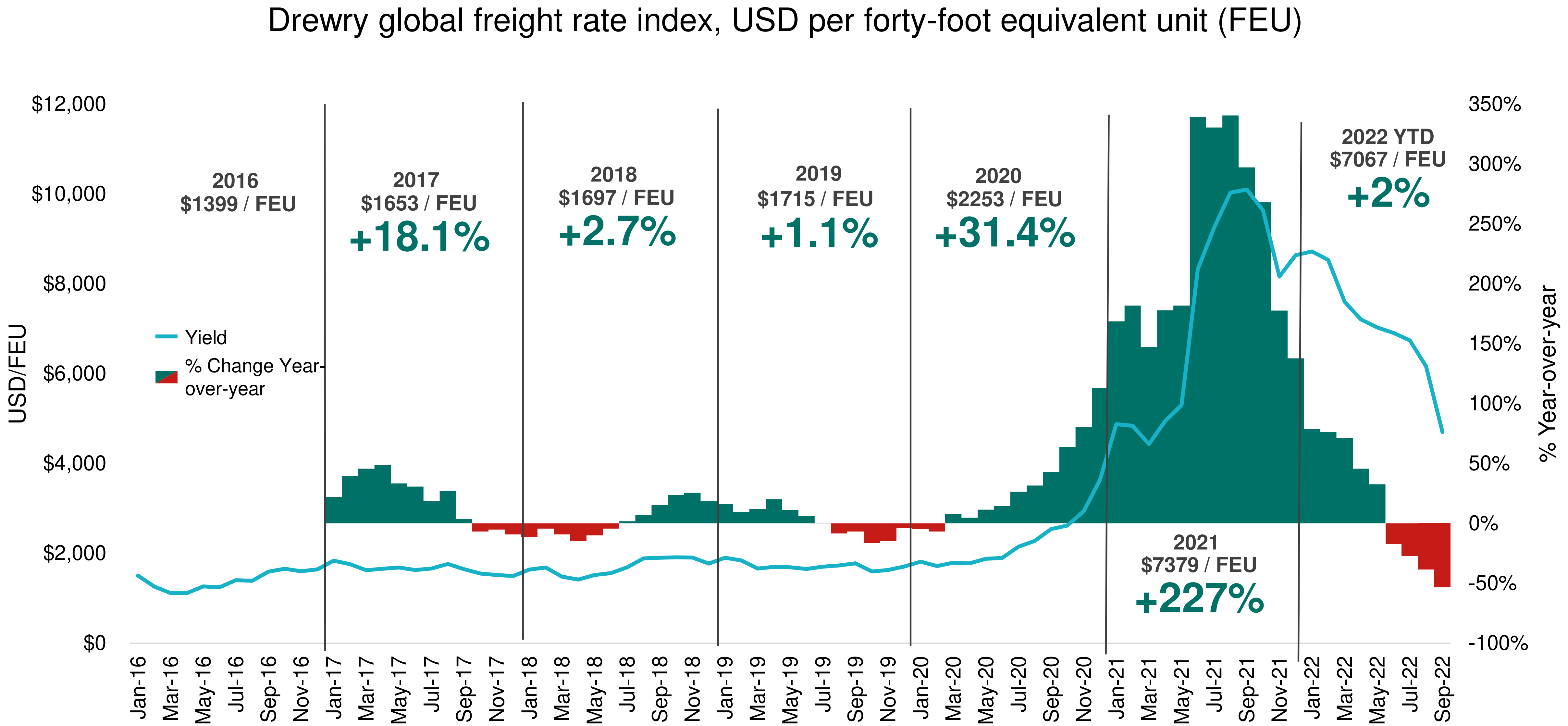
Source: Cirium Fleets

World air cargo yields have been moderating since May 2022



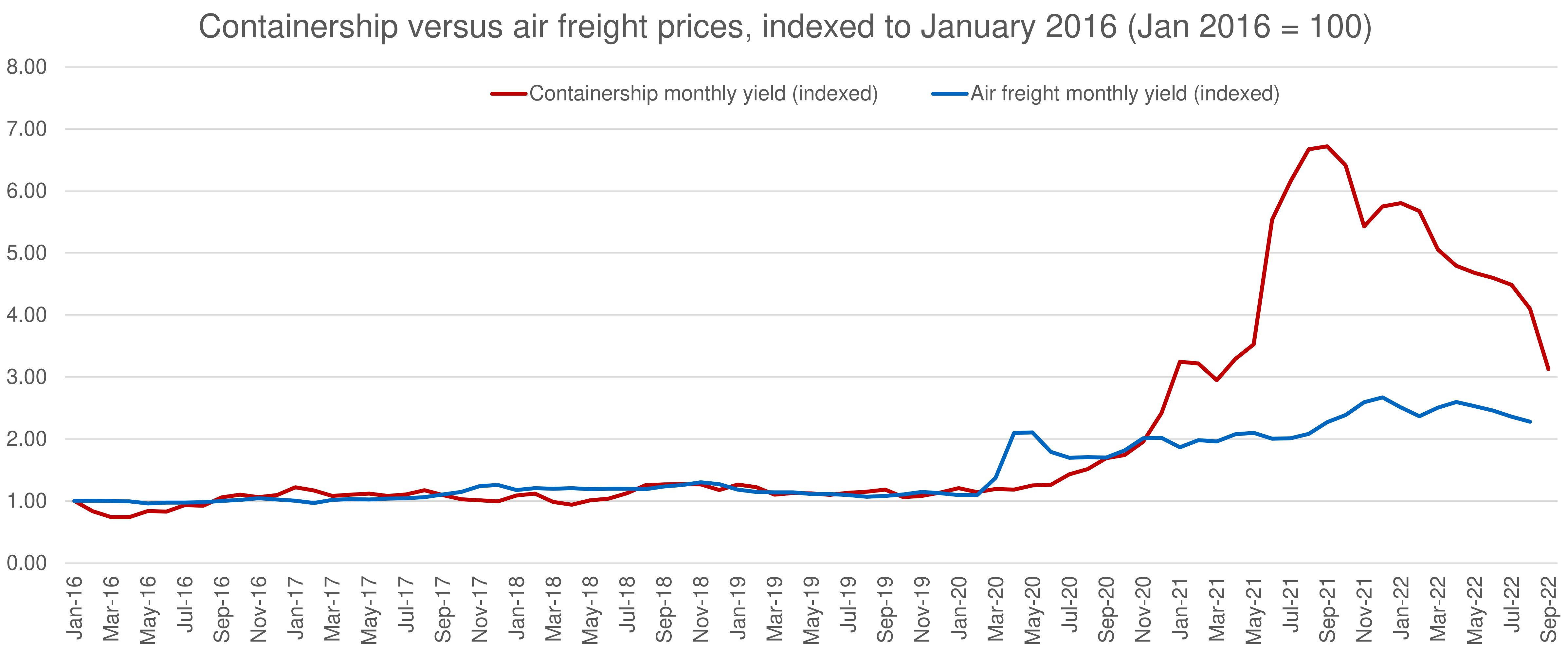
Source: IATA CargoIS updated October 2022

