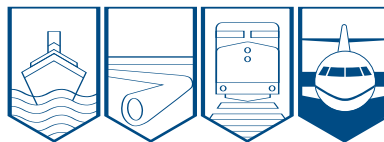




TSB Statistical Summary Aviation Occurrences 2003



Foreword

This document provides users of Canadian aviation safety data with an annual summary of selected statistics on aviation occurrences. Information in this summary is also posted on the Transportation Safety Board of Canada (TSB) Internet site at www.tsb.gc.ca.

Users of these statistics are advised that, in a live database, the occurrence data are constantly being updated. Consequently, the statistics can change slightly over time. Further, as many occurrences are not formally investigated, information recorded on some occurrences may not have been verified. Therefore, caution should be used when utilizing these statistics. The 2003 statistics presented here reflect the TSB database updated as of 15 March 2004.

To enhance awareness and increase the safety value of the material presented in the *TSB Statistical Summary, Aviation Occurrences 2003*, readers are encouraged to copy or reprint the data presented, in whole or in part, for further distribution (with acknowledgement 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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AVIATION OCCURENCES IN 2003

ACCIDENTS

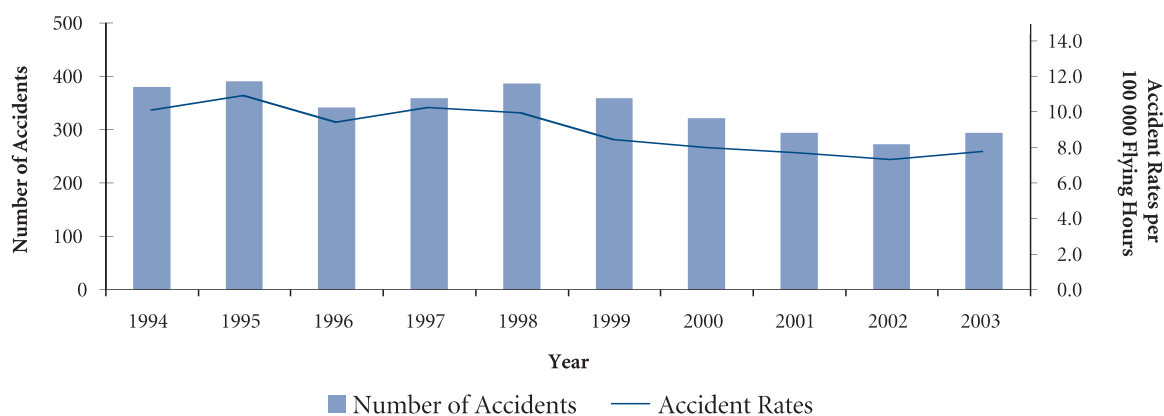
Overview of Accidents and Fatalities (Tables 1 and 2 – Appendix A)

In 2003, a total of 372 aviation accidents were reported to the TSB. Of this number, which excludes ultralights, 296 involved Canadian-registered aircraft, an increase of 8% from 2002 (Figure 1). Statistical analysis using linear regression indicates a significant downward trend ($p < .001$)¹ of reported aircraft accidents over the past 10 years.

Based on a relatively unchanged estimate in flying activity, the accident rate is estimated to have increased from 7.4 accidents per 100 000 flying hours in 2002 to 7.8 in 2003.

The 296 accidents involving Canadian-registered aircraft (excluding ultralights) included 243 aeroplanes (69 of which were commercially operated) and 44 helicopters. The remaining 12 were either balloons, gliders or gyrocopters.²

Figure 1 - Accidents and Accident Rates,³ 1994-2003



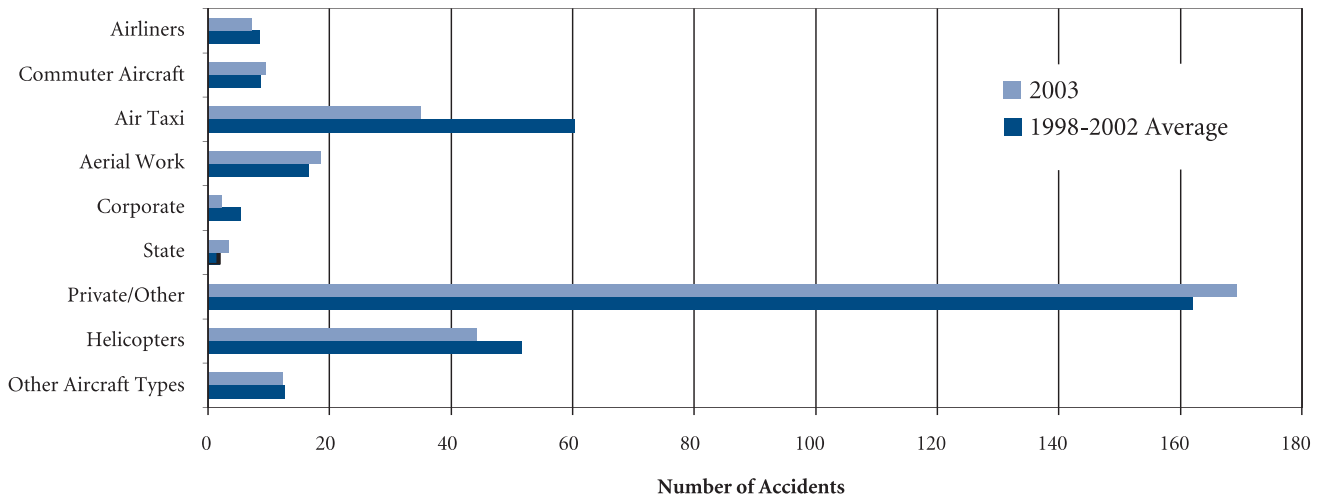
Of the 69 commercial aeroplanes (7 airliners, 9 commuter aircraft, 35 air taxi and 18 aerial work) involved in accidents in 2003 (Figure 2), 5 air taxi and 4 aerial work aircraft were involved in fatal accidents. There were no fatal accidents involving airliners or commuters.

A total of 169 private aeroplanes were involved in accidents, 5% higher than the five-year average of 161. In 2003, 17 such accidents resulted in fatalities, comparable to 15 in 2002 and the five-year average of 16.

1 It is agreed by convention that for a result to be considered statistically significant, its probability must be lower than 1 in 20 (i.e., $p < .05$).
 2 As some occurrences involve more than one aircraft, users are cautioned to note differences between the number of occurrences and the number of aircraft involved in occurrences. Table 1 is the only table to include ultralight aircraft; Tables 1 and 3 are the only tables to include balloons, gliders and gyrocopters.
 3 Canadian-registered aircraft (excluding ultralights).

