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Safety Improves in U.S. On-Demand Operations

Part 121 accident data presented a mixed picture in 2009.

Although the February 2009 fatal accident involving a Colgan Air Bombardier Q400¹ shook the confidence of the industry and the public, it was

a relatively good year overall for U.S. civil aviation accident rates based on preliminary data, the U.S. National Transportation Safety Board (NTSB) says.²

The fatal accident rate for scheduled flights under U.S. Federal Aviation Regulations (FARs) Part 121 was 0.01 per 100,000 departures (Table 1). There were no fatal accidents in FARs Part 135 commuter operations.

The 2009 rate for all accidents in Part 121 scheduled operations, 0.26 per 100,000 departures, was higher than the 0.19 for 2008.

Nonscheduled Part 121 flights had a rate per 100,000 departures of 2.66 in 2009, compared with 4.83 in 2008. The 26 Part 121 accidents in scheduled service exceeded the 20 in 2008.

Accidents, Fatalities and Rates, U.S. Civil Aviation, 2009								
	Accidents		Fatalities		Accidents per 100,000 Flight Hours		Accidents per 100,000 Departures	
	All	Fatal	Total	Aboard	All	Fatal	All	Fatal
U.S. air carriers operating under FARs Part 121								
Scheduled	26	1	50	49	0.149	0.006	0.255	0.010
Nonscheduled	4	1	2	2	0.753	0.188	2.663	0.666
U.S. air carriers operating under FARs Part 135								
Commuter	2	0	0	0	0.685	—	0.353	—
On-demand	47	2	17	14	1.63	0.07	—	—
U.S. general aviation	1,474	272	474	465	7.20	1.33	—	—
U.S. civil aviation	1,551	275	534	530	—	—	—	—
Non-U.S.-registered	7	2	2	2	—	—	—	—

FARs = U.S. Federal Aviation Regulations
 Notes: All data are preliminary.
 Flight hours and departures are compiled and estimated by the U.S. Federal Aviation Administration (FAA). On-demand U.S. Federal Aviation Regulations (FARs) Part 135 flight hours are estimated by the FAA. Departure information for on-demand Part 135 operations is not available.
 Accidents and fatalities in the categories do not necessarily sum to the figures in U.S. civil aviation because of collisions involving aircraft in different categories.
 U.S. air carriers operating under Part 135 previously referred to as scheduled and nonscheduled services are now called commuter operations and on-demand operations respectively. On-demand Part 135 operations encompass charters, air taxis, air tours, or medical services when a patient is on board.

Source: U.S. National Transportation Safety Board

Table 1

Accidents and Accident Rates, FARs Part 121, by NTSB Classification, 2000–2009

Year	Accidents				Accidents per Million Hours Flown			
	Major	Serious	Injury	Damage	Major	Serious	Injury	Damage
2000	3	3	20	30	0.109	0.109	1.093	1.475
2001	5	1	19	21	0.281	0.056	1.067	1.179
2002	1	1	14	25	0.058	0.058	0.810	1.446
2003	2	3	24	25	0.114	0.172	1.374	1.431
2004	4	0	15	11	0.212	0.000	0.794	0.583
2005	2	3	11	24	0.103	0.155	0.567	1.238
2006	2	2	7	22	0.104	0.104	0.363	1.142
2007	0	2	14	12	0.000	0.102	0.713	0.611
2008	3	1	8	16	0.157	0.052	0.419	0.838
2009	2	3	15	10	0.111	0.167	0.833	0.556

FARs = U.S. Federal Aviation Regulations; NTSB = U.S. National Transportation Safety Board

Notes: The NTSB classifications are as follows:

Major — an accident in which any of three conditions is met: A Part 121 aircraft was destroyed, or there were multiple fatalities, or there was one fatality and a Part 121 aircraft was substantially damaged.

Serious — an accident in which at least one of two conditions is met: There was one fatality without substantial damage to a Part 121 aircraft, or there was at least one serious injury and a Part 121 aircraft was substantially damaged.

Injury — a nonfatal accident with at least one serious injury and without substantial damage to a Part 121 aircraft.

Damage — an accident in which no person was killed or seriously injured, but in which any aircraft was substantially damaged.

