Aviation Industry Safety Update

Intelligence, Safety and Risk Analysis Unit

1 January to 30 June 2012

CIVIL AVIATION AUTHORITY
OF NEW ZEALAND
Te Mana Rererangi Tūmatanui o Aotearoa

Table of Contents

Introduction and Executive Summary

Introduction

This safety report is produced using data from the Civil Aviation Authority Management Information System. It primarily covers the six-month period from 1 January to 30 June 2012.

This report uses calendar years; the first quarter is 1 January to 31 March.

Data in tables may not sum exactly to the total shown due to rounding.

Estimated Activity Data

Not all operators comply with the requirements to report hours and flights data and allowance is made for the 'missing' data by applying a statistical estimating process to each quarter's data. The following table shows the percentage of aircraft for which expected returns had been received for the January to June 2012 period at the time of publication which is 8 or 11 months after the returns were due.

Aircraft Category	Percentage of Expected Returns Received
Large Aeroplanes	88%
Medium Aeroplanes	54%
Small Aeroplanes	26%
Helicopters	46%
Sport Aircraft – Aeroplanes	9%
Sport Aircraft – Free Balloons	6%
Sport Aircraft - Hang Gliders	53%
Sport Aircraft - Helicopters	0%
Sport Aircraft - Parachutes	30%
Sport Aircraft - Paragliders	37%
Agricultural Aeroplanes	62%

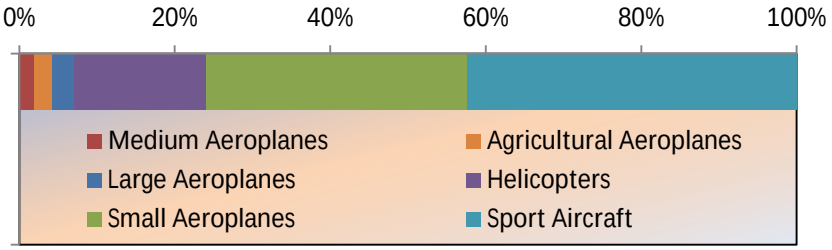
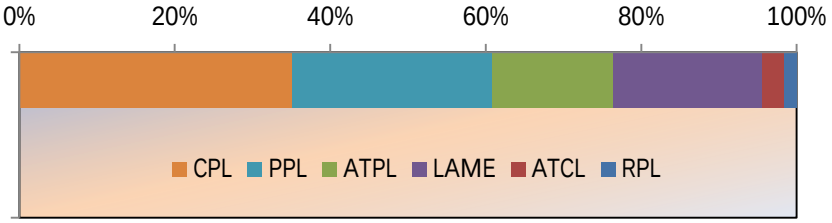
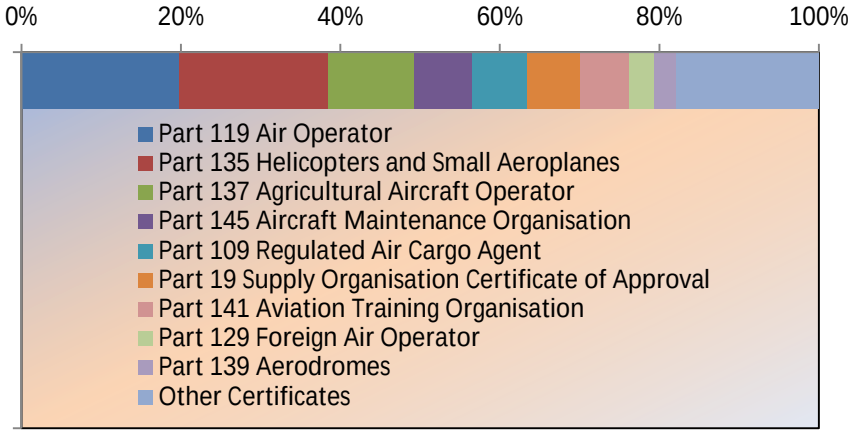
This estimating process requires a reasonable level of returned data and in cases where this can't be achieved, a further estimating process, based on previous activity data and patterns is used

For this report the additional estimation process has been applied to the Jan-Mar 2012 and Apr-Jun 2012 quarters.

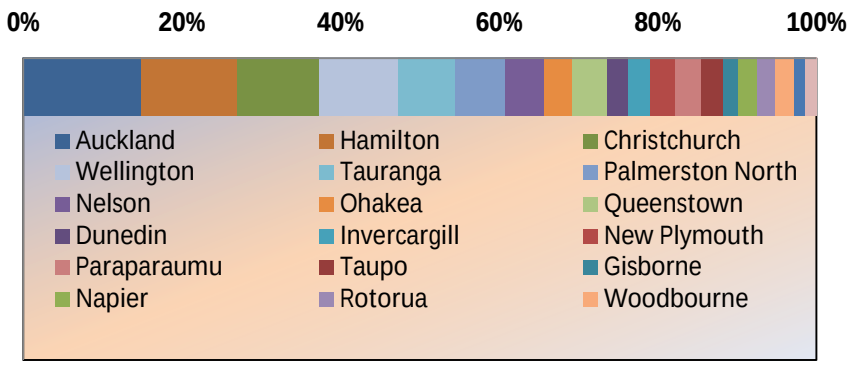
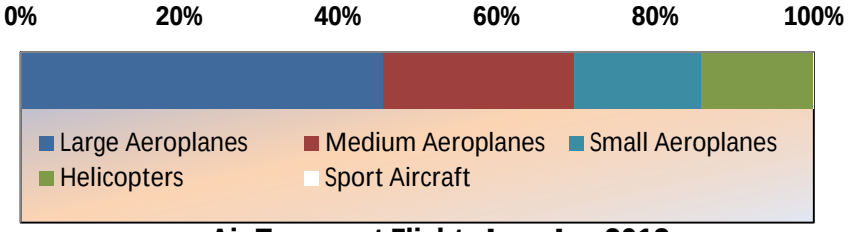
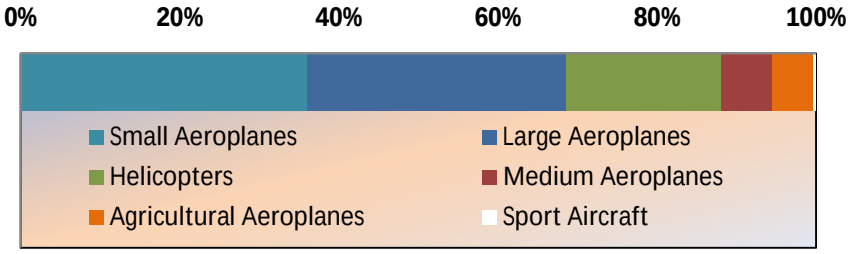
Executive Summary - Status as at 30 June 2012

This section is organised into three parts: Industry Size, Industry Activity and Safety Outcomes

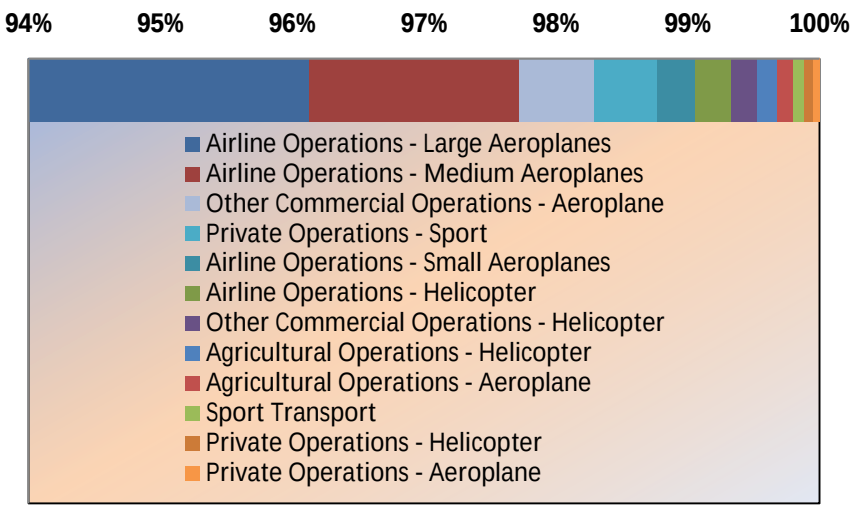
Industry Size

Measure	*Current Contributors*
Registered Aircraft as at 30 June 2012 4,532 1 Year prior 4,490 Average for last 3 years 4,493.5	
Licences on Issue as at 30 June 2012 13,434 1 Year prior 13,328 Average for last 3 years 13,330.0	
Certificates Current as as at 30 June 2012 950 1 Year prior 943 Average for last 3 years 947.0	

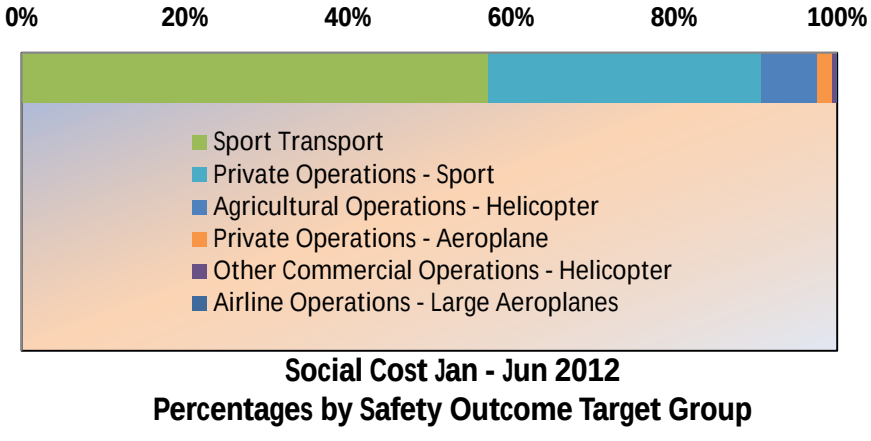
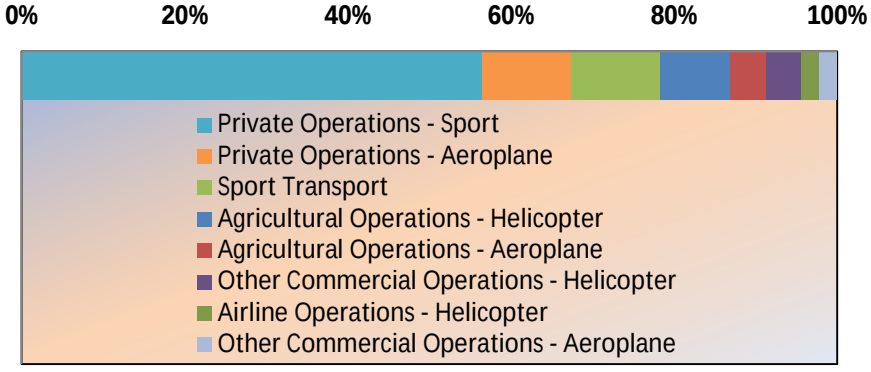
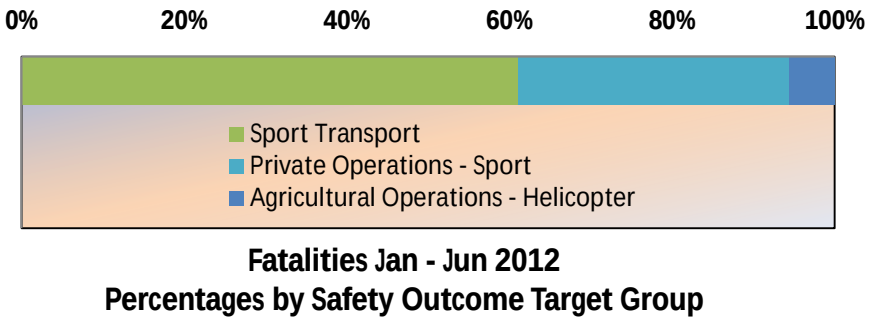
Industry Activity

Measure	*Current Contributors*
Aircraft Movements at Aerodromes Jan-Jun 2012 519,649 1 Year prior 514,163 Average for last 3 years 529,333.33	 **Aircraft Movements at Aerodromes Jan - Jun 2012** **Percentages by Aerodrome**
Air Transport Flights Jan-Jun 2012 195,948 1 Year prior 187,867 Average for last 3 years 187,196.4	 **Air Transport Flights Jan - Jun 2012** **Percentages by Aircraft Type**
Hours Flown (all operations) Jan-Jun 2012 520,922.7 1 Year prior 496,865.0 Average for last 3 years 481,979.5	 **Hours Flown Jan - Jun 2012** **Percentages by Aircraft Type**

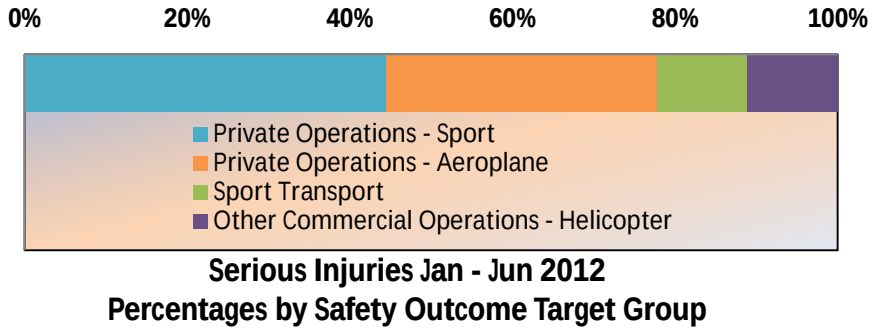
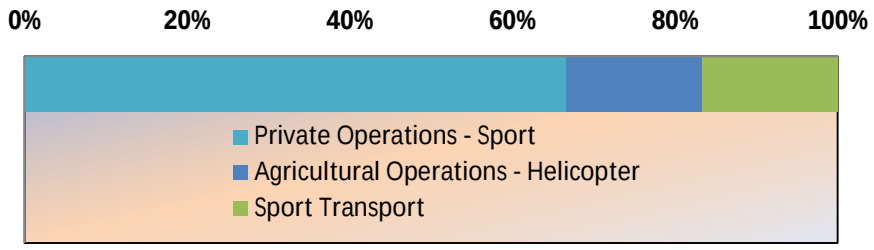
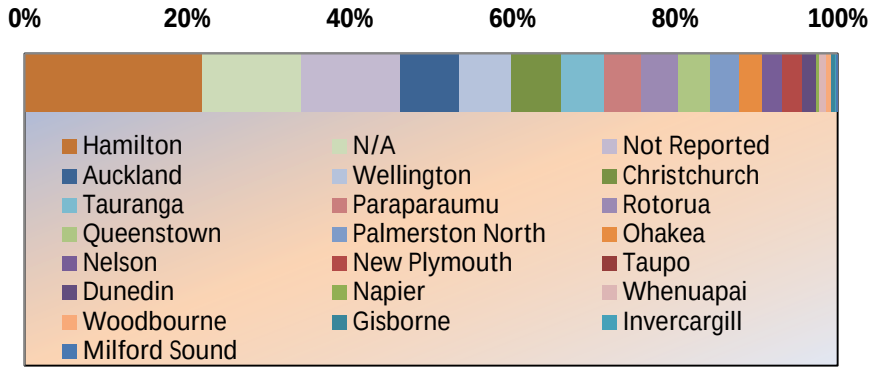
Industry Activity

Measure	***Current Contributors***
Seat Hours (Millions) Jan-Jun 2012 25.62 1 Year prior 23.71 Average for last 3 years 24.73	 **Seat Hours Occupied Jan - Jun 2012** **Percentages by Safety Outcome Target Group** (Note the false zero on the percentage scale, The Airline Operations – Large Aeroplanes group contributes 96.13% to the seat-hour total)

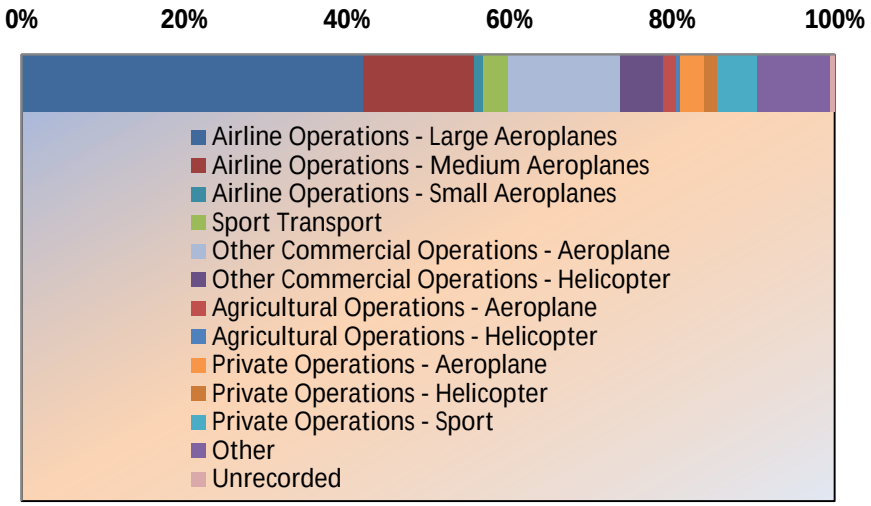
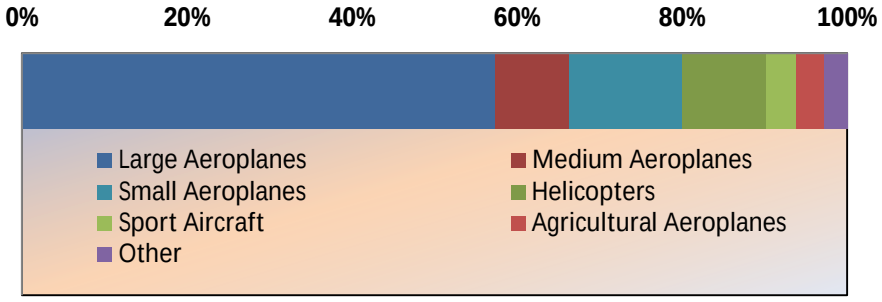
Safety Outcomes

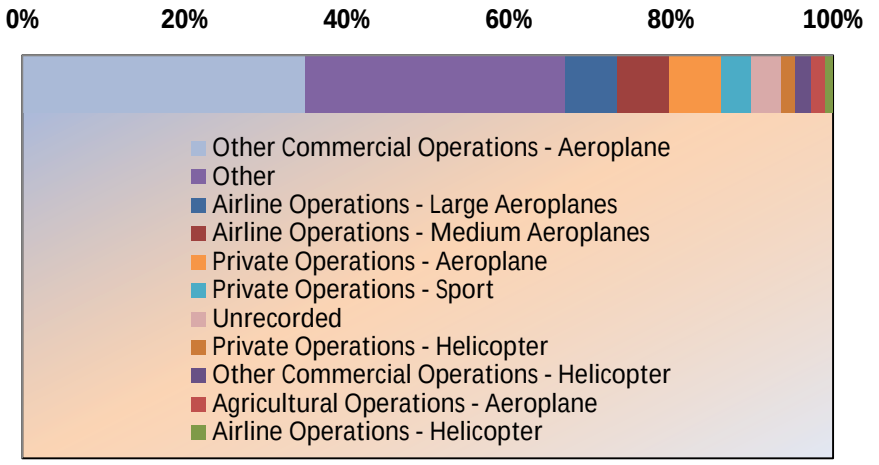
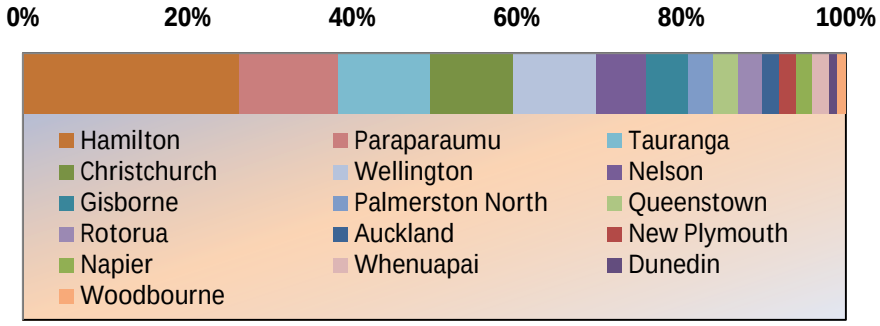
Measure	*Current Contributors*
Social Cost (2011 dollars) Jan-Jun 2012 $M **71.74** 1 Year prior $M 34.62 Average for last 3 years $M 37.78	 **Social Cost Jan - Jun 2012** **Percentages by Safety Outcome Target Group**
Accidents Jan-Jun 2012 46 1 Year prior 64 Average for last 3 years 56.6	 **Accidents 2012 Jan - Jun** **Percentages by Safety Outcome Target Group**
Fatalities Jan-Jun 2012 **18** 1 Year prior 7 Average for last 3 years 8.5	 **Fatalities Jan - Jun 2012** **Percentages by Safety Outcome Target Group**

Safety Outcomes

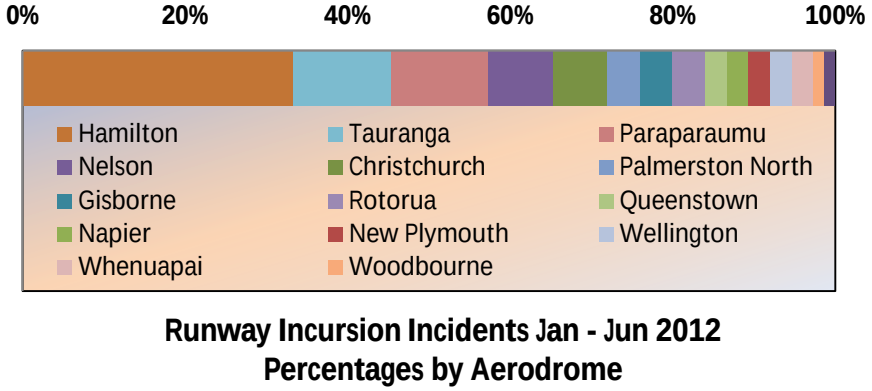
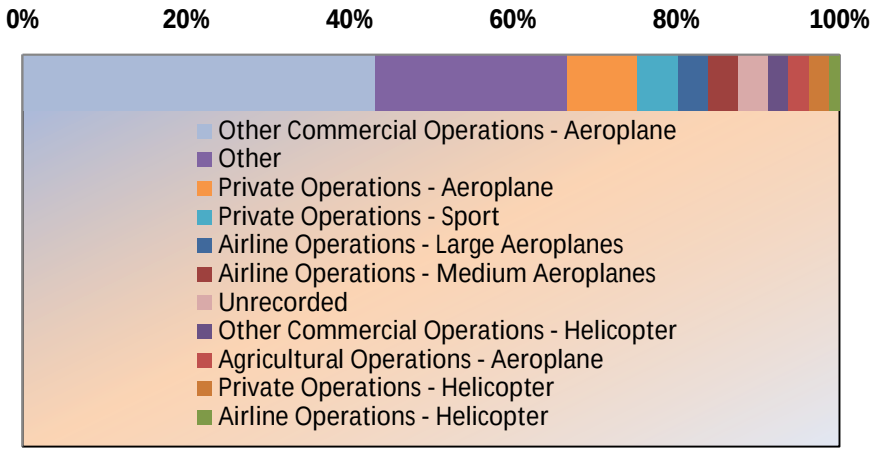
Measure	*Current Contributors*
Serious Injuries Jan-Jun 2012 9 1 Year prior 11 Average for last 3 years 8.5	 **Serious Injuries Jan - Jun 2012** **Percentages by Safety Outcome Target Group**
Fatal Accidents Jan-Jun 2012 6 1 Year prior 6 Average for last 3 years 4.3	 **Fatal Accidents Jan - Jun 2012** **Percentages by Safety Outcome Target Group**
Airspace Incidents Reported Jan-Jun 2012 633 (5 Critical) 1 Year Ago 474 (6 Critical) 6 month average for last 3 years 491.2 (8.5 Critical Tauranga, 12% New Plymouth, 9%)	 **Airspace Incidents Jan - Jun 2012** **Percentages by Nearest Reporting Point**

Safety Outcomes

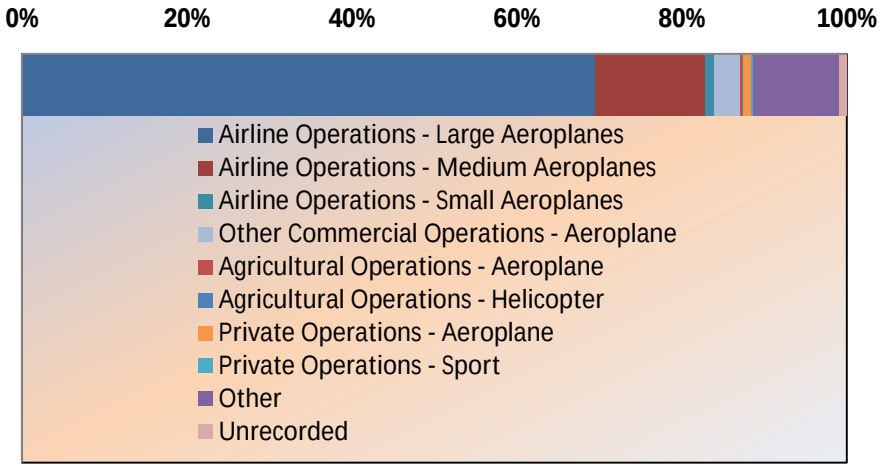
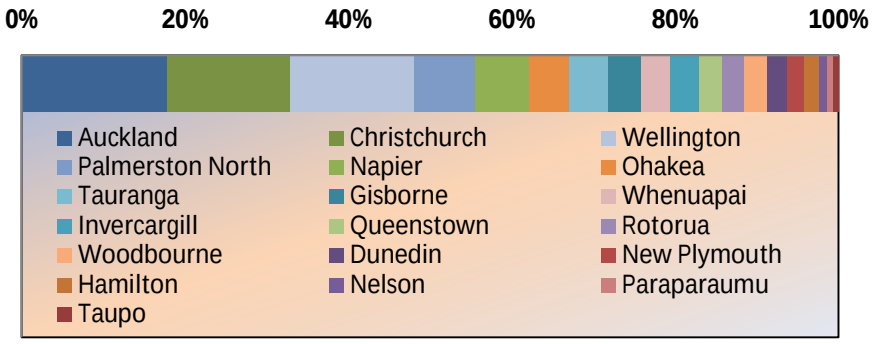
Measure	*Current Contributors*
Aircraft Incidents Reported Jan-Jun 2012 338 1 Year prior 391 Average for last 3 years 355.5	 **Aircraft Incidents Jan - Jun 2012** **Percentages by Safety Outcome Target Group**
Defect Incidents Reported Jan-Jun 2012 680 (3 Critical) 1 Year prior 772 (0 Critical) Average for last 3 years 686.5 (1.0 Critical)	 **Defect Incidents Jan - Jun 2012** **Percentages by Aircraft Type**

Safety Outcomes	
Measure	***Current Contributors***
Aerodrome Incidents Reported Jan-Jun 2012 109 (1 Critical) 1 Year prior 55 (0 Critical) Average for last 3 years 75.5 (0.2 Critical)	 **Aerodrome Incidents Jan - Jun 2012** **Percentages by Safety Outcome Target Group**  **Aerodrome Incidents Jan - Jun 2012** **Percentages by Aerodrome**

Safety Outcomes

Measure	*Current Contributors*
Runway Incursions Reported Jan-Jun 2012 81 1 Year prior 32 Average for last 3 years 45.2	 **Runway Incursion Incidents Jan - Jun 2012** **Percentages by Aerodrome**  **Runway Incursions Jan - Jun 2012** **Percentages by Safety Outcome Target Group**

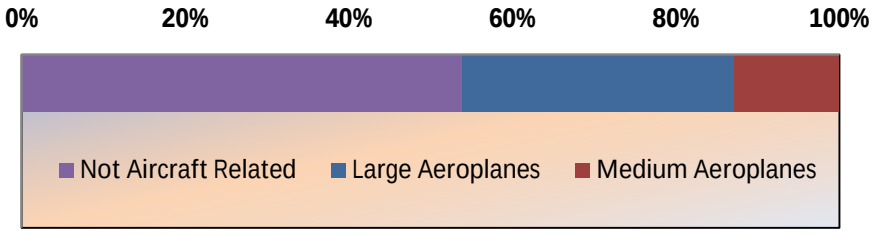
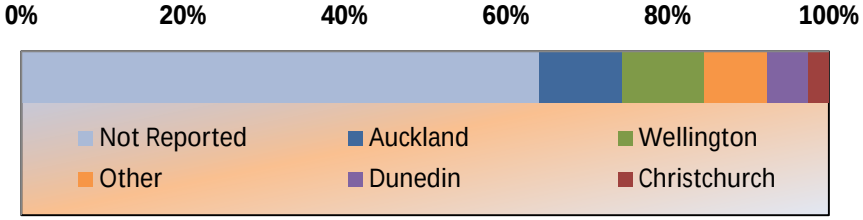
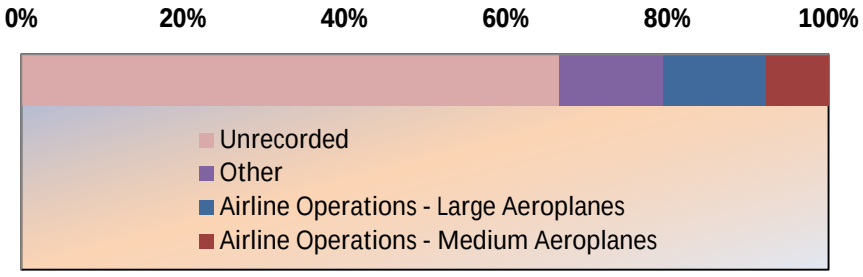
Safety Outcomes

