



Flight Training Safety Report

Autumn/Winter 2019



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

Introduction

This review highlights some key activity and safety statistics on flight training activity over the last 6 months. I am keen that we use this information as a means to analyse activity in the training sector, to identify trends and where necessary to enable proactive action that will improve safety outcomes.

The CAA flight examiners in PFT have therefore provided comment in the report that aims to highlight particular focus areas identified from our own risk analysis and through continuous liaison with training organisations, flight examiners and instructors. My aim, through the medium of the report, is to provide you with prompts and guidance that can be used to shape Industry action on training quality and safety together with your own local training and safety improvements.

This edition places an emphasis on 4 significant areas of risk: instructor experience levels, supervision of training activity, airspace incidents and circuit procedures. You may also identify local issues that are highlighted by the statistics presented. Use that information to inform your organisation's safety management system and then tell us about it: your problem might be one that affects others and we should be sharing solutions for the safety benefit of all. There is no 'us' and 'them' in safety.

Future Flight Training Safety Reviews will be published at a 6-monthly interval. My aim is to stimulate comment and feedback, and your suggestions for specific or additional statistical data are encouraged and welcome. The CAA is not an organisation that has a monopoly on good ideas. Inputs can be made direct to any member of the PFT team or can be sent to pft.admin@caa.govt.nz (for the attention of the PAE). I look forward to developing the value of this Review by working together.

David Harrison
Principal Aviation Examiner

Note: The following report looks at flight training in fixed wing aeroplanes and helicopters only. Statistics on recreational flying, microlights, sport aircraft and gliders are not included in the data.



Overview of Sector

There are currently 44 active part 141 training organisations in New Zealand. There are 29 organisations (66%) located in the North Island, and 15 organisations (44%) located in the South Island.

Part 141 Organisations by Location

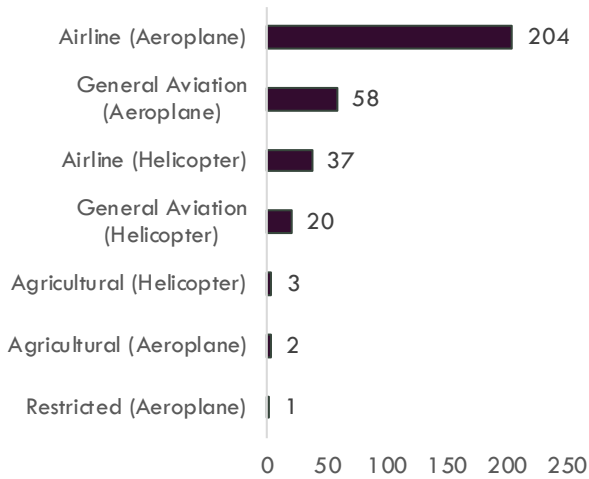


Current Examiners and Instructors



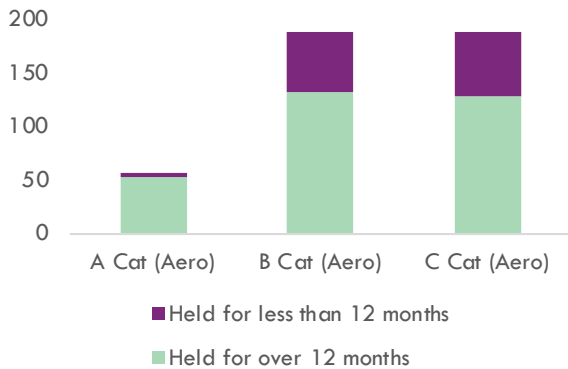
There are 317 individuals in New Zealand who hold current flight examiner ratings. Seven examiners hold two rating types, and one holds three separate rating types. The figure below shows the number of active flight examiner ratings held.

Current Flight Examiners



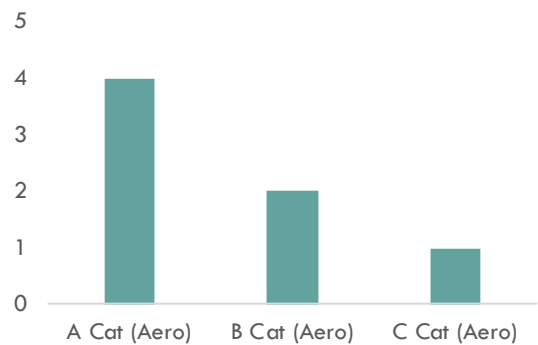
The number of instructors who hold a current rating and either a class 1 or 2 medical certificate are shown in the figure below.

Current Fixed Wing Instructors



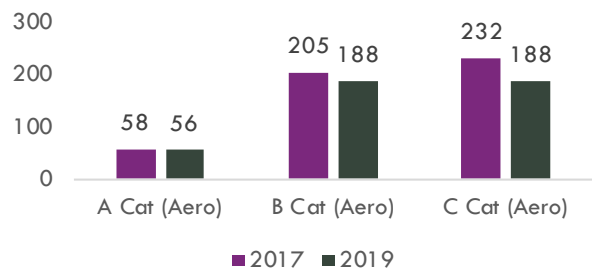
The number of instructors who hold a current rating and a DL9 medical are shown in the figure below.

Current Instructors with a DL9 Medical

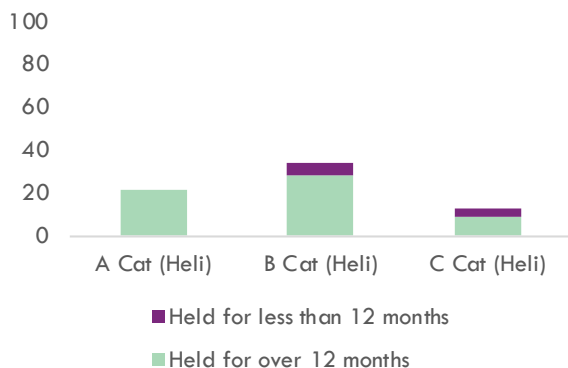


Over the past two years there has been a drop in the numbers of current instructors across most categories. This is most pronounced in fixed wing B and C Cats. The difference in the numbers of instructors current in 2017 compared to 2019 are shown below.

