CIVIL AVIATION AUTHORITY
OF NEW ZEALAND

Aviation Safety Summary

1 January to 31 March 2016

Summer 2016

Introduction to the Quarterly Safety Summary Report

Welcome to the quarterly safety summary report for the summer of 2016 (Jan/Feb/Mar).

Summer is traditionally the high season for flying activity, both private and commercial. It is often the quarter with the highest number of accidents. This summer there were 32 accidents, up slightly from 31 last summer. 14 (44%) of those were hang glider, paraglider or parachute accidents, and 18 (56%) involved conventional aircraft. 17 of those 18 aircraft accidents occurred without causing serious injuries. Sadly there was 1 fatality in a glider accident near Omarama.

Significantly, this is the lowest number of fatal accidents and fatal injuries for a summer quarter in 6 years. The last summer with only a single fatal accident/fatality was 2010 (when there was 1 fatality in a private aeroplane).

Less encouraging were some of the non-fatal, non-injury accidents, such as the two accidents at Warbirds over Wanaka which both involved passenger operations in historic aircraft. The outcome of both accidents was minor but a read of the summary of the DC3 vs Tiger Moth landing accident (see page 10) reveals how close to a serious accident the participants came.

In the Other Commercial sector there were three accidents during landing. While the occupants escaped injury and the aircraft were not destroyed, it is noted that all three landing accidents happened during dual training exercises, with an instructor aboard. See page 11.

Safe flying,

J.D. Stanton
Manager Intelligence, Safety & Risk Analysis

jack.stanton@caa.govt.nz

Executive Summary - Aviation Safety to 31 March 2016

- There were a total of 32 accidents in the January to March quarter of 2016. There was 1 fatal injury, 8 serious and 11 minor injuries in these accidents and injury incidents. Social cost in this quarter has accrued from accidents and injury incidents in the following safety target groups:
  - Sport Transport — 3 minor injuries
  - Other Commercial Operations - Helicopters — 1 minor injury
  - Private Operations - Aeroplanes — 2 minor injuries
  - Private Operations - Sport — 1 fatal injury, 8 serious and 5 minor injuries, 1 aircraft destroyed

  There were additional accidents in the groups above and other safety target groups that were not serious enough to contribute to the social cost outcome this quarter (no injuries or aircraft destroyed), but still represent safety risks, see page 3.
- The Annual Social Cost is now $63 million (three year average). The social cost now shows a downward trend. In the last four years the cost has decreased by 25% from $84M to $63M. See page 4.
- The overall accident rate over the period April 2011 to March 2016 shows a neutral trend and is at 4.8 accidents per 100,000 hours flown, which is below the average of approximately 5.0 accidents per 100,000 hours flown over the previous four years, see page 7.
- Defect incident rates are increasing for small aeroplanes and helicopters, see page 14.
- Aircraft incident rates are increasing for small aeroplanes, see page 15.
- Airspace incident rates are increasing for large aeroplanes, small aeroplanes, agricultural aeroplanes and helicopters, see page 16.
- The total annual number of hours flown for the year ending December 2015 is 4% lower than the year ending December 2011. The number of private hours flown is increasing, but the numbers of other commercial and agricultural hours are decreasing. See page 19.
- The annual number of air transport flights for the year ending December 2015 is 13% higher than the year ending December 2011, see page 20.
- The total annual number of aircraft movements from certificated aerodromes is continuing to decrease, by 12% from the year ending March 2012 to the year ending March 2016. See page 21.
- The number of Recreational Pilot Licences (with a medical fitness certificate) increased from 337 at 31 March 2015 to 401 at 31 March 2016, an increase of 64 (19%).
- At 31 March 2016 there were 31 ‘Part 102 Unmanned Aircraft Operators’, this certificate was introduced on 1 August 2015.

Section 1 - Social Cost and Accidents

Social Cost Quarterly Safety Outcome

The following table displays the social cost contribution from injuries and aircraft losses for each of the safety target groups for the quarter 1 January to 31 March 2016. The table also shows the number of accidents in this quarter.

Legend:

Fatal Injuries	Serious Injuries	Minor Injuries	Aircraft Destroyed	Accidents

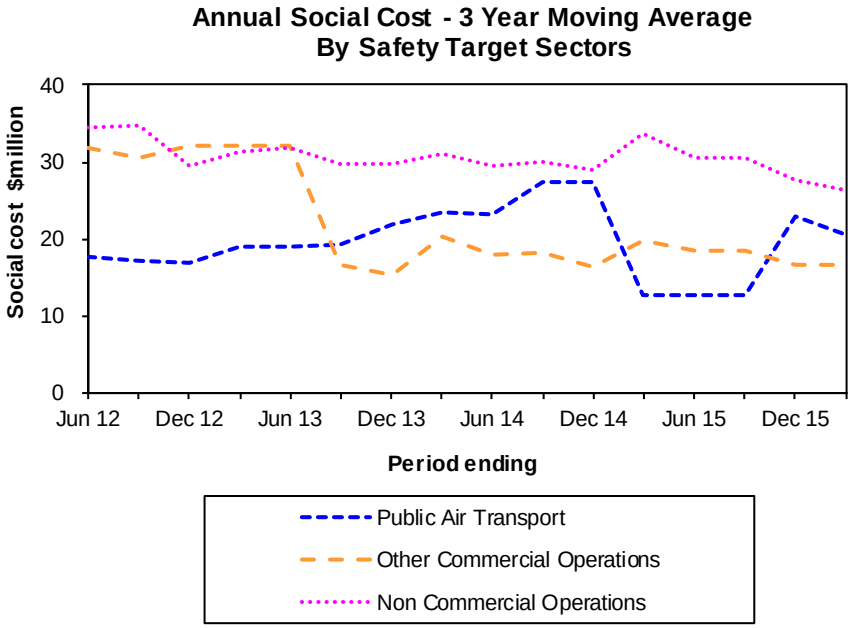
		Social Cost	Fatal Injuries	Serious Injuries	Minor Injuries	Aircraft Destroyed	Accidents
Total Safety Cost	$7.76 m						
	Public Air Transport	$0.05 m					
		Airline Operations - Large Aeroplanes	$0.00 m	0	0	0	0	1
		Airline Operations - Medium Aeroplanes	$0.00 m	0	0	0	0	0
		Airline Operations - Small Aeroplanes	$0.00 m	0	0	0	0	0
		Airline Operations - Helicopters	$0.00 m	0	0	0	0	0
		Sport Transport	**$0.05 m**	**0**	**0**	**3**	**0**	**3**
	Other Commercial Operations	$0.02 m					
		Other Commercial Operations - Aeroplanes	$0.00 m	0	0	0	0	3
		Other Commercial Operations - Helicopters	**$0.02 m**	**0**	**0**	**1**	**0**	**0**
		Agricultural Operations - Aeroplanes	$0.00 m	0	0	0	0	0
		Agricultural Operations - Helicopters	$0.00 m	0	0	0	0	1
		Agricultural Operations - Sport	$0.00 m	0	0	0	0	0
	Non Commercial Operations	$7.68 m					
		Private Operations - Aeroplanes	**$0.04 m**	**0**	**0**	**2**	**0**	**5**
		Private Operations - Helicopters	$0.00 m	0	0	0	0	1
		Private Operations - Sport	**$7.65 m**	**1**	**8**	**5**	**1**	**18**

Notes:

1. Individual values in the table may not sum exactly to the subtotals or total shown due to rounding.
2. Sport groups include hang gliders and parachutes.
3. An explanation of the Safety Target Groups is provided by the diagram in the Definitions section.
4. Social cost is the cost of fatal, serious and minor injuries, and aircraft destroyed, expressed in 2015 dollars.

Social Cost Trends

To provide context to this quarter's social cost outcome, the following graph shows the annual social cost (three year moving average) for the four-year period 1 April 2012 to 31 March 2016, (including the Sport Safety Target Groups).



Social Cost Analysis

The graph above indicates the social cost contribution of each safety target sector averaged over the previous three years.

