

World Air Transportation Recovery After COVID-19 Restrictions



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Nomenclature

ACI	Airport Council International
ASK	Available Seat Kilometer
COVID-19	Coronavirus Disease of 2019
IATA	International Air Transport Association
LF	Load Factor
MoM	Month-on-Month, Month-over-Month
PLF	Passenger Load Factor
RPK	Revenue per Kilometer
YtD	Year-to-Date
YoY	Year-on-Year, Year-over-Year, Year-to-Year

1 Introduction

The year 2022 was one of the most remarkable years in global aviation history. After fighting against the new Covid-19 pandemic for more than 2 years, many countries' epidemic prevention and control targets have achieved good outcomes. The domestic air transportation business has made a speedy recovery despite the epidemic. It will soon return to the level it was in 2019. At this time, it appears to be becoming better for international flight travel.

ICAO and IATA reports demonstrate that (ICAO, 2022; IATA, 2022a, b):

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- While the global domestic market trended sideways before 2022, revenue passenger kilometers (RPKs) for international traffic were renewed to drive the recuperation of the worldwide aviation industry.
- Many significant international route locations outperformed 2019 levels in the same periods of 2022 monthly, while other carriers likely achieved RPK levels. Several of these sites were located in Africa (Anna, 2022).
- Asia Pacific airlines have seen significant international expansion for the past 4 months, achieving a recovery rate of 453.3% in the same era as year-on-year (YoY) measurements. This recovery rate significantly improved from the 103.5% seen in January 2022. This encouraging trend is anticipated to continue as the region will gradually reopen.
- The recovery of the global industry picked up speed, and global RPK reports presented a 64.1% improvement before the crisis. In May, domestic RPK reports pointed out that the improvement reached 76.7% of the previous peaks in 2019. The worldwide RPKs increased by 10.7% month-on-month (MoM) compared to April 2022.
- Inflation shows itself as the most considerable bottom lack for improvement. Low consumer confidence and demand and high jet fuel price have been unable to stop the upswing from continuing. The fact that comparisons over international and domestic bookings indicate that an increased desire to travel internationally continues to exist.

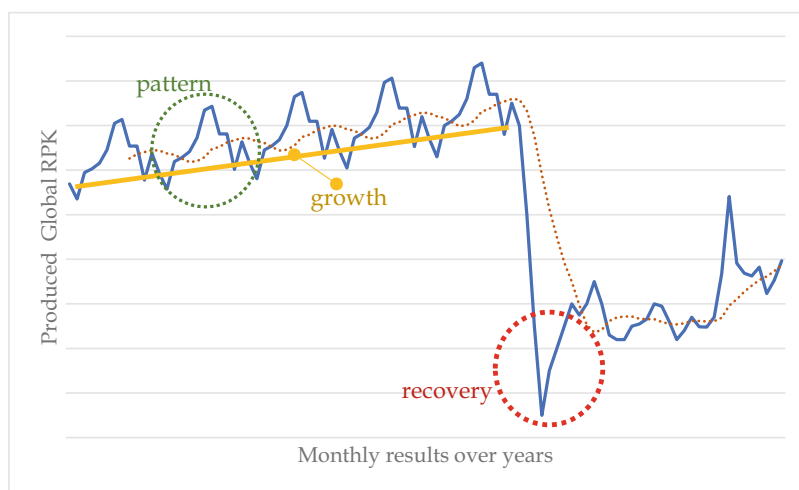
2 Reports

As the busiest travel period of the year approaches in the Northern Hemisphere's summer, the IATA has released passenger figures for May 2022 indicating that the resurgence in air travel is gaining momentum. Unless otherwise specified, we have reverted to comparing the volume of traffic YoY instead of comparing it to the period covered by 2019 thus far. The low traffic base in 2021 will result in some markets demonstrating good YoY growth, although their size is considerably smaller than in 2019.

As assessed by revenue passenger kilometers (RPKs), total traffic in May 2022 increased by 83.1% compared to May 2021. This increase was primarily related to the significant increase in overseas travel. Global traffic is 68.7% of what it was before the financial crisis. The amount of domestic travel increased by 0.2% in May 2022 compared to the previous month. Significant increases in some areas were offset by a 73.2% YoY fall in the Chinese domestic market due to COVID-19 restrictions. In May 2022, the volume of domestic traffic was 76.7% of what it was in May 2019. The amount of international traffic has increased by 325.8% since May 2021. The easing of travel restrictions across most of Asia is helping to restart the recovery of the international tourism industry. In May 2022, the international RPKs hit 64.1% of their May 2019 levels.