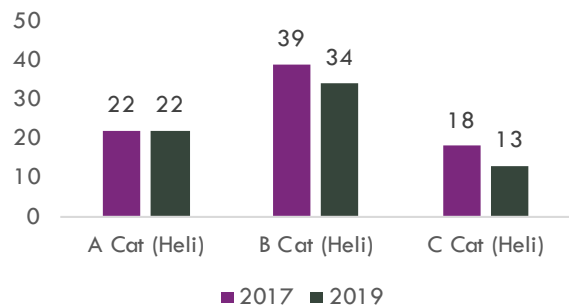
Fixed Wing Instructors 2017 and 2019



Current Rotary Instructors



Rotary Instructors 2017 and 2019

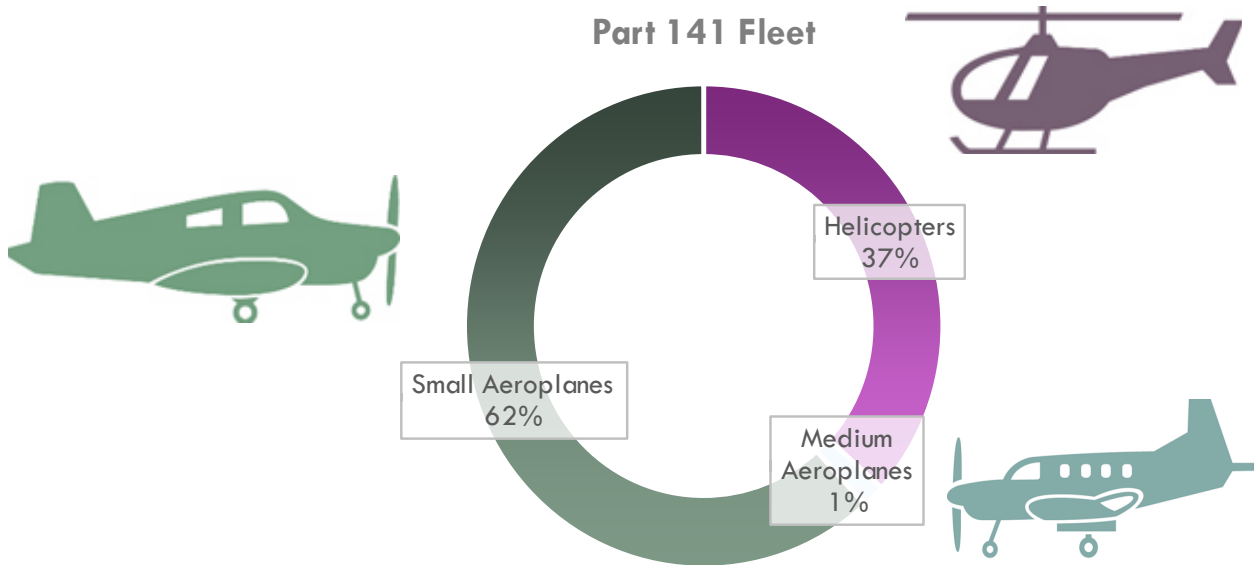




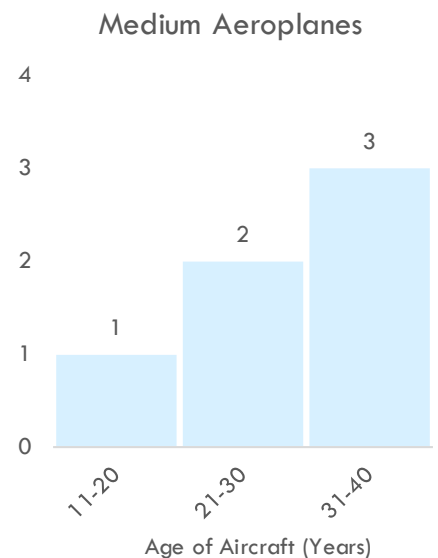
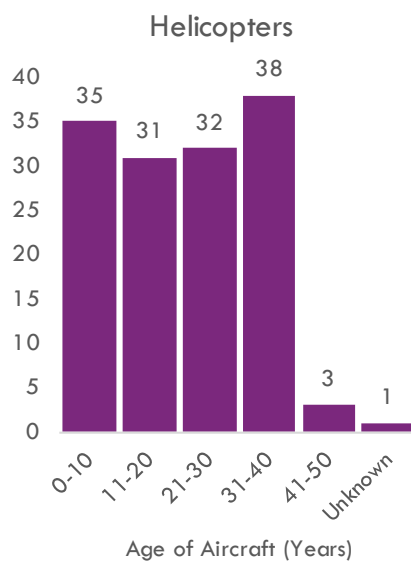
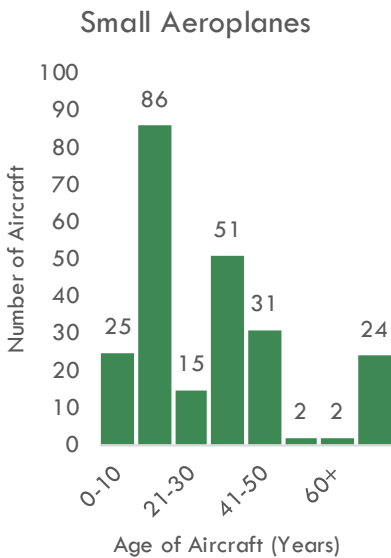
Training Fleet

Aircraft Owned by Part 141 Organisations

The following statistics are drawn from the numbers of aircraft owned by Part 141 organisations. There are 128 large aircraft, however these are owned by training organisations who also hold Part 119 certificates, so are not used primarily for training, therefore have not been included here. Aircraft owned by other organisations which are leased to part 141 organisations are also not included in the fleet statistics.