Containership rates surge began in latter 2020, but have now fallen by ~50% since February 2022



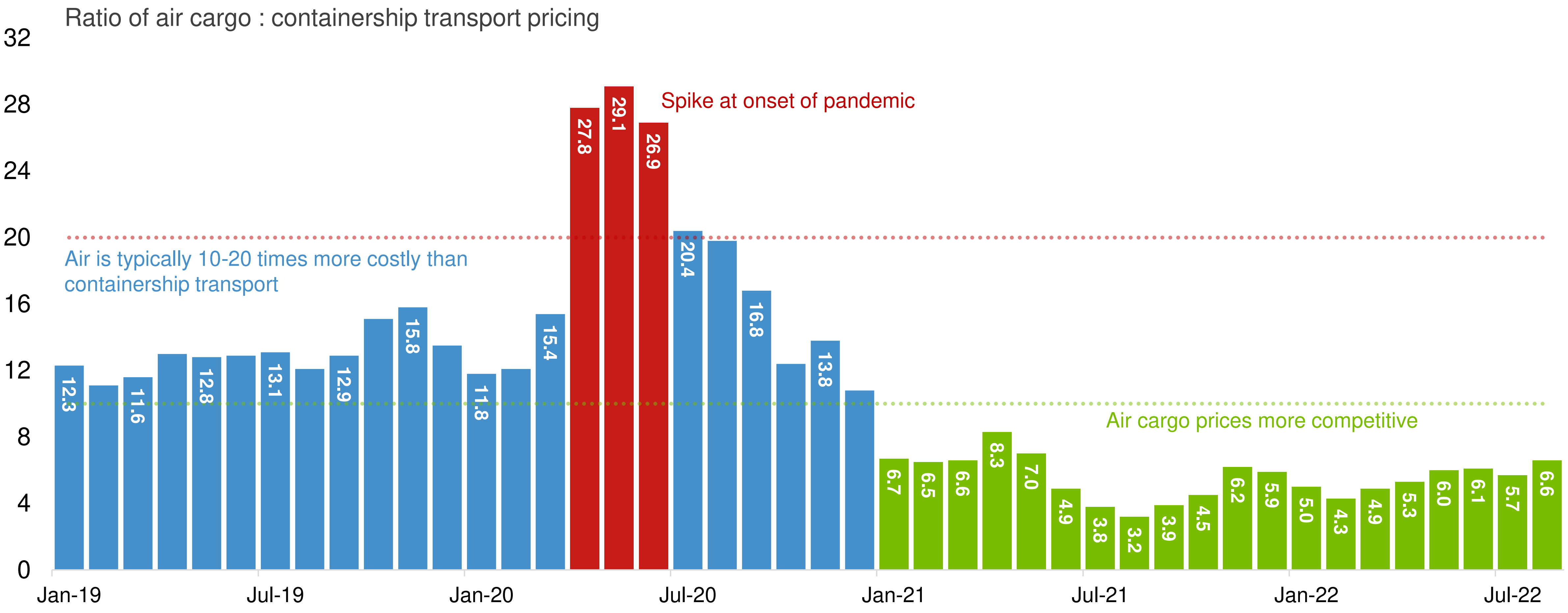
Source: Drewry Sea & Air Freight Shipper Insight, various issues