Source: U.S. National Transportation Safety Board

Table 2

Passenger Injuries and Injury Rates, FARs Part 121 Scheduled Service, 2000–2009

Year	Accidents		Fatalities		Accidents per 100,000 Flight Hours		Accidents per 1,000,000 Miles Flown		Accidents per 100,000 Departures	
	All	Fatal	Total	Aboard	All	Fatal	All	Fatal	All	Fatal
2000	49	2	89	89	0.280	0.011	0.0069	0.0003	0.443	0.018
2001	41	6	531	525	0.216	0.012	0.0053	0.0003	0.348	0.019
2002	34	0	0	0	0.203	—	0.0049	—	0.331	—
2003	51	2	22	21	0.302	0.012	0.0073	0.0003	0.499	0.020
2004	23	1	13	13	0.126	0.005	0.0030	0.0001	0.213	0.009
2005	34	3	22	20	0.182	0.016	0.0043	0.0004	0.312	0.027
2006	26	2	50	49	0.139	0.011	0.0033	0.0003	0.245	0.019
2007	26	0	0	0	0.137	—	0.0032	—	0.242	—
2008	20	0	0	0	0.108	—	0.0026	—	0.195	—
2009	26	1	50	49	0.149	0.006	0.0036	0.0001	0.255	0.010

FARs = U.S. Federal Aviation Regulations

Notes: 2009 data are preliminary.

Flight hours, miles and departures are compiled by the U.S. Federal Aviation Administration.

For 2001, the Sept. 11 terrorist attack is included in the totals for accidents and fatalities but excluded for accident rate computation. Other than the persons aboard aircraft who were killed, fatalities resulting from the act are excluded.

Source: U.S. National Transportation Safety Board

Table 3

Among all Part 121 accidents, two were classified by the NTSB as major (Table 2).³ That was a decrease from three in 2008 and from the average for the preceding nine years, beginning in 2000, of 2.4.⁴ The number of accidents classified as serious and as injury accidents increased from 2008.

The 2009 rate for Part 121 major accidents per 100,000 departures was 0.11, compared with 0.16 in 2008 and an average of 0.13 for the nine years of 2000 to 2008. Rates for serious and injury accidents increased in 2009 over those for 2008.

Despite the Colgan Air accident, the 2009 fatal accident rate for Part 121 scheduled operations, 0.01, equaled the previous nine-year average (Table 3). The latest rate for all accidents in Part 121 scheduled operations, 0.26, is below the previous nine-year average of 0.31.

Excluding the 2001 fatal accident total, which included the Sept. 11 hijacked airplanes as

Accidents, Fatalities and Rates, FARs Part 121, Nonscheduled Service, 2000–2009

Year	Accidents		Fatalities		Accidents per 100,000 Flight Hours		Accidents per 1,000,000 Miles Flown		Accidents per 100,000 Departures	
	All	Fatal	Total	Aboard	All	Fatal	All	Fatal	All	Fatal
2000	7	1	3	3	0.853	0.122	0.0188	0.0027	1.689	0.241
2001	5	0	0	0	0.762	—	0.0167	—	1.533	—
2002	7	0	0	0	1.225	—	0.0265	—	3.012	—
2003	3	0	0	0	0.517	—	0.0113	—	1.462	—
2004	7	1	1	1	1.002	0.143	0.0215	0.0031	2.915	0.416
2005	6	0	0	0	0.885	—	0.0186	—	2.728	—
2006	7	0	0	0	1.138	—	0.0243	—	3.619	—
2007	2	1	1	1	0.321	0.161	0.0069	0.0034	1.030	0.515
2008	8	2	3	1	1.464	0.366	0.0325	0.0081	4.832	1.208
2009	4	1	2	2	0.753	0.188	0.0166	0.0041	2.663	0.666

FARs = U.S. Federal Aviation Regulations

Notes: 2009 data are preliminary.

Flight hours, miles and departures are compiled by the Federal Aviation Administration.

Source: U.S. National Transportation Safety Board

Table 4

Accidents, Fatalities and Rates, FARs Part 135, Commuter Operations, 2000–2009

Year	Accidents		Fatalities		Accidents per 100,000 Flight Hours		Accidents per 1,000,000 Miles Flown		Accidents per 100,000 Departures	
	All	Fatal	Total	Aboard	All	Fatal	All	Fatal	All	Fatal
2000	12	1	5	5	3.247	0.271	0.2670	0.0223	1.988	0.166
2001	7	2	13	13	2.330	0.666	0.1624	0.0464	1.254	0.358
2002	7	0	0	0	2.559	—	0.1681	—	1.363	—
2003	2	1	2	2	0.627	0.313	0.0422	0.0211	0.349	0.175
2004	4	0	0	0	1.324	—	0.0855	—	0.743	—
2005	6	0	0	0	2.002	—	0.1312	—	1.138	—
2006	3	1	2	2	0.995	0.332	0.0645	0.0215	0.528	0.176
2007	3	0	0	0	1.028	—	0.0651	—	0.506	—
2008	7	0	0	0	2.385	—	0.1508	—	1.215	—
2009	2	0	0	0	0.685	—	0.0432	—	0.353	—

FARs = U.S. Federal Aviation Regulations

Notes: 2009 data are preliminary. Flight hours, miles, and departures are compiled by the U.S. Federal Aviation Administration (FAA).

