

Parachuting operations data collection

Marko TAEHTIVAARA and
Yngvi YNGVASON

Combined GA TeB & GA COM meeting 02-2021 – WP12.1
23 November 2021

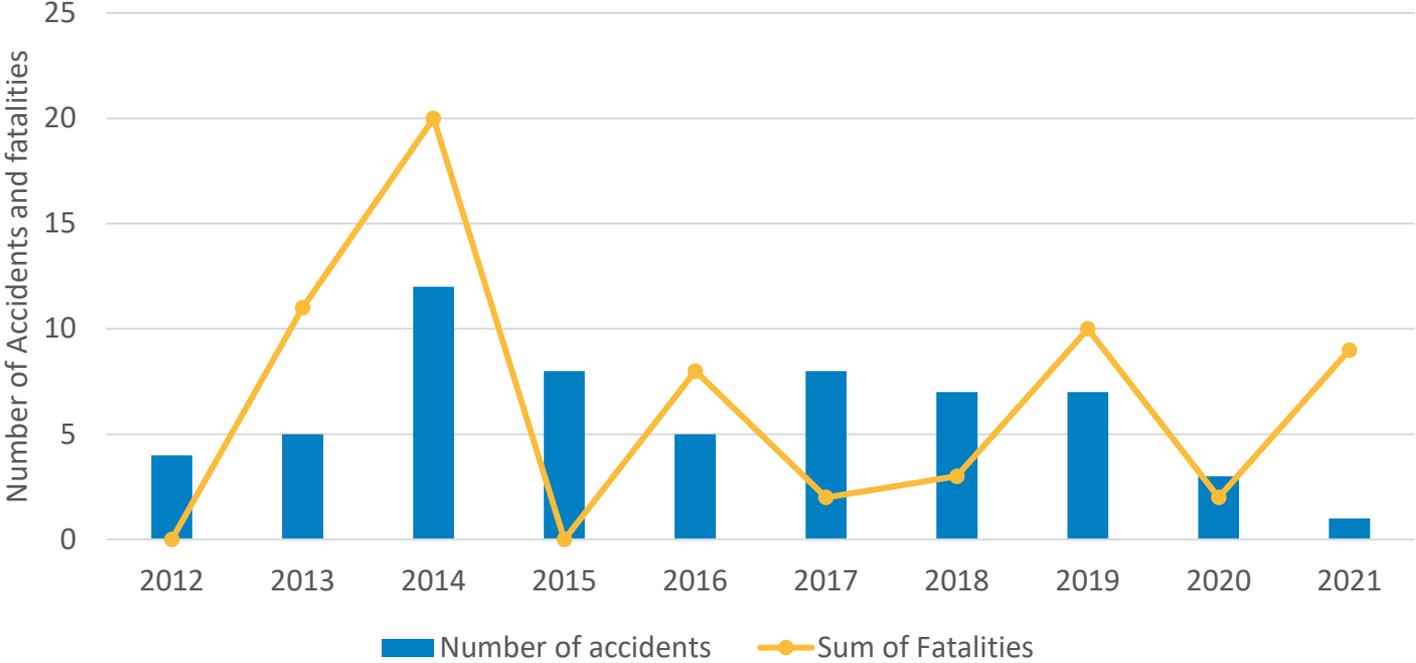
Your safety is our mission.

Main data points

- EASA dataset shows **60** accidents in parachute operations from 2012 – 2021 or 9 years.
- Last 9 years there have been **65** fatalities in **14** accidents.
 - 17 accidents on Cessna 182(13) and 185(4)
 - 13 accidents on Cessna 205(1), 206(7), 207(1) and 208(4)
 - 13 accidents on Pilatus PC 6
 - 1 accident on Piper PA 31
 - 1 accident on COMP Air 8
 - 1 accident on Gippsland GA8
 - 3 accidents on Technoavia SMG 92
 - 1 accident on SHORT SC7
 - 2 accidents on PAC 750XL
 - 1 accident on Yakolev YAK 12

