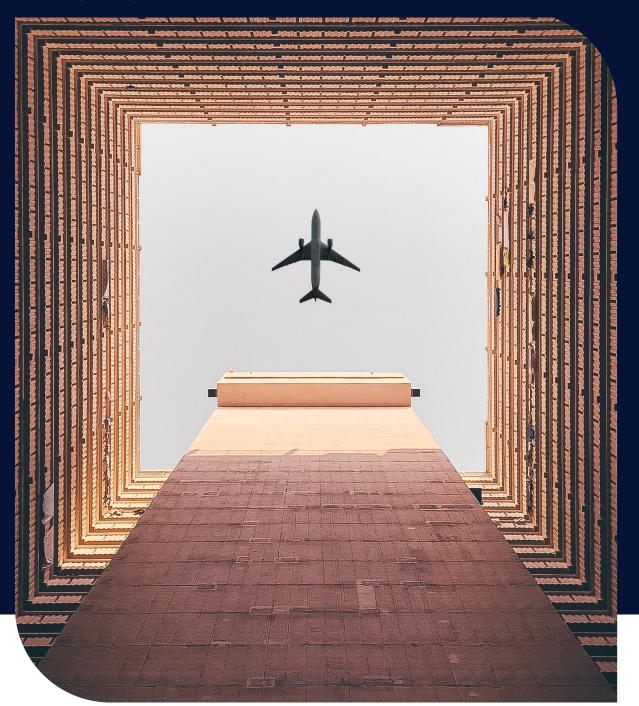


Passenger Aviation Demand Forecast 2022 – 2024

H2 2022 Report / September 2022



About Teneo

Teneo is the global CEO advisory firm.

We partner with our clients globally to do great things for a better future. Drawing upon our global team and expansive network of senior advisors, we provide advisory services across our five business segments on a stand-alone or fully integrated basis to help our clients solve complex business challenges. Our clients include a significant number of the Fortune 100 and FTSE 100, as well as other corporations, financial institutions and organisations.

Our full range of advisory services includes strategic communications, investor relations, financial transactions and restructuring, management consulting, physical and cyber risk, organisational design, board and executive search, geopolitics and government affairs, corporate governance, ESG and DE&I. The firm has more than 1,500 employees located in 41 offices around the world.

Teneo has extensive experience in the global transportation industry, including rail, bus, road and, in particular, aviation. Over the past decade, Teneo has worked directly with the world's largest airlines and airports, their lenders and central government to support strategic and commercial decisions across a range of topics. Since the Covid-19 outbreak in Q1 of 2020, Teneo has taken a leading role across multiple industries in forecasting consumer and passenger demand for products, services and transportation in the wake of political, economic and behavioural changes brought about by the pandemic.

Specifically, Teneo forecasts aviation demand recovery at a granular level across a range of scenarios. To facilitate this work, we have developed a Central Forecasting Model, which contains detailed aviation forecasts for every major country and airline in the world, taking into account a range of factors and scenarios. This paper marks the second industry update on forecast aviation demand. This specific piece is presented from a UK perspective; however, regional (and airline-specific) forecasts are available upon request.

Teneo's broader work in the transportation and infrastructure sectors includes commercial and financial advisory to rail and bus-owning groups; demand analysis in rail, bus and road; direct work with central government on the future of transportation post-Covid; and transaction support in the broader transport and infrastructure space.

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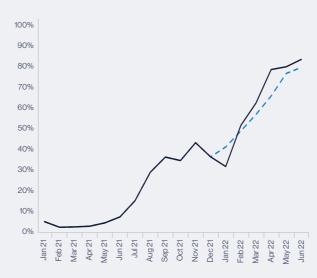
Previous Forecast Analysis

Here we will compare the forecast from our Q1 2022 report with what actually happened

Forecast vs. Actual Comparison: Europe & North America

Europe, Jan 2021 – Jun 2022¹

Passenger volume as a % of 2019



Kev

- Actuals --- Teneo forecast Q12022

North America, Jan 2021 – Jun 2022¹

Passenger volume as a % of 2019



Commentary

Overall, our forecast for European recovery by the end of H1 was fairly accurate; however, the profile of this recovery differed slightly, likely due to:

- Underestimating the impact of the Omicron Covid variant on January travel.
- We previously forecasted a quick return to growth for the European market in Q12022 as countries quickly reversed Omicron-related travel restrictions introduced in Q4 2021.
 - · However, the variant had a large impact on airline staffing in late December, with approximately 6,000 flights being cancelled over the holiday period, likely leading to reduced demand in January.
- This large Omicron impact in winter then led to pent-up demand over spring 2022, which led to a steeper recovery profile between February and April.