Measure	*Current Contributors*
Bird Hazard Incidents Reported Jan-Jun 2012 662 (259 Strikes) 1 Year prior 695 (252 Strikes) Average for last 3 years 650.8 (237.0 Strikes) (The only Critical Bird Hazard incident reported in the last 10 years was in 2002 at Wellington)	 **Bird Hazard Incidents Jan - Jun 2012** **Percentages by Safety Outcome Target Group**  **Bird Hazard Incidents Jan - Jun 2012** **Percentages by Aerodrome**

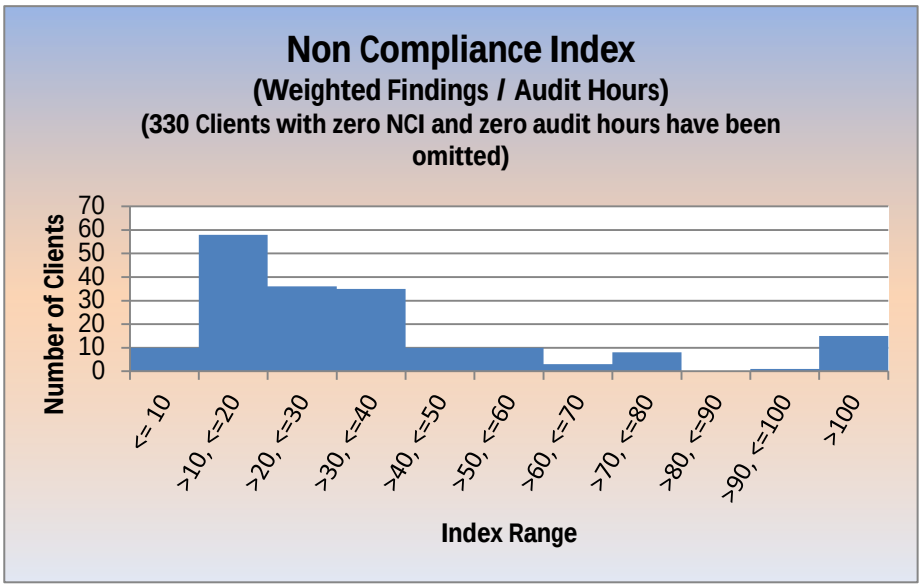
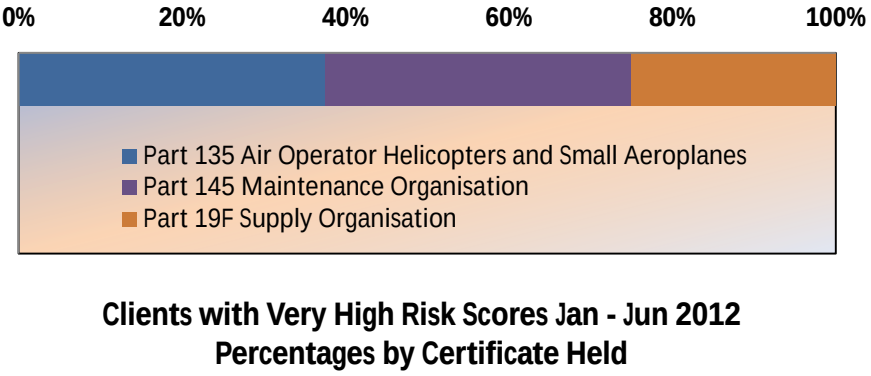
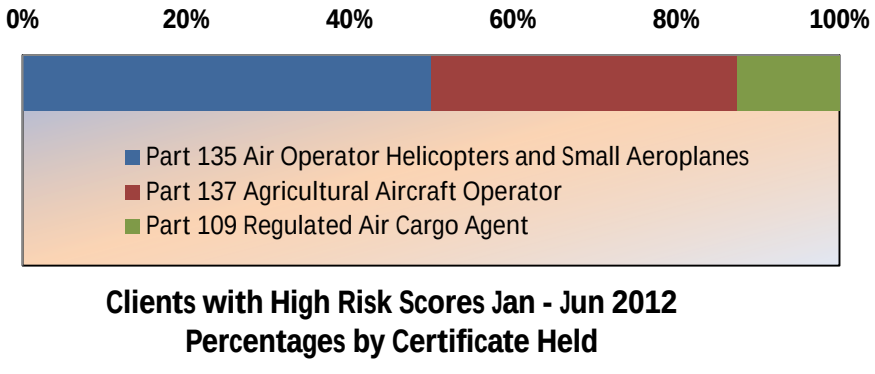
Safety Outcomes

Measure	*Current Contributors*
Security Incidents Reported Jan-Jun 2012 14 (0 Critical) 1 Year Ago 32 (0 Critical) 6 month average for last 3 years 35.3 (0 Critical)	 **Security Incidents Jan - Jun 2012** **Percentages by Aircraft Type** **Security Incidents Jan - Jun 2012** **Percentages by NRP**
Aviation Related Concerns Reported Jan-Jun 2012 220 1 Year prior 175 Average for last 3 years 185.0	· The coding of ARCs is such that no useful analysis is currently possible · Approximately 41% of ARCs received are actually Section 13A notifications that are treated as ARCs because there is no other procedure defined for processing them.

Safety Outcomes

Measure	*Current Contributors*
All Other Incidents Reported (Dangerous Goods, Facility Malfunction, Cargo Security, Promulgated Information) Jan-Jun 2012 39 (0 Critical) 1 Year Ago 49 (0 Critical) Average for last 3 years 55.7 (0.2 Critical) The only critical 'other' incident reported in the last 3 Jan-Jun half years was unrelated to any specific aircraft or operation type and was reported with a Nearest Reporting Point of NZAA. It was a Dangerous Goods incident.	 **All Other Incidents Jan - Jun 2012** **Percentages by Aircraft Type**  **All Other Incidents Jan - Jun 2012** **Percentages by NRP**  **All Other Incidents Jan - Jun 2012** **Percentages by Safety Outcome Target Group**

Safety Outcomes

Measure	*Current Contributors*
Median Non-Compliance Index 30 June 2012 25.0 1 Year prior 28.08 Average for last 3 years 35.82	
Number of Clients with Risk Score of 'Very High' Jan-Jun 2012 8 1 Year prior 9 Average for last 3 years 7.8	
Number of Clients with Risk Score of 'High' Jan-Jun 2012 8 1 Year p 6 Average for last 3 years 13.4	

All values quoted are based on data as reported to the CAA

Reporting rates vary widely depending on the nature and severity of incidents

Activity data reporting varies widely between sectors in both accuracy and completeness

Air Transport Flights and All Hours Flown values have been adjusted to allow for the probable activity levels of aircraft for which an expected Aircraft Operations Statistics return has not been received

Industry Size and Activity Data

Registered Aircraft

The following table summarises the number of aircraft on the register by Aircraft Category at 30 June 2012 and the average of the numbers at the end of each 6 month period over the last 3 years.

Aircraft Category	30 June 2012	Average Last 3 Years
Large Aeroplanes	126	124.0
Medium Aeroplanes	85	85.0
Small Aeroplanes	1522	1517.7
Helicopters	770	769.5
Sport Aircraft	1920	1888.2
Agricultural Aeroplanes	109	109.2
Total	4532	4493.5

Licences

The following table summarises the number of airline transport, commercial, private and recreational pilot, air traffic controller, and aircraft maintenance engineer licences on the register at 30 June 2012 and the average of the numbers at the end of each 6 month period over the last 3 years.

Licences (Medical Certificate)	30 June 2012	Average Last 3 Years
RPL	221	184.7
ATCL	374	366.0
ATPL	2090	2081.7
LAME	2575	2532.8
PPL	3458	3572.8
CPL	4716	4592.0
Total	13434	13330.0

Note — the statistics above for pilot licences count only those with active class 1 or active class 2 medical certificates or, for RPL holders, a certificate, issued in accordance with the NZTA medical fitness standards that are applicable for a Class 2, 3, 4 or 5 driver licence with passenger endorsement. 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). The statistics for ATCL holders count only those with an active class 3 medical certificate.

These statistics do not show the number of licence holders as each holder may hold more than one licence.

Certificated Operators

The following tables show the number of Civil Aviation Rule Part certificate holders at 30 June 2012 and the average of the numbers at the end of each 6 month period over the last 3 years.

Rule Part	30 June 2012	Average Last 3 Years
Part 109 Regulated Air Cargo Agent	63	63.2
Part 115 Adventure Aviation Operator	20	8.2
Part 119 Air Operator	181	183.0
Part 129 Foreign Air Operator	28	32.0
Part 137 Agricultural Aircraft Operator	99	103.8
Part 139 Aerodromes	26	26.0
Part 140 Aviation Security Service	1	1.0
Part 141 Aviation Training Organisation	57	56.7
Part 145 Aircraft Maintenance Organisation	67	62.0
Part 146 Aircraft Design Organisation	15	14.0
Part 148 Aircraft Manufacturing Organisation	23	22.2
Part 149 Aviation Recreation Organisation	9	8.3
Part 171 Aeronautical Telecommunication Service Organisation	2	2.0
Part 172 Air Traffic Service	1	1.3
Part 173 Instrument Flight Procedure Service Organisation	3	3.0
Part 174 Meteorological Service Organisation	2	2.0
Part 175 Aeronautical Information Service Organisation	1	1.2
Part 19 Supply Organisation Certificate of Approval	60	59.0
Part 92 Dangerous Goods Packaging Approval	57	58.2
Australian AOC Operating with ANZA Privileges	1	1.7
Total	716	708.7

Note: For organisations with Part 92 and for those with Part 172 certificates the figures show the total number of approvals held.

Part 119 Air Operator	30 June 2012	Average Last 3 Years
Part 108 Security Programme	18	18.0
Part 121 Large Aeroplanes	9	9.3
Part 125 Medium Aeroplanes	15	15.0
Part 135 Helicopters and Small Aeroplanes	171	172.5

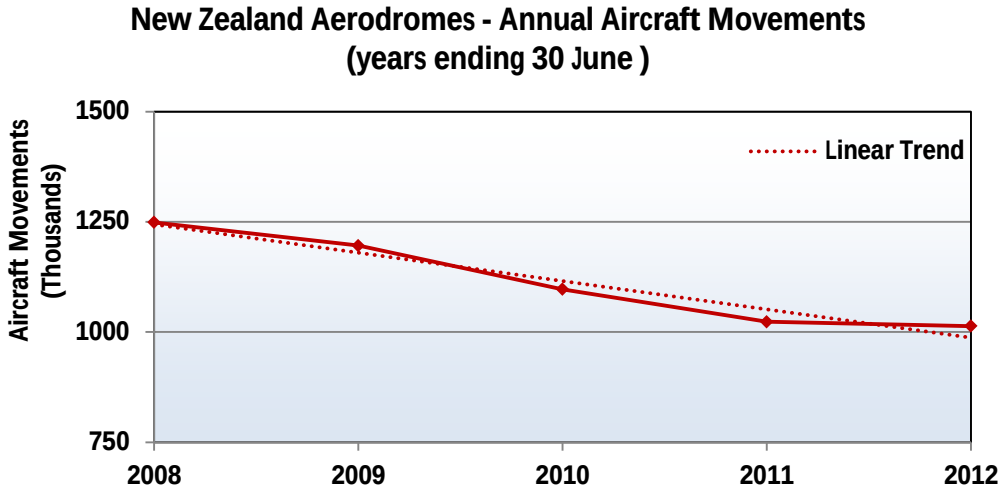
Part 129 Foreign Air Operator	30 June 2012	Average Last 3 Years
Part 108 Security Programme	21	23.5

Aircraft Movements

The following graph and table show the number of aircraft movements at the following aerodromes: Auckland, Christchurch, Dunedin, Gisborne, Hamilton, Invercargill, Milford Sound, Napier, Nelson, New Plymouth, Ohakea, Palmerston North, Kapiti Coast, Queenstown, Rotorua, Taupo, Tauranga, Wellington, Whenuapai and Woodbourne. These figures are as reported to CAA by Airways Corporation and Taupo Airport.

Long-Term Change in Aircraft Movements

The following graph shows the annual number of aircraft movements for the five-year period ending 30 June 2012. Kapiti Coast Airport has been omitted from this long term analysis because the available data is incomplete because there has only been a flight information service available since October 2011.



The average annual decrease in the number of aircraft movements was 5.1% from the year ended 30 June 2008 until the year ended 30 June 2012 during which 1013482 movements were recorded.

Six-Monthly Comparison

The following table shows the number of Aerodrome movements in the period 1 January to 30 June 2012 and the average of the movement numbers during each 6 month period over the last 3 years.

Activity	1 Jan to 30 Jun 2012	Average Last 3 Years
Aircraft Movements	525,142	534,971.17

Aircraft Movements at Aerodromes

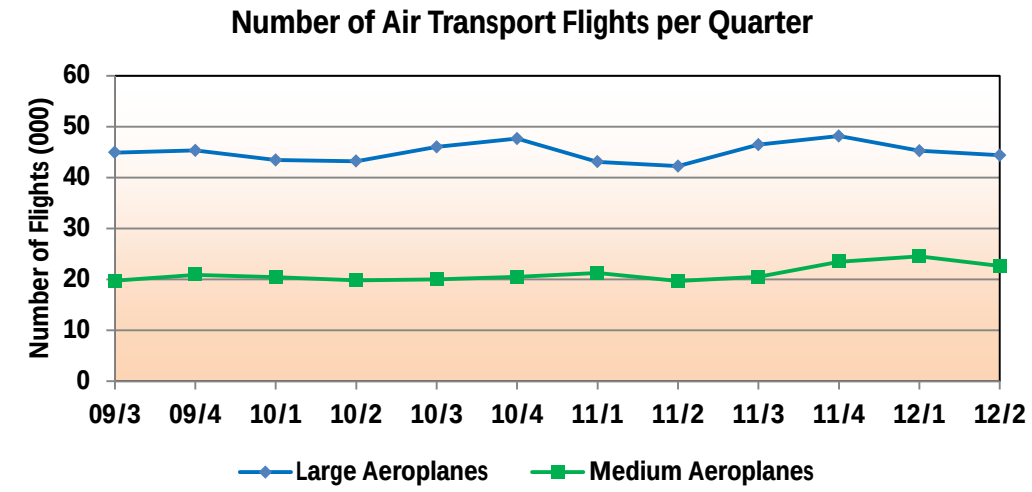
The aerodromes are shown in descending order of the number of aircraft movements for the year ending 30 June 2012. The figures all relate to years ending 30 June.

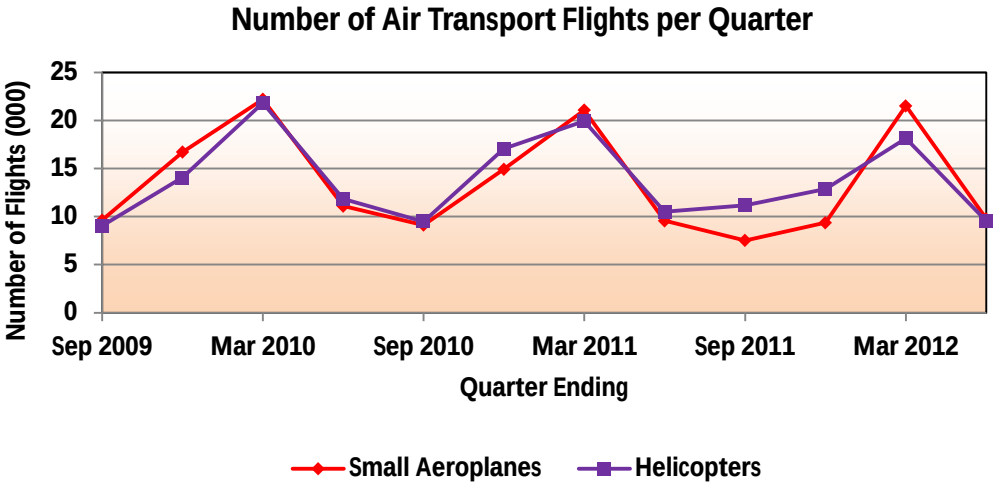
Aerodrome	2008	2009	2010	2011	2012
Auckland	158536	164417	156325	157201	156655
Christchurch	135963	148320	136249	125611	121469
Hamilton	139939	151109	148380	99308	110419
Wellington	121308	122206	111969	109193	105988
Tauranga	97631	105992	97144	86935	74400
Palmerston North	88817	82776	58761	56439	65708
Ohakea	71085	73513	72997	61896	55726
Nelson	51287	47931	48273	51570	50094
Queenstown	49015	50445	45966	42347	41769
New Plymouth	39444	45773	43518	37097	32791
Invercargill	23427	25332	25805	29279	30840
Dunedin	40939	55321	53602	44003	29229
Napier	24381	27948	24114	27172	27332
Taupo	32902	34696	30680	28774	26376
Woodbourne	25711	25405	24058	22829	23660
Rotorua	26856	29657	20734	23380	22682
Gisborne	25279	24341	23955	22174	22459
Whenuapai	15468	12372	13220	14347	14675
Milford Sound	17473	15876	14227	14042	13043
Paraparaumu					12832

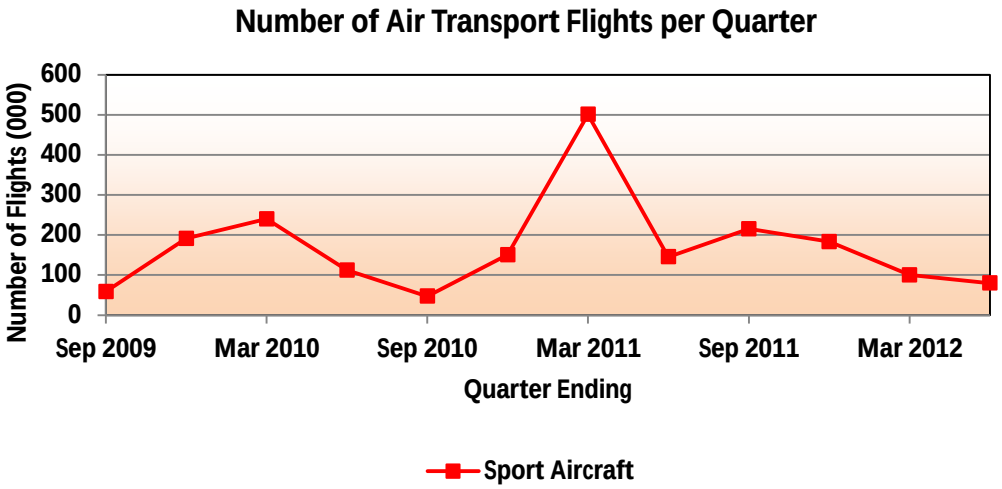
Air Transport Flights

Note that these graphs exclude the aircraft statistics categories Sport Aircraft, Hang Gliders and Parachutes, and foreign registered aircraft that are operated in New Zealand.

The following graphs show the estimated number of air transport flights per quarter during the three year period ending 30 June 2012. The estimates are based on the reported numbers of flights with an allowance for aircraft for which reports were not received.

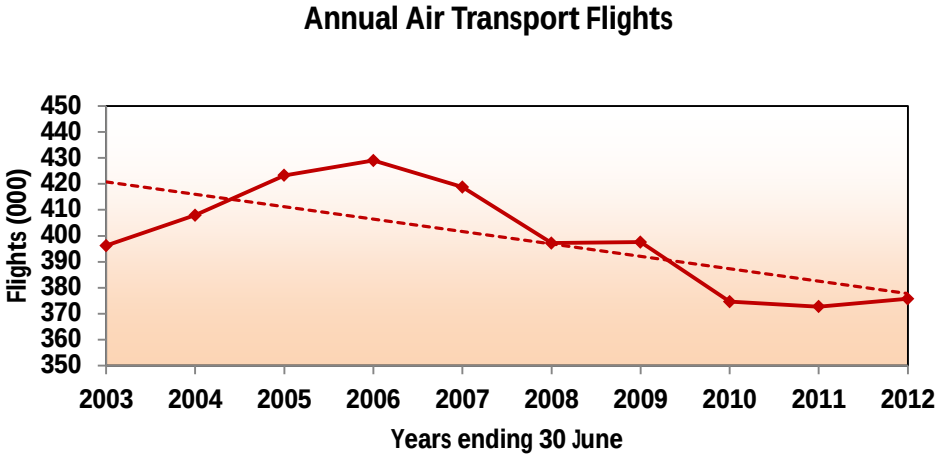






Long-Term Change in Air Transport Flights

The following graph shows the number of air transport flights (includes the aircraft classes aeroplane, helicopter and balloon only; excludes other aircraft classes, hang gliders and parachutes) for the 10-year period ending 30 June 2012



The change in the estimated number of annual air transport flights across this period is equivalent to an annual decrease of 0.6%.

Six-Monthly Comparison

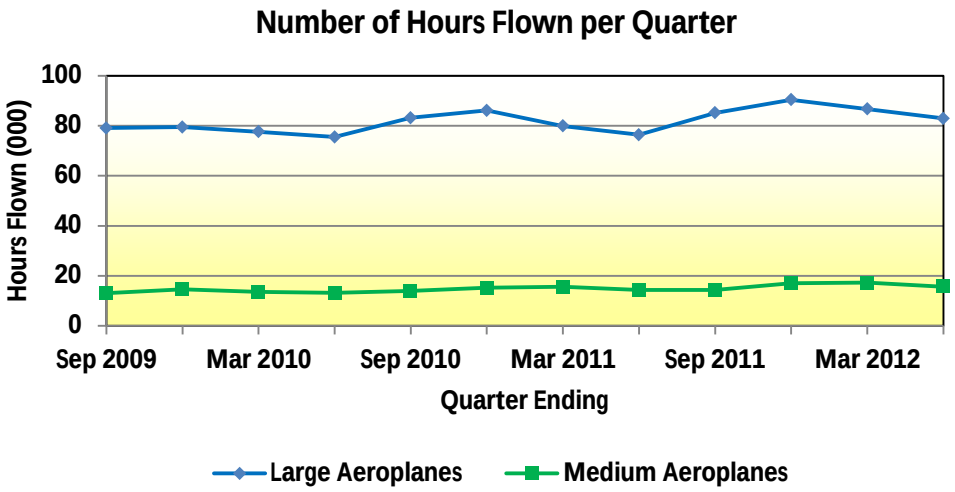
Number of Air Transport Flights (January to June)

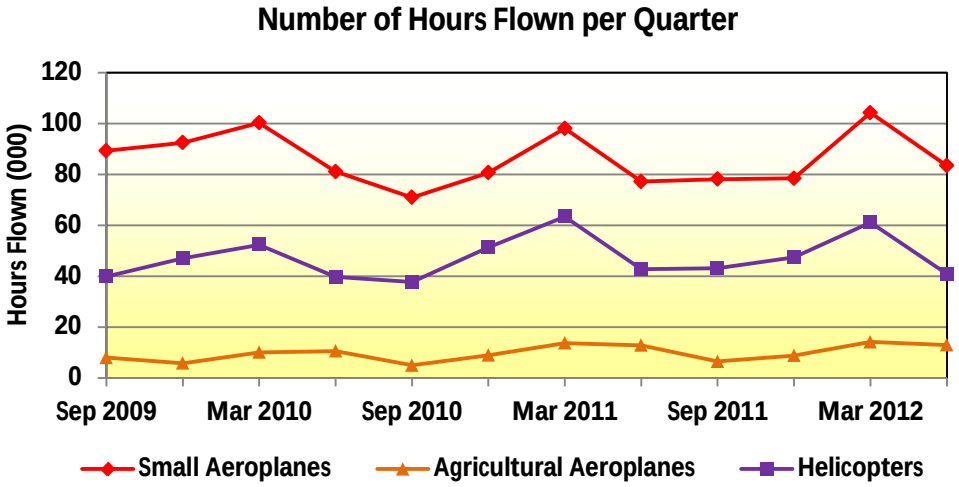
Aircraft Category	1 Jan to 30 Jun 2012	Average Last 3 Years
Large Aeroplanes	89636	89995.4
Medium Aeroplanes	47169	42221.4
Small Aeroplanes	31272	27072.0
Helicopters	27691	27570.4
Sport Aircraft	180	337.3
Total	195948	187196.4

Hours Flown

Note that these graphs exclude the aircraft statistics categories Sport Aircraft, Hang Gliders and Parachutes, and foreign registered aircraft that are operated in New Zealand.

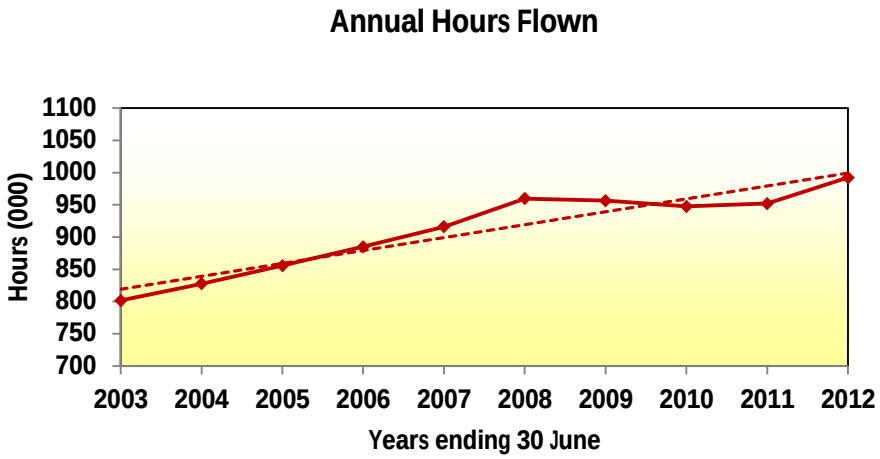
The following graphs show the estimated number of hours flown per quarter during the three year period ending 30 June 2012. The estimates are based on the reported hours with an allowance for aircraft for which reports were not received.





Long-Term Change in Hours Flown

The following graph shows the annual hours flown (includes the aircraft classes aeroplane, helicopter and balloon only; excludes other aircraft classes, hang gliders and parachutes) for the 10-year period ending 30 June 2012.



The change in the estimated number of annual hours flown across this period is equivalent to an annual increase of 2.4%.

Six-Monthly Comparison

Hours Flown (January to June)

Aircraft Category	1 Jan to 30 Jun 2012	Average Last 3 Years
Large Aeroplanes	169560.9	163696.0
Medium Aeroplanes	33002.7	29699.3
Small Aeroplanes	187583.3	172317.0
Helicopters	101958.2	94444.2
Sport Aircraft	1668.5	2246.7
Agricultural Aeroplanes	27149.1	19576.4
Total	493773.6	462403.1

Seat-Hours

The following table indicates the size of the aviation industry as determined from Aircraft Operating Statistics in the relevant 2010 Safety Target Group categories for the six month period ending 30 June 2012. A seat-hours measure is used as an indication of person exposure. For each Safety Target Group the total number of hours flown is multiplied by the average number of seats and an 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 seat hours.

Safety Outcome Target Group	1 Jan to 30 Jun 2012	Average Last 3 Years
Airline Operations - Large Aeroplanes	24.63 (96.13%)	23.79 (96.21%)
Airline Operations - Medium Aeroplanes	0.41 (1.59%)	0.37 (1.48%)
Airline Operations - Small Aeroplanes	0.07 (0.28%)	0.05 (0.22%)
Airline Operations - Helicopter	0.07 (0.27%)	0.06 (0.25%)
Sport Transport	0.02 (0.09%)	0.05 (0.19%)
Other Commercial Operations - Aeroplane	0.15 (0.57%)	0.13 (0.54%)
Other Commercial Operations - Helicopter	0.05 (0.20%)	0.05 (0.20%)
Agricultural Operations - Aeroplane	0.03 (0.13%)	0.02 (0.09%)
Agricultural Operations - Helicopter	0.04 (0.15%)	0.05 (0.19%)
Private Operations - Aeroplane	0.01 (0.05%)	0.02 (0.09%)
Private Operations - Helicopter	0.02 (0.06%)	0.02 (0.08%)
Private Operations - Sport	0.12 (0.48%)	0.11 (0.44%)
Total	25.62 (100.00%)	24.73 (100.00%)

* most sport aircraft do not report hours or seats, so a standard estimate of seat hours offered is used as well as reported data for such aircraft in these groups.

Note that the percentages may not sum exactly to 100.0% due to rounding.