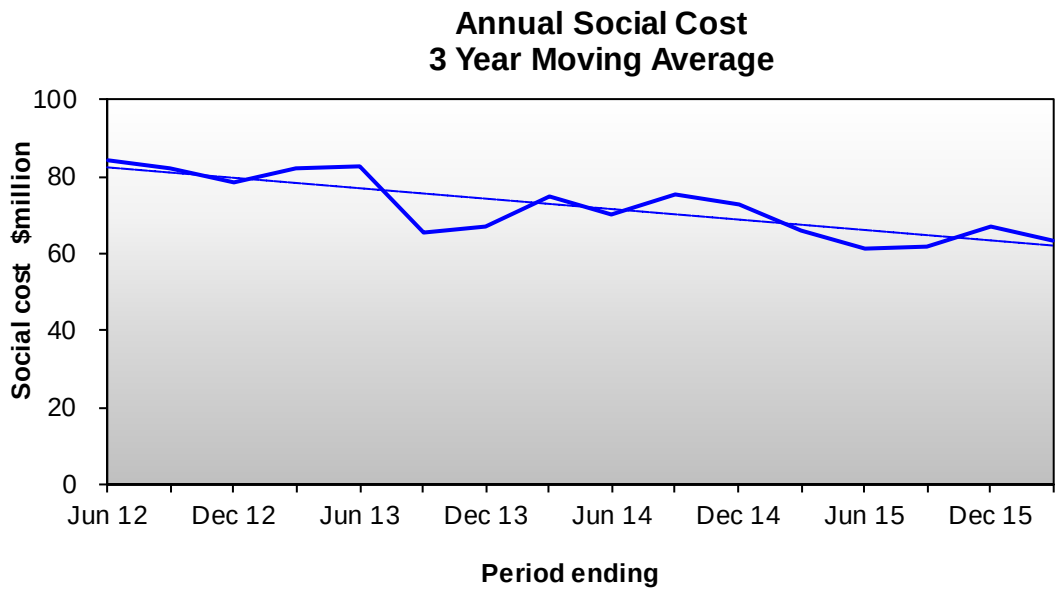
In this graph Public Air Transport shows an overall neutral trend, to approximately $20M (three year average). The increase at the end of 2015 was due to one accident in the Airline Operations - Helicopter group that resulted in 7 fatalities. In this quarter there were 3 minor injuries in the Sport Transport group (in paragliders and parachutes).

The social cost in the Other Commercial sector has been relatively constant since mid-2013 at approximately $18M (three year average). In this quarter there was 1 minor injury in the Other Commercial Operations - Helicopter group.

The Non Commercial sector's social cost shows an overall neutral trend, to approximately $26M (three year average). This quarter the majority of the cost resulted from 1 fatal injury, 8 serious and 5 minor injuries, and 1 aircraft destroyed in the Private Operations - Sport group (including 8 serious and 3 minor injuries in hang gliders, paragliders and parachutes).

The combined annual social cost of all three sectors is shown in the graph on the next page and has decreased by 25% from $84M to $63M between 2012 and 2016.

Section 1



Accidents by Safety Target Group

Quarterly Comparison

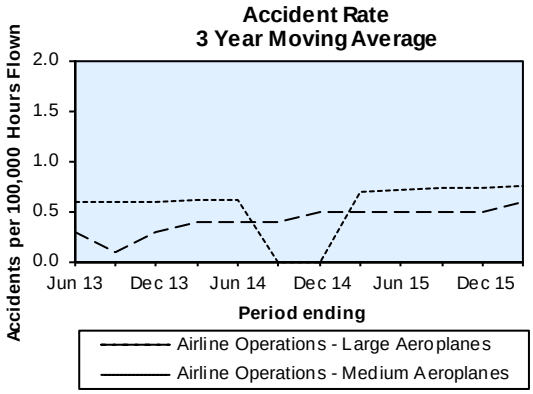
Safety Target Group	1 Jan to 31 Mar 2016	1 Jan to 31 Mar 2015	Average Of Same Quarter In Previous 3 Years
Airline Operations - Large Aeroplanes	1	0	0.7
Airline Operations - Medium Aeroplanes	0	1	0.0
Airline Operations - Small Aeroplanes	0	0	0.3
Airline Operations - Helicopters	0	0	1.7
Sport Transport	3	4	3.0
Other Commercial Operations - Aeroplanes	3	2	2.0
Other Commercial Operations - Helicopters	0	3	1.0
Agricultural Operations - Aeroplanes	0	1	1.3
Agricultural Operations - Helicopters	1	2	0.7
Agricultural Operations - Sport Aircraft	0	0	0.0
Private Operations - Aeroplanes	5	4	4.7
Private Operations - Helicopters	1	2	1.0
Private Operations - Sport	18	12	21.3
Other	0	0	1.0
Total	**32**	31	38.7

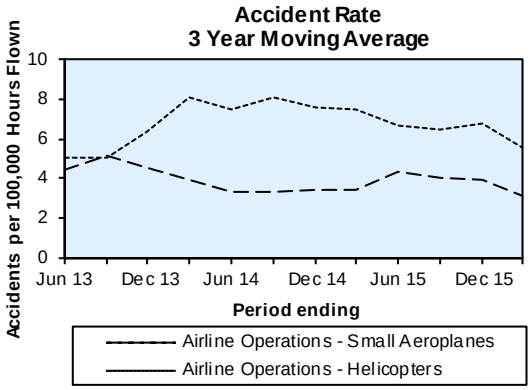
Comment

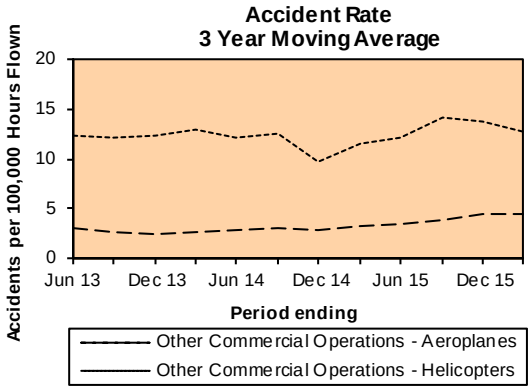
Overall accident numbers in the 2016 summer quarter have increased by 1 (3%) in comparison to the 2015 summer quarter. The biggest increase is within the Private Operations - Sport group, while the biggest decrease was within the Other Commercial Operations - Helicopters group.

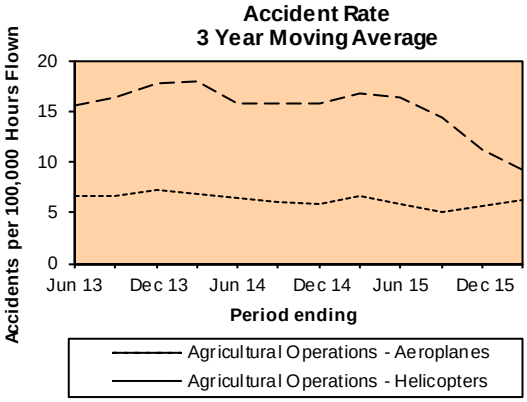
Trends

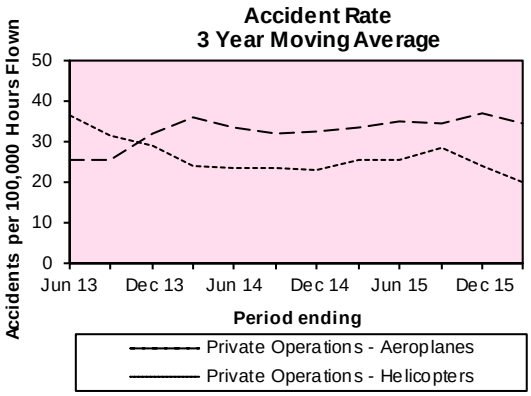
The following graphs show the aircraft accident rates (three year moving average) for the three-year period 1 April 2013 to 31 March 2016 (excluding the Sport Safety Target Groups, for which no accurate activity information is available).











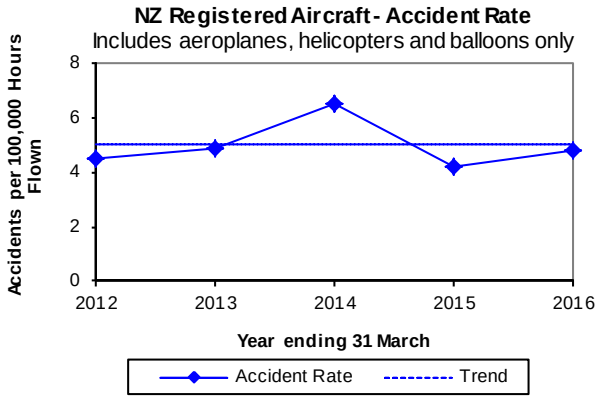
No accident rate information available for Sport Transport or Private Operations - Sport.

