

BUSINESS AVIATION SAFETY & LOSSES

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ANNUAL REVIEW

2024

Last year, 2024, saw some slight improvement in the number of fatal accidents and fatalities suffered by business jets but business turboprops had a poor year with both the number of fatal accidents and fatalities increasing. The number of fatalities in business turboprop accidents increased markedly during the year, going from 21 in 2023 to 60 in 2024 mainly as the result of a number of accidents with a high loss of life.

The business jet and turboprop fleets have “good” and “bad” years and 2024 might, indeed, be described as a “bad” year for business turboprops. However, the long-term trend shows that, while the average annual number of both fatal accidents and fatalities suffered by business jets have remained flat for over 20 years, these figures for the turboprop fleet have, generally, been decreasing, albeit slowly.

Over the long term, the fatal accident and fatality rates for both business jets and turboprops are improving and, on this basis, these classes of aircraft are now around four or five times safer than they were in 1990.

¹ Accident Rates. Currently we do not have good data for the number of flights etc on a global basis for this class of aircraft to allow us to calculate accident rates in the form of, for instance, “fatal accidents per million flights”. However, we do have good fleet data and this allows us to use “aircraft years in service” (the average number of aircraft available for operation in the fleet) and “seat years” as measures of exposure when calculating accident rates. Nevertheless, although these rates do give a good indication of trends over the longer term, possible changes in utilisation from year to year, especially the impact of Covid-19 in 2020 and into 2021, should be borne in mind when comparing one year to another.

Fatal Accident Rates

In 2024, the fatal accident rate for business jets was about one per 2,500 aircraft in service¹, the same as in 2023 but markedly worse than in 2022, when the rate was one per 5,000 aircraft. Last year's rate was broadly similar to many other recent years but falls slightly above where the long-term trend would predict.

The business jet fatal accident rate for the last decade (2010-2019) was one per 2,500 aircraft in service. The rate for the decade of the 2000s was one per 1,600 aircraft and for the decade of the 1990s, one per 900 aircraft.

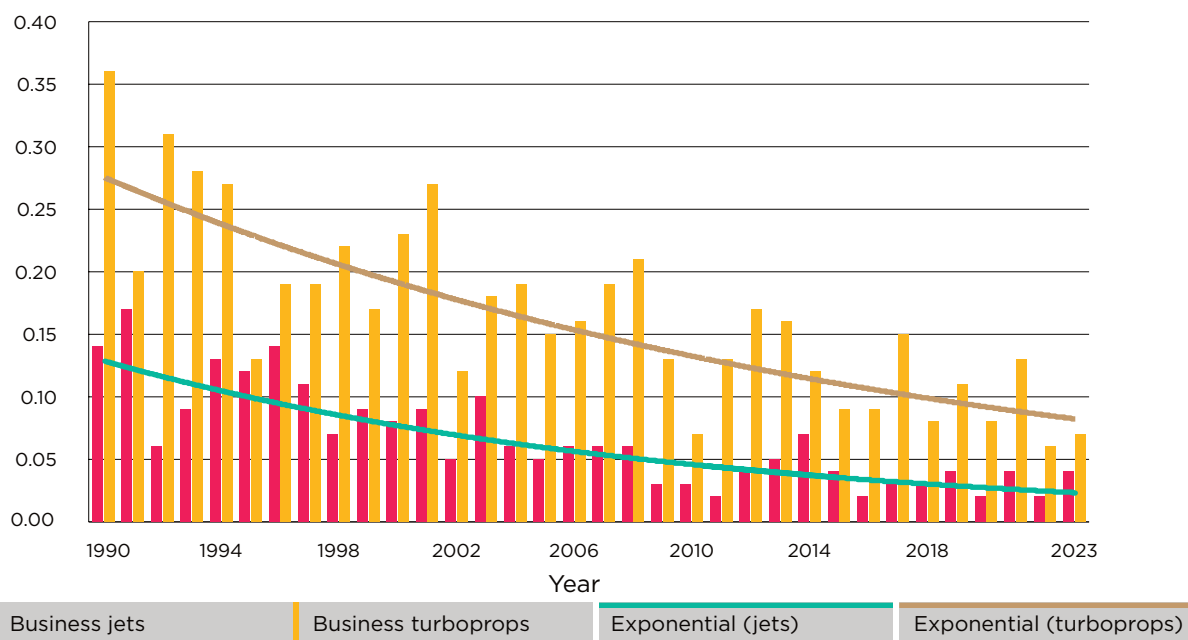
The fatal accident rate last year for the business turboprop fleet was markedly worse