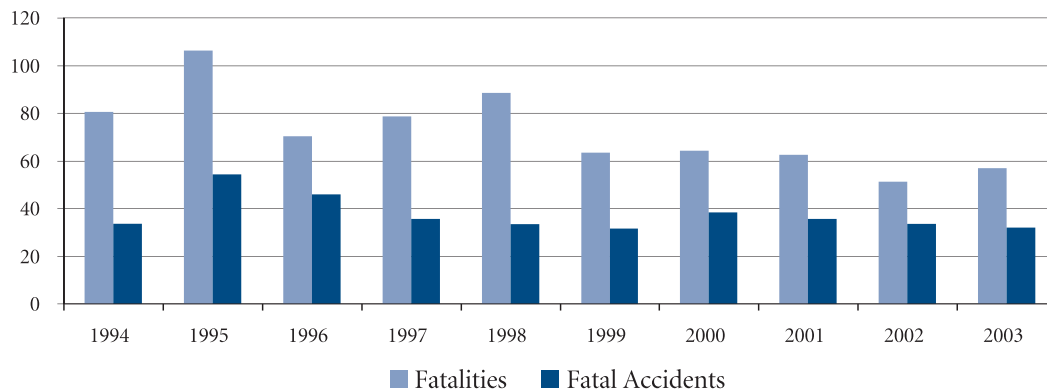


Figure 2 - Canadian-Registered Aircraft Accidents by Aircraft Type



In 2003, Canadian-registered aircraft, excluding ultralights, were involved in 31 fatal accidents⁴ (Figure 3), 7% less than the 1998-2002 average of 33 and comparable to last year's total of 30. The number of fatalities (58) decreased by 12% from the five-year average (66), while the number of injuries remained unchanged (44).

Figure 3 - Fatalities and Fatal Accidents, 1994-2003



Aeroplanes operated by the state (i.e., operated by federal or provincial governments) were involved in 3 accidents in 2003 with no fatalities.

In 2003, there were 44 helicopter accidents, a 21% decrease from the five-year average of 52. Of the 44 helicopter accidents, 3 were fatal, resulting in 6 fatalities. Over the past 10 years, the highest proportion of helicopter accidents occurred during air transport operations (27%) and training (13%).

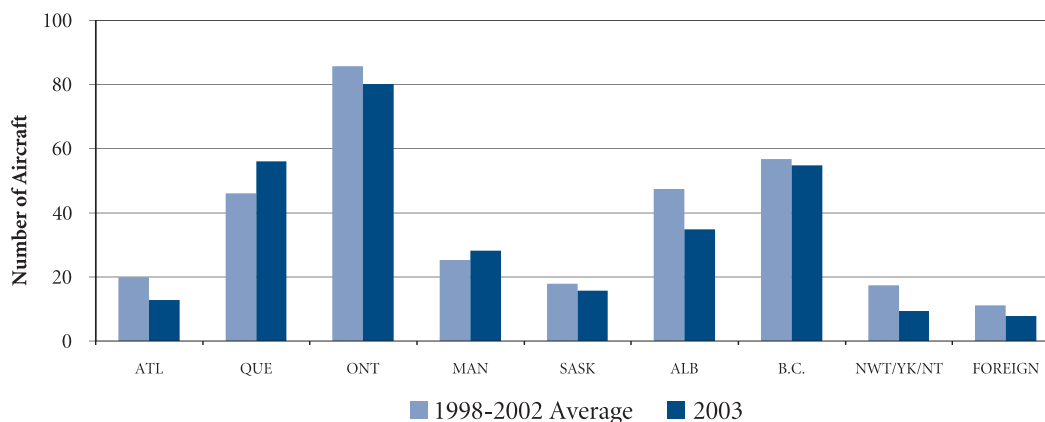
In 2003, 46 ultralight aircraft and 30 foreign-registered aircraft were involved in accidents in Canada. Of the accidents involving ultralight aircraft, 7 resulted in 9 fatalities, which is consistent with previous years. Of the accidents involving foreign-registered aircraft, 6 resulted in 8 fatalities.

⁴ Three of the 31 accidents involved gliders and a gyroplane.

Accidents by Selected Categories

Province (Table 3): The total number of accidents for Canadian-registered aircraft increased from 274 in 2002 to 296 in 2003. There were some notable changes by province (Figure 4). Alberta, Northwest Territories, Nova Scotia and New Brunswick saw substantially fewer accidents (34, 5, 1 and 1 respectively compared with their previous five-year averages of 47, 11, 6 and 5), while the number of accidents in Quebec increased to 55 in 2003 from 47 over its previous five-year average.

Figure 4 - Aircraft Involved in Accidents by Province



Events and Phases (Tables 4 - 6): Accidents are frequently classified according to the first event (or abnormal condition) in the sequence of events that led to the occurrence. This classification serves to demonstrate the nature and distribution of safety-significant events, and how these events shift over time. However, the first event should not be construed to be the cause of the accident.

In 2003, the most common first event in aeroplane accidents was a take-off/landing event (23%). Power loss (15%), control loss (11%), collision with object (10%) and collision with terrain (10%) were the next most common first events. In helicopter accidents, power loss (25%), collision with terrain (11%), and autorotative landing (9%) were the most common first events.

The statistics show that the first event leading to an accident varies substantially according to the flight phase of the aircraft involved. For aeroplanes, accidents during the landing phase account for about 35% of total accidents. The most common first events in such accidents were landing (such as nose over, tire blow-out, etc.) and control loss. Approximately 24% of aeroplane accidents occur during the take-off phase; in these accidents, power loss and control loss were the more common first events. The en-route phase accounted for about 15% of aeroplane accidents, with power loss being the most common first event in that flight phase.

The approach/landing phase accounted for 30% of helicopter accidents, with the most common first events being collision with object and control loss. About 17% of helicopter accidents occurred in the en-route phase, with power loss and weather-related event being common first events. The manoeuvring phase (16%) had power loss as the most common first event. The hover/lift phase (15%) had sling-related event as the most common first event.

Pilot Licences (Table 7): First events vary with the licence type of the pilot. Students and aeroplane pilots with private pilot licences were more commonly involved in accidents where the first event was control loss, power loss or take-off/landing event than were pilots with other licence types. However, commercial and air transport pilots were involved in proportionally more accidents when the first event was collision with terrain, component system malfunction or a weather-related event than were pilots with other licence types.

Operation Type (Table 8): In 2003, aeroplane accidents occurred mainly on recreational flights (50%), followed by air transport (17%) and training flights (11%). Helicopter accidents occurred mainly on air transport flights (25%) and during surveying operations (18%).