Sport Transport (Part 115) data not available for this period but may be provided from a future period.

Activity data is not provided by all aircraft classes in the Private Operations - Sport group (private amateur built aircraft, microlights, gliders, hang gliders and parachutes do not provide activity reports).

Overall Accident Rate

The following graph shows the overall accident rate per 100,000 hours flown. This data includes the aircraft classes aeroplane, helicopter and balloon only. Other aircraft classes such as amateur built aircraft, microlights, gliders, hang gliders and parachutes are excluded from this rate information. Data shown is for the five-year period 1 April 2011 to 31 March 2016. The accident rate is 4.8 accidents per 100,000 hours flown, which is below the average of approximately 5.0 accidents per 100,000 hours flown over the previous four years.



Note that this graph shows an annual rate and not a 3 year moving average.

Summary of Injury Accidents and Destroyed Aircraft Accidents

This section describes injury accidents, and accidents where there were no injuries but the aircraft was destroyed, that occurred during the period 1 January to 31 March 2016. These descriptions are classified according to the highest level of injury sustained and the safety target group. Not all of these accidents were investigated by the CAA, and some of the CAA investigations have not been completed, so the text may be condensed from the original accident notification.

Fatal Accidents

Private Operations - Sport

- A glider went overdue while on a cross country flight. The wreckage was found the following day below a ridge line. The pilot, who did not survive the accident, was found approximately 250 metres further down the terrain below the glider. The glider had been destroyed. (Occurrence Number 16/437)
  CAA safety investigation 16/SAI/186 in progress.

Serious Injury Accidents

Private Operations - Sport

- A hang glider encountered rain at approximately 1500 ft which changed the flight characteristics of the aircraft. The pilot attempted to land but collided with a tree, suffering serious injuries (broken ribs, multiple breaks, a badly bruised shoulder and was unconscious). (Occurrence Number 16/727)
- The hang glider pilot noticed a twist in the harness on launch. As the pilot was bringing the hang glider back to the ground, it was picked up by a slight gust taking the pilot off balance. The pilot put out their foot to prevent hitting a rock, resulting in a broken leg below the ankle (serious injury). (16/923)
- A paraglider encountered strong sinking air while landing and the hard landing resulted in compression fractures in two vertebrae (serious injury). (16/533)
- On launching, the paraglider pilot tripped on an uneven surface and fell, hitting a hard object, which felt like a rock. The pilot broke the humerus bone (serious injury). (16/634)
- A paraglider pilot flew into sink while on approach, causing the paraglider to land short of the intended landing spot. The pilot tripped while landing in the grassy area and put out their hand, hitting a rock in the grass and causing a fracture in the arm (serious injury). (16/927)
- A powered paraglider crashed onto the dunes by a beach. The pilot received serious injuries. (16/668)
- A cameraman had been filming a tandem skydive pair. On final approach to the landing area, the cameraman did a low final turn at high speed and impacted with the ground, sustaining an injury to their back (serious injury). (16/1129) CAA health and safety reactive investigation 16/HSRI/2 in progress.
- A parachutist flared late during an off-site landing, and while trying to avoid a fence had a hard landing and fractured a heel (serious injury). (16/769)

Summary of Injury Accidents and Destroyed Aircraft Accidents continues on next page.

Minor Injury Accidents

Sport Transport

- The paraglider passenger failed to continue running until the paraglider was airborne. The pilot fell on top of the passenger and both were dragged down the slope for some distance, both receiving minor injuries. (Occurrence Number 16/766)
- A parachute passenger dislocated their shoulder (minor injury) during free fall. (16/1370)

Private Operations - Aeroplane

- A Cessna A185F Skywagon crashed on take-off. The port wing clipped on Matagouri halfway through the take-off roll, the aeroplane hit a bank and flipped, coming to rest upside down. The pilot and passenger received minor injuries. (16/233)

Private Operations - Sport

- A class 2 microlight experienced windshear on final and landed heavily causing a landing gear wheel to break. The undercarriage dug into grass flipping the aircraft onto its back. The passenger received minor injuries. (16/53)
- A paraglider collided with a hill while operating in windy conditions. The pilot suffered a compressed vertebra (minor injury). (16/635)
- A paraglider was forced to complete a downwind landing in a coastal boulder field. The pilot received minor injuries (foot). (16/128)
- A paraglider got pulled up and sideways on take-off. As the pilot tried to correct this, they tripped onto some bushes and the wing twisted. The paraglider landed back on the take-off side, resulting in minor injuries. (16/924)

Destroyed Aircraft Accidents

In the 1 January to 31 March 2016 quarter, there were **no accidents** where the aircraft was destroyed without injuries.

Summary of Other Accidents and Selected Incidents

This section describes the other accidents that occurred during the period (in addition to the fatal/injury/destroyed accidents already described). Also included here are selected incidents[1] from the period which had a high potential risk. For brevity the text may be condensed from the original occurrence notification.

Airline Operations - Large Aeroplanes

Accidents

- A large aeroplane had a landing accident after a passenger transport A to A flight. The aeroplane was cleared to land by ATC, but during the landing roll a Tiger Moth taxied onto the runway from the grass on the left hand side of the runway. The propeller of the Tiger Moth clipped the outboard section of the aeroplane's left wing causing damage to both aeroplanes. (Occurrence Number 16/1454)
  CAA safety investigation 16/SAI/221 in progress.

Airspace Incidents

- A large aeroplane on a passenger transport A to B flight came into close proximity with a medium aeroplane, from the opposite direction. The medium aeroplane was climbing through the altitude of the large aeroplane. As the aeroplanes came to within 2 NM and 700 ft of each other, the TCAS TA was activated in the large aeroplane. (16/710)
  CAA safety investigation 16/SAI/196 has been completed.
- On a passenger transport A to B flight, the tower advised of traffic orbiting to the right of the inbound large aeroplane on the RNAV B, traffic was sighted to the right and 400 ft above. The aircraft then proceeded to cross directly in front of the large aeroplane right to left at an estimated 0.5 to 1 NM, 200-300 ft above. The concern is the aircraft should not have been near the approach path with the large aeroplane on an instrument approach, in the event of a discontinued approach or go-around they would have been directly in the large aeroplane's climb out path. (16/877)
  CAA safety investigation 16/SAI/203 in progress.

Aircraft Incidents

- While enroute on a passenger transport A to B flight the "Forward Smoke Warning" illuminated. This warning extinguished after approximately 30 seconds, but was followed almost immediately by INV 1 Fault caution. A strong acrid electrical burning smell was confirmed on the flightdeck and in the passenger compartment. Cabin crew reported a strong burning acrid smell in the cabin and light smoke was observed in the passenger cabin. Oxygen masks were donned. A PAN call was made to Air Traffic Control and Local Standby requested. The aeroplane diverted to a nearby airport. (16/456)
  CAA safety investigation 16/SAI/191 in progress.

Summary of Other Accidents and Selected Incidents continues on next page.

[1] In the period 1 January to 31 March 2016 there were a total of 1,387 incidents reported to the CAA, the ones presented here have been selected on the basis of potential risk of injury.