than in 2023. The 2024 fatal accident rate was about one per 900 aircraft in service compared to one per 1,425 aircraft in service in 2023 but was better than in 2021 when it was about one per 770 aircraft. The fatal accident rate in 2020 was one per 1,250 aircraft.

Although the accident rates for both business jets and turboprops have been improving, the fatal accident rate for business jets remains far better than that for turboprops. In round numbers, the fatal accident rate for business jets is about three to four times better than that for turboprops and the relative difference in rates has been steadily increasing. In 1990, the business jet fatal accident rate was about twice as good as that for turboprops.

Fatal accidents per 100 aircraft in service – business jets and turboprops

Fatal accidents per 100 aircraft (excludes acts of violence)



Annual fatal accident rates (business aircraft) – last 10 years

Year	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Jets	0.04	0.02	0.03	0.03	0.04	0.02	0.04	0.02	0.04	0.04
Turboprops	0.09	0.09	0.15	0.08	0.11	0.08	0.13	0.06	0.07	0.11

Fatal accidents per 100 aircraft at risk

Fatal Accidents

Business jets suffered eight fatal accidents in 2024, one fewer than in 2023 but four more than in 2022. Last year's result was also worse than the five-year moving average of 6.8. In the past, there have been relatively "good" and "bad" years but the long-term trend in the annual number of fatal accidents to this class of aircraft has shown little improvement over some 40 years with, typically, some seven or eight such accidents every year since the late 1970s. Nevertheless, the annual average for the last decade (2010-2019), at 6.6, was slightly better than that for the previous decade, 7.6, and that for the 1990s, 8.2. The annual average so far for the current decade is 6.8.

Business turboprops suffered 12 known fatal accidents in 2024, four more than in 2023 and six more than in 2022. The five-year moving average

for the class is 9.6. The annual average number of fatal accidents for the last decade (2010-2019) was 11.4, that for the previous decade was 15.6, and that for the 1990s, 16.7. The annual average so far for the current decade is 9.6.

Business aircraft safety, over the longer term, has been improving, with the fatal accident rate on a per aircraft basis falling. However, in the case of business jets, this improvement has really only just been keeping up with the growth of the fleet, with little improvement in the frequency of fatal accidents over at least the last 30-40 years. Meanwhile, business turboprops have been showing improvement, not just in the accident rate but also in the frequency of fatal accidents, with the annual average number of fatal accidents falling from about 20 in the 1990s to less than 10 now.