Commentary

- · We consistently overpredicted the recovery of the North American market vs. actual data in Q1 2022.
- Initially, the forecast underestimated the impact the Omicron variant would have on travel in Q1 2022, not from a demand perspective, but from a supply perspective, as flight cancellations increased due to Omicron-related staffing issues.
- From March to June 2022, the forecasted pace of recovery was consistent with the actual recovery; however, the overestimation in Q1 carried forward into Q2, leading to consistent overestimation across the period.

Forecast vs. Actual Comparison: Middle East & South Asia

Middle East, Jan 2021 - Jun 2022¹

Passenger volume as a % of 2019



- Actuals --- Teneo forecast Q12022

South Asia, Jan 2021 – Jun 2022¹

Passenger volume as a % of 2019



Commentary

- Our forecast for January travel demand was closely aligned to actuals in the Middle East, however it subsequently underestimated recovery levels.
- Once the impacts of Omicron has subsided, demand was stronger than expected throughout H1, partly due to the EXPO 2020 in Dubai, which has generally driven increased tourism throughout the region.

"The hospitality industry is recovering at a pace faster than expected in the Middle East with Expo 2020 serving as a strong catalyst for this."

Travel and Tour World²

Commentary

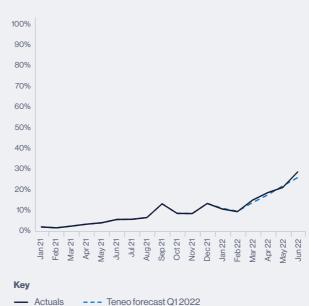
The South Asian market recovered stronger than expected throughout H12022, despite the fact that the reduction of demand due to the Omicron variant in Q1 was worse than expected.

- The key reason for this strong recovery was the reversal of a ban on international commercial flights in India on the 27th March (this was accompanied by dropping mandatory testing and quarantine).
- The timing and pace of this re-opening were somewhat unexpected (we had previously assumed that such a re-opening would not happen until October 2022), given that in January the Indian government was enforcing lockdown and curfews due to the Omicron variant.
 - We had previously assumed that such a re-opening would not happen until October 2022
- Significant pent-up demand in the market for both leisure and VFR travel likely led to the significant pace of recovery once international travel became fully feasible again in March.

Forecast vs Actual Comparison: East Asia

East Asia, Jan 2021 - Jun 2022¹

Passenger volume as a % of 2019





4

Commentary

Overall, our demand forecast for the East Asia region was closely aligned to actuals throughout H1 2022.

The slow recovery of travel demand to the region was driven by a number of countries beginning to ease travel restrictions as predicted.

- Vietnam and Thailand opened to tourists with restrictions in February and March respectively.
- In April, South Korea began allowing fully vaccinated international visitors without the need for quarantine.

It is likely that the pace of recovery will accelerate throughout 2022 as key markets in Japan and China begin to relax international travel restrictions.

Forecasting Methodology

Our Central Forecasting Model is a granular, bottom-up approach to aviation demand forecasting, which can be applied to any country, region or airline.

Using 2019 passenger volumes and revenue as the base, historic demand is segmented by factors such as country, purpose of travel, traveller age, traveller income, airline and airport to provide a segmented view of pre-pandemic demand. Various suppression factors are then applied to each segment in turn to account for the level of demand suppression expected in each segment for factors such as remaining Covid restrictions and its longterm impact, the wider geopolitical environment (e.g. war in Ukraine), air industry labour shortages, the macroeconomic environment (e.g. cost of living crisis) and changing attitudes toward the environment.

Over 100 different public and proprietary data sources - including economic forecasts, consumer surveys and people movement data - are included in the model to build a detailed view of suppression across each segment.

Through the combination of these suppression factors and the aggregation of the various segments, we are able to forecast demand at various levels and splits, including by airline, airport, country, region, income, age or travel purpose.