Sport Transport

Accidents

- On landing the North American Harvard aeroplane after a passenger transport A to A flight, a swing developed, which caused the aeroplane to ground loop. The aeroplane vacated the sealed runway and stopped on the grass. The undercarriage failed. (Occurrence Number 16/1411)

Other Commercial Operations - Aeroplane

There were 3 dual training landing accidents:

Accidents

- The tail of a Cessna U206G on a dual training flight clipped a boundary fence while landing. The rear fuselage, tailplane and one elevator were damaged. (16/966)
- A Cessna 152 on a dual training flight suffered a hard landing which caused substantial damage. (16/835)
  CAA safety investigation 16/SAI/202 in progress.
- The wing of a Piper PA-18A-150 on a dual training flight collided with a fertilizer bin on landing. One of the main wheels collapsed and the wing was also damaged. (16/86)

Other Commercial Operations - Helicopter

Airspace Incidents

- A helicopter on a passenger transport A to B flight made all radio calls departing the heli-pad. The second helicopter took off on a conflicting departure path, and had to flare to avoid conflict with the first helicopter. (16/493)

Aircraft Incidents

- After a passenger transport A to B flight landed on a helibarge, and while disembarking passengers to a waiting vessel, a wave lifted the vessel so that an aerial on the vessel came into contact with a main rotor blade. This broke the aerial off and it then hit one of the passengers on the vessel in the arm causing minor injuries. The helicopter was then flown from the barge to the helicopter hangar with damaged main rotor blades. (16/1200)
- While positioning to another rural fire event the helicopter encountered severe turbulence. A precautionary landing was carried out to check over the helicopter. The rear locker door and one 20 Litre container of class A firefighting foam was missing. (16/1072)
- On a ferry flight severe turbulence was encountered in a river gorge. On landing to commence a fire fighting operation it was noted that the rear locker door was missing, with only the hinge attached to the aircraft. Unrestrained cargo had moved during the turbulence encounter and broken the locker door. Safety nets as well as double latches are to be fitted. (16/1146)
- Upon lifting from the hangar on a ferry/positioning flight, a loud bang was heard followed by vibration through the tail rotor pedals. An immediate landing and shutdown was carried out. Witnesses reported a sheet metal plate that covers the chemical sump had broken away in the downwash up into the tail rotor blades. Inspection revealed damaged tail rotor blades. (16/925)

Agricultural Operations - Aeroplane

Airspace Incidents

- A student flying a small aeroplane on a first solo cross country flight received a Traffic Alert "TRAFFIC 0 MILES SAME ALTITUDE". The student was initially confused but started looking for the traffic. Approximately 5-10 seconds later, an agricultural aeroplane on a ferry/positioning flight passed approximately within 8-12 metres of the student's aeroplane. ATC passed traffic information as the agricultural aeroplane was 1 NM ahead of the student's aeroplane, at the same level (both aeroplanes were entering controlled airspace). (Occurrence Number 16/1394)
  CAA safety investigation 16/SAI/217 in progress.

Agricultural Operations - Helicopter

Accidents

- The main rotor blade of a Robinson R44 struck a tree while spraying gorse below it. No vibration was felt and the helicopter was landed immediately. (16/308)

Private Operations - Aeroplane

There were 3 landing accidents and 1 taxiing accident:

Accidents

- The Piper PA-18A-150 was carrying out a short field three point landing, excessive brake application in the latter stage led to the tail rising and the propeller striking the ground. The tail returned to the ground. (16/500)
- The pilot of a Mooney M20C forgot to lower the undercarriage and landed with the gear up. The prop and engine were damaged. (16/134)
- Considerable sink was encountered on short final to a farm airstrip. The pilot commenced a go-around, however the Cessna 180 struck rising ground which damaged the right-hand undercarriage leg. The aircraft bounced into the air and the pilot was able to continue to fly the aircraft. During an emergency landing at a nearby aerodrome the right-hand undercarriage leg failed at the attachment point, resulting in the aircraft sustaining damage to the right wing and propeller. (16/231)
  CAA safety investigation 16/SAI/179 has been completed.
- After refuelling the Cessna, the pilot failed to do a clearing turn and the aeroplane ran into another fuel bowser which was in the aircrafts blind spot. There was significant damage to the bowser, and the aircraft's propeller and engine. (16/1354)

Summary of Other Accidents and Selected Incidents continues on next page.

Private Operations - Helicopter

Accidents

- A Robinson R22 Beta on a hunting flight suffered forward dynamic rollover while picking up a crewman from a steep slope. (Occurrence Number 16/834)

Private Operations - Sport

Accidents

- Just after take-off on a solo training flight, the clamshell canopy of the aeroplane unlatched and popped open. Due to slipstream the canopy sucked upward to 45 degrees affecting control of the aircraft and visibility. The pilot found it impossible to re-close the canopy so carried out a precautionary landing, this required the pilot to use their left hand to hold the canopy, working the throttle and stick alternately with their right hand. This resulted in a heavy landing. The nose wheel collapsed, folding under the aircraft, and the propeller shattered. (16/101)
- The pilot of a class 2 microlight (with a passenger on board) applied the brakes and found no response, on looking out of the window the pilot saw the port main landing gear wheel was missing. The pilot flew to a nearby airport, and with assistance from ATC was able to choose a suitable vector and made a landing, the result of which caused substantial damage to the aircraft. (16/1025)
- The class 2 microlight received a bird strike to the prop (the bird was similar to a seagull), which destroyed the prop and tore the engine from the mounting. The microlight landed safely. (16/162)
- During a cross country glider flight, an outlanding became necessary. A suitable paddock was chosen but there were power wires along the road adjoining the approach paddock. The glider encountered turbulence and cross-wind before crossing the boundary and the port wingtip struck the centre conductor on the power line. The glider lost lift and crashed. (16/673)
- A hang glider pilot was flying in a thermal close to the slope of a ski field and impacted the hill. (16/929)

Aircraft Incidents

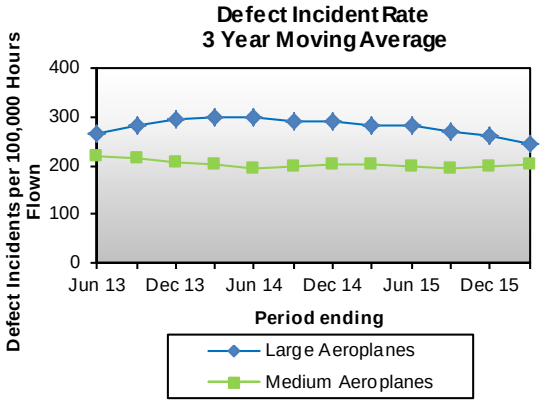
- While taking off on aerotow, the glider sank back heavily into the ground. The take-off continued and a normal landing was performed at the end of the flight. The pilot received minor injuries. (16/1057)

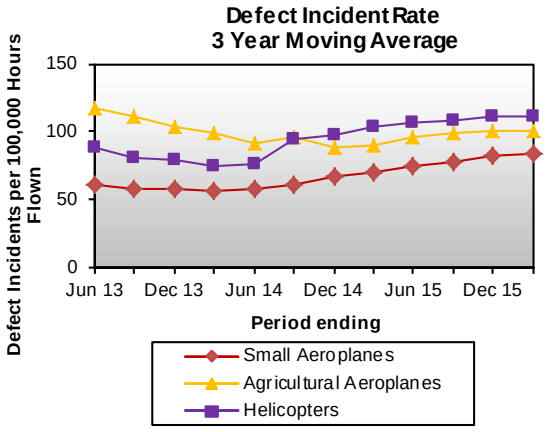
Section 2 - Incidents

Defect Incidents by Aircraft Statistics Category

Trends

The following graphs show the reported defect incident rates (three year moving average) for the three-year period 1 April 2013 to 31 March 2016 (excluding the Sport Aircraft statistics category).





Quarterly Comparison

Number of Reported Defect Incidents

Aircraft Statistics Category	1 Jan to 31 Mar 2016	1 Jan to 31 Mar 2015	Average Of Same Quarter In Previous 3 Years
Large Aeroplanes	142	142	261.0
Medium Aeroplanes	22	16	24.7
Small Aeroplanes	66	80	50.3
Agricultural Aeroplanes	10	16	10.7
Helicopters	44	61	34.0
Sport Aircraft	7	12	8.7
Unknown Aircraft	14	13	11.7
Total	**305**	**340**	**401.0**

Severity of Reported Defect Incidents

Severity	1 Jan to 31 Mar 2016	1 Jan to 31 Mar 2015	Average Of Same Quarter In Previous 3 Years
Critical	0	1	1.3
Major	26	23	66.7
Minor	279	316	333.0

No critical defect incidents were reported in the 1 January to 31 March 2016 quarter.

Rate Monitoring

Defect incident rate monitoring of individual types of large and medium air transport aircraft has been carried out for the period ended 31 December 2015, using estimated data for some of the aircraft types due to a shortage of returned Aircraft Operations Statistics for these aircraft. Analysis shows that 1 of the 14 monitored aircraft types has a defect rate above the "trigger level" for CAA action (medium aeroplane[2]).

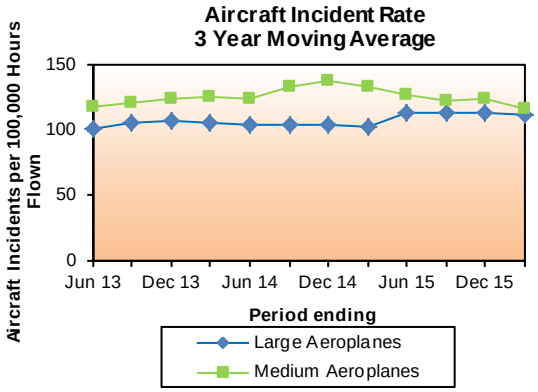
[2] Medium and large aeroplane categories include all aircraft with more than 10 passenger seats operated under CAR Part 125 or 121.

