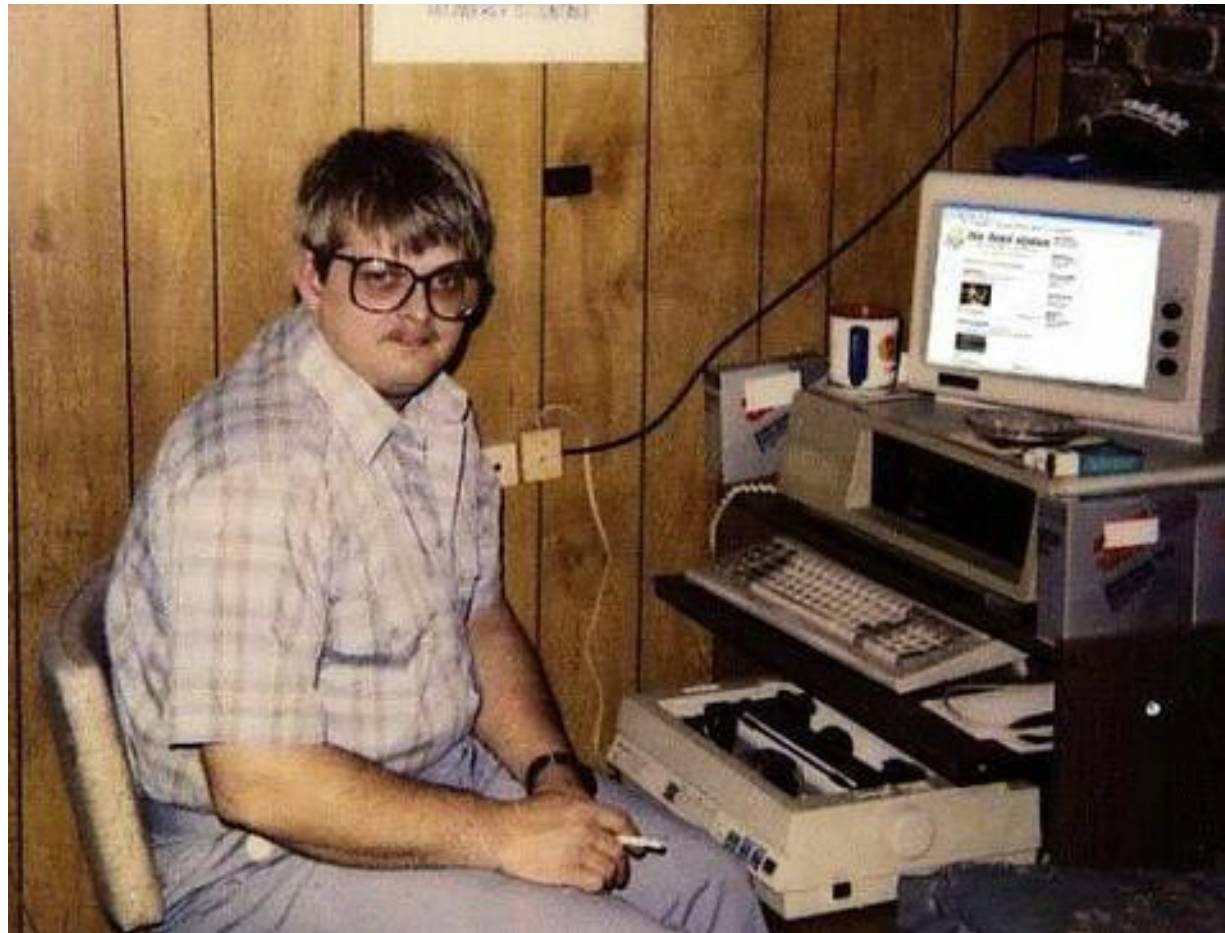




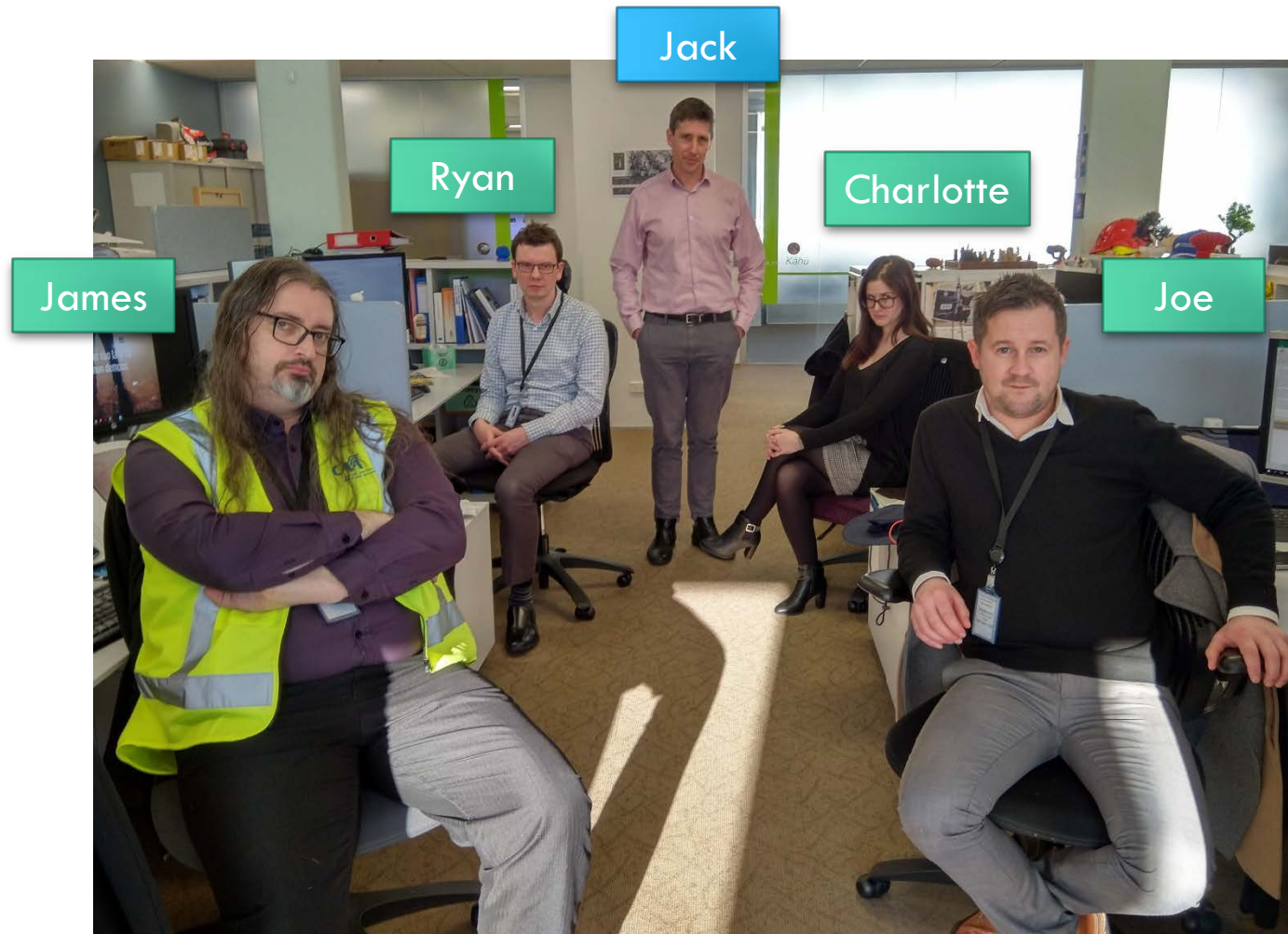
# INTELLIGENCE & SAFETY ANALYSIS

What we do

# ANALYSTS — THE MYTH

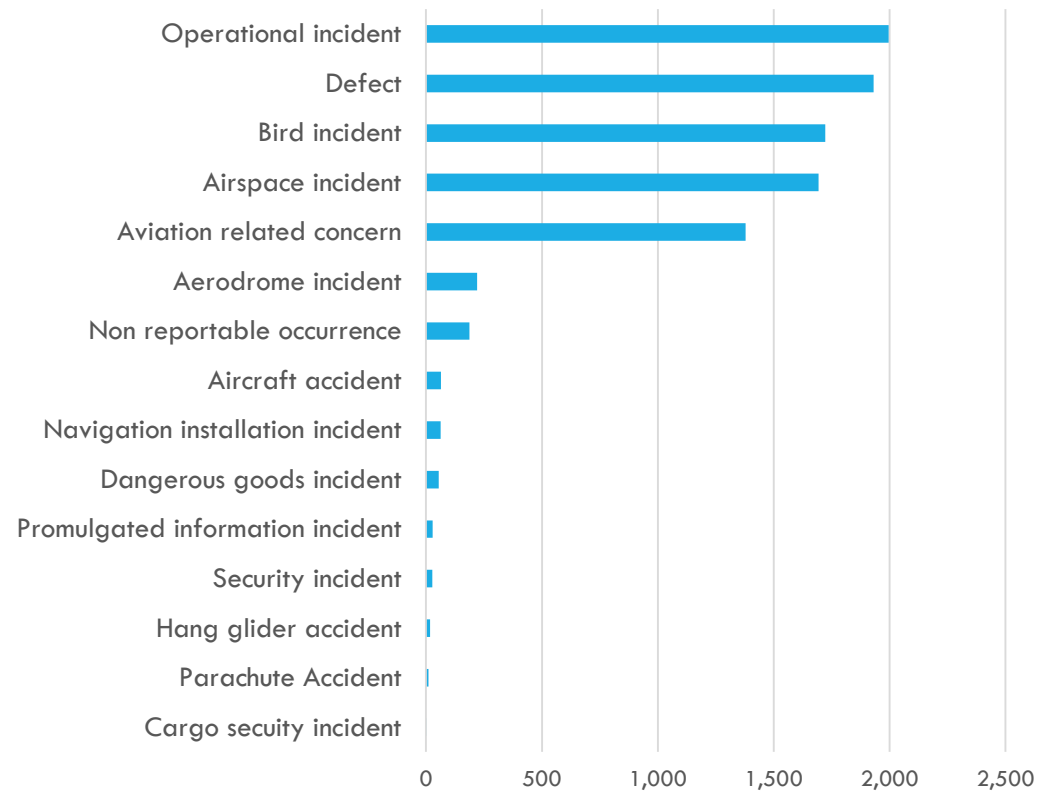


# ANALYSTS — THE REALITY



# DATA SOURCES

Approx 10,000 reported occurrences in 2018



Activity data – hours and flights

Investigation results

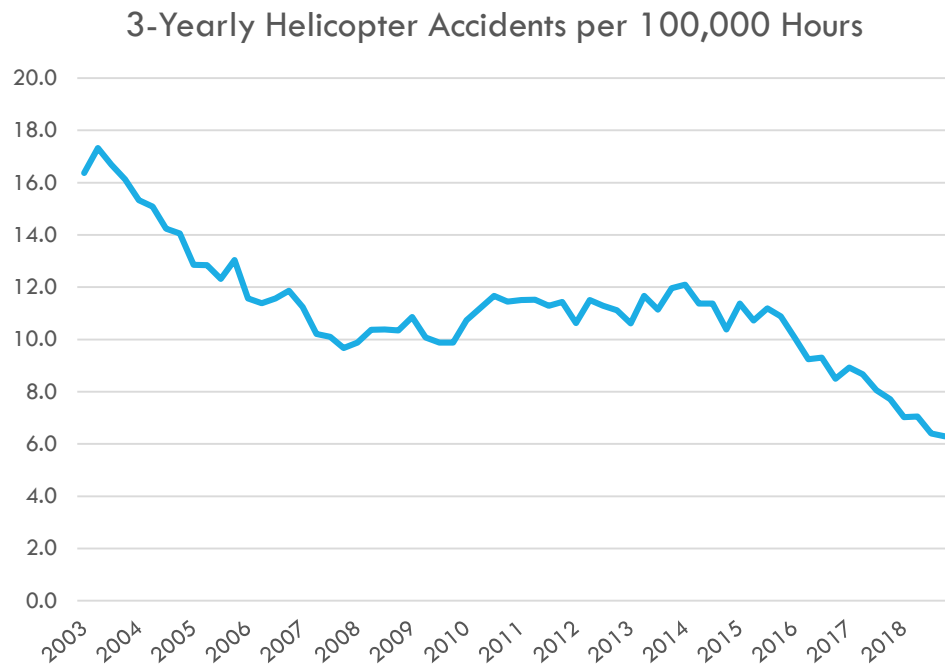
Surveillance notes and findings

International safety data

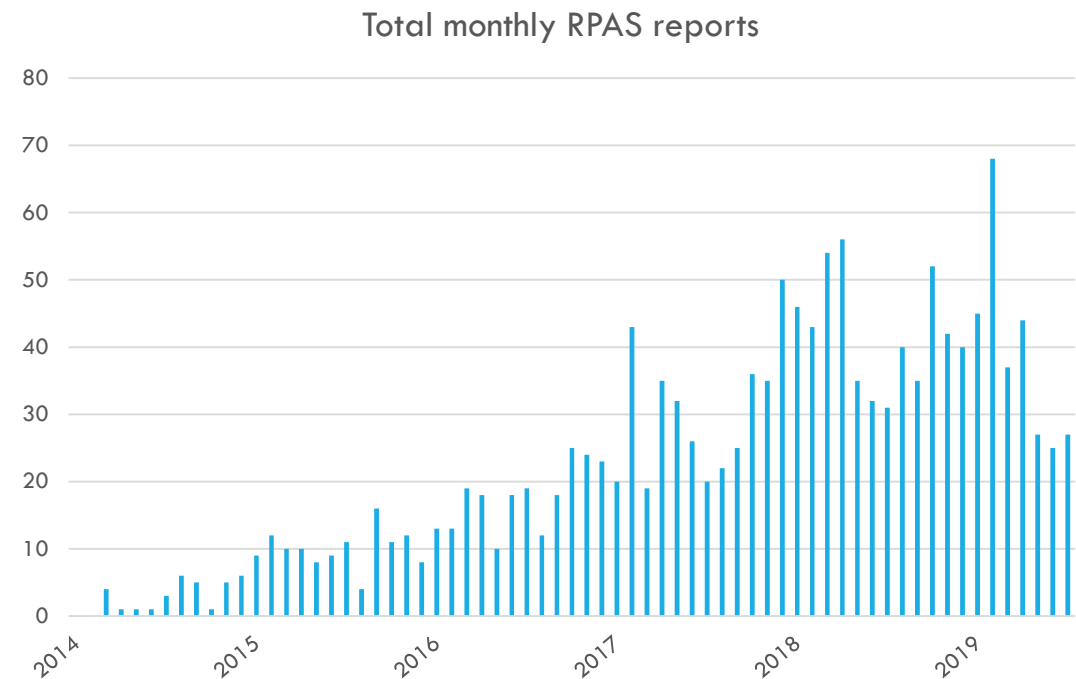