After central forecast has been established, key assumptions can be flexed to account for and model a range of scenarios. This includes further regional Covid-19 variants, fluctuating levels of economic recovery and varying views of key factors such as business travel recovery.



Forecasting methodology diagram Segments

Suppression assumption applied on a month-bymonth basis Bottom-line suppression determined by combining suppression drivers

01

02

03

04

05

over time



Time Monthly

(e) $\langle \checkmark \rangle$



Suppression Drivers

Restrictions Short-med. term Suppression assumption $\langle (0) \rangle$ Suppression due to nations prohibiting the entry of foreign travellers from some or all applied on a month-byregions and due to residual fear of travelling. Entry prohibition may also differ within a month basis nation dependent on passenger vaccination status. Geopolitical environment Short-med. term nllnll Suppression due to fear of flying given the geopolitical environment (e.g. the war in Ukraine) and the increased flight time due to rerouting to avoid areas of conflict. Labour shortage Short-med. term Q 9 p 0-()-0 Suppression due to the current labour shortages in the air industry, which impact on 0 Y O airports' and airlines' capacity for travel. Bottom-line suppression determined by combining suppression drivers Economic environment (cost of living) Med. term Suppression due to the current cost of living crisis, which will have an impact on the ability of individuals to pay and afford travel. Economic environment (recession) Med-long term Suppression due to the current state of the economy and forecasted recessionary environment, which will have an impact on the ability of businesses and individuals to pay for travel. Passenger volume and Attitudes to the environment Long term revenue forecast results Suppression due to increasing consumer environmental consciousness (especially in rom suppression younger people), which has the potential to limit demand as people choose to either reduce the amount they fly or stop flying altogether.

7

Air travel passenger revenue is highly dependent on seasonality. This month-by-month variation is fundamental to determining suppression of geography and purpose segments and is applied across all segments.

Geography Country-by-country, or regional

Different geographies are likely to exhibit different behaviours in the future based on factors such as their specific border and Covid control policies their different economic. situations or their proximity to areas of political instability. Geographic forecasts are adjusted using PoS splits to reflect the directionality of travel.

Different types of travellers are likely to exhibit different behaviours in the return to travel, given factors such as pent-up demand, and changing business travel attitudes.

Traveller age 18-24, 24-44, >45

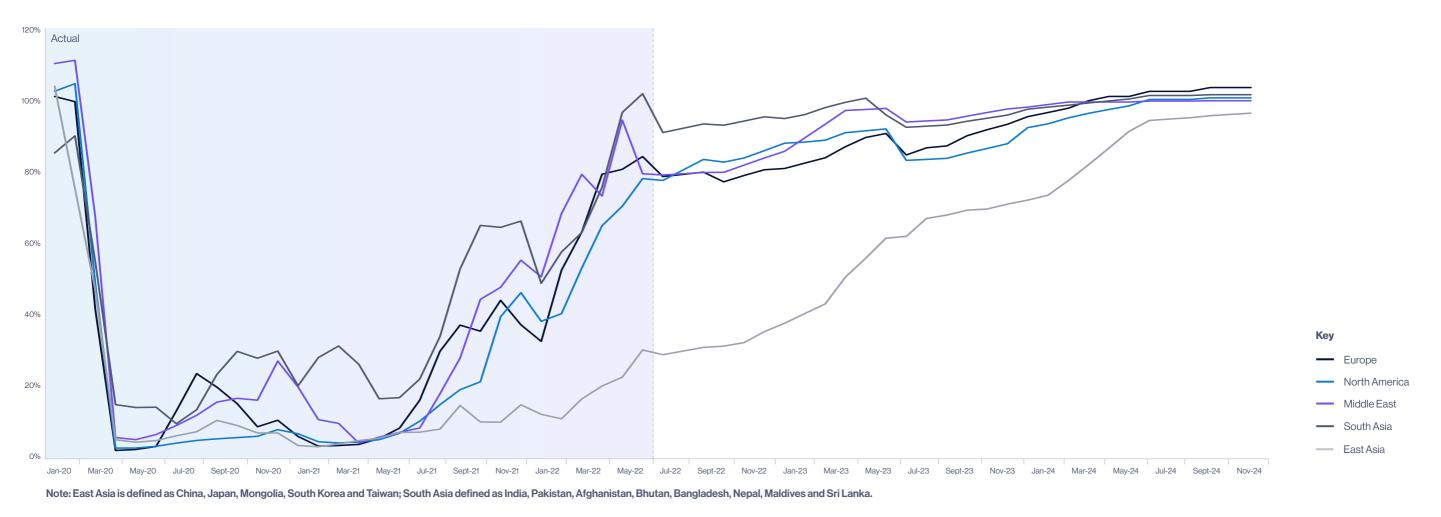
Different aged travellers are likely to have different travel plans and needs, given different travel requirements, frequencies, fear regarding covid and attitudes to the environment.

