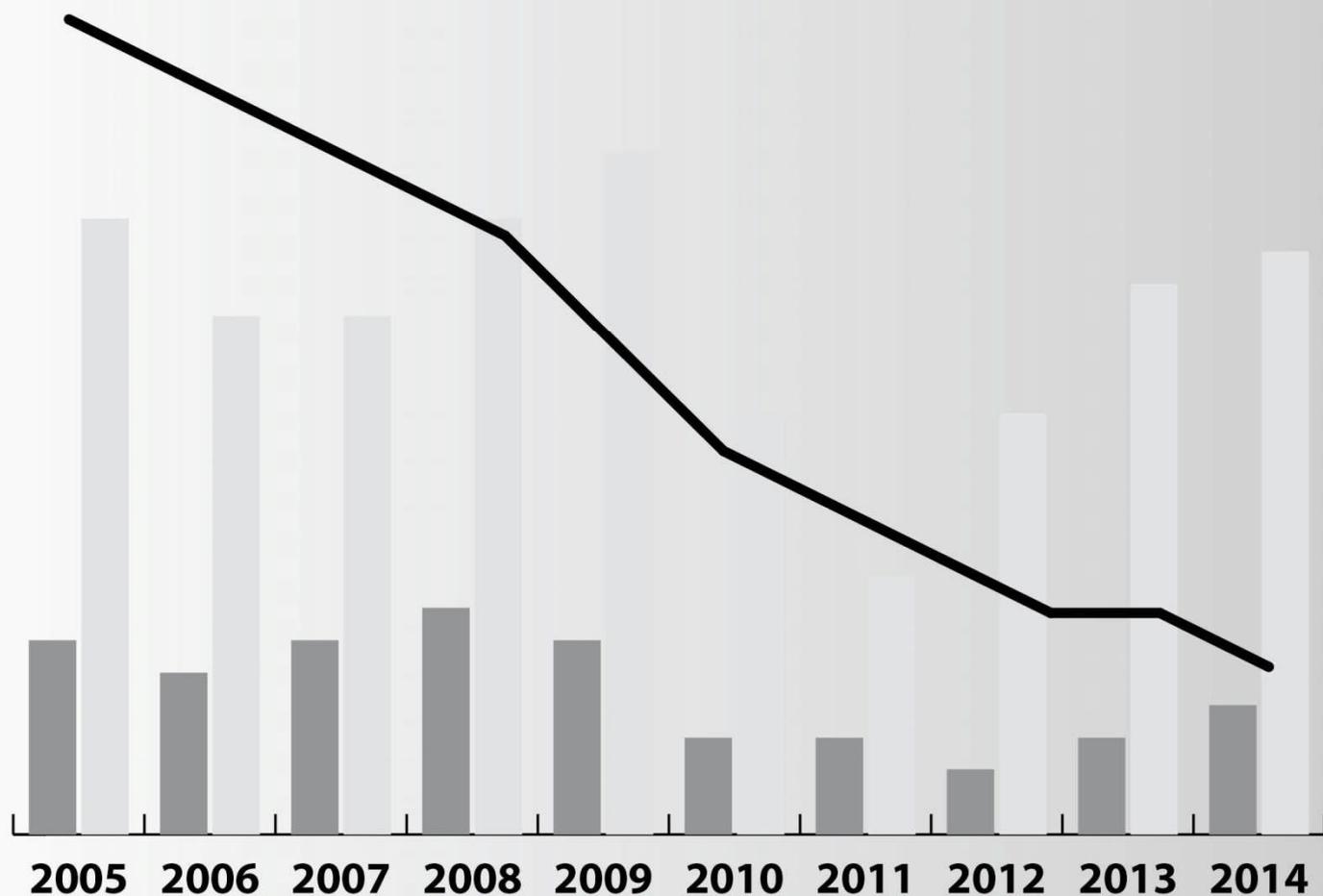

BUSINESS AVIATION SAFETY & LOSSES

ANNUAL REVIEW 2014



2014 – Yet another disappointing year

The year 2014 was another disappointing one, with business jet aircraft experiencing the worst fatal accident rate in recent years.

The accident rate for business turboprops did improve last year in comparison to 2013 and 2012, but it was similar or worse than the rates for 2009 through 2011.

The long-term trend in the accident rates for business turboprops is improving, but that for business jets seems to have largely stalled over the last 10 years ¹.

Fatal Accident Rates

In 2014, the fatal accident rate for business jets was about one per 1,430 aircraft², a marked deterioration on the one per 2,500 aircraft in 2013 and one per 3,300 aircraft in 2012. Business turboprops, however, improved with a fatal accident rate in 2014 of about one per 770 aircraft, compared with one per 550 aircraft in 2013 and one per 590 aircraft in 2012.