Research findings

# MONITOR TRENDS

## Accident rates



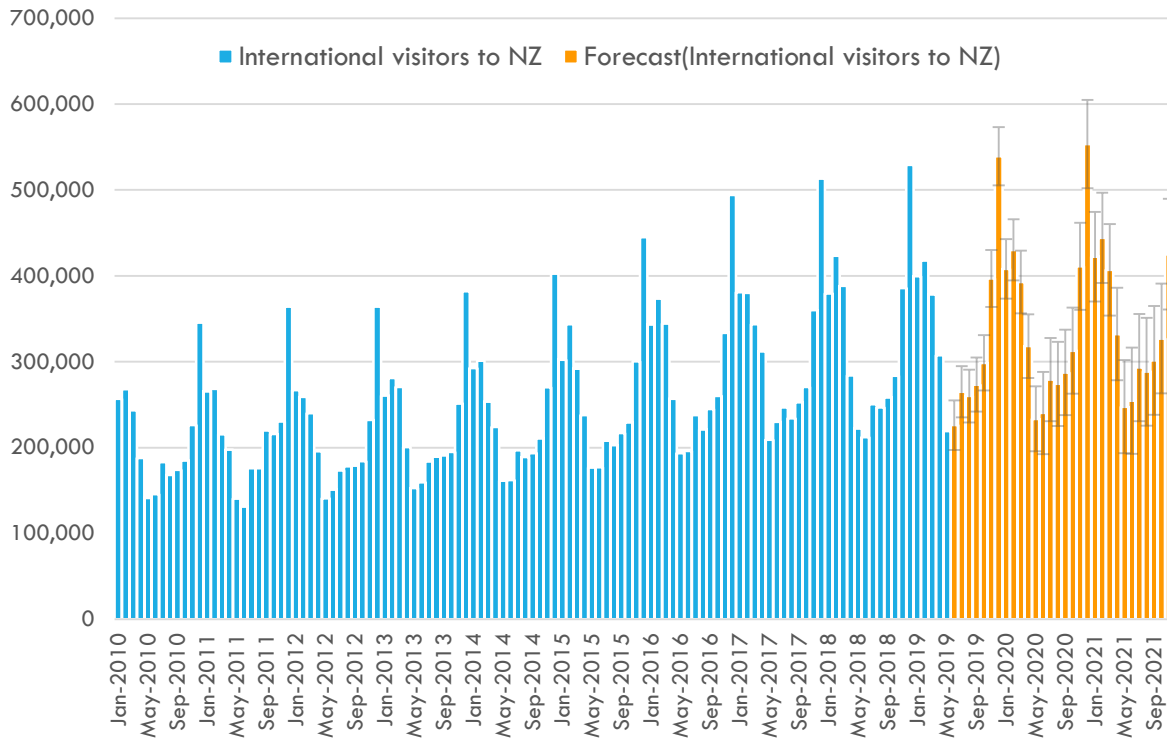
## Incident reporting



# IDENTIFY CURRENT & EMERGING RISKS

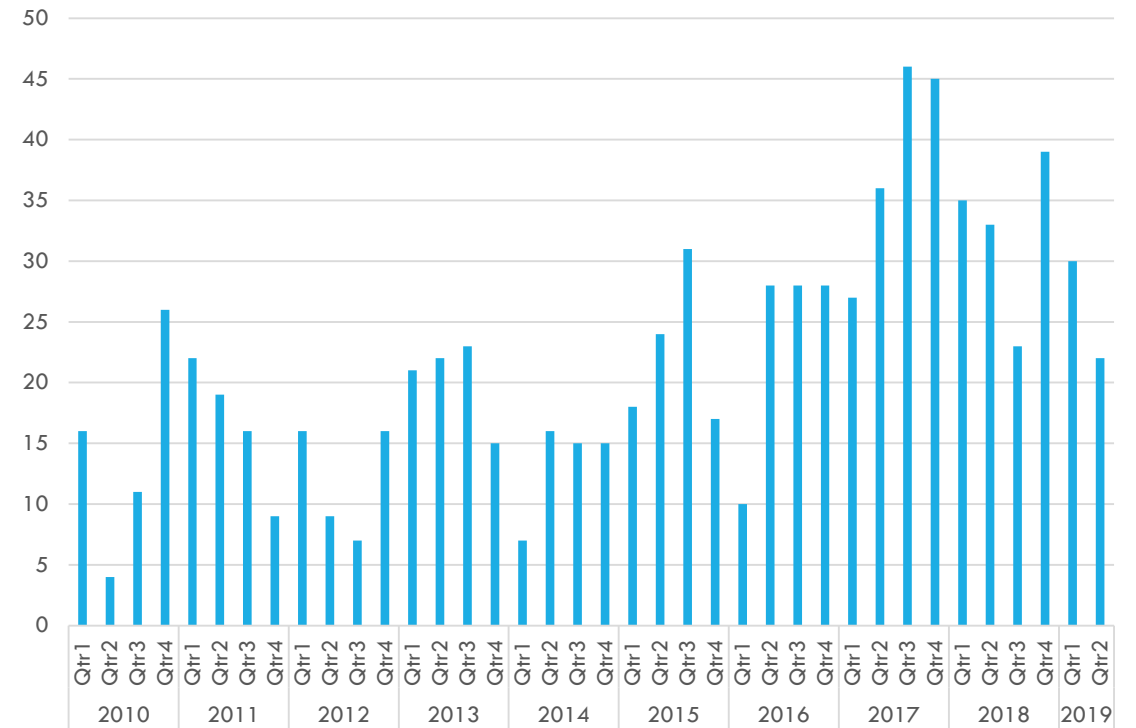
## Activity

Forecast Monthly International Visitors to NZ



## Accident/incident types

Reported Unruly Passenger incidents



# PUT ANALYSIS TO WORK

## Inform and influence

Operating groups – audits, safety investigations, flight training, exemptions.