Based on a February 2002 FAA legal interpretation provided to the NTSB, any Part 135 operation conducted with no revenue passengers aboard is be considered an on-demand flight operation. This interpretation is applied to accidents beginning with the year 2002. It has not been retroactively applied to accidents in 2000 and 2001.

U.S. air carriers operating under Part 135 previously referred to as scheduled and nonscheduled services are now called commuter operations and on-demand operations respectively. On-demand Part 135 operations encompass charters, air taxis, air tours, or medical services when a patient is on board.

Source: U.S. National Transportation Safety Board

Table 5

Accidents, Fatalities and Rates, FARs Part 135, On-Demand Operations, 2000–2009

Year	Accidents		Fatalities		Accidents per 100,000 Flight Hours	
	All	Fatal	Total	Aboard	All	Fatal
2000	80	22	71	69	2.04	0.56
2001	72	18	60	59	2.40	0.60
2002	60	18	35	35	2.06	0.62
2003	73	18	42	40	2.49	0.61
2004	66	23	64	63	2.04	0.71
2005	65	11	18	16	1.70	0.29
2006	52	10	16	16	1.39	0.27
2007	62	14	43	43	1.54	0.35
2008	58	20	69	69	1.81	0.62
2009	47	2	17	14	1.63	0.07

FARs = U.S. Federal Aviation Regulations

Notes: 2009 data are preliminary.

Flight hours are estimated by the U.S. Federal Aviation Administration (FAA).

In 2002, FAA changed its estimate of on-demand activity. The revision was retroactively applied to the years 1992 to 2002. In 2003, the FAA again revised flight activity estimates for 1999 to 2002.

U.S. air carriers operating under Part 135 previously referred to as scheduled and nonscheduled services are now called commuter operations and on-demand operations respectively. On-demand Part 135 operations encompass charters, air taxis, air tours, or medical services when a patient is on board.

Source: U.S. National Transportation Safety Board

Table 6

accidents, the previous nine years averaged 1.33 fatal accidents in the category, higher than the one fatal accident in 2009. The category included 26 total accidents in 2009, compared with the previous nine-year average — again factoring out 2001 — of 33.

Considering the 2009 fatal accident rate for Part 121 nonscheduled operations against the rest of the decade, it was the fifth lowest (Table 4). The rate, 0.67 per 100,000 departures, can be measured against a previous nine-year average of 0.26. It was, however, lower than the 2008 rate.

For Part 135 commuter operations, the 2009 total accident rate of 0.35 per 100,000 departures was encouraging in a year-over-year comparison with the 2008 rate of 1.22 and the nine-year average of 1.00 (Table 5).

There were two accidents in the category in 2009, also an improvement over the previous year's seven and the nine-year average of 5.67.

The Part 135 on-demand operations record for 2009 also showed an improvement in fatal accidents (Table 6). The rate, 0.07 per 100,000 flight hours — data for departures were unavailable — was about a tenth of the 2008 rate, and was by a comfortable margin the lowest in the 10-year period. The average rate for the previous nine years was 0.51.

The category's rate for all accidents, 1.63 per 100,000 flight hours, also was the third-lowest in the 10-year period, and better than the preceding nine-year average of 1.94.

Fatal accidents in the Part 135 on-demand category numbered two in 2009, compared with 20 in 2008. Again, the number was below that of any year in the previous nine, which averaged 17.11. Total accidents were also fewer than any other year in the 10-year period, as were on-board fatalities.

Notes

1. The Colgan Air flight, operating as Continental Connection 3407, crashed on approach to the Buffalo, New York, airport following a stall. There were 49 on-board fatalities and one ground fatality.
2. The NTSB data are available online at <www.nts.gov/aviation/Stats.htm>.
3. The NTSB classifications are as follows:

Major — an accident in which any of three conditions is met: A Part 121 aircraft was destroyed, or there were multiple fatalities, or there was one fatality and a Part 121 aircraft was substantially damaged.

Serious — an accident in which at least one of two conditions is met: There was one fatality without substantial damage to a Part 121 aircraft, or there was at least one serious injury and a Part 121 aircraft was substantially damaged.

Injury — a nonfatal accident with at least one serious injury and without substantial damage to a Part 121 aircraft.
4. All averages in this article are means.