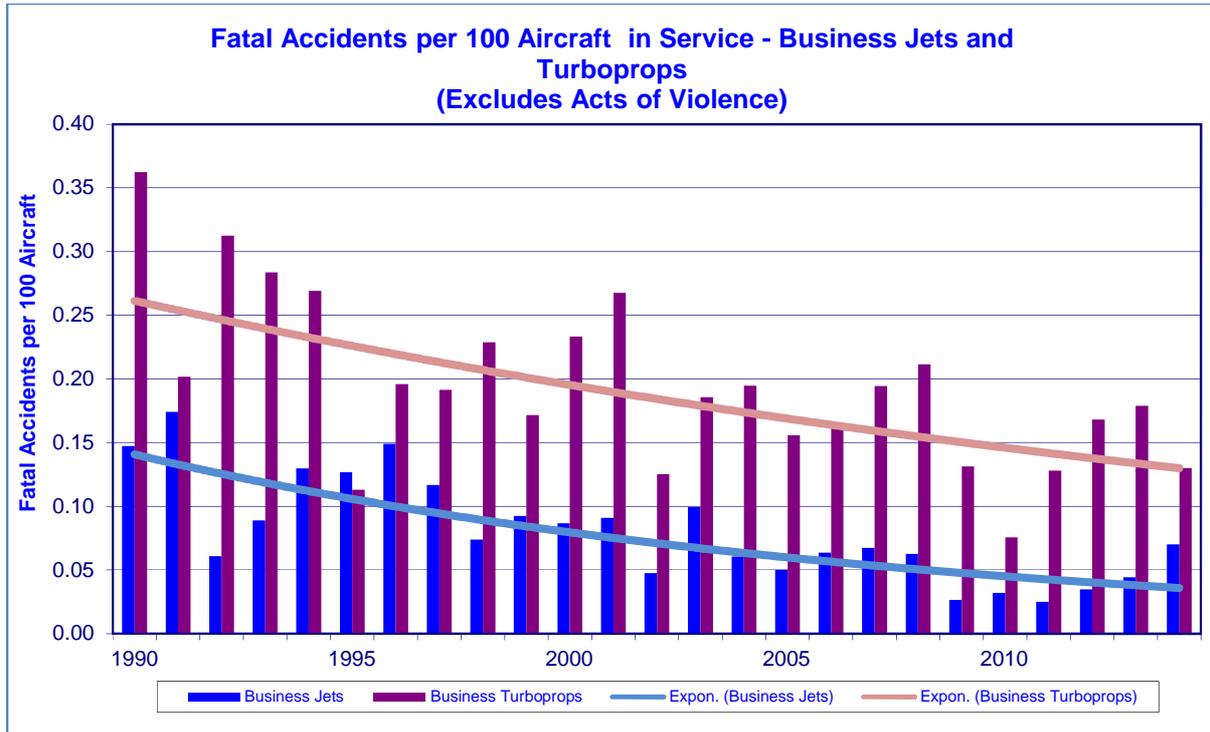
The 2014 fatal accident rate for business jets compares poorly with the most recent years – the business jet fatal accident rate for the decade of the 2000s was one per 1,600 aircraft. However, it was better than the average for the decade of the 1990s, which was one per 900 aircraft.

Meanwhile, the 2014 fatal accident rate for business turboprops, at one per 770 aircraft, shows a marked improvement over the annual average for the decade of the 2000s, which was one per 560 aircraft. The average for the 1990s was one per 435 aircraft.

With no improvement in the fatal accident rate for business jets in recent years, business turboprops have begun to close the gap again. Twenty years ago, on average, the fatal accident rate for business jets was about two times better than that for business turboprops. A more rapid improvement in safety for the business jet fleet then meant that the accident rates for the two classes of aircraft diverged to the point where the business jet fatal accident rate was some four times better than for the turboprops. However, by the end of last year, the difference in the rates had narrowed somewhat.

¹ “Business Jets and Turboprops”. Our definition includes all those aircraft types generally considered to be targeted at the private/corporate executive market but excluding “airliner” types, which may be used as executive/VVIP transports (a list of the types included appears at the end of this report). This analysis is based on the class of aircraft and is not limited to those aircraft actually in private/corporate use. Many of these “business” aircraft are operated for passenger or cargo air taxi/charter, aerial work etc.

² 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 should be borne in mind when comparing one year to another.



Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Jets	0.05	0.06	0.07	0.06	0.03	0.03	0.02	0.03	0.04	0.07
Turboprops	0.16	0.16	0.19	0.21	0.13	0.08	0.13	0.17	0.18	0.13

Fatal accidents per 100 aircraft at risk

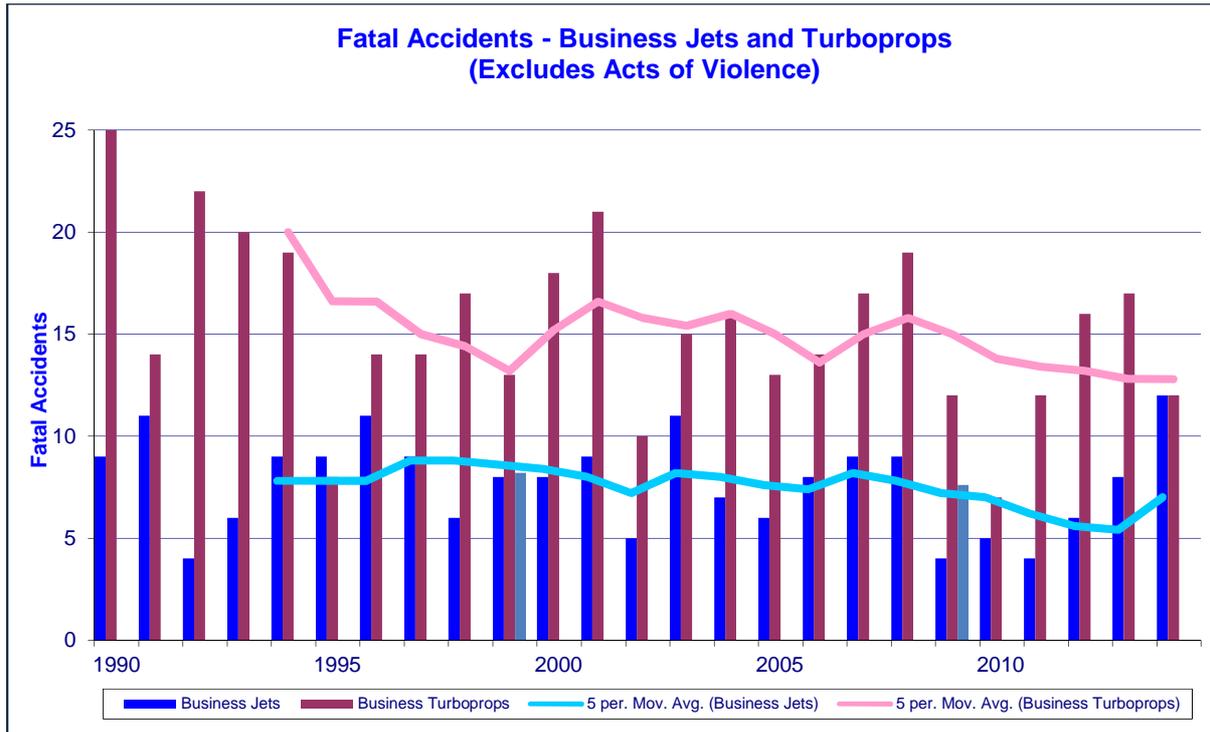
Fatal Accidents

Business jets suffered a total of 12 fatal accidents in 2014, four more than in 2013 and the worst result since the class entered service in the 1960s. However, there were six previous years with 11 fatal accidents: 2003, 1996, 1991, 1985, 1980 and 1977. Fatal accidents increased for the third year running in 2014. Nevertheless, the annual average for the current decade so far (2010-2014), at seven, is still better than the previous decade at 7.6 and for the 1990s, at 8.2.

Business turboprops also suffered 12 fatal accidents in 2014, however, this was a relatively better result for this class. There were 17 fatal accidents in 2013 and 16 in 2012. The 2014 result brings the annual average number of fatal accidents for the current decade so far down to 12.8. The average for the previous decade was 15.4, and that for the 1990s, 16.7.