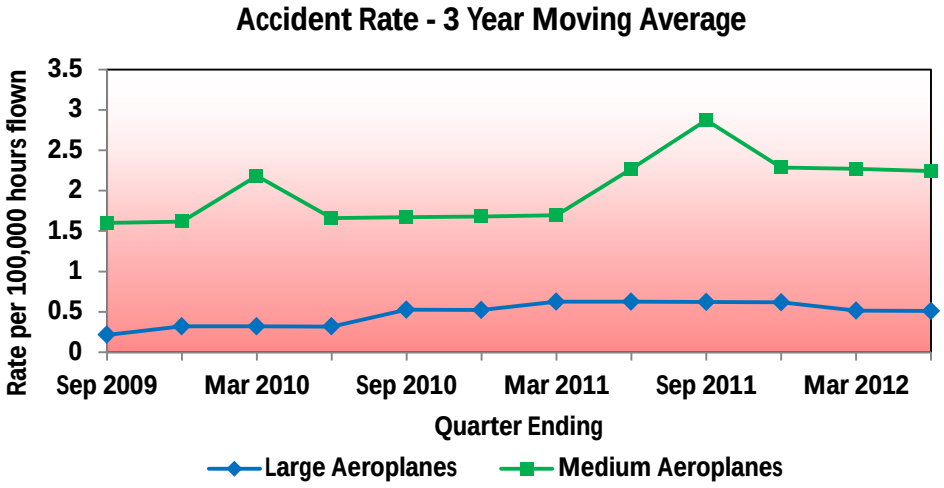
This table shows that approximately 96.1% of seat hours are offered by the Airline Operations – Large Aeroplanes group, around 1.6% by the Airline Operations – Medium Aeroplanes group, with the remaining 2.3% of seat hours offered being split between the other safety target groups.

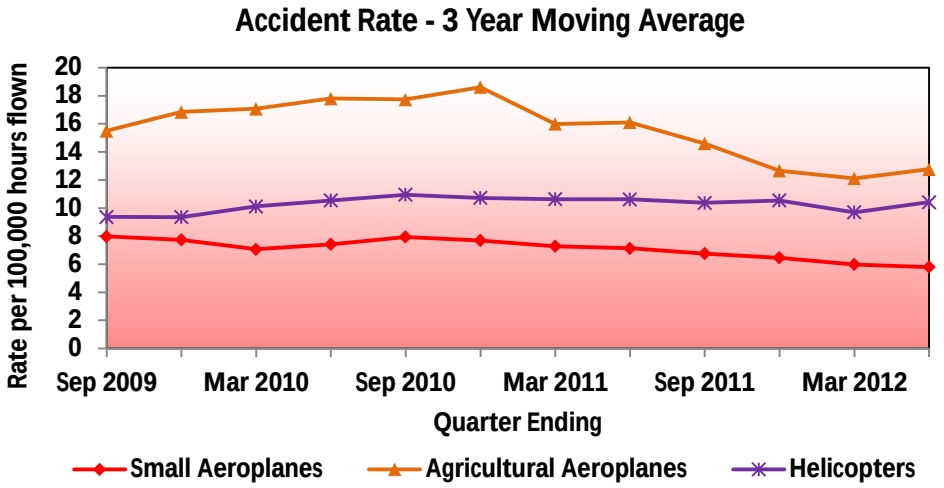
Occurrence Analysis

Aircraft Accidents

The following graphs show the aircraft accident rates (accidents per estimated 100,000 hours flown) three year moving average for the three-year period ending 30 June 2012 (excluding the aircraft statistics categories Sport Aircraft, Hang Gliders and Parachutes). Trends for each group are shown immediately following the group

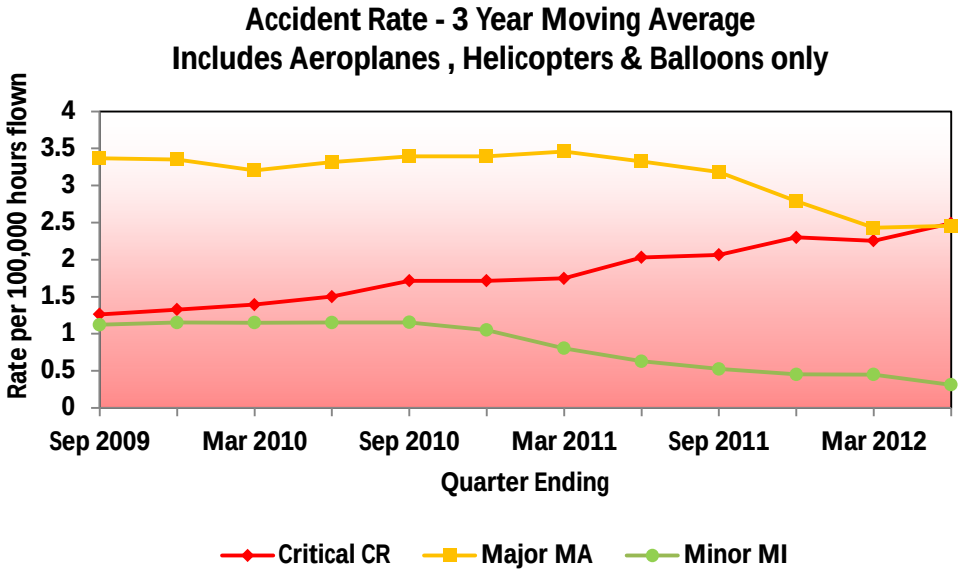
Breakdown by Aircraft Category





Aircraft Category	Straight Line Trend of 3 Year Moving Average
Large Aeroplanes	Trending Up
Medium Aeroplanes	Trending Up
Small Aeroplanes	Trending Down
Agricultural Aeroplanes	Trending Down
Helicopters	Constant

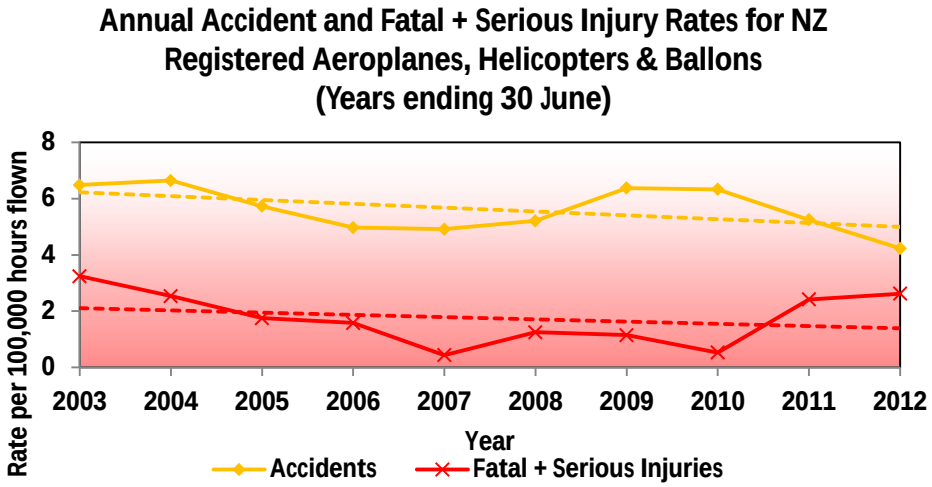
Breakdown by Severity



Severity	Straight Line Trend of 3 Year Moving Average
Critical	Trending Up
Major	Trending Down
Minor	Trending Down

Long-Term Accident Rate

The following graph shows the overall annual accident rate per 100,000 hours flown for the 10 year period ending 30 June 2012. Hang gliders and parachutes are excluded because no reliable hours data is available for those classes.



Note that this graph does not show a moving average and because it also includes some but not all sport aircraft it is not appropriate to compare it to the other accident rate graphs in the report.

Six Monthly Comparisons

Critical Accidents

Aircraft Category	1 Jan to 30 Jun 2012	Average Last 3 Years
Large Aeroplanes	0	0.0
Medium Aeroplanes	0	0.2
Small Aeroplanes	1	4.0
Helicopters	5	6.2
Sport Aircraft	11	9.0
Agricultural Aeroplanes	1	1.0
Hang Gliders	3	2.2
Parachutes	3	1.5
Unknown	0	0.0
Total	24	24.0

Major Accidents

Aircraft Category	1 Jan to 30 Jun 2012	Average Last 3 Years
Large Aeroplanes	0	0.3
Medium Aeroplanes	0	0.3
Small Aeroplanes	4	5.5
Helicopters	2	3.7
Sport Aircraft	6	7.8
Agricultural Aeroplanes	1	1.2
Hang Gliders	2	2.3
Parachutes	4	2.0
Unknown	1	0.5
Total	20	23.7

Minor Accidents

Aircraft Category	1 Jan to 30 Jun 2012	Average Last 3 Years
Large Aeroplanes	0	0.5
Medium Aeroplanes	0	0.2
Small Aeroplanes	1	0.5
Helicopters	0	0.0
Sport Aircraft	1	0.7
Agricultural Aeroplanes	0	0.3
Hang Gliders	0	2.8
Parachutes	0	0.7
Unknown	0	0.2
Total	2	5.8

All Accidents

Aircraft Category	1 Jan to 30 Jun 2012	Average Last 3 Years
Large Aeroplanes	0	0.8
Medium Aeroplanes	0	0.7
Small Aeroplanes	6	10.0
Helicopters	7	9.8
Sport Aircraft	18	17.5
Agricultural Aeroplanes	2	2.5
Hang Gliders	5	7.3
Parachutes	7	4.2
Unknown	1	0.7
Total	46	53.5

Safety Target Structure

The 2010 Safety Targets classify all New Zealand aviation under three broad group headings: Public Air Transport, Other Commercial Operations, and Non-commercial Operations. Thirteen further sub-groups enable differentiation between aeroplanes, helicopters, and sport aircraft, and also allow for different weight groups.

Number of Accidents

The following table shows, for each safety target group, the number of accidents each year for the six month period ending 30 June 2012 and the average six-month total over the last three years. All aircraft types are included

Safety Outcome Target Group	1 Jan to 30 Jun 2012	Average Last 3 Years
Airline Operations - Large Aeroplanes	0	0.8
Airline Operations - Medium Aeroplanes	0	0.7
Airline Operations - Small Aeroplanes	0	1.0
Airline Operations - Helicopter	1	1.2
Sport Transport	5	5.2
Other Commercial Operations - Aeroplane	1	4.8
Other Commercial Operations - Helicopter	2	3.0
Agricultural Operations - Aeroplane	2	2.3
Agricultural Operations - Helicopter	4	2.7
Private Operations - Aeroplane	5	4.0
Private Operations - Helicopter	0	3.0
Private Operations - Sport	26	24.3
Other	0	0.5
Total	46	53.5

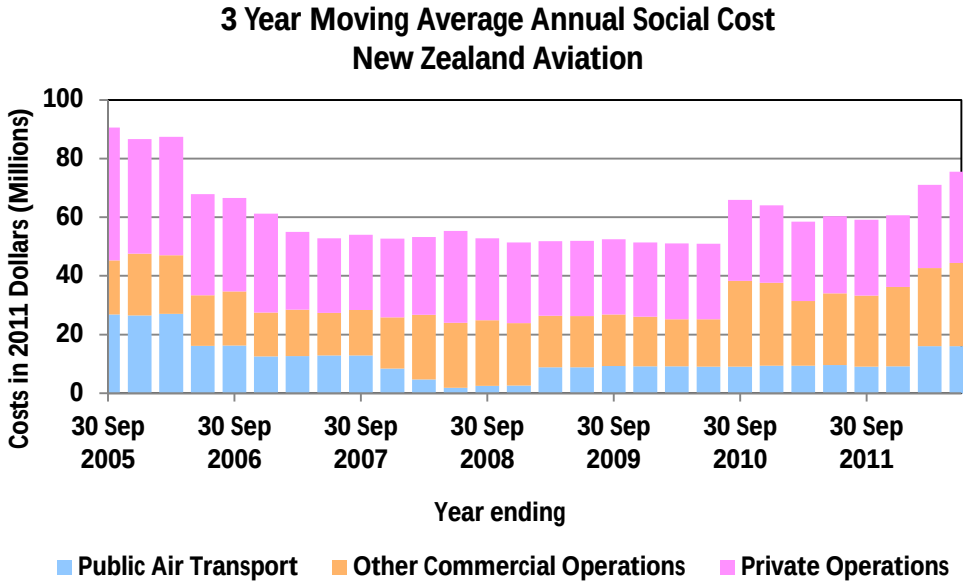
Social Cost

Social cost is the cost of fatal, serious and minor injuries and aircraft destroyed. The following table displays the social cost in millions of dollars (2011) for each safety target group for the 6 month period ending 30 June 2012 and the average six month cost for the last three years

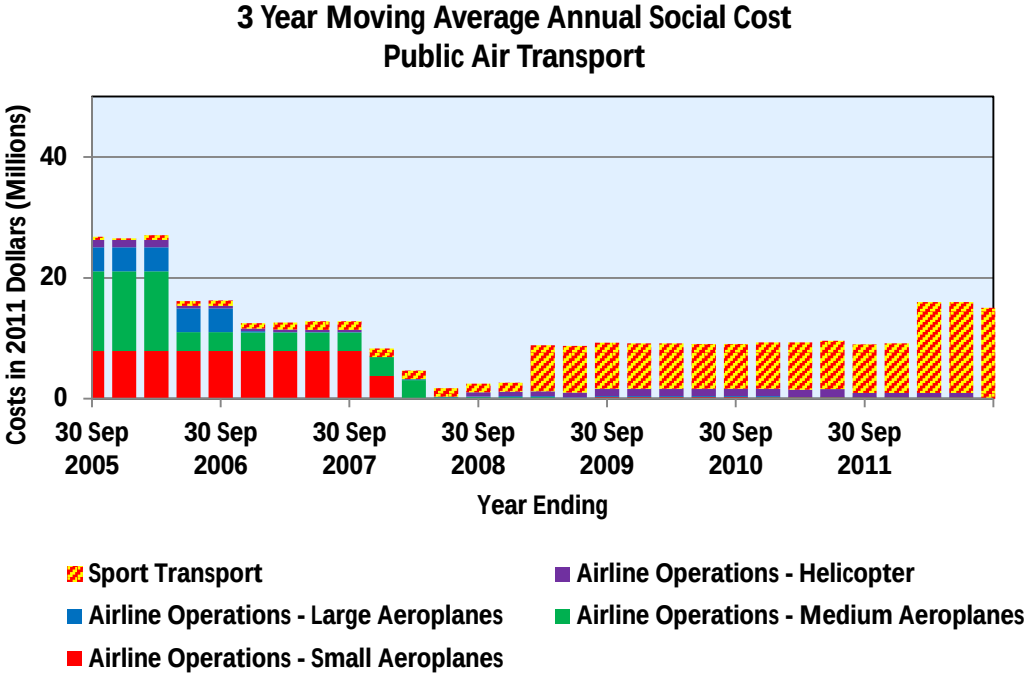
Safety Outcome Target Group	1 Jan to 30 Jun 2012	Average Last 3 Years
Airline Operations - Large Aeroplanes	0.03	0.01
Airline Operations - Medium Aeroplanes	0.00	0.01
Airline Operations - Small Aeroplanes	0.00	0.13
Airline Operations - Helicopter	0.00	0.33
Sport Transport	41.02	7.52
Other Commercial Operations - Aeroplane	0.00	7.81
Other Commercial Operations - Helicopter	0.39	5.06
Agricultural Operations - Aeroplane	0.00	0.28
Agricultural Operations - Helicopter	4.92	1.08
Private Operations - Aeroplane	1.33	2.31
Private Operations - Helicopter	0.00	1.54
Private Operations - Sport	24.05	11.70
Other	0.00	0.00
Total	71.74	37.78

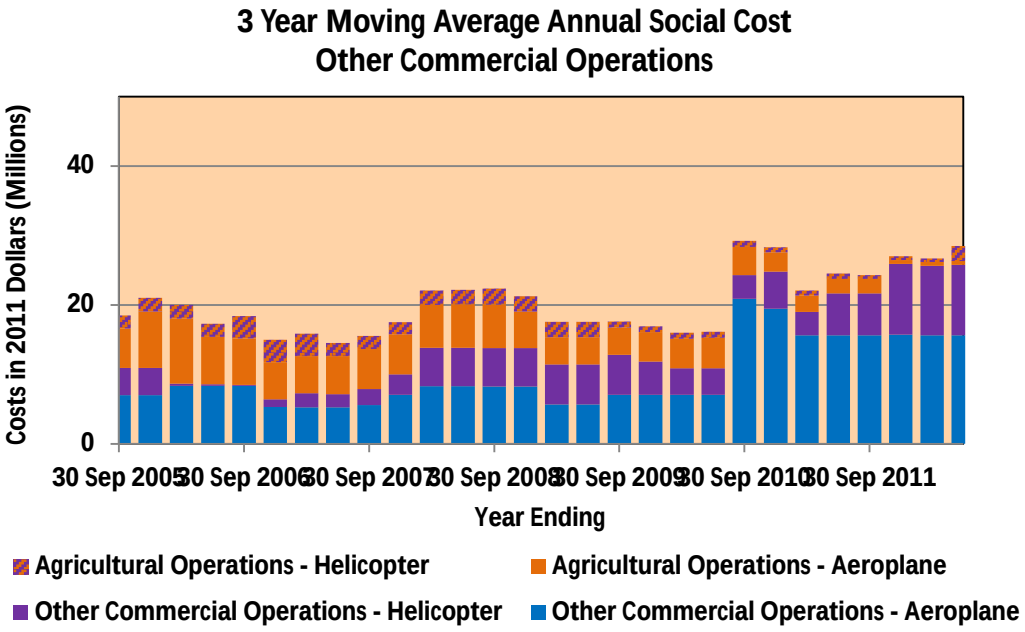
The following charts show the annual social cost (3 year moving average) for each Safety Target Group for the period 1 October 2005 to 30 June 2012. Social cost is the cost of fatal, serious and minor injuries, and aircraft destroyed, expressed in 2011 dollars. Note that the Sport groups include hang gliders and parachutes.

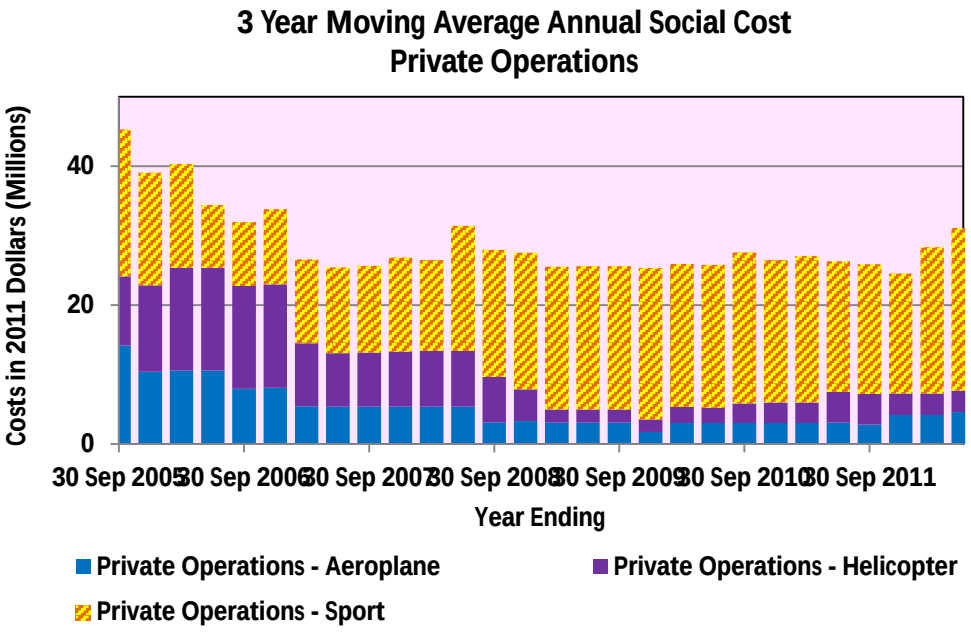
The first chart shows a breakdown into the three major groupings, Public Air Transport, Other Commercial and Private operational groupings.



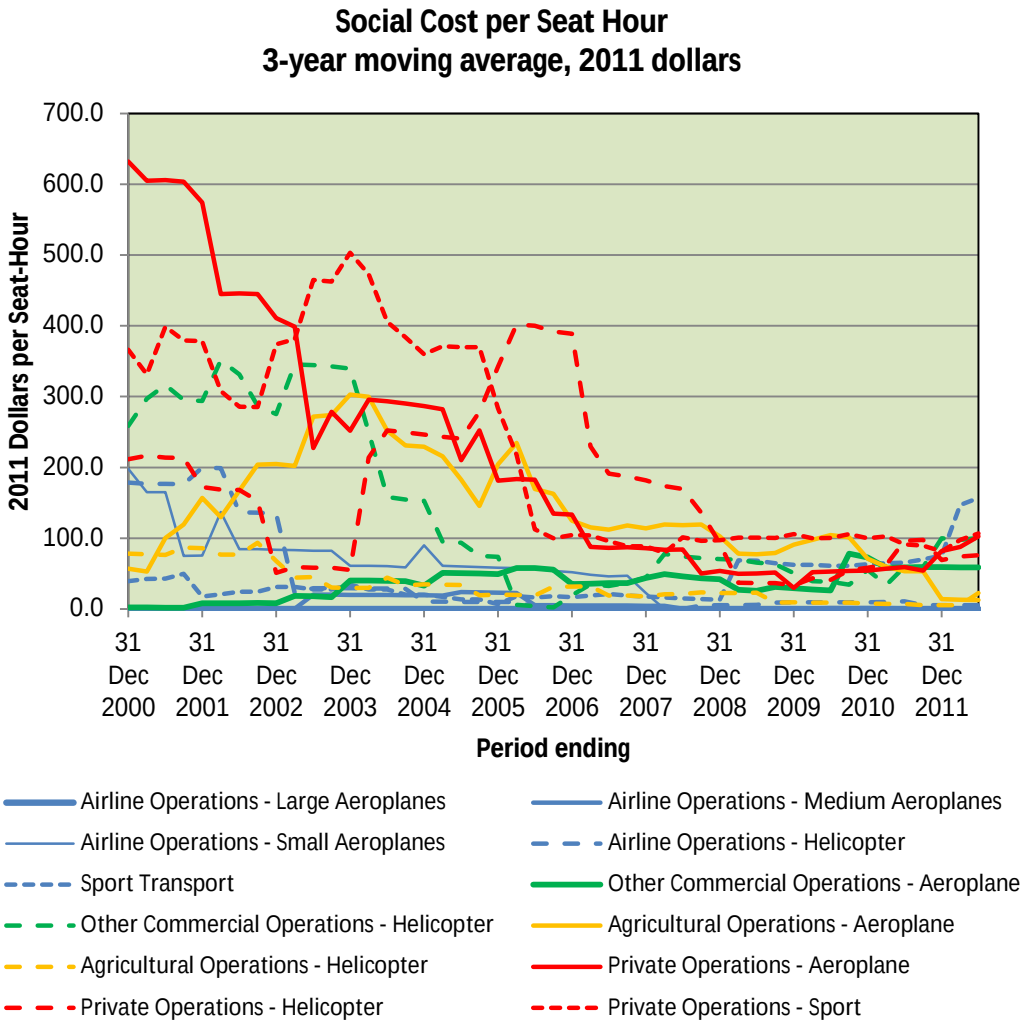
The next three charts show breakdowns of each of the major groupings into their individual Safety Outcome Target Groups





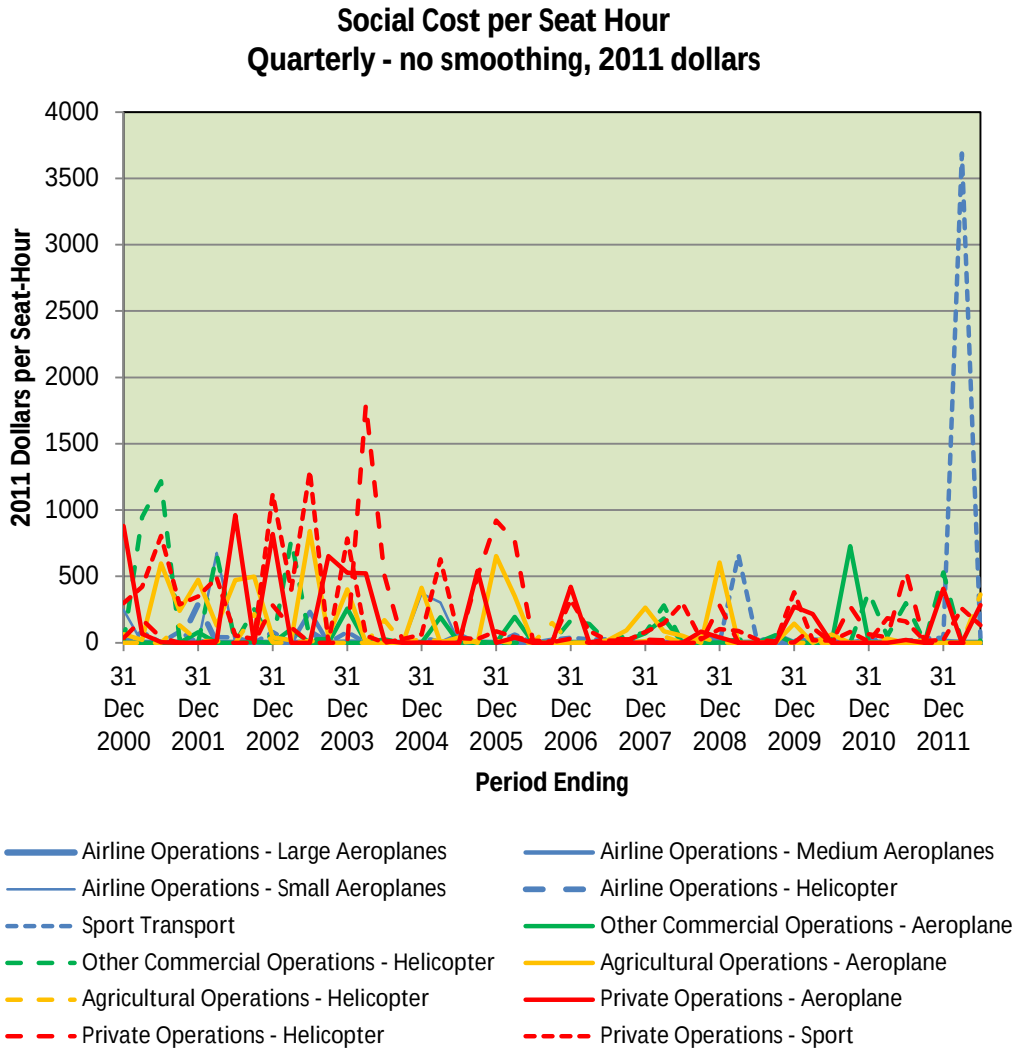


The following graph illustrates an apparent steady decline in the Social Cost per Seat-Hour (three year moving average) over the period since the 4th quarter of 2000 which is the earliest date for which data is available. Since the 4th quarter of 2008 the decline has become relatively indiscernible and it may be that social cost levels have reached or are approaching a practical minimum for the current intervention practices.



However the use of 3-year moving average smoothing to render the graphs more readable has the side effect of masking any abrupt changes in the data and there is therefore a risk that the unpredictability of this measure may be underestimated.

The following graph shows the same data with all the smoothing removed. Although this view is quite accurate in that costs are attributed solely to the period in which they occur, it is arguably less instructive about how the risk is changing with time. For example the large peak in sport transport (dashed blue line) is not proceeded by any discernable increase in cost and then vanishes again, implying a rapid deterioration and equally rapid improvement in safety. As the repercussions of a major safety failure, both commercial and social, take many years to overcome, the three year averaging method does in a sense, provide a more realistic view.



Safety Outcome Targets

Each target group had its own target level expressed as social cost per unit of passenger exposure, the unit being one seat hour. For target groups that are not predominantly passenger carrying a surrogate of 500 kg of aircraft weight is used instead of passenger exposure. These outcome targets represent the maximum level of social cost considered acceptable for each group.

The table below shows the average Safety Outcomes in 2011 dollars per seat-hour (including the cost of aircraft destroyed) for the three year period ending 30 June 2012. Target groups highlighted in yellow are groups where major safety improvements need to be achieved. Red outlining has been used to draw attention to groups with significant recent safety failure.