The Part 141 fleet is made up primarily of small aircraft (236) with a small number of medium aircraft (six). There are 140 helicopters owned by Part 141 organisations. The following graphs show the owned aircraft by age and type. The majority of small aircraft are under 20 years old, however most training helicopters are over 30 years old. Unknown ages of aircraft represent aircraft registered prior to the date of manufacturer being a mandatory field.

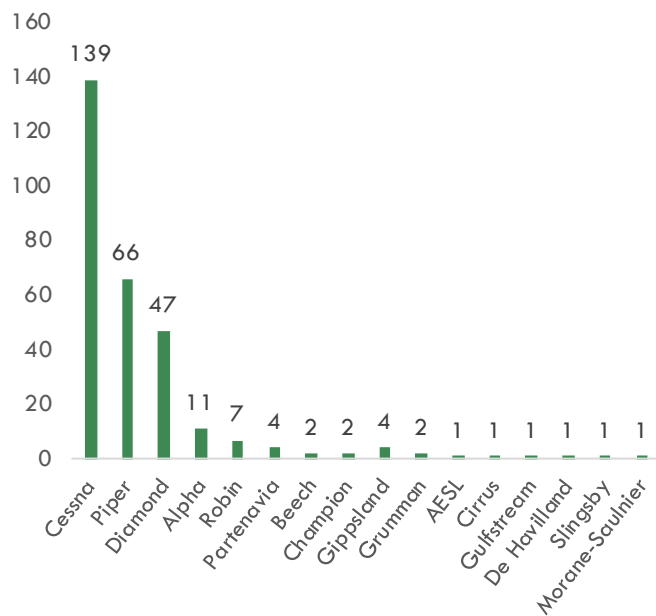




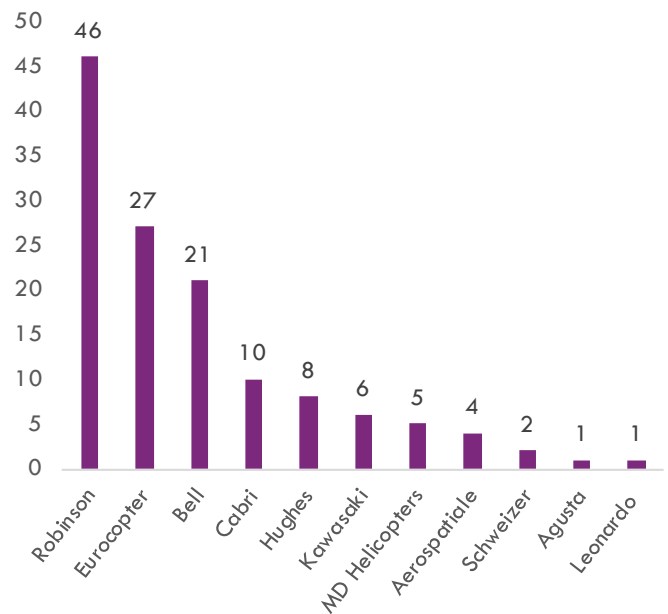
Aircraft Operated for Training

All aircraft operated for either dual or solo training are included in the statistics below. This includes training undertaken under Part 61, and aircraft not necessarily owned by Part 141 organisations. In the last 12 months from 1 July 2018 to 30 June 2019, 427 individual aircraft were used for flight training. Of these, 290 were small aircraft, 131 were helicopters and six were medium aircraft. The charts below show the the aircraft used by manufacturer. The six medium aeroplane fleet is made up of three Beech, two Cessna and one Raytheon aircraft.

Small Aeroplanes

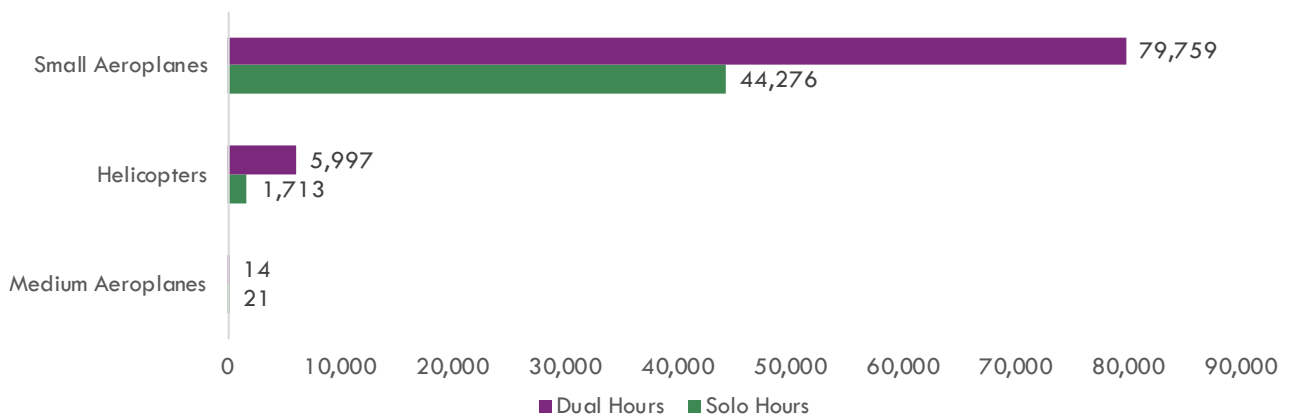


Helicopters



The chart below shows the training hours flown by type of aircraft over the last 12 months from 1 July 2018 to 30 June 2019.