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Jets	6	8	9	9	4	5	4	6	8	12
Turboprops	13	14	17	19	12	7	12	16	17	12

Fatal accidents involving passenger and/or crew deaths



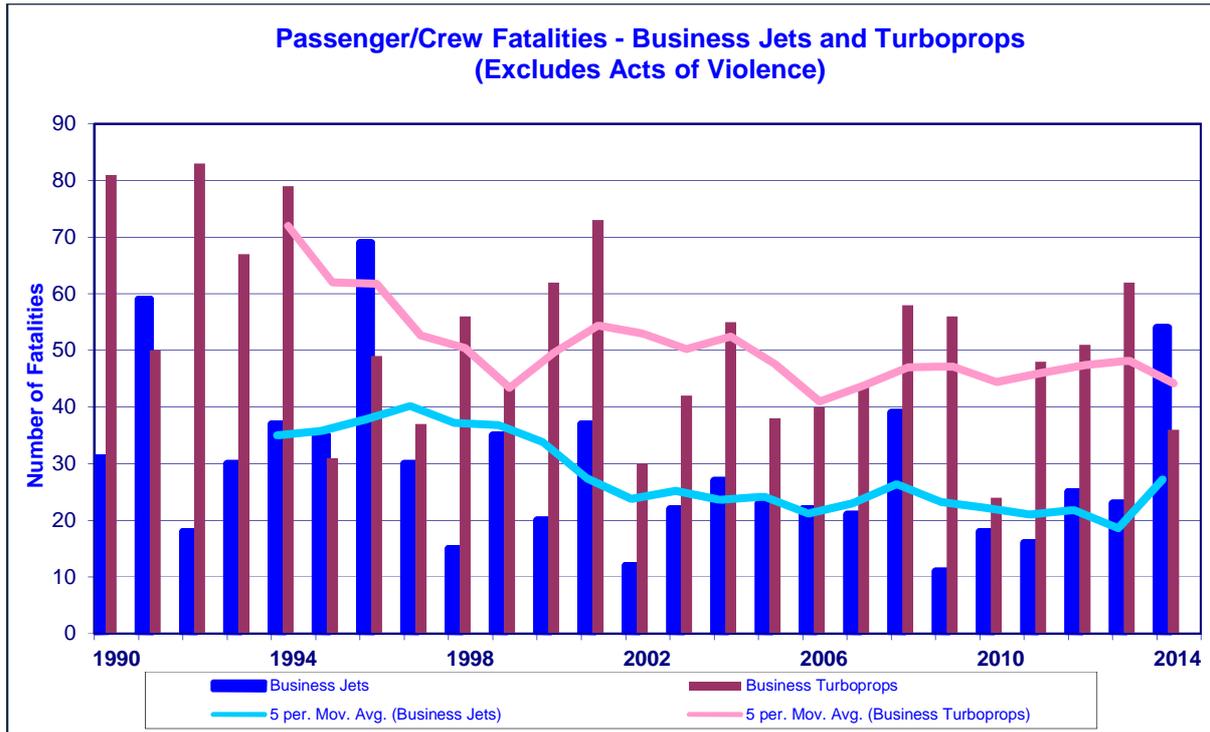
Safety over the longer term is still improving, with the fatal accident rate on a per aircraft basis falling. However, for much of the last 20 or so years, this improvement has really only been keeping up with the growth of the fleet; it has not been enough to significantly reduce the frequency of accidents.

Fatalities

In 2014, 54 passengers and crew died in the 12 fatal accidents suffered by business jets, giving a simple average of 4.5 fatalities per fatal accident. This is compared with the 23 passengers and crew who died in the eight fatal accidents in 2013, and 25 in the six fatal accidents in 2012. The 2014 result was the worst since 1996 when 69 people were killed in 11 fatal accidents. The annual average number of fatalities so far in this decade is now 27.2 compared with the previous decade's average of 23.4, but it is an improvement on that for the 1990s of 35.9.

A total of 36 passengers and crew died in the 12 fatal accidents suffered by business turboprops in 2014, giving a simple average of three fatalities per fatal accident. In 2013, 62 passengers and crew died in 17 accidents and in 2012, 51 died in 16 accidents. The annual average number of passenger and crew deaths for the decade so far is 44.2, that for the 2000s, 49.8, and for the 1990s, 58.1.

Annual Fatalities (Business Aircraft) – Last 10 Years										
Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Jets	23	22	21	39	11	18	16	25	23	54
Turboprops	38	40	44	58	56	24	48	51	62	36
Passenger and crew fatalities										



The worst accidents in 2014 include 1) the Diplomat Aviation (Bahamas) Limited Learjet 35 (N17UF) accident on 14 November, which killed the seven passengers and the two pilots when it apparently undershot on approach to Freeport, Bahamas; 2) the Lineas Aereas Comerciales SA de CV Hawker 125 Srs700 (XA-UKR) on 19 April, which undershot on approach to Saltillo, Mexico, in poor visibility, killing six passengers and two crew; 3) the Emar Associates Inc Gulfstream IV (N121JM), on 31 May, which overran following an aborted take-off at Hanscom Field, Bedford, Massachusetts, killing four passengers and three crew; 4) the AF Andrade Empreend e Particip Ltda Citation XLS (PR-AFA) which crashed in a built up area of Santos, Brazil, while positioning for a second approach to the airport, killing the five passengers and two crew; and 5) the Ambulancias Aereas de Colombia Ltda King Air C90 EPIC (HK-4921) which undershot on approach to Villavicencio, Colombia.