Air freight pricing has been slower to shed COVID gains than containership prices



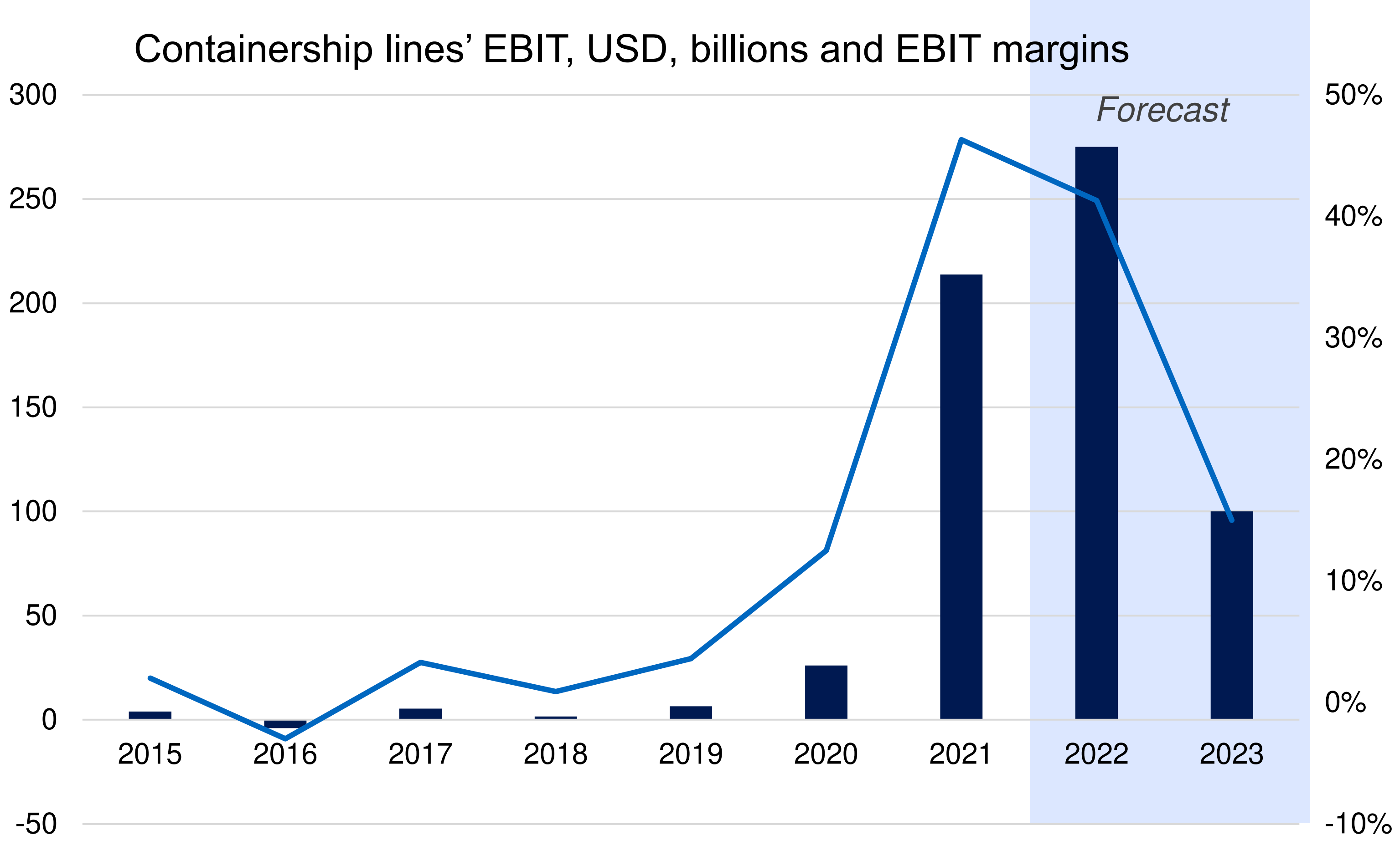
Source: IATA CargoIS and Drewry Sea & Air Freight Shipper Insight