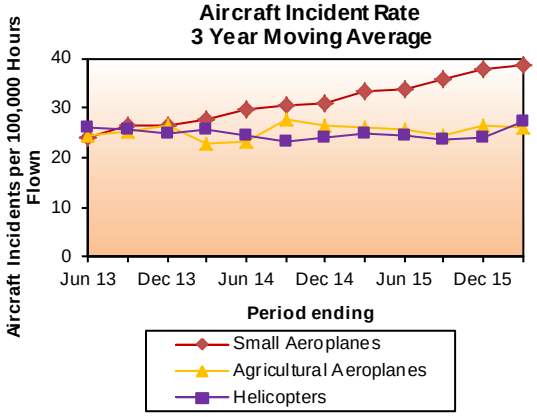
Section 2

Aircraft Incidents by Aircraft Statistics Category

Trends

The following graphs show the reported aircraft incident rates (three year moving average) for the three-year period 1 April 2013 to 31 March 2016 (excluding the Sport Aircraft statistics category). An aircraft incident is any safety occurrence related to the operation of an aircraft that does not result in an accident and is not classified as one of the other nine incident types. Examples of aircraft incidents include hard landings, lightning strikes, icing encounters, turn backs, diversions and go-arounds.





Quarterly Comparison

Number of Reported Aircraft Incidents

Aircraft Statistics Category	1 Jan to 31 Mar 2016	1 Jan to 31 Mar 2015	Average Of Same Quarter In Previous 3 Years
Large Aeroplanes	88	56	87.3
Medium Aeroplanes	8	6	16.0
Small Aeroplanes	21	38	20.3
Agricultural Aeroplanes	3	2	2.3
Helicopters	22	16	9.3
Sport Aircraft	10	13	9.3
Unknown Aircraft	57	58	39.3
Total	**209**	**189**	**184.0**

Severity of Reported Aircraft Incidents

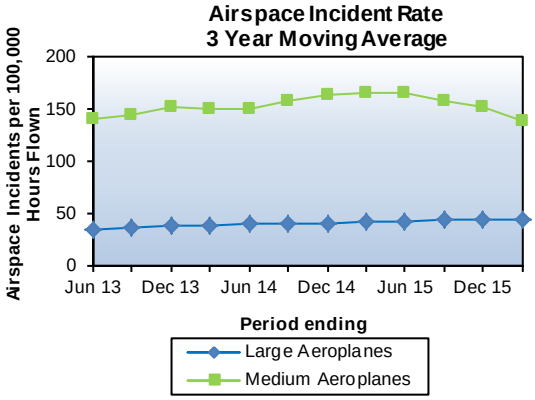
Severity	1 Jan to 31 Mar 2016	1 Jan to 31 Mar 2015	Average Of Same Quarter In Previous 3 Years
Critical	0	3	1.7
Major	13	22	26.3
Minor	196	164	156.0

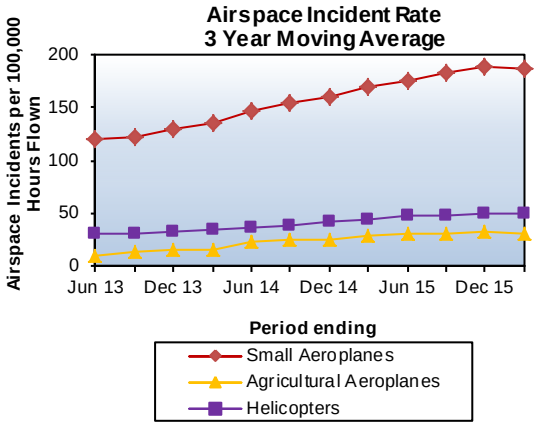
No critical aircraft incidents were reported in the 1 January to 31 March 2016 quarter.

Airspace Incidents by Aircraft Statistics Category

Trends

The following graphs show the reported airspace incident rates (three year moving average) for the three-year period 1 April 2013 to 31 March 2016 (excluding the Sport Aircraft statistics category).





Quarterly Comparison

Number of Reported Airspace Incidents

Aircraft Statistics Category	1 Jan to 31 Mar 2016	1 Jan to 31 Mar 2015	Average Of Same Quarter In Previous 3 Years
Large Aeroplanes	42	50	35.0
Medium Aeroplanes	15	18	25.3
Small Aeroplanes	135	169	134.7
Agricultural Aeroplanes	1	2	1.7
Helicopters	23	29	21.7
Sport Aircraft	29	23	31.7
Unknown Aircraft	226	168	128.3
Total	**471**	**459**	**378.3**

Severity of Reported Airspace Incidents

Severity	1 Jan to 31 Mar 2016	1 Jan to 31 Mar 2015	Average Of Same Quarter In Previous 3 Years
Critical	2	1	2.7
Major	23	31	47.7
Minor	446	427	328.0

Analysis of reported airspace incidents continues on next page.

Of the 2 critical airspace incidents reported in the 1 January to 31 March 2016 quarter, 1 was in the 'Agricultural Aeroplanes' statistics category and 1 was in the 'Helicopters' statistics category.

- A student flying a small aeroplane on a first solo cross country flight received a Traffic Alert "TRAFFIC 0 MILES SAME ALTITUDE". The student was initially confused but started looking for the traffic. Approximately 5-10 seconds later, an agricultural aeroplane on a ferry/positioning flight passed within approximately 8-12 metres of the student's aeroplane. ATC passed traffic information as the agricultural aeroplane was 1 NM ahead of the student's aeroplane, at the same level (both aeroplanes were entering controlled airspace). CAA safety investigation 16/SAI/217 in progress.
- A helicopter on a passenger transport A to B flight made all radio calls departing the heli-pad. The second helicopter took off on a conflicting departure path, and had to flare to avoid conflict with the first helicopter.

Attributability

Of the 471 reported airspace incidents in the 1 January to 31 March 2016 quarter, 13% are Air Traffic Service (ATS) attributable, 80% are pilot attributable, 4% are ATS and pilot attributable, and 3% are unknown attributable.
(Note that the percentages may not sum exactly to 100% due to rounding.)

Since April 2013 the long-term trend of the ATS attributable airspace occurrence rate is upward and the long-term trend of the pilot attributable rate is upward.

Bird Incident Rates

Bird hazard monitoring has been carried out for the period ended 31 March 2016.

There were no aerodromes with strike rates in the high risk category of the CAA standard (10.0 and above bird strikes per 10,000 aircraft movements).

There were 2 aerodromes with strike rates in the medium risk category (5.0 to 10.0 per 10,000 movements), both having long-term upward trends.

26 aerodromes had strike rates in the low risk category (below 5.0 per 10,000 aircraft movements), 5 having long-term upward trends, 5 having long-term constant trends and 16 having long-term downward trends.

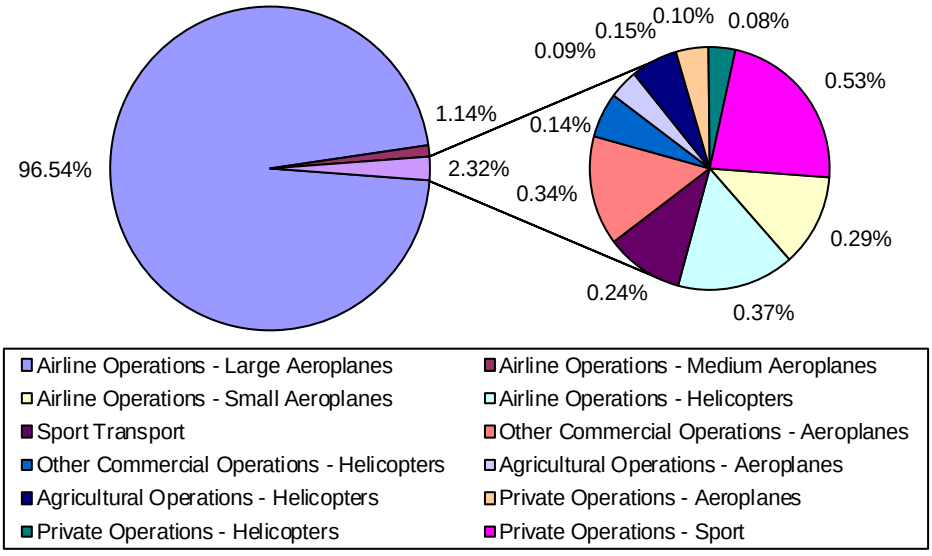
For more information visit the 'Bird Hazard Reports' section of the CAA web site http://www.caa.govt.nz/safety_info/safety_reports.htm