CAA leadership, policy group, rule changes.

Other agencies e.g. Worksafe, TAIC, Ministry of Transport, Ministry of Health.

Operators – different sectors e.g. helicopters, agricultural, adventure aviation, flight training.



# STANDARD AVIATION SAFETY REPORTS

**CAA**  
CIVIL AVIATION AUTHORITY  
OF NEW ZEALAND  
Te Mana Rerangi Tūmatanui o Aotearoa

A to Z Topics  
Airspace Hazards  
About the CAA  
About the CAA Web Site  
Civil Aviation in NZ  
Contact Us  
Links  
Public and Media Info  
Passenger Info  
Search  
Vacancies  
What's New  
Home

Accidents and Incidents  
Adventure Aviation  
Aerodromes  
Air Cargo  
Aircraft  
Airlines  
Airspace  
Aeronautical Services  
General Aviation  
Health and Safety  
Maintenance Engineers  
Medical  
Meteorology  
Pilots

## Safety Reports

Sector Risk Profiles

### Aviation Industry Safety Update - issued six monthly

- Aviation Industry Safety Update - 01 Jul 2013 to 30 Jun 2014 (3.1MB)
- Aviation Industry Safety Update - 01 Jan to 31 Dec 2013 (1.3 MB)
- Aviation Industry Safety Summary - 01 Jul 2012 to 30 Jun 2013 (1.5 MB)
- Aviation Industry Safety Update - 01 Jan to 31 Dec 2012 (1.5 MB)
- Aviation Industry Safety Update - 01 Jan to 30 Jun 2012 (1.6 MB)
- Aviation Industry Safety Update - 01 Jul to 31 Dec 2011

Earlier Safety Reports >>

Back to Top

### Bird Hazard Reports

- Bird Incident Rate Report for Jul to Sep 2014
- Bird Incident Rate Report for Apr to Jun 2014
- Bird Incident Rate Report for Jan to Mar 2014
- Bird Incident Rate Report for Oct to Dec 2013
- Bird Incident Rate Report for Jul to Sep 2013
- Bird Incident Rate Report for Apr to Jun 2013
- Bird Incident Rate Report for Jan to Mar 2013
- Bird Incident Rate Report for Oct to Dec 2012
- Bird Incident Rate Report for Jul to Sep 2012
- Bird Incident Rate Report for Apr to Jun 2012
- Bird Incident Rate Report for Jan to Mar 2012

Earlier Safety Reports >>

Back to Top

### Aviation Safety Summary Report - issued quarterly

- Aviation Safety Summary Report  
01 Jul to 30 Sep 2014  
(1.3 MB)
- Aviation Safety Summary Report  
01 Oct to 31 Dec 2014
- Aviation Safety Summary Report  
01 Jan to 31 Mar 2014
- Aviation Safety Summary Report  
01 Apr to 30 Jun 2014
- Aviation Safety Summary Report  
01 Oct to 31 Dec 2013
- Aviation Safety Summary Report  
01 Jul to 30 Sep 2013
- Aviation Safety Summary Report  
Winter 2013
- Aviation Safety Summary Report  
Spring 2013
- Aviation Safety Summary Report  
Summer 2013
- Aviation Safety Summary Report  
Spring 2012
- Aviation Safety Summary Report  
Winter 2012

<https://www.caa.govt.nz/safety-info/safety-reports/>



# SECTOR PRODUCTS



**NEW ZEALAND HELICOPTER  
SAFETY UPDATE  
JUNE 2019**

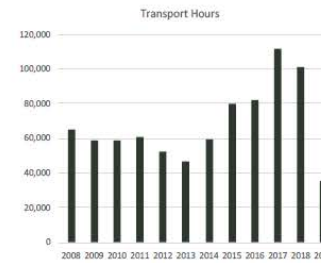
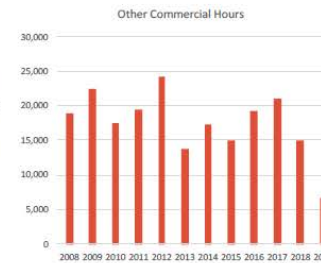
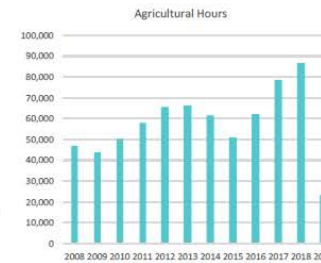


## INTRODUCTION

This is a further update on activity and safety performance in the helicopter sector, with activity and accident rate information current to March 2019. The report includes details of accidents and incidents for the purpose of raising awareness about risks and sharing lessons amongst the sector. If you have questions or comments about the information then please contact me at [Joe.Dewar@caa.govt.nz](mailto:Joe.Dewar@caa.govt.nz)

## SECTOR ACTIVITY

The series of charts that follow show the total estimated annual flight hours by operation type. The data show that air transport and agricultural activity has increased in the last few years, while training and private activity has shown the opposite trend.



<https://www.aia.org.nz/Divisions/rotor.co.nz/Safety+Bulletins.html>

# 2019 GA SAFETY PERFORMANCE UPDATE



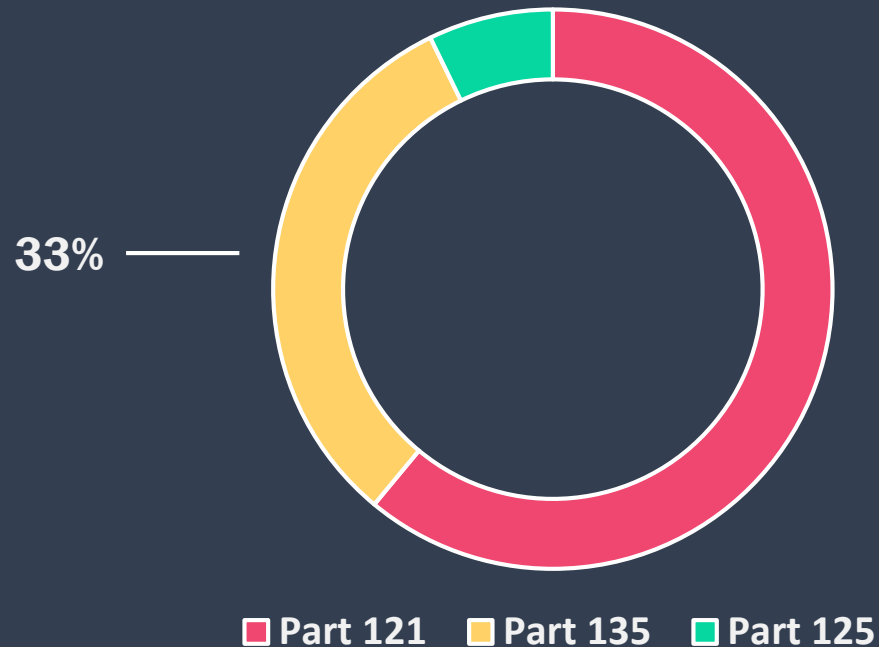
Prepared by JOE DEWAR  
CIVIL AVIATION AUTHORITY