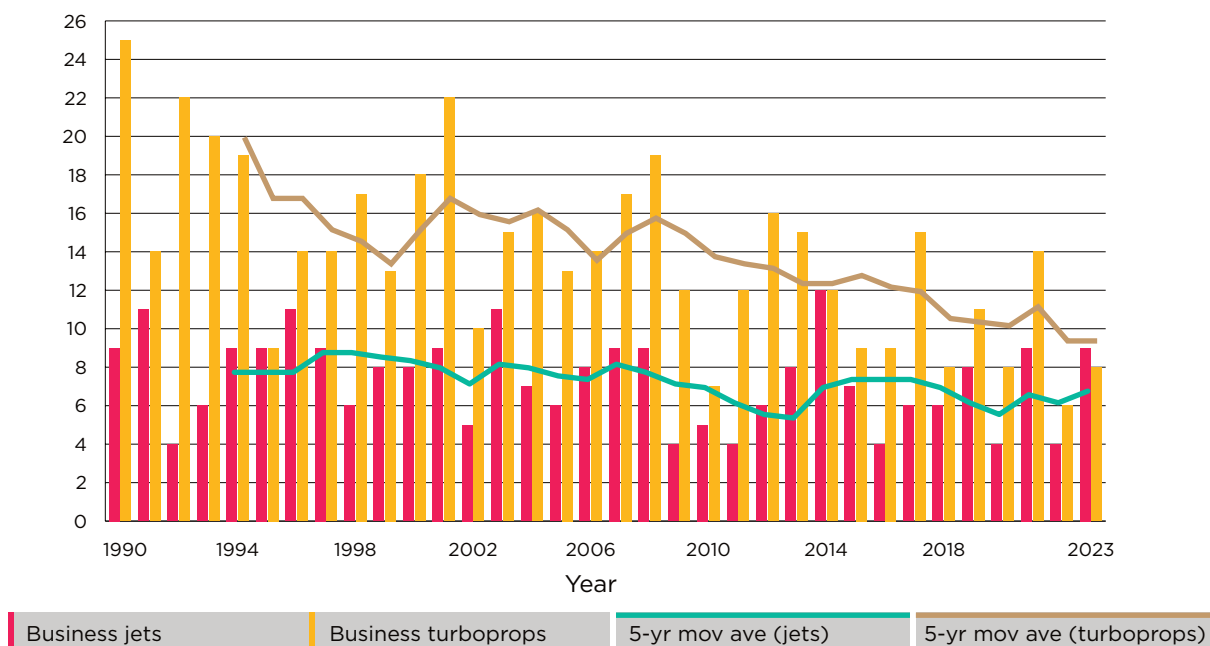
Annual fatal accidents (business aircraft) – last 10 years

Year	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Jets	7	4	6	6	8	4	9	4	9	8
Turboprops	9	9	15	8	11	8	14	6	8	12

Fatal accidents involving passenger and/or crew deaths

Fatal accidents – business jets and turboprops

Fatal accidents (excludes acts of violence)



Fatalities

In 2024, 21 passengers and crew died in the eight fatal accidents suffered by business jets, giving a simple average of about 2.6 fatalities per fatal accident. Last year's result was considerably better than that for 2023 when 32 passengers and crew died in nine fatal accidents but was worse than in 2022 when there were only 16 fatalities in four fatal accidents. Last year's result was better than the five-year moving average (24.6) and recent decade averages. The annual average number of fatalities during the last decade (2010-2019) was 25.9, the previous decade's was 23.4 and that of the 1990s was 35.9. The annual average so far

for the current decade is 24.6.

Business turboprops suffered a poor year, with a total of 60 passengers and crew being killed in the 12 fatal accidents, giving a simple average of 5.0 fatalities per fatal accident. The result for 2023 was the worst since 2019, when 65 passengers and crew were killed. The five-year moving average to the end of 2024 was 34.0. The annual average number of passenger and crew deaths for the last decade was 41.5, that for the 2000s, 49.8, and for the 1990s, 58.1. The annual average so far for the current decade is 34.0.