Section 3 - Activity

Industry Size and Shape by Safety Target Group

The following graph and table show the size and shape of the aviation industry as determined from Aircraft Operating Statistics in the relevant Safety Target Group categories for the period 1 October to 31 December 2015 (the most recent quarter for which adequate data are available) with an allowance for aircraft for which reports were not received. Adequate flying hours data for the 1st quarter of 2016 are not available yet due to later returns from operators. For each Safety Target Group the total number of hours flown is multiplied by the average number of seats and the appropriate load factor, to give the number of seat hours utilised by the group (person exposure). For Safety Target Groups that are not predominantly passenger carrying a surrogate of 500 kg of aircraft weight is used instead of person exposure. For the Sport Safety Target Groups a standard estimate of seat hours offered is used as well as reported data for such aircraft in these groups, as most sport aircraft do not report hours or seats.

Percentage Sector Seat Hours



Safety Target Group	Percentage Sector Seat Hours
Airline Operations - Large Aeroplanes	96.54
Airline Operations - Medium Aeroplanes	1.14
Airline Operations - Small Aeroplanes	0.29
Airline Operations - Helicopters	0.37
Sport Transport	0.24
Other Commercial Operations - Aeroplanes	0.34
Other Commercial Operations - Helicopters	0.14
Agricultural Operations - Aeroplanes	0.09
Agricultural Operations - Helicopters	0.15
Agricultural Operations - Sport	-
Private Operations - Aeroplanes	0.10
Private Operations - Helicopters	0.08
Private Operations - Sport	0.53

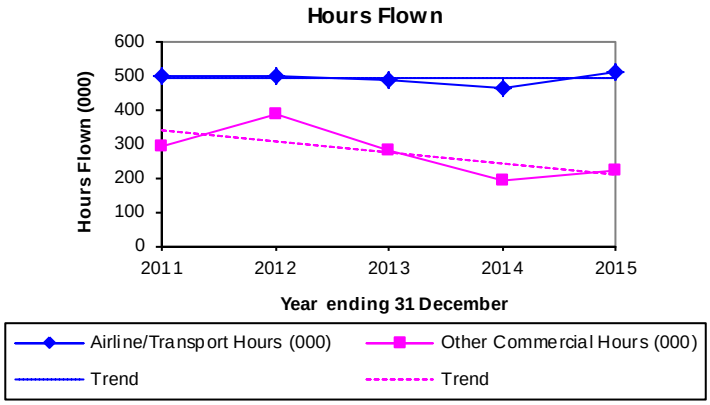
Note that the percentages may not sum exactly to 100.00% due to rounding.

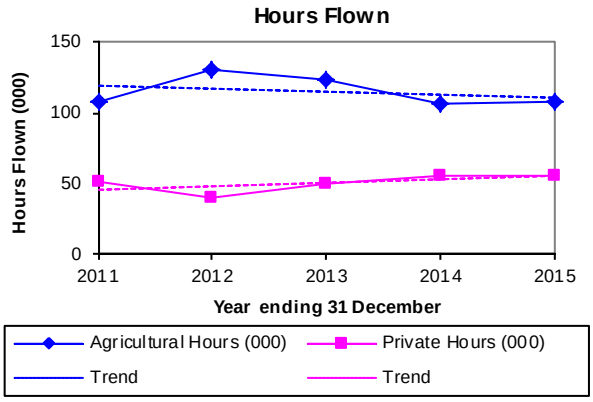
Section 3

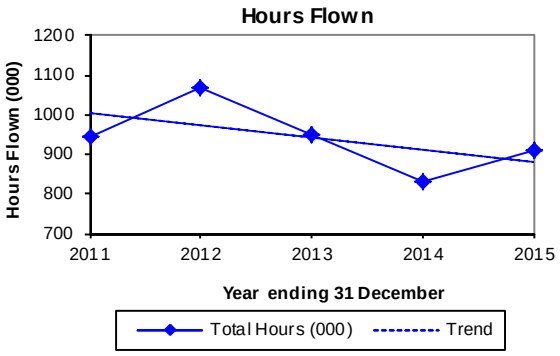
Hours by Operation Type

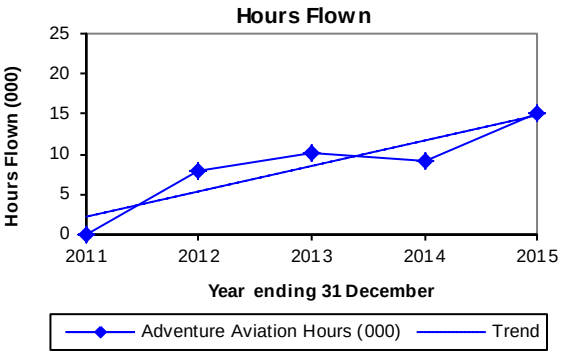
Trends

The following graphs show the number of hours flown (annual data) for the five-year period 1 January 2011 to 31 December 2015 (for the aircraft classes aeroplane, helicopter and balloon only). Adequate flying hours data for the 1st quarter of 2016 are not available yet due to later returns from operators.









Note that the scales on some of these graphs do not start at zero.

Note that the reporting of adventure aviation hours as a separate category began in 2012.

Quarterly Comparison

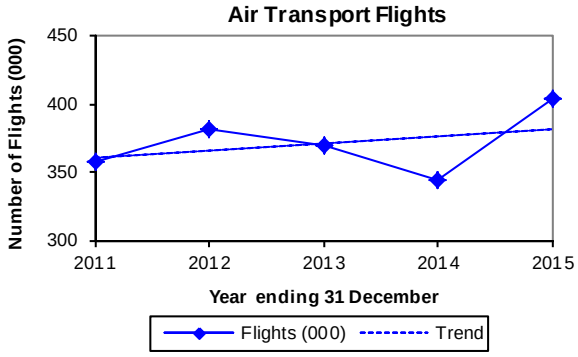
Activity	1 Oct to 31 Dec 2015	1 Oct to 31 Dec 2014	Average Of Same Quarter In Previous 3 Years
Airline/Transport Hours	137,802	121,645	129,410
Adventure Aviation Hours	4,607	2,218	2,078
Other Commercial Hours	55,754	42,649	81,564
Agricultural Hours	28,665	27,543	30,384
Private Hours	14,648	14,714	11,664
Total Hours	**241,477**	**208,770**	**255,099**

Note that these assessments include the aircraft classes aeroplane, helicopter and balloon only and exclude other aircraft classes such as hang gliders and parachutes, and foreign registered aircraft that are operated in New Zealand. These assessments are based on the reported Aircraft Operating Statistics for periods up to the quarter ended 31 December 2015 (the most recent quarter for which adequate data are available) with an allowance for aircraft for which reports were not received.

Air Transport Flights

Trends

The following graph shows the number of air transport flights (annual data) for the five-year period 1 January 2011 to 31 December 2015 (for the aircraft classes aeroplane, helicopter and balloon only).



Note that the scale on this graph does not start at zero.

Quarterly Comparison

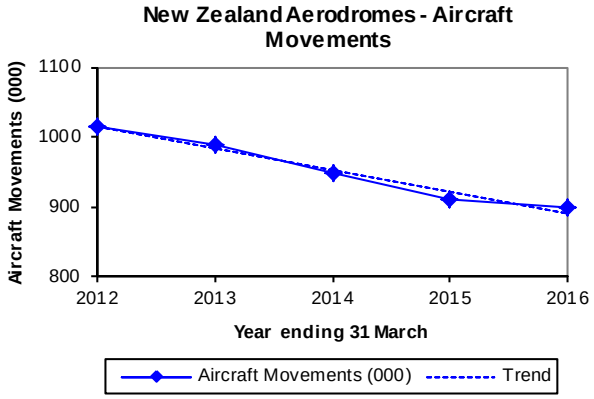
Activity	1 Oct to 31 Dec 2015	1 Oct to 31 Dec 2014	Average Of Same Quarter In Previous 3 Years
Air Transport Flights	107,243	91,961	98,884

Note that these assessments include the aircraft classes aeroplane, helicopter and balloon only and exclude other aircraft classes such as hang gliders and parachutes, and foreign registered aircraft that are operated in New Zealand. These assessments are based on the reported Aircraft Operating Statistics for periods up to the quarter ended 31 December 2015 (the most recent quarter for which adequate data are available) with an allowance for aircraft for which reports were not received.