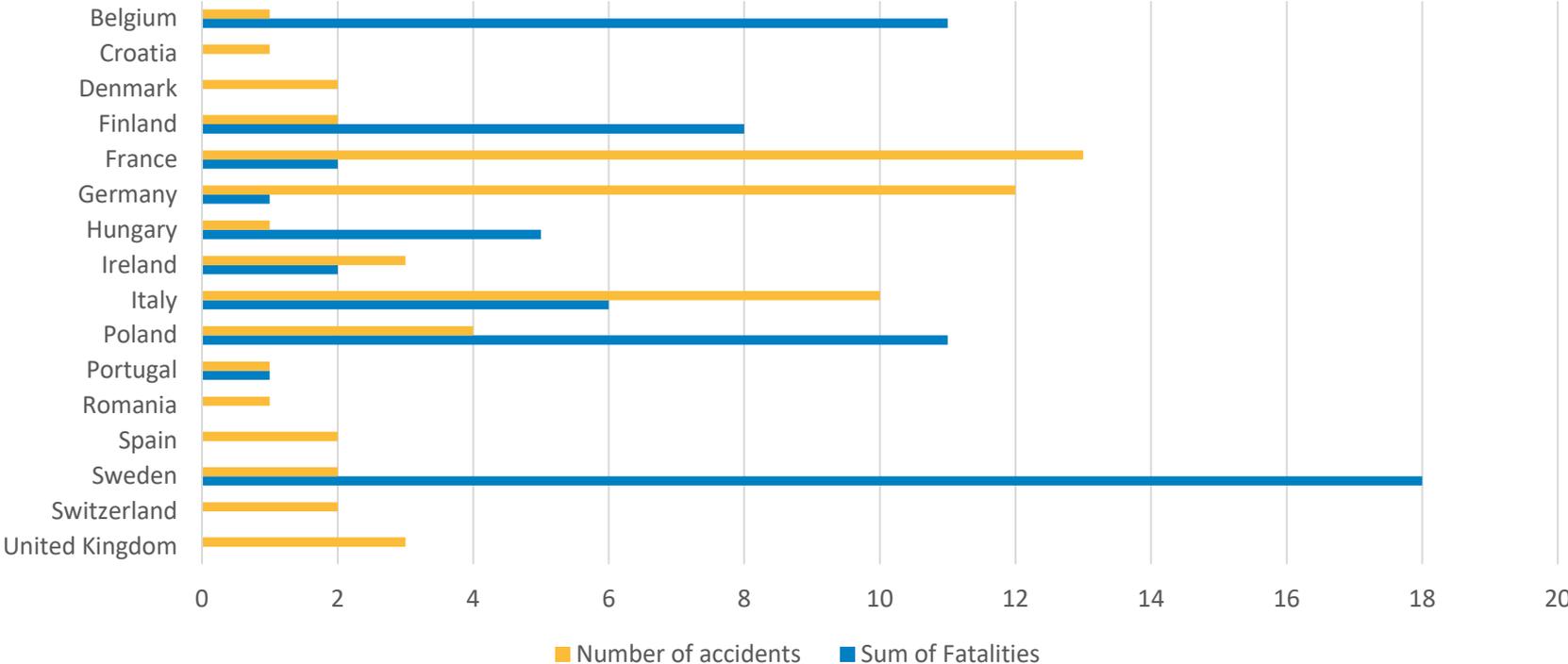
Data analysis – accidents and fatalities