**SECTOR**

**ACTIVITY**

# PART 135 TRANSPORT – HOW BIG?

NZ Domestic Air Transport Hours 2018-2019



**498 HELICOPTERS**

**200 SMALL AEROPLANES**

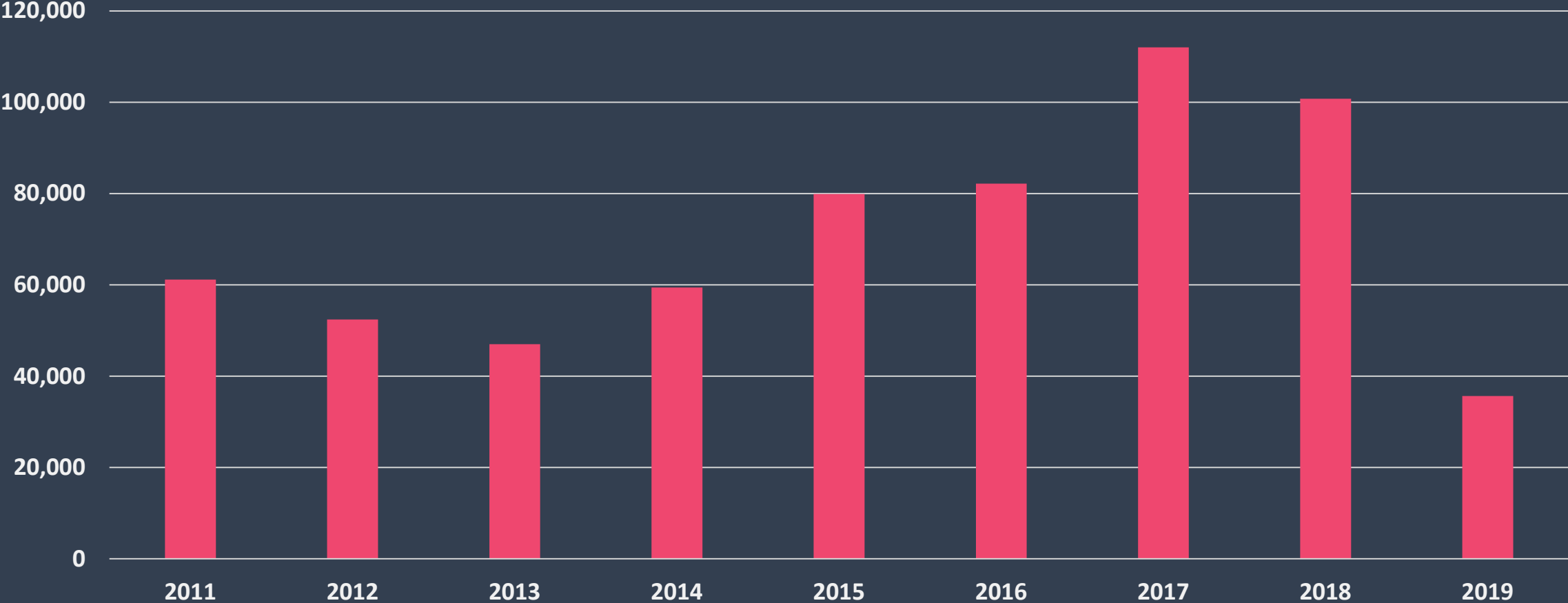
**TOTAL PAX SEAT CAPACITY – 3,980**

**= 22 A320s**

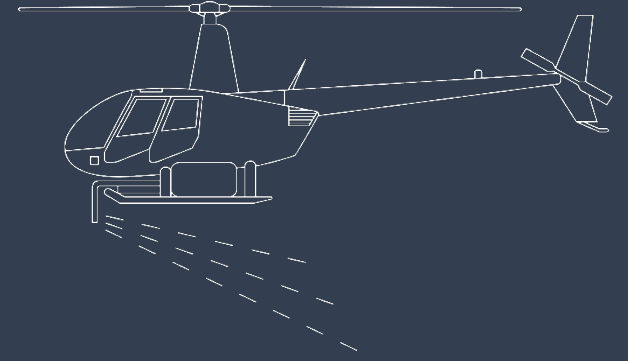
# PART 135 TRANSPORT ACTIVITY



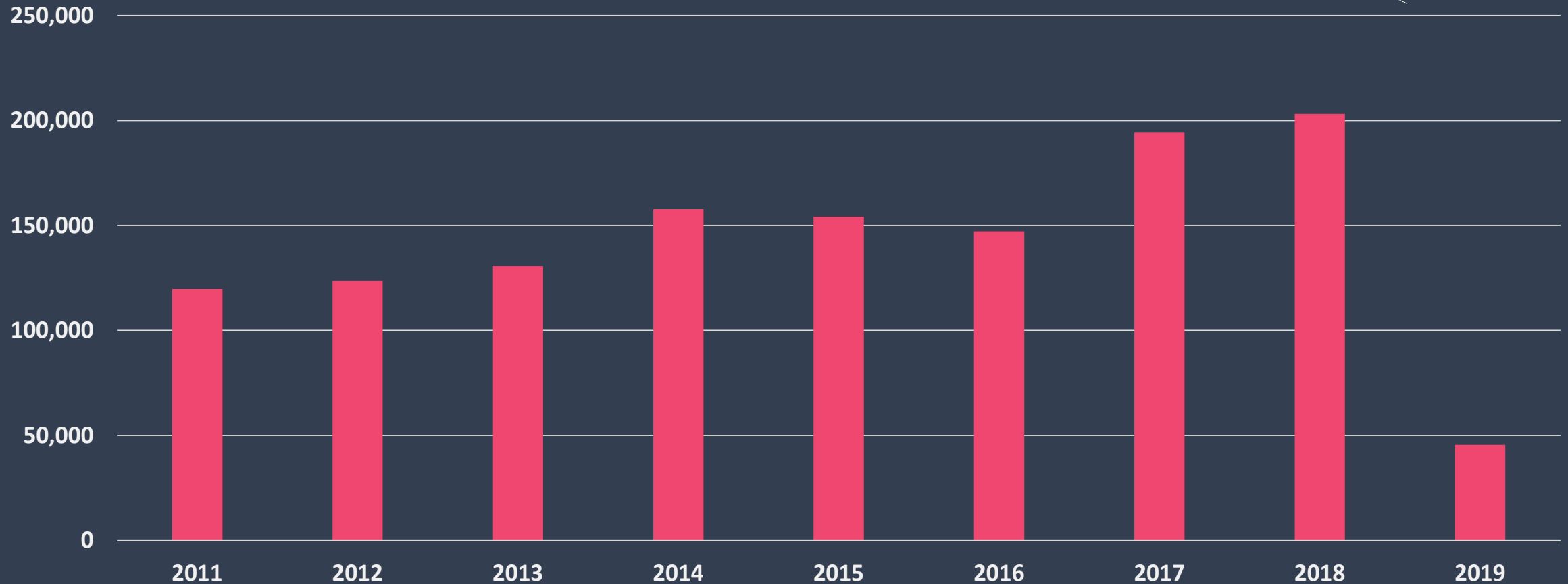
Annual Transport Hours - Helicopters



# SECTOR – AGRICULTURAL AVIATION



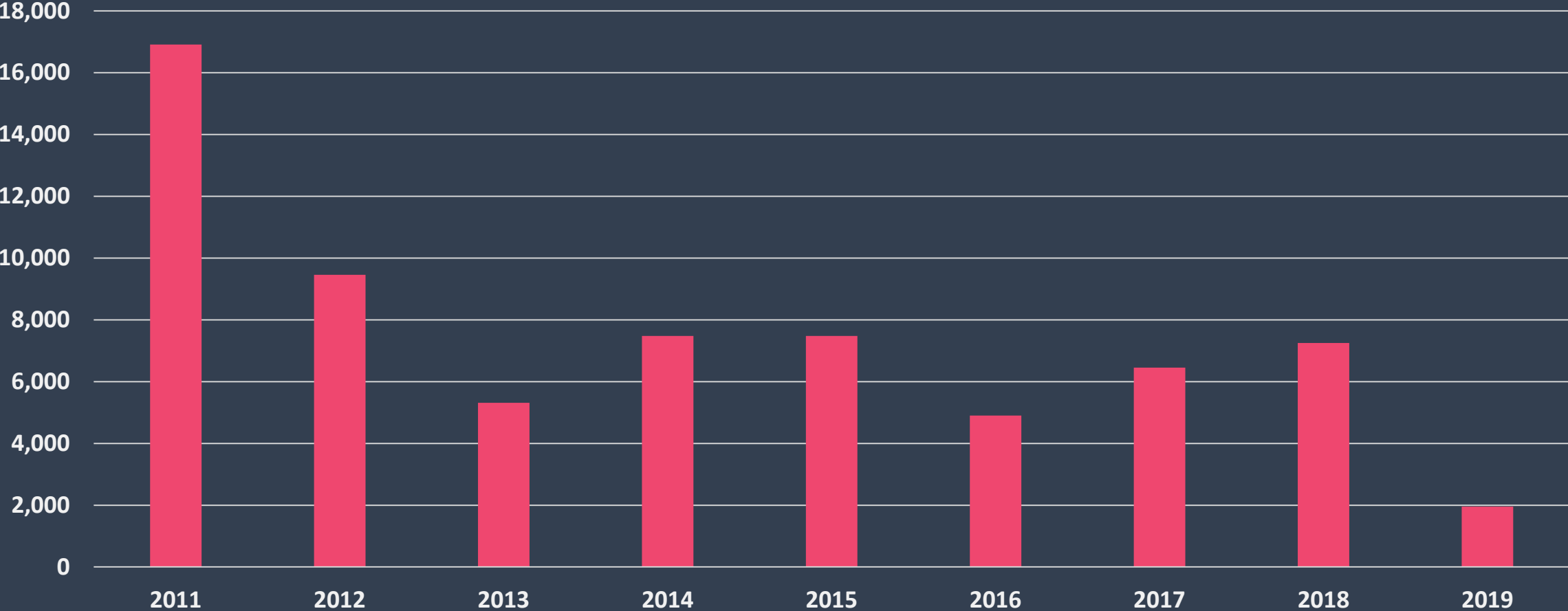