Traveller income <£23k, £23k - £45k, £46k - £80k, >£81k

The income level of travellers dictates the affordability of travel and therefore the impact that factors such as the cost of living crisis or a recession will have.

Insights: UK Centric

Passenger volume as a % of 2019³



Key Takeaways

Commentary

We expect demand recovery to stagnate in the immediate short-term as a result of i) the ongoing cost of living crisis in the UK and other markets, ii) the ongoing impact of the UK's labour shortage and iii) the current geopolitical situation in Europe. • We expect this stagnation to be most pronounced in the European market, as shorthaul customers are the most likely to exit the market due to a reduction in their disposable income. Additionally, European routes are those most affected by labour shortages

The East Asian market will continue to recover, and the pace of this recovery will increase as governments still enforcing 'zero Covid' policies are forced to change tactics or risk getting left behind in the international economic recovery. Recently, China has relaxed quarantine restrictions for international travellers from two weeks to one week, and Japan has begun to allow entry to international tourists who have prebooked onto specific guided tours.

Current OBR forecasts predict a UK recession in H2 2023. Whilst the magnitude of this recession is expected to be small, we expect a significant negative impact on travel demand across all regions. • The recovery of demand post-recession is expected to take between 6-10 months, depending on the region. This is significantly quicker than for historic recessions as a result of the shallow nature of the predicted recession compared to historic recessions.

By the end of the forecast period, we expect that changing attitudes towards the environment will begin to have a small suppressive effect on demand, especially on long haul routes.

Factor Deep Dives

Long-term Covid impacts

Covid will permanently suppress business travel as some travellers won't return and those that do will likely travel less frequently.

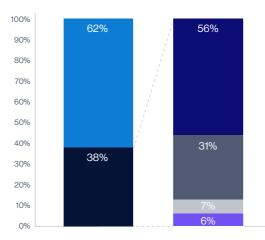
Strong vaccination programmes and government policies transitioning to address Covid as an endemic disease have allowed for a significant recovery in travel demand over the last 6-12 months. However, this impact has not been consistent for all types of travellers or geographies.

Over the forecast period, we expect business travel to remain suppressed compared to 2019 levels. The rise in hybrid working technology, as well as companies' increasing commitments to net zero pledges, means that a large number of business travelers are either going to not return to business travel, or will travel less frequently. This will likely lead to a permanent suppression in business travel demand.

Additionally, we expect the the lines between business and leisure travel will become increasingly blurred, as consumers increasingly take up options to work from abroad or tack holidays onto the end of business trips. Airlines may have to adapt their offering for such mixed travel customers.

Recovery of demand in East Asian markets still lags behind the rest of the world, as key markets such as China and Japan are still imposing strict restrictions on international travel. We expect these restrictions to slowly unwind over the forecast period as governments still enforcing 'zero Covid' policies are forced to change tactics or risk getting left behind in the international economic recovery.

% of international business travel cancelled due to Covid⁴



Key

- Cancelled Not cancelled Do not plan to resume
- Not sure Discussed but no definite plans
- Plan to resume in the near future



The current geopolitical environment

The war in Ukraine is reducing demand for travel to and from Europe due to customer fear. However, this impact will likely wane as the war continues.

Russia has closed its borders to western airlines and recalled its flag carrier, effectively closing the market to commercial aviation. Ukraine, as an active war zone, is also inaccessible for commercial flights. This has resulted in a direct reduction of demand in both markets.

