



Transportation
Safety Board
of Canada

Bureau de la sécurité
des transports
du Canada



STATISTICAL SUMMARY

AVIATION OCCURRENCES 2014

30 June 2015

Canada

Foreword

This document provides Canadians with an annual summary of selected aviation safety data. The Transportation Safety Board of Canada (TSB) gathers and uses this data during the course of our investigations to analyse safety deficiencies and identify risks in the Canadian transportation system.

On March 12, 2014, the TSB implemented new regulations that changed the reporting requirements effective July 1, 2014. These changes are reflected in this statistical summary.

Users of these statistics are advised that, in a live database, the occurrence data are constantly being updated. Consequently, the statistics may change slightly over time. Further, as many occurrences are not formally investigated, information recorded for some occurrences may not have been verified. The 2014 statistics presented here reflect the TSB database updated at February 17, 2015.

To enhance awareness and increase the safety value of the material presented in the *TSB Statistical Summary – Aviation Occurrences 2014*, readers are encouraged to copy or reprint the data presented, in whole or in part, for further distribution (with acknowledgements of the source).

The TSB is an independent agency operating under its own Act of Parliament. Its sole aim is the advancement of transportation safety.

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Statistical Summary – Aviation Occurrences 2014

Accidents

Overview of accidents and fatalities

In 2014, a total of 249 aviation accidents were reported to the TSB, a 10% decrease from the previous year's total of 276 and a 12% decrease from the 5-year average of 282. Of the total, 212 involved Canadian-registered aircraft (excluding ultra-lights)¹, a 13% decrease from the previous year's total of 243 (Figure 1), and a 12% decrease from the 5-year average of 241.

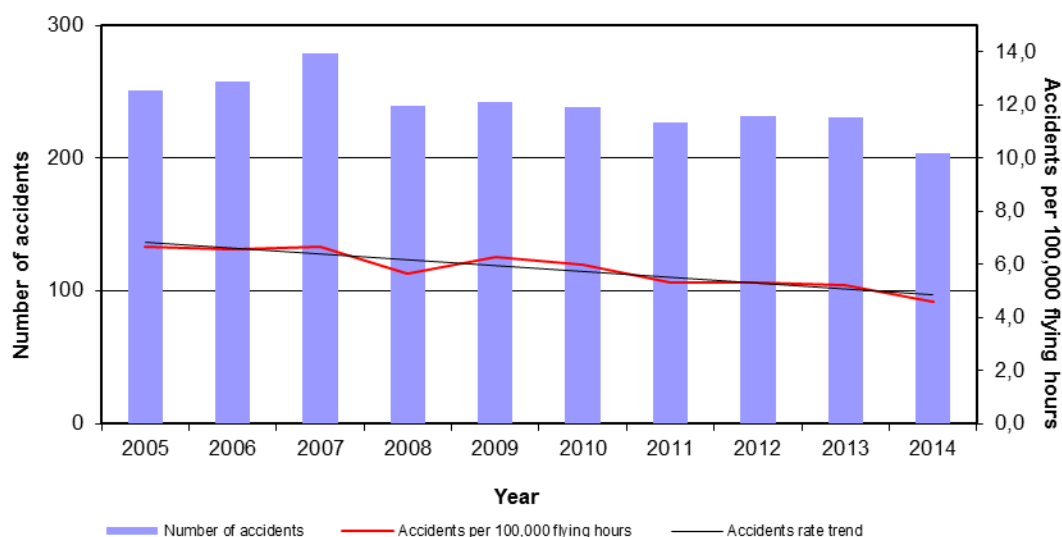
The 2014 estimate of flying activity is 4,433,000 hours², and the accident rate for Canadian-registered aircraft was 4.6 accidents per 100,000 flying hours, a decrease from the previous year's accident rate of 5.2. Analysis using linear regression indicates a statistically significant downward trend in accident rates ($p < .001$)³ over the 10-year period from 2005 to 2014 (Figure 1). Similarly, the 2014 accident rate of 3.4 accidents per 100,000 aircraft movements decreased from the 2013 rate of 3.9 accidents per 100,000 aircraft movements, and that rate has also trended significantly downward ($p < .05$) over the same 10-year period.

¹ Ultra-light accidents will be presented separately in all subsequent discussion of occurrences involving Canadian-registered aircraft.

² Source: Transport Canada

³ It is agreed by convention that, for a result to be considered statistically significant, its probability must be lower than 1 in 20 (that is, $p < .05$).

Figure 1. Accidents and accident rates, 2005–2014

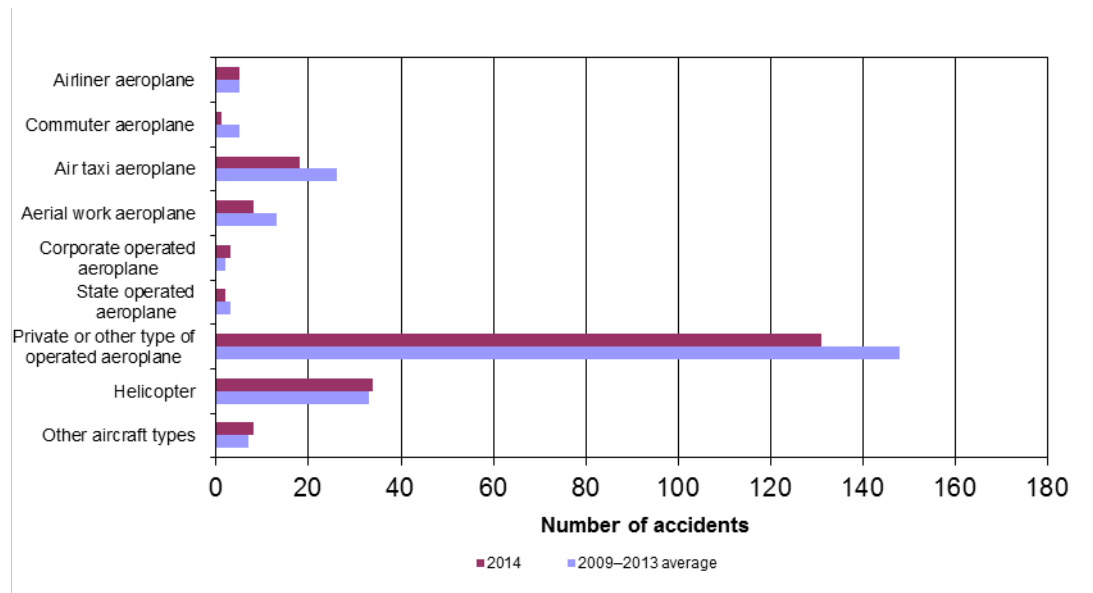


The 212 accidents involving Canadian-registered aircraft (Figure 2), included 170 accidents involving aeroplanes⁴ (34 accidents involved commercially operated aeroplanes) and 34 accidents involving helicopters. The remaining 8 accidents involved gliders, gyroplanes, balloons, or unmanned aerial vehicles (UAVs).

Of the 34 accidents involving Canadian-registered commercially operated aeroplanes (5 airliners, 1 commuter aircraft, 18 air taxi, 8 aerial work, and 2 flight training) in 2014, 2 resulted in a total of 4 fatalities (Table 4). One fatal accident involved air taxi, and one fatal accident involved aerial work.

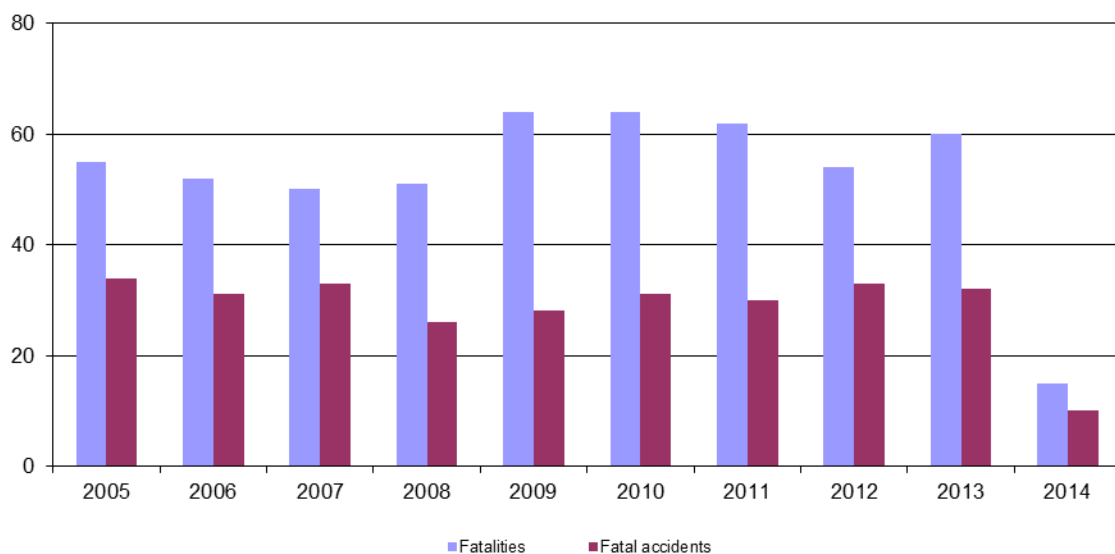
A total of 131 accidents involved Canadian-registered private/other aeroplanes, 11% lower than the 5-year average of 148. In 2014, 8 such accidents resulted in fatalities, down from 16 in 2013, and down from the 5-year average of 15.