Training Hours by Aircraft Type



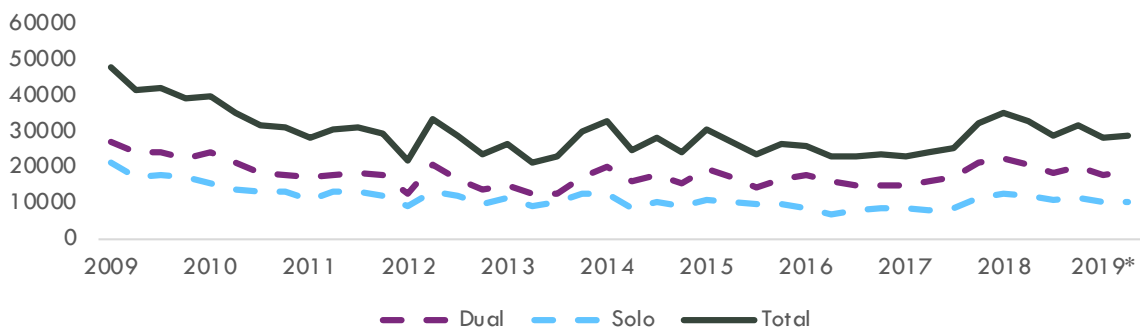


Fixed Wing Flight Training

Activity, Dual and Solo

Training activity in fixed wing aircraft is recovering from a low point in 2016/2017. Dual and solo training hours tend to run in parallel, with dual hours being on average 22% higher than solo.

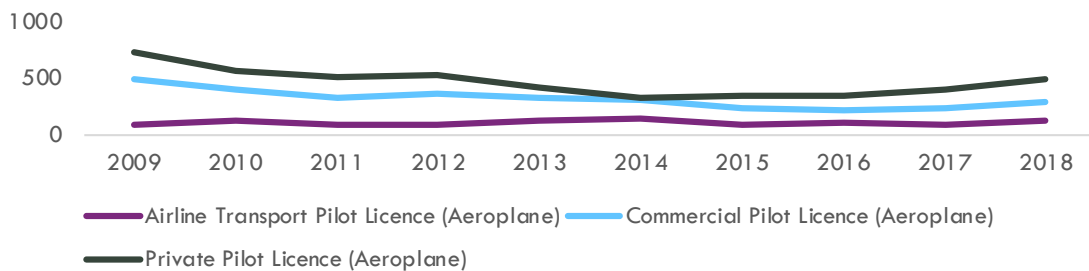
Fixed Wing Training Hours



Licence Issues (CAA data)

The CAA data on licence issue contains both initial issues from ASPEQ flight tests and licence conversions from overseas. The number of fixed wing licences issued by the CAA was on a steady decline from 2009 to 2014 however licence issues have begun to slowly increase over the past five years.

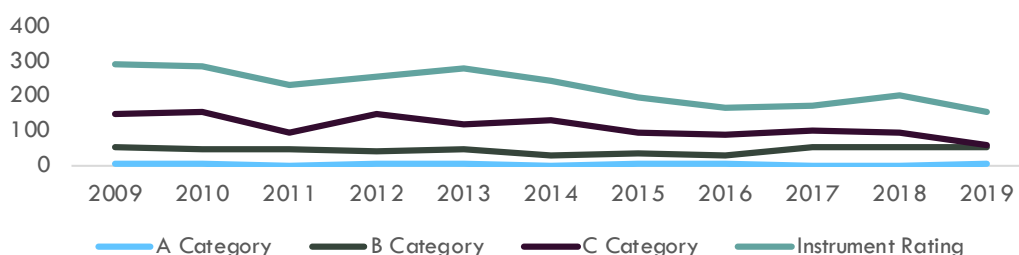
Fixed Wing Licence Issues



Rating Issues (ASPEQ data)

ASPEQ provides the CAA with the numbers of flight tests conducted for rating issues. The number of instructor and instrument rating issues has seen a decline over the past ten years, and has not seen quite the same level of recovery than has been seen in the licence issues. The number of A Cat issues remains low across the decade.