Annual Total Tonnes - Helicopter



# FLIGHT TRAINING ACTIVITY



Annual Training Hours - Helicopters





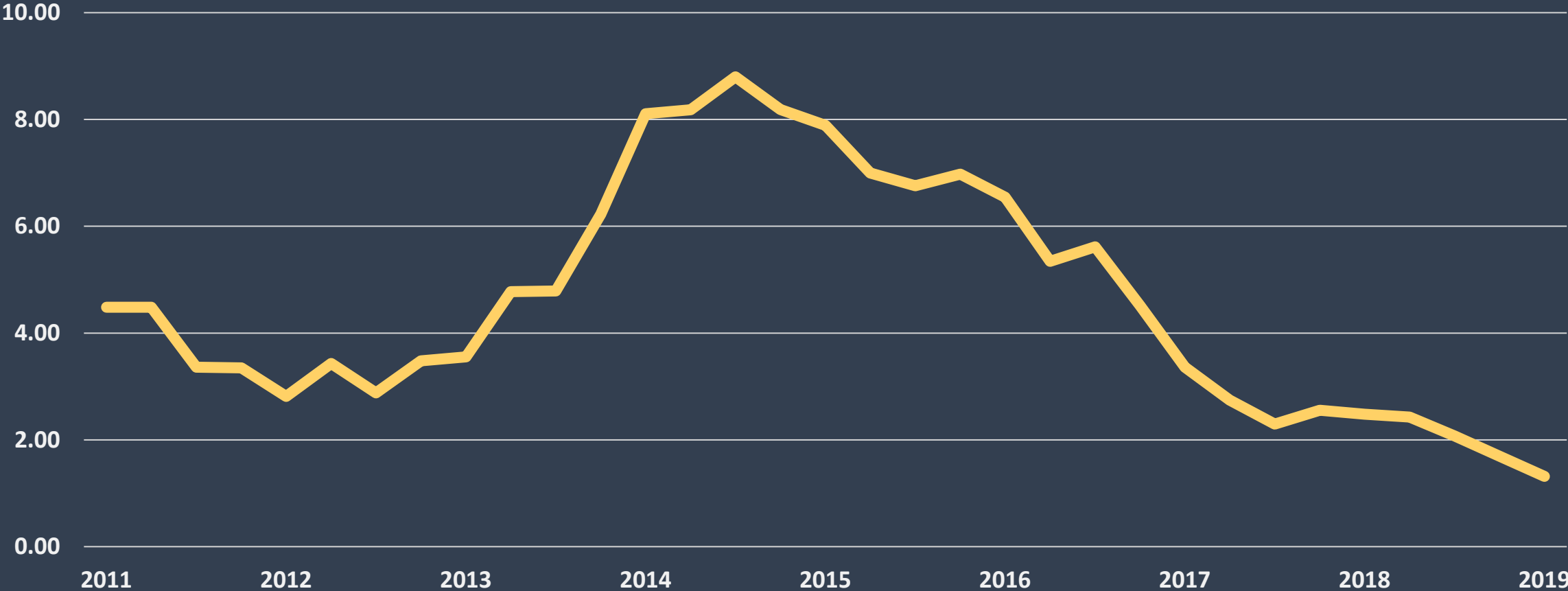
**SAFETY**

**PERFORMANCE**

# PART 135 TRANSPORT SAFETY

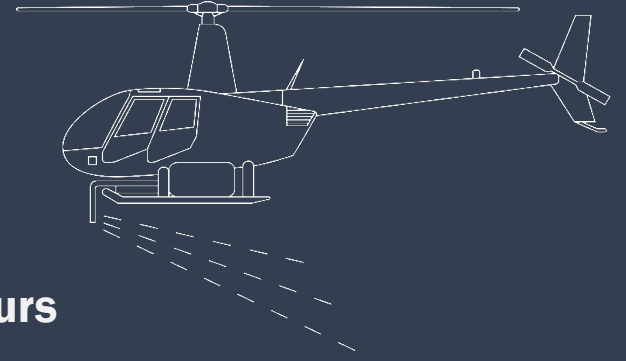


3-Yearly Accidents per 100,000 Hours - Part 135 Helicopters

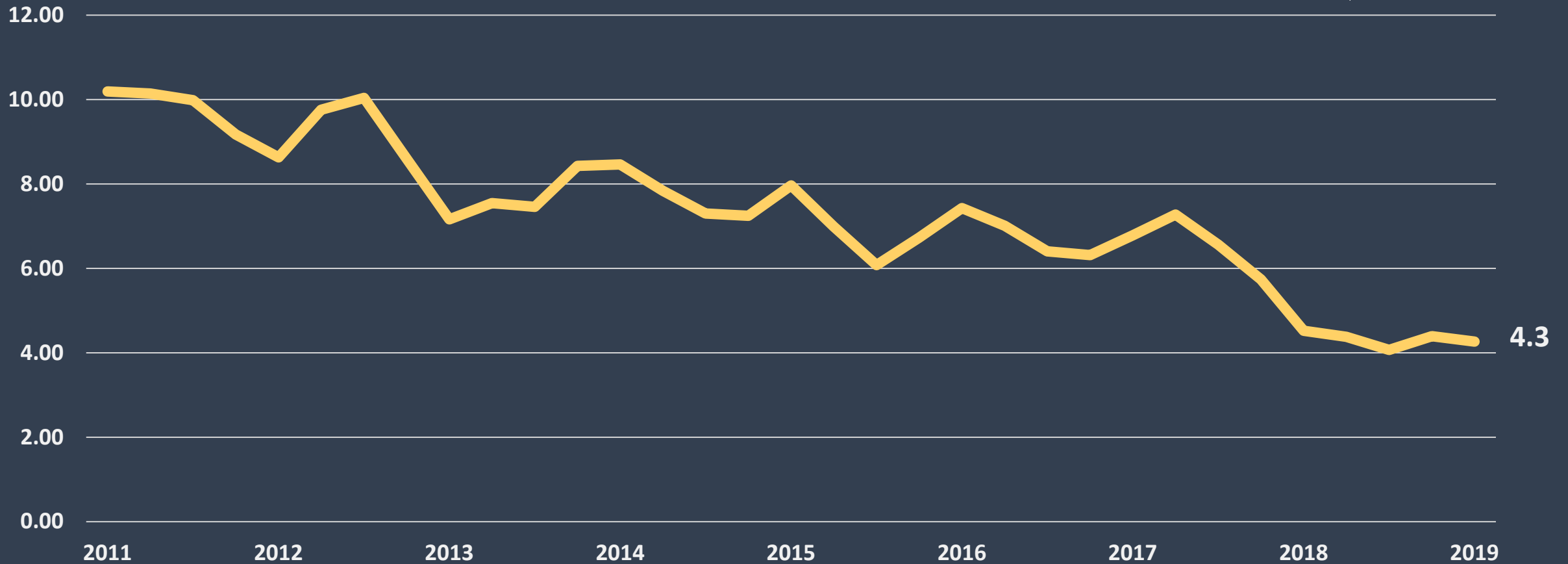


1.3

# AGRICULTURAL AVIATION SAFETY



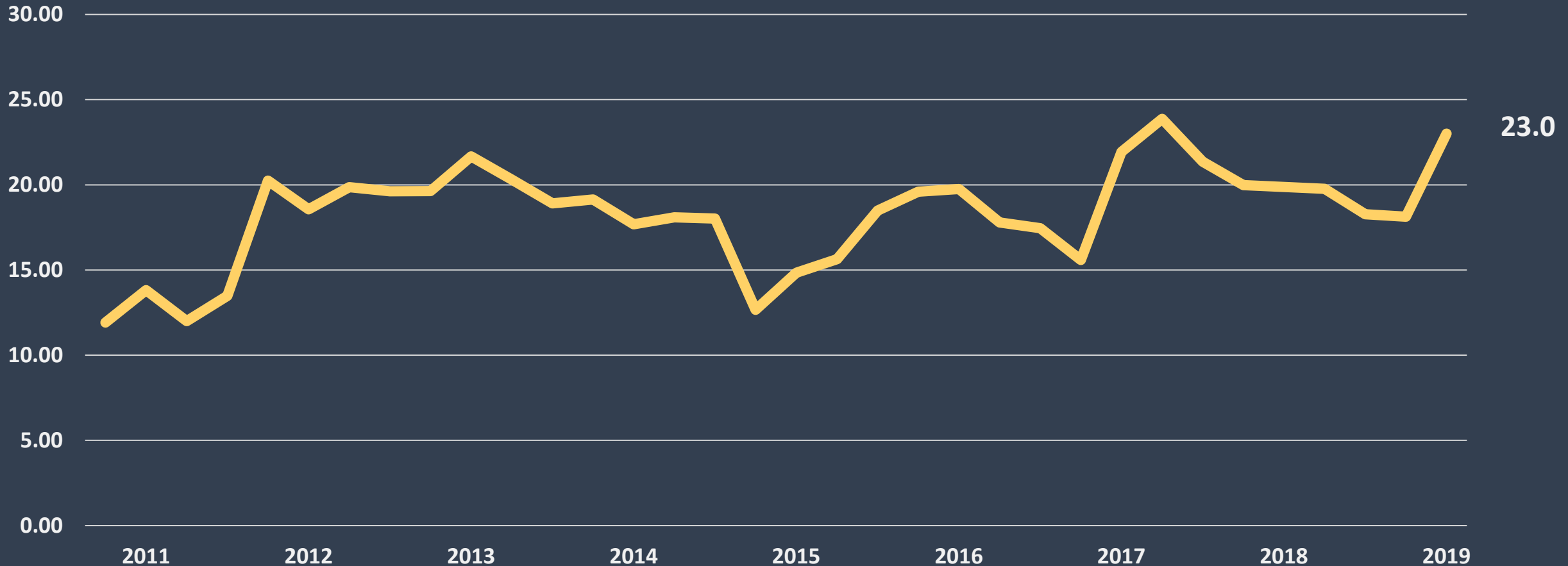
3-Yearly Agricultural Aviation Accidents per 100,000 Hours