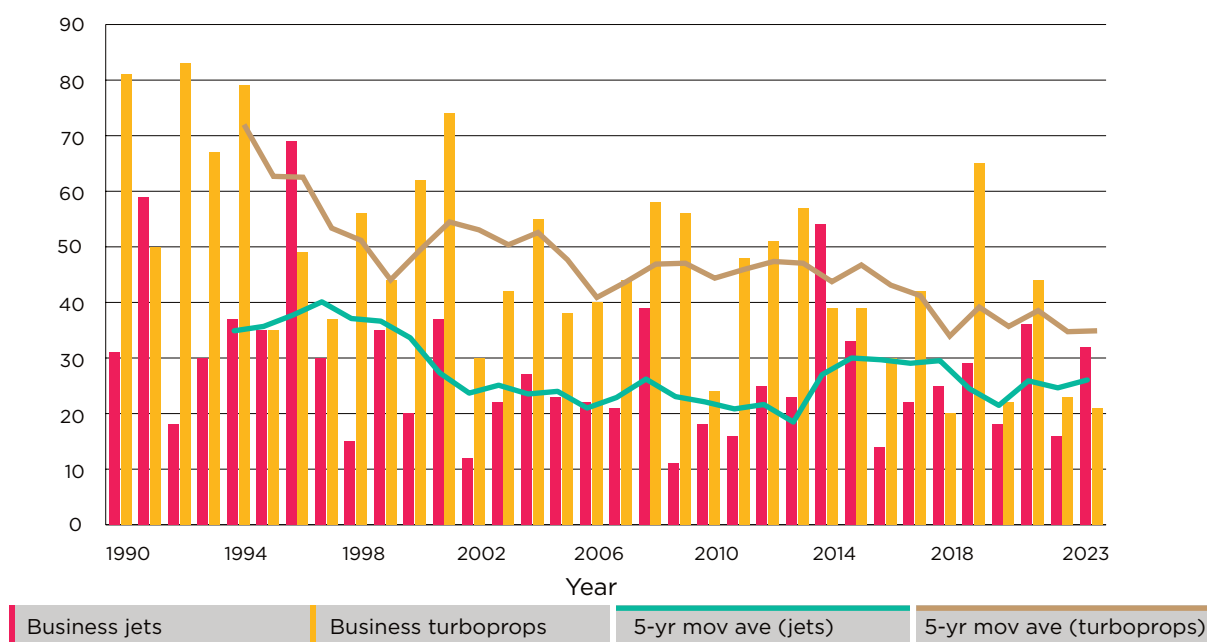
Annual fatalities (business aircraft) – last 10 years

Year	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Jets	33	14	22	25	29	18	36	16	32	21
Turboprops	39	30	42	20	65	22	44	23	21	60

Passenger and crew fatalities

Passenger/crew fatalities – business jets and turboprops

Number of fatalities (excludes acts of violence)



The worst accidents in 2024 included:

1) Gulfstream Astra SP (N1125A) of Skyjet Elite Corp on 10 March that was destroyed by impact and post-impact fire, killing the two crew and three passengers on board, when it apparently undershot while on final approach to Runway 25 at Ingalls Field, Hot Springs, Virginia, impacting trees about 300ft short of the runway. The accident happened in daylight (1452L) and in VMC. The aircraft was operating a flight from Hollywood International airport, Fort Lauderdale, Florida.

2) Beechcraft King Air E90 (XB-SKA) of Comercializadora Masvi SA de CV on 28 March that was destroyed by impact and post-impact fire when it crashed on high ground while descending inbound Palenque, Chiapas, Mexico, killing the two crew and seven passengers on board. The point of impact is apparently about 2,700ft above the airfield elevation, some 2km north of Lote Ocho and about 15km southwest of Palenque. The accident happened in daylight but, reportedly, in poor visibility in mist and cloud. The aircraft was operating a flight from Tuxtla Gutierrez.

Among those killed in the accident were Juan Pablo Montes de Oca, campaign coordinator of Eduardo Ramirez Aguilar, Morena candidate for the government of Chiapas, his wife and two children and other members of his family.

3) Beechcraft King Air B200 (YV3296) of Latino Americana de la Construcción CA on 9 May that appears to have gone out of control and entered a steep, descending left turn from about 10,000ft about 15min after take-off from La Chinita International airport, Maracaibo, Venezuela. Control was not regained and the aircraft crashed into the waters of El Tablazo

Bay, at the northern end of Lake Maracaibo, about 25nm north northeast of the airport, killing all eight on board. There was apparently no distress call. The accident happened in daylight (1624L). The aircraft was operating a flight to Porlamar, Venezuela.

4) Pilatus PC-12 47E (NG) (N357HE) of Haynie Enterprises Inc on 26 July that went out of control and crashed in open country about 60km north of Gillette, Wyoming while enroute from Nebraska City to Billings, Montana, killing the pilot and the six passengers on board. After take-off, the aircraft climbed to its cruise altitude, FL260. At about 1302L, the aircraft altered course to the right, climbed to about 27,550ft amsl and performed a 270° right turn. In the first 180° of the turn, the aircraft descended to an altitude of about 25,250ft amsl, however, it then climbed back to about 27,025ft amsl in the last 90° of the turn. Shortly after this the aircraft made a slight left turn before it began a descending 180° right turn which continued until impact. During the last portion of the flight, the pilot reported to ATC that he had lost the autopilot and declared an emergency. The controller queried the pilot on where he would like to land, however, received no initial response. The pilot then responded that he was trying to get control of the aircraft. There was then no further response from the pilot. The accident happened in daylight (1304L). The aircraft had stopped at Nebraska City to re-fuel and for lunch before continuing to Billings, with a final destination reported to be Seattle, Washington where the passengers were due to join a Gaither Homecoming Cruise to Alaska.