⁴ As some occurrences involve more than one aircraft, readers are cautioned to note differences between the number of occurrences and the number of aircraft involved in occurrences. All Tables except Table 1 exclude ultra-light aircraft; all tables except Tables 1 and 4 also exclude balloons, gliders, gyrocopters, and UAVs.

Figure 2. Accidents involving Canadian-registered aircraft, by aircraft type, 2014

In 2014, 10 fatal accidents involved Canadian-registered aircraft other than ultra-lights (Figure 3), substantially down from the 2013 total of 32 and down from the 5-year average of 31.

The number of fatalities (15), was substantially lower than the 2013 total of 60, and the 5-year average of 61. The number of serious injuries (29) was higher than the 2013 total of 19 but slightly lower than the 5-year average of 33.

Figure 3. Fatalities and fatal accidents, 2005–2014

In 2014, crew fatalities accounted for 71% of aircraft fatalities, and passenger fatalities accounted for 29%.

In 2014, 34 accidents involved Canadian-registered helicopters, similar to the 5-year average of 33. Unlike in 2013, where there were 6 fatal accidents resulting in 12 fatalities, in 2014, none of the helicopter accidents were fatal. This is the first year without helicopter fatalities in the last ten years. Over the past 10 years, the highest proportion of helicopter accidents occurred during air transport operations (41%), pleasure/travel (16%), and training (6%).

In 2014, 31 accidents in Canada involved Canadian-registered ultra-light aircraft, an 11% increase from the 5-year average of 28. Two of these were fatal accidents resulting in 2 fatalities.

In 2014, 7 accidents involved foreign-registered aircraft in Canada, with 2 fatal accidents resulting in 4 fatalities.

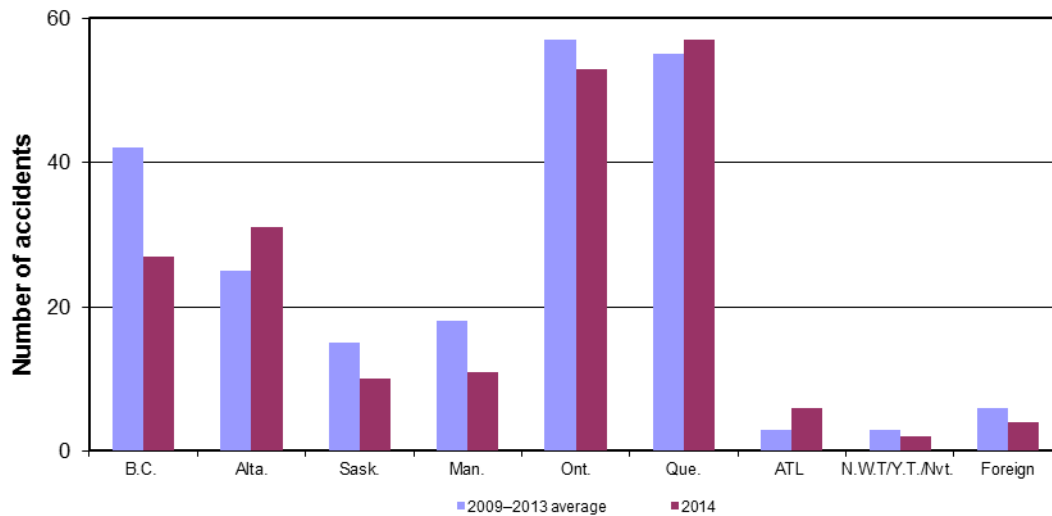
Accidents by selected categories

Province (Table 8)

In 2014, The total number of Canadian-registered aircraft accidents were slightly lower than the 5-year average for most provinces (Figure 4). Quebec accounted for 27% of Canadian-registered aircraft accidents, Ontario accounted for 25%, and Alberta accounted for 15%. These accidents were approximately proportional to the number of registered aircraft in those provinces⁵.

⁵ Transport Canada Canadian Civil Aircraft Registry

Figure 4. Accidents involving Canadian-registered aircraft, by province, 2014



Accident events and phases (Tables 11 and 12)

Accidents may be analyzed in more detail by examining the nature and distribution of selected events contributing to an occurrence. Tables 11 and 12 show counts of accidents involving selected event types within each phase of flight.

Although a single accident may involve more than one event within a phase, that accident is only counted once in the phase total. Therefore, the total of events within a phase will not sum to phase event totals. For example, in the take-off phase, if an occurrence involves both loss of control and power loss events, the occurrence is counted in each event category, but only once in the phase total. As well, approximately 5% of aeroplane accidents and 25% of helicopter accidents involve events in more than one phase of flight (not including post-impact), so the accidents shown in Figure 5 and Figure 6 sum to more than the total of accidents.

In 2014, the distribution was similar to that of 2013. The greatest numbers of aeroplane accidents were associated with landing (56%) and take-off (27%) phases of flight, followed by approach (15%) and en route (13%) phases. The greatest numbers of helicopter accidents were associated with landing (35%), takeoff (26%), and en route (21%) phases of flight, followed by manoeuvring⁶ (18%) and standing/taxiing (12%) phases. The figures below show the distribution of accidents per phase of flight for the period 2005–2014.

⁶ Manoeuvring (i.e., low altitude/aerobatic flight operations) does not occur on all flights.

Figure 5. Aeroplane accidents by event phase of flight, 2005–2014

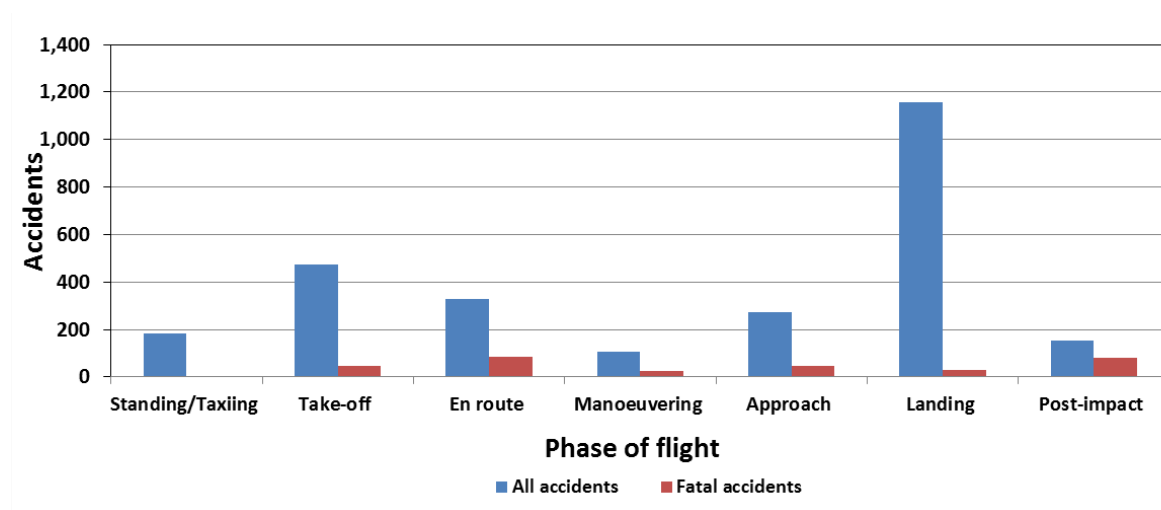
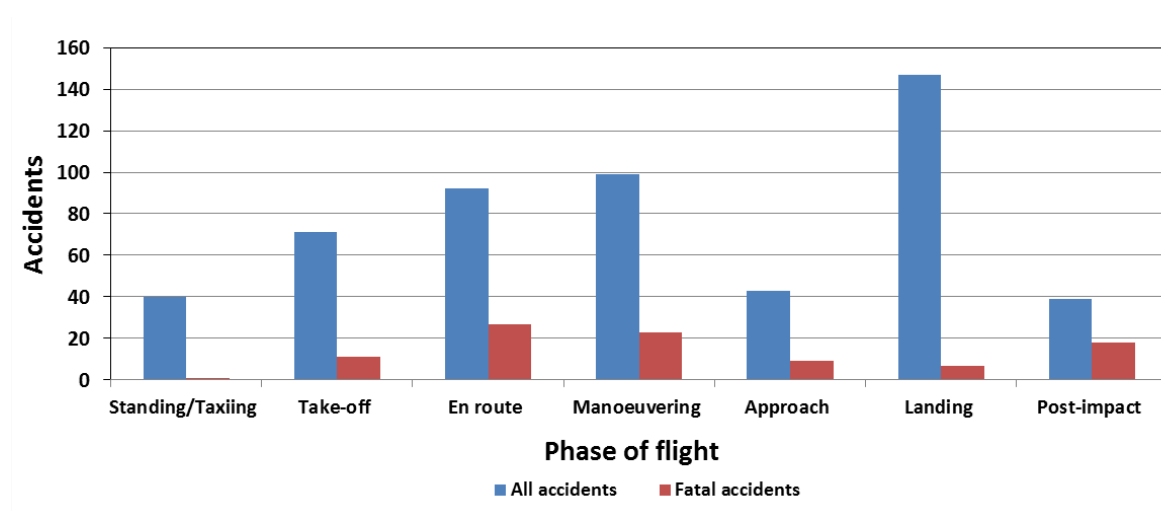


Figure 6. Helicopter accidents by event phase of flight, 2005–2014



Aeroplane accidents

From 2005 to 2014, of the 1,159 aeroplane accidents with landing phase events, 21% involved collision with object, 21% involved missing or going off the runway, 18% involved landing gear collapse or retraction, and 18% involved a nosedown or overturning event. Of the 475 aeroplane accidents with take-off phase events, 30% involved collision with terrain, 29% involved collision with object, and 28% involved loss of control.