Parachuting ops accidents and fatalities per year



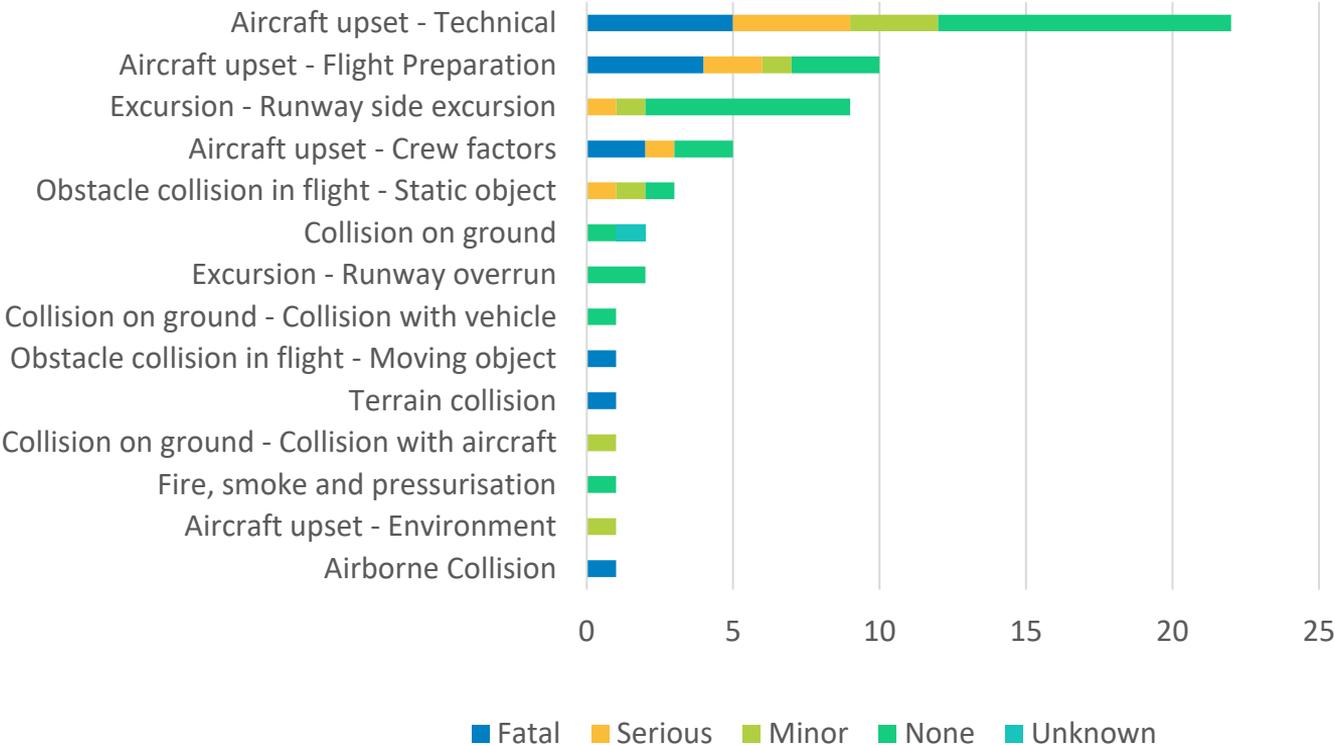
Data analysis

Number of accidents and fatalities per State of occurrence
2012-2021



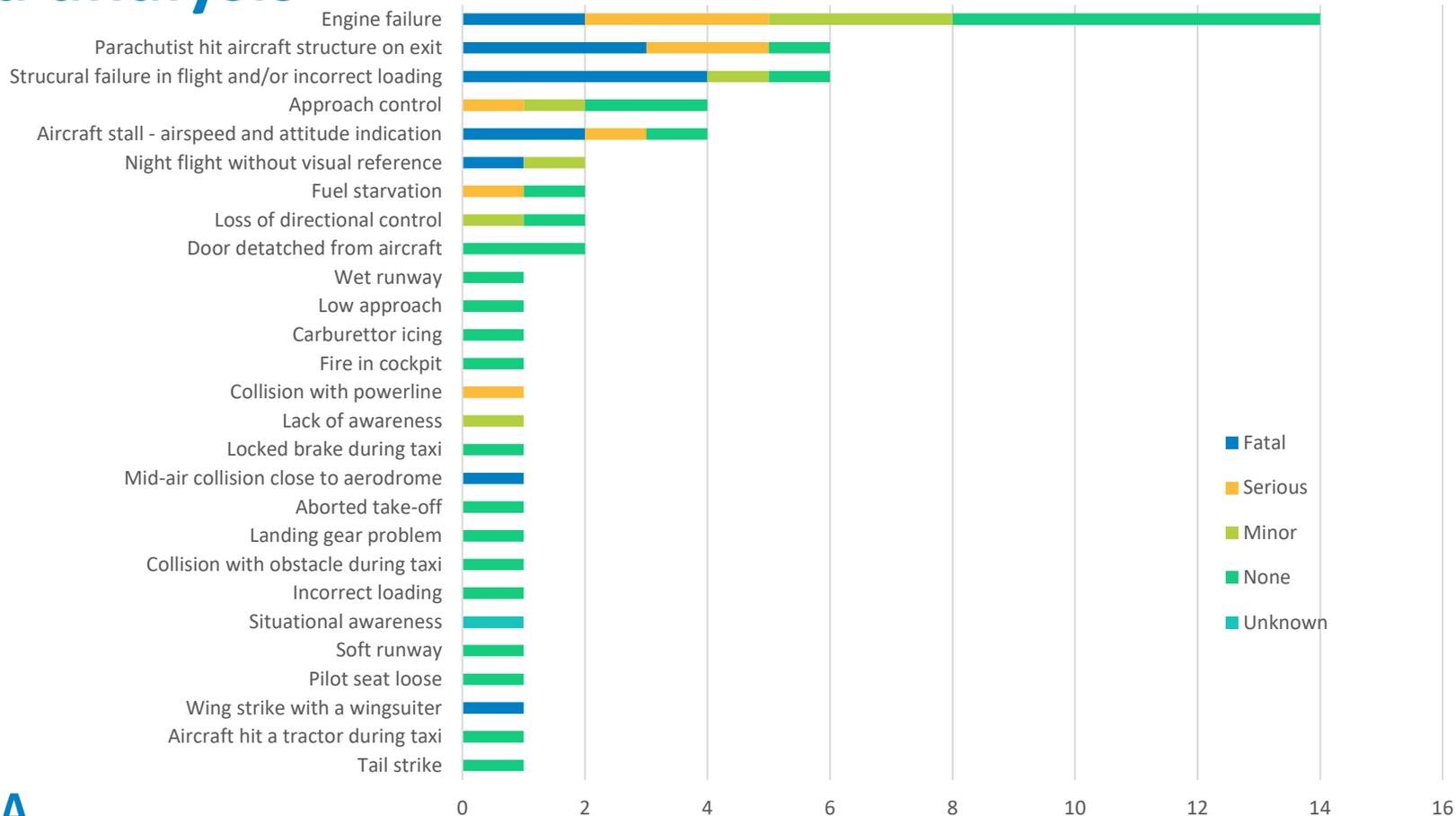
Data analysis

Number of Parachute ops accidents 2012-2021 per Key Risk Area



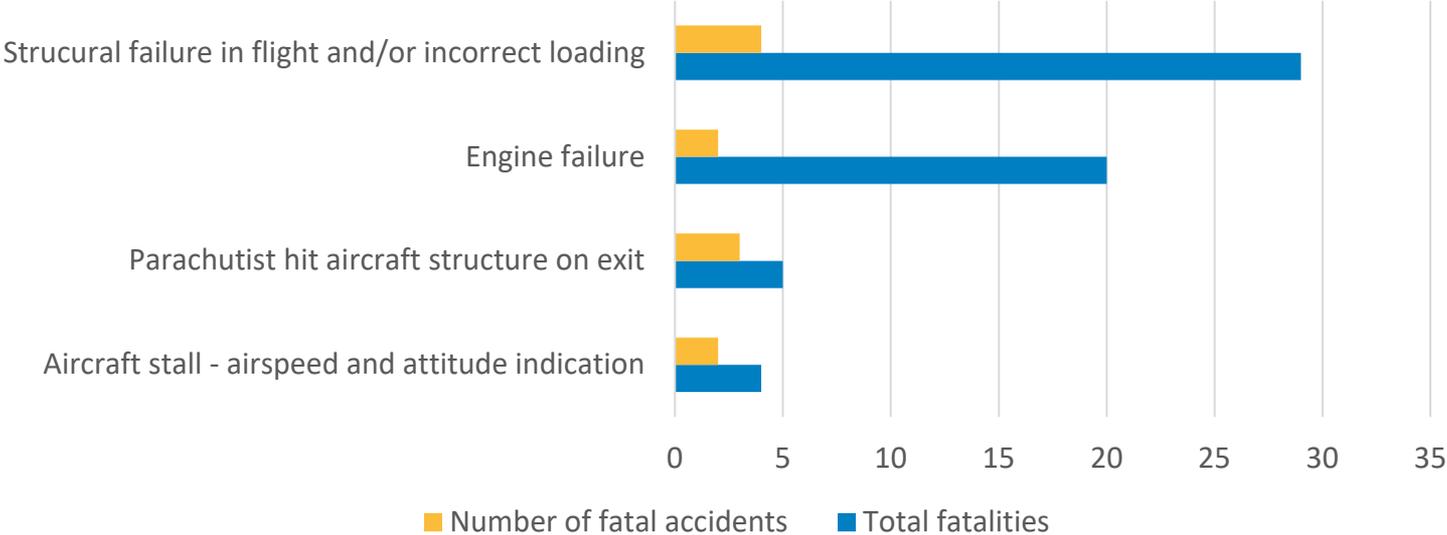
Data analysis

Parachute operations accidents 2012-2021 - Main issues



Data analysis

KRA Aircraft Upset - Fatal accidents and the Main identified causes
2012-2021



Aircraft upset - Technical

→ Engine failures

Engine failure

File number	Year	State/area of occurrence	Aircraft reg	Flight phase	Fatalities	Manufacturer	Model	Headline
14000438	2014	Poland	N11WB	Take-off	11	PIPER	PA31P	Piper PA-31 Navajo - Engine problems during climb-out, loss of height and collision with ground. A/C Destroyed by post-impact fire - 12POB - 11OB Fatal -10B Serious - A/C Destroyed
Unknown	2021	Sweden		Take-off	9	DE HAVILLAND	DHC2	It looks like there is an engine failure shortly after take-off