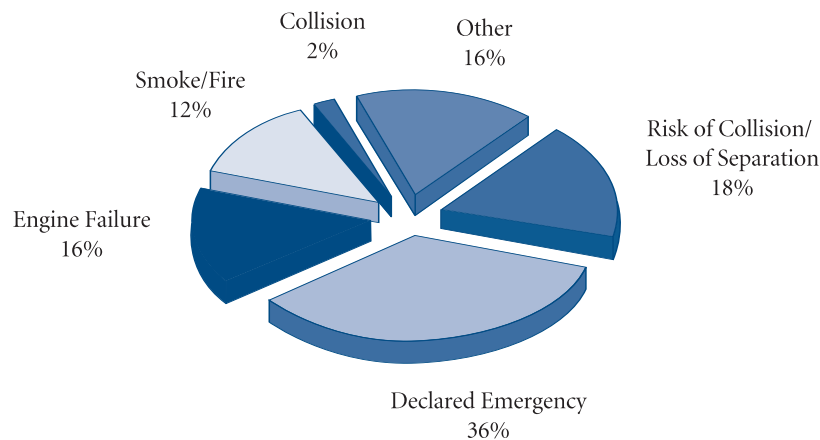
INCIDENTS

Overview of Incidents (Tables 1, 9 and 10)

Pursuant to TSB mandatory incident reporting requirements, 834 incidents were reported in 2003, 677 of which involved Canadian-registered aircraft.

In 2003, the most frequent incident types were declared emergency (36%), risk of collision or loss of separation (18%), and engine failure (16%), with the remainder being mostly smoke/fire incidents (Figure 5).

Figure 5 - Incidents Involving Aircraft by Type, 2003



The first event in declared emergency on Canadian-registered aircraft usually involved component failures, the most common of which were landing gear, hydraulic system, and electrical system.

Over the past five years, the majority of risk of collision incidents involving Canadian-registered aircraft had air traffic services (ATS)-related or air proximity events⁵ as their first event.

⁵ Please refer to the definitions in Appendix B for explanations for ATS-related and air proximity events.

APPENDIX A - AVIATION OCCURRENCE TABLES

Table 1

Aviation Occurrences and Casualties
1994-2003

| | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 |
|---|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Canadian-Registered Aircraft Accidents¹ | 381 | 390 | 342 | 356 | 387 | 341 | 320 | 295 | 274 | 296 |
| Aeroplanes Involved ² | 304 | 314 | 273 | 295 | 317 | 286 | 258 | 243 | 210 | 243 |
| Airliners | 6 | 7 | 4 | 8 | 14 | 6 | 9 | 5 | 6 | 7 |
| Commuter Aircraft | 8 | 19 | 12 | 13 | 10 | 13 | 4 | 8 | 6 | 9 |
| Air Taxi | 100 | 128 | 91 | 110 | 108 | 70 | 45 | 37 | 41 | 35 |
| Aerial Work | 16 | 6 | 13 | 10 | 18 | 18 | 19 | 18 | 12 | 18 |
| Corporate | 14 | 10 | 6 | 9 | 11 | 6 | 5 | 4 | 2 | 2 |
| State | 4 | 2 | 2 | 2 | 2 | 2 | 1 | 3 | 4 | 3 |
| Private/Other ³ | 156 | 142 | 145 | 143 | 154 | 171 | 175 | 168 | 139 | 169 |
| Helicopters Involved | 61 | 68 | 56 | 56 | 57 | 46 | 53 | 46 | 56 | 44 |
| Other Aircraft Involved ⁴ | 21 | 13 | 13 | 10 | 17 | 15 | 12 | 9 | 10 | 12 |
| Hours Flown (thousands) ⁵ | 3 776 | 3 576 | 3 624 | 3 476 | 3 931 | 4 046 | 3 982 | 3 885 | 3 713 | 3 790 |
| Accident Rate (per 100 000 hours) ⁶ | 10.1 | 10.9 | 9.4 | 10.2 | 9.8 | 8.4 | 8.0 | 7.6 | 7.4 | 7.8 |
| Fatal Accidents | 33 | 52 | 44 | 36 | 32 | 34 | 38 | 33 | 30 | 31 |
| Aeroplanes Involved ² | 30 | 45 | 34 | 29 | 25 | 28 | 26 | 25 | 22 | 26 |
| Airliners | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 |
| Commuter Aircraft | 2 | 2 | 1 | 0 | 1 | 2 | 1 | 1 | 0 | 0 |
| Air Taxi | 12 | 20 | 11 | 11 | 8 | 5 | 3 | 5 | 4 | 5 |
| Aerial Work | 2 | 1 | 0 | 0 | 0 | 1 | 2 | 1 | 1 | 4 |
| Corporate | 1 | 2 | 0 | 1 | 1 | 2 | 0 | 1 | 0 | 0 |
| State | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 2 | 0 |
| Private/Other ³ | 12 | 19 | 21 | 16 | 15 | 17 | 18 | 17 | 15 | 17 |
| Helicopters Involved | 3 | 11 | 7 | 8 | 6 | 4 | 11 | 6 | 6 | 3 |
| Other Aircraft Involved ⁴ | 0 | 0 | 3 | 0 | 2 | 4 | 1 | 3 | 3 | 3 |
| Fatalities | 80 | 107 | 71 | 77 | 87 | 65 | 65 | 61 | 50 | 58 |
| Serious Injuries | 36 | 54 | 38 | 69 | 49 | 42 | 53 | 35 | 42 | 44 |
| Canadian-Registered Ultralight Aircraft Accidents | 36 | 43 | 30 | 55 | 38 | 35 | 38 | 35 | 36 | 46 |
| Fatal Accidents | 8 | 8 | 4 | 7 | 4 | 12 | 5 | 6 | 9 | 7 |
| Fatalities | 11 | 10 | 5 | 9 | 7 | 19 | 9 | 8 | 12 | 9 |
| Serious Injuries | 5 | 12 | 8 | 7 | 7 | 7 | 10 | 8 | 4 | 14 |
| Foreign-Registered Aircraft Accidents in Canada | 22 | 18 | 22 | 16 | 21 | 21 | 18 | 29 | 13 | 30 |
| Fatal Accidents | 4 | 5 | 4 | 5 | 5 | 5 | 7 | 8 | 1 | 6 |
| Fatalities | 9 | 17 | 13 | 11 | 236 | 8 | 17 | 10 | 2 | 8 |
| Serious Injuries | 1 | 2 | 2 | 5 | 3 | 0 | 2 | 5 | 0 | 3 |
| All Aircraft: Reportable Incidents | 563 | 603 | 705 | 685 | 771 | 699 | 725 | 853 | 865 | 834 |
| Risk of Collision/Loss of Separation | 144 | 138 | 193 | 213 | 181 | 168 | 161 | 204 | 194 | 154 |
| Declared Emergency | 134 | 185 | 197 | 192 | 226 | 207 | 225 | 255 | 280 | 292 |
| Engine Failure | 165 | 159 | 174 | 144 | 170 | 155 | 161 | 175 | 160 | 132 |
| Smoke/Fire | 61 | 53 | 75 | 61 | 106 | 87 | 84 | 107 | 100 | 103 |
| Collision | 10 | 5 | 2 | 11 | 4 | 7 | 8 | 19 | 22 | 16 |
| Other | 49 | 63 | 64 | 64 | 84 | 75 | 86 | 93 | 109 | 137 |

- 1 Ultralight aircraft excluded.
- 2 As some accidents may involve multiple aircraft, the number of aircraft involved may differ from the total number of accidents.
- 3 Other: Contains, but is not limited to, organizations that rent aircraft (i.e. flying schools, flying clubs, etc.).
- 4 Includes gliders, balloons and gyroplanes.
- 5 Source: Transport Canada (1995 to 2003 hours flown are estimated).
- 6 Accident rate does not include "Other Aircraft Involved."