Aircraft Movements

Trends

The following graph shows the number of aircraft movements at certificated aerodromes (annual data) for the five-year period 1 April 2011 to 31 March 2016.



Note that the scale on this graph does not start at zero.

Quarterly Comparison

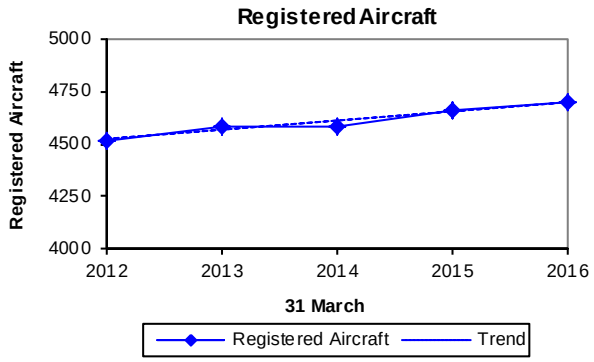
Activity	1 Jan to 31 Mar 2016	1 Jan to 31 Mar 2015	Average Of Same Quarter In Previous 3 Years
Aircraft Movements	237,499	237,404	255,233

Note that this covers certificated aerodromes only. These figures are as reported to CAA by Airways Corporation and Taupo Airport. Includes Auckland, Christchurch, Dunedin, Gisborne, Hamilton, Invercargill, Napier, Nelson, New Plymouth, Ohakea, Palmerston North, Paraparaumu (certificated from April 2009, included in the graph from late July 2011), Queenstown, Rotorua, Taupo, Tauranga, Wellington and Woodbourne. Excludes Chatham Islands/Tuuta Airport, Hokitika, Kerikeri/Bay of Islands, Mount Cook (certificated from Nov 2012), Te Anau/Manapouri (certificated until April 2015), Timaru, Westport, Whakatane (certificated from April 2015), Whanganui and Whangarei.

Registered Aircraft by Aircraft Statistics Category

Trends

The following graph shows the number of registered aircraft at 31 March for each of the five-years 2012 to 2016.



Note that the scale on this graph does not start at zero.

Quarterly Comparison

Aircraft Statistics Category	31 March 2016	31 March 2015	Average Of 31 March In Previous 3 Years
Large Aeroplanes	130	120	127
Medium Aeroplanes	74	78	79
Small Aeroplanes	1,507	1,510	1,524
Agricultural Aeroplanes	93	96	106
Helicopters	840	840	788
Sport Aircraft	2,056	2,018	1,939
Total	**4,700**	4,662	4,563

Note that these figures include the sport aircraft statistics category but exclude hang gliders, paragliders and parachutes.

Licences and Organisations

The number of Recreational Pilot Licences (with a medical fitness certificate) increased from 337 at 31 March 2015 to 401 at 31 March 2016, an increase of 64 (19%).

At 31 March 2016 there were 31 ‘Part 102 Unmanned Aircraft Operators’, this certificate was introduced on 1 August 2015.

At 31 March 2016 there was 1 ‘Part 147 Maintenance Training Organisation’, this certificate was introduced on 1 February 2016.

Section 4 - Quarterly Statistics

Quarter	2013/2	2013/3	2013/4	2014/1	2014/2	2014/3
Social Cost $ million[1]	3.15	2.60	14.91	37.63	11.07	16.91
Number of Fatal Accidents[2]	0	0	2	5	1	2
Number of Fatal Injuries[2]	0	0	2	6	2	2
Number of Serious + Minor Injuries[2]	10	6	21	19	6	16
Number of Aircraft Accidents[2]						
Large Aeroplanes	0	0	2	2	0	0
Medium Aeroplanes	0	0	0	0	0	0
Small Aeroplanes	6	4	7	8	3	2
Agricultural Aeroplanes	3	1	3	2	0	0
Helicopters	8	1	6	5	2	4
Sport Aircraft	8	6	10	22	5	2
Unknown Aircraft	0	0	1	2	0	0
Hang Gliders	4	2	4	6	0	5
Parachutes	1	0	1	4	3	2
Number of Incidents[3]	1,460	1,375	1,384	1,290	1,244	1,378
Number of Aviation Related Concerns[4]	181	219	208	271	171	214
Number of Hours Flown[5]	223,070	223,324	236,596	235,028	189,466	199,823
Number of Air Transport Flights[5]	86,684	86,186	94,318	96,946	78,023	77,818
Number of Aircraft Movements[6]	227,657	232,694	240,943	247,546	221,072	232,016
Number of Aircraft on the Register[7]	4,579	4,577	4,562	4,587	4,552	4,570
Number of Part 119 Certificated Operators						
Air Operator – Large Aeroplanes	9	9	9	9	9	9
Air Operator – Medium Aeroplanes	16	16	15	15	14	13
Air Operator – Helicopters and Small Aeroplanes	173	168	166	167	168	167
Number of Part 137 Agricultural Aircraft Operators	103	98	99	99	99	98
Number of Part 115 Adventure Aviation Operators	33	34	34	32	28	27
Number of Part 102 Unmanned Aircraft Operators	0	0	0	0	0	0
Number of Part 141 Training Organisations	57	57	56	52	53	55
Number of Part 149 Recreation Organisations	7	8	8	8	8	8
Number of Licences (Type of Medical Certificate)[8]						
Recreational Pilot Licence (RPL Medical)	247	267	281	289	293	311
Private Pilot Licence (Class 1 & 2)	3,193	3,108	3,017	2,948	2,816	2,763
Commercial Pilot Licence (Class 2 only)	2,554	2,578	2,571	2,527	2,544	2,515
Commercial Pilot Licence (Class 1)	2,217	2,167	2,150	2,147	2,098	2,107
Airline Transport Pilot Licence (Class 2 only)	993	1,060	1,052	990	994	986
Airline Transport Pilot Licence (Class 1)	1,163	1,121	1,120	1,204	1,223	1,232
Air Traffic Controller Licence (Class 3)	367	375	380	381	381	384
Aircraft Maintenance Engineer Licence (N/A)	2,639	2,647	2,660	2,678	2,699	2,708

[1] All aircraft statistics categories. Includes hang gliders and parachutes. Cost of fatal, serious and minor injuries, and aircraft destroyed, in June 2015 dollars.
[2] All accidents. All aircraft statistics categories. Includes hang gliders and parachutes.
[3] Number of reported incidents. All incident sub-types.
[4] Number of reported Aviation Related Concerns.
[5] New Zealand registered aircraft. Includes the aircraft classes aeroplane, helicopter and balloon only; excludes other aircraft classes, hang gliders and parachutes. Based on reported Aircraft Operating Statistics for periods up to the quarter ended 31 December 2015 (the most recent quarter for which adequate data are available) with an allowance for aircraft for which reports were not received. Estimated for 2016/1.