Fatal aeroplane accidents

Collision with terrain was the predominant event in fatal aeroplane accidents from 2005 to 2014. Collision with terrain was involved in 57% of the 46 fatal aeroplane accidents with takeoff phase events, 69% of 87 fatal aeroplane accidents with en route phase events, 72% of 25 fatal aeroplane accidents with manoeuvring phase events, 68% of 47 fatal aeroplane

accidents with approach phase events, and 48% of 31 fatal aeroplane accidents with landing phase events.

Helicopter accidents

From 2005 to 2014, of the 147 helicopter accidents with landing phase events, 27% involved a hard landing, 24% involved a collision with object, 22% involved collision with terrain, and 19% involved loss of control. Of the 99 helicopter accidents with manoeuvring phase events, 47% involved collision with terrain, 27% involved loss of control, and 27% involved collision with object.

Fatal helicopter accidents

Collision with terrain was also the predominant event in fatal helicopter accidents from 2005 to 2014. Collision with terrain was involved in 8 of 11 fatal helicopter accidents with takeoff phase events, 21 of 27 fatal helicopter accidents with en route phase events, 15 of 23 fatal helicopter accidents with manoeuvring phase events, 4 of 9 fatal helicopter accidents with approach phase events, and 6 of 7 fatal helicopter accidents with landing phase events.

Operation type (Table 6)

In 2014, aeroplane accidents occurred mainly on recreational flights (56%), followed by training (16%) and air transport flights (13%). Helicopter accidents occurred mainly on air transport flights (53%) and recreational flights (21%).

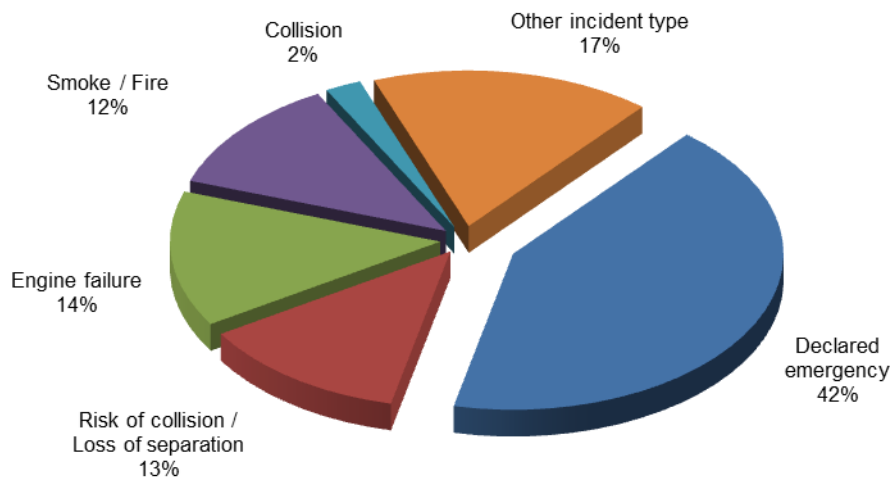
Incidents

Overview of incidents

Pursuant to TSB mandatory incident reporting requirements, 738 incidents were reported in 2014, with 653 involving Canadian-registered aircraft. This is an 8% increase from the 2013 total of 686, and 2% increase from the 5-year average of 721. On March 12, 2014, the TSB issued new regulations that changed the reporting requirements effective July 1, 2014. Under the new reporting requirements, aviation incidents include aircraft having a maximum certificated take-off weight greater than 2,250 kg (formerly 5,700 kg) and aircraft being operated under an air operator certificate issued under *Canadian Aviation Regulations*, Part VII. The increase in incidents in 2014 is consistent with this change.

In 2014, the most frequent incident types involving all Canadian-registered and foreign-registered aircraft were declared emergency (42%), engine failure, (14%), and risk of collision or loss of separation (13%) (Figure 7).

Figure 7. Reportable incidents by type, 2014



Appendices

Appendix A: Data tables

Table 1
Reportable aviation occurrences
2005-2014

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Accidents	306	303	323	294	297	288	257	291	276	249
Accidents in Canada involving Canadian-registered aircraft	283	278	300	274	271	273	240	267	262	238
Accidents outside Canada involving Canadian-registered aircraft	7	11	13	7	11	1	7	8	4	4
Accidents in Canada involving foreign-registered aircraft	18	14	10	15	15	14	10	17	10	7
Accidents by operator type	306	303	323	294	297	288	257	291	276	249
Commercial	94	105	98	95	74	86	77	73	65	59
Airliner (705)	4	7	4	6	2	6	6	5	7	5
Commuter (704)	7	4	4	5	6	7	6	5	3	2
Air taxi (703)	56	63	53	64	44	44	37	34	32	33
Aerial work (702)	26	30	34	19	20	28	27	26	21	17
Foreign/Other commercial type (a)	2	1	4	2	2	1	1	4	2	3
State	2	4	2	5	4	5	2	4	6	4
Corporate	10	3	10	4	6	2	7	6	6	5
Private/Other operator type (b)	201	191	213	191	215	195	172	208	200	181
Accidents by aircraft type	306	303	323	294	297	288	257	291	276	249
Aeroplane	218	216	243	208	223	220	201	205	212	176
Helicopter	50	56	46	44	33	31	36	41	27	34
Ultralight	31	28	30	29	35	30	17	36	24	32
Other aircraft type (c)	8	4	5	13	7	7	3	9	14	8
Number of aircraft involved in accidents*	314	311	327	300	303	290	261	296	280	253
Aeroplanes	224	223	245	214	228	222	204	209	215	179
Helicopters	51	56	47	44	33	31	36	42	27	34
Ultralights	31	28	30	29	35	30	17	36	24	32
Other aircraft type(c)	8	4	5	13	7	7	4	9	14	8
Fatal accidents by aircraft type	44	34	38	38	34	36	35	42	38	14
Aeroplane	27	24	25	16	21	28	23	25	25	12
Helicopter	10	9	6	9	8	3	8	7	6	0
Ultralight	5	1	5	12	4	3	3	8	4	2
Other aircraft type (c)	2	0	2	1	1	2	1	2	4	0
Fatalities	69	55	56	64	71	70	67	63	66	21
Serious injuries	61	53	65	50	45	36	49	49	22	36
Accidents in Canada involving foreign-registered aircraft	18	14	10	15	15	14	10	17	10	7
Fatal accidents	6	2	0	0	2	2	2	1	2	2
Fatalities	10	2	0	0	2	2	2	1	2	4
Serious injuries	15	1	2	5	3	1	1	4	0	1
Occurrences with a dangerous good release	1	2	4	1	3	1	0	1	4	4
Incidents (d)	796	807	874	887	790	814	677	636	686	738
Incidents in Canada involving Canadian-registered aircraft	571	580	622	651	591	582	520	481	540	595
Incidents outside Canada involving Canadian-registered aircraft	79	78	69	78	67	83	55	49	39	58
Incidents in Canada involving foreign-registered aircraft	184	188	224	194	155	188	127	128	126	99
Incidents by type (d)	796	807	874	887	790	814	677	636	686	738
Risk of collision/Loss of separation	174	168	168	172	153	206	120	101	115	93
Declared emergency	222	260	298	314	313	310	275	260	291	313
Engine failure	139	130	129	120	107	87	95	90	83	104
Smoke/Fire	99	102	123	107	97	81	88	71	67	88
Collision	12	21	13	8	9	4	7	5	15	16
Other incident type	150	126	143	166	111	126	92	109	115	124

Data extracted February 17, 2015.

Accidents and reportable incidents are reported in accordance with the TSB's regulations for mandatory reporting of occurrences.

Breakdowns may not add up to totals. For example, in the total "Accidents by aircraft type", when an occurrence involves an airplane and a

* "Number of aircraft involved in accidents" are aircraft counts, all other data are accident counts.

a. The commercial service type is not available for foreign-registered aircraft.

b. Other operator type contains, but is not limited to, organizations that rent aircraft (i.e., flying schools, flying clubs, etc.).

c. Includes balloons, gyroplanes, gliders, dirigibles, hang gliders, unmanned aerial vehicles (UAV) and similar aircraft types.

d. New TSB regulations came into effect on July 1, 2014. Under new reporting requirements aviation incidents include: a) aircraft having a maximum certificated take-off weight greater than 2 250 kg (formerly 5700 kg); b) aircraft being operated under an air operator certificate issued under CARS Part VII.