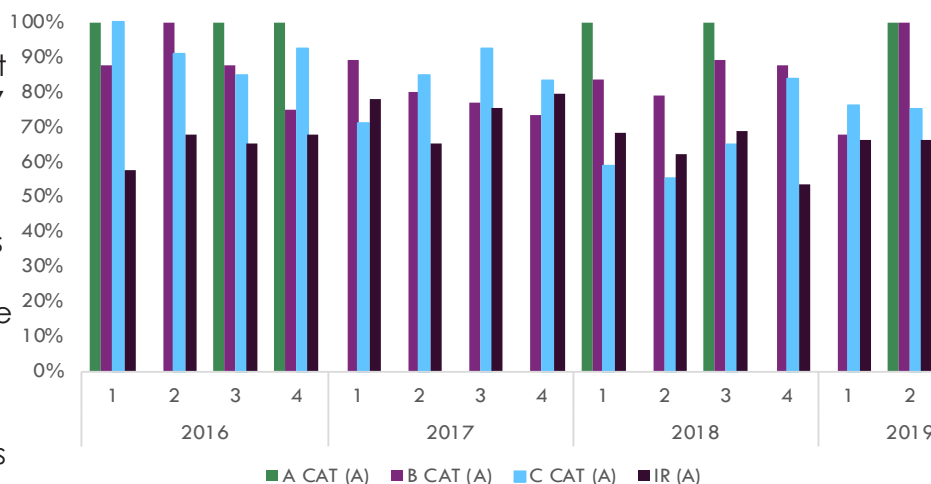
Fixed Wing Rating Issues



National Flight Test First Attempt Pass Rates

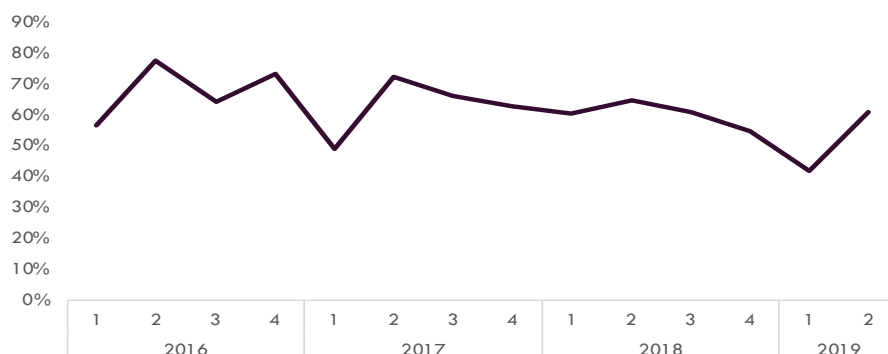
The first attempt pass rates for rating issues over the last 3.5 years has a varied pattern. A Cat tests have low numbers, but a 100% pass rate overall. B Cat ratings have mixed pass rates over time, where the rate reached its lowest point in the fourth quarter of 2017 where it was 73%. The overall average pass rate for first attempts at B Cat flight tests however, is 83%. C Cat pass rates were at their lowest in the second quarter of 2018 where the first attempt pass rate was 65%, although the overall first attempt pass rate over the period in question is 80%. Instrument ratings follow a low but relatively stable trend, with an average first attempt pass rate of 67% over the period.

Fixed Wing Rating First Attempt Pass Rates



Commercial flight test first attempt pass rates have remained relatively stable since 2016, with the average pass rate sitting at 77%.

Fixed Wing CPL Pass First Attempt Rates



While the overall training hours flown remains level, evidence shows that student numbers are increasing and this is also reflected in the number of licences being issued showing a steady upward trend. Some of this is due to a recent increase in foreign licence transfers albeit mainly at the CPL/ATPL level. The marked increase in PPL issues will almost certainly flow into future CPL issues and bolster the upward trend here. A significant proportion of the PPL/CPL licences are being issued to foreign students and a more comprehensive breakdown of these figures will be investigated for the next review.

Against this increase, the decline in the overall number of instructors and the experience level within the cadre is a continuing cause for concern. This presents a challenge for the industry in terms of sustaining the quality of training that can be given by increasingly inexperienced instructors and a growing burden of supervision for a reducing number of senior instructors, and all set against the background of increasing training activity. This has been identified as a risk within the CAA's Regulatory SMS system and has been highlighted in work between the CAA and with the industry, was a particular topic at the recent Flight Instructor Seminars and has led to planning for another CFI Conference in 2020.

Domestically, a reduced intake to Air New Zealand may slow instructor recruitment to the airlines in the short-term but the global demand shows little decline. Careful management of this issue will be essential to ensure safe operations and should form a core element of any training schools recently introduced or soon to be rolled out SMS system.

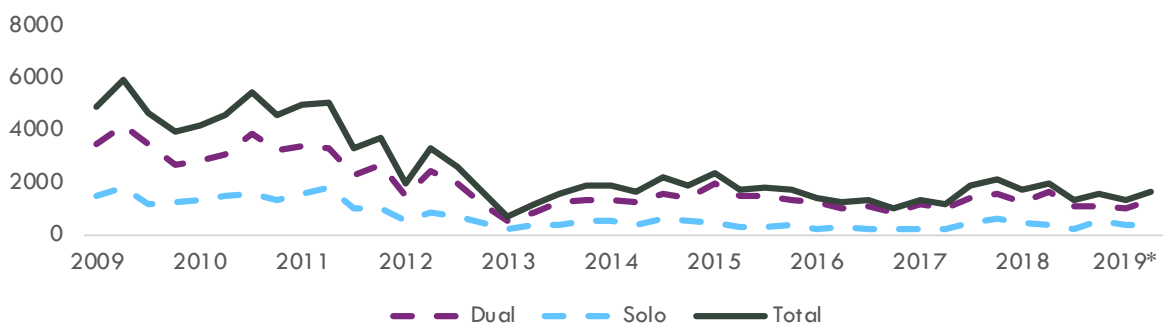


Rotary Flight Training

Activity, Dual and Solo

Rotary training activity in aircraft has declined significantly over the last decade. 2013 saw the lowest activity and since then the training hours have remained somewhat stable at under 2500 hours per quarter. Dual hours are over 50% higher than solo, taking up 75% of all rotary training activity. Solo hours are consistent, sitting under 1000 hours per quarter. Rotary training has gone from 9% of all training activity across fixed wing and rotary in 2009 to 5% in 2018.

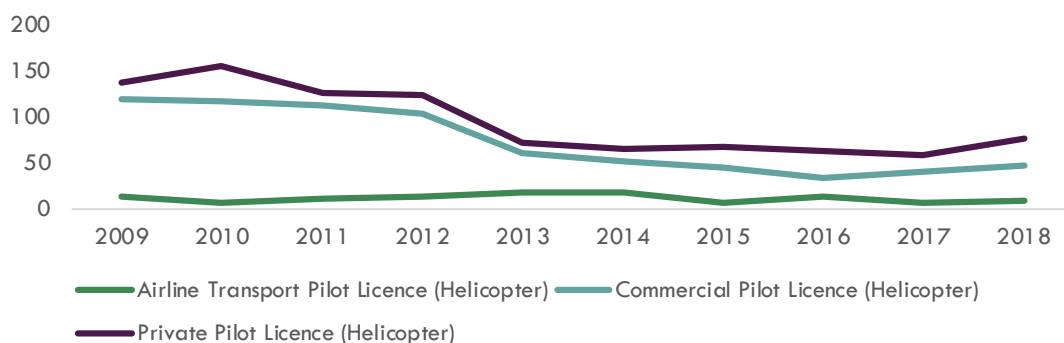
Rotary Training Hours



Licence Issues (CAA data)