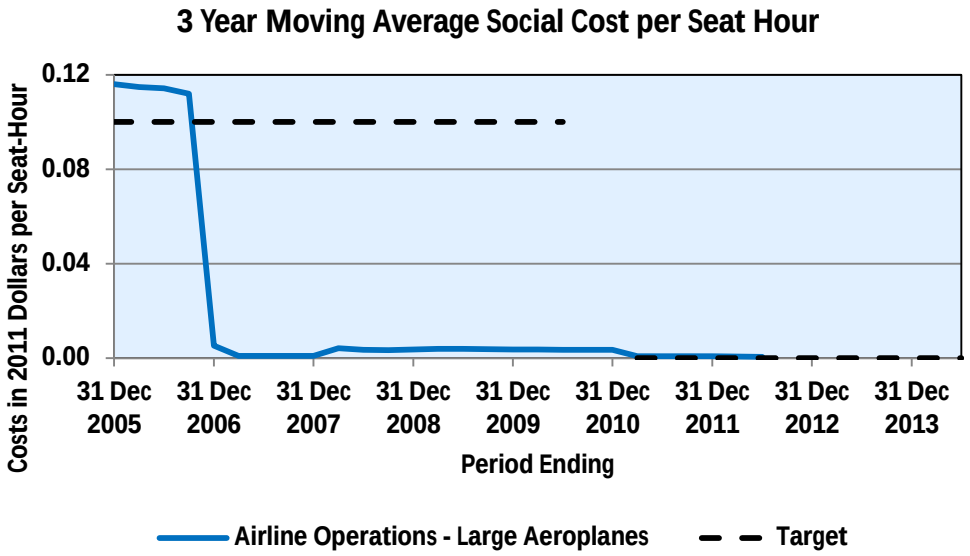
Safety Target Group	Current Estimate	Target
Airline Operations - Large Aeroplanes	0.00	0.00
Airline Operations - Medium Aeroplanes	0.02	0.02
Airline Operations - Small Aeroplanes	2.28	2.34
Airline Operations - Helicopter	5.28	6.50
Sport Transport	156.81	13.00
Other Commercial Operations - Aeroplane	58.93	6.50
Other Commercial Operations - Helicopter	100.35	6.50
Agricultural Operations - Aeroplane	12.40	14.00
Agricultural Operations - Helicopter	22.64	8.56
Private Operations - Aeroplane	102.58	10.00
Private Operations - Helicopter	75.77	10.00
Private Operations - Sport	106.63	20.00

* Current Estimate:

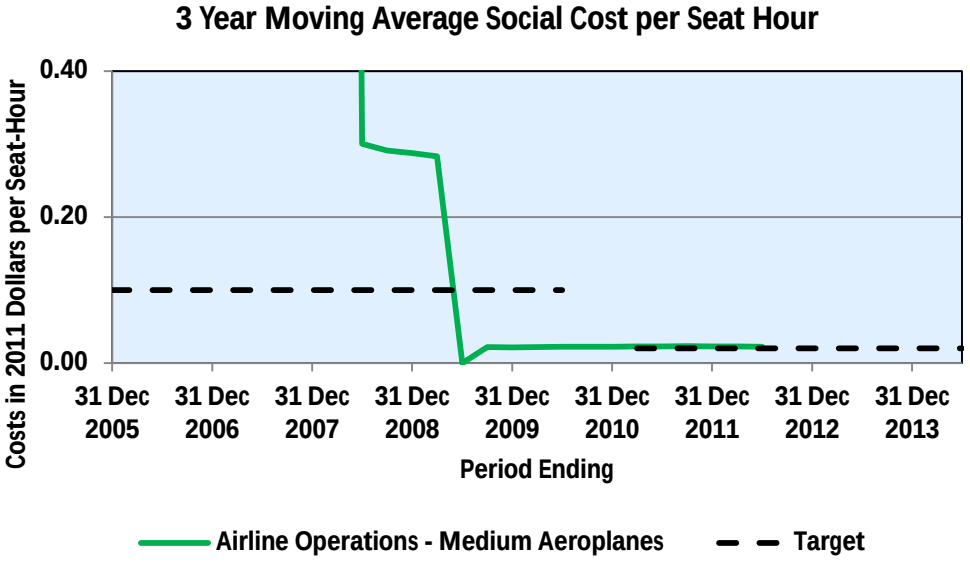
This is the estimated social cost of injuries and aircraft destroyed per seat hour for the three year period. Note: Aviation Safety reports prior to July to December 2008 used a 10 year averaging period for large and medium aeroplanes and a one year period for all others.

Safety Target Graphs

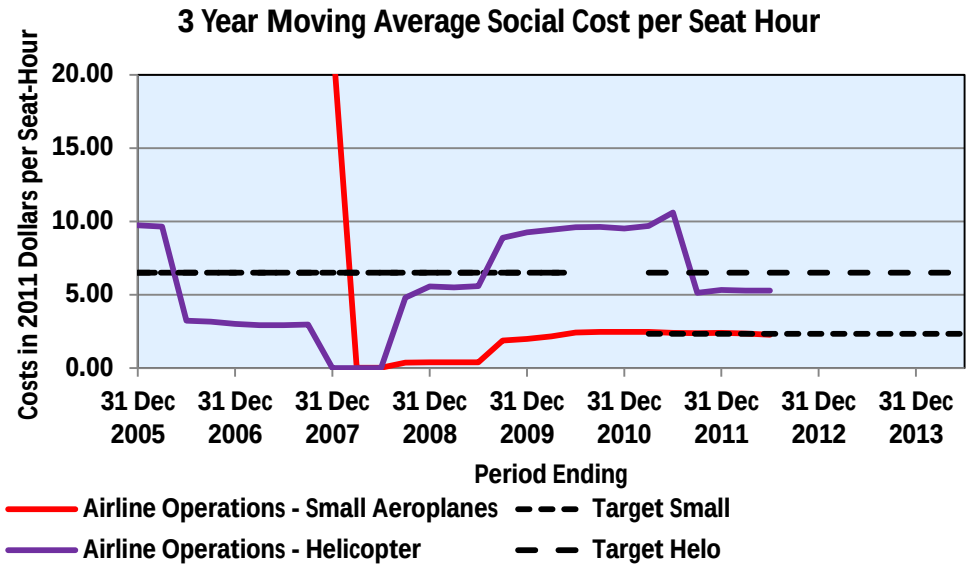
Graphs displaying the Safety Outcome Targets and the quarterly progress of Safety Outcomes derived using 3 year averages are shown on the following pages. These graphs span the period from 1 October 2005 when Social Cost targets were introduced to 30 June 2014 when the current targets are due for review.



The outcome for Airline Operations – Large Aeroplanes remained well below the initial target level of $0.10 per seat hour of exposure from late 2006 until the targets were revised in 2011. The new target appears on the graph as 0 but is actually $0.0034 and the current performance is significantly below the target. There is no significant recent trend either up or down. No fatal, no serious and 4 minor injuries were reported in this group during the 3 year period ending 30 June 2012.

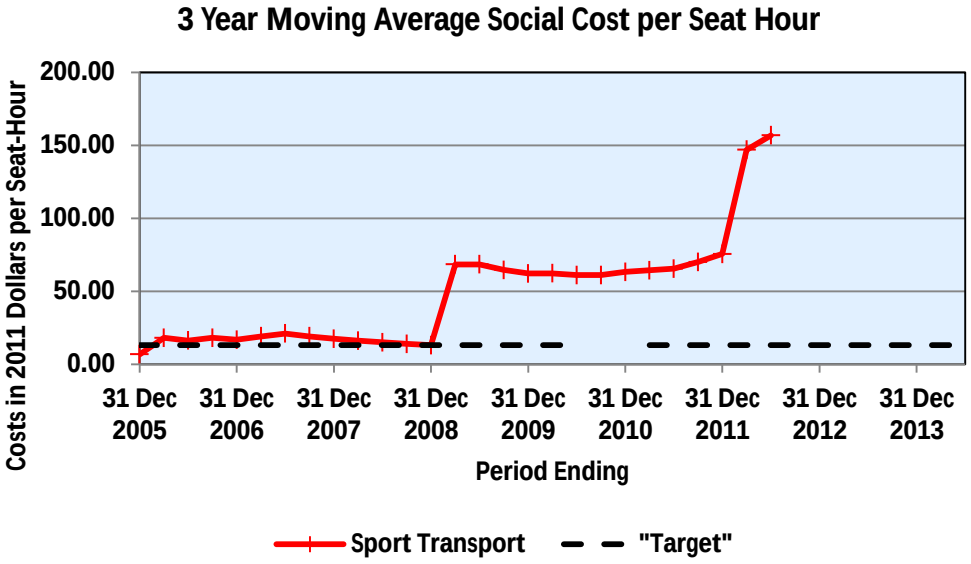


The outcome for Airline Operations – Medium Aeroplanes dropped below the initial target during the second quarter of 2009 and is trending down. The outcome is slightly above the new target of $0.02 per seat hour but, at 20% of the previous target this may well be acceptable. No fatal, no serious and 3 minor injuries were reported in this group during the 3 year period ending 30 June 2012.



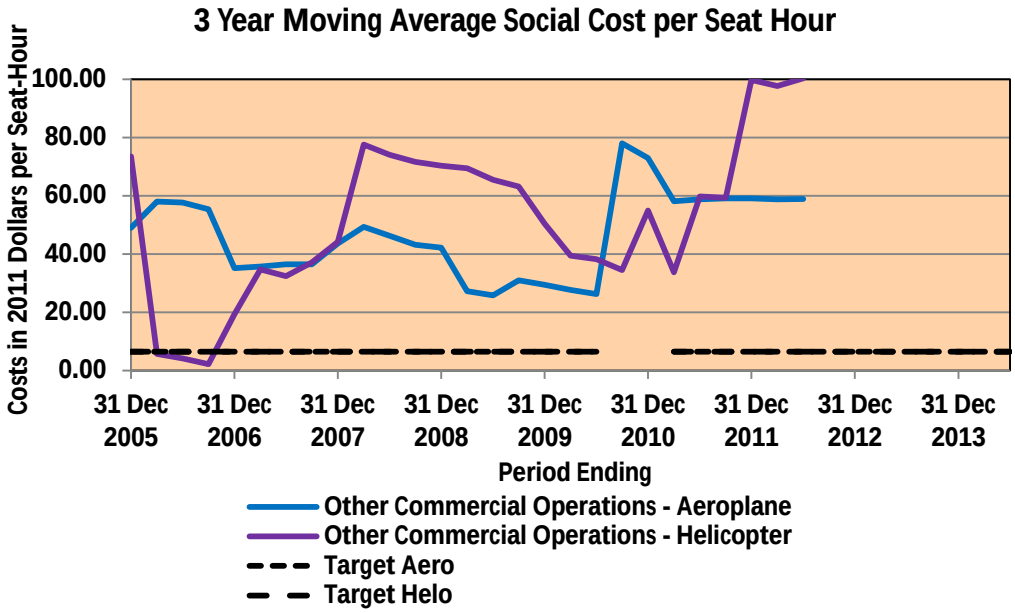
The outcome for Airline Operations – Small Aeroplanes shows a significant long term downward trend from the high starting point of $45.64 per seat-hour of exposure in the three years to September 2007. The safety outcome for this group has been below the initial target level since the January to March 2008 quarter but exceeds the new target of $2.34 by a very small amount. No fatal, 1 serious and 2 minor injuries were reported in this group during the 3 year period ending 30 June 2012.

The outcome for Airline Operations – Helicopter exceeded the target level until the second quarter of 2006 and it has done so again since the 3rd quarter of 2009. A small upward trend is evident. The new target of $6.50 per seat hour is the same as the old value and has been achieved again since the 3rd quarter of 2011. No fatal, 1 serious and 4 minor injuries were reported in this group during the 3 year period ending 30 June 2012.



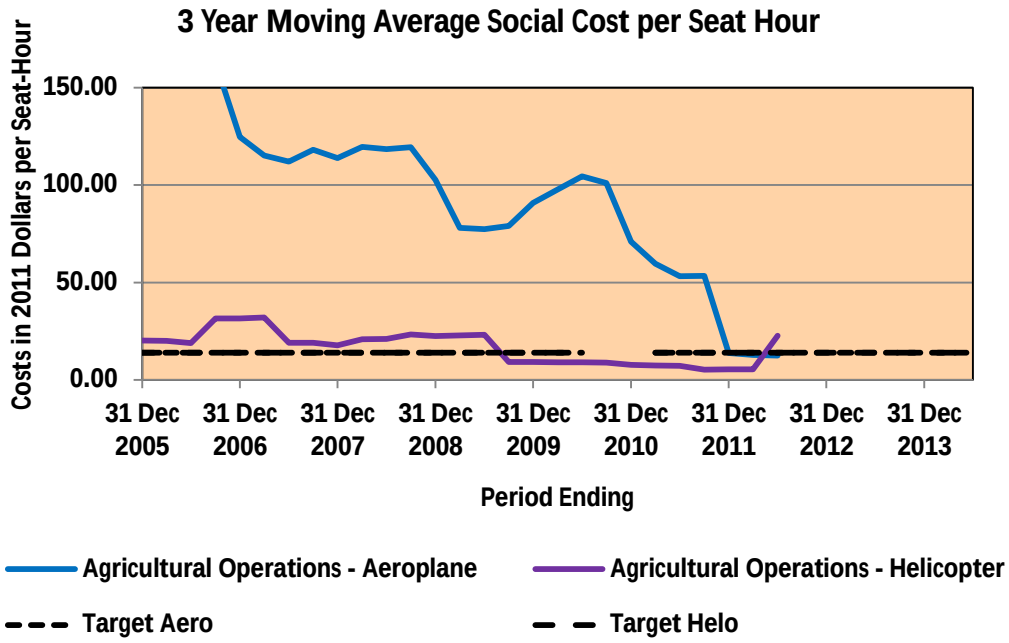
Two hang glider, two microlight and one glider fatalities during the first quarter of 2009 and 11 balloon fatalities in 2012 have contributed to a significant increase in the upward trend displayed by this group. The outcome exceeds the target of $13.00 by a large margin. 11 fatal, 11 serious and 13 minor injuries were reported in this group during the 3 year period ending 30 June 2012.

Note that this group includes hang gliders and parachutes used on transport operations.



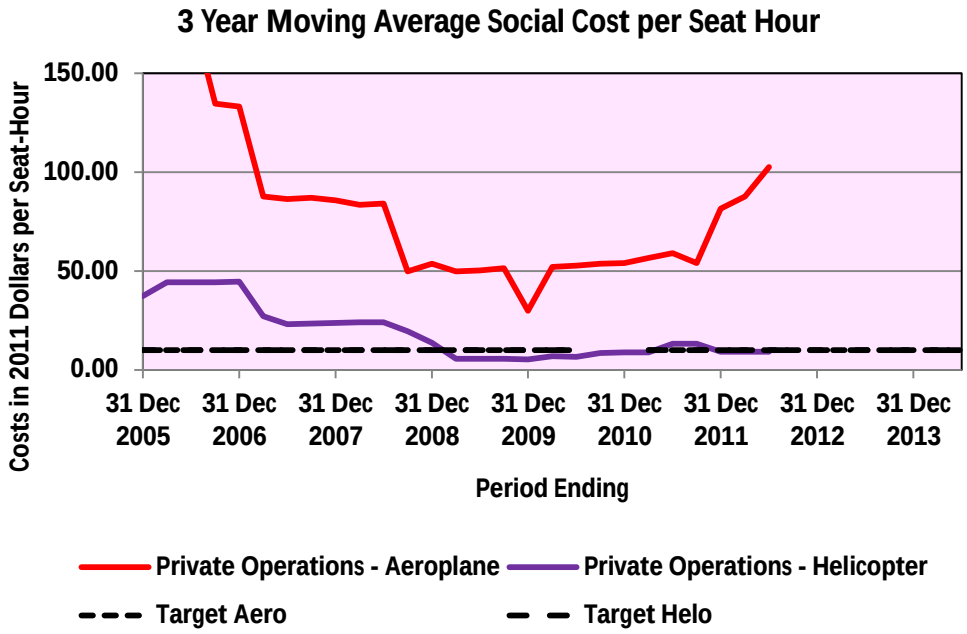
The outcome for Other Commercial Operations – Aeroplane remains well above the target of $6.50 per seat hour. 12 fatal, 3 serious and no minor injuries were reported in this group during the 3 year period ending 30 June 2012.

The outcome for Other Commercial Operations – Helicopter turned sharply upwards during the first quarter of 2008 and remains well above the target level of $6.50 per seat hour. 7 fatal, 2 serious and 3 minor injuries were reported in this group during the 3 year period ending 30 June 2012.



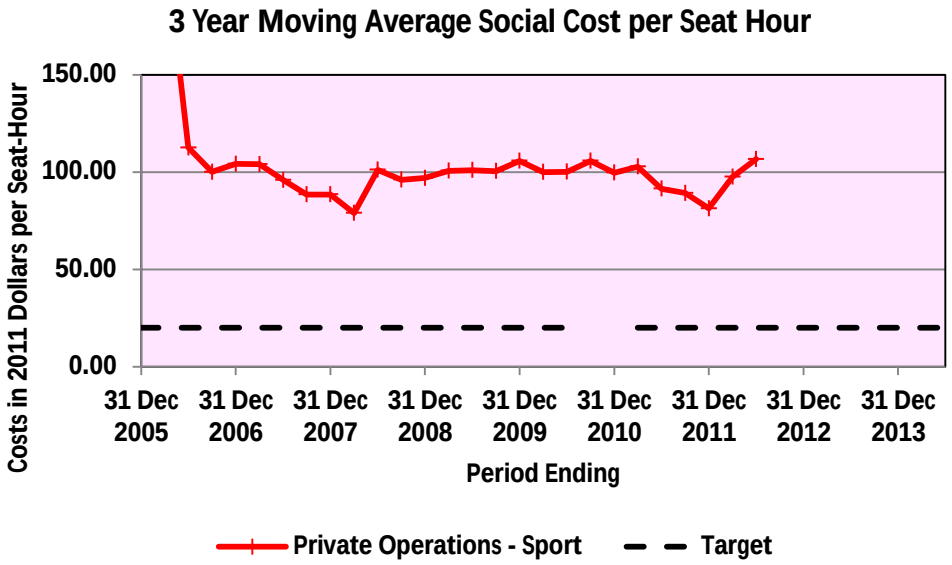
The outcome for Agricultural Operations – Aeroplanes has been well above the target level of $14.00 per seat hour but has been steadily trending down and this group has now achieved its target. No fatal, 1 serious and 2 minor injuries were reported in this group during the 3 year period ending 30 June 2012.

The outcome for Agricultural Operations – Helicopter has been below the target level of $8.56 per seat hour since the 3rd quarter of 2009 but a recent fatal injury has resulted in the target again being exceeded from the 2nd quarter of 2012. 1 fatal, no serious and 1 minor injuries were reported in this group during the 3 year period ending 30 June 2012.



The outcome for Private Operations – Aeroplanes had been slowly trending down since late 2005 but remained well above the target of $10.00 per seat hour. The downward trend has now reversed. 3 fatal, 5 serious and 1 minor injuries were reported in this group during the 3 year period ending 30 June 2012.

The outcome for Private Operations – Helicopters has been trending down since early 2006 and except for two quarters during 2011 has been below the target of $10.00 per seat hour since the first quarter of 2009. 1 fatal, 3 serious and 5 minor injuries were reported in this group during the 3 year period ending 30 June 2012.

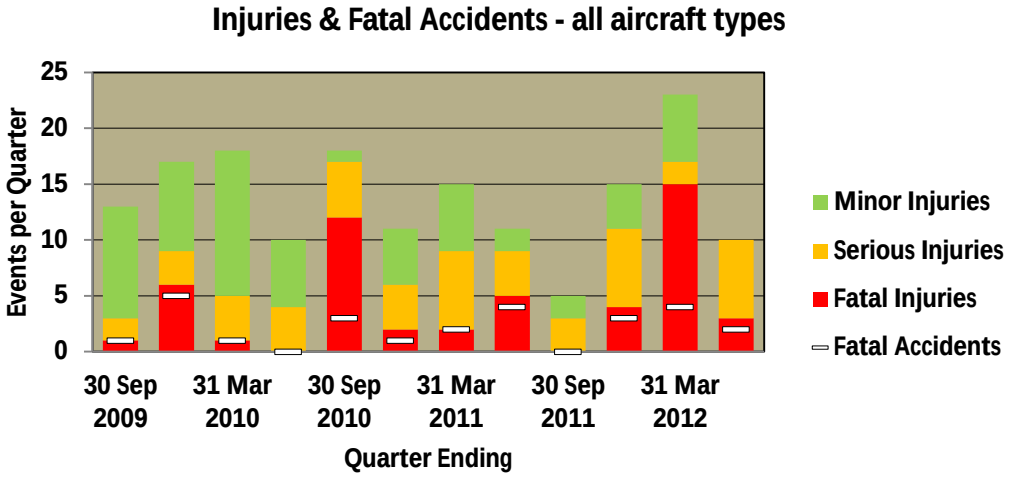


The outcome for Private Operations – Sport is well above the target level of $20.00 per seat hour and shows no significant trend. 16 fatal, 25 serious and 26 minor injuries were reported in this group during the 3 year period ending 30 June 2012.

Note that this group includes hang gliders and parachutes used on private operations.

Injury Accidents

The following chart shows the number of injuries, broken down by severity (fatal, serious or minor) in each quarter of the 3-year period ending 30 June 2012. All aircraft types are included. The chart also shows the number of fatal accidents.



A breakdown of the same three years' data by Safety Outcome Target Group is shown in the table below.

Safety Target Group	Injuries			Fatal Accidents
	Fatal	Serious	Minor	
Airline Operations - Large Aeroplanes	0	0	4	0
Airline Operations - Medium Aeroplanes	0	0	3	0
Airline Operations - Small Aeroplanes	0	1	2	0
Airline Operations - Helicopter	0	1	4	0
Sport Transport	11	11	13	1
Other Commercial Operations - Aeroplane	12	3	0	3
Other Commercial Operations - Helicopter	7	2	3	4
Agricultural Operations - Aeroplane	0	1	2	0
Agricultural Operations - Helicopter	1	0	1	1
Private Operations - Aeroplane	3	5	1	3
Private Operations - Helicopter	1	3	5	1
Private Operations - Sport	16	25	26	13
Other	0	0	0	0

The following table displays the number of fatalities for each safety target group for the 6 month period ending 30 June 2012 and the average six month number for the last three years

Safety Outcome Target Group	1 Jan to 30 Jun 2012	Average Last 3 Years
Airline Operations - Large Aeroplanes	0	0.00
Airline Operations - Medium Aeroplanes	0	0.00
Airline Operations - Small Aeroplanes	0	0.00
Airline Operations - Helicopter	0	0.00
Sport Transport	11	1.83
Other Commercial Operations - Aeroplane	0	2.00
Other Commercial Operations - Helicopter	0	1.17
Agricultural Operations - Aeroplane	0	0.00
Agricultural Operations - Helicopter	1	0.17
Private Operations - Aeroplane	0	0.50
Private Operations - Helicopter	0	0.17
Private Operations - Sport	6	2.67
Other	0	0.00
Total	18	8.50

Flight Phase

The following table shows the flight phase recorded for accidents for the six months ending 30 June 2012 and the six month average for the three years ending on the same date. The figures include all aircraft types.

Flight Phase	1 Jan to 30 Jun 2012	Average Last 3 Years
Approach	3	2.8
Circuit	0	0.3
Climb	0	3.0
Hover	2	2.0
Landing	17	18.3
Parked	2	1.5
Takeoff	7	10.0
Taxiing	2	1.8
Unknown	1	1.0
Total	34	41

The most common phase of flight during which accidents occurred in the year ending 30 June 2012 was the Landing phase (50%)

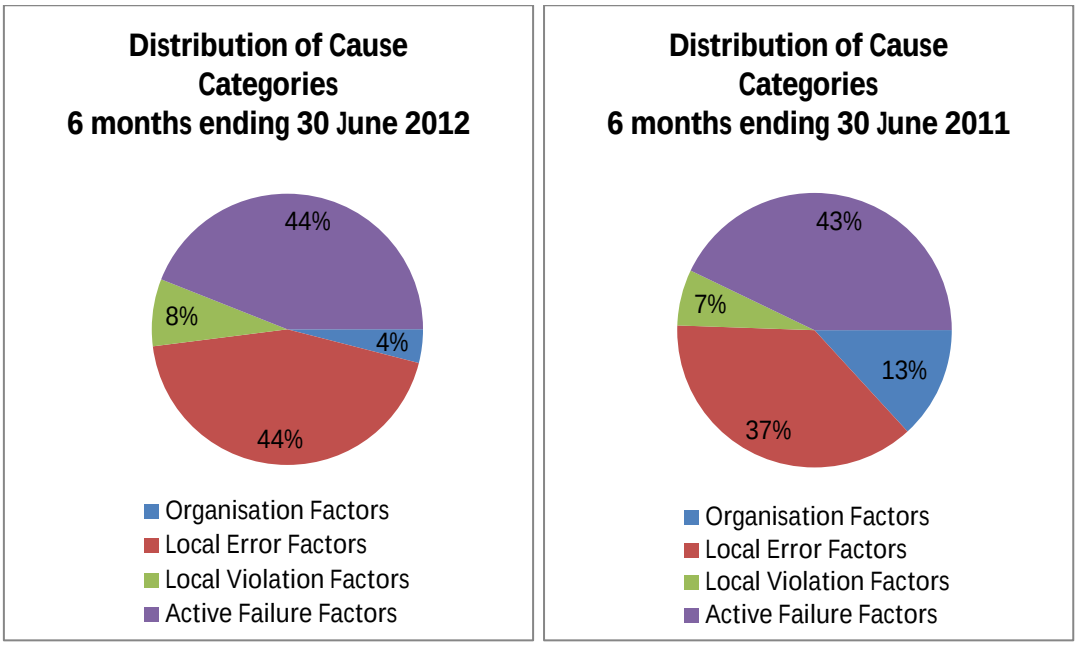
The most common descriptor associated with Landing phase accidents during the year ending 30 June 2012 was 'Hard Landing' (40%)

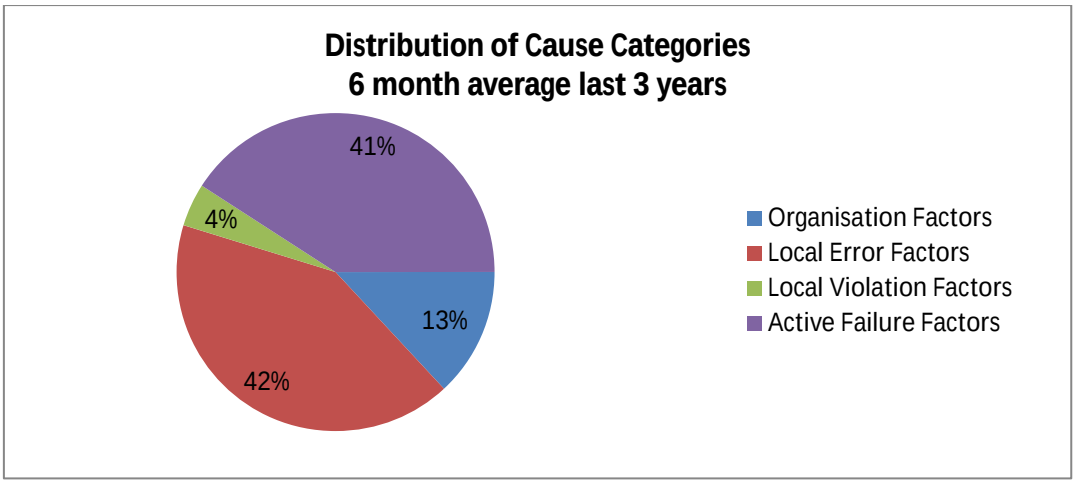
The most common cause (at 10.3%) recorded for Landing phase accidents during the year ending 30 June 2012 was 'Active Failure Factors - Poor Procedure "Action"'

Accident Causal Factors

Causal factors have been assigned to 17 (37%) of the 46 accidents that were reported as occurring during the six months ending 30 June 2012. This compares with 67% for the same period in the previous year and an average of 64% over the last three years. In making this comparison it is important to remember that the assignment of causal factors is an outcome of an investigation and for the current period may not be completed in time for inclusion in this report

The following charts show the distribution of cause categories (groupings of causal factors) recorded for accidents that occurred during the six month period ending 30 June 2012, the same period for the previous year and the average for the last three years.