Table 2
Occurrences involving Canadian-registered aircraft
2005-2014

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Accidents by aircraft and operator type (a)	259	262	284	252	249	244	230	239	243	212
Aeroplane accidents	203	202	234	197	210	209	192	191	204	170
Commercial	57	54	58	63	54	57	49	44	40	34
Airliner (705)	4	7	4	6	2	6	5	5	7	5
Commuter (704)	6	4	4	5	5	6	4	5	3	1
Air taxi (703)	33	30	39	41	36	28	26	20	18	18
Aerial work (702)	14	13	11	12	10	17	14	14	12	8
Other commercial type	0	0	0	0	1	0	0	0	0	2
State	1	4	1	3	2	3	2	2	2	3
Corporate	6	2	7	4	4	2	4	3	4	2
Private/Other operator type (b)	139	142	168	127	152	147	138	142	159	131
Helicopter accidents	49	56	45	42	32	29	35	41	27	34
Commercial	35	50	34	28	19	27	26	28	22	24
State	1	0	1	0	0	0	0	2	1	1
Corporate	0	0	3	0	1	0	1	1	0	0
Private/Other operator type (b)	13	6	7	14	12	2	8	10	4	9
Other aircraft type (c)	8	4	5	13	7	6	3	7	13	8
Fatal accidents by aircraft and operator type (a)	34	31	33	26	28	31	30	33	32	10
Aeroplane accidents	22	22	25	16	20	27	21	25	24	10
Commercial	9	6	7	3	5	12	10	6	7	2
Airliner (705)	0	0	0	0	0	0	1	0	0	0
Commuter (704)	1	0	1	0	0	1	1	1	1	0
Air taxi (703)	6	5	5	3	5	7	6	3	5	1
Aerial work (702)	2	1	1	0	0	4	2	2	1	1
Other commercial type	0	0	0	0	0	0	0	0	0	0
State	0	1	0	0	0	0	0	0	0	0
Corporate	0	0	1	2	0	0	0	0	1	0
Private/Other operator type (b)	13	15	17	11	15	15	11	19	16	8
Helicopter accidents	10	9	6	9	7	3	8	7	6	0
Other aircraft type (c)	2	0	2	1	1	1	1	1	3	0
Fatalities (a)	55	52	50	51	64	64	62	54	60	15
Serious injuries (a)	37	40	56	40	34	31	43	39	19	29
Incidents by type (d)	650	658	691	729	658	665	575	530	579	653
Risk of collision/Loss of separation	150	150	152	149	137	179	105	92	105	83
Declared emergency	152	184	186	235	237	238	224	200	231	277
Engine failure	116	106	108	98	94	67	87	77	70	94
Smoke/Fire	85	86	106	90	84	70	67	59	55	76
Collision	8	18	9	7	7	3	7	4	14	15
Other incident type	139	114	130	150	99	108	85	98	104	108
Accidents involving ultralight aircraft	31	28	30	29	34	30	17	36	23	31
Fatal accidents	5	1	5	12	4	3	3	8	4	2
Fatalities	6	1	6	13	5	4	3	8	4	2
Serious injuries	9	12	7	5	8	4	5	6	3	6

Data extracted February 17, 2015.

Accidents and reportable incidents are reported in accordance with the TSB's regulations for mandatory reporting of occurrences.

Breakdowns may not add up to totals. For example, in the total "Number of accidents by aircraft type", when an occurrence involves an airplane and a helicopter, the occurrence is counted in each category, but only once in the total.

a. Accidents involving Canadian-registered aircraft, excluding ultralights.

b. Other operator type contains, but is not limited to, organizations that rent aircraft (i.e. flying schools, flying clubs, etc.).

c. Includes balloons, gyroplanes, gliders, dirigibles, hang gliders, unmanned aerial vehicles (UAV) and similar aircraft types.

d. New TSB regulations came into effect on July 1, 2014. Under new reporting requirements aviation incidents include: a) aircraft having a maximum certificated take-off weight greater than 2 250 kg (formerly 5700 kg); b) aircraft being operated under an air operator certificate issued under CARS Part VII.

Table 3a**Accident rates involving Canadian-registered aircraft (per hours flown, excluding ultralights and other aircraft types)****2005-2014**

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Accidents	251	258	279	239	242	238	227	232	231	204
Fatal accidents	32	31	31	25	27	30	29	32	30	10
Fatalities	52	52	47	50	63	63	60	53	58	15
Hours flown (thousands) (a)	3,755	3,919	4,201	4,241	3,864	3,987	4,271	4,365	4,421	4,433
Accidents per 100,000 hours	6.7	6.6	6.6	5.6	6.3	6.0	5.3	5.3	5.2	4.6
Fatal accidents per 100,000 hours	0.9	0.8	0.7	0.6	0.7	0.8	0.7	0.7	0.7	0.2
Fatalities per 100,000 hours	1.4	1.3	1.1	1.2	1.6	1.6	1.4	1.2	1.3	0.3

Data extracted February 17, 2015.

Accidents are reported in accordance with the TSB's regulations for mandatory reporting of occurrences.

Canadian-registered aircraft, excluding ultralights, balloons, gyroplanes, gliders, dirigibles, hang gliders and similar aircraft types.

a. Source: Transport Canada (2013 to 2014 hours flown are estimated).

Table 3b**Aircraft accident rates in Canada (per movements, excluding ultralights and other aircraft types)****2005-2014**

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Accidents	260	261	277	245	246	250	230	238	235	206
Fatal accidents	36	29	30	21	28	31	30	31	28	11
Fatalities	59	49	44	43	64	64	61	52	53	17
Aircraft movements (thousands) (a)	6,056	6,206	6,722	6,751	6,443	6,327	6,179	6,157	6,027	6,011
Accidents per 100,000 aircraft movements	4.3	4.2	4.1	3.6	3.8	4.0	3.7	3.9	3.9	3.4
Fatal accidents per 100,000 aircraft movements	0.6	0.5	0.4	0.3	0.4	0.5	0.5	0.5	0.5	0.2
Fatalities per 100,000 aircraft movements	1.0	0.8	0.7	0.6	1.0	1.0	1.0	0.8	0.9	0.3

Data extracted February 17, 2015.

Accidents are reported in accordance with the TSB's regulations for mandatory reporting of occurrences.

Excluding ultralights, balloons, gyroplanes, gliders, dirigibles, hang gliders and similar aircraft types.

a. Source: Statistics Canada (November and December 2014 non-tower movements are estimated).

Table 4
Aircraft accident fatalities
2005-2014

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Fatalities	69	55	56	64	71	70	67	63	66	21
Fatalities in Canada involving Canadian-registered aircraft	60	48	53	57	67	68	64	61	58	15
Fatalities outside Canada involving Canadian-registered aircraft	1	5	3	7	2	0	1	1	6	2
Fatalities in Canada involving foreign-registered aircraft	10	2	0	0	2	2	2	1	2	4
Fatalities by operator type	69	55	56	64	71	70	67	63	66	21
Commercial	26	28	19	25	36	36	38	17	28	4
Airliner (705)	0	0	0	0	0	0	12	0	0	0
Commuter (704)	2	0	1	0	17	1	2	1	5	0
Air taxi (703)	17	18	10	20	18	28	16	12	19	2
Aerial work (702)	7	10	9	5	1	7	8	3	4	2
Foreign/Other commercial type (a)	0	0	0	0	0	0	0	1	0	0
State	0	1	0	0	0	0	0	1	0	0
Corporate	1	0	1	7	0	0	2	0	1	0
Private/Other operator type (b)	42	26	36	32	35	34	27	45	37	17
Crew fatalities by operator type	44	32	37	35	35	39	37	40	44	15
Commercial	15	12	12	8	10	17	18	10	20	3
Airliner (705)	0	0	0	0	0	0	4	0	0	0
Commuter (704)	2	0	0	0	2	1	2	0	2	0
Air taxi (703)	9	5	7	6	7	11	7	7	14	1
Aerial work (702)	4	7	6	2	1	5	5	2	4	2
Foreign/Other commercial type (a)	0	0	0	0	0	0	0	1	0	0
State	0	1	0	0	0	0	0	1	0	0
Corporate	1	0	1	2	0	0	2	0	1	0
Private/Other operator type (b)	28	19	24	25	25	22	17	29	23	12
Passenger fatalities by operator type	25	22	19	28	36	30	29	22	20	6
Commercial	11	15	7	16	26	18	20	6	8	1
Airliner (705)	0	0	0	0	0	0	8	0	0	0
Commuter (704)	0	0	1	0	15	0	0	1	3	0
Air taxi (703)	8	12	3	14	11	16	9	5	5	1
Aerial work (702)	3	3	3	2	0	2	3	0	0	0
Foreign/Other commercial type (a)	0	0	0	0	0	0	0	0	0	0
State	0	0	0	0	0	0	0	0	0	0
Corporate	0	0	0	5	0	0	0	0	0	0
Private/Other operator type (b)	14	7	12	7	10	12	9	16	12	5
Ground fatalities	0	1	0	1	0	1	1	1	2	0
Fatalities by aircraft type	69	55	56	64	71	70	67	63	66	21
Aeroplane	45	42	39	34	38	57	47	44	47	19
Helicopter	15	12	8	16	27	7	15	9	12	0
Ultralight	6	1	6	13	5	4	3	8	4	2
Other aircraft type (c)	3	0	3	1	1	2	2	2	7	0

Data extracted February 17, 2015.