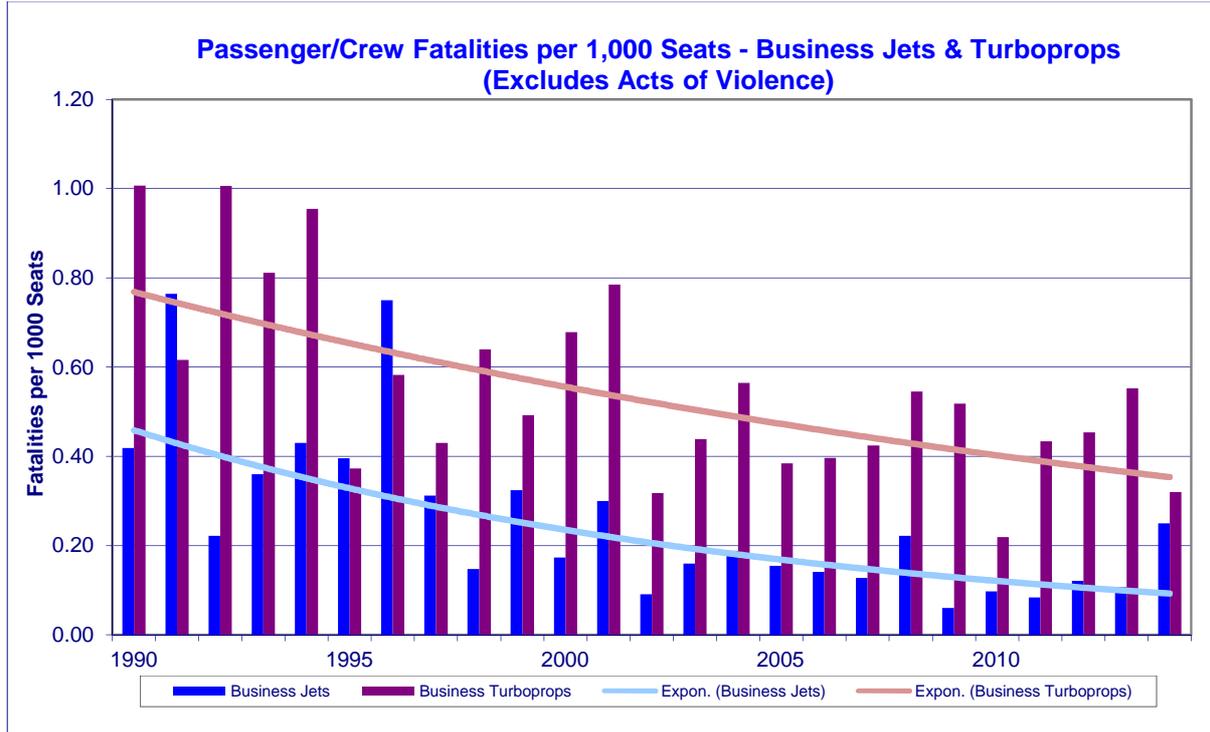
Fatality Rates

Fatality rates in 2014, on a deaths per 1,000 seat-years basis, generally followed the pattern shown for fatal accidents, with business jets experiencing a marked deterioration but with turboprops producing a relatively better result.

The fatality rate for business jets worsened last year, going from about one death per 9,100 seats in 2013 to one per 4,000 seats in 2014. The average fatality rate for the 2000s was one per 6,250 seats and for the 1990s, one per 2,500 seats.

Turboprops showed considerable improvement with the fatality rate for 2014 standing at almost one per 2,800 seats, far better than in 2013 when the rate was one per 1,800 seats and the average for the last decade, which was one per 2,000. The average for the 1990s was one per 1,450 seats.

It is perhaps worrying that, although the turboprop business aid fatality rate has shown an improvement over the 1990s, there has been no improvement in the rate in recent years.



Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Jets	0.15	0.14	0.13	0.22	0.06	0.10	0.08	0.12	0.11	0.25
Turboprops	0.38	0.40	0.42	0.55	0.52	0.22	0.43	0.45	0.55	0.36

Fatalities (passengers and crew) per 1,000 seats

Notes

The aircraft types covered in this report include:-

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

Paul Hayes, London, 27 March 2015

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