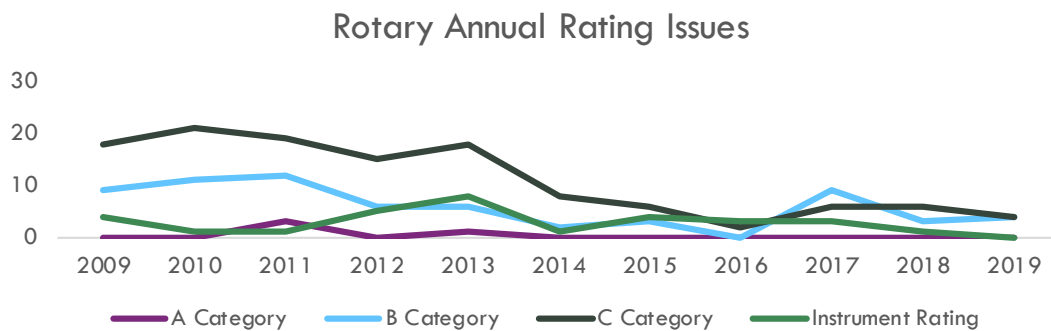
The number of rotary licences issued by the CAA has declined from 2009 to a low point in 2017. 2018 however saw a slight increase in rotary licence issues.

Rotary Licence Issues



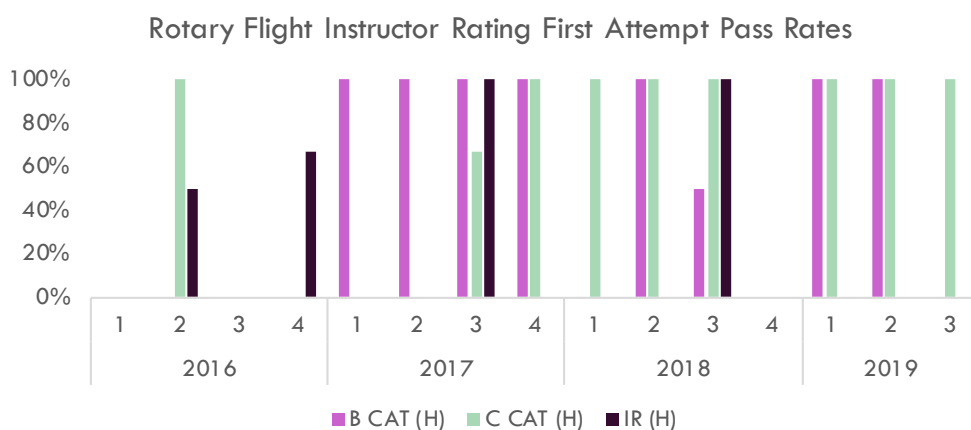
Rating Issues (ASPEQ data)

The number of rotary instructor and instrument rating issues has seen a significant drop over the past 10 years, which mirrors the decline in training activity. There has been little recovery of this trend apart from a spike in B cat issues in 2017. The number of A Cat issues remains low across the decade. Since 2009, there have only been four rotary A Cat ratings issued.

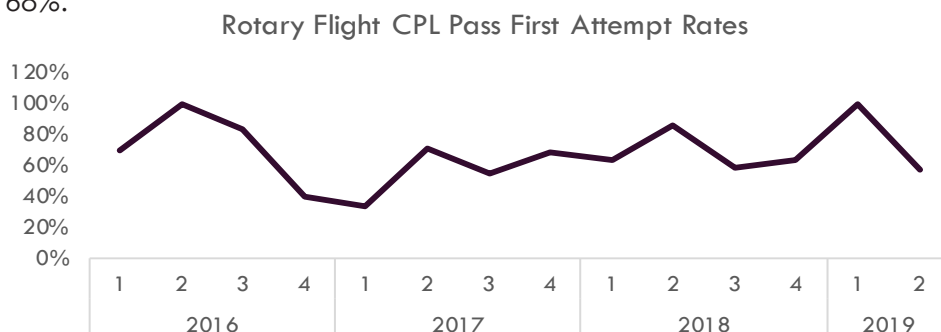


National Flight Test First Attempt Pass Rates

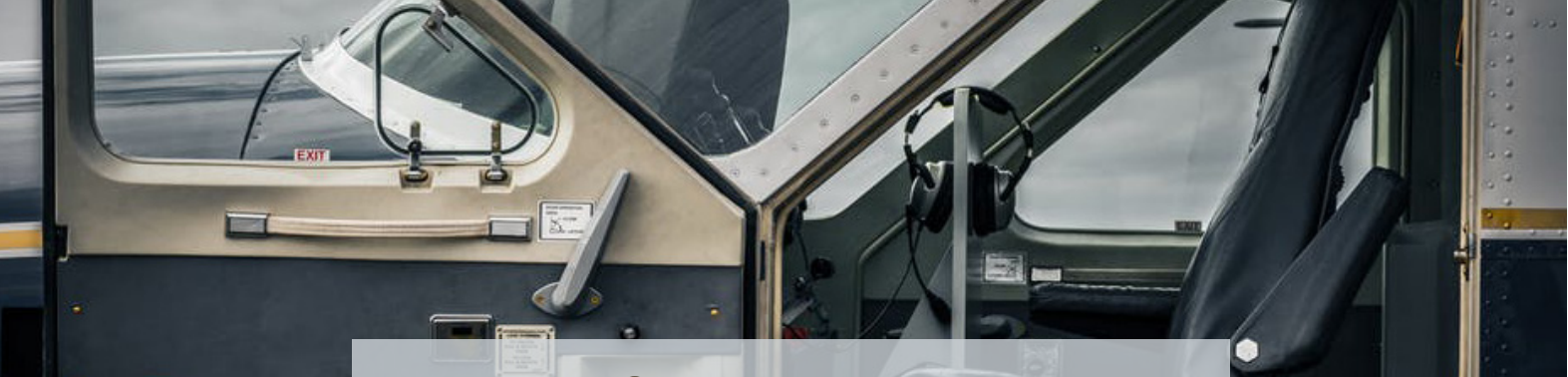
The pass rates for first attempt rotary instructor rating flight tests over the last 3.5 years sits almost consistently at 100%. There have been no A Cat tests in the period. B and C Cat ratings have a 95% average pass rate overall, the rate falling under 100% in only one quarter for each test over the 3.5 years. Instrument ratings had low pass rates in 2016, but since then have had 100% pass rates. Due to the low number of tests the pass rates may only give limited insight.