Accidents are reported in accordance with the TSB's regulations for mandatory reporting of occurrences.

Breakdowns may not add up to totals. For example, in the total "Fatalities by aircraft type", when an occurrence involves an airplane and a helicopter, a fatality is counted in each category, but only once in the total.

a. The commercial service type is not available for foreign-registered aircraft.

b. Other operator type contains, but is not limited to, organizations that rent aircraft (i.e., flying schools, flying clubs, etc.).

c. Includes balloons, gyroplanes, gliders, dirigibles, hang gliders, unmanned aerial vehicles (UAV) and similar aircraft types.

Table 5
Aircraft accident serious injuries
2005-2014

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Serious injuries	61	53	65	50	45	36	49	49	22	36
Serious injuries in Canada involving Canadian-registered aircraft	45	51	61	45	41	35	39	40	22	35
Serious injuries outside Canada involving Canadian-registered aircraft	1	1	2	0	1	0	9	5	0	0
Serious injuries in Canada involving foreign-registered aircraft	15	1	2	5	3	1	1	4	0	1
Serious injuries by operator type	61	53	65	50	45	36	49	49	22	36
Commercial	24	20	30	24	11	16	31	20	11	9
Airline (705)	1	1	0	1	1	1	10	1	0	0
Commuter (704)	0	0	1	2	1	4	7	2	2	0
Air taxi (703)	4	16	15	18	6	7	9	15	6	5
Aerial work (702)	7	2	14	3	3	4	5	1	3	3
Foreign/Other commercial type (a)	12	1	0	0	0	0	0	1	0	1
State	1	2	3	0	2	1	0	0	0	0
Corporate	4	0	1	0	3	0	0	0	0	0
Private/Other operator type (b)	33	31	31	26	29	19	18	29	11	27
Crew serious injuries by operator type	37	28	30	25	26	22	18	25	13	23
Commercial	11	9	10	11	5	6	6	5	4	4
Airline (705)	1	1	0	0	0	0	0	0	0	0
Commuter (704)	0	0	1	0	0	1	0	2	0	0
Air taxi (703)	2	6	3	9	2	2	2	1	2	2
Aerial work (702)	6	2	6	2	3	3	4	1	2	1
Foreign/Other commercial type (a)	2	0	0	0	0	0	0	1	0	1
State	1	1	1	0	1	1	0	0	0	0
Corporate	2	0	0	0	2	0	0	0	0	0
Private/Other operator type (b)	23	18	19	14	18	15	12	20	9	19
Passenger serious injuries by operator type	22	23	32	25	19	13	30	23	8	12
Commercial	11	10	20	13	6	10	24	14	6	5
Airline (705)	0	0	0	1	1	1	10	0	0	0
Commuter (704)	0	0	0	2	1	3	7	0	2	0
Air taxi (703)	1	9	12	9	4	5	7	14	4	3
Aerial work (702)	0	0	8	1	0	1	0	0	0	2
Foreign/Other commercial type (a)	10	1	0	0	0	0	0	0	0	0
State	0	1	2	0	1	0	0	0	0	0
Corporate	1	0	1	0	1	0	0	0	0	0
Private/Other operator type (b)	10	12	9	12	11	3	6	9	2	7
Ground serious injuries	2	2	3	0	0	1	1	1	1	1
Serious injuries by aircraft type	61	53	65	50	45	36	49	49	22	36
Aeroplane	41	28	32	29	24	28	36	32	13	21
Helicopter	10	9	13	14	11	3	8	7	6	7
Ultralight	9	12	7	5	8	4	5	6	3	7
Other aircraft type (c)	2	4	13	2	2	1	0	4	0	1

Data extracted February 17, 2015.

Accidents are reported in accordance with the TSB's regulations for mandatory reporting of occurrences.

Breakdowns may not add up to totals. For example, in the total "Serious injuries by aircraft type", when an occurrence involves an airplane and a helicopter, a serious injury is counted in each category, but only once in the total.

a. The commercial service type is not available for foreign-registered aircraft.

b. Other operator type contains, but is not limited to, organizations that rent aircraft (i.e., flying schools, flying clubs, etc.).

c. Includes balloons, gyroplanes, gliders, dirigibles, hang gliders, unmanned aerial vehicles (UAV) and similar aircraft types.

Table 6**Accidents involving Canadian-registered aeroplanes and helicopters by operation type****2005-2014**

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Aeroplane accidents by operation type	203	202	234	197	210	209	192	191	204	170
Training	16	33	33	30	43	28	28	27	24	27
Pleasure/Travel	116	96	118	83	109	108	102	109	127	96
Business	6	8	15	7	4	6	7	4	2	9
Forest fire management	2	4	0	1	3	2	1	2	3	2
Test/Demonstration/Ferry	5	6	8	4	0	6	4	4	4	4
Aerial application	6	8	8	9	4	10	4	3	7	5
Inspection	1	1	0	1	1	1	0	1	1	0
Air transport	35	37	40	46	34	37	35	28	26	22
Air ambulance	1	3	2	3	5	2	1	1	0	1
Sightseeing	2	3	1	2	2	1	2	6	1	1
Other/Unknown	14	5	9	11	8	9	10	8	11	4
Aeroplane fatal accidents by operation type	22	22	25	16	20	27	21	25	24	10
Training	0	4	3	0	1	1	1	1	2	1
Pleasure/Travel	12	11	10	8	13	14	10	16	11	7
Business	0	1	1	2	1	1	0	1	1	1
Forest fire management	0	0	0	0	0	2	0	0	0	0
Test/Demonstration/Ferry	1	1	4	1	0	0	0	1	1	0
Aerial application	0	0	1	1	0	0	0	0	1	0
Inspection	0	0	0	0	0	0	0	0	0	0
Air transport	7	5	4	3	4	7	8	4	5	1
Air ambulance	0	0	1	0	1	0	0	0	0	0
Sightseeing	0	0	1	0	0	0	1	0	0	0
Other/Unknown	2	1	0	1	0	2	1	3	3	0
Helicopter accidents by operation type	49	56	45	42	32	29	35	41	27	34
Training	3	2	3	6	5	0	2	1	1	2
Pleasure/Travel	11	4	4	9	5	2	9	8	2	7
Business	1	0	5	0	3	0	0	3	1	0
Forest fire management	1	3	0	0	4	1	2	1	3	0
Test/Demonstration/Ferry	0	2	3	0	0	1	1	0	1	0
Aerial application	2	0	2	1	0	3	1	5	0	1
Inspection	0	1	1	0	0	1	2	2	2	3
Air transport	19	29	16	22	10	15	13	9	8	18
Air ambulance	1	0	0	1	0	0	0	1	2	0
Sightseeing	0	0	0	0	1	0	0	1	0	1
Other/Unknown	11	15	12	3	4	6	5	10	7	2
Fatal helicopter accidents by operation type	10	9	6	9	7	3	8	7	6	0
Training	0	0	0	0	1	0	1	1	0	0
Pleasure/Travel	5	0	0	3	2	0	2	0	0	0
Business	1	0	1	0	0	0	0	1	0	0
Forest fire management	0	2	0	0	1	0	1	0	0	0
Test/Demonstration/Ferry	0	1	0	0	0	1	1	0	0	0
Aerial application	0	0	0	0	0	0	0	0	0	0
Inspection	0	0	1	0	0	0	1	0	1	0
Air transport	3	2	3	4	3	2	1	1	3	0
Air ambulance	0	0	0	0	0	0	0	0	1	0
Sightseeing	0	0	0	0	0	0	0	1	0	0
Other/Unknown	1	4	2	2	0	0	1	3	1	0

Data extracted February 17, 2015.

Accidents are reported in accordance with the TSB's regulations for mandatory reporting of occurrences.

Breakdowns may not add up to totals. For example, in the total "Airplane accidents by operation type", when an occurrence involves a Business and an Inspection airplane, the occurrence is counted in each category, but only once in the total.

Canadian-registered aircraft, excluding ultralights, balloons, gyroplanes, gliders, dirigibles, hang gliders and similar aircraft types.