Quarter	2014/4	2015/1	2015/2	2015/3	2015/4	2016/1
Social Cost $ million[1]	15.26	43.39	3.32	1.87	32.65	7.76
Number of Fatal Accidents[2]	2	4	0	0	1	1
Number of Fatal Injuries[2]	2	9	0	0	7	1
Number of Serious + Minor Injuries[2]	23	13	11	12	15	17
Number of Aircraft Accidents[2]						
Large Aeroplanes	1	0	0	0	0	1
Medium Aeroplanes	0	1	0	0	0	0
Small Aeroplanes	4	7	6	4	7	8
Agricultural Aeroplanes	1	1	1	0	0	0
Helicopters	3	7	2	4	4	2
Sport Aircraft	13	8	5	7	9	7
Unknown Aircraft	0	0	0	0	0	0
Hang Gliders	7	6	7	7	8	11
Parachutes	3	1	2	1	4	3
Number of Incidents[3]	1,285	1,429	1,428	1,228	1,309	1,387
Number of Aviation Related Concerns[4]	227	244	188	171	135	255
Number of Hours Flown[5]	208,770	251,926	203,612	212,486	241,477	256,270
Number of Air Transport Flights[5]	91,961	115,035	88,297	92,965	107,243	118,757
Number of Aircraft Movements[6]	220,846	237,404	211,137	222,320	227,208	237,499
Number of Aircraft on the Register[7]	4,615	4,662	4,610	4,650	4,679	4,700
Number of Part 119 Certificated Operators						
Air Operator – Large Aeroplanes	8	8	7	7	8	8
Air Operator – Medium Aeroplanes	12	13	13	13	15	15
Air Operator – Helicopters and Small Aeroplanes	165	163	163	163	164	161
Number of Part 137 Agricultural Aircraft Operators	97	101	103	104	104	102
Number of Part 115 Adventure Aviation Operators	27	27	28	30	30	28
Number of Part 102 Unmanned Aircraft Operators	0	0	0	4	16	31
Number of Part 141 Training Organisations	55	56	56	57	55	54
Number of Part 149 Recreation Organisations	8	8	8	8	8	8
Number of Licences (Type of Medical Certificate)[8]						
Recreational Pilot Licence (RPL Medical)	320	337	366	385	395	401
Private Pilot Licence (Class 1 & 2)	2,617	2,587	2,580	2,585	2,530	2,492
Commercial Pilot Licence (Class 2 only)	2,442	2,390	2,448	2,376	2,316	2,248
Commercial Pilot Licence (Class 1)	2,125	2,141	2,046	2,048	2,076	2,073
Airline Transport Pilot Licence (Class 2 only)	998	987	995	1,046	1,034	1,019
Airline Transport Pilot Licence (Class 1)	1,226	1,232	1,228	1,173	1,210	1,221
Air Traffic Controller Licence (Class 3)	379	379	387	387	383	380
Aircraft Maintenance Engineer Licence (N/A)	2,726	2,737	2,754	2,766	2,779	2,789

[6] Certificated aerodromes. Reported to CAA by Airways Corporation and Taupo Airport. Includes Auckland, Christchurch, Dunedin, Gisborne, Hamilton, Invercargill, Napier, Nelson, New Plymouth, Ohakea, Palmerston North, Paraparaumu, Queenstown, Rotorua, Taupo, Tauranga, Wellington and Woodbourne. Excludes Chatham Islands/Tuuta Airport, Hokitika, Kerikeri/Bay of Islands, Mount Cook, Te Anau/Manapouri (certificated until April 2015), Timaru, Westport, Whakatane (certificated from April 2015), Whanganui and Whangarei.

[7] As at the last day of the quarter. Includes the sport aircraft statistics category, excluding hang gliders, paragliders and parachutes.

[8] As at the last day of the quarter. For RPL holders, a medical fitness certificate, in accordance with the NZTA medical fitness standards that are applicable for a Class 2, 3, 4 or 5 driver licence with a passenger endorsement. For PPL, CPL & ATPL holders, an active class 1 or active class 2 medical certificate; this means that for CPL and ATPL licences, the number with a class 2 medical only, must only be exercising PPL privileges (or not flying at all). For ATCL holders, an active class 3 medical certificate. This does not show the number of licence holders as each client may hold more than one licence.

Definitions

Accident

An occurrence that is associated with the operation of an aircraft and takes place between the time any person boards the aircraft with the intention of flight and such time as all such persons have disembarked and the engine or any propellers or rotors come to rest, being an occurrence in which–

(1) a person is fatally or seriously injured as a result of–

(i) being in the aircraft; or

(ii) direct contact with any part of the aircraft, including any part that has become detached from the aircraft; or

(iii) direct exposure to jet blast–

except when the injuries are self-inflicted or inflicted by other persons, or when the injuries are to stowaways hiding outside the areas normally available to passengers and crew; or

(2) the aircraft sustains damage or structural failure that–

(i) adversely affects the structural strength, performance, or flight characteristics of the aircraft; and

(ii) would normally require major repair or replacement of the affected component–

except engine failure or damage that is limited to the engine, its cowlings, or accessories, or damage limited to propellers, wing tips, antennas, tyres, brakes, fairings, small dents, or puncture holes in the aircraft skin; or

(3) the aircraft is missing or is completely inaccessible.

Aircraft Incident

Any incident, not otherwise classified, associated with the operation of an aircraft which did not immediately affect the safety of an aircraft operation but which,

(1) if allowed to continue uncorrected, or

(2) if repeated in different but likely circumstances,

could affect the safety of an aircraft operation.

Note about Social Cost

Social cost is a way of measuring safety performance by accounting for the number and severity of casualties, and aircraft damage. The values used to estimate cost to the nation of fatal, serious and minor injuries are obtained from the annual report of the 'Social Cost of Road Crashes and Injuries' published by the Ministry of Transport. The Ministry of Transport has directed its agencies to use social cost to permit comparisons between transport modes. The current value of statistical life is $4.06 million. Estimates of the values of aircraft destroyed or written off are made by the CAA on the basis of market prices in a number of developed aviation nations.

Aircraft Statistics Category

The following table shows the definition of each aircraft statistics category and the aircraft classes included.

Aircraft Statistics Category	Definition	Aircraft Class
Large Aeroplanes	Aeroplanes that must be operated under Part 121 when used for air transport	Aeroplane
Medium Aeroplanes	Aeroplanes that must be operated under Part 125 when used for air transport, except for those required to operate under Part 125 solely due to operating SEIFR	Aeroplane
Small Aeroplanes	Other Aeroplanes with Standard Category Certificates of Airworthiness	Aeroplane
Agricultural Aeroplanes	Aeroplanes with Restricted Category Certificates of Airworthiness limited to agricultural operations	Aeroplane
Helicopters	Helicopters with Standard or Restricted Category Certificates of Airworthiness	Helicopter
Sport Aircraft	All aircraft not included in the groups above	Aeroplane, Amateur Built Aeroplane, Amateur Built Glider, Amateur Built Helicopter, Balloon, Glider, Gyroplane, Helicopter, Microlight Class 1, Microlight Class 2, Power Glider

Other Aircraft Types (not included on the NZ Aircraft Register)

Hang Glider
A glider, including a powered glider, that is capable of being launched and landed solely by the use of the pilot's legs, and includes paragliders. **Paraglider** means a hang glider with no rigid primary structure.

Parachute
Any device, without a motor in operation, comprising a flexible drag, or lift/drag, surface from which a load is suspended by shroud lines capable of controlled deployment from a packed condition.

Airspace Incident

An incident involving deviation from, or shortcomings of, the procedures or rules for–

(1) avoiding a collision between aircraft; or

(2) avoiding a collision between aircraft and other obstacles when an aircraft is being provided with an Air Traffic Service.

Bird Incident

Means an incident where–

(1) there is a collision between an aircraft and one or more birds; or

(2) when one or more birds pass sufficiently close to an aircraft in flight to cause alarm to the pilot.

Defect Incident

An incident that involves failure or malfunction of an aircraft or aircraft component, whether found in flight or on the ground.

Fatal Injury

An injury which results in death within 30 days of the accident.

Incident

Any occurrence, other than an accident, that is associated with the operation of an aircraft and affects or could affect the safety of operation.

Incident Sub-Types	
Aerodrome Incident	Dangerous Goods Incident
Aircraft Incident	Defect Incident
Airspace Incident	Facility Malfunction Incident
Bird Incident	Promulgated Information Incident
Cargo Security Incident	Security Incident

Occurrence

Means an accident or incident.

Serious Injury

Means any injury that is sustained by a person in an accident and that–

(1) requires hospitalisation for more than 48 hours, commencing within 7 days from the date the injury was received; or

(2) results in a fracture of any bone, except simple fractures of fingers, toes, or nose; or

(3) involves lacerations which cause severe haemorrhage, nerve, muscle, or tendon damage; or

(4) involves injury to an internal organ; or

(5) involves second or third degree burns, or any burns affecting more than 5% of the body surface; or

(6) involves verified exposure to infectious substances or injurious radiation.

Severity

The following definitions apply to the severity accorded to accidents and incidents as the result of investigation of occurrences:

Severity	Definition
Critical	An occurrence or deficiency that caused, or on its own had the potential to cause, loss of life or limb;
Major	An occurrence or deficiency involving a major system that caused, or had the potential to cause, significant problems to the function or effectiveness of that system;
Minor	An isolated occurrence or deficiency not indicative of a significant system problem.

Safety Target Structure