Rotary commercial flight test pass rates sit slightly lower than fixed wing, however the lower numbers mean the overall rates are more variable. The average pass rate for first attempts over the last 3.5 years is 68%.



The low number of helicopter instructor rating issues remains stubbornly low. Whilst the factors involved are different to the fixed wing problem – no real equivalent of the airline ‘pull’ – there are issues to be addressed. Funding models for helicopter training do not reflect the additional cost involved compared to an equivalent fixed wing course. Work on the Helicopter NZQA Diploma syllabus provided some ‘smoothing’ of the funding albeit with no increase and Aviation NZ is engaged with TEC to seek increased funding for helicopter training. In the interim, CAA helicopter examiners will meet later this year to look at options for eligibility changes to encourage more A Cat instructor candidates to come forward.

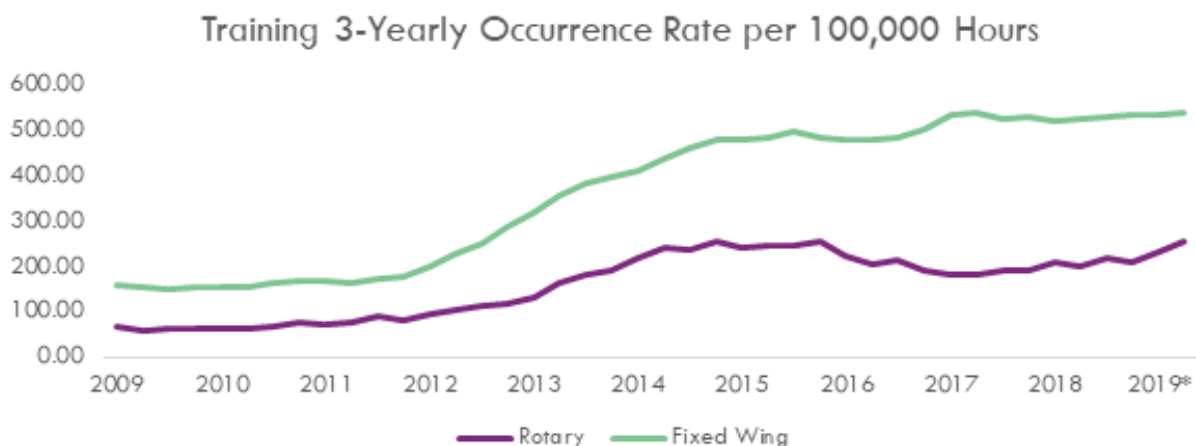


Occurrences

The following statistics show the occurrence, incident and accident rates as three yearly rolling averages. The occurrences included in the analysis are those with the nature of flight stated as either training dual or training solo. The occurrences are reported by operators, entered into the CAA database and subsequently extracted for analysis.

Fixed wing and Rotary Occurrence Rates

This occurrence rate includes accidents, operational incidents, airspace incidents, aerodrome incidents and defects. The number of occurrences show an upward trend over the last ten years. There is an aspect of this which may be due to the increase in healthy reporting cultures within training organisations, however other explanations for the rise in occurrences requires further exploration.

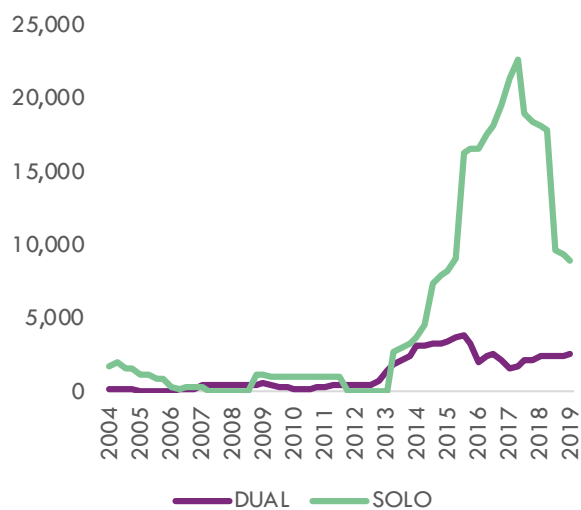


Accident Rates

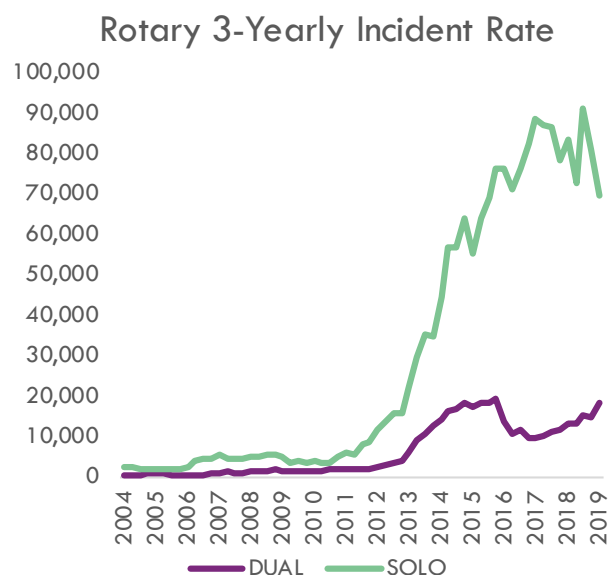
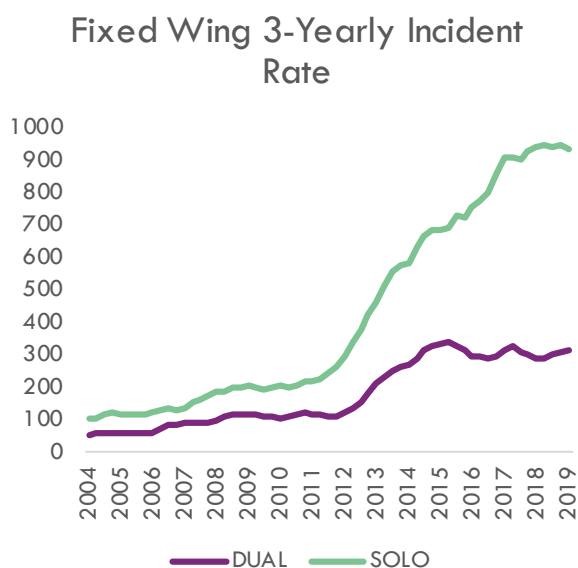
Fixed Wing 3-Yearly Accident Rate