Table 1 Air transportation market detail (IATA, 2022a)

May 2022 (% YoY)	World share	RPK	ASK	PLF (%-PT)	PLF (Level)
Total market	100%	83.1%	52.8%	13.1%	79.1%
Africa	1.9%	124.9%	76.8%	14.9%	69.6%
Asia Pacific	27.5%	-4.7%	-8.2%	2.6%	69.6%
Europe	25.0%	258.8%	159.1%	22.4%	80.7%
Latin America	6.5%	99.3%	89.5%	4.0%	80.7%
Middle East	6.6%	279.6%	103.5%	35.4%	76.2%
North America	32.6%	56.3%	36.6%	10.8%	86.0%

**Fig. 1** Recovery period of RPKs all over the world. (Adapted from IATA, 2022b)

The travel industry is continuing to revive. Humans must travel. Moreover, they do so when governments eliminate COVID-19 prohibitions (ICAO, 2022). Numerous significant international route segments, such as those within Europe and those between the Middle East and North America, have already surpassed the 100 million passenger mark. The way forward is to eliminate all COVID-19 restrictions, with Australia being the most recent nation to do so this week. China's internal travel fell by a staggering 73,2% compared to the previous year, an enormous exception to the optimism surrounding this travel resurgence. The significantly delayed travel recovery related to China is evidence that this nation's prolonged implementation of a zero-COVID policy is incompatible with the norm in other parts of the world (Chen et al., 2022). Table 1 and Fig. 1 indicate the trends and the changes in regions and time. The aviation RPK values have indicated themselves by the patterns and YoY draws a regular increase. However, the recovery will represent some peaks to reach a new pattern in the following years of aviation (Oxley & Jain, 2015).

2.1 International Markets for Passengers

European carriers' traffic in May grew by 412.3% compared to 2021. The capacity increased by 221.3%, while the load factor (LF) climbed by 30.1–80.6%. Only regions directly touched by the crisis in Ukraine were impacted (Rutynskyi & Kushniruk, 2022).

Compared to May 2021, May traffic for Asia-Pacific airlines climbed 453.3%. This climb is significantly more extensive than the 295.3% YoY growth observed in April 2022 (Kim & Sohn, 2022). The capacity climbed by 118.8%, while the LF rose by 43.6–72.1%. Reductions in restrictions on most of the region's markets, except China, contribute to regional growth.

May airplane traffic in the Middle East surged 317.2% over 2021. The LF grew 37.1–76.6% this year compared to the previous month. The growing reopening of Asian markets is increasing Gulf hubs' trade volume.

North American carriers saw a 203.4% increase in traffic in May compared to the same month in 2021. The capacity grew by 101.1%, while the LF climbed by 27.1–80.3%. Tourism and a strong desire to travel continue to contribute to the global recovery, despite some route regions surpassing 2019 figures. The peak rises can be reviewed in Table 2.

May traffic for Latin American airlines climbed 180.5% compared to May 2021. In May, capacity expanded by 135.3%, while LF rose by 13.5 percentage points to 83.4%, the highest LF in the region for the twentieth consecutive month (Bhowmik & Eluru, 2022). Several routes, notably those between Central America and Europe and Europe and North America, surpass 2019 levels. Figure 2 demonstrates the trends in time and how the traffic capacity has improved in recent months. Europe and China need to consider how the markets react after global shocks.

2021 May RPKs for African airlines surged 134.9% compared to 2021 May. May 2022 capacity grew by 78.5%, but LF rose by 16.4–68.4%, the region's lowest.

