

飛航事故率降低至零

針對飛航安全的諸多改善措施，在2021年皆有顯著的提升；依據「國際航空運輸協會」(International Air Transport Association，後文簡稱IATA)的統計數據顯示，甚至包括「偏離跑道」(runway excursion)的飛航事故，連一件也沒有發生過。

邁德 譯



依據 IATA 近 15 年來的記錄，全球商用航空業者首次在 2021 年，沒有發生過一件「偏離跑道 / 滑行道」的飛航事故。

2021 年 IATA 的航空公司會員，依其安全績效的數據顯示，還展現出航空業者有不少涉及安全的基本項目，在 2021 年的記錄中具有明顯的進步；諸如：飛航事故、致命事故的件數，以及整體飛航事故率等，都有逐漸降低的趨勢。

本文報告之宗旨，係依 IATA 對飛航事故的定義，相關飛航事故必須符合下列的四項標準：

- 人員 (不論是機組人員或乘客，或是兩者兼而有之) 必須「為飛航目的」而登機。
- 該飛航目的係為了「正常商用航空營運，

特別是定期航班 / 包機客運，或是貨運服務等。行政性的飛航作業，以及訓練、維護 / 測試飛行等作業，都不包括在內。」

- 該架飛機使用渦輪發動機的動力，且經認證的最大起飛重量，至少為 5,700 公斤 (12,540 磅)。
- 該架飛機遭遇的重大結構損壞超過 100 萬美元，或是飛機「飛機儲備價值」(hull reserve value) 的 10%，並以較低者為準；或者是已被宣佈為「飛機全毀」(hull loss)。

商用飛機在 2021 年共計發生 26 起飛航事故，其中包括 7 件致命事故 (分別是 1 架噴射和 6 架渦輪螺旋槳的飛機)，造成 121 人死亡；總飛航事故率為每百萬次航班 1.01 件。相較之下，商用飛機在 2020 年共計發

生 35 起飛航事故，其中包括 5 件造成 132 人死亡的致命事故；總飛航事故率為每百萬次航班 1.58 件。另檢視 2017-2021 年的五年平均值，每年發生 44.2 件飛航事故，7.4 件致命事故，造成 207 人死亡；總飛航事故率為每百萬次航班 1.23 件。

2021 年的航班總數為 2,570 萬架次，而 2020 年則為 2,220 萬架次；至於 2017-2021 年的五年平均值為 3,660 萬架次，係因當時大多數的年份均未遭受到 COVID-19 疫情的影響，進而導致航班的停飛。

「相較於 2017-2021 年的五年平均值，2021 年的航班總架次大幅減少；當我們在計算總飛航事故率時，難免會放大每次飛航事故的影響，」IATA 總幹事 Willie Walsh 在週三的數據公佈時，特別發表一份聲明：「雖然如此，但 2021 年在面臨眾多營運的挑戰情況下，航空業者在幾個關鍵性的安全指標上，仍有不少的進步紀錄。在此同時，最明顯的是我們還有很多當前的工作要做，才能促使所有的區域性和各類型航空業者的營運狀況，把安全績效提升至全球化的水準。」

「致命風險」(fatality risk) 係 IATA 用來衡量「災難性飛航事故，乘客或機組人員未能倖存」的指標，在 2021 年為 0.23，高於 2020 年的 0.13，這是因為渦輪螺旋槳飛機的飛航事故增加所導致。2021 年噴射飛機的致命風險為 0.04，而五年的平均值則為 0.06。

2021 年的總體致命風險為 0.23，IATA 將其解釋為「若一個人每天需要搭乘乙次航班，平均要經歷 10,078 年，才可能會遭遇到至少一人死亡的飛航事故。」

在針對區域性的數據分析中，IATA 發

現全世界有 8 個區域中的 5 個區域，在 2021 年每百萬次起飛離場的噴射飛機「飛機全毀」率降低至 0.0；它們分別是非洲、獨立國協、拉丁美洲和加勒比地區、中東和北非，以及北亞等區域。其他 3 個區域，分別是亞太區域的 0.33、歐洲區域的 2.7，以及北美區域的 0.14。IATA 對「飛機全毀」的定義是：「在飛航事故中，飛機被摧毀或嚴重損壞，以及隨後因任何因素而未進行修復者，包括飛機所有者因財務考量而做的決定。」

檢視 2017-2021 的五年期間，每百萬次起飛離場的噴射飛機「飛機全毀」率，分別有從中東和北非的 0.0，到獨立國協的 0.92 等不同差異。

2021 年每百萬次起飛離場的渦輪螺旋槳飛機「飛機全毀」率，則分別有從亞太、歐洲、拉丁美洲和加勒比地區、中東和北非、北美，以及北亞等區域的 0.0，到非洲的 5.59，以及獨立國協的 42.53 等不同差異。