Rotary 3-Yearly Accident Rate



Incident Rates



Both helicopter and aeroplane training follow very similar occurrence trends. The overall occurrence rate for both shows a significant rise from around 2012 to 2015/16 and a plateauing off after that. The increase undoubtedly records the role that better occurrence reporting has had and the levelling off of occurrences in part reflects the work that the CAA and industry has undertaken in tackling the recommendations of 2014's Dual Flight Training Review. The latter is also reflected in the marked drop or levelling off in dual accidents and incidents from about 2015. However, the increase in the events for solo pilots is of some concern.

As yet we have no hard data to support conclusions on why the increase is happening, but these are statistics we need to take proactive action on. Anecdotally, there is some evidence from recent incidents that what we might be seeing is the consequence of the issues of instructor experience and supervision already noted. Additionally, with fewer instructors of less experience, with increasing training demands, the supervisory task grows and the pressures to output students can be both subtle and insidious. This is classic 'swiss cheese' territory where effective supervision can often be the one single action that blocks the train of events leading to an incident or accident.

Also, with growing numbers of foreign students training in New Zealand we are seeing an increasing number of training flights being completed that are required to meet foreign aviation authority or airline requirements and that do not fall directly under a Part 61 syllabus. Additionally, the need to train instructors is generating a significant amount of upgrade flying that is often treated as 'private' flying often in the evenings or the weekend when aircraft are available (think fatigue management in this space as well). These flights require the same level of supervision as you would give to any Part 61 training flight. A B-cat instructor may be experienced VFR single engine, but after conversion to multi-engine or IFR, they are inexperienced in the new operation and must be supervised accordingly. A foreign student may hold a PPL or CPL and be 'only building hours' but they also do not have experience in the NZ environment, English is likely to be their second language and their flying still warrants significant oversight.

Effective supervision is a major block to any potential accident or incident; have a close look at all of your training to ensure you have a robust system in place.

Incident Types

Fixed Wing Occurrences – Training Dual				
Type	2016	2017	2018	2019*
Accident	3	0	4	1
Aerodrome Incident	2	7	8	2
Airspace Incident	90	88	151	70
Defect	61	97	54	38
Operational Incident	38	25	27	19
Grand Total	194	217	244	130

Fixed Wing Occurrences – Training Solo				
Type	2016	2017	2018	2019*
Accident	1	4	4	2
Aerodrome Incident	16	21	16	6
Airspace Incident	271	204	389	150
Defect	51	48	34	10
Operational Incident	35	50	43	28
Grand Total	374	327	386	196

Rotary Occurrences – Training Dual				
Type	2016	2017	2018	2019*
Accident	2	0	1	0
Airspace Incident	3	4	5	10
Defect	1	3	4	2
Operational Incident	1	2	1	0
Grand Total	7	10	11	12

Rotary Occurrences – Training Solo				
Type	2016	2017	2018	2019*
Accident	1	0	0	0
Airspace Incident	2	0	3	4
Defect	0	1	0	0
Operational Incident	1	0	1	0
Grand Total	4	1	4	4

Incorporating feedback from recent examiner and instructor seminars, 2 areas of action are noted in this review.

Firstly, the number of airspace incidents continues to increase (higher activity is noted as a factor in this). Make sure your students are totally familiar with the airspace they will be flying through, ensure they are fully competent in the comprehension and execution of standard RT calls and get them briefed and familiar with the airfields they will be operating to and from. A constant comment from flight examiners at all levels is the generally poor standard of lookout being shown by students. All too often, the lookout scan may be evident prior to an academic steep turn exercise but thereafter, heads and eyes remain fixated ahead or inside the aircraft – not acceptable. And lookout is not just about seeing other aircraft. It should be a scan that includes identifying airspace boundaries coming up, what the weather conditions are ahead or constantly assesses suitable areas for a forced landing. Work hard with your students to improve this core skill.

Secondly, a recent safety notice was issued by the CAA regarding the importance of following standard circuit procedures. Non-standard joins have become endemic with some uneducated/unthinking/selfish pilots at many airfields. An RT call 'joining non-standard' does NOT absolve a pilot from following the rules and has had recent catastrophic consequences. Make sure your circuit training is up to standard: accurate and consistent circuit patterns (not miles away from the runway, you should be able to reach the field in the event of an engine failure from downwind), radio calls in the correct place (visual and aural cues are so important for awareness of other traffic), followed by consistent, stable approaches. Remember a good landing starts with a good, accurate circuit and stable, consistent approaches.

On-going Action



Four issues have been highlighted in this Review for action, and the CAA PFT team will be monitoring these over the next 6 months and liaising with training organisations about how the risks are being managed. Good ideas will be shared across the sector. Of course, there is plenty more to be looked at and so your feedback will be essential in shaping future risk-mitigation activities.