Table 7
Aircraft accidents by province/territory
2005-2014

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Accidents by province/territory	306	303	323	294	297	288	257	291	276	249
Newfoundland and Labrador	5	4	6	7	3	3	3	5	3	5
Prince Edward Island	1	0	0	0	1	0	0	0	0	0
Nova Scotia	0	2	4	6	3	7	5	5	5	3
New Brunswick	6	3	8	1	2	5	3	3	2	6
Quebec	64	56	72	58	68	65	58	71	66	69
Ontario	73	60	81	69	74	71	63	67	72	67
Manitoba	19	21	18	27	19	27	17	18	13	12
Saskatchewan	15	19	23	19	14	18	18	9	19	12
Alberta	34	44	32	33	31	25	22	35	29	33
British Columbia	70	64	46	44	59	47	43	54	51	30
Yukon	5	4	7	7	4	3	8	8	4	4
Northwest Territories	5	5	8	8	6	9	6	5	3	3
Nunavut	2	8	5	8	2	7	4	3	4	1
Other air space under Canadian air traffic control	0	2	0	0	0	0	0	0	1	0
Outside Canada	7	11	13	7	11	1	7	8	4	4
Fatal accidents by province/territory	44	34	38	38	34	36	35	42	38	14
Newfoundland and Labrador	1	0	1	0	2	1	0	0	0	0
Prince Edward Island	0	0	0	0	1	0	0	0	0	0
Nova Scotia	0	0	1	0	0	1	1	0	1	1
New Brunswick	1	1	0	0	0	2	0	0	0	1
Quebec	10	4	6	5	10	9	5	10	5	2
Ontario	7	4	6	7	6	9	6	10	9	5
Manitoba	2	0	3	1	0	1	1	3	2	0
Saskatchewan	1	4	5	0	2	0	3	1	2	1
Alberta	5	6	3	8	1	2	4	6	4	1
British Columbia	16	9	10	10	8	7	10	9	10	2
Yukon	0	1	1	1	1	0	1	1	0	0
Northwest Territories	0	1	1	2	1	3	2	0	1	0
Nunavut	0	0	0	0	0	1	1	1	0	0
Other air space under Canadian air traffic control	0	0	0	0	0	0	0	0	1	0
Outside Canada	1	4	1	4	2	0	1	1	3	1
Fatalities by province/territory	69	55	56	64	71	70	67	63	66	21
Newfoundland and Labrador	2	0	1	0	18	2	0	0	0	0
Prince Edward Island	0	0	0	0	1	0	0	0	0	0
Nova Scotia	0	0	1	0	0	2	1	0	1	1
New Brunswick	1	1	0	0	0	2	0	0	0	2
Quebec	14	7	7	7	16	26	9	11	6	2
Ontario	11	6	7	8	12	14	9	19	19	8
Manitoba	2	0	5	1	0	1	1	4	5	0
Saskatchewan	2	4	6	0	4	0	8	5	3	2
Alberta	8	9	5	12	1	4	5	6	5	1
British Columbia	28	16	17	26	14	15	16	15	17	3
Yukon	0	1	1	1	1	0	1	1	0	0
Northwest Territories	0	6	3	2	2	3	4	0	1	0
Nunavut	0	0	0	0	0	1	12	1	0	0
Other air space under Canadian air traffic control	0	0	0	0	0	0	0	0	3	0
Outside Canada	1	5	3	7	2	0	1	1	6	2

Data extracted February 17, 2015.

Accidents are reported in accordance with the TSB's regulations for mandatory reporting of occurrences.

Table 8**Accidents involving Canadian-registered aircraft by province/territory (excluding ultralights)****2005-2014**

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Accidents by province/territory	259	262	284	252	249	244	230	239	243	212
Newfoundland and Labrador	5	3	5	5	3	3	3	5	3	4
Prince Edward Island	1	0	0	0	1	0	0	0	0	0
Nova Scotia	0	0	3	2	1	7	3	3	5	2
New Brunswick	5	2	7	1	2	4	3	3	2	6
Quebec	56	48	61	50	60	52	52	52	57	57
Ontario	57	52	71	62	61	55	56	54	59	53
Manitoba	18	17	17	24	19	25	16	15	13	11
Saskatchewan	13	18	21	18	12	18	17	8	18	10
Alberta	28	41	31	28	28	24	18	30	27	31
British Columbia	59	53	36	33	44	38	39	46	44	27
Yukon	3	4	6	7	2	3	7	7	4	4
Northwest Territories	5	5	8	8	5	8	6	5	3	2
Nunavut	2	8	5	7	1	6	3	3	3	1
Other air space under Canadian air traffic control	0	0	0	0	0	0	0	0	1	0
Outside Canada	7	11	13	7	10	1	7	8	4	4
Fatal accidents by province/territory	34	31	33	26	28	31	30	33	32	10
Newfoundland and Labrador	1	0	1	0	2	1	0	0	0	0
Prince Edward Island	0	0	0	0	1	0	0	0	0	0
Nova Scotia	0	0	0	0	0	1	0	0	1	0
New Brunswick	1	0	0	0	0	2	0	0	0	1
Quebec	9	3	4	4	8	8	5	4	3	1
Ontario	6	4	6	4	5	8	4	9	6	3
Manitoba	2	0	3	1	0	1	1	3	2	0
Saskatchewan	0	3	4	0	1	0	3	1	2	1
Alberta	2	6	3	4	1	2	3	5	4	1
British Columbia	12	9	9	6	8	5	9	8	9	2
Yukon	0	1	1	1	0	0	1	1	0	0
Northwest Territories	0	1	1	2	1	2	2	0	1	0
Nunavut	0	0	0	0	0	1	1	1	0	0
Other air space under Canadian air traffic control	0	0	0	0	0	0	0	0	1	0
Outside Canada	1	4	1	4	1	0	1	1	3	1
Fatalities by province/territory	55	52	50	51	64	64	62	54	60	15
Newfoundland and Labrador	2	0	1	0	18	2	0	0	0	0
Prince Edward Island	0	0	0	0	1	0	0	0	0	0
Nova Scotia	0	0	0	0	0	2	0	0	1	0
New Brunswick	1	0	0	0	0	2	0	0	0	2
Quebec	12	6	5	6	14	25	9	5	4	1
Ontario	10	6	7	4	11	12	7	18	16	4
Manitoba	2	0	5	1	0	1	1	4	5	0
Saskatchewan	0	3	5	0	2	0	8	5	3	2
Alberta	4	9	5	8	1	4	4	5	5	1
British Columbia	23	16	15	22	14	13	15	14	16	3
Yukon	0	1	1	1	0	0	1	1	0	0
Northwest Territories	0	6	3	2	2	2	4	0	1	0
Nunavut	0	0	0	0	0	1	12	1	0	0
Other air space under Canadian air traffic control	0	0	0	0	0	0	0	0	3	0
Outside Canada	1	5	3	7	1	0	1	1	6	2

Data extracted February 17, 2015.

Accidents are reported in accordance with the TSB's regulations for mandatory reporting of occurrences.

Table 9
Reportable aircraft incidents
2005-2014

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Incidents by type	796	807	874	887	790	814	677	636	686	738
Risk of collision/Loss of separation	174	168	168	172	153	206	120	101	115	93
Declared emergency	222	260	298	314	313	310	275	260	291	313
Engine failure	139	130	129	120	107	87	95	90	83	104
Smoke/Fire	99	102	123	107	97	81	88	71	67	88
Collision	12	21	13	8	9	4	7	5	15	16
Control difficulties	44	41	41	39	24	32	31	33	25	40
Crew unable to perform duties	67	57	65	78	59	50	26	40	58	36
Dangerous goods-related	1	2	3	1	3	1	0	1	3	4
Depressurization	14	9	13	17	6	11	16	15	14	12
Fuel shortage	10	6	8	7	4	9	6	7	2	6
Failure to remain in landing area	11	7	9	18	9	13	11	10	9	20
Incorrect fuel	1	1	0	1	0	0	0	0	0	0
Slung load released	1	3	3	5	3	9	1	1	4	5
Transmission or gearbox failure	1	0	1	0	3	1	1	2	0	1
Incidents by operator type	796	807	874	887	790	814	677	636	686	738
Commercial	732	773	823	857	751	776	637	598	653	695
Airliner (705)	488	528	563	590	499	520	448	409	450	429
Commuter (704)	89	80	75	94	88	85	75	78	90	104
Air taxi (703)	39	52	25	36	43	30	29	26	35	80
Aerial work (702)	22	20	20	24	31	26	15	11	12	35
Foreign/Other commercial type (a)	151	165	196	181	138	171	110	110	111	80
State	28	21	29	17	24	25	14	21	20	13
Corporate	45	30	43	21	29	20	22	20	20	17
Private/Other operator type (b)	40	31	24	33	26	31	25	21	19	35
Incidents by aircraft type	796	807	874	887	790	814	677	636	686	738
Aeroplane	779	787	854	870	772	789	659	624	670	713
Helicopter	20	29	22	19	21	32	20	17	20	29
Ultralight/Other aircraft type (c)	1	1	0	0	1	2	0	0	0	3
Number of aircraft involved in incidents*	956	974	1031	1052	916	977	779	733	797	826
Aeroplanes	935	942	1009	1033	893	943	759	716	777	794
Helicopters	20	30	22	19	22	32	20	17	20	29
Ultralight/Other aircraft type (c)	1	2	0	0	1	2	0	0	0	3
Incidents by province/territory	796	807	874	887	790	814	677	636	686	738
Newfoundland and Labrador	25	24	19	21	16	30	14	17	29	21
Prince Edward Island	1	2	1	2	2	0	1	0	2	0
Nova Scotia	14	17	26	20	18	25	19	17	11	22
New Brunswick	11	14	17	12	5	10	7	7	7	8
Quebec	123	101	127	127	97	108	126	107	122	89
Ontario	220	244	264	273	195	176	178	155	166	157
Manitoba	39	43	52	59	46	51	31	31	31	51
Saskatchewan	14	20	19	28	18	19	11	18	27	32
Alberta	108	111	79	89	106	84	82	81	103	98
British Columbia	93	83	133	120	162	156	76	101	99	132
Yukon	3	5	4	4	6	4	3	4	5	6
Northwest Territories	27	25	27	27	14	21	30	17	16	25
Nunavut	16	10	14	17	8	21	19	19	10	20
Other air space under Canadian air traffic control	23	30	23	10	30	26	25	13	19	19
Outside Canada	79	78	69	78	67	83	55	49	39	58

Data extracted February 17, 2015.