Analysis Summary

The analysis shows clearly that there were 16 accidents, where engine failure is the main factor, in parachuting operations from 2012-2021. **2 of these 16 accidents resulted in 20 fatalities.** The causes for the engine failure are different between incidents, but two of them are fuel starvations. It is also worth noting that in several of these accidents the cause has not been determined. The recent accident in July in Sweden is a part of this analysis in spite the fact that factual data has not been released from the SIA. An engine failure is suspected but it is important that we await the factual report coming in soon.

Aircraft upset – flight preparation

→ Aircraft's envelope exceeded, loss of control and structural failure

File number	Year	State of occurrence	Aircraft reg	Flight phase	Fatalities	Manufacturer	Model	Headline
14/048	2014	Switzerland	HB-CBZ	Take-off	0	CESSNA	C182	Runway overrun on take-off.
201301984	2013	Belgium	OO-NAC	En route	11	PILATUS	PC6	Abrupt maneuver - left wing structural failure due to a significant overload - A/C out of control crashed into a ploughed field
201400793	2014	Finland	OH-XDZ	En route	8	COMP	AIR 8	During climb close to drop-off area, right wing broke due to a fatigue failure - aircraft entered a spin, crashed and caught fire - 11POB - 8OB Fatalities
BFU 3X089-14	2014	Germany	D-EHLB	Take-off	0	CESSNA	C182	A/C has an off-field landing after mush stall in initial climb phase
EASA-2014002862	2014	Denmark	OY-SDT	Take-off	0	CESSNA	C182	Aircraft sank and crashed after retracting the flaps. Parachutists on board. Substantial damage, no injuries
EASA-2016001338	2016	Portugal	D-FSCB	En route	1	PILATUS	PC6	In-flight fuselage breakup due to material fatigue.
EASA-2019002053	2019	Sweden	SE-MES	Take-off	9	GIPPSLAND	GA8	Aircraft was in high altitude close to drop-off area. Aircraft suffered structural failure causing fatal injuries to all onboard.