Table 2

Canadian-Registered Aircraft Involved in Accidents, Accident Rates, and Fatalities by Operator Type 1994-2003

| | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 |
|--|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Accidents | | | | | | | | | | |
| Aeroplanes Involved | | | | | | | | | | |
| Airliners | 6 | 7 | 4 | 8 | 14 | 6 | 9 | 5 | 6 | 7 |
| Commuter Aircraft | 8 | 19 | 12 | 13 | 10 | 13 | 4 | 8 | 6 | 9 |
| Air Taxi | 100 | 128 | 91 | 110 | 108 | 70 | 45 | 37 | 41 | 35 |
| Aerial Work | 16 | 6 | 13 | 10 | 18 | 18 | 19 | 18 | 12 | 18 |
| Corporate/Private/Other ¹ | 170 | 152 | 151 | 152 | 165 | 177 | 180 | 172 | 141 | 171 |
| State | 4 | 2 | 2 | 2 | 2 | 2 | 1 | 3 | 4 | 3 |
| Helicopters Involved | 61 | 68 | 56 | 56 | 57 | 46 | 53 | 46 | 56 | 44 |
| Total | 365 | 382 | 329 | 351 | 374 | 332 | 311 | 289 | 266 | 287 |
| Hours Flown (thousands)² | | | | | | | | | | |
| Aeroplanes | | | | | | | | | | |
| Airliners | 1 049 | 1 053 | 1 079 | 1 070 | 1 210 | 1 247 | 1 198 | 1 168 | 1 124 | 1 148 |
| Commuter Aircraft | 302 | 297 | 299 | 294 | 329 | 344 | 337 | 322 | 311 | 318 |
| Air Taxi | 860 | 785 | 803 | 732 | 805 | 825 | 792 | 754 | 683 | 651 |
| Aerial Work | 125 | 133 | 137 | 141 | 173 | 197 | 219 | 242 | 262 | 313 |
| Corporate/Private/Other | 728 | 625 | 587 | 553 | 630 | 629 | 612 | 555 | 496 | 463 |
| State | 145 | 106 | 146 | 142 | 174 | 196 | 220 | 240 | 258 | 307 |
| Helicopters | 567 | 577 | 574 | 543 | 610 | 609 | 604 | 604 | 578 | 590 |
| Total | 3 776 | 3 576 | 3 624 | 3 476 | 3 931 | 4 046 | 3 982 | 3 885 | 3 713 | 3 790 |
| Accident Rates (per 100 000 hours) | | | | | | | | | | |
| Aeroplanes | | | | | | | | | | |
| Airliners | 0.6 | 0.7 | 0.4 | 0.7 | 1.2 | 0.5 | 0.8 | 0.4 | 0.5 | 0.6 |
| Commuter Aircraft | 2.6 | 6.4 | 4.0 | 4.4 | 3.0 | 3.8 | 1.2 | 2.5 | 1.9 | 2.8 |
| Air Taxi | 11.6 | 16.3 | 11.3 | 15.0 | 13.4 | 8.5 | 5.7 | 4.9 | 6.0 | 5.4 |
| Aerial Work | 12.8 | 4.5 | 9.5 | 7.1 | 10.4 | 9.2 | 8.7 | 7.4 | 4.6 | 5.8 |
| Corporate/Private/Other | 23.4 | 24.3 | 25.7 | 27.5 | 26.2 | 28.1 | 29.4 | 31.0 | 28.4 | 36.9 |
| State | 2.8 | 1.9 | 1.4 | 1.4 | 1.1 | 1.0 | 0.5 | 1.2 | 1.5 | 1.0 |
| Helicopters | 10.8 | 11.8 | 9.8 | 10.3 | 9.3 | 7.6 | 8.8 | 7.6 | 9.7 | 7.5 |
| Total (all aircraft) | 9.7 | 10.7 | 9.1 | 10.1 | 9.5 | 8.2 | 7.8 | 7.4 | 7.2 | 7.6 |
| Fatalities: Crew | | | | | | | | | | |
| Aeroplanes | | | | | | | | | | |
| Airliners | 0 | 1 | 1 | 0 | 0 | 2 | 2 | 0 | 0 | 0 |
| Commuter Aircraft | 4 | 4 | 2 | 0 | 2 | 2 | 2 | 2 | 0 | 0 |
| Air Taxi | 15 | 18 | 10 | 13 | 9 | 6 | 2 | 4 | 1 | 5 |
| Aerial Work | 3 | 1 | 0 | 0 | 0 | 1 | 3 | 1 | 1 | 4 |
| Corporate | 1 | 2 | 0 | 0 | 2 | 1 | 0 | 1 | 0 | 0 |
| State | 1 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 1 | 0 |
| Private/Other | 10 | 18 | 22 | 16 | 16 | 16 | 20 | 17 | 15 | 15 |
| Helicopters | 3 | 8 | 4 | 9 | 5 | 5 | 10 | 7 | 6 | 3 |
| Total | 37 | 52 | 39 | 39 | 34 | 33 | 41 | 32 | 24 | 27 |
| Fatalities: Passengers | | | | | | | | | | |
| Aeroplanes | | | | | | | | | | |
| Airliners | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Commuter Aircraft | 3 | 4 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 |
| Air Taxi | 21 | 31 | 9 | 9 | 16 | 4 | 5 | 8 | 6 | 10 |
| Aerial Work | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 |
| Corporate | 2 | 1 | 0 | 2 | 1 | 4 | 0 | 1 | 0 | 0 |
| State | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| Private/Other | 9 | 11 | 15 | 13 | 11 | 14 | 6 | 12 | 16 | 15 |
| Helicopters | 7 | 8 | 2 | 12 | 13 | 6 | 8 | 2 | 0 | 3 |
| Total | 43 | 55 | 26 | 38 | 50 | 28 | 20 | 24 | 22 | 29 |