Reportable incidents are reported in accordance with the TSB's regulations for mandatory reporting of occurrences.

New TSB regulations came into effect on July 1, 2014. Under new reporting requirements aviation incidents include: a) aircraft having a maximum certificated take-off weight greater than 2 250 kg (formerly 5700 kg); b) aircraft being operated under an air operator certificate. Breakdowns may not add up to totals. For example, in the total "Incidents by aircraft type", when an occurrence involves an airplane and a helicopter, the occurrence is counted in each category, but only once in the total.

* "Number of aircraft involved in incidents" are aircraft counts, all other data are incident counts.

a. The commercial service type is not available for foreign-registered aircraft.

b. Other operator type contains, but is not limited to, organizations that rent aircraft (i.e., flying schools, flying clubs, etc.).

c. Includes balloons, gyroplanes, gliders, dirigibles, hang gliders, unmanned aerial vehicles (UAV) and similar aircraft types.

Table 10
Reportable incidents involving Canadian-registered aircraft
2005-2014

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Incidents by type	650	658	691	729	658	665	575	530	579	653
Risk of collision/Loss of separation	150	150	152	149	137	179	105	92	105	83
Declared emergency	152	184	186	235	237	238	224	200	231	277
Engine failure	116	106	108	98	94	67	87	77	70	94
Smoke/Fire	85	86	106	90	84	70	67	59	55	76
Collision	8	18	9	7	7	3	7	4	14	15
Control difficulties	41	31	38	32	18	24	27	31	22	36
Crew unable to perform duties	67	56	63	76	57	49	26	38	56	35
Dangerous goods-related	1	2	3	1	3	1	0	1	3	3
Depressurization	12	9	11	15	3	10	15	13	10	10
Fuel shortage	5	6	4	4	4	6	5	4	2	3
Failure to remain in landing area	10	6	7	16	8	8	10	9	7	17
Incorrect fuel	1	1	0	1	0	0	0	0	0	0
Slung load released	1	3	3	5	3	9	1	1	4	4
Transmission or gearbox failure	1	0	1	0	3	1	1	1	0	0
Incidents by operator type	650	658	691	729	658	665	575	530	579	653
Commercial	604	635	660	704	627	636	546	501	552	620
Airliner (705)	487	524	563	586	495	519	445	409	449	427
Commuter (704)	89	79	75	94	88	85	75	78	90	104
Air taxi (703)	39	52	25	36	43	30	29	25	35	80
Aerial work (702)	22	20	17	24	30	26	15	11	12	32
Other commercial type (a)	24	31	36	32	19	31	22	14	11	10
State	25	20	28	16	21	21	14	18	19	11
Corporate	29	21	23	17	21	17	13	15	15	10
Private/Other operator type (b)	34	27	22	31	25	28	21	18	18	31
Incidents by aircraft type	650	658	691	729	658	665	575	530	579	653
Aeroplane	633	638	673	712	640	642	557	519	563	631
Helicopter	20	29	20	19	21	31	20	16	20	26
Ultralight/Other aircraft type (c)	1	1	0	0	1	1	0	0	0	3
Number of aircraft involved in incidents*	785	803	833	874	774	811	668	619	681	728
Aeroplanes	764	771	813	855	751	779	648	603	661	699
Helicopters	20	30	20	19	22	31	20	16	20	26
Ultralight/Other aircraft type (c)	1	2	0	0	1	1	0	0	0	3
Incidents by province/territory	650	658	691	729	658	665	575	530	579	653
Newfoundland and Labrador	14	13	10	13	7	13	10	10	17	12
Prince Edward Island	0	2	0	1	1	0	0	0	1	0
Nova Scotia	7	12	17	12	13	19	14	9	9	19
New Brunswick	7	9	12	7	3	8	5	7	4	6
Quebec	98	79	90	96	77	89	104	84	96	81
Ontario	175	198	202	222	168	141	148	127	142	139
Manitoba	31	35	43	49	40	45	30	30	27	45
Saskatchewan	11	19	16	26	16	15	11	14	26	27
Alberta	95	99	67	76	92	74	76	75	93	93
British Columbia	85	72	120	103	141	134	68	87	93	125
Yukon	2	3	4	2	6	3	3	3	3	5
Northwest Territories	25	21	27	27	14	19	30	17	16	25
Nunavut	14	10	9	14	7	17	16	15	10	16
Other air space under Canadian air traffic control	7	8	5	3	6	5	5	3	3	2
Outside Canada	79	78	69	78	67	83	55	49	39	58

Data extracted February 17, 2015.

Reportable incidents are reported in accordance with the TSB's regulations for mandatory reporting of occurrences.

New TSB regulations came into effect on July 1, 2014. Under new reporting requirements aviation incidents include: a) aircraft having a maximum certificated take-off weight greater than 2 250 kg (formerly 5700 kg); b) aircraft being operated under an air operator certificate. Breakdowns may not add up to totals. For example, in the total "Incidents by aircraft type", when an occurrence involves an airplane and a helicopter, the occurrence is counted in each category, but only once in the total.

* "Number of aircraft involved in incidents" are aircraft counts, all other data are incident counts.

a. The commercial service type is not available for foreign-registered aircraft.

b. Other operator type contains, but is not limited to, organizations that rent aircraft (i.e., flying schools, flying clubs, etc.).

c. Includes balloons, gyroplanes, gliders, dirigibles, hang gliders, unmanned aerial vehicles (UAV) and similar aircraft types.

Table 11
Number of accidents involving aeroplanes by phase of flight and selected event category
2005-2014

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Total
Standing/Taxiing	21	20	16	13	20	17	18	17	23	17	182
Collision with object	8	8	6	6	9	6	6	7	8	6	70
Collision with moving aircraft	1	4	2	4	3	1	1	2	1	4	23
Nosedown/Overturned	2	1	0	1	1	4	3	3	5	1	21
Landing gear collapsed/retracted	2	1	1	0	4	2	3	0	2	1	16
Loss of control	0	2	1	0	1	3	0	3	4	1	15
Other events	14	11	10	6	9	8	10	9	13	10	100
Take-off	50	48	51	40	49	54	41	54	40	48	475
Collision with terrain	22	18	10	9	14	15	11	21	11	10	141
Loss of control	18	14	12	7	15	15	12	17	7	18	135
Collision with object	11	18	17	14	16	14	10	17	8	11	136
Take-off/Landing event	10	10	16	5	13	13	13	19	9	11	119
Power loss	12	9	14	14	12	14	11	6	13	16	121
Other events	25	19	26	21	22	27	22	22	20	27	231
En route	34	41	29	34	40	32	31	31	34	23	329
Power loss	14	18	11	18	25	13	14	15	15	14	157
Precautionary/Forced landing/Ditching	8	6	6	14	9	11	13	9	8	7	91
Collision with terrain	8	16	6	5	9	8	8	8	10	5	83
Component/System related	7	5	9	4	8	6	5	6	5	5	60
Other events	14	21	15	13	18	19	14	12	17	11	154
Manoeuvring	17	11	12	12	3	11	12	10	12	5	105
Collision with terrain	10	4	8	3	2	5	6	7	7	1	53
Loss of control	3	1	5	3	1	3	1	4	1	1	23
Collision with object	2	4	2	4	0	7	2	1	2	2	26
Power loss	5	0	0	4	1	1	3	0	0	0	14
Other events	6	5	4	6	1	3	8	3	5	2	43
Approach	31	25	28	29	31	29	23	19	31	27	273
Collision with terrain	14	5	5	8	12	11	7	6	6	7	81
Power loss	9	9	7	8	7	7	2	0	11	6	66
Collision with object	5	4	9	8	3	6	8	1	8	9	61
Component/System related	6	3	6	6	9	2	5	3	3	5	48
Precautionary/Forced landing/Ditching	5	5	2	6	4	5	3	3	7	8	48
Loss of control	3	4	3	5	3	6	3	4	4	1	36
Other events	14	6	13	4	14	10	7	11	8	6	93
Landing	106	116	149	114	122	112	114	111	116	99	1159
Missed or went off runway	33	22	26	17	24	24	27	27	28	14	242
Collision with object	23	30	32	22	23	25	28	26	18	20	247
Landing gear collapsed/retracted	7	16	30	28	18	26	24	22	25	17	213
Nosedown/Overturned	18	21	27	27	22	18	18	20	20	17	208
Loss of control	18	14	25	16	23	20	17	27	19	22	201
Hard landing	11	20	35	16	19	23	22	20	13	14	193
Collision with terrain	20	10	21	19	16	18	16	17	12	21	170
Wheels-up landing	6	5	11	8	12	7	3	7	10	7	76
Precautionary/Forced landing/Ditching	0	3	0	0	0	0	0	1	1	0	5
Other events	52	56	60	42	50	52	52	48	54	33	499
Post-impact	20	12	13	13	13	20	11	19	13	18	152
Fire/Explosion/Fumes	13	7	8	9	8	15	6	7	7	6	86
Other events	7	5	6	5	6	5	5	12	6	14	71

Data extracted February 17, 2015.