Twenty nine persons were fatally injured in these accidents. From the existing data, it can be inferred that the overloading of the aircraft caused either the structural failure or a stall that led to the structural failure. The position of the persons onboard and how they moved towards the door might have caused the stall. The position of each passenger is crucial to the aircraft's stability and sudden change to the center of gravity can easily result in a stall and resulting loss of control or structural failure. Better flight preparation could have prevented this accident. Other factors, like the request from sky-divers to the pilot to fly as slow as possible before the jump increases the risk of a stall. THIS activity increases also the risk.

Aircraft upset – flight preparation

→ Parachutist hit aircraft on exit

File number	Year	State/area of occurrence	Aircraft reg	Flight phase	Fatalities	Manufacturer	Model	Headline
EASA-2014002725	2014	France	F-GGVC	En route	1	CESSNA	C206	Parachute opened upon parachutist leaving the aircraft, parachute struck the tail of the aircraft and damaged part of the stabilizer, loss of control of aircraft and subsequent crash.
EASA-2015001797	2015	Ireland	EI-CDP	Unknown	0	CESSNA	C182	Entanglement of parachute canopy and lines over horizontal stabiliser and parachute contact with tailplane followed by A/C upset
EASA-2016001176	2016	Italy	S5-CMB	En route	2	PILATUS	PC6	Parachutists reserve parachute opened prematurely. Parachutist hit the RH stabilizer - structural damage in flight and crash.
EASA-2016001643	2016	Italy	PH-JAS	En route	0	CESSNA	C208	Skydiver hits horizontal stabilizer.
EASA-2018005878	2018	Germany	N208TE	En route	0	CESSNA	C208	Parachutist hit the elevator during exit the A/C
EASA-2020002769	2020	Italy	T7-SKY	Manoeuvring	2	PILATUS	PC6	Collision between airplane and skydiver. Crash.

Analysis Summary

In 3 of 6 accidents of this nature, there were 5 fatalities. Two of them on Pilatus PC6 and one on a Cessna 206. All of these accidents could have been avoided with better flight preparation. This questions the organisational structure of the parachute operations.

Aircraft upset – Crew factors

→ Speed and attitude monitoring

Speed and attitude monitoring

File number	Year	State/area of occurrence	Aircraft reg	Flight phase	Fatalities	Manufacturer	Model	Headline
EASA-2017002384	2017	Italy	I-SCAP	Take-off		CESSNA	C182	Loss of control inflight - crash and fire.
EASA-2018000989	2018	Ireland	G-KNYS	Approach		CESSNA	C208	Aircraft crash following steeply banked turn
EASA-2018001586	2018	Germany	D-FCLG	En route		PIPLATUS	PC6	Aircraft stalled during climb- parachutists on board - spin on recovery. No injuries, substantial damage.
Unknown	2020	Finland	OH-CSO	Take-off	0	CESSNA	C206	Crash during take-off due to warm weather incorrect take-off procedure.

Analysis Summary

In 2 of 4 accidents of this nature, there were 3 fatalities. Both of them on Pilatus PC6. Both of these accidents could have been avoided with better flight preparation. This questions the organisational structure of the parachute operations.

Thank you for your attention

easa.europa.eu/connect



Your safety is our mission.

An Agency of the European Union 