Table 2 International RPK YoY change by regions (IATA, 2022b)

Sections	YoY change, April	YoY change, May
Industrial globally	330.6%	325.8%
Asia-Pacific	259.3%	453.3%
Europe	477.7%	412.3%
Middle East	258.3%	317.2%
North America	230.3%	203.4%
Latin America	262.8%	180.5%
Africa	120.4%	134.9%

China and Europe fall behind

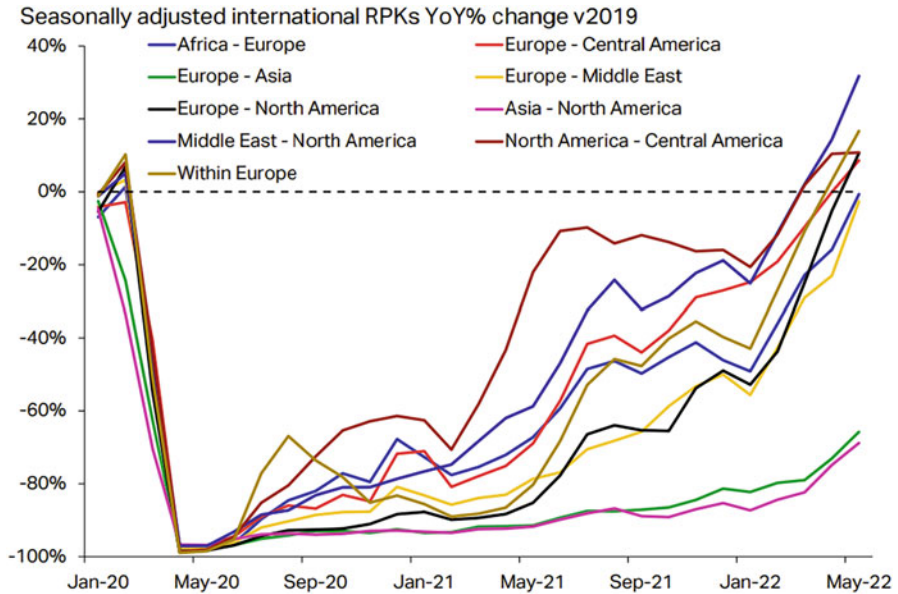


Fig. 2 International RPK’s YoY change starting from Covid-19 pandemic. (IATA, 2022b)

2.2 Domestic Market for Passengers

India’s domestic RPKs climbed by 405.7% YoY, much greater than the 78.6% in April. In May 2021, India experienced the most severe case of COVID-19 in its history. Domestic traffic in the United States increased by 26.1% in May compared to May 2021.

Passenger demand is catching up to 2019 levels, thanks to the healthy performance of the great majority of foreign and domestic markets compared to the previous year. In May 2022, total RPKs reached 68.7% of May 2019 levels, the most remarkable performance of the year relative to pre-COVID-19 travel levels.

China PR for domestic RPKs increased by 42.2% compared to the April 2022 (Zoubir & Tran, 2022). Even while the country’s traffic numbers have recovered from the repeated shocks of tighter travel rules, they are still 71.5% lower than those before the outbreak.

The US domestic traffic improved by 3.1% MoM but is still below the RPK criteria for 2019. The number of RPKs sold in the United States has reduced by 4.7% compared to the same month in 2019 (compared to a loss of 1.6% in April). Although capacity has declined by 6.0% YoY, LFs across the nation have remained high at 88.7%.

This market may experience an increase in traffic congestion due to the high price of gasoline and the continuous labor shortage. In April, the rate of domestic RPK growth in the United States reached a peak of 48.1%; in May, it plummeted to 26.1%.

Table 3 Domestic air transportation market detail

May 2022 (% YoY)	World share	RPK	ASK	PLF (%-PT)	PLF (Level)
Domestic	62.3%	0.2%	-3.3%	2.9%	79.8%
Domestic Australia	0.8%	34.7%	23.1%	6.5%	75.6%
Domestic Brazil	1.9%	73.1%	89.6%	-7.1%	74.8%
Domestic China P.R	17.8%	-73.2%	-64.7%	-18.8%	59.1%
Domestic India	2.2%	405.7%	205.7%	32.4%	81.8%
Domestic Japan	1.1%	132.7%	70.7%	15.2%	56.9%
Domestic United States	25.6%	26.1%	15.6%	7.3%	88.7%

Adapted from IATA (2022a)

In May, volume levels in Brazil decreased from the previous month, resulting in a YoY increase of 73.1%. Traffic in India decreased by 0.3% compared to the April 2022 but increased by 405.7% compared to the previous year. As a result of loosened travel restrictions and increased consumer confidence, domestic RPK sales in Japan soared in May. Table 3 shows the domestic market in 2022 figures.