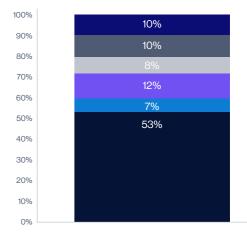
No-fly zones over Russia, Ukraine and neighbouring territories have also required certain flights to be rerouted. Without access to Russian airspace, many European airlines are taking longer routes to reach APAC markets. Increasing costs and flight times are negatively impacting demand.

Neighbouring countries have seen increased 'fear' levels, driving lower demand. Bulgaria, Croatia, Estonia, Hungary, Poland, Slovakia and Slovenia all saw a 30-50% reduction in bookings in the week following the invasion.

However, this does not just affect Eastern Europe. The European Trasnsport Commission (ETC) stated in June that 51% of people from Switzerland and 44% of people from Italy changed their travel plans within Europe for the next 6 months due to the war.

"51% of people from Switzerland and 44% of people from Italy changed their travel plans within Europe for the next 6 months due to the war."

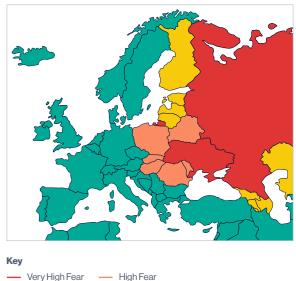
% of people whose travel plans have been affected by the ongoing war between Russia and Ukraine⁵



Key

- It did not affect me at all
- I made the trip with some changes from the initial plan
- I will wait and see how the war evolves before booking a trip
- ---- I changed my trip from international to domestic
- I change my itinerary to avoid countries neighbouring the conflict zone
- I rescheduled or cancelled my trip

Consumer fear for travelling in Europe



- Moderate Fear - Low Fear

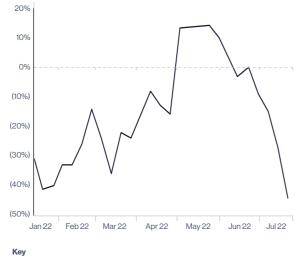
UK labour shortage

A major staffing crisis is causing delays at UK airports, stifling the recovery of demand and leaving the UK market ill-equipped to handle surges in demand.

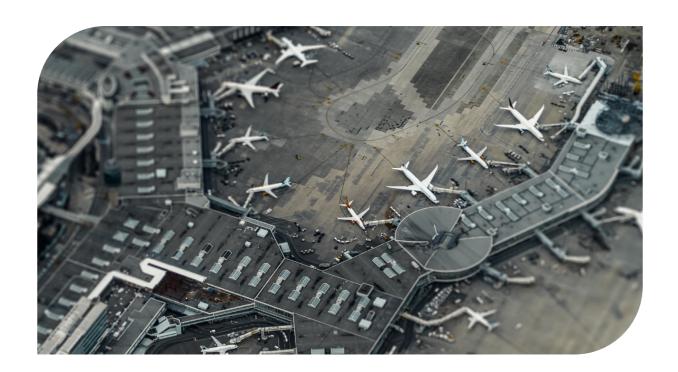
Across Europe, passengers have been facing widespread flight delays and cancellations caused by a combination of unexpected high demand for travel following Covid and labour shortages. Capacity for flights out of the UK to Europe has decreased by 7% (comparing scheduled capacity for July and August), and Heathrow has been forced to implement a cap on the number of daily departing passengers.

This disruption is being caused by a labour shortage in the airline industry. The airline industry issued mass redundancies during Covid. Airlines and airports, in particular, have not been able to replace these staff in time for high levels of summer demand. In the UK, this disruption has been exacerbated by Brexit, as airports are unable to draw on the pool of EU workers. These factors are likely to continue to cause disruption and capacity reduction in the shortto-medium-term, especially for short-haul flights to Europe, as the UK continues to grapple with a general labour shortage.