1 Other: Contains, but is not limited to, organizations that rent aircraft (i.e. flying schools, flying clubs, etc.).

2 Source: Transport Canada (2003 hours flown are estimated).

Table 3

Accidents Involving Canadian-Registered Aircraft by Province 1994-2003

| | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 |
|---------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Accidents | | | | | | | | | | |
| Newfoundland and Labrador | 10 | 9 | 10 | 9 | 7 | 5 | 14 | 10 | 6 | 9 |
| Prince Edward Island | 0 | 0 | 2 | 1 | 0 | 0 | 1 | 1 | 0 | 1 |
| Nova Scotia | 9 | 8 | 5 | 4 | 7 | 4 | 9 | 3 | 7 | 1 |
| New Brunswick | 4 | 5 | 1 | 6 | 6 | 7 | 5 | 4 | 2 | 1 |
| Quebec | 70 | 78 | 39 | 60 | 42 | 46 | 55 | 48 | 42 | 55 |
| Ontario | 84 | 74 | 72 | 84 | 105 | 106 | 73 | 64 | 74 | 81 |
| Manitoba | 12 | 29 | 18 | 25 | 29 | 32 | 17 | 28 | 17 | 28 |
| Saskatchewan | 23 | 28 | 24 | 22 | 21 | 22 | 9 | 18 | 18 | 16 |
| Alberta | 51 | 46 | 56 | 46 | 62 | 52 | 39 | 36 | 46 | 34 |
| British Columbia | 81 | 72 | 83 | 72 | 70 | 40 | 68 | 58 | 41 | 54 |
| Nunavut ¹ | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 2 | 1 | 0 |
| Northwest Territories | 17 | 16 | 13 | 10 | 13 | 14 | 11 | 12 | 4 | 5 |
| Yukon | 8 | 11 | 11 | 5 | 8 | 4 | 6 | 4 | 4 | 4 |
| Outside Canada | 12 | 14 | 8 | 12 | 17 | 9 | 9 | 7 | 12 | 7 |
| Total | 381 | 390 | 342 | 356 | 387 | 341 | 320 | 295 | 274 | 296 |
| Fatal Accidents | | | | | | | | | | |
| Newfoundland and Labrador | 0 | 0 | 2 | 1 | 1 | 1 | 2 | 1 | 1 | 2 |
| Prince Edward Island | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Nova Scotia | 0 | 3 | 0 | 0 | 2 | 0 | 3 | 0 | 2 | 0 |
| New Brunswick | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Quebec | 9 | 7 | 6 | 7 | 9 | 5 | 5 | 6 | 6 | 4 |
| Ontario | 6 | 10 | 9 | 7 | 4 | 9 | 4 | 6 | 4 | 12 |
| Manitoba | 1 | 4 | 3 | 1 | 2 | 4 | 0 | 2 | 1 | 0 |
| Saskatchewan | 2 | 2 | 1 | 4 | 2 | 1 | 2 | 0 | 2 | 1 |
| Alberta | 3 | 4 | 3 | 2 | 4 | 5 | 3 | 2 | 2 | 3 |
| British Columbia | 7 | 14 | 12 | 11 | 5 | 8 | 10 | 11 | 9 | 7 |
| Nunavut ¹ | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 0 |
| Northwest Territories | 0 | 1 | 4 | 0 | 0 | 1 | 1 | 3 | 0 | 0 |
| Yukon | 1 | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| Outside Canada | 3 | 3 | 3 | 3 | 3 | 0 | 4 | 1 | 3 | 1 |
| Total | 33 | 52 | 44 | 36 | 32 | 34 | 38 | 33 | 30 | 31 |
| Fatalities | | | | | | | | | | |
| Newfoundland and Labrador | 0 | 0 | 5 | 2 | 1 | 1 | 3 | 3 | 2 | 3 |
| Prince Edward Island | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Nova Scotia | 0 | 4 | 0 | 0 | 4 | 0 | 4 | 0 | 2 | 0 |
| New Brunswick | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Quebec | 20 | 9 | 12 | 18 | 29 | 9 | 8 | 13 | 14 | 8 |
| Ontario | 16 | 31 | 12 | 8 | 9 | 14 | 5 | 8 | 5 | 28 |
| Manitoba | 2 | 7 | 4 | 4 | 5 | 7 | 0 | 4 | 1 | 0 |
| Saskatchewan | 3 | 3 | 1 | 9 | 5 | 1 | 2 | 0 | 2 | 1 |
| Alberta | 5 | 5 | 3 | 4 | 10 | 8 | 3 | 4 | 3 | 4 |
| British Columbia | 23 | 32 | 20 | 22 | 12 | 24 | 19 | 17 | 16 | 12 |
| Nunavut ¹ | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 3 | 0 | 0 |
| Northwest Territories | 0 | 4 | 5 | 0 | 0 | 1 | 3 | 8 | 0 | 0 |
| Yukon | 1 | 7 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 1 |
| Outside Canada | 8 | 3 | 8 | 10 | 12 | 0 | 11 | 1 | 5 | 1 |
| Total | 80 | 107 | 71 | 77 | 87 | 65 | 65 | 61 | 50 | 58 |

1 This territory was created on 1 April 1999.



Table 4

Canadian-Registered Aircraft Involved in Accidents by First Event and Phase of Flight 1994-2003

| | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 |
|---|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Aeroplanes Involved in Accidents by First Event | | | | | | | | | | |
| Control Loss | 51 | 45 | 31 | 33 | 34 | 30 | 41 | 37 | 23 | 27 |
| Power Loss | 50 | 51 | 44 | 46 | 55 | 41 | 37 | 37 | 29 | 36 |
| Collision with Object | 28 | 35 | 39 | 33 | 40 | 36 | 24 | 21 | 16 | 25 |
| Collision with Terrain | 15 | 18 | 21 | 18 | 18 | 22 | 30 | 18 | 16 | 25 |
| Collision with Moving Aircraft | 0 | 6 | 0 | 3 | 3 | 9 | 3 | 3 | 2 | 1 |
| Operations-Related Event | 16 | 17 | 14 | 13 | 10 | 12 | 5 | 6 | 5 | 5 |
| Component System Malfunction | 16 | 22 | 13 | 16 | 15 | 18 | 15 | 13 | 14 | 7 |
| Landing Gear Collapsed/Retracted | 17 | 3 | 15 | 18 | 18 | 15 | 8 | 7 | 10 | 9 |
| Runway Overrun | 3 | 6 | 5 | 5 | 5 | 4 | 2 | 1 | 1 | 1 |
| Take-Off/Landing Event | 50 | 46 | 48 | 46 | 59 | 53 | 46 | 47 | 45 | 55 |
| Wheels-Up Landing | 5 | 7 | 4 | 13 | 6 | 9 | 4 | 5 | 9 | 5 |
| Component System-Related Event | 7 | 18 | 4 | 16 | 13 | 4 | 10 | 9 | 7 | 13 |
| Weather-Related Event | 13 | 16 | 12 | 12 | 10 | 7 | 15 | 12 | 12 | 9 |
| Aircraft Damage | 8 | 4 | 8 | 7 | 10 | 1 | 5 | 4 | 3 | 4 |
| Other/Unknown | 25 | 20 | 15 | 16 | 21 | 25 | 13 | 23 | 18 | 21 |
| Total | 304 | 314 | 273 | 295 | 317 | 286 | 258 | 243 | 210 | 243 |
| Helicopters Involved in Accidents by First Event | | | | | | | | | | |
| Control Loss | 5 | 9 | 3 | 6 | 10 | 3 | 3 | 5 | 6 | 3 |
| Power Loss | 13 | 6 | 5 | 9 | 6 | 12 | 9 | 5 | 9 | 11 |
| Collision with Object | 8 | 11 | 7 | 6 | 12 | 8 | 14 | 8 | 5 | 3 |
| Collision with Terrain | 3 | 1 | 3 | 5 | 3 | 6 | 5 | 4 | 9 | 5 |
| Collision with Moving Aircraft | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Operations-Related Event | 2 | 8 | 6 | 1 | 0 | 5 | 1 | 2 | 0 | 2 |
| Sling-Related Event | 2 | 9 | 5 | 2 | 2 | 2 | 2 | 2 | 4 | 2 |
| Dynamic System Malfunction | 3 | 1 | 2 | 3 | 1 | 0 | 2 | 2 | 2 | 1 |
| Dynamic Rollover | 2 | 0 | 0 | 1 | 2 | 0 | 3 | 1 | 3 | 1 |
| Autorotative Landing | 2 | 1 | 3 | 6 | 1 | 2 | 2 | 3 | 4 | 4 |
| Weather-Related Event | 3 | 3 | 2 | 0 | 1 | 1 | 3 | 4 | 2 | 1 |
| Aircraft Damage | 4 | 5 | 11 | 5 | 6 | 3 | 2 | 3 | 1 | 3 |
| Other/Unknown | 12 | 12 | 9 | 12 | 13 | 4 | 7 | 6 | 11 | 8 |
| Total | 61 | 68 | 56 | 56 | 57 | 46 | 53 | 46 | 56 | 44 |
| Aeroplanes Involved in Accidents by Phase of Flight | | | | | | | | | | |
| Standing/Taxiing | 17 | 22 | 19 | 22 | 26 | 17 | 21 | 18 | 22 | 23 |
| Take-off | 102 | 80 | 57 | 64 | 72 | 72 | 59 | 52 | 51 | 47 |
| En Route | 46 | 56 | 44 | 43 | 52 | 38 | 39 | 34 | 30 | 41 |
| Manoeuvring | 20 | 18 | 19 | 14 | 22 | 21 | 17 | 15 | 10 | 11 |
| Approach | 23 | 40 | 27 | 39 | 27 | 29 | 24 | 36 | 18 | 21 |
| Landing | 95 | 97 | 104 | 110 | 112 | 105 | 91 | 87 | 72 | 93 |
| Post-Impact | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| Unknown | 1 | 1 | 3 | 3 | 6 | 3 | 7 | 1 | 7 | 6 |
| Total | 304 | 314 | 273 | 295 | 317 | 286 | 258 | 243 | 210 | 243 |
| Helicopters Involved in Accidents by Phase of Flight | | | | | | | | | | |
| Standing | 6 | 6 | 7 | 4 | 1 | 4 | 2 | 3 | 2 | 1 |
| Take-off | 10 | 13 | 5 | 9 | 3 | 4 | 9 | 5 | 9 | 5 |
| En Route | 13 | 11 | 7 | 14 | 9 | 6 | 8 | 10 | 7 | 6 |
| Hover/Lift | 7 | 14 | 13 | 6 | 13 | 10 | 4 | 5 | 3 | 4 |
| Manoeuvring | 7 | 6 | 11 | 9 | 13 | 8 | 14 | 2 | 9 | 9 |
| Approach/Landing | 17 | 17 | 13 | 14 | 17 | 12 | 13 | 19 | 21 | 18 |
| Unknown | 1 | 1 | 0 | 0 | 1 | 2 | 3 | 2 | 5 | 1 |
| Total | 61 | 68 | 56 | 56 | 57 | 46 | 53 | 46 | 56 | 44 |



Table 5

Canadian-Registered Aircraft Involved in Accidents First Event vs. Phase of Flight 1994-2003

| | Phase of Flight | | | | | | | Total |
|--|----------------------|------------|------------|-------------|------------|------------|-------------------|--------------|
| | Standing/ Taxiing | Take-off | En Route | Manoeuvring | Approach | Landing | Other/ Unknown | |
| Aeroplanes Involved in Accidents by First Event | | | | | | | | |
| Control Loss | 10 | 130 | 17 | 31 | 20 | 140 | 4 | 352 |
| Power Loss | 0 | 129 | 188 | 40 | 64 | 3 | 2 | 426 |
| Collision with Object | 61 | 70 | 21 | 32 | 44 | 67 | 2 | 297 |
| Collision with Terrain | 3 | 57 | 43 | 24 | 31 | 30 | 13 | 201 |
| Collision with Moving Aircraft | 8 | 6 | 3 | 6 | 6 | 1 | 0 | 30 |
| Operations-Related Event | 10 | 42 | 20 | 3 | 10 | 15 | 3 | 103 |
| Component System Malfunction | 12 | 32 | 15 | 1 | 31 | 57 | 1 | 149 |
| Landing Gear Collapsed/Retracted | 16 | 10 | 0 | 0 | 0 | 94 | 0 | 120 |
| Runway Overrun | 1 | 5 | 0 | 0 | 0 | 26 | 1 | 33 |
| Take-Off/Landing Event | 3 | 90 | 3 | 1 | 23 | 375 | 0 | 495 |
| Wheels-Up Landing | 0 | 0 | 0 | 0 | 1 | 66 | 0 | 67 |
| Component System-Related Event | 6 | 26 | 23 | 3 | 10 | 32 | 1 | 101 |
| Weather-Related Event | 8 | 24 | 43 | 6 | 22 | 14 | 1 | 118 |
| Aircraft Damage | 34 | 4 | 1 | 1 | 0 | 12 | 2 | 54 |
| Other/Unknown | 35 | 31 | 46 | 19 | 22 | 34 | 10 | 197 |
| Total | 207 | 656 | 423 | 167 | 284 | 966 | 40 | 2 743 |

| | Phase of Flight | | | | | | | Total |
|---|-----------------|-----------|-----------|------------|-------------|----------------------|-----------|------------|
| | Standing | Take-off | En Route | Hover/Lift | Manoeuvring | Approach/ Landing | Unknown | |
| Helicopters Involved in Accidents by First Event | | | | | | | | |
| Control Loss | 4 | 11 | 1 | 5 | 7 | 23 | 2 | 53 |
| Power Loss | 0 | 12 | 25 | 12 | 19 | 17 | 0 | 85 |
| Collision with Object | 5 | 13 | 3 | 15 | 18 | 26 | 2 | 82 |
| Collision with Terrain | 4 | 7 | 11 | 3 | 9 | 9 | 1 | 44 |
| Collision with Moving Aircraft | 0 | 0 | 3 | 0 | 0 | 1 | 1 | 5 |
| Operations-Related Event | 1 | 7 | 2 | 4 | 3 | 10 | 0 | 27 |
| Sling-Related Event | 1 | 4 | 2 | 17 | 5 | 3 | 0 | 32 |
| Dynamic System Malfunction | 0 | 3 | 6 | 4 | 3 | 1 | 0 | 17 |
| Dynamic Rollover | 2 | 6 | 0 | 0 | 1 | 3 | 1 | 13 |
| Autorotative Landing | 0 | 0 | 2 | 1 | 5 | 19 | 1 | 28 |
| Weather-Related Event | 0 | 1 | 12 | 2 | 0 | 5 | 0 | 20 |
| Aircraft Damage | 11 | 0 | 3 | 8 | 2 | 17 | 2 | 43 |
| Other/Unknown | 8 | 8 | 21 | 8 | 16 | 27 | 6 | 94 |
| Total | 36 | 72 | 91 | 79 | 88 | 161 | 16 | 543 |