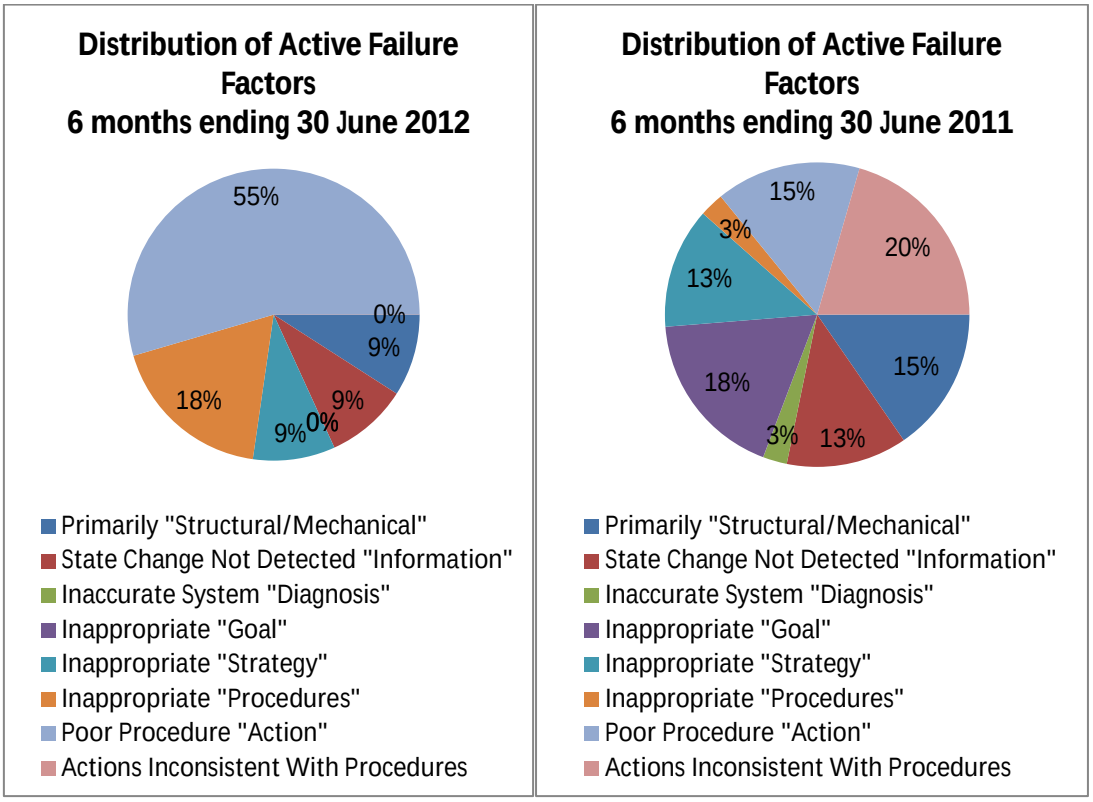


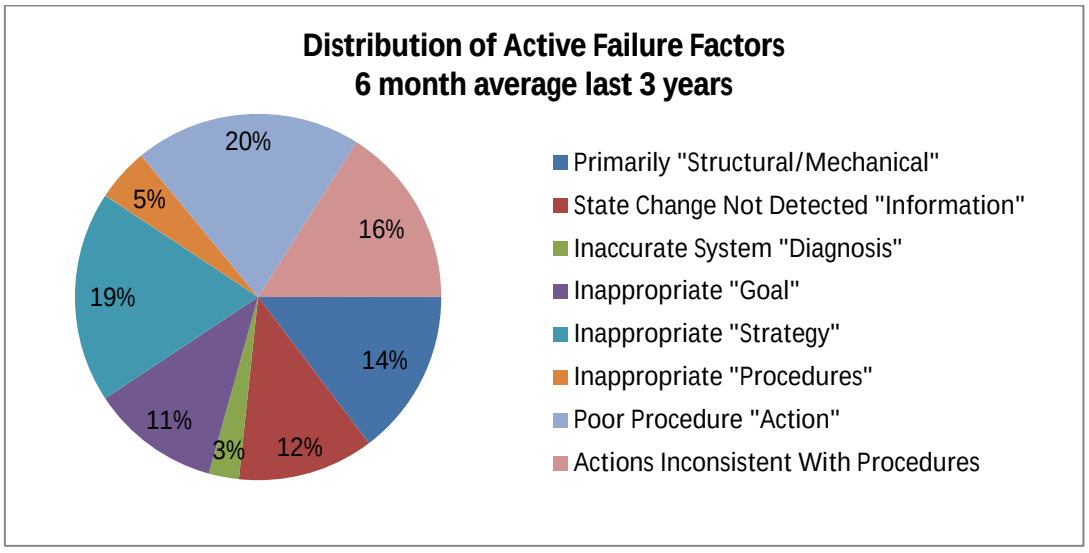


Active Failure Factors

The Active Failure cause category has been further analysed on the grounds that whatever precursor latent failures may exist and be discovered during a subsequent investigation, at least one 'Unsafe Act' (e.g. Omitted checklist item, Exceeded ability etc.) must occur for an accident to result. These unsafe acts are collectively grouped as Active Failure Factors.

The following charts show the distribution of Active Failure causes during the same periods as above.

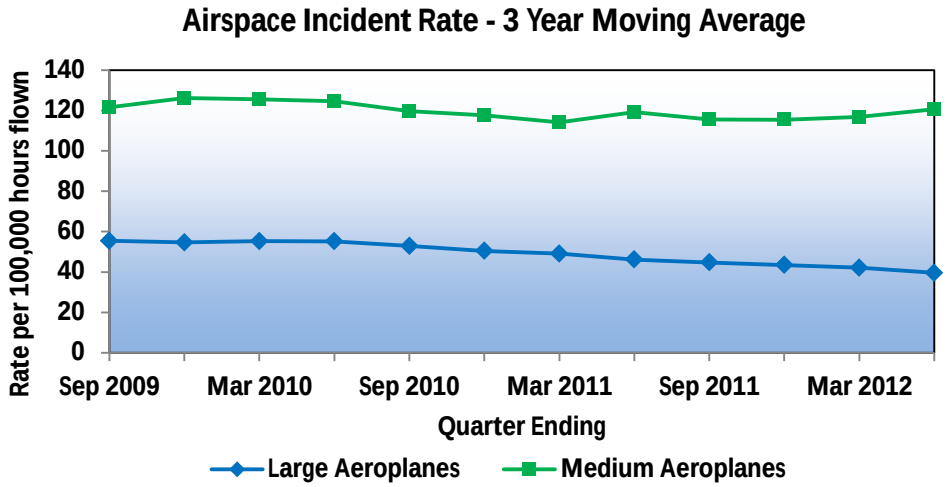


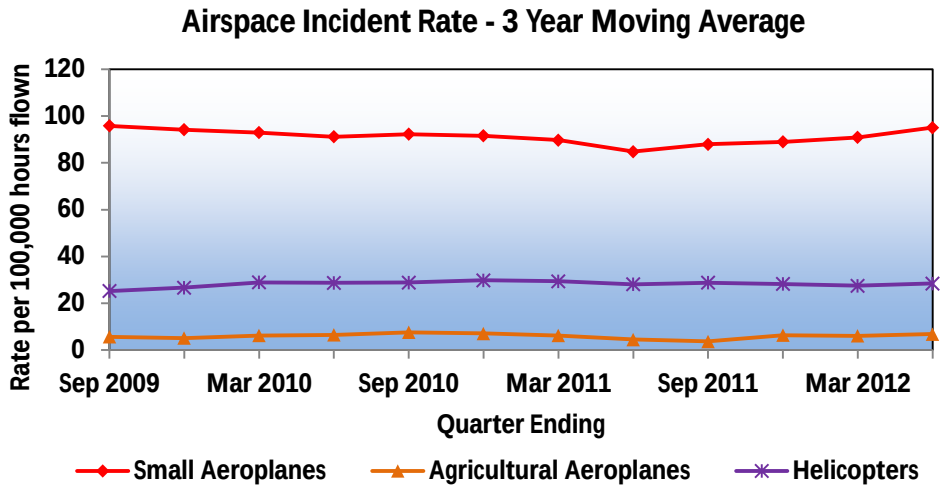


Airspace Incidents

The following graphs show the airspace incident reporting rates (incidents per 100,000 hours flown) three year moving average for the three-year period ending 30 June 2012 (excluding the Sport Aircraft category). The graphs do not differentiate between incidents that are pilot or ATS attributable.

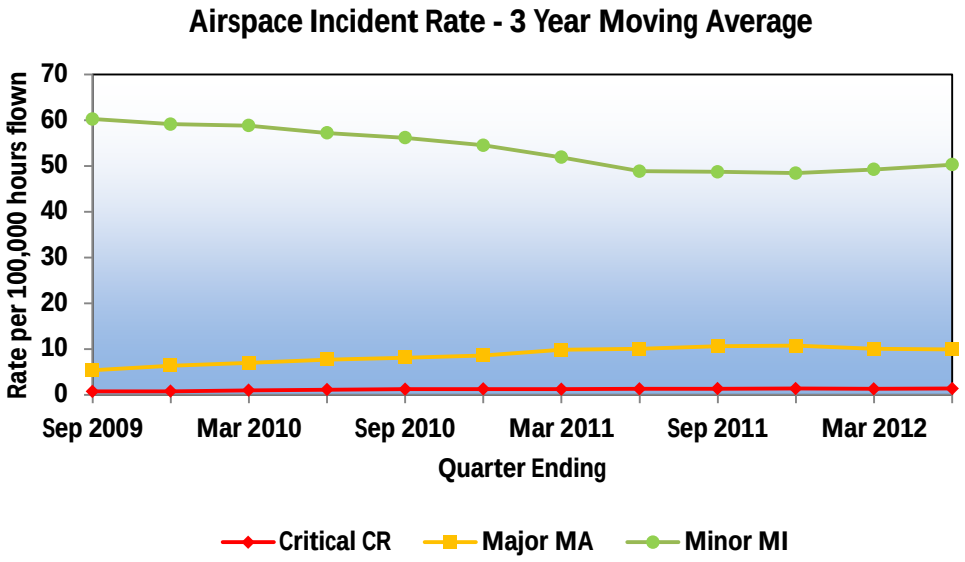
Breakdown by Aircraft Category





Aircraft Category	Straight Line Trend of 3 Year Moving Average
Large Aeroplanes	Trending Down
Medium Aeroplanes	Constant
Small Aeroplanes	Constant
Agricultural Aeroplanes	Constant
Helicopters	Constant

Breakdown by Severity



Severity	Straight Line Trend of 3 Year Moving Average
Critical	Trending Up
Major	Trending Up
Minor	Trending Down

Six Monthly Comparisons

By Aircraft Category

Critical Airspace Incidents

Aircraft Category	1 Jan to 30 Jun 2012	Average Last 3 Years
Large Aeroplanes	0	0.5
Medium Aeroplanes	0	0.2
Small Aeroplanes	4	4.5
Helicopters	0	1.2
Sport Aircraft	1	0.8
Agricultural Aeroplanes	0	0.2
Not Recorded	0	1.2
Total	5	8.5

Major Airspace Incidents

Aircraft Category	1 Jan to 30 Jun 2012	Average Last 3 Years
Large Aeroplanes	6	6.0
Medium Aeroplanes	10	5.8
Small Aeroplanes	24	30.0
Helicopters	2	4.7
Sport Aircraft	5	5.5
Agricultural Aeroplanes	0	0.2
Not Recorded	33	21.2
Total	80	73.3

Minor Airspace Incidents

Aircraft Category	1 Jan to 30 Jun 2012	Average Last 3 Years
Large Aeroplanes	52	58.3
Medium Aeroplanes	43	29.8
Small Aeroplanes	195	129.3
Helicopters	28	21.0
Sport Aircraft	34	19.7
Agricultural Aeroplanes	1	1.0
Not Recorded	195	150.2
Total	548	409.3

All Airspace Incidents

Aircraft Category	1 Jan to 30 Jun 2012	Average Last 3 Years
Large Aeroplanes	58	64.8
Medium Aeroplanes	53	35.8
Small Aeroplanes	223	163.8
Helicopters	30	26.8
Sport Aircraft	40	26.0
Agricultural Aeroplanes	1	1.3
Not Recorded	228	172.5
Total	633	491.2

By Nearest Airways Monitored Aerodrome

All Airspace Incidents	1 Jan to 30 Jun 2012	Average Last 3 Years
Auckland	45	52.7
Taupo	12	10.5
Christchurch	38	36.7
Dunedin	11	9.2
Gisborne	2	4.7
Hamilton	135	64.5
Milford Sound	1	0.5
New Plymouth	15	9.7
Napier	7	7.8
Nelson	15	20.2
Invercargill	1	2.8
Ohakea	18	14.5
Palmerston North	22	19.7
Paraparaumu	28	9.8
Queenstown	24	19.7
Rotorua	28	17.0
Tauranga	33	24.2
Woodbourne	4	8.8
Wellington	39	32.2
Whenuapai	5	3.7
Other	75	67.2
Not Reported	75	55.3
Total	633	491.2

Air Traffic Service (ATS) and Pilot Attributable Airspace Incidents

Introduction

Airspace incidents are categorised as ATS, pilot, or ATS and pilot attributable. For the purposes of this analysis airspace incidents have been divided into those that have been identified to have an ATS attributable element and those that have a pilot attributable element. Accordingly there is some overlap in the number of occurrences reported where both ATS and pilot elements are involved. The following pages of this section report on apparent trends in ATS and pilot attributable occurrences.

ATS attributable airspace occurrences include those that are attributable to both New Zealand and external ATS organisations. External ATS organisations are included where information coordination problems have arisen or where a New Zealand registered aircraft has reported a conflict in non-NZ airspace.

Descriptors

Occurrence descriptors have been established for all of the 633 reported airspace incidents in the period 1 January to 30 June 2012

Note: each airspace incident may have more than one airspace occurrence descriptor.

Six-Monthly Comparison

The following table shows the assignment of airspace occurrence descriptors that are associated with ATS attributable occurrences.

Descriptor	1 Jan to 30 Jun 2012	Average Last 3 Years
ATS clearance/instruction deficiency	43	28.3
ATS coordination deficiency	55	40.0
ATS flight information deficiency	10	5.8
ATS flight planning system deficiency	11	7.2
Total	119	81.3

The following table shows the assignment of airspace occurrence descriptors that are associated with pilot attributable occurrences.

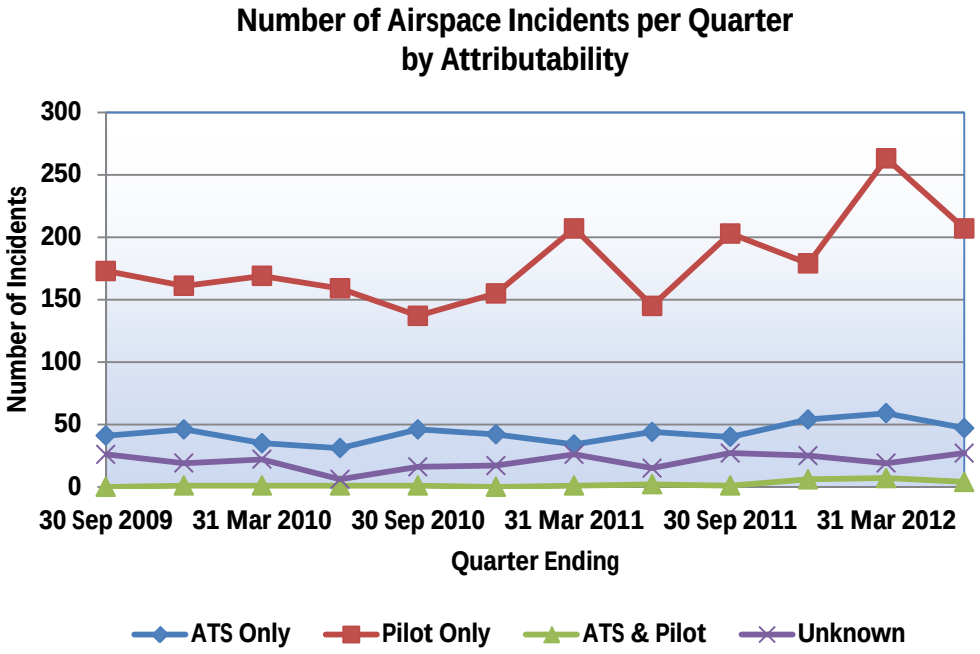
Descriptor	1 Jan to 30 Jun 2012	Average Last 3 Years
Breach of other clearance	151	86.8
Flight assist	1	2.2
Pilot flight planning deficiency	14	10.5
Pilot position reporting deficiency	45	30.3
Pilot readback deficiency	4	2.2
Unauth airspace incursion	171	146.2
Unauth altitude penetration	65	45.2
Total	451	323.3

The following table shows the assignment of airspace occurrence descriptors that could be associated with either ATS or pilot attributable occurrences.

Descriptor	1 Jan to 30 Jun 2012	Average Last 3 Years
Controller/pilot datalink communications	0	0.0
Loss of separation	28	23.3
Near collision	9	16.0
Other	19	16.7
Reduced vertical separation minima	2	0.7
Short term conflict alert	5	1.7
Traffic collision avoidance system	52	50.5
Total	115	108.8

Trend

The following graph shows the quarterly numbers of airspace incident reports and their attributability for the three year period ending 30 June 2012.



Quarterly ASP incident report numbers show an upward trend for all attributabilities.

The number of "unknown" attributable airspace incidents reflects difficulties with coding of reports received by the CAA. Note that there is a time delay between incidents occurring, being investigated, and attributability being assigned to either ATS or Pilot.

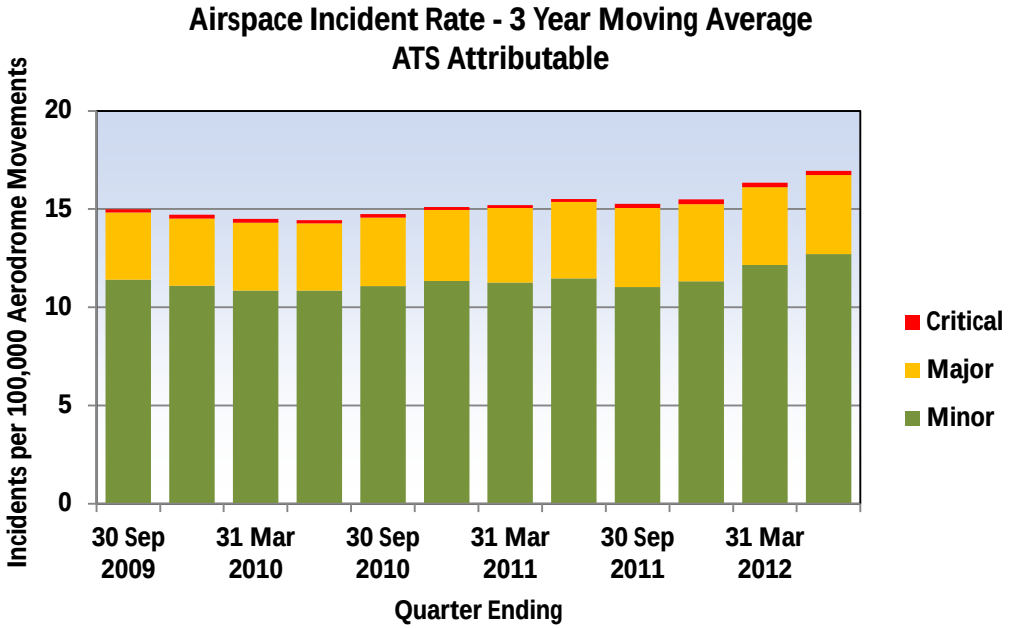
The following table shows the attributability of airspace incidents.

Attributability	1 Jan to 30 Jun 2012	Average Last 3 Years
ATS Only	106	86.5
Pilot Only	470	359.7
ATS & Pilot	11	4.2
Unknown	46	49.0
Total	633	499.3

ATS Attributable ASP Incidents

Occurrence Trend

The following chart shows the airspace incident reporting rate for Air Traffic Service (ATS) attributable incidents. The values are incidents per 100,000 reported aircraft movements, 12 month moving average for the 3 year period ending 30 June 2012.

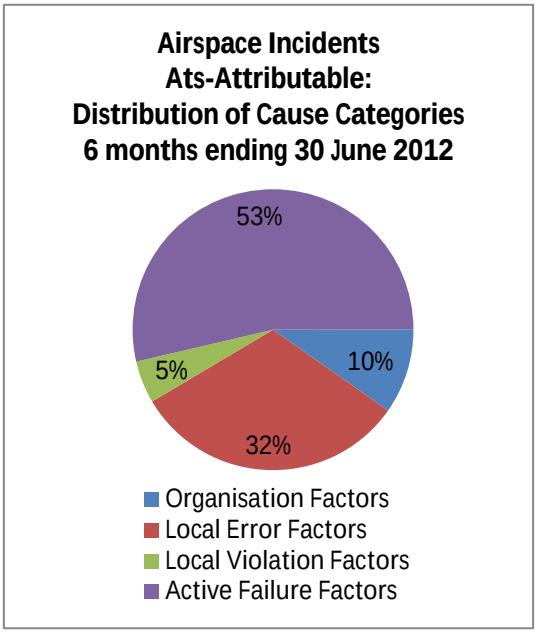


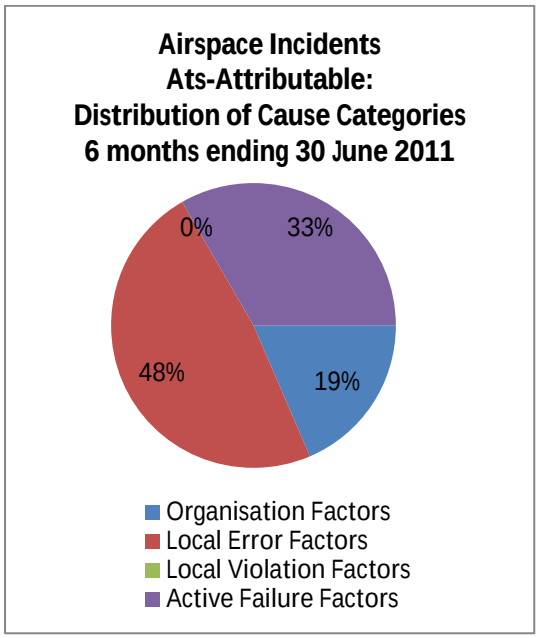
The 3 year moving average of the ATS attributable reported airspace incident rate shows no significant trend over the three year period.

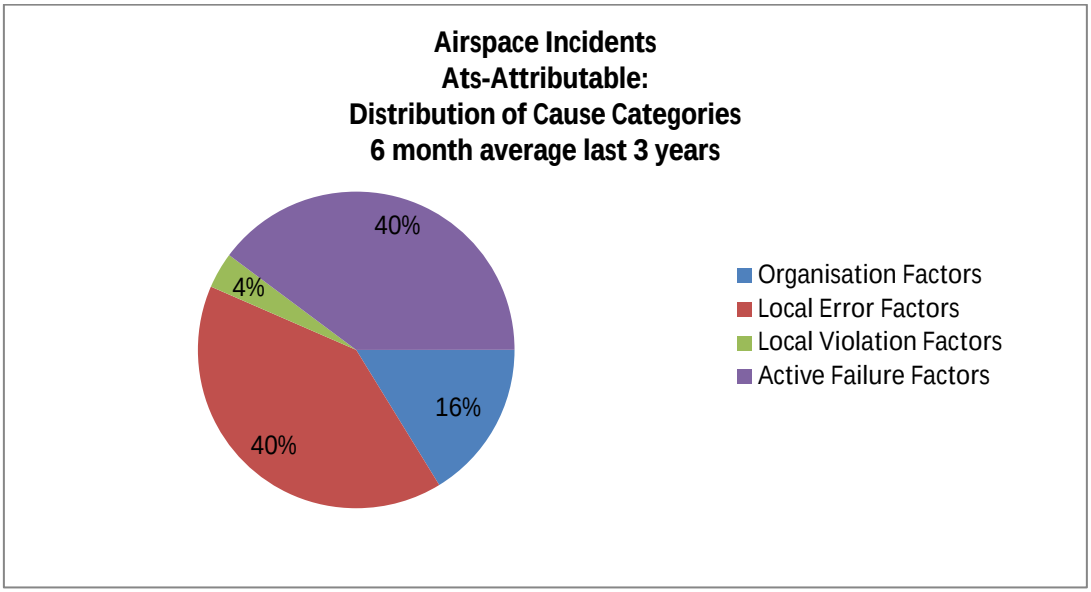
Causal Factors

Causal factors have been assigned to 37 (6%) of the 633 airspace incidents that were reported as occurring during the six months ending 30 June 2012. This compares with 12% for the same period in the previous year and an average of 10% over the last three years. In making this comparison it is important to remember that the assignment of causal factors is an outcome of an investigation and for the current period may not be completed in time for inclusion in this report

The following charts show the distribution of cause categories (groupings of causal factors) recorded for ATS attributable airspace incidents that occurred during the six month period ending 30 June 2012, the same period for the previous year and the average for the last three years.



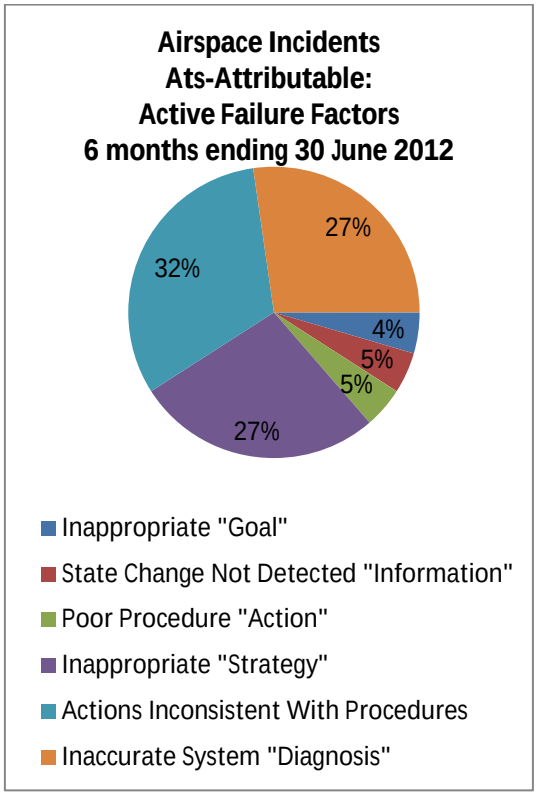


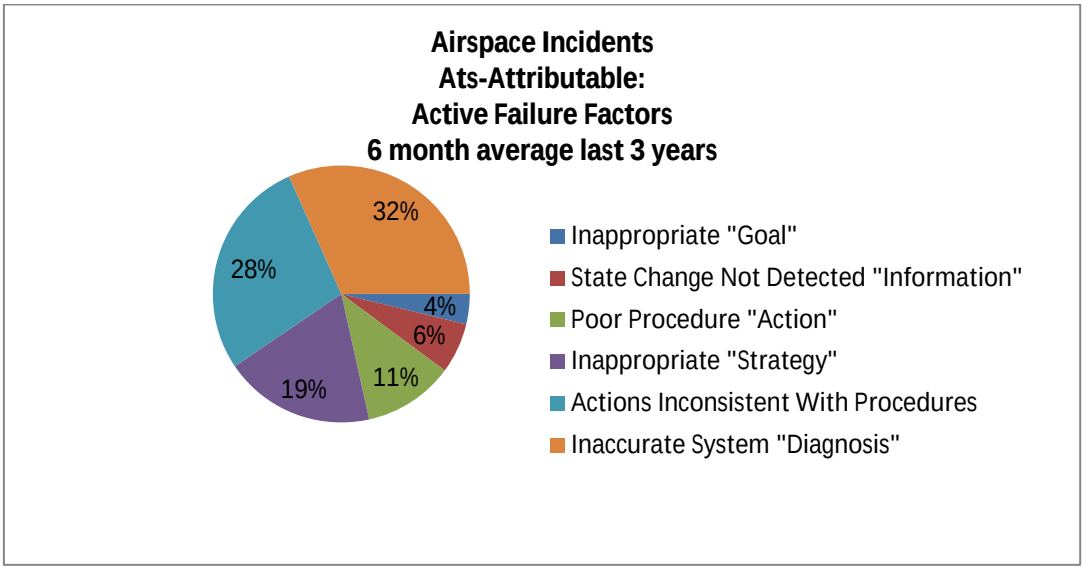


Active Failure Factors

The Active Failure cause category has been further analysed on the grounds that whatever precursor latent failures may exist and be discovered during a subsequent investigation, at least one 'Unsafe Act' (e.g. Omitted checklist item, Exceeded ability etc.) must occur for an incident to result. These unsafe acts are collectively grouped as Active Failure Factors.

The following charts show the distribution of Active Failure causes during the same periods as above.

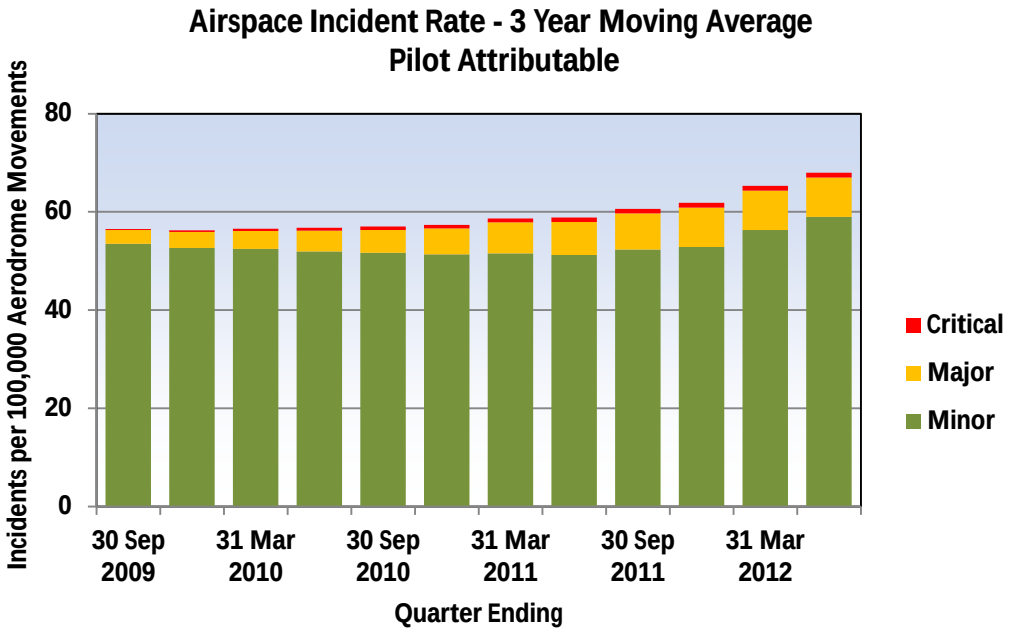




Pilot Attributable ASP Incidents

Occurrence Trend

The following graph shows the airspace incident reporting rate for pilot attributable incidents. The values are incidents per 100,000 reported aircraft movements, 12 month moving average for the three-year period ending 30 June 2012.