統計報告指出，儘管 2021 年渦輪螺旋槳飛機的營運狀況，只佔總飛航架次的 11%，但其發生的事故卻佔所有飛航事故的一半，更佔所有致命事故的 86%，而其所造成的死亡人數則佔 49%。

該統計報告進一步說明，航空公司總部設在撒哈拉沙漠以南的非洲地區，在 2021 年發生了 4 起飛航事故，全部都涉及渦輪螺旋槳飛機所造成；其中有 3 件是致命事故，共計造成 18 人死亡。在獨立國協中，也發生了 4 起飛航事故，其中也有 3 件是致命事故，共計造成 41 人死亡。✈️

譯自：Aero Safety World March 2022

Down to Zero

IATA data show many measures of safety improved in 2021, including the lack of runway excursion accidents.

Linda Werfelman

For the first time in 15 years, the worldwide commercial airline industry recorded no runway/taxiway excursion accidents in 2021, according to data from the International Air Transport Association (IATA).

The data, included in IATA's airline safety performance data for 2021, also show strong improvement in several elements of the industry's safety record in 2021, with reductions in the total number of accidents and fatalities and in the overall accident rate.

For purposes of this report, IATA defined an accident as an event in which four criteria were satisfied:

- People (either crewmembers or passengers, or both) have boarded "with the intention of flight."
- The flight is intended for "normal commercial aviation activities, specifically scheduled/charter passenger or cargo service. Executive jet operations, training, maintenance/test flights are all excluded."
- The aircraft is turbine-powered, with a certificated maximum takeoff weight of at least 5,700 kg (12,540 lb).
- The aircraft sustains major structural damage of more than \$1 million or 10 percent of the aircraft's hull reserve value,



whichever is lower, or it has been declared a hull loss.

Commercial airliners were involved in a total of 26 accidents in 2021, including seven fatal accidents (in one jet and six turboprops) that killed 121 people; the total accident rate was 1.01 per million flights. In comparison, commercial airliners were involved in 35 accidents in 2020, including five fatal accidents that killed 132 people; the total accident rate was 1.58 per million flights. Data for the five-year average for 2017–2021 showed 44.2 accidents per year and 7.4 fatal accidents with 207 fatalities; the accident rate was 1.23 per million flights.

The number of flights in 2021 totaled 25.7 million, compared with 22.2 million in 2020 and 36.6 million in 2017–2021, when most years were unaffected by grounded flights caused by the COVID-19 pandemic.

“The severe reduction in flight numbers last year, compared to the five-year average, magnified the impact of each accident when we calculate rates,” IATA Director General Willie Walsh said Wednesday in a statement accompanying release of the data. “Yet in the face of numerous operational challenges in 2021, the industry improved in several key safety metrics. At the same time, it is clear that we have much work ahead of us to bring all regions and types of operations up to global levels of safety performance.”

Data showed the fatality risk – which IATA uses to measure “the exposure of a passenger or crew to a catastrophic accident with no survivors” – was 0.23 in 2021, up from 0.13 in 2020 because of the increase in turboprop accidents. The jet fatality risk in 2021 was 0.04, compared with the five-year average of 0.06.

The overall fatality risk was 0.23, which IATA interpreted as meaning that “on average, a person would need to take a flight every day for 10,078 years to be involved in an accident with at least one fatality.”

In a breakdown of regional data, IATA found that the jet hull loss rate in 2021 dropped to 0.0 per million departures in five of the world’s eight regions – Africa, Commonwealth of Independent States, Latin America and the Caribbean, Middle East and North Africa, and North Asia. In the Asia Pacific, the rate was 0.33 per million departures; in Europe, 2.7 per million; and in

North America, 0.14 per million. IATA considers a hull loss to be “an accident in which the aircraft is destroyed or substantially damaged and is not subsequently repaired for whatever reason, including a financial decision of the owner.”

Over the 2017–2021 period, the jet hull loss ranged from 0.0 in Middle East and North Africa to 0.92 per million departures in the Commonwealth of Independent States.

The turboprop hull loss rate for 2021 ranged from 0.0 per million departures in the Asia Pacific, Europe, Latin America and the Caribbean, Middle East and North Africa, North America and North Asia to 5.59 in Africa and 42.53 in the Commonwealth of Independent States.

Although the sectors flown by turboprops in 2021 accounted for 11 percent of total sectors flown, turboprop accidents accounted for half of all accidents, 86 percent of all fatal accidents and 49 percent of fatalities, the report said.

The report said that airlines based in sub-Saharan Africa had four accidents in 2021, all involving turboprops; three were fatal accidents responsible for a total of 18 fatalities. In the Commonwealth of Independent States, there were also four accidents, three of them fatal accidents with 41 fatalities. ✈️

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