Table 6

Canadian-Registered Aeroplanes Involved in Accidents First Event vs. Aeroplane Type 1994-2003

| | Aeroplane Type | | | | | | |
|--|----------------|------------|------------|-------------|-----------|-----------|-------------------|
| | Airliner | Commuter | Air Taxi | Aerial Work | Corporate | State | Private/ Other |
| Aeroplanes Involved in Accidents by First Event | | | | | | | |
| Control Loss | 2 | 11 | 84 | 12 | 7 | 1 | 235 |
| Power Loss | 8 | 2 | 108 | 34 | 11 | 1 | 262 |
| Collision with Object | 14 | 14 | 71 | 30 | 9 | 6 | 153 |
| Collision with Terrain | 2 | 7 | 74 | 10 | 3 | 2 | 103 |
| Collision with Moving Aircraft | 0 | 1 | 5 | 2 | 1 | 1 | 20 |
| Operations-Related Event | 1 | 4 | 27 | 9 | 1 | 0 | 61 |
| Component System Malfunction | 5 | 12 | 52 | 6 | 7 | 3 | 64 |
| Landing Gear Collapsed/Retracted | 5 | 9 | 38 | 1 | 2 | 1 | 64 |
| Runway Overrun | 2 | 0 | 11 | 1 | 1 | 0 | 18 |
| Take-Off/Landing Event | 12 | 18 | 142 | 16 | 12 | 7 | 288 |
| Wheels-Up Landing | 1 | 2 | 27 | 2 | 3 | 0 | 32 |
| Component System-Related Event | 4 | 6 | 22 | 3 | 4 | 0 | 62 |
| Weather-Related Event | 1 | 6 | 41 | 7 | 3 | 0 | 60 |
| Aircraft Damage | 7 | 3 | 11 | 2 | 0 | 1 | 30 |
| Other/Unknown | 8 | 7 | 52 | 13 | 5 | 2 | 110 |
| Total | 72 | 102 | 765 | 148 | 69 | 25 | 1 562 |
| Aeroplanes Involved in Fatal Accidents by First Event | | | | | | | |
| Control Loss | 0 | 1 | 13 | 2 | 2 | 1 | 31 |
| Power Loss | 1 | 0 | 4 | 1 | 1 | 0 | 19 |
| Collision with Object | 0 | 0 | 5 | 1 | 1 | 1 | 18 |
| Collision with Terrain | 2 | 3 | 34 | 4 | 2 | 2 | 44 |
| Collision with Moving Aircraft | 0 | 1 | 3 | 0 | 1 | 1 | 9 |
| Operations-Related Event | 0 | 2 | 2 | 0 | 0 | 0 | 7 |
| Component System Malfunction | 0 | 1 | 2 | 0 | 0 | 0 | 3 |
| Landing Gear Collapsed/Retracted | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Runway Overrun | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Take-Off/Landing Event | 0 | 1 | 1 | 1 | 0 | 0 | 3 |
| Wheels-Up Landing | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Component System-Related Event | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| Weather-Related Event | 0 | 0 | 6 | 0 | 0 | 0 | 7 |
| Aircraft Damage | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Other/Unknown | 1 | 1 | 13 | 3 | 1 | 0 | 22 |
| Total | 4 | 10 | 84 | 12 | 8 | 5 | 167 |

Table 7

Canadian-Registered Aeroplanes Involved in Accidents First Event vs. Pilot Licence Type 1994-2003

| | Pilot Licence Type ¹ | | | | | Total |
|--|---------------------------------|------------|------------|-----------------------------------|------------------|------------|
| | Student | Private | Commercial | Senior ² Commercial | Air Transport | |
| Aeroplanes Involved in Accidents by First Event | | | | | | |
| Control Loss | 6 | 46 | 25 | 0 | 13 | 90 |
| Power Loss | 5 | 41 | 27 | 0 | 17 | 90 |
| Collision with Object | 2 | 24 | 22 | 1 | 7 | 56 |
| Collision with Terrain | 0 | 19 | 33 | 0 | 22 | 74 |
| Collision with Moving Aircraft | 0 | 9 | 6 | 0 | 0 | 15 |
| Operations-Related Event | 3 | 11 | 10 | 0 | 4 | 28 |
| Component System Malfunction | 1 | 6 | 10 | 1 | 12 | 30 |
| Landing Gear Collapsed/Retracted | 0 | 6 | 1 | 1 | 4 | 12 |
| Runway Overrun | 0 | 2 | 3 | 0 | 2 | 7 |
| Take-Off/Landing Event | 3 | 25 | 8 | 0 | 18 | 54 |
| Wheels-Up Landing | 0 | 0 | 2 | 0 | 1 | 3 |
| Component System-Related Event | 0 | 5 | 6 | 0 | 5 | 16 |
| Weather-Related Event | 0 | 9 | 13 | 0 | 6 | 28 |
| Aircraft Damage | 0 | 3 | 2 | 0 | 2 | 7 |
| Other/Unknown | 1 | 22 | 21 | 0 | 21 | 65 |
| Total | 21 | 228 | 189 | 3 | 134 | 575 |

1 Accident pilots for whom the licence type is unknown and pilots with other licence types were excluded.

2 This column represents pilots who had senior commercial licences at the time of the accident. This licence type was discontinued by Transport Canada on 15 November 1994.