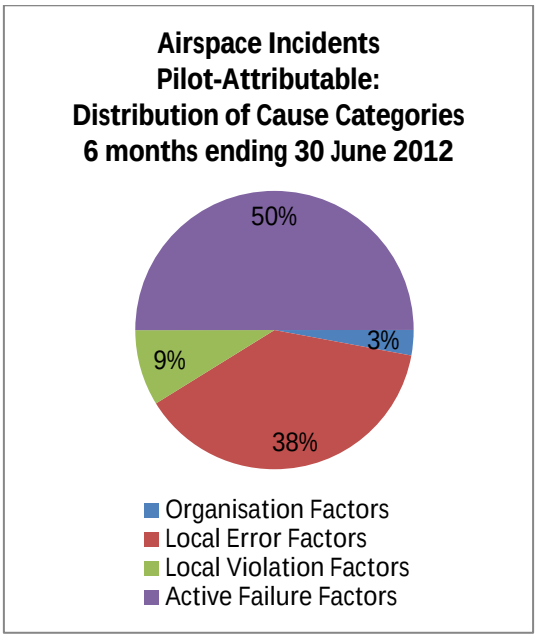


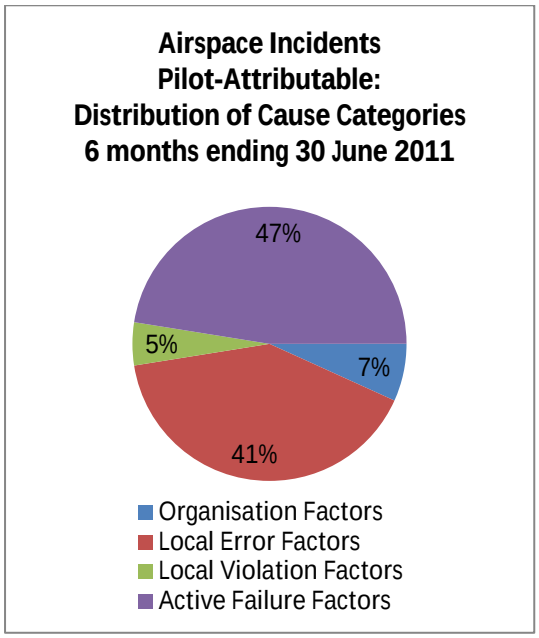
The 3 year moving average of the Pilot attributable reported airspace incident rate shows no significant trend over the three year period.

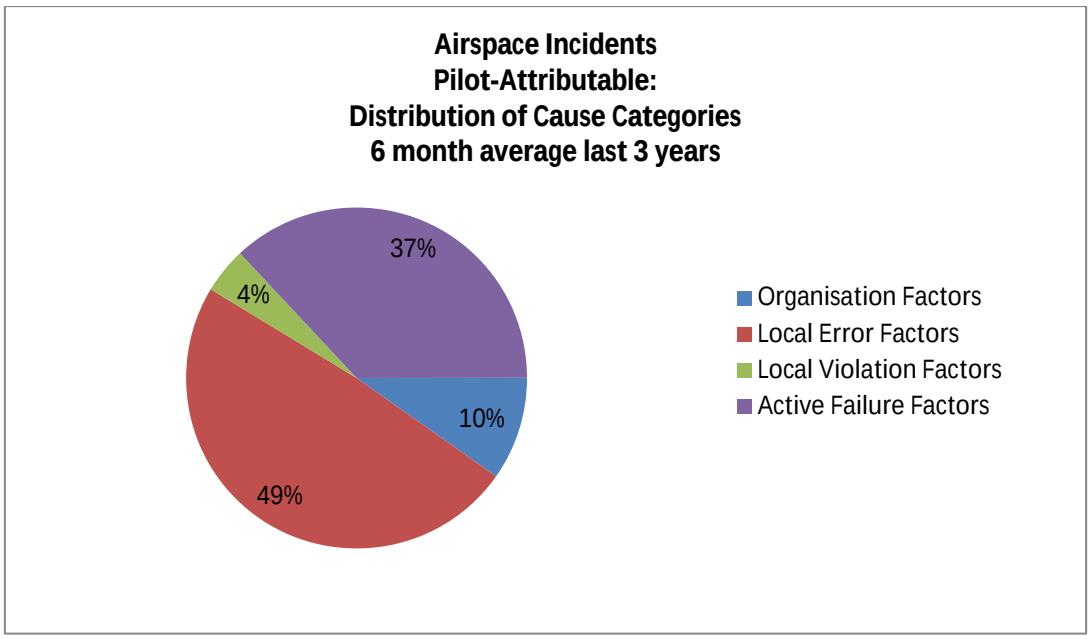
In early 2011 a system of follow-up letters was introduced for operators of aircraft who didn't report Airspace incidents that were reported by the ATS provider. Since the introduction of this system there has been a noticeable increase in the number of Airspace incidents that are reported by both parties.

Causal Factors

The following charts show the distribution of cause categories (groupings of causal factors) recorded for Pilot attributable airspace incidents that occurred during the six month period ending 30 June 2012, the same period for the previous year and the average for the last three years.



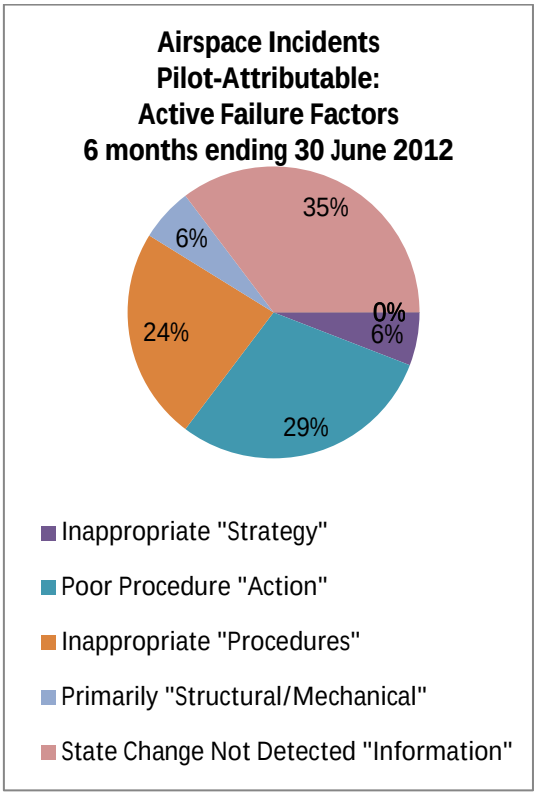


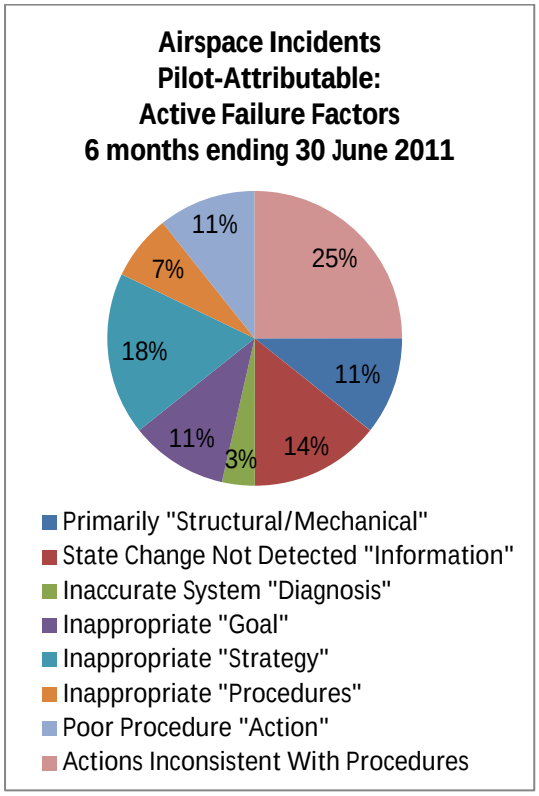


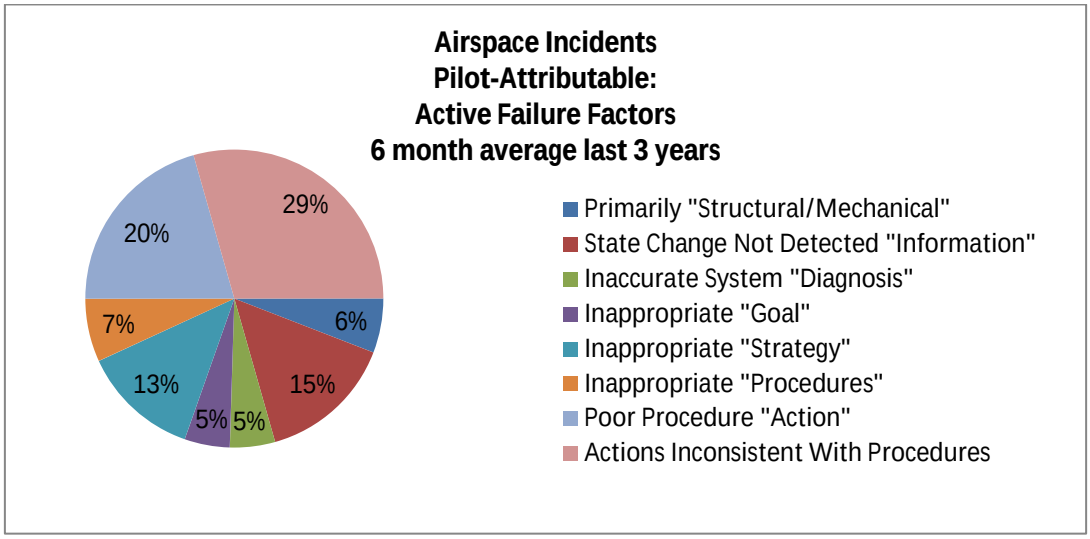
Active Failure Factors

The Active Failure cause category has been further analysed on the grounds that whatever precursor latent failures may exist and be discovered during a subsequent investigation, at least one 'Unsafe Act' (e.g. Omitted checklist item, Exceeded ability etc.) must occur for an incident to result. These unsafe acts are collectively grouped as Active Failure Factors.

The following charts show the distribution of Active Failure causes during the same periods as above.



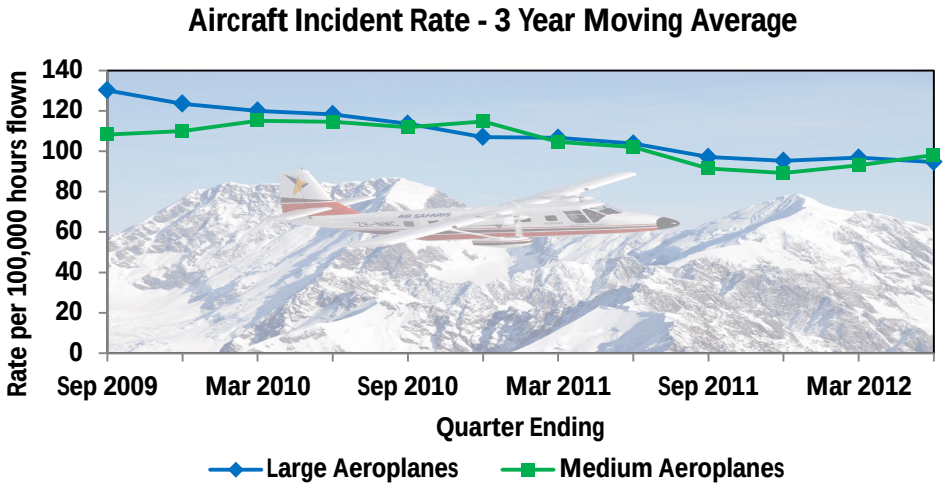


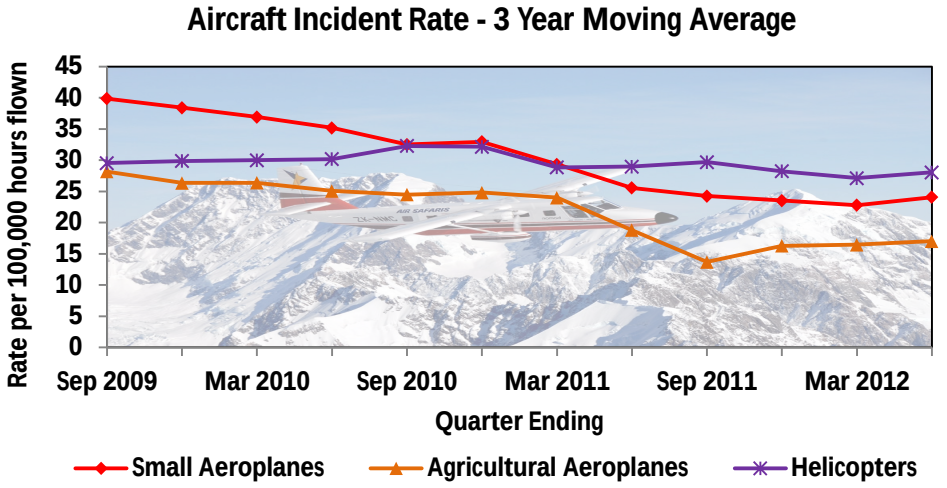


Aircraft Incidents

Occurrence Trend

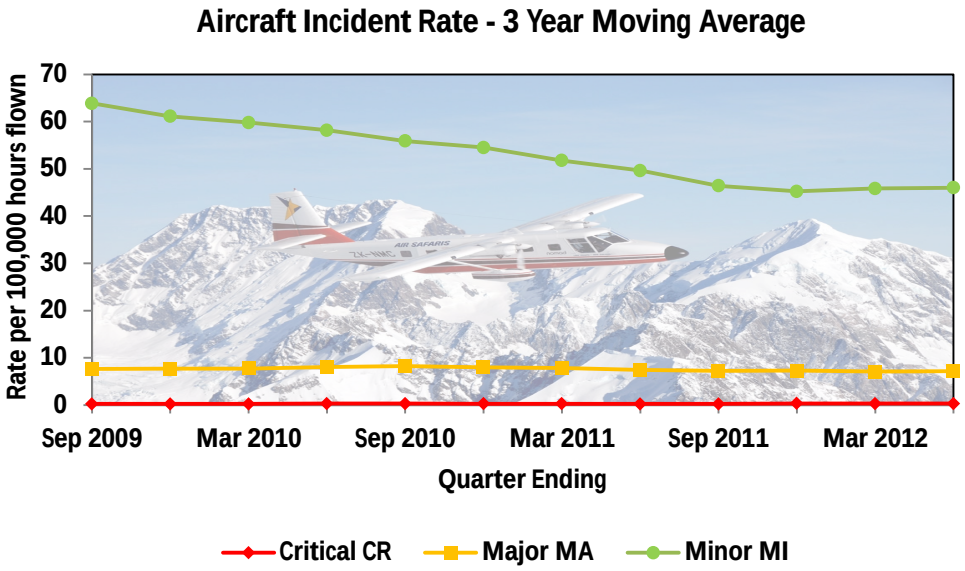
The following graphs show the reported aircraft incident rates (incidents per 100,000 hours flown) three year moving average for the three-year period ending 30 June 2012.





Aircraft Category	Straight Line Trend of 3 Year Moving Average
Large Aeroplanes	Trending Down
Medium Aeroplanes	Trending Down
Small Aeroplanes	Trending Down
Agricultural Aeroplanes	Trending Down
Helicopters	Constant
Sport Aircraft	Trending Down

Breakdown by Severity



Severity	Straight Line Trend of 3 Year Moving Average
Critical	Trending Up
Major	Constant
Minor	Trending Down

Six Monthly Comparisons

Critical Aircraft Incidents

Aircraft Category	1 Jan to 30 Jun 2012	Average Last 3 Years
Large Aeroplanes	0	0.3
Medium Aeroplanes	0	0.3
Small Aeroplanes	0	0.5
Helicopters	0	0.3
Sport Aircraft	0	0.0
Agricultural Aeroplanes	0	0.0
Not Recorded	0	0.0
Total	0	1.5

Major Aircraft Incidents

Aircraft Category	1 Jan to 30 Jun 2012	Average Last 3 Years
Large Aeroplanes	9	10.5
Medium Aeroplanes	2	3.5
Small Aeroplanes	13	10.0
Helicopters	14	7.8
Sport Aircraft	6	4.3
Agricultural Aeroplanes	1	1.5
Not Recorded	8	8.3
Total	53	46.0

Minor Aircraft Incidents

Aircraft Category	1 Jan to 30 Jun 2012	Average Last 3 Years
Large Aeroplanes	128	144.2
Medium Aeroplanes	46	25.3
Small Aeroplanes	48	31.0
Helicopters	10	18.3
Sport Aircraft	11	6.0
Agricultural Aeroplanes	3	1.8
Not Recorded	39	81.3
Total	285	308.0

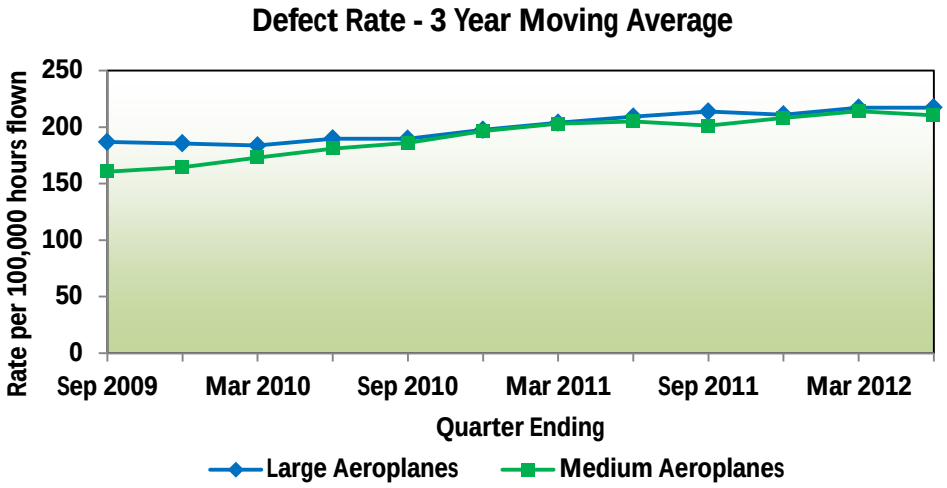
All Aircraft Incidents

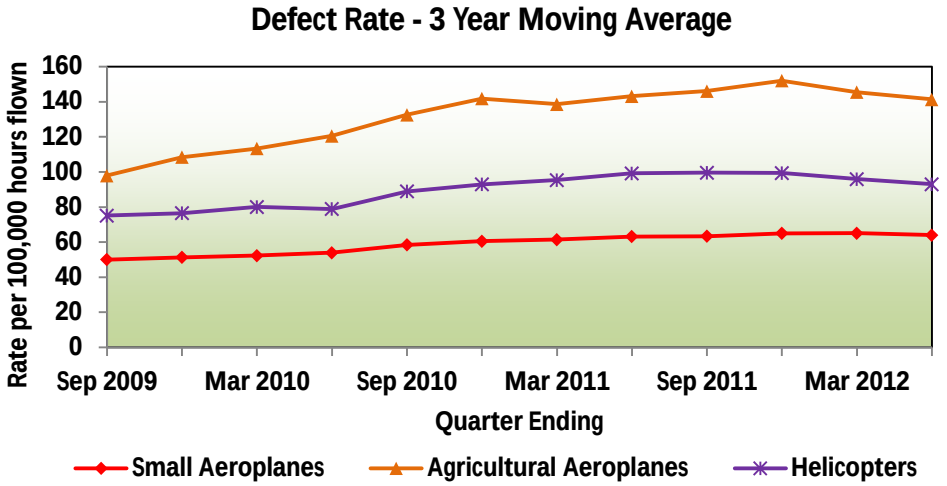
Aircraft Category	1 Jan to 30 Jun 2012	Average Last 3 Years
Large Aeroplanes	137	155.0
Medium Aeroplanes	48	29.2
Small Aeroplanes	61	41.5
Helicopters	24	26.5
Sport Aircraft	17	10.3
Agricultural Aeroplanes	4	3.3
Not Recorded	47	89.7
Total	338	355.5

Defect Incidents

Occurrence Trend

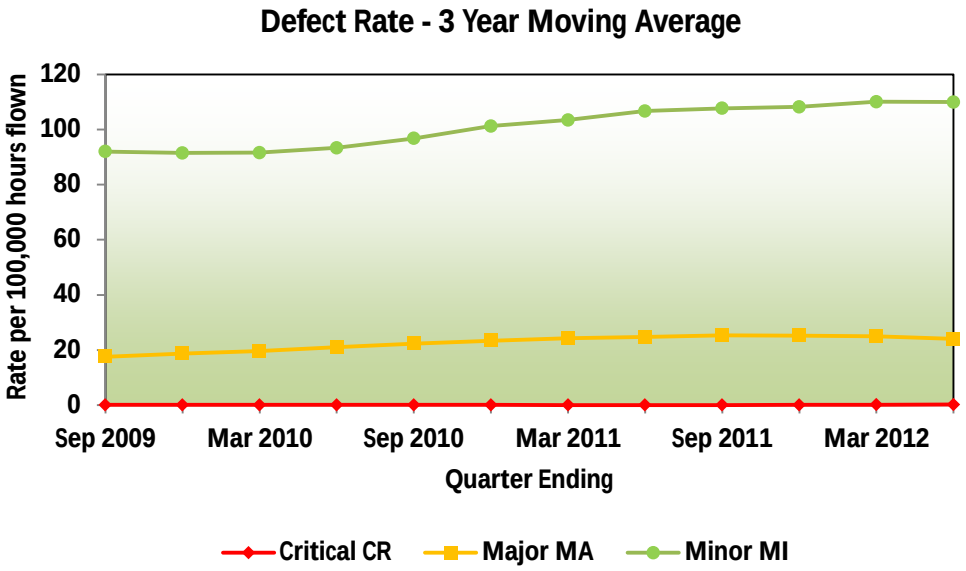
The following graphs show the aircraft defect incident reporting rates (incidents per 100,000 hours flown) three year moving average for the three-year period ending 30 June 2012.





Aircraft Category	Straight Line Trend of 3 Year Moving Average
Large Aeroplanes	Trending Up
Medium Aeroplanes	Trending Up
Small Aeroplanes	Trending Up
Agricultural Aeroplanes	Trending Up
Helicopters	Trending Up

Breakdown by Severity



Severity	Straight Line Trend of 3 Year Moving Average
Critical	Trending Up
Major	Trending Up
Minor	Trending Up

Six Monthly Comparisons

Critical Defect Incidents

Aircraft Category	1 Jan to 30 Jun 2012	Average Last 3 Years
Large Aeroplanes	1	0.2
Medium Aeroplanes	0	0.3
Small Aeroplanes	1	0.2
Helicopters	0	0.2
Sport Aircraft	0	0.0
Agricultural Aeroplanes	1	0.2
Not Recorded	0	0.0
Total	3	1.0

Major Defect Incidents

Aircraft Category	1 Jan to 30 Jun 2012	Average Last 3 Years
Large Aeroplanes	49	49.0
Medium Aeroplanes	11	11.0
Small Aeroplanes	31	30.3
Helicopters	21	16.5
Sport Aircraft	14	7.3
Agricultural Aeroplanes	12	8.3
Not Recorded	5	3.5
Total	143	126.0

Minor Defect Incidents

Aircraft Category	1 Jan to 30 Jun 2012	Average Last 3 Years
Large Aeroplanes	340	306.5
Medium Aeroplanes	50	51.2
Small Aeroplanes	61	79.8
Helicopters	48	71.2
Sport Aircraft	11	9.7
Agricultural Aeroplanes	10	19.2
Not Recorded	14	22.0
Total	534	559.5

All Defect Incidents

Aircraft Category	1 Jan to 30 Jun 2012	Average Last 3 Years
Large Aeroplanes	390	355.7
Medium Aeroplanes	61	62.5
Small Aeroplanes	93	110.3
Helicopters	69	87.8
Sport Aircraft	25	17.0
Agricultural Aeroplanes	23	27.7
Not Recorded	19	25.5
Total	680	686.5

ATA Chapters

Defect Incidents reported as occurring during the six month period ending 30 June 2012 were associated with the following ATA component code chapters.

Large Aeroplanes

Chapter 21 (AIR CONDITIONING - GENERAL) was the most common with 47 defects, up from 35 in the previous period.

The next most common chapter was Chapter 24 (ELECTRICAL POWER - GENERAL) with 34 defects, up from 25 in the previous period.

Medium Aeroplanes

Chapter 27 (AEROPLANE FLIGHT CONTROL - GENERAL) was the most common with 13 defects, up from 2 in the previous period.

The next most common chapter was Chapter 34 (FLIGHT NAVIGATION SYSTEMS - GENERAL) with 8 defects, down from 11 in the previous period.

Small Aeroplanes

Chapter 32 (LANDING GEAR (LG) - GENERAL) was the most common with 13 defects, up from 10 in the previous period.

The next most common chapter was Chapter 85 (ENGINE (RECIPROCATING) - GENERAL) with 12 defects, up from 5 in the previous period.

Agricultural Aeroplanes

Chapter 32 (LANDING GEAR (LG) - GENERAL) was the most common with 5 defects, the same as in the previous period.

The next most common chapter was Chapter 25 (AIRCRAFT FURNISHING - GENERAL) with 4 defects, up from 3 in the previous period.

Helicopters

Chapter 63 (MAIN ROTOR DRIVE - GENERAL) was the most common with 10 defects, up from 5 in the previous period.

The next most common chapters were Chapter 72 (ENGINE(TURBINE/TURBOPROP) - GENERAL) and Chapter 25 (AIRCRAFT FURNISHING - GENERAL) with 7 defects each, down from 10 and 9 respectively in the previous period.

Defect Incident Rates

Summary of Defect Rate Standard

Three levels have been defined for categorising quarterly defect rates. The current levels are:

Normal – less than 4.25 defect incidents per 1,000 hours flown.

Alert – between 4.25 and 6 defect incidents per 1,000 hours flown.

High – above 6 defect incidents per 1,000 hours flown.

The current levels were set in July 2002. They are based on data from the three years to 30 June 2002, excluding B747-200 aircraft since that type was removed from service during the quarter 1 July to 30 September 1999.

CAA Actions

The following table shows how the current values of defect rates will be used to determine CAA action.

Defect Rate	CAA Action
Normal	Monitor
Alert	Notify appropriate General Manager
High	Notify appropriate General Manager

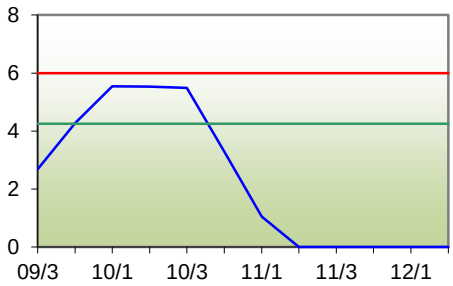
The timing of defect reports is often considerably later than what is mandated by Rule Part 12 and likewise a small number of operators of large and medium aeroplanes are persistently late with their hours and flights data returns. As a result the following defect rate graphs do not yet extend past the end of 2011 for want of sufficient data from a few operators.

Analysis

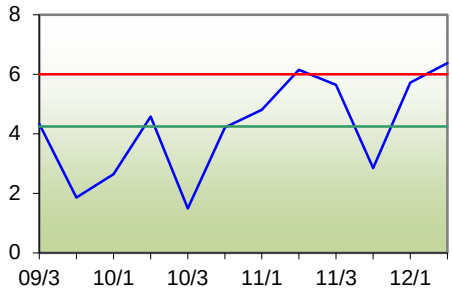
The top line on each graph shows the High defect rate. The next line shows the Alert defect rate. The Manager Airline Maintenance is notified of all high and alert rates on a quarterly basis.