Among those killed in the crash were three members of The Nelons gospel group. Killed

in the crash were Jason and Kelly Nelon Clark, Amber and Nathan Kistler and their assistant, Melodi Hodges, along with the pilot, Larry Haynie and his wife, Melissa.

5) Beechcraft King Air C90GTx (PS-AAS)

of Arni Alberto Spiering on 15 August that was destroyed by impact and post-impact fire when it crashed on a farm, about 80km north of Apiacas, Mato Grosso, Brazil and about 48km northwest from Pousada Amazonia Fishing Lodge Airstrip, Para, Brazil, where it had taken off from. The five people on board were killed, including the owner, businessman Arni Alberto Spiering. The accident happened in daylight (0700L) and in VMC. The passengers, who were reportedly employees and family members, were “returning home” after engaging in “sport fishing”.

6) Embraer EMB-121 A1 (PT-MBU) of

Aerotaxi Abaete on 23 October that was destroyed by impact and post-impact fire when it crashed on a wooded hillside at Santa Branca, about 100km from Sao Paulo, Brazil while on a Medevac flight. According to reports from local residents, the aircraft “sounded like it had suffered an engine failure” with this being followed by a “loud explosion”. All five onboard, including a doctor and a nurse, were killed. The accident happened in darkness (1845L) and reportedly in adverse weather with “poor visibility” and “heavy rain”. The aircraft

was enroute from Hercilio Luz International airport, Florianopolis, Brazil to Pampulha-Carlos Drummond de Andrade Airport, Belo Horizonte, Brazil, where it would refuel before proceeding to Salvador, Bahia, Brazil.

7) Piper PA-42-1000 Cheyenne 400LS

(PR-NDN) of Luiz Claudio Salgueiro Galeazzi on 22 December that was destroyed by impact and post-impact fire when it lost height shortly after take-off from Runway 24 at Canela Airport, Canela, Rio Grande do Sul, Brazil, struck the roof of a two-storey house in Gramado, Rio Grande do Sul and crashed into an empty furniture shop. Burning debris continued across a road and impacted a small hotel. All 10 on board the aircraft were killed in the accident and a number of people on the ground were injured, two of them seriously. After take-off, the aircraft entered a right turn and climbed to a height of about 625ft above the airfield elevation as it flew over the Arroli Angabei valley, before rapidly losing height and crashing on the far side of the valley, about 1.5km from the airfield. The accident happened in daylight (0913L) but in poor weather with reduced visibility in rain and fog. The aircraft was operating a flight to Jundiá, Sao Paulo.

It is understood that the pilot was Luiz Claudio Salgueiro Galeazzi while the passengers were all members of his extended family.

Fatality Rates

The fatality rate, on a fatality per 1,000 seats basis, for business jets in 2024 improved from that for 2023 and fell, more or less where the long-term trend predicted. In 2024, the fatality rate was about one death per 14,000 seats. The average fatality rate for the last

decade (2010-2019) was one per 10,000 seats. The rate for the 2000s was about one per 7,250 seats and for the 1990s, one per 2,850 seats. On this basis, business jet operations are now about five times safer than they were 30 years ago.