The volume of domestic traffic is currently 27.3% lower than it was prior to the epidemic and continues to recover. Even though the number of domestic RPKs in Australia decreased by 6.2% MoM, current levels are just 5.9% below 2019. China domestic market is undoubtedly the tailender in recovery activities by its nature of the most sensitive air passengers in the world. Table 4 compares the YoY vs. YtD figures, which support the recovery status for each market component.

2.3 China

China's international aircraft transportation has always had difficulty recovering, primarily due to the ongoing changes in the international pandemic situation, which are superimposed on other countries' varied epidemic prevention and control techniques. China's civil aircraft transportation industry has been subjected to extreme stress. Since the beginning of the new Covid-19 pandemic in February 2022, China's official data indicate that the country's civil air transportation business has accrued an overall loss of 31.25 billion USD. This figure is current as of February 2022. The subsequent aviation tragedy in Wuzhou that involved China Eastern Airlines made the situation much direr and ended the 4227-day-long streak of safe flight records for China Civil Aviation. Several significant obstacles, including the recurrence of epidemics in different parts of the country and the ongoing transformations in the international aviation industry, are currently hindering the expansion of China's aviation business.

China's civil aviation will facilitate up to 17 million take-offs and landings by 2025. In 2020, 9.05 million take-offs and landings were affected by the outbreak. In 2019, 11.66 million take-offs and landings were unaffected by the outbreak.

Table 4 Air passenger market in detail (YoY vs. YtD) – May 2022

	World share	Year to year			Year to date		
		RPK	ASK	PLF (%-pt)	RPK	ASK	PLF (%-pt)
Total market	10	8.31	5.28	1.31	8.47	5.32	1.24
Africa	0.19	12.49	7.68	1.49	7.8	4.66	1.18
Asia Pacific	2.75	-0.47	-0.82	0.26	-0.27	-0.33	0.04
Europe	2.5	25.88	15.91	2.24	24.19	15.47	1.88
Latin America	0.65	9.93	8.95	0.4	10.53	8.41	0.82
Middle East	0.66	27.96	10.35	3.54	21.32	8.67	2.79
North America	3.26	5.63	3.66	1.08	8.67	4.96	1.58
International	3.77	32.58	15.21	3.2	27.6	13.08	2.72
Africa	0.15	13.49	7.85	1.64	8.45	4.61	1.36
Asia Pacific	0.31	45.33	11.88	4.36	23.9	8	2.77
Europe	1.87	41.23	22.13	3.01	38.57	20.75	2.67
Latin America	0.21	18.05	13.53	1.35	21.03	14.18	1.76
Middle East	0.6	31.72	11.57	3.71	23.87	9.59	2.92
North America	0.62	20.34	10.11	2.71	20.85	9.26	2.73
Domestic	6.23	0.02	-0.33	0.29	1.63	0.81	0.53
Domestic Australia	0.08	3.47	2.31	0.65	3.46	2.65	0.43
Domestic Brazil	0.19	7.31	8.96	-0.71	6.46	6.04	0.2
Domestic China PR	1.78	-7.32	-6.47	-1.88	-4.9	-4.04	-1.05
Domestic India	0.22	40.57	20.57	3.24	4.55	2.19	1.29
Domestic Japan	0.11	13.27	7.07	1.52	7.16	5.19	0.58
Domestic United States	2.56	2.61	1.56	0.73	6	3.47	1.3

Adapted from IATA (2022b)

2.4 Europe

Following the March 2020 outbreak of the COVID pandemic, which caused interruptions in air travel, international travel was significantly disrupted for an extended period due to the restrictive and ever-changing travel laws that governments arbitrarily created (Tiknonov & Sazonov, 2022). Domestic services were easier to maintain in many European nations since travel restrictions impacted them less. These maintained services made them accessible to a broader audience.

After more than 2 years from the onset of the pandemic, the recovery rate of domestic capacity in Europe's major air transport markets varies substantially. Even though the outbreak began more than 2 years ago, this is the situation. The domestic air travel market recovery rate for the top 15 markets ranges from 50% in Germany to 117% in Italy. Germany has the fastest rate of economic recovery. Five countries have seen a rise in capacity, while three others have reached above 90%.

