



УДК 656.7.08

**THE ANALYSIS OF THE MAIN CAUSES OF AVIATION INCIDENTS, ACCIDENTS AND  
CRASHES IN 2025 AND WAYS OF PREVENTING THEM**

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**Abstract.** The causes of aviation incidents, accidents and crashes for 2025 were analysed and divided into four main groups. The illustrative cases of their causes and consequences were given. The possible ways of preventing further aviation incidents or accidents were suggested.

**Keywords:** causes of aviation incidents, accidents; flight safety; ways of preventing accidents and incidents.

**АНАЛИЗ ОСНОВНЫХ ПРИЧИН АВИАЦИОННЫХ ИНЦИДЕНТОВ,  
ПРОИСШЕСТВИЙ И КАТАСТРОФ В 2025 ГОДУ И СПОСОБЫ ИХ  
ПРЕДОТВРАЩЕНИЯ**

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**Аннотация.** Причины авиационных инцидентов, происшествий и катастроф за 2025 год были проанализированы и разделены на 4 основные группы. Примеры ситуации этих причин и их последствий были представлены. Возможные способы предотвращения дальнейших авиационных инцидентов и происшествий были предложены.

**Ключевые слова:** причины авиационных инцидентов, происшествий; безопасность полетов; способы предотвращения инцидентов и происшествий.

Flight safety has always been one of the key components of aviation. A lot of people are deeply indulged in maintaining the highest level of flight safety all over the world. Travelling by plane is considered to be the safest way of transportation nowadays. But nevertheless, aviation incidents happen almost every day all over the world. Each accident or incident is thoroughly investigated so that in future it can be avoided or at least it will lead to less damage to aircraft and injuries among passengers. Thus, the main aim of this article is to understand what can have a negative influence on flight safety nowadays all over the world and what can be done to improve the situation. In our study the following tasks will be solved:

- To analyse the reports of aviation incidents and accidents in 2025 from the site “Aviation herald” [1].
- To define the main causes that affected flight safety in 2025.
- To recommend possible ways of avoiding or minimizing the risk of flight safety related events in the future.

So, what is flight safety? It is a term encompassing the theory, investigation and categorization of flight failures and the prevention of such failures through regulation, education and training. Flight safety is connected to aircraft design and maintenance, the development of navigation aids and new safety rules and procedures [2, 3].

Accidents and incidents usually occur due to a combination of several different causes – factors or cause factors. For simplicity, these factors have been categorized into three groups: Man, Machine and Environment [2].

Man factor involves people directly involved in aircraft operation – pilots, ATC and all human involvement in aircraft design, construction, maintenance, operation and management [2, 5].

Machine factor encompasses aircraft system failures, engines malfunctions, avionics errors or structural defects.

Environment concerns integrate weather, topography, natural phenomena/natural disasters with human-created elements of aviation environment such as air traffic control, international legislation, airports, NAVAIDs, rules, regulations, procedures[4].

As man is involved in all three, it is vital to consider the human role in aviation. Actually about 80% of aviation crashes happen due to human factor, which is considered to be the main one. Nowadays it usually refers to any factor which could affect an individual's performance. Human factor is about people: it is about people in their working and living environments, their relationship with other people, with machines, equipment and procedures [2, 5].

To identify the primary factors affecting contemporary flight safety, we analyzed incident and accident reports from January to December 2025, sourced from the site “Aviation herald” [1].

The total number