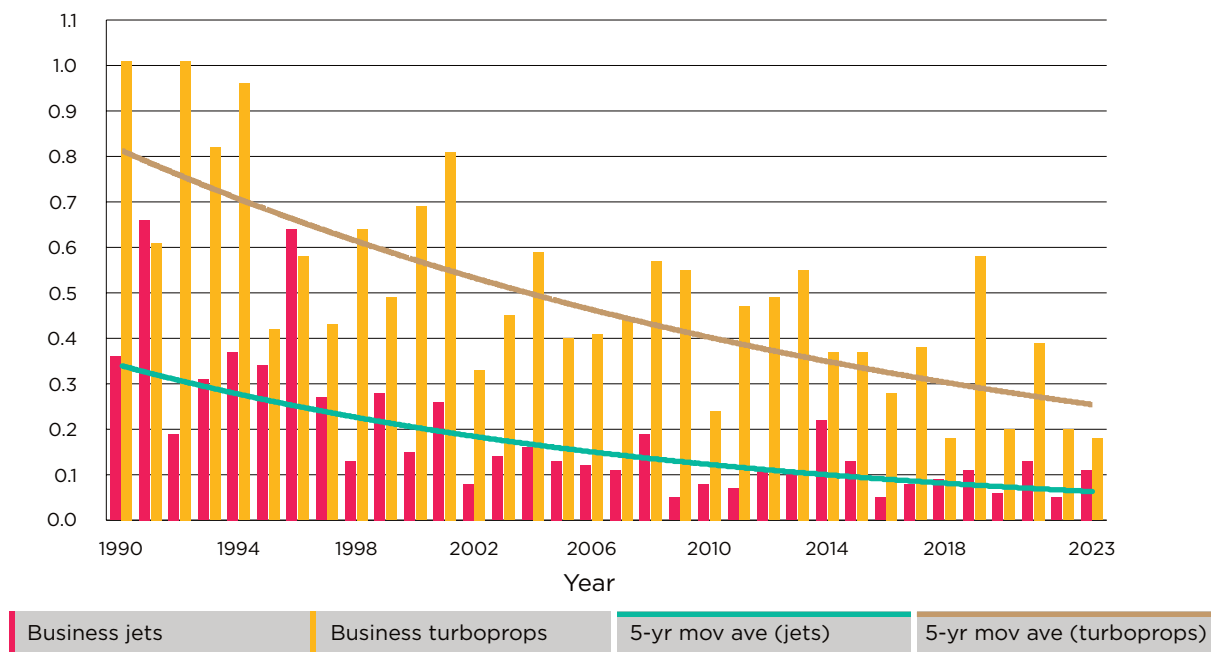
In comparison to the business jet fleet, the fatality rate, on a per seat basis, for turboprops in 2024 was considerably worse than that for 2023, influenced by a number of accidents with a higher than usual death toll. The rate last year was around one death per 2,000 seats, while that for 2023 was about one per 5,500 seats. The long-term trend line suggested an expected fatality rate in 2024 of one per 3,700 seats. The average for the last decade (2010-2019) was one death per 1,650 seats, for

the 2,000s one per 2,000 seats and that for the 1990s one per 1,450 seats. The turboprop fatality rate, as with the jets, is now about five times better than in the 1990s but, as last year has shown, there can still be “bad” years.

Although the fatality rate for both business jets and turboprops has shown considerable improvement over the last 30 to 40 years, business jets, on this basis, are now about four times safer than business turboprops.

Passenger/crew fatalities per 1,000 seats – business jets & turboprops

Fatalities per 1,000 seats (excludes acts of violence)



Annual fatality rates (business aircraft) – last 10 years

Year	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Jets	0.13	0.05	0.08	0.09	0.11	0.06	0.13	0.05	0.11	0.07
Turboprops	0.37	0.28	0.38	0.18	0.58	0.20	0.38	0.20	0.18	0.49

Fatalities (passengers and crew) per 1,000 seats

Notes

The aircraft types covered in this report include the following:

- All business jets
- Twin turboprops – Cessna 406, 421 Turbo conversion, 425 and 441, Embraer Xingu, Epic E1000 and LT Dynasty, Beechcraft
- King Air family, Duke Turbo conversion, Starship, Fairchild Merlin I, II and III, Mitsubishi MU2, Piper PA-31T and PA-42 Cheyenne, Piaggio P180 Avanti and Turbo Commander family.
- Single turboprop – Pilatus PC12 and TBM700/850/900.

PAUL HAYES, LONDON, 8 AUGUST 2025

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