Relative value of air cargo service more competitive than ever



Note: Comparison of East-West Air Freight Price Index and Drewry's East/West Container Freight Rate Index (converted into cost per kg basis: basis 4,500kg per teu).
Source: Drewry Maritime Research

Despite falling box rates, containership lines will remain more profitable than ever into 2023



- The containership industry achieved a collective estimated record profit of $214 billion and 46% EBIT margin in 2021, exceeding the combined profits of the past 20 years by ~2X.
- Ongoing supply chain bottlenecks have kept freight rates well above historic levels .
- However, China's "zero-COVID" policy have dragged down manufacturing and container trade volumes.
- The Russia-Ukraine war and inflation have darkened both the economic outlook and this forecast.

SOURCE: Drewry (www,drewry.co.uk) presentations, 05 August 2021, 19 October 2021, 26 April 2022, and 20 October 2022

Long-term drivers of air cargo growth

Evolving supply chain strategies

Time-sensitive and high value cargo

E-commerce network growth

Value relative to container shipping

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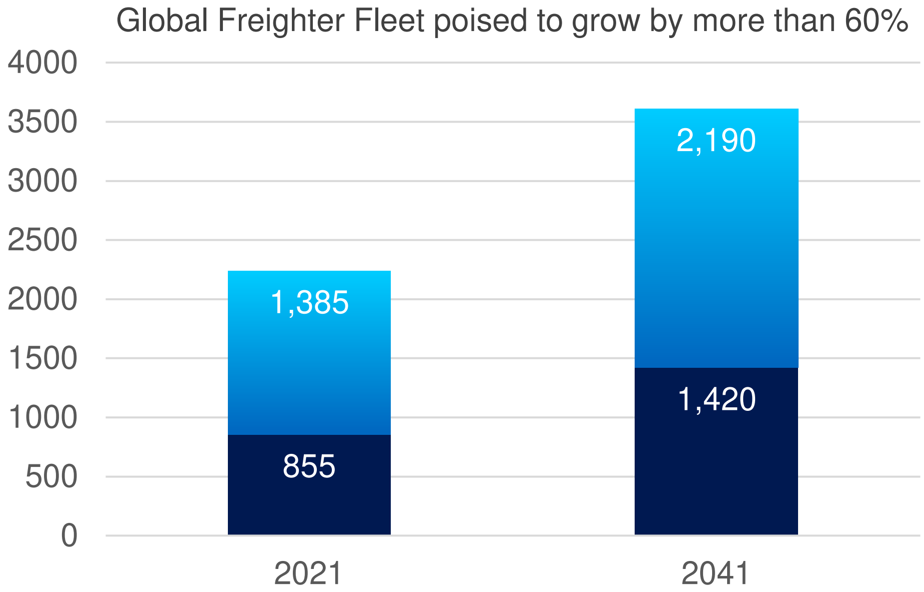
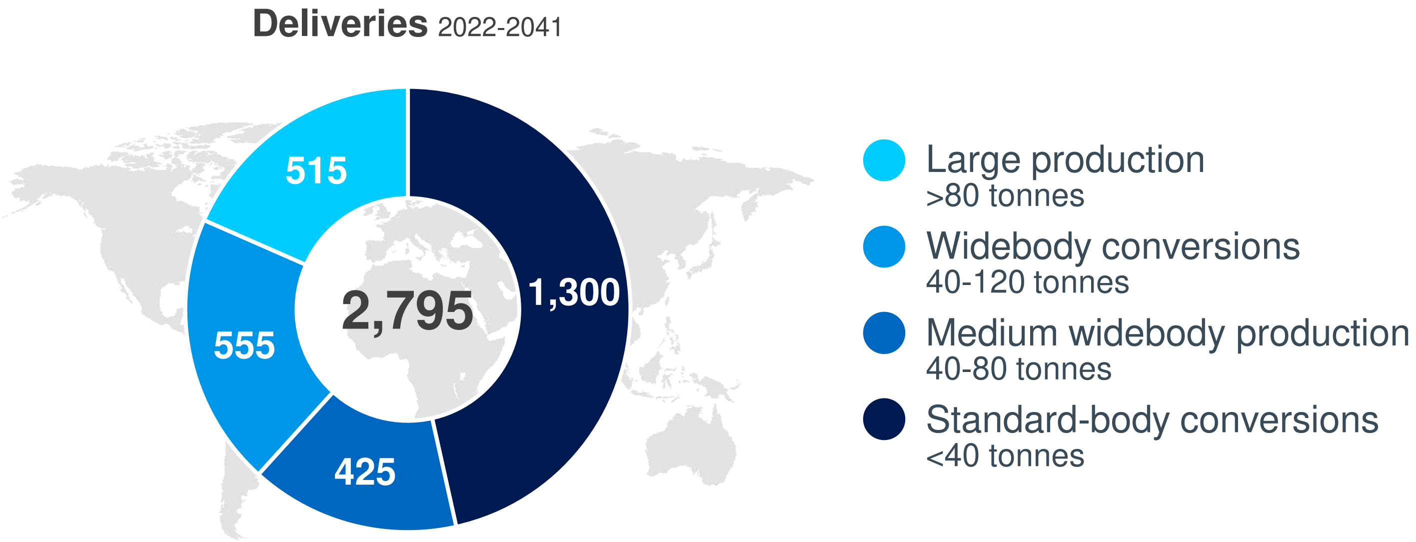
Levers for sustainable aviation