Weekly air tickets for intra-European travel in July and August as a percentage of 2019 levels, Jan 2022 – Jul 2022⁶



- Actuals



The cost of living crisis

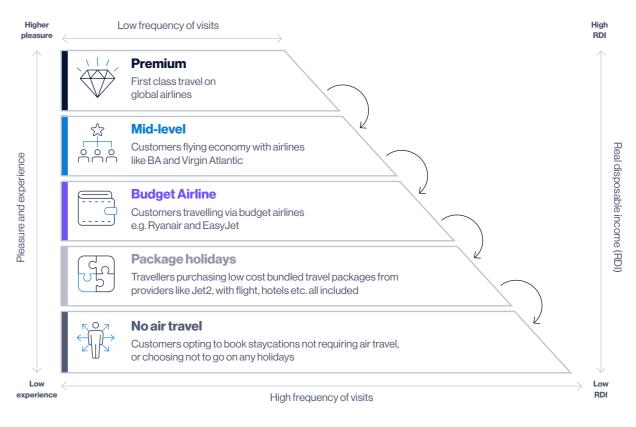
The current inflationary environment will cause consumers to 'trade down,' resulting in some consumers exiting the market.

Already strained supply chains, exacerbated by the war in Ukraine, have led to increasing commodity prices and high and rising inflation levels. As a result, consumers are likely to see reduced incomes, as wages fail to keep up with inflation. This reduction is expected to be quite substantial in 2022 and continue throughout 2023. Current high tax levels and likely limited government support are likely to compound this effect in the UK.

Consumers are therefore increasingly likely to make trade-offs in their purchasing decisions, as their real purchasing power declines. They are likely to be more conscious of value and 'trade down' to a lower luxury level than they would normally target. This impact will ultimately lead to some consumers exiting the market, thereby reducing demand for air travel.

The effect of inflation will also likely be compounded by rising fuel costs being passed onto consumers.

Aviation value pyramid



The extent to which this happens will be determined by the pricing power of certain key airlines. On long-haul routes where competition is limited, cost increases are likely to be passed on to consumers. However, for short-haul European routes, the market is more fragmented, leading to more uncertainty as to whether or not rising costs will be passed on to consumers.





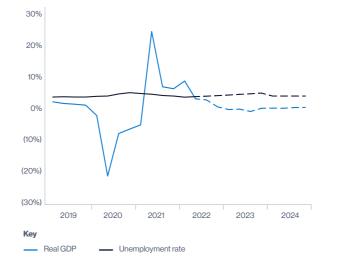
The economy

The UK is expected to enter a period of recession in 2023, which will have a long-term negative impact on both leisure and business travel demand.

GDP growth is forecast to be negative for the first three quarters of 2023, reaching (0.8%) in Q3. Limited recovery is expected in 2024, with growth not rising above 0.5%. In this environment, leisure travellers will likely be more reluctant to spend on discretionary luxuries such as international travel. However, this may be mitigated by pent-up demand built up through the pandemic.

Typically passenger traffic takes a long time to recover post-recession: global RPKs took five years to recover post-2009, and US RPKs took four years to recover from the smaller recession in 2000. As such, even a limited recession, as currently forecast, could cause long-term suppression of travel demand.

UK real GDP growth and unemployment rate, $2019 - 2024F^{8}$



"... given the nature of the UK economy, we see high vulnerability to external shocks beyond the near term and see increasing chances of a recession over the next one to two years."

JP Morgan, June 2022



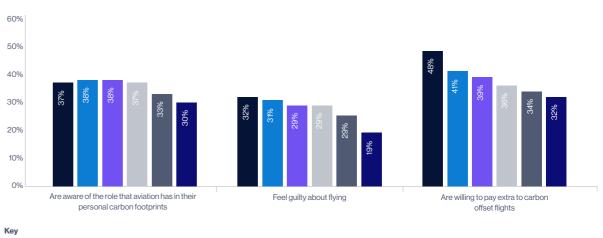
Changing attitudes toward air travel

Increasing numbers of young, more environmentally conscious consumers are expected to either stop or reduce the number of flights they take.

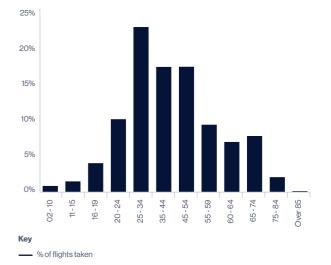
Concerns about the environment are leading to more conscious decisions by consumers. This effect is most pronounced amongst young people, who are increasingly likely to reduce or eliminate air travel as a result.

As younger consumers (18-24-year-olds) grow older and become more economically active, the impact of flight-related guilt on consumer demand is likely to increase. Whilst airlines are making attempts to mitigate these factors e.g. by carbon offsetting, young people are increasingly sceptical of such initiatives and often view them as greenwashing, meaning the effects of such mitigation attempts may be limited.