# OTHER COMMERCIAL SAFETY



3-Yearly Other Commercial Accidents per 100,000 Hours



**ACCIDENT**

**SPECIFICS**

# THE USHST SAFETY DATA MODEL

US HELICOPTER SAFETY TEAM – CAA Joint Project



**ACC TYPES**

**48**



**CAUSES**

**222**



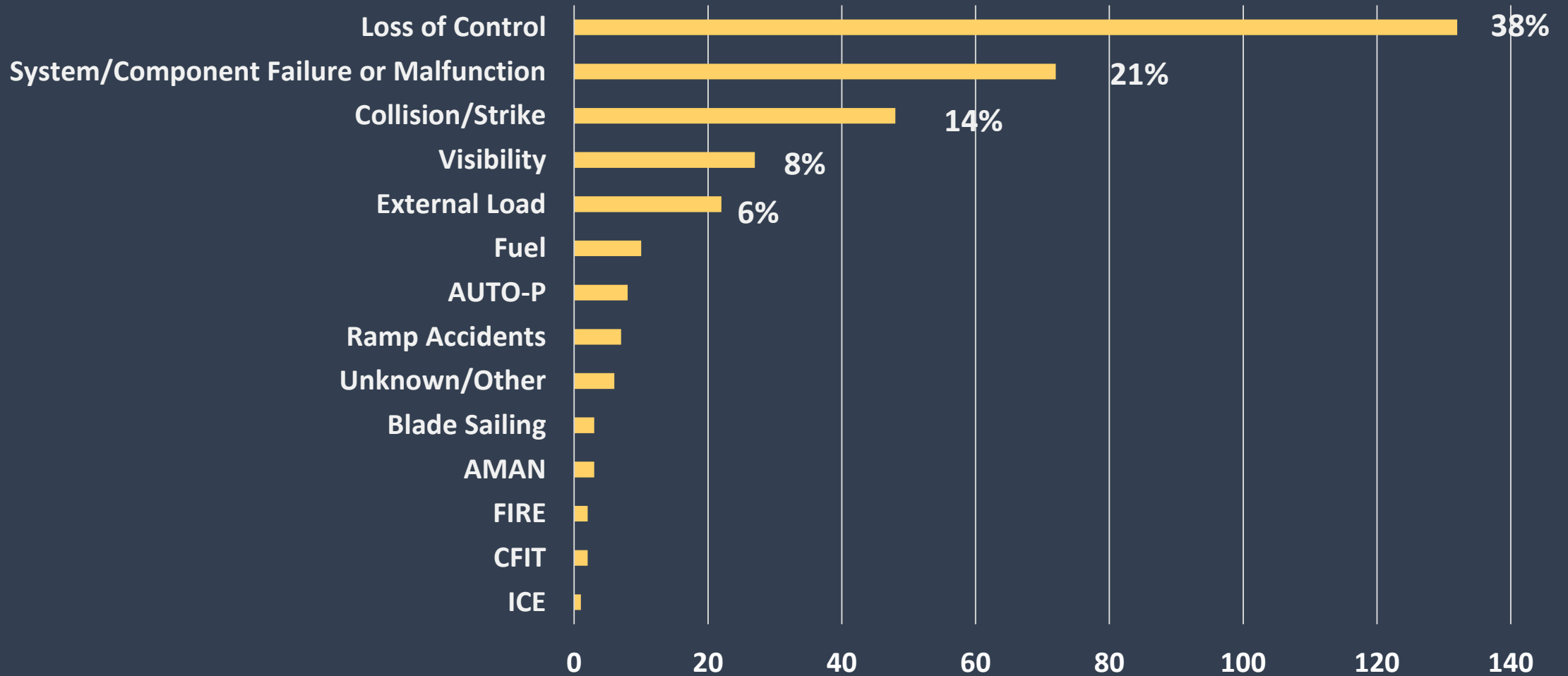
**INTERVENTIONS**

**104**

# ALL ACCIDENTS



## Total Accidents

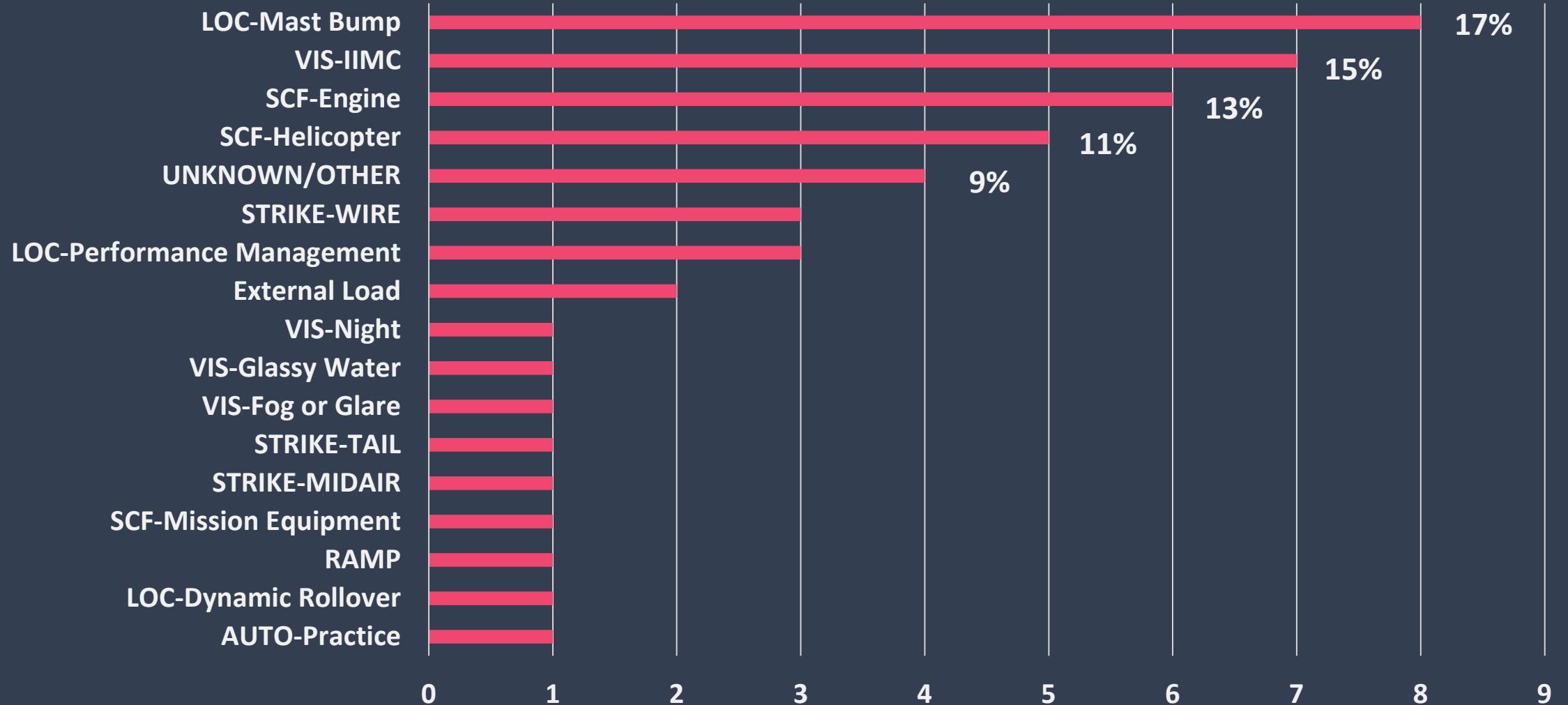




# ALL FATAL ACCIDENTS



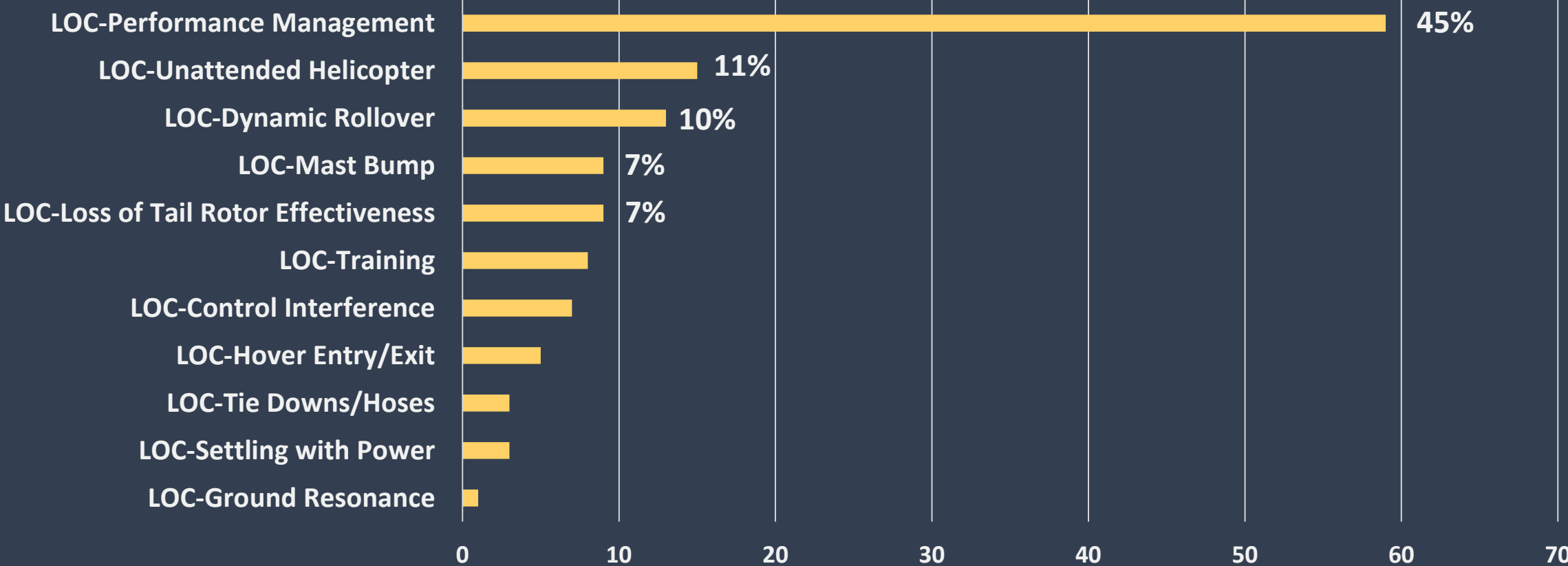
Total Fatal Accidents



# LOSS OF CONTROL



**Total LOC Accidents by Type**



# PERFORMANCE MANAGEMENT



**“.. the pilot accepts that he may have overpitched on the high density-altitude, high-weight, downwind departure and lost rotor rpm..”**

**“Cause: Did not anticipate effect of prevailing wind.”**

# PERFORMANCE MANAGEMENT



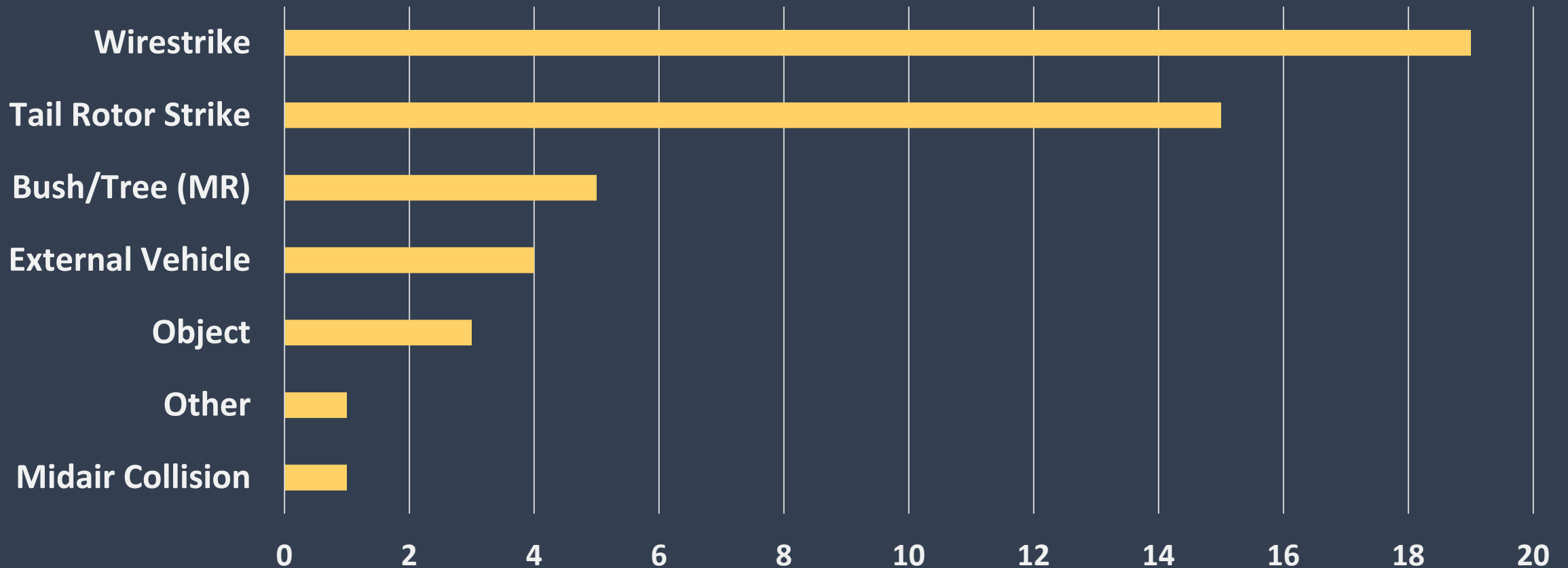
*“The pilot in command did not determine the aircraft operating weight prior to flight.”*