Fleet Renewal	**20-25%** more efficient aircraft
Operational Efficiency	Up to **10%** in fuel savings
Renewable Energy	**100% SAF** before 2030
Advanced Technology	**75%** sustainable R&D spending

World air cargo market requires 2,795 freighters over the next 20 years

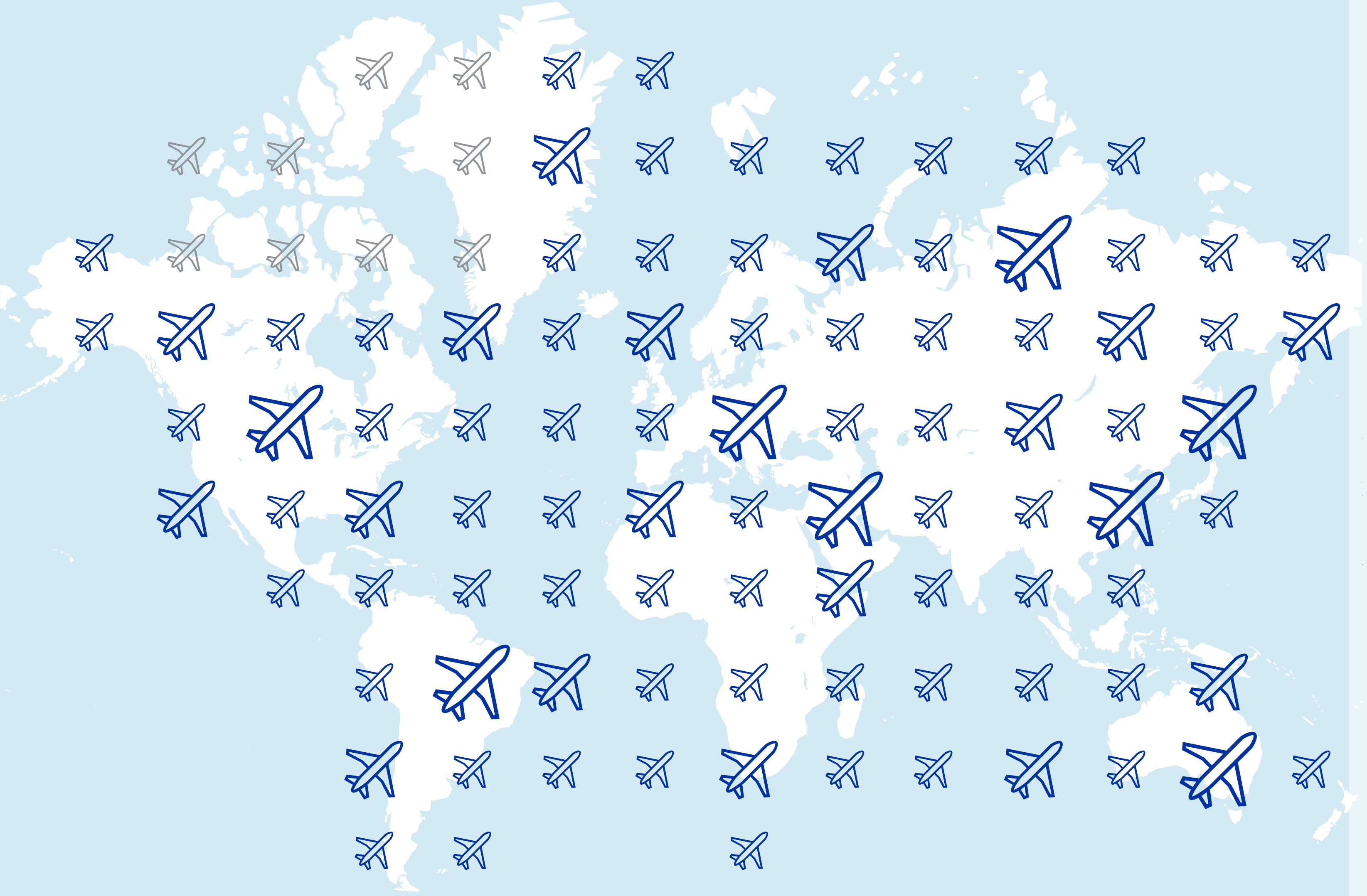
940 new and 1,855 converted freighters

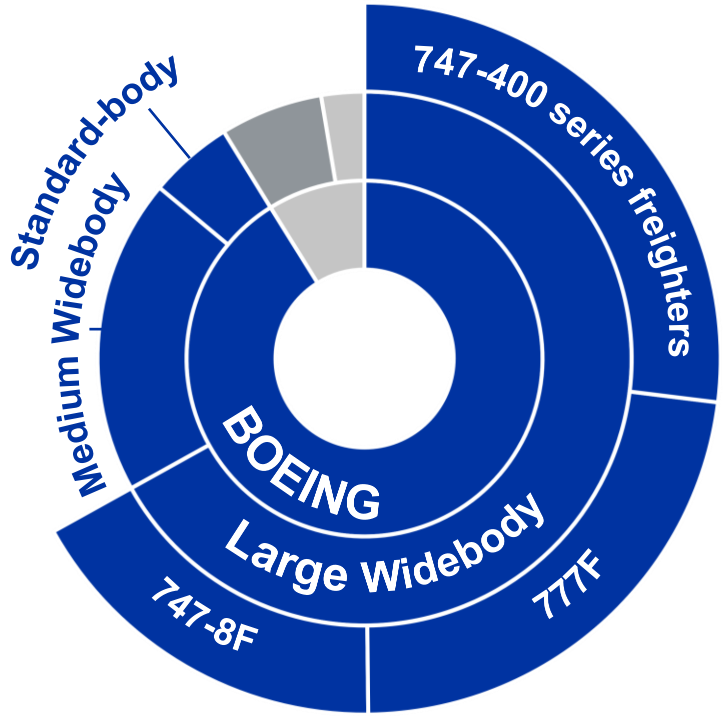




Source: Boeing Commercial Market Outlook (July 2022)

Boeing has a long history in air cargo





>90%

of air cargo freighter
CAPACITY
is on Boeing aircraft

SOURCES: Cirium, Boeing analysis

Boeing offers a complete family of freighters

Structural payload capability, tonnes [1,000 lb.]

737-800BCF and 767-300BCF shown with optional winglets
Maximum structural payload

Strong market demand for Boeing Freighters

747-8F	777-8F	777F	767-300F	767-300BCF	737-800BCF
107 Orders	**55** Orders	**314** Orders	**278** Orders	**105+** Orders*	**250+** Orders*

Orders as of September 30, 2022
*737-800BCF and 767-300BCF include firm orders and commitments

Things to remember

- Both air cargo traffic and capacity facing headwinds; revenues remain elevated
- Air cargo belly capacity slowly returning to normalcy; trans-Atlantic close to pre-COVID levels
- COVID-19-yield freight transport premium receding
- Air cargo still good value relative to containership pricing and service
- Sustained dedicated freighter demand drivers