Environmental concerns, by age



<u>18-24</u> <u>25-34</u> <u>35-44</u> <u>45-54</u> <u>55-64</u> <u>64+</u>



Age distribution of UK flight customers (2019)⁹

Deglobalisation

The possibility of deglobalisation represents a long-term risk to the aviation industry.

Since the early 1990s, the world has embraced globalisation, increasing international trade and interdependence amonst countries. This globalisation naturally created higher demand for the movement of people internationally, which contributed to a positive feedback loop of increased demand and decreasing fares in the aviation industry.

However, the rise of nationalist politics since 2015 and vaccine protectionism during the Covid pandemic appear to have kickstarted 'deglobalisation,' a reversal of the trends seen over the last three decades. Combined with stretched global supply chains and increasing geopolitical tensions between the east and west, deglobalisation (and its associated negative economic impacts) has the potential to continue to stifle demand for air travel in the longer term.

"The rise of nationalist politics since 2015 and vaccine protectionism during the Covid pandemic appear to have kickstarted 'deglobalisation.'"



How Teneo can help

Teneo has a team of aviation experts across both our Financial Advisory and Management Consulting practices that have a wealth of experience advising both the executive leadership and wider stakeholders of airlines, airports, lessors and wider aviation service businesses.





Gee Lefevre Managing Director, Consulting Gee.Lefevre@teneo.com

Stephanie McMahon Senior Managing Director, Financial Advisory

Stephanie.McMahon@teneo.com





Ben Davies Senior Managing Director Ben.Davies@teneo.com

Matt Powney Associate Director, Financial Advisory Matt.Powney@teneo.com



Damien Murran Senior Managing Director, Financial Advisory Damien.Murran@teneo.com



David Gard Senior Managing Director, Financial Advisory David.Gard@teneo.com



Ewan Salter Consultant, Management Consulting Ewan.Salter@teneo.com



Calin Rovinescu Senior Advisor Calin.Rovinescu@teneo.com

Appendix

Average yearly model outputs

	2022	2023	2024
Europe	70.90%	86.03%	99.50%
North America	68.55%	86.13%	96.65%
Middle East	76.09%	93.10%	98.17%
South Asia	82.21%	94.34%	98.86%
East Asia	23.65%	56.57%	86.60%

Previous report model outputs

	2022	2023
Europe	72.1%	91.8%
North America	77.6%	91.4%
Middle East	68.0%	94.0%
South Asia	69.1%	90.7%
East Asia	22.8%	60.5%
Overall	70.6%	90.6%

Endnotes

1

UK CAA, Teneo research and analysis

2

https://www.travelandtourworld.com/news/article/ expo-2020-spurs-recovery-in-mideast-tourismsay-experts/

3

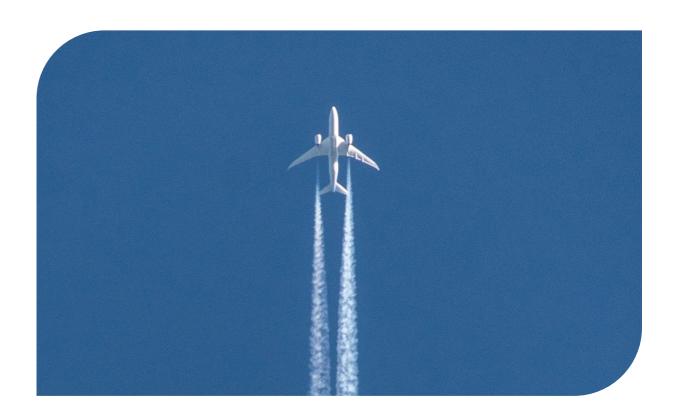
UK CAA, Teneo research and analysis

4

Global Business Travelers Association (GBTA)

5

European Transport Commission (ETC)



6

ForwardKeys

7

OBR

8

OBR Bank of England

9

UK CAA



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Our full range of advisory services includes strategic communications, investor relations, financial transactions and restructuring, management consulting, physical and cyber risk, organizational design, board and executive search, geopolitics and government affairs, corporate governance, ESG and DE&I.

The firm has more than 1,500 employees located in 41 offices around the world.

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