Large Aeroplanes

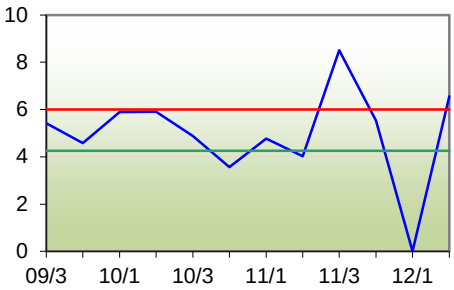
B737-200 Defects per 1000 Hours



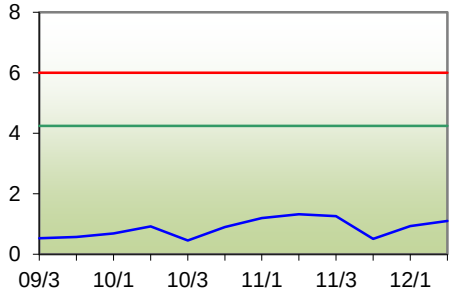
B737-300 Defects per 1000 Hours



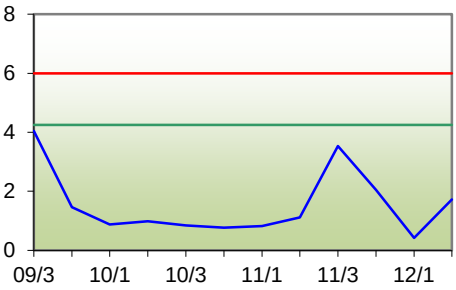
B737-400 Defects per 1000 Hours



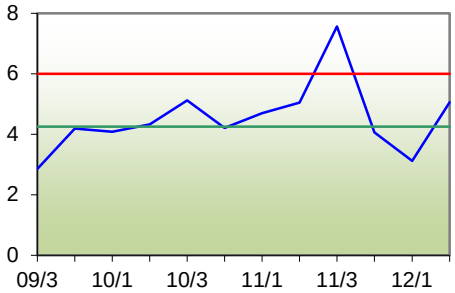
B737-800 Defects per 1000 Hours



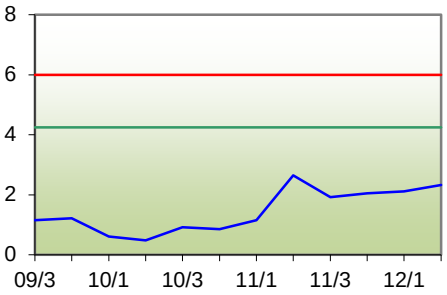
B747-400 Defects per 1000 Hours



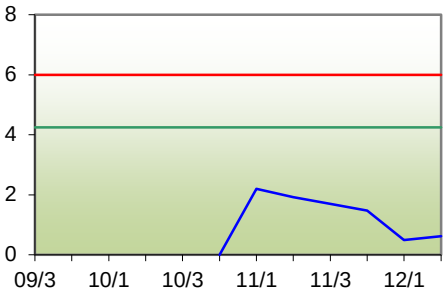
B767 Defects per 1000 Hours



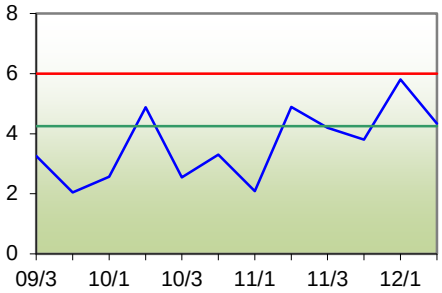
B777-200 Defects per 1000 hours



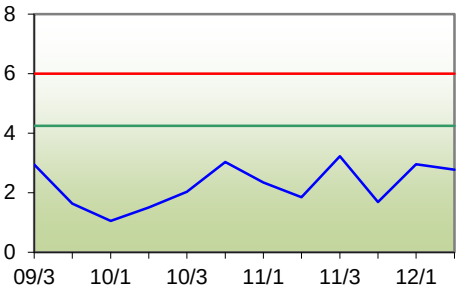
B777-300 Defects per 1000 hours



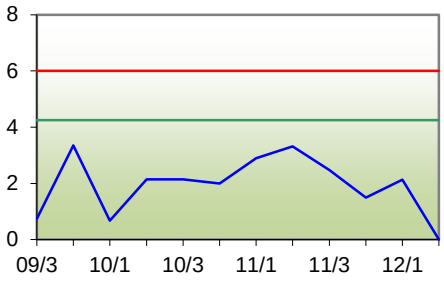
A320 Defects per 1000 Hours



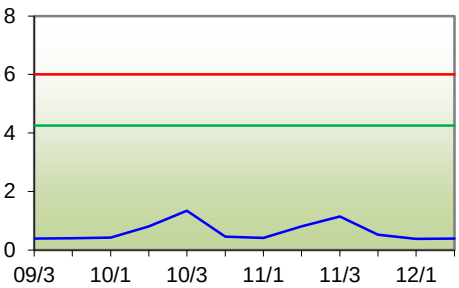
ATR 72 Defects per 1000 Hours



Convair 580 Defects per 1000 hours

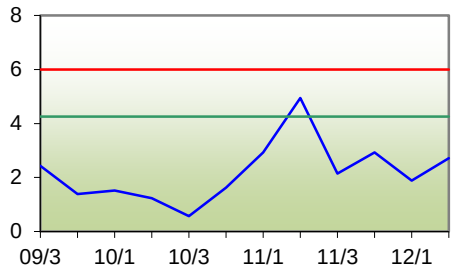


DHC-8 Defects per 1000 Hours

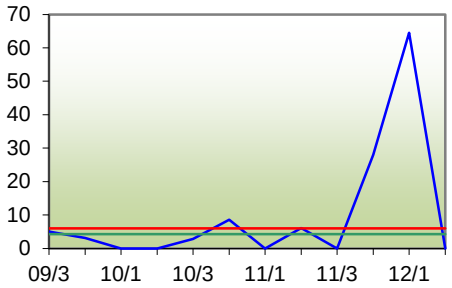


Medium Aeroplanes

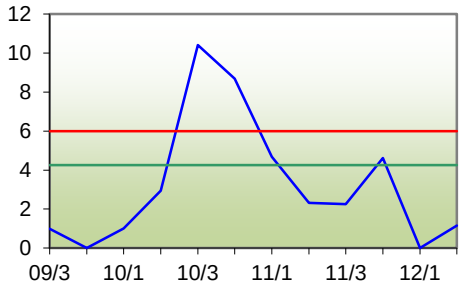
1900D Defects per 1000 Hours



J31, J32 Defects per 1000 Hours



SA227 Defects per 1000 Hours



Bird Incident Rates

12-Month Moving Average Strike Rate

Bird occurrence reporting rates are measured quarterly by aerodrome. This is achieved by querying the database for the number of strikes reported at aerodromes by quarter. The results of this query are then divided by the aircraft movements at each aerodrome and multiplied by 10,000 to give strikes per 10,000 aircraft movements. Aircraft movements at aerodromes are obtained from the ACNZ, and, where available, from individual airport companies.

The following table shows the 12-month moving average strike rates for identified aerodromes for each quarter of the three year period ending 30 September 2012.

	Quarter											
Aerodrome	**09/4**	**10/1**	**10/2**	**10/3**	**10/4**	**11/1**	**11/2**	**11/3**	**11/4**	**12/1**	**12/2**	**12/3**
Auckland	2.3	2.4	3.0	3.1	2.9	2.9	2.4	2.6	3.1	3.2	3.1	2.8
Chatham Islands	10.0	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Christchurch	2.1	1.9	2.0	2.8	2.7	3.0	3.1	2.8	3.0	3.0	3.6	3.5
Dunedin	4.5	4.5	4.3	5.5	4.1	4.8	4.8	4.9	5.8	5.1	5.3	4.0
Gisborne	5.4	4.7	3.0	3.1	4.1	4.2	5.8	5.3	5.3	6.7	7.0	7.4
Hamilton	1.6	1.8	1.9	2.6	2.6	1.9	1.9	1.5	1.4	1.3	1.2	1.1
Hokitika	3.5	3.6	3.7	3.8	7.5	3.7	3.7	3.6	0.0	3.6	3.6	3.6
Invercargill	5.0	7.0	6.9	7.8	6.8	5.5	5.8	6.6	6.2	5.2	3.8	1.9
Kerikeri	10.0	8.8	8.8	6.3	6.3	11.3	8.8	10.0	12.5	8.8	7.5	8.8
Manapouri	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Napier	6.6	8.2	12.9	12.0	10.7	11.4	6.9	5.8	9.1	7.5	9.3	11.9
Nelson	1.7	1.4	1.6	2.0	2.3	2.2	2.0	2.3	2.6	2.4	2.2	2.7
New Plymouth	4.6	4.5	4.4	5.2	5.7	5.3	5.8	4.7	3.7	4.4	3.5	3.6
Ohakea	1.5	1.9	2.5	2.6	2.7	1.9	2.5	2.9	3.1	3.3	2.9	2.5
Palmerston North	6.0	5.5	4.3	4.6	4.3	3.8	3.9	2.8	2.1	1.9	2.8	3.6
Paraparaumu	0.8	0.8	0.8	0.8	0.4	0.4	0.4	0.4	0.0	1.1	1.3	1.2
Queenstown	2.8	1.8	1.6	1.8	1.4	1.9	1.9	1.0	2.2	2.1	3.6	4.8
Rotorua	6.3	6.8	6.0	6.7	6.0	4.4	3.6	2.6	3.1	4.0	2.6	2.7
Taupo	2.9	2.0	2.4	2.1	2.8	5.6	5.9	5.7	4.5	2.7	2.3	2.3
Tauranga	1.0	0.7	0.9	1.4	2.0	2.6	2.6	2.2	1.2	1.4	1.9	2.2
Timaru	7.5	6.3	3.8	1.3	2.5	5.0	10.0	10.0	8.8	6.3	2.5	2.5
Wanganui	1.1	0.6	1.2	1.7	1.7	3.4	3.6	2.9	3.9	2.6	2.0	2.4
Wellington	1.4	1.3	1.6	1.8	1.7	1.7	1.5	1.2	1.9	2.2	2.6	3.1
Westport	24.4	23.9	24.6	19.6	19.5	10.0	4.8	4.8	4.8	14.5	14.5	14.5
Whangarei	7.5	6.0	6.8	5.3	5.3	6.8	7.5	7.5	8.3	8.3	6.8	5.3
Whenuapai	10.6	9.9	12.5	12.6	13.2	12.0	10.0	11.2	10.9	13.5	14.2	13.5
Woodbourne	2.9	5.4	5.2	5.7	5.7	4.8	4.2	4.6	4.6	3.8	4.3	4.4
Overall	3.0	2.9	3.2	3.6	3.5	3.6	3.4	3.2	3.3	3.3	3.4	3.4

Data with a pink background is based on CAA estimates of aircraft movements for the aerodrome because the CAA has either no data or incomplete data for that aerodrome.

Analysis

Each aerodrome is assigned a risk category based on the most recent 12 month average bird strike rate per 10,000 aircraft movements. These categories are:

Low	where the rate is less than 5 strikes per 10,000 movements
Medium	where the rate is not less than 5 strikes per 10,000 movements but less than 10 strikes per 10,000 movements
High	where the rate is not less than 10 strikes per 10,000 movements.

Each aerodrome is also assigned a trend category based on a straight line approximation to the 3 year history of bird strike rates. These categories are:

Trending down	where the 3 year decrease exceeds 20% of the average
Constant	where the 3 year change is between + and – 20% of the average
Trending up	where the 3 year increase exceeds 20% of the average

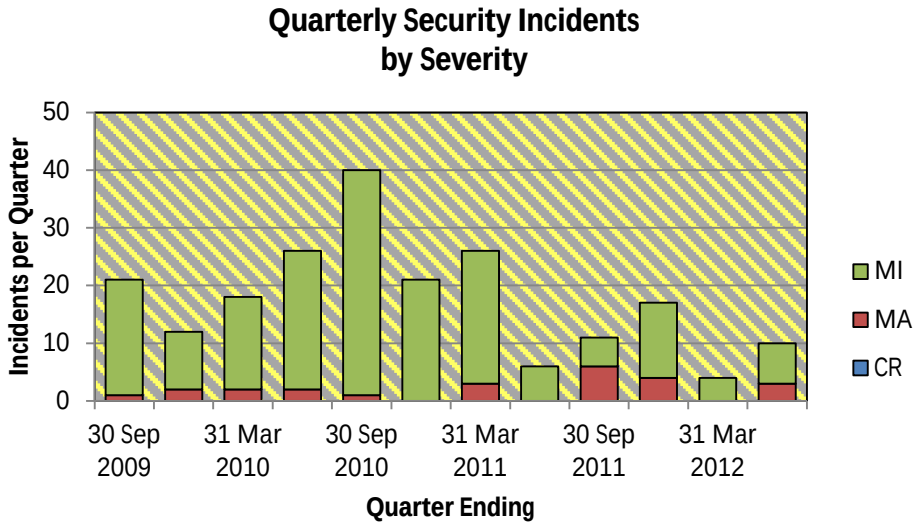
The CAA then determines what if any actions are required based on the combination of the above categories

Details as at 30 September 2012 for individual aerodromes are shown in the following table.

Aerodrome	Incident Rate	Trend
Auckland	Low	Constant
Chatham Islands	Low	Downward
Christchurch	Low	Upward
Dunedin	Low	Constant
Gisborne	Medium	Upward
Hamilton	Low	Downward
Hokitika	Low	Downward
Invercargill	Low	Downward
Kerikeri	Medium	Constant
Manapouri	Low	Constant
Napier	High	Constant
Nelson	Low	Upward
New Plymouth	Low	Downward
Ohakea	Low	Upward
Palmerston North	Low	Downward
Paraparaumu	Low	Upward
Queenstown	Low	Upward
Rotorua	Low	Downward
Taupo	Low	Upward
Tauranga	Low	Upward
Timaru	Low	Constant
Wanganui	Low	Upward
Wellington	Low	Upward
Westport	High	Downward
Whangarei	Medium	Constant
Whenuapai	High	Upward
Woodbourne	Low	Constant
Overall	Low	Constant

Security Incidents

The following chart shows the reported security incidents by quarter over the three year period ending 30 June 2012



Note: none of the incidents reported have been assessed as Critical.

Six Monthly Comparison

The following table shows a breakdown by location (nearest staffed aerodrome) of the security incidents reported as occurring during the six months ending 30 June 2012 and the average for each six month period over the last three years.

Location	1 Jan to 30 Jun 2012	Average Last 3 Years
Auckland	4	14.8
Christchurch	0	3.3
Wellington	6	3.8
Milford Sound	0	0.0
Gisborne	0	0.3
Nelson	0	0.7
Hamilton	0	0.7
Rotorua	0	0.0
Queenstown	0	1.0
Dunedin	0	0.3
Palmerston North	0	0.0
Other	2	1.7
Not Reported	2	8.7
Total	14	35.3

The following table shows a breakdown by Aircraft Statistics Category of the security incidents reported as occurring during the six months ending 30 June 2012 and the average for each six month period over the last three years.

Location	1 Jan to 30 Jun 2012	Average Last 3 Years
Large Aeroplanes	5	4.5
Medium Aeroplanes	1	0.5
Small Aeroplanes	1	0.2
Helicopters	0	0.0
Sport Aircraft	0	0.0
Agricultural Aeroplanes	0	0.0
Parachutes	0	0.0
Hang Gliders	0	0.0
Other	7	30.2
Total	14	35.3

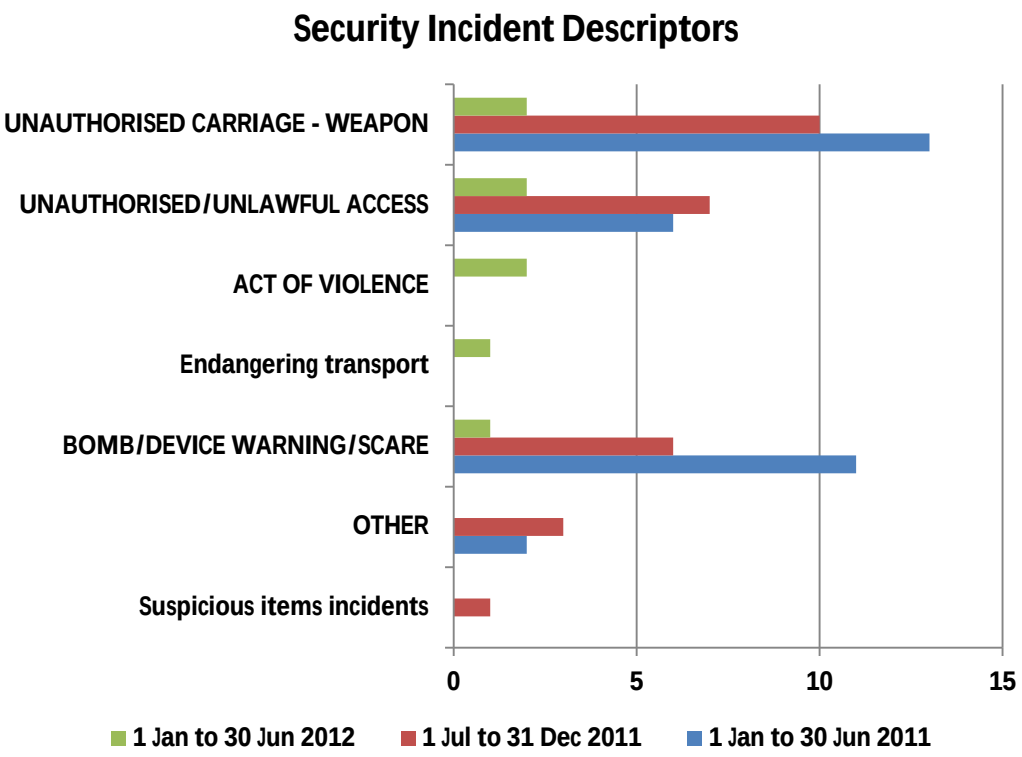
Descriptors and Causal Factors

The most common descriptors (2 each) recorded for Security Incidents during the period 1 January to 30 June 2012 were 'Unauthorised Carriage - Weapon', 'Act Of Violence' And 'Unauthorised/Unlawful Access'

No causal factors have been recorded for security incidents that occurred during the period 1 January to 30 June 2012.

Descriptors

The following chart shows the numbers of each occurrence descriptor that has been recorded for security incidents reported as occurring during the period 1 January to 30 June 2012 and the two previous six-month periods.



Aerodrome Incidents

Runway Incursions

Runway incursion rates are calculated by dividing the total number of reported Aerodrome Incidents that have any of the five runway incursion descriptors by the total number of reported movements for the same aerodrome over the same period. The result is tabulated and graphed as runway incursions per 100,000 movements.

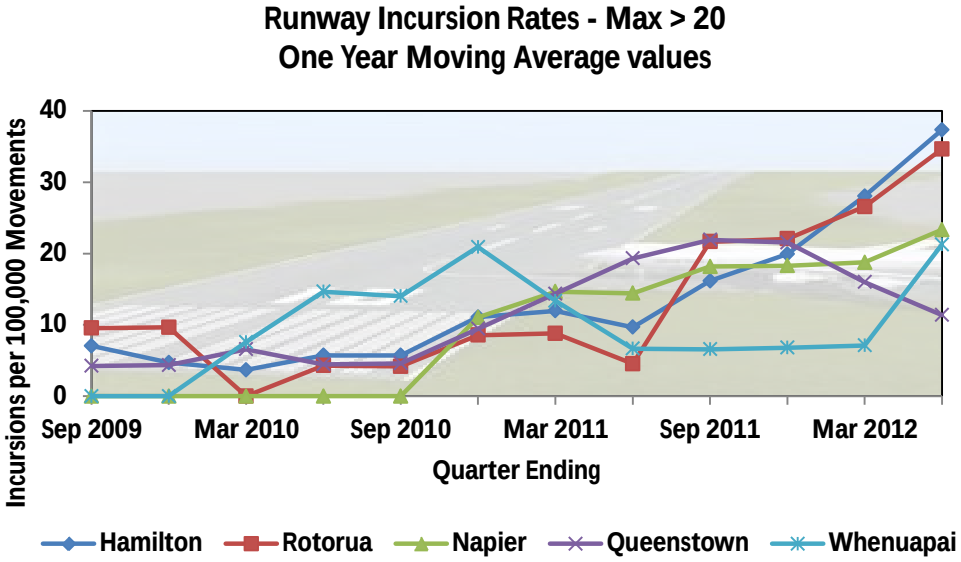
Usable data is available only from the 4th quarter of 2008 so the current report is limited to displaying quarterly values. When enough data has been collected this table will be modified to show three year moving average values. When movement data becomes available from additional certificated aerodromes they will also be included.

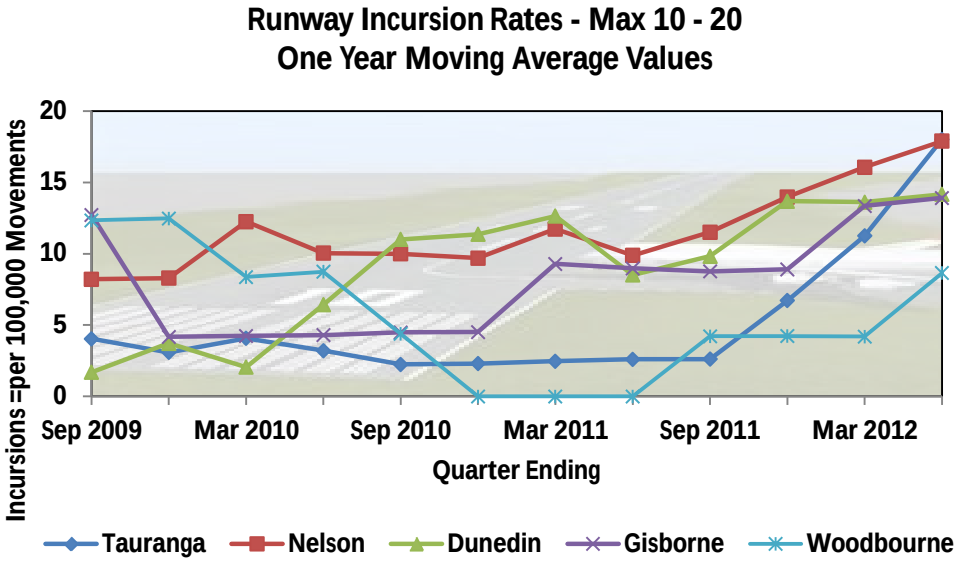
Clearly the number of runway incursions is low with many certificated aerodromes having no such incidents reported at all. With such low numbers caution needs to be exercised in drawing statistical conclusions..

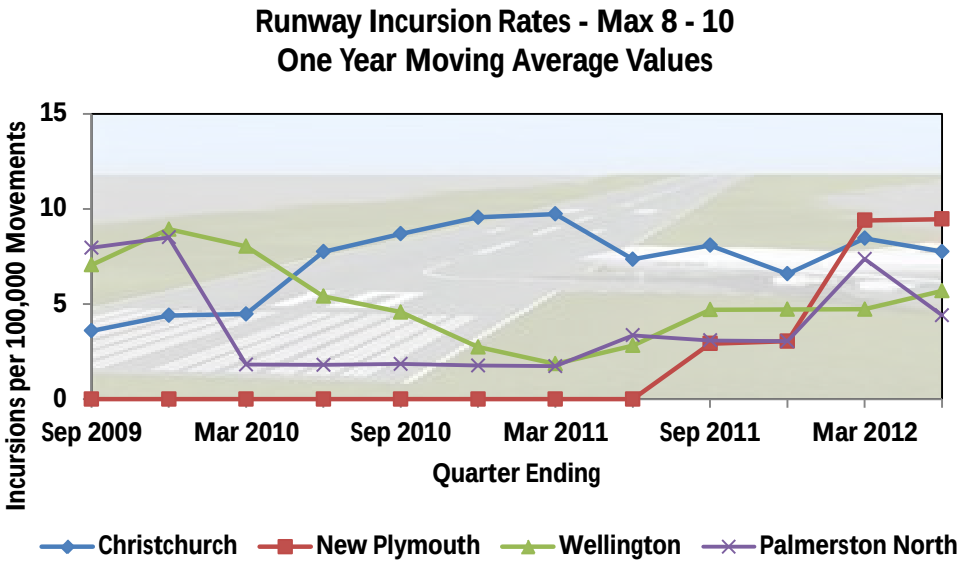
The following table shows 12 month moving average values of reported quarterly runway incursion rates for all certificated aerodromes for which adequate movement data is available.

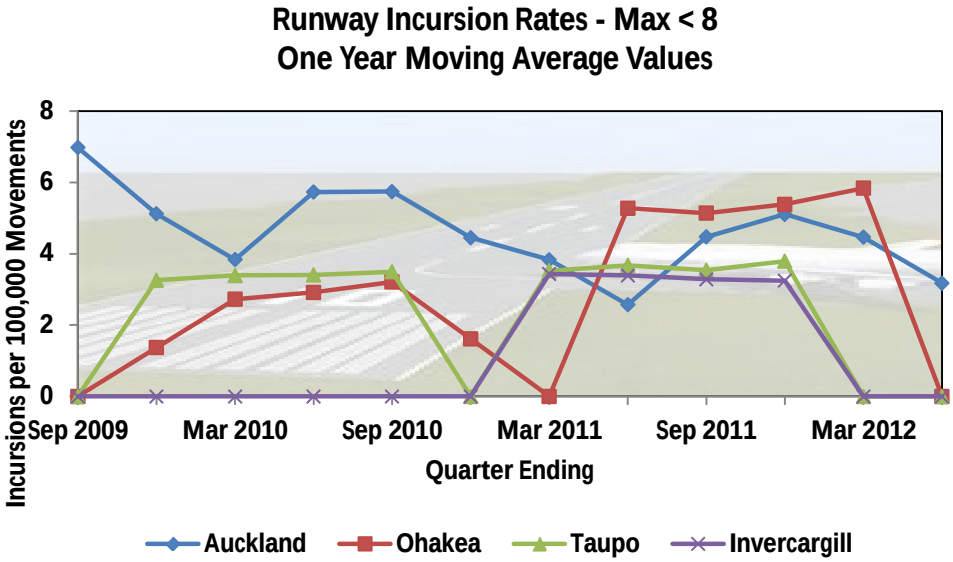
Aerodrome	09/3	09/4	10/1	10/2	10/3	10/4	11/1	11/2	11/3	11/4	12/1	12/2
Auckland	7.0	5.1	3.8	5.7	5.7	4.5	3.8	2.6	4.5	5.1	4.5	3.2
Taupo	0.0	3.3	3.4	3.4	3.5	0.0	3.5	3.7	3.5	3.8	0.0	0.0
Christchurch	3.6	4.4	4.5	7.8	8.7	9.6	9.7	7.4	8.1	6.6	8.5	7.8
Dunedin	1.7	3.7	2.1	6.4	11.0	11.4	12.6	8.5	9.8	13.7	13.6	14.2
Gisborne	12.7	4.2	4.2	4.3	4.5	4.5	9.3	9.0	8.8	8.9	13.3	13.9
Hamilton	7.1	4.7	3.7	5.7	5.7	11.1	12.0	9.7	16.1	19.9	28.0	37.3
New Plymouth	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.9	3.0	9.4	9.5
Napier	0.0	0.0	0.0	0.0	0.0	11.0	14.7	14.4	18.2	18.3	18.8	23.3
Nelson	8.2	8.3	12.3	10.0	10.0	9.7	11.7	9.9	11.5	14.0	16.1	17.9
Invercargill	0.0	0.0	0.0	0.0	0.0	0.0	3.4	3.4	3.3	3.2	0.0	0.0
Ohakea	0.0	1.4	2.7	2.9	3.2	1.6	0.0	5.3	5.1	5.4	5.8	0.0
Palmerston North	8.0	8.5	1.8	1.8	1.9	1.8	1.7	3.4	3.1	3.0	7.4	4.4
Queenstown	4.2	4.4	6.6	4.5	4.6	9.4	14.4	19.3	21.9	21.5	16.0	11.4
Rotorua	9.5	9.6	0.0	4.3	4.2	8.6	8.8	4.5	21.6	22.0	26.6	34.6
Tauranga	4.0	3.1	4.1	3.2	2.3	2.3	2.5	2.6	2.6	6.7	11.2	18.0
Woodbourne	12.3	12.5	8.4	8.7	4.4	0.0	0.0	0.0	4.2	4.2	4.2	8.6
Wellington	7.1	8.9	8.0	5.4	4.6	2.7	1.9	2.8	4.7	4.7	4.7	5.7
Whenuapai	0.0	0.0	7.6	14.7	14.0	20.9	13.4	6.7	6.6	6.8	7.1	21.3
Overall	**5.9**	**5.9**	**5.5**	**6.0**	**6.3**	**6.9**	**7.3**	**6.6**	**8.4**	**9.2**	**11.3**	**13.9**

By way of comparison, National Transportation Safety Board data puts the runway incursion rate in the United States at about 6 runway incursions per 100,000 tower operations during the 4 calendar years 2005 – 2008 with an improving outlook for 2009.