*“...had previously operated turbine helicopters and failed to anticipate the available power difference when operating a piston helicopter.”*

# COLLISION/STRIKE



## Collision/Strike



# TAIL ROTOR COLLISION/STRIKE

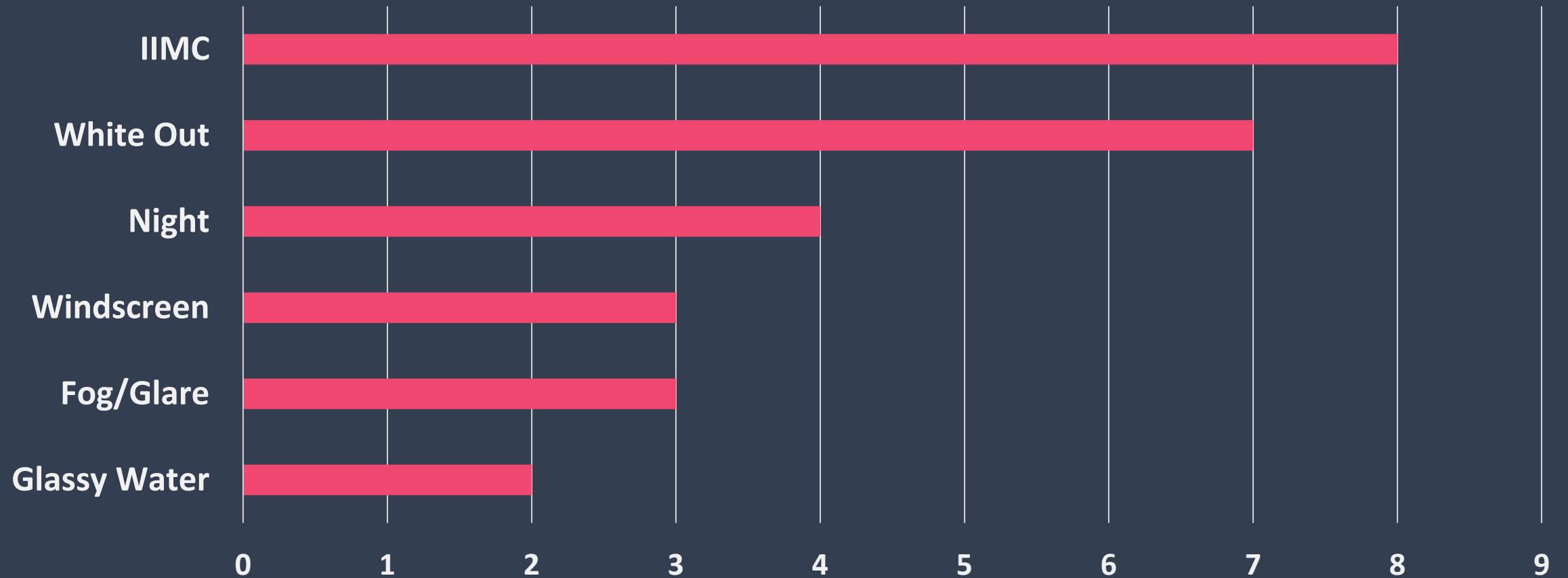


***“The helicopter was hovered on the side of a river bed to allow a shooter to disembark. On liftoff the tail rotor struck a tree trunk that was protruding from boulders in the river bed. The shooter saw the helicopter rapidly climb to around 60 feet. It then rolled to its starboard side and crashed inverted in the river bed. The pilot was killed. The space in which the helicopter was being manoeuvred was extremely confined with minimal main rotor clearance.”***