Table 8

Canadian-Registered Aircraft Involved in Accidents by Operation Type 1994-2003

| | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 |
|--|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Aeroplanes Involved in Accidents | | | | | | | | | | |
| Training | 28 | 34 | 31 | 42 | 49 | 43 | 45 | 46 | 20 | 34 |
| Pleasure/Travel | 146 | 147 | 130 | 138 | 129 | 130 | 116 | 108 | 102 | 122 |
| Business | 19 | 17 | 9 | 9 | 15 | 10 | 9 | 10 | 6 | 8 |
| Test/Demonstration/Ferry | 12 | 10 | 15 | 9 | 14 | 9 | 5 | 7 | 7 | 5 |
| Aerial Application | 19 | 13 | 17 | 11 | 17 | 9 | 12 | 13 | 6 | 13 |
| Fire Fighting/Fire Management | 4 | 1 | 0 | 2 | 3 | 2 | 3 | 2 | 2 | 2 |
| Survey/Inspection | 2 | 1 | 3 | 4 | 3 | 2 | 0 | 2 | 5 | 2 |
| Air Ambulance | 1 | 3 | 1 | 3 | 3 | 3 | 0 | 3 | 2 | 1 |
| Air Transport | 51 | 76 | 50 | 63 | 67 | 67 | 53 | 43 | 49 | 42 |
| Sightseeing | 5 | 1 | 1 | 4 | 1 | 0 | 5 | 1 | 1 | 4 |
| Other/Unknown | 17 | 11 | 16 | 10 | 16 | 11 | 10 | 8 | 10 | 10 |
| Total | 304 | 314 | 273 | 295 | 317 | 286 | 258 | 243 | 210 | 243 |
| Aeroplanes Involved in Fatal Accidents | | | | | | | | | | |
| Training | 0 | 1 | 0 | 2 | 5 | 2 | 2 | 2 | 1 | 2 |
| Pleasure/Travel | 14 | 20 | 16 | 16 | 11 | 14 | 12 | 10 | 11 | 15 |
| Business | 1 | 2 | 1 | 2 | 2 | 3 | 3 | 4 | 0 | 0 |
| Test/Demonstration/Ferry | 3 | 5 | 5 | 1 | 2 | 1 | 1 | 2 | 3 | 0 |
| Aerial Application | 2 | 1 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 1 |
| Fire Fighting/Fire Management | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 |
| Survey/Inspection | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 2 | 0 |
| Air Ambulance | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Air Transport | 7 | 12 | 6 | 6 | 4 | 5 | 4 | 4 | 4 | 4 |
| Sightseeing | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| Other/Unknown | 0 | 1 | 4 | 0 | 1 | 1 | 1 | 1 | 0 | 3 |
| Total | 30 | 45 | 34 | 29 | 25 | 28 | 26 | 25 | 22 | 26 |
| Helicopters Involved in Accidents | | | | | | | | | | |
| Training | 8 | 4 | 4 | 9 | 5 | 6 | 11 | 11 | 9 | 6 |
| Pleasure/Travel | 3 | 5 | 1 | 6 | 0 | 0 | 3 | 4 | 2 | 1 |
| Business | 5 | 2 | 1 | 2 | 5 | 1 | 1 | 4 | 6 | 1 |
| Test/Demonstration/Ferry | 1 | 4 | 4 | 4 | 0 | 3 | 4 | 1 | 5 | 0 |
| Aerial Application | 3 | 4 | 2 | 0 | 1 | 1 | 2 | 1 | 1 | 2 |
| Fire Fighting/Fire Management | 1 | 9 | 5 | 2 | 10 | 7 | 2 | 2 | 6 | 6 |
| Survey/Inspection | 4 | 2 | 7 | 5 | 7 | 4 | 4 | 0 | 3 | 8 |
| Air Ambulance | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| Air Transport | 21 | 21 | 17 | 15 | 14 | 10 | 11 | 12 | 14 | 11 |
| Sightseeing | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| Other/Unknown | 13 | 17 | 14 | 13 | 14 | 13 | 15 | 10 | 10 | 9 |
| Total | 61 | 68 | 56 | 56 | 57 | 46 | 53 | 46 | 56 | 44 |
| Helicopters Involved in Fatal Accidents | | | | | | | | | | |
| Training | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 |
| Pleasure/Travel | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 |
| Business | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 1 | 0 |
| Test/Demonstration/Ferry | 0 | 1 | 2 | 1 | 0 | 0 | 1 | 1 | 2 | 0 |
| Aerial Application | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fire Fighting/Fire Management | 1 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| Survey/Inspection | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 |
| Air Ambulance | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Air Transport | 0 | 4 | 3 | 3 | 2 | 1 | 1 | 1 | 0 | 0 |
| Sightseeing | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| Other/Unknown | 1 | 1 | 1 | 2 | 1 | 2 | 5 | 1 | 3 | 1 |
| Total | 3 | 11 | 7 | 8 | 6 | 4 | 11 | 6 | 6 | 3 |



Table 9

Incidents Involving Canadian-Registered Aircraft by Incident Type 1994-2003

| | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 |
|--------------------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Incidents | | | | | | | | | | |
| Risk of Collision/Loss of Separation | 115 | 120 | 156 | 181 | 149 | 142 | 130 | 168 | 169 | 124 |
| Declared Emergency | 108 | 165 | 165 | 157 | 183 | 173 | 174 | 209 | 232 | 229 |
| Engine Failure | 124 | 120 | 133 | 115 | 133 | 121 | 129 | 157 | 135 | 104 |
| Smoke/Fire | 52 | 45 | 68 | 46 | 86 | 71 | 71 | 92 | 82 | 82 |
| Collision | 8 | 3 | 1 | 11 | 3 | 7 | 8 | 17 | 19 | 16 |
| Control Difficulties | 14 | 22 | 19 | 13 | 28 | 18 | 25 | 28 | 28 | 41 |
| Crew Unable to Perform Duties | 6 | 3 | 8 | 13 | 8 | 17 | 15 | 13 | 37 | 48 |
| Dangerous Goods-Related | 1 | 0 | 7 | 4 | 3 | 3 | 2 | 6 | 0 | 2 |
| Depressurization | 7 | 13 | 12 | 12 | 19 | 6 | 4 | 15 | 18 | 17 |
| Fuel Shortage | 1 | 2 | 0 | 2 | 6 | 7 | 1 | 2 | 1 | 6 |
| Failure to Remain in Landing Area | 6 | 11 | 8 | 9 | 8 | 10 | 13 | 4 | 6 | 3 |
| Incorrect Fuel | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Slung Load Released | 1 | 3 | 1 | 2 | 1 | 5 | 6 | 8 | 3 | 4 |
| Transmission or Gearbox Failure | 0 | 0 | 2 | 1 | 1 | 3 | 2 | 2 | 2 | 1 |
| Total¹ | 443 | 507 | 580 | 566 | 628 | 583 | 580 | 721 | 733 | 677 |

1 Incidents involving Canadian-registered aircraft only; Table 1 includes those involving foreign aircraft.

Table 10

Canadian-Registered Aircraft Involved in Incidents Selected Incident Types vs. First Event 1999-2003

| Incident Type | First Event | |
|---|---------------------------|-----|
| Risk of Collision/ Loss of Separation 1 184 Aircraft Involved | Air Proximity | 300 |
| | ATS-Related Event | 697 |
| | Altitude-Related Event | 39 |
| | Runway Incursion | 70 |
| | Other | 78 |
| Declared Emergency 1 017 Aircraft Involved | Landing Gear Failure | 191 |
| | Hydraulic Failure | 159 |
| | Electrical Failure | 48 |
| | Other Component Failure | 342 |
| | Other | 277 |
| Engine Failure 646 Aircraft Involved | Power Loss - First Engine | 275 |
| | Component Failure | 313 |
| | Other | 58 |
| Smoke/Fire 398 Aircraft Involved | Fire/Explosion | 288 |
| | Component Failure | 93 |
| | Other | 17 |
| Control Difficulties 140 Aircraft Involved | Component Failure | 59 |
| | Weather-Related Event | 33 |
| | Other | 48 |

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
- or
- b) results in a fracture of any bone (except simple fractures of fingers, toes or nose); or
- c) involves lacerations which 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, of any of the following aircraft:

- 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.