Runway Incursion Rates - Max 8 - 10
One Year Moving Average Values
Incursions per 100,000 Movements
15
10
5
0
Sep 2009
Mar 2010
Sep 2010
Mar 2011
Sep 2011
Mar 2012
Quarter Ending
Christchurch
New Plymouth
Wellington
Palmerston North


Runway Incursion Rates - Max < 8
One Year Moving Average Values
Incursions per 100,000 Movements
8
6
4
2
0
Sep 2009
Mar 2010
Sep 2010
Mar 2011
Sep 2011
Mar 2012
Quarter Ending
Auckland
Ohakea
Taupo
Invercargill

Occurrences — General

The following table shows the number of occurrences (excluding Non-Reportable Occurrences) that were registered on the CAA database during each of the six months of the reporting period.

Month	ACC	ADI	ARC	ASP	BRD	DEF	DGD	HGA	INC	NIO	PAA	PIO	SEC
Jan - 2012	6	19	111	129	103	128	3	0	62	6	1	1	2
Feb - 2012	6	15	71	92	112	128	7	2	56	1	0	4	6
Mar - 2012	2	27	65	134	115	120	6	2	65	3	2	1	1
Apr - 2012	13	20	68	114	135	96	0	0	42	0	1	0	2
May - 2012	3	12	68	89	103	122	3	0	62	3	2	0	2
Jun - 2012	3	16	55	86	92	65	3	1	54	3	1	1	3
Total	**33**	**109**	**438**	**644**	**660**	**659**	**22**	**5**	**341**	**16**	**7**	**7**	**16**

ACC	Accident	**DGD**	Dangerous Goods Incident
ADI	Aerodrome Incident	**HGA**	Hang Glider Accident
ARC	Aviation Related Concern	**INC**	Aircraft Incident
ASP	Airspace Incident	**NIO**	Facility Malfunction Incident
BRD	Bird Incident	**PAA**	Parachute Accident
CSI	Cargo Security Incident	**PIO**	Promulgated Information Incident
DEF	Defect Incident	**SEC**	Security Incident

Causal Factor Analysis

Introduction

The following section presents an analysis of occurrence causes recorded during the period 1 January to 30 June 2012 as determined by safety investigations.

The causal factor analysis is grouped into three parts, each dealing with a unique sector of the aviation industry:

- Aircraft Flight Operations (Aircraft Operator Organisations and Flight Crew);
- Aircraft Maintenance Operations (Aircraft Maintenance/Design Organisations and Maintenance Engineers);
- Air Traffic Services and Personnel (Air Traffic Service Organisations and Air Traffic Service personnel).

The first two sections are further sub-grouped by Aircraft Category, namely:

- Large Aeroplanes;
- Medium Aeroplanes;
- Other Aeroplanes, Helicopters and Sport; and
- "Unknown".

A discussion of the Reason Model – Latent Failure Model used by the CAA for causal factor identification is provided in the appendix.

Please note that the following abbreviations apply:

ACC	Accident	**DGD**	Dangerous Goods Incident
ADI	Aerodrome Incident	**HGA**	Hang Glider Accident
ARC	Aviation Related Concern	**INC**	Aircraft Incident
ASP	Airspace Incident	**NIO**	Facility Malfunction Incident
BRD	Bird Incident	**PAA**	Parachute Accident
CSI	Cargo Security Incident	**PIO**	Promulgated Information Incident
DEF	Defect Incident	**SEC**	Security Incident

Aircraft Flight Operations

The following section summarises causal factors identified from investigation of occurrences and which have been attributed to aircraft flight operations (either the aircraft operator, organisation or flight crew). The number of times particular causal factors have been identified is reported by occurrence type.

Large Aeroplanes

Category	Cause	ASP	DEF
Active failure	Actions inconsistent with procedures	1	
	Poor procedure "action"	1	
	Primarily "structural/mechanical"		5
Organisation	Inadequate procedures	7	
Task/environment error	Inadequate checking		1

Medium Aeroplanes

Category	Cause	ADI	DEF	INC
Active Failure	Actions inconsistent with procedures	1		1
	Primarily "structural/mechanical"		1	
Task/Environment Error	Inadequate checking		1	
	Time shortage			1

Unknown Aircraft Category

Category	Cause	ARC
Organisation	Inadequate procedures	1
Task/Environment Error	Risk misperception	1

Other Aeroplanes, Helicopters and Sport Aircraft

Category	Cause	ACC	ADI	ARC	ASP	DEF	INC
Active Failure	Actions inconsistent with procedures	1			5		3
	Inaccurate system "diagnosis"	1			2		1
	Inappropriate "goal"	1			1		1
	Inappropriate "procedures"			1			
	Inappropriate "strategy"	1					2
	Poor procedure "action"	4	1		2		
	Primarily "structural/mechanical"	2				24	
	State change not detected "information"	4			2	1	
Organisation	Design deficiencies						1
	Inadequate communications	1					
	Inadequate control and monitoring						1
	Inadequate planning				2		
	Inadequate procedures	1					
Task/Environment Error	Hostile environment	1					
	Inadequate checking	3	1		3		5
	Inexperience (not lack of training)	3			2		2
	Information overload	1	1		2		
	Interpretation difficulties	1	1				
	Lack of knowledge	1			2	2	
	Negative task transfer (habits)	1	1		3		
	Other environmental factor (eg weather)	1					
	Other error enforcing condition	1					
	Poor instructions/procedures	1		1			
	Risk misperception				1		2
	Task unfamiliarity	1					2
	Time shortage				1		
	Visual illusion	1					
Task/Environment Violation	Hazard misperception				1		
	Lack of safety culture				1		
	Other violation enforcing condition	1					
	Perceived license to bend rules	1			1		1

Aircraft Maintenance Operations

The following section summarises causal factors identified from investigation of occurrences and which have been attributed to aircraft maintenance operations (the aircraft operator, aircraft maintenance organisation or maintenance engineer). The number of times particular causal factors have been identified is reported by occurrence type.

Large Aeroplanes

Category	Cause	DEF
Active Failure	Actions inconsistent with procedures	2
Organisation	Inadequate control and monitoring	1
	Inadequate defences	1
	Inadequate specifications/requirements	1
	Unsuitable equipment	1
Task/Environment Error	Lack of knowledge	1
	Risk misperception	1

Medium Aeroplanes

Category	Cause	DEF
Active Failure	Actions inconsistent with procedures	1
	Primarily "structural/mechanical"	1
Organisation	Inadequate defences	1
	Inadequate procedures	1
	Inappropriate goals or policies	1
Task/Environment Error	Inadequate checking	2
	Lack of knowledge	1
	Task overload	1

Other Aeroplanes, Helicopters and Sport Aircraft

Category	Cause	ACC	DEF	INC
Organisation	Design deficiencies		4	
	Inadequate control and monitoring	1	2	
	Inadequate defences		1	
	Inadequate procedures		2	
	Inadequate specifications/requirements		3	
	Inappropriate goals or policies		1	
	Poor work environment		2	
	Unsuitable equipment		1	
Task/Environment Error	Inadequate checking		5	
	Lack of knowledge		2	
	Negative task transfer (habits)		1	
	Other error enforcing condition	1		
	Poor human-system interface		1	
	Risk misperception			1
Task/Environment Violation	Lack of safety culture		2	

Unknown Aircraft Category

Category	Cause	ARC
Organisation	Inadequate control and monitoring	1
Task/Environment Error	Negative task transfer (habits)	1
Task/Environment Violation	Perceived license to bend rules	1

Air Traffic Services and Personnel

The following tables summarise causal factors identified from investigation of occurrences and which have been attributed to personnel. The number of times particular causal factors have been identified is reported by occurrence type.

Air Traffic Service Providers

Category	Cause	ASP	INC
Organisation	Inadequate control and monitoring	2	
	Inadequate defences	1	
	Inadequate training	2	
Task/Environment Error	Inadequate checking		1
	Poor instructions/procedures	1	

Air Traffic Service Personnel

Category	Cause	ADI	ASP	INC
Active Failure	ACTIONS INCONSISTENT WITH PROCEDURES	2	10	1
	INACCURATE SYSTEM "DIAGNOSIS"		7	
	INAPPROPRIATE "GOAL"	1	1	1
	INAPPROPRIATE "STRATEGY"		4	
	POOR PROCEDURE "ACTION"	1	1	
	STATE CHANGE NOT DETECTED "INFORMATION"	1		
Task/Environment Error	INADEQUATE CHECKING		9	1
	INEXPERIENCE (NOT LACK OF TRAINING)		4	
	LACK OF KNOWLEDGE		2	
	RISK MISPERCEPTION		3	
	TASK OVERLOAD		1	
Task/Environment Violation	PERCEIVED LICENSE TO BEND RULES		2	

Client Risk Assessment

Introduction

The CAA's client risk assessment system came into operation in February 2007.

The system measures a series of factors, rated using a scale of 1 to 5 where 1 is an exemplary rating. It is a qualitative rating and relates solely to the interaction the CAA staff member is having with the client at that time, or to changes in the organisation recorded in the CAA database.

Risk profiles can be generated at any time, including at the end of every audit.

The combined ratings form a risk assessment used to help decide the depth and frequency of inspection and monitoring for each client.

Results are in the form of a percentage of the maximum possible score (if all factors had been rated 5), and are divided into bands of low, moderate, high and very high:

Low: <=16%

Moderate: 16-26%

High: 26-36%

Very High: >36%

Clients can have several risk profiles current at one time, one for each activity. Each risk profile is independent of the others, and applies only to the relevant activity.

The following table refers to risk profiles current on the dates shown and shows the numbers of certificate holders with risk scores in each band.

Comparison of Client Numbers in Risk Score Bands

(as at 30 June 2012 and over the Preceding Three Years)

	As at 30 June 2012				Average at end of each 6 month period over last 3 years			
Activity	**Very High**	**High**	**Mode rate**	**Low**	**Very High**	**High**	**Mode rate**	**Low**
Australia AOC with ANZA Privileges Part 108 Security Programme	0	0	0	1	0.0	0.0	0.0	1.0
Part 108 Security Programme	0	0	2	10	0.0	0.0	1.5	10.7
Part 109 Regulated Air Cargo Agent	0	1	7	53	0.0	1.5	9.0	42.7
Part 121 Air Operator Large Aeroplanes	0	0	0	9	0.3	0.3	0.2	8.8
Part 125 Air Operator Medium Aeroplanes	0	0	3	10	0.3	0.3	2.5	10.7
Part 129 Foreign Air Transport Operator	0	0	1	24	0.2	0.0	1.3	18.5
Part 135 Air Operator Helicopters and Small Aeroplanes	3	4	32	96	1.8	4.3	43.3	88.2
Part 137 Agricultural Aircraft Operator	0	3	15	65	0.2	2.7	26.8	55.3
Part 139 Aerodrome Operator	0	0	0	13	0.0	0.0	0.0	17.7
Part 140 Aviation Security Service Organisation	0	0	0	1	0.0	0.0	0.0	1.0
Part 141 Aviation Training Organisation	0	0	4	36	0.0	0.8	3.5	34.5
Part 145 Maintenance Organisation	3	0	5	39	1.3	0.0	3.3	39.5
Part 146 Aircraft Design Organisation	0	0	1	11	0.3	0.0	0.8	9.2
Part 148 Aircraft Manufacturing Organisation	0	0	0	15	0.3	0.2	0.7	14.7
Part 149 Aviation Recreation Organisation	0	0	0	4	0.2	0.0	0.5	2.0
Part 171 Telecom Service Organisation	0	0	1	0	0.0	0.0	0.3	1.2
Part 172 Air Traffic Service Organisation	0	0	1	0	0.0	0.0	0.5	0.5
Part 173 Instrument Flight Procedure	0	0	1	2	0.0	0.0	0.3	2.3
Part 174 Meteorological Service Organisation	0	0	1	1	0.0	0.0	0.5	1.3
Part 175 Aeronautical Info Service Organisation	0	0	1	0	0.0	0.0	0.3	0.7
Part 19F Supply Organisation	2	0	2	33	0.5	0.0	3.7	32.2
Part 92 Dangerous Goods Packaging Approval Holder	0	0	0	2	0.0	0.0	0.0	1.0

Appendix — Definitions

General

Accident [ACC] — means 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.

Aerodrome incident [ADI] — means an incident involving an aircraft operation and–

(1) an obstruction either on the aerodrome operational area or protruding into the aerodrome obstacle limitation surfaces; or

(2) a defective visual aid; or

(3) a defective surface of a manoeuvring area; or

(4) any other defective aerodrome facility.

Aircraft incident [INC] — means any incident, not otherwise classified, associated with the operation of an aircraft.

Airspace incident [ASP] — means 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 [BRD] — 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.

Cargo security incident [CSI] — means an incident involving cargo or mail that is carried, or has been accepted by a regulated air cargo agent or an air operator for carriage, by air on an aircraft conducting an international regular air transport operation passenger service, and–

(1) there is evidence of tampering or suspected tampering with the cargo or mail which could be an act or an attempted act of unlawful interference; or

(2) a weapon, explosive, or other dangerous device, article or substance, that may be used to commit an act of unlawful interference is detected in the cargo or mail.

Dangerous goods incident [DGD] — means an incident associated with and related to the carriage of dangerous goods by air after acceptance by the operator, that–

(1) results in injury to a person, property damage, fire, breakage, spillage, leakage of fluid or radiation, or other evidence that the integrity of the packaging has not been maintained; or

(2) involves dangerous goods incorrectly declared, packaged, labelled, marked, or documented.

Defect incident [DEF] — means an incident that involves failure or malfunction of an aircraft or aircraft component, whether found in flight or on the ground.

Facility malfunction incident [NIO] — means an incident that involves an aeronautical facility.

Fatal Injury — means any injury which results in death within 30 days of the accident.

Incident — means any occurrence, other than an accident, that is associated with the operation of an aircraft and affects or could affect the safety of operation. Note: Incident has many sub-categories.

Occurrence — means an accident or incident.

Promulgated information incident [PIO] — means an incident that involves significantly incorrect, inadequate, or misleading information or aeronautical data promulgated in an aeronautical information publication, map, chart, or otherwise provided for the operation of an aircraft.

Security incident [SEC] — means an incident that involves unlawful interference.

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

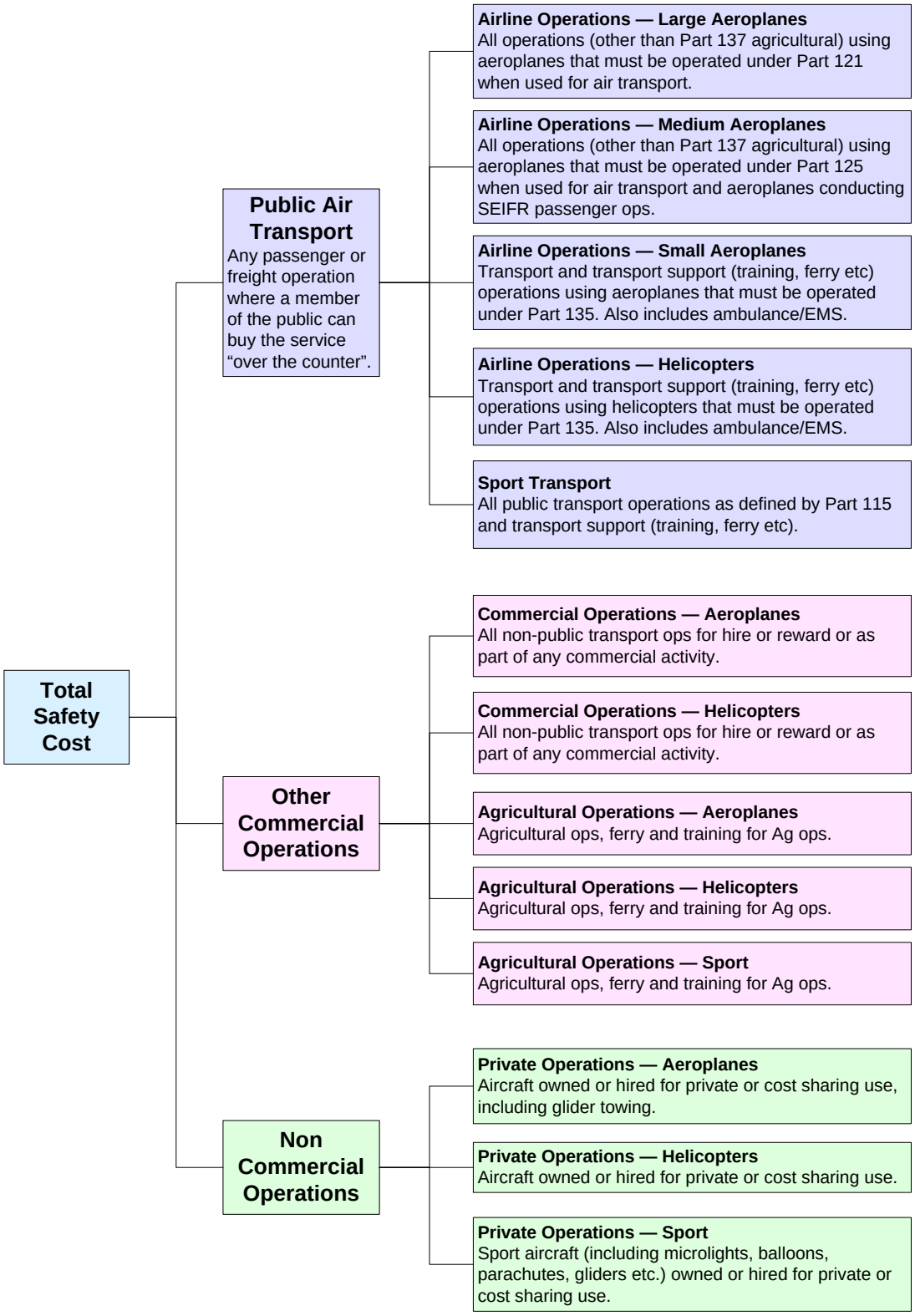
(6) involves verified exposure to infectious substances or injurious radiation.

Severity

The following definitions apply to the severity accorded to occurrences and to findings as the result of investigation of occurrences.

Severity Factor		Definition
CR	Critical	An occurrence or deficiency that caused, or on its own had the potential to cause, loss of life or limb;
MA	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;
MI	Minor	An isolated occurrence or deficiency not indicative of a significant system problem.

Safety Target Groups



Target group name	General description	Includes	Excludes
Airline Operation - Large Aeroplanes	All operations using large passenger and freight aeroplanes that are operated under part 121	Ferry, test, training, passenger and freight, domestic and international, Part 91 operations, and commercial operations other than Part 137 agricultural operations. Includes all aeroplanes that have a passenger seating configuration of 30 seats or more, or a payload capacity of more than 3410kg.	Part 137 agricultural operations
Airline Operation - Medium aeroplanes	All operations using medium passenger and freight aeroplanes that are operated under part 125.	Ferry, test, training, passenger and freight, domestic and international, Part 91 operations, and commercial operations other than Part 137 agricultural operations. Aeroplanes that have a seating configuration of 10 to 30 seats, excluding any required crew member seats, or a payload capacity of 3410 kg or less and a MCTOW of greater than 5700 kg, and any aeroplanes conducting SEIFR passenger operations.	Part 137 agricultural operations
Airline Operation - Small aeroplanes	All operations by 119 certificate holders using other aeroplanes.	Ferry, test, passenger and freight, domestic and international, training in support of Part 135 operations, Ambulance/EMS	Part 137 agricultural operations, Part 91 operations, and commercial operations. SEIFR under Part 125
Airline Operation - Helicopters	All operations by 119 certificate holders using helicopters	Ferry, test, passenger and freight, domestic and international, training in support of Part 135 operations, Ambulance/EMS	Part 137 agricultural operations, Part 91 operations, and commercial operations. SEIFR under Part 125
Commercial Operations - Aeroplane	Other commercial operations Aeroplane (all non-public transport ops for hire or reward or as part of any commercial activity)	Positioning, ferrying flights, training (dual and solo), "Commercial non-certified", Business and Executive	Public transport ops, Agricultural ops & training for Agricultural ops, non-commercial ops
Commercial Operations - Helicopter	Other commercial operations Helicopter (all non-public transport ops for hire or reward or as part of any commercial activity)	Positioning, ferrying flights, training (dual and solo), "Commercial non-certified", Business and Executive	Agricultural ops & training for Agricultural ops, public transport, non-commercial ops.
Agricultural Operations - Aeroplane	Agricultural operations using aeroplanes	Agricultural ops, ferry & training for Ag ops.	Everything else.
Agricultural Operations - Helicopters	Agricultural operations using helicopters	Agricultural ops, ferry & training for Ag ops.	Everything else
Agricultural Operations - Sport Aircraft	Agricultural operations using sport aircraft	Agricultural ops, ferry & training for Ag ops.	Everything else
Private Aeroplane	Private operations in aeroplanes	Cost sharing, aircraft hired from schools and clubs for private or cost sharing use, glider towing	Airline, commercial, agricultural operations, sport aircraft, balloons, training (dual and solo)
Private Helicopter	Private operations in helicopters	Cost sharing, aircraft hired from schools and clubs for private or cost sharing use	Airline, commercial, agricultural operations, sport aircraft, balloons, training, ferry/positioning flights by commercial operators
Sport Transport	All public transport ops by sport aircraft	Ferry, test, passenger and freight, domestic and international, training for such ops. And balloons	Agricultural operations.

Target group name	General description	Includes	Excludes
Sport Private	Private operations using sport aircraft	Cost sharing, aircraft hired from schools and clubs for private or cost sharing use, training, gliders, power gliders, hang gliders, parachutes and all forms of inflatable wing, balloons	Airline, commercial, agricultural operations, and training for these activities

Aircraft Categories

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

Significant Events

The following text is taken from the procedure SI - 0.0 Occurrence Management, 0.08 - Occurrence completion:

To facilitate in deciding whether or not your investigation file should be "tagged" as a "Significant Event" here are some occurrences that substantially meet the criteria.

- Occurrences that are investigated by TAIC unless it is known that the TAIC are using the event for their own training purposes and would not otherwise be investigating.
- Critical air transport occurrences resulting in Near Collision (provided one of the aircraft involved is airborne, nearly airborne, or has just landed). In cases where an aircraft is landing or taking off the event would not be significant unless the aircraft's speed was in excess of 10 kts.
- Critical air transport occurrences resulting in Loss of Control
- Critical air transport occurrences where a Distress or Urgency call was (or should have been) made
- Air transport occurrences where the last in a series of "redundant" systems failed in flight or during take off or landing
- SEIFR air transport occurrences involving loss of engine power to the extent that an unscheduled landing is required
- Fatal accidents
- Occurrences that are relevant to a current (group) of safety concerns. For example in 1999/2000 aircraft electrical wiring was a significant international concern therefore occurrences in the New Zealand fleet of electrical wiring problems may warrant them being tagged as significant.
- Occurrences that are relevant to the current CAA (Business) Safety Plan. For the 1999/2000-year collision with terrain, obstacles, and water; controlled flight into terrain and loss of control in flight were relevant for aircraft with a MCTOW of 5,670 kg and above.
- Engine failure in 2-plus engined air transport aircraft at critical phases of flight or failures of a nature that may have a fleet impact or significantly affect safe operations or are subject to media scrutiny.
- Significant structural or engine failure of a private GA aircraft/helicopter that may have implications for the fleet type, particularly where that type is used for air transport operations.

Serious Events

The following text is taken from the procedure SI - 2.0 Safety Investigation - Appendices, 2.02 Appendix B - Aviation Occurrence Notification Checklist:

“Serious incident” means an incident involving circumstances indicating that an accident nearly occurred. The difference between an accident and serious incident lies only in the result (ICAO Annex 13 definition). The serious incidents listed below are extracted from ICAO Annex 13 attachment D. The list is not exhaustive and only serves as guidance to the definition of serious incident.

(a) Near collisions requiring an avoidance manoeuvre to avoid a collision or an unsafe situation or when an avoidance action would have been appropriate.

(b) Controlled flight into terrain only marginally avoided.

(c) Aborted take-off on a closed or engaged runway.

(d) Take-off from a closed or engaged runway with marginal separation from obstacle(s).

(e) Landings or attempted landings on a closed or engaged runway.

(f) Gross failures to achieve predicated performance during take-off or initial climb.

(g) Fires and smoke in the passenger compartment, in cargo compartments or engine fires, even though such fires were extinguished by the use of extinguishing agents.

(h) Events requiring the emergency use of oxygen by the flight crew.

(i) Aircraft structural failures or engine disintegration’s not classified as an accident.

(j) Multiple malfunctions of one or more aircraft systems seriously affecting the operation of the aircraft.

(k) Flight crew incapacitation in flight.

(l) Fuel quantity requiring the declaration of an emergency by the pilot.

(m) Take-off or landing incidents. Incidents such as undershooting, overrunning or running off the side of runways.

(n) System failures, weather phenomena, operations outside the approved flight envelope or other occurrences, which could have caused difficulties controlling the aircraft.

(o) Failures of more than one system in a redundancy system mandatory for flight guidance and navigation.

Reason Model – Latent Failure Model

CAA identification of occurrence causal factors is based on the Reason Model (latent failure model). Occurrence investigations attempt to assign attributable cause by identifying the generic type of organisation or person involved and the contributing active failures, local

factors, and/or organisation factors. The analysis contained in the Causal Factor Analysis section of this report summarises the results from investigation by reporting the different types of causal factors identified versus occurrence type. It should be noted that occurrence types (e.g. Accident, Defect etc.) are not mutually exclusive (e.g. an accident and a defect may be associated) and hence any causal factor recorded during the investigation will be recorded for all associated occurrence types.

The following two diagrams are designed to show the basic principles of the latent failure model:

Diagram 1

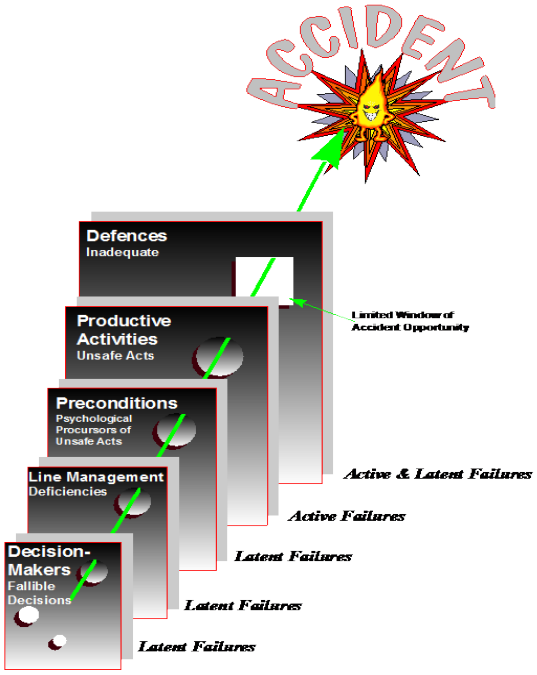


Diagram 1 shows the layers of defences that have been created within the aviation system to prevent accidents and incidents happening. It also shows how these defences have holes in them. When these holes line up there is a window of opportunity for an accident or incident. All that is needed to complete the breach in the defence is an active failure at the operational level. When this happens an accident occurs. When the defences in the system work properly and are only partially breached the end result may be an incident. Incidents are free lessons that should be investigated to show where the holes (latent failures) in the system are. Holes in the system are there all the time and a good pro-active audit program should also help in detecting them.

Diagram 2

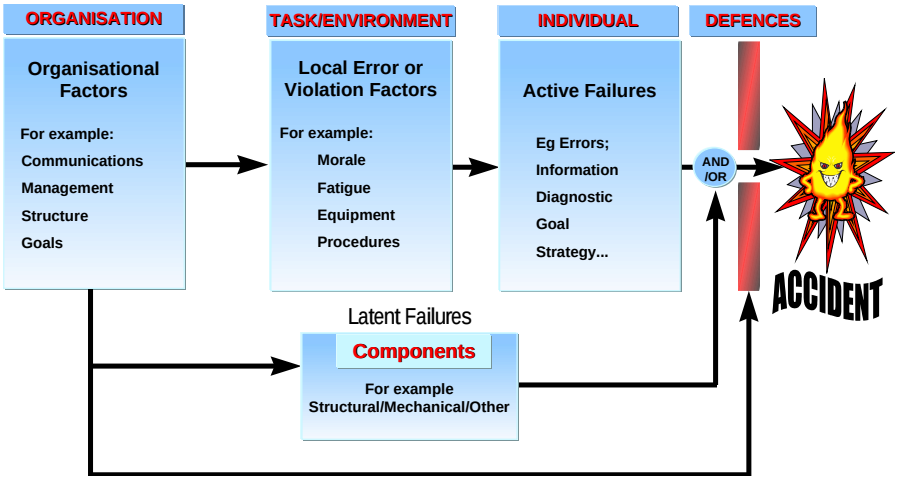


Diagram 2 shows how the latent failures are grouped into 3 areas:

1. The active failures.
2. Task/environment or local factors.
3. Organisational factors.

In basic terms the latent failure model states that an accident is predicated by deficiencies in the management and physical systems responsible for and supporting the particular operation. Management system deficiencies in the responsible organisation(s) can lead to error or violation inducing conditions in the local working environment. The existence of these conditions increases the likelihood of actual errors or violations by personnel which can place an over-reliance on, or expose deficiencies in, final defences.