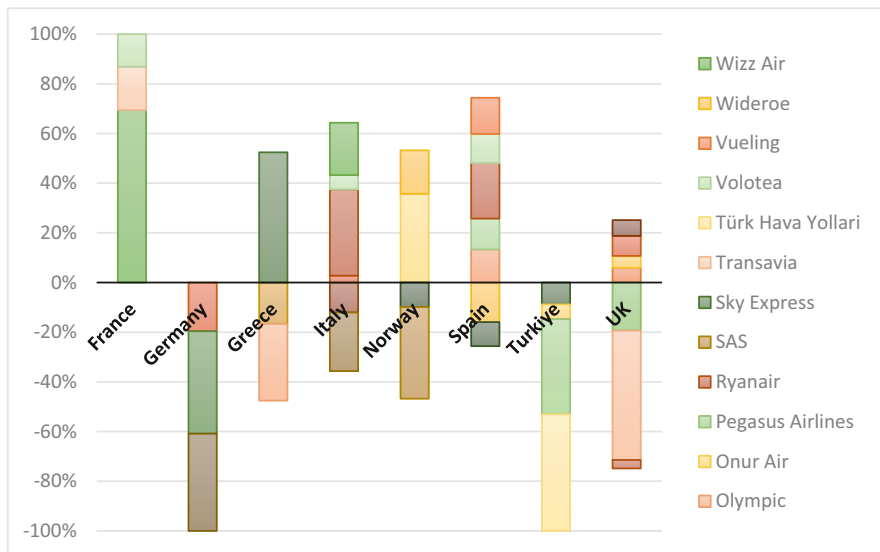


Fig. 3 The changes for European airlines for traffic recovery and available seat changes compared with the total change figures. (Airserviceone, 2022)

It is possible to determine which airlines have gained or lost passengers from Fig. 3. The comparable capacities between August 2019 and August 2022 have been distinguished as top country markets. Although the demise of the original Flybe was detrimental to the UK market’s economy, there were no airline failures in the German market. It would appear that most Germans have altered their method of domestic travel due to the country’s efficient high-speed train network and autobahns.

2.5 North America

The performance in North America significantly improved in the second quarter of 2021, following a lackluster performance in the first 3 months of the year. This advancement was made possible by a rapidly improving domestic market in the United States and an overall high immunization rate, which contributed to the area concluding 2018 at 65.1% of 2019 levels (Dube, 2022).

The fantastic success is anticipated to continue into 2022, allowing the region to beat all other regions and reach 89% of its 2019 level by the end of the year. North America is anticipated to be the first region to return to 2019 levels for an entire year as early as 2023.

3 Conclusion

Much uncertainty surrounds the aviation industry's resurgence, particularly in the medium to long term. Predicting how the recovery will unfold is still difficult and requires significant caution. In addition to the unpredictability surrounding vaccination, especially in emerging and developing nations, and the risk of an outbreak during the fall and winter seasons, we must now also consider the possibility of geopolitical conflict and related humanitarian crises, as well as a severe economic downturn and an imminent recession. These threats could hinder or prolong the healing procedure.

Despite the risks to the downside, the sector continues to be optimistic that a return to 2019 levels is possible within the next 2–3 years (OAG, 2022; Statista, 2022). According to the number of people who traveled at the beginning of summer, there is no doubt that many are eager to hit the road again. The elimination of travel restrictions will increase the demand for air travel and contribute to the revival of the business. This recovery is because “holiday deprivation” will be coupled with increased trust in air travel due to improved vaccination rates and safety measures. We anticipate a surge in demand for air travel in the second half of 2022, when most governments will abolish virtually all health precautions and travel restrictions to return to normalcy. This constraint removal will increase the number of individuals desiring to take flights. Table 5 provides a summary of the information presented as

Table 5 Air passenger market 2019 vs 2022 (IATA, 2022b)