# VISIBILITY



## Visibility

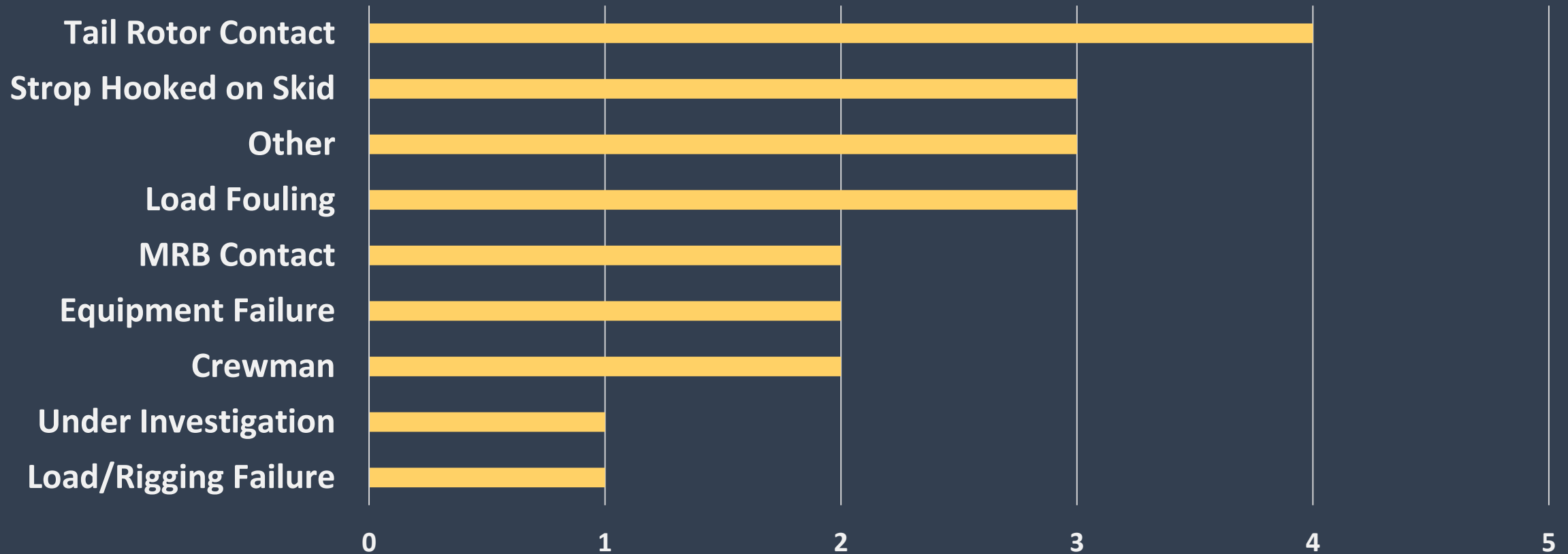




# EXTERNAL LOAD



External Load Accidents by Type



# 2019 AGRICULTURAL HELICOPTERS

## DEFECTS INCIDENTS ACCIDENTS



OCC No	Code	Sev	Date	Time	U/Reg	Location	Description	WR_ID	Model	Part Defect	Part Manu	Part Mod
19/136	DEF	MI	4/01/2019		SM		Engine Chip Light came on during spraying Ops		Bell 206B			
19/190	DEF	MI	7/01/2019		HMP	Gisborne	While waiting for another spray load, noted a light tapping noise from the engine along with a small amount of smoke. Engine shutdown.		Robinson R	Push Rod/Lycoming		IO 540 AEU
19/083	DEF	MA	8/01/2019		OP	Kawaii	During underslung bucket sowing, a sudden extreme vertical bounce developed, it was so violent the pilot was unable to control the helicopter. Pilot feared an in-flight break up so shutdown the machine and carried out a short autorotation to a soft landing.	19/SAI/23	Eurocopter	TBA	Eurocopter	AS350BA
19/1085	INC	MI	18/01/2019		HTV	Southland	Left fuel cap off after filling with 2 Jerry cans.		Robinson R44 II			
19/1050	DEF	MI	24/01/2019		HCM	Te Anau	During routine maintenance engineers found a fuel nozzle cap and insulation tape in the belly tank of the helicopter.	19/SAI/29	KHI Kawasaki	Hughes 369D		
19/892	ACC	CR	25/01/2019		LT	Atiamuri	Helicopter hit power lines and crashed while spraying.	19/SAI/24	Bell 206A-3			
19/531	DEF	MA	28/01/2019		HGO	Kawaii	Cargo hook universal joint failed during agricultural fertiliser operation.	19/SAI/26	Eurocopter	Universal J	Airbus	
19/1375	INC	MI	10/02/2019		GR	Fairlie	So to avoid spray drift, the pilot flew lower than normal, in doing so the carbon fibre spray boom contacted wild oats and damaged the boom.		Robinson R44 II			
19/1287	INC	MI	13/02/2019		KLI	Kaharoa	High rate of descent on approach resulted in a hard landing. Crosstube on skid found to be slightly bent as a result.		Robinson R44			
19/1632	INC	MA	6/03/2019		UC	Gisborne	While spraying kanuka dropped down a steep face and miss judged the distance on the tail rotor from a bush, the tail rotor made contact with the bush. Flew directly back to the loading site and shut down the machine.		Bell 206L-1			
19/3708	DEF	MI	7/03/2019		OI	Temuka	Main rotor driveshaft boot popped off driveshaft multiple times. Found during daily inspections.		Bell 206B	Sealant	Bell	206 B3
19/1893	INC	MI	18/03/2019		HYK	Taihape	While carrying out an agricultural operation the bucket came into contact with the top of a tree. The pilot immediately landed back at the loading site and inspected the bucket. No damage was found but a few twigs were caught on the bottom of the bucket.	19/SAI/99	Hughes 369E			
19/2221	DEF	MI	23/03/2019		FI	Wyndale Fe	During spray ops, spray valve failed to shut off when commanded. Turn was tightened up to stay as close to within block boundaries as possible and aircraft spray pump shut off manually, returned to load site to investigate.		Eurocopter AS 350 B2			
19/2634	DEF	MI	5/04/2019		HMZ	Browns/Peb	Oil Gauges Flickering within green range. Oil temperature wasn't red lining, then short time later oil temperature went to red line, carried out precautionary landing.		Hughes 369HS			
19/2728	ACC	CR	13/04/2019		PZ	Ohaki	During agricultural operation hit a single electric wire. Damage to windscreen, mast, and rotor blades.	19/SAI/57	Robinson R44 II			
19/2940	INC	MI	15/04/2019		HRS	Dipton West	Pilot forgot to close baggage door prior to take-off. Noted by ground crew, pilot notified by radio, landed and secured.		Bell 206B			
19/7493	DEF	MI	11/07/2019		HVD	Omahu Valle	Bent push rod Lycoming 0540		Robinson R	number 6	Lycoming	IO 0540
19/5501	DEF	MI	30/07/2019		HOP	Ardmore	During scheduled maintenance, while complying with Airworthiness Directive DCA/AS350/129A on the cargo swing gimbal/universal joint assembly, P/N OAL 114-10504, a crack indication was identified. The part was removed and the 146 Design Organisation was notified of the defect.	20/SAI/91	Eurocopter	Gimbal/uni	Airborne S	Mod OAL1
19/5492	DEF	MA	6/08/2019		IBQ	Masterton	Pilot reported was carrying out Ag operations when he heard a load noise and noticed his fertiliser bucket had detached from the aircraft, the pilot landed immediately and found the cargo hook link frame in 3 pieces.	20/SAI/97	Eurocopter	Cargo Hook	Airbus	
19/6702	DEF	MI	7/08/2019		HHZ		When the FMS was updated the total mass was uploaded twice and the cg table was omitted. This could potentially lead to the a/c operating outside of its cog range.		Eurocopter AS 350 B2			
19/5757	DEF	MI	7/08/2019		ES	Oamaru	After finishing a bucket job on landing back at a load site. The buckets hangar was hanging rearward down on landing causing it to pierce the under side of the belly or the aircraft on landing.		McDonnell Douglas 500N			
19/5690	INC	MI	12/08/2019		H2P	Te Houka	While carrying out a bucket operation, the pilot failed to maintain a positive rate of climb once he had picked up the bucket. The bucket clipped the top of a previously unseen post resulting in damage to the spinner.		Hughes 369E			
19/5833	INC	MI	21/08/2019		HTT	Balukutha	While spreading fertiliser, once the bucket emptied it twisted and came off the hook falling into the paddock below. Bucket was unserviceable after the event.		Hughes 369E			
19/5927	DEF	MI	29/08/2019		PR	Opoitiki	Fert spreader bar bolts hooked on cargo hook releases cable and pulled the wires out of the hook.		MD Helicopters 500N			
19/6216	DEF	MI	2/09/2019		FI	Abbey Rocks	Pilot stopped operation to allow engineer to carry out Nut Re-torque as part of maintenance following Starflex installation. Previously Detachment of 3x Retaining Nuts allowing yoke assembly and ring to become displaced.		Eurocopter Droop Stop	Eurocopter	AS350B2	
19/6231	INC	MI	2/09/2019		OI	Waimate	Pilot inadvertently depressed the cyclic cargo release button causing the bucket to be jettisoned into a paddock. New to type (30 Hours), the cyclic setup is different to what pilot was used to.		Bell 206B			
19/6012	DEF	MI	2/09/2019		HOP	Ardmore	During scheduled aircraft inspection, two of the four mounts of the agricultural spray tank were found to have cracked attachment brackets. On the R/H forward mount one of the attachment brackets was found cracked completely through and had detached, the remaining attachment bracket was cracked approximately half way through. The L/H forward mount was found to have cracks on both of the brackets about half way through.		Eurocopter	Agriculture	Hellspecs	Modification
19/6164	DEF	MI	9/09/2019		ITD	Hillend	While carrying out fertiliser spreading operations, the cargo hook separated from the cargo swing following the failure of the cargo hook link, resulting in the loss of the fertiliser spreading bucket.		Eurocopter	Cargo Hook	Onboard Systems	
19/6501	DEF	MI	13/09/2019		HVR	Taupo	Cargo hook load beam failed to lock closed while being used to spread fertiliser in the field.		Bell 206L-2	Load Beam	On Board SLC	Talon
19/6767	INC	MI	19/09/2019		ES	Oamaru	IES began to lift off after refuelling and the fuel hose was still in the a/c, causing it to pull tight and break off the nozzle on the end of the fuel hose. A/c landed and inspected. No damage to a/c.	20/SAI/174	McDonnell Douglas 500N			
19/6672	DEF	MI	20/09/2019		HUJ	Glenice, Se	U/S spray tank dump door opened uncommanded.		Robinson R44 II			
19/6551	INC	MI	20/09/2019		HYK	Te Kumu, Te	Near Miss with TV Aerial Wire. On second run back along top of ridge, noticed wire across gateway. TV Aerial Wire to neighbouring house. Block was surveyed with farmer the day before. I was informed of a TV aerial but when we surveyed we found another TV aerial to another neighbouring house which I presumed was the one in contention.		Hughes 369E			
19/6921	DEF	MA	7/10/2019		HPK	Ardmore	Owner reported unusually high oil pressure. Gearbox access revealed widespread contamination of internal surfaces with a thin film of sticky black tar like substance. Also as in several recently reported cases the pressure oil screen is almost completely blocked with the contaminant.	20/SAI/184	Bell 206B	Power plant	Rolls Royce	A250-C20
19/7345	INC	MA	20/10/2019		INR	En-Route	After transit to another job location found zips on the underslung travel bag had opened enough to allow one work bag, one jacket and three jerry cans to slip out. A locking system will now be used to prevent uncontrolled opening.	20/SAI/214	McDonnell Douglas 500N			

7 out of 34 events involved fertiliser rotary spreader buckets

Cargo hook universal joint failed during agricultural fertiliser operation.



During scheduled maintenance, while complying with Airworthiness Directive DCA/AS350/129A on the cargo swing gimbal/universal joint assembly, P/N OAL 114-10504, a crack indication was identified. The part was removed and the 146 Design Organisation was notified of the defect.

Pilot reported was carrying out Ag operations when he heard a load noise and noticed his fertiliser bucket had detached from the aircraft, the pilot landed immediately and found the cargo hook frame in 3 pieces.

While spreading fertiliser, once the bucket emptied it twisted and came off the hook falling into the paddock below. Bucket was unserviceable after the event.



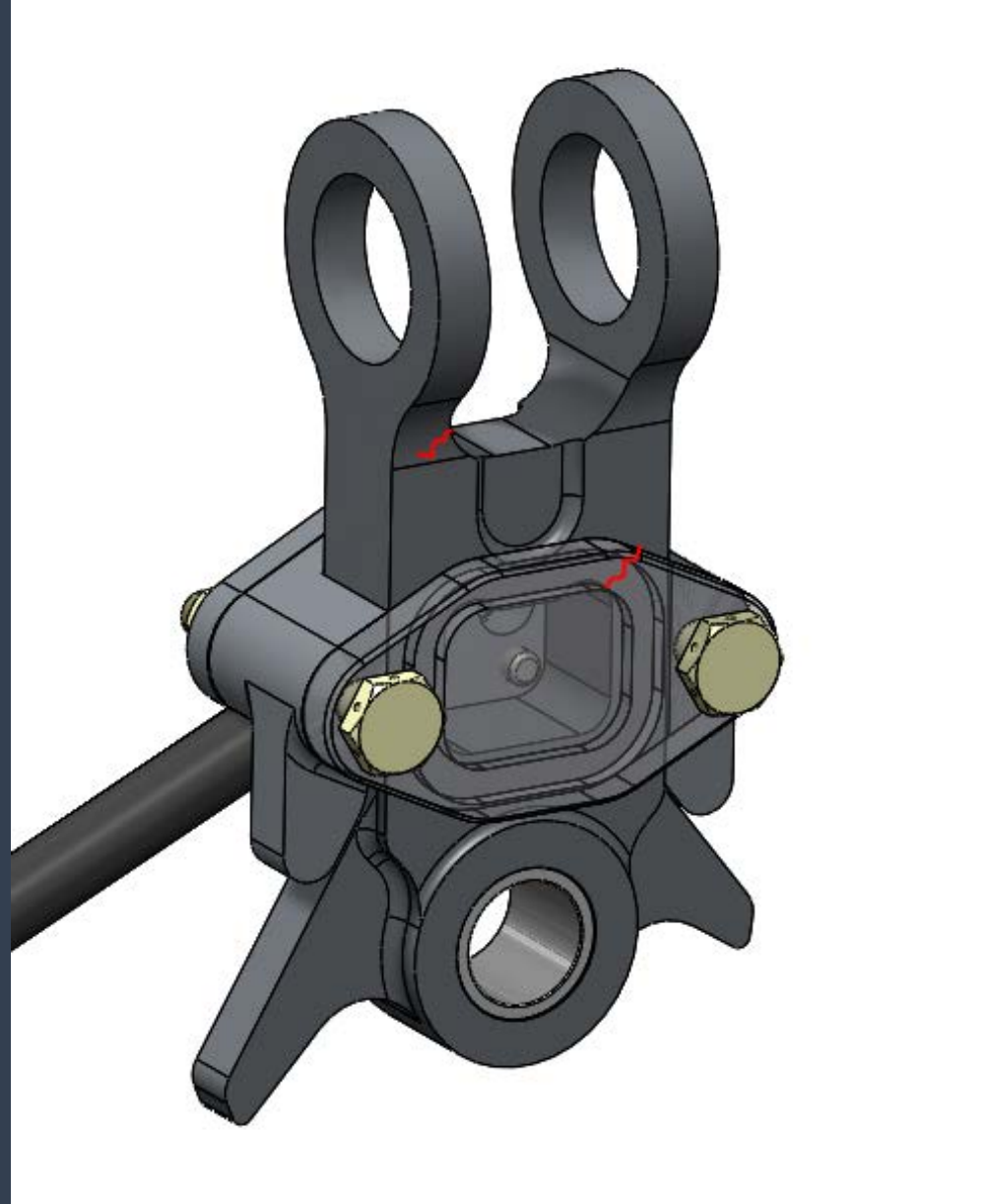
Fert spreader bar bolts hooked on cargo hook release cable and pulled the wires out of the hook.

While carrying out fertiliser spreading operations, the cargo hook separated from the cargo swing following the failure of the cargo hook link, resulting in the loss of the fertiliser spreading bucket.

Cargo hook load beam failed to lock closed while being used to spread fertiliser in the field.

# EXTERNAL LOAD

Onboard Systems  
SB 159-036-00  
Load Cell Torsional  
Fatigue Failure



# EXTERNAL LOAD

## Onboard Systems SB 159-036-00



If torsional loading is present per the *Torsional Load Description* definition on page 3, limit external load time to 100 hours between overhaul of the load cell.  
Upgrade the load cell to the latest configuration as soon as possible.

# EXTERNAL LOAD



Photo Credit: Onboard Systems SB 159-036-00