Accidents are reported in accordance with the TSB's regulations for mandatory reporting of occurrences.

Breakdowns do not add up to totals. For example, in the "Take-off" phase, if an occurrence involves both "Control loss" and "Power loss" events, the occurrence is counted in each event category, but only once in the phase total.

Table 12**Number of accidents involving helicopters by phase of flight and selected event category****2005-2014**

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Total
Standing/Taxiing	9	6	4	3	3	0	6	4	1	4	40
Collision with terrain	1	2	1	0	1	0	2	1	0	0	8
Loss of control	1	2	1	1	0	0	2	0	0	2	9
Collision with object	1	1	3	1	0	0	0	0	0	2	8
Other events	8	5	2	2	3	0	5	4	1	4	34
Take-off	10	11	7	7	4	2	7	7	7	9	71
Loss of control	4	7	4	4	1	1	4	2	0	5	32
Collision with terrain	3	6	2	3	2	2	3	1	2	1	25
Collision with object	2	2	1	0	1	1	0	4	2	3	16
Power loss	1	2	0	1	1	0	2	0	1	1	9
Other events	5	5	4	6	1	1	1	2	4	3	32
En route	8	12	12	11	11	7	10	9	5	7	92
Collision with terrain	4	5	6	6	3	3	3	3	1	3	37
Power loss	2	6	4	4	5	3	2	3	1	1	31
Precautionary/Forced landing/Ditching	3	3	3	2	1	1	2	3	1	0	19
Component/System related	3	2	0	3	1	1	3	2	1	1	17
Other events	4	3	5	8	5	3	5	4	4	4	45
Manoeuvring	11	14	13	9	7	9	10	12	8	6	99
Collision with terrain	7	5	5	4	3	3	6	6	5	3	47
Loss of control	5	0	7	2	3	2	2	2	2	2	27
Collision with object	0	7	1	2	2	4	3	3	2	3	27
Operations related event	1	4	4	1	1	1	2	1	1	0	16
Power loss	1	0	2	2	2	2	0	2	1	0	12
Other events	4	8	7	5	5	4	3	5	2	3	46
Approach	6	2	4	3	5	4	6	7	3	3	43
Collision with terrain	2	1	1	2	3	4	1	1	0	0	15
Power loss	2	1	1	0	1	0	0	2	0	1	8
Loss of control	2	0	0	0	0	1	1	1	0	1	6
Collision with object	0	0	0	0	1	0	2	0	0	1	4
Other events	2	1	2	2	3	3	3	5	3	2	26
Landing	19	21	16	17	15	15	7	13	12	12	147
Hard landing	2	9	5	6	2	4	4	4	1	3	40
Collision with terrain	5	3	1	5	5	4	2	4	0	3	32
Loss of control	5	4	2	6	2	1	1	1	2	4	28
Collision with object	4	5	4	3	4	4	0	2	5	4	35
Other events	8	7	9	4	9	7	2	4	9	5	64
Post-impact	9	4	4	3	4	4	4	2	3	2	39
Fire/Explosion/Fumes	7	3	3	2	3	1	2	1	2	0	24
Other events	2	1	1	1	1	3	2	1	1	2	15

Data extracted February 17, 2015.

Accidents are reported in accordance with the TSB's regulations for mandatory reporting of occurrences.

Breakdowns do not add up to totals. For example, in the "Take-off" phase, if an occurrence involves both "Control loss" and "Power loss" events, the occurrence is counted in each event category, but only once in the phase total.

Appendix B: Definitions

The following definitions apply to aviation occurrences that are required to be reported pursuant to the *Canadian Transportation Accident Investigation and Safety Board Act* and the associated regulations.

Aviation occurrence

- a) Any accident or incident associated with the operation of an aircraft; and
- b) Any situation or condition that the Board has reasonable grounds to believe could, if left unattended, induce an accident or incident described in a) above.

Reportable aviation accident

An accident resulting directly from the operation of an aircraft where

- a) a person sustains a serious injury or is killed as a result of
 - i) being on board the aircraft;
 - ii) coming into contact with any part of the aircraft or its contents; or
 - iii) being directly exposed to the jet blast or rotor downwash of the aircraft;
- b) the aircraft sustains damage that adversely affects the structural strength, performance or flight characteristics of the aircraft and that requires major repair or replacement of any affected component part; or
- c) the aircraft is missing or inaccessible.

Reportable aviation incident

An incident resulting directly from the operation of an aeroplane having a maximum certificated take-off weight (MCTOW) greater than 5,700 kg, or from the operation of a rotorcraft having a MCTOW greater than 2,250 kg, where

- a) an engine fails or is shut down as a precautionary measure;
- b) a transmission gearbox malfunction occurs;
- c) smoke or fire occurs;
- d) difficulties in controlling the aircraft are encountered owing to any aircraft system malfunction, weather phenomena, wake turbulence, uncontrolled vibrations or operations outside the flight envelope;
- e) the aircraft fails to remain within the intended landing or take-off area, lands with all or part of the landing gear retracted, or drags a wing tip, an engine pod, or any other part of the aircraft;
- f) any crew member whose duties are directly related to the safe operation of the aircraft is unable to perform the crew member's duties as a result of physical incapacitation that poses a threat to the safety of any person, property, or the environment;
- g) depressurization occurs that necessitates an emergency descent;
- h) a fuel shortage occurs that necessitates a diversion or requires approach and landing priority at the destination of the aircraft;

- i) the aircraft is refuelled with the incorrect type of fuel or contaminated fuel;
- j) a collision, risk of collision, or loss of separation occurs;
- k) a crew member declares an emergency or indicates any degree of emergency that requires priority handling by an air traffic control unit or the standing by of emergency response services;
- l) a slung load is released unintentionally or as a precautionary or emergency measure from the aircraft; or
- m) any dangerous goods are released in or from the aircraft.

Serious injury

An injury that is sustained by a person in an accident and that

- a) requires hospitalization for more than 48 hours, commencing within seven days of the date the injury was received; or
- b) results in a fracture of any bone (except simple fractures of fingers, toes or nose); or
- c) involves lacerations that cause severe haemorrhage or nerve, muscle or tendon damage; or
- d) involves injury to any internal organ; or
- e) involves second- or third-degree burns, or any burns affecting more than 5% of the body surface; or
- f) involves verified exposure to infectious substances or injurious radiation.

ATS-related event

Any event related to the provision of air traffic control services including, but not limited to, failure or inability to provide service, emergency handling, or loss of in-flight separation.

Air proximity event

A situation in which, in the opinion of a pilot or air traffic services personnel, the distance between aircraft as well as their positions and speed have been such that the safety of the aircraft involved may have been compromised.

Commercial operators

Commercial operators include carriers that offer a “for-hire” service to transport people or goods, or to undertake specific tasks such as aerial photography, flight training, or crop spraying.

Airliner

An aeroplane used by a Canadian air operator in an air transport service or in aerial work involving sightseeing operations, that has a MCTOW of more than 8,618 kg (19,000 pounds) or for which a Canadian type certificate has been issued authorizing the transport of 20 or more passengers.

Commuter aircraft

An aeroplane used by a Canadian air operator, in an air transport service or in aerial work involving sightseeing operations, in which the aircraft is:

- a) a multi-engined aircraft that has a MCTOW of 8,618 kg (19,000 pounds) or less and a seating configuration, excluding pilot seats, of 10 to 19 inclusive;
- b) a turbo-jet-powered aeroplane that has a maximum zero fuel weight of 22,680 kg (50,000 pounds) or less and for which a Canadian type certificate has been issued authorizing the transport of not more than 19 passengers.

Aerial work aircraft

A commercially operated aeroplane or helicopter used in aerial work involving

- a) the carriage on board of persons other than flight crew members;
- b) the carriage of helicopter external loads;
- c) the towing of objects; or
- d) the dispersal of products.

Air taxi aircraft

A commercially operated aircraft used in an air transport service or in aerial work involving sightseeing operations, in which the aircraft is:

- a) a single-engined aircraft;
- b) a multi-engined aircraft, other than a turbo-jet-powered aeroplane, that has a MCTOW of 8,618 kg (19,000 pounds) or less and a seating configuration, excluding pilot seats, of nine or less; or
- c) any aircraft that is authorized by the Minister of Transport to be operated under Part VII, Subpart 3, Division 1 of the *Canadian Aviation Regulations* (CARs).

State operators

State operators include the federal and provincial governments.

Corporate operators

Corporate operators include companies flying for business reasons.

Private operators

Private operators include individuals flying for pleasure. Included are flights on which it is not possible to transport people or cargo on a “for-hire” basis.