	World share	RPK	ASK	PLF (%-pt)	PLF (Level)
Total market	100.0%	−31.3%	−2.89	−0.27	79.1%
Africa	1.9%	−29.2%	−3.11	0.19	69.6%
Asia Pacific	27.5%	−62.5%	−5.67	−1.08	69.6%
Europe	25.0%	−19.6%	−1.65	−0.3	80.7%
Latin America	6.5%	−15.7%	−1.3	−0.26	80.7%
Middle East	6.6%	−10.5%	−1.42	0.31	76.2%
North America	32.6%	−10.4%	−1.03	−0.02	86.0%
Domestic	62.3%	−23.3%	−1.92	−0.42	79.8%
Domestic Australia	0.8%	−5.9%	−0.52	−0.05	75.6%
Domestic Brazil	1.9%	−2.0%	0.7	−0.69	74.8%
Domestic China PR	17.8%	−71.5%	−5.95	−2.49	59.1%
Domestic India	2.2%	−12.8%	−0.4	−0.82	81.8%
Domestic Japan	1.1%	−27.8%	−0.72	−1.62	56.9%
Domestic United States	25.6%	−4.7%	−0.6	0.13	88.7%
International	37.7%	−35.9%	−3.43	−0.19	78.6%
Africa	1.5%	−33.2%	−3.44	0.12	68.4%
Asia Pacific	3.1%	−73.9%	−7.15	−0.66	72.1%
Europe	18.7%	−20.9%	−1.74	−0.35	80.6%
Latin America	2.1%	−30.2%	−2.96	−0.06	83.4%
Middle East	6.0%	−10.0%	−1.45	0.38	76.8%
North America	6.2%	−21.3%	−1.78	−0.35	80.3%

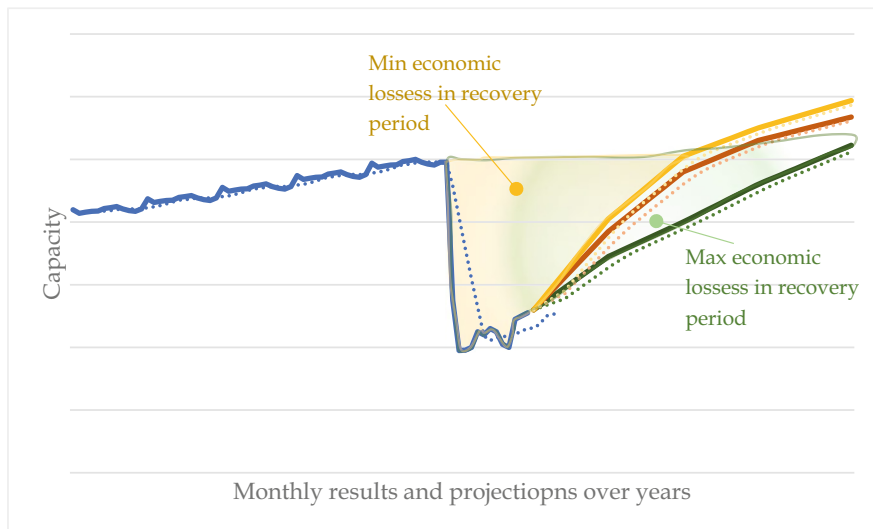


Fig. 4 Mid-term capacity projections. (Adapted from ACI, 2022)

recovery percentages. Vaccination distribution and acceptance will be effective in emerging and underdeveloped nations by 2022.

- The scenario accounts for the impact of Omicron in the first quarter of 2022.
- This forecast predicts that consumer confidence in travel return in 2022 will grow, inflation will be high but under control, and the likelihood of a recession will be low.
- It assumes a moderate improvement in the health of the aircraft fleet and a continued relaxation of travel restrictions in all regions of the world. It also shows that the supply-and-demand imbalance in the aviation industry does not meet industry-wide forecasts.
- As the globe becomes more accustomed to “living with COVID-19,” subsequent epidemic and pandemic waves are expected to be both possible and manageable. These waves will not be localized and therefore have less effect on air travel bookings.

Recent projections indicate that the number of passengers traveling worldwide will likely surpass 2019 levels by the end of 2023, with a full-year return to 2019 levels in 2024. The overall rebound will be driven by domestic passenger traffic but will be hampered by Asia-Pacific and international travel (globally, domestic traffic accounted for 58% of total passenger traffic in 2019). Nevertheless, it is evident that, economic losses will affect the global economy; whether it is a minimum or maximum effect, it will stop investments globally (Fig. 4). This effect can trigger a global economic crisis.

Global domestic passenger traffic is expected to surpass 2019 levels by the end of the year 2023. The number of passengers will not reach 2019 levels until the second half of 2024. By 2025, the number of international passengers will have caught up to what it was in 2019.

Domestically significant markets are projected to recover to pre-COVID-19 levels between the middle and end of 2023. The anticipated traffic levels for 2019 will not be attained in international markets with high traffic until 2024 or 2025. Some country markets, especially emerging and developing countries, will not achieve 2019 passenger levels until 2025 or 2026, especially those dependent on international traffic. This is as a result of the uneven supply of vaccines, geopolitical turmoil, the resulting humanitarian crises, and the deteriorating economic outlook.

References

- ACI. (2022). *The impact of COVID-19 on airports – And the path to recovery*. <https://aci.aero/2022/06/28/the-impact-of-covid-19-on-airportsand-the-path-to-recovery/>. Accessed 01 Aug 2022.
- Air Service One. (2022). *European air traffic domestic capacity recovery rates vary from 50% in Germany to 117% in Italy*. <https://airserviceone.com/european-air-traffic-domestic-capacity-recovery-rates-vary-from-50-in-germany-to-117-in-italy/>. Accessed 01 Aug 2022.
- Anna. (2022). *Weekly route constructions*. <https://www.anna.aero/all-new-airline-routes/>. Accessed 01 Aug 2022.
- Bhowmik, T., & Eluru, N. (2022). An airport level framework for examining the impact of COVID-19 on airline demand. *Transportation Research. Part A, Policy and Practice*, 159, 169–181.
- Chen, T., Fu, X., Hensher, D. A., Li, Z. C., & Sze, N. N. (2022). Air travel choice, online meeting and passenger heterogeneity – An international study on travellers’ preference during a pandemic. *Transportation Research Part A: Policy and Practice*, 165, 439–453.
- Dube, K. (2022). COVID-19 vaccine-induced recovery and the implications of vaccine apartheid on the global tourism industry. *Physics and Chemistry of the Earth, Parts A/B/C*, 126, 103140.
- IATA. (2022a). *Strong international traffic propels continuing air travel recovery*. <https://www.iata.org/en/pressroom/2022-releases/2022-07-07-02/>. Accessed 01 Aug 2022.
- IATA. (2022b). *Air passenger market analysis*. <https://www.iata.org/en/iata-repository/publications/economic-reports/air-passenger-monthly-analysis%2D%2D-may-2022/>. Accessed 01 Aug 2022.
- ICAO. (2022). *Latest air traffic forecasts illustrate encouraging recovery and higher growth in global air travel*. <https://www.icao.int/Newsroom/Pages/Latest-air-traffic-forecasts-illustrate-encouraging-recovery-and-higher-growth-in-global-air-travel.aspx>. Accessed 01 Aug 2022.
- International Civil Aviation Organization. (2022). *Effects of novel coronavirus (COVID-19) on civil aviation: Economic impact analysis (2020)*. Air Transport Bureau, Montreal, Canada, from https://www.icao.int/sustainability/Documents/COVID-19/ICAO_Coronavirus_Econ_Impact.pdf. Accessed 06 July 2022.
- Kim, M., & Sohn, J. (2022). Passenger, airline, and policy responses to the COVID-19 crisis: The case of South Korea. *Journal of Air Transport Management*, 98, 102144.
- OAG. (2022). *Global total seats*. <https://www.oag.com/coronavirus-airline-schedules-data>. Accessed 01 Aug 2022.
- Oxley, D., & Jain, C. (2015). *Global air passenger markets: Riding out periods of turbulence*. IATA, The Travel & Tourism Competitiveness Report <https://www.iata.org/en/iata-repository/>

[publications/economic-reports/global-air-passenger-markets-riding-out-periods-of-turbulence/](#). Accessed 01 Aug 2022.

- Rutynskyi, M., & Kushniruk, H. (2022). European low-cost Airlines in Ukraine: Features of entry and consolidation in the national market. In *Challenges and opportunities for transportation services in the post-COVID-19 era* (pp. 104–139). IGI Global.
- Statista. (2022). *Number of air passengers in China from 2010 to 2021*. <https://www.statista.com/statistics/275907/number-of-air-passengers-in-china/>. Accessed 01 Aug 2022.
- Tikhonov, A., & Sazonov, A. (2022). Major trends in aviation industry during COVID-19. *Journal of Applied Engineering Science*, 20(4), 1093–1102.
- Zoubir, Y. H., & Tran, E. (2022). China's health silk road in the Middle East and North Africa amidst COVID-19 and a Contested World Order. *Journal of Contemporary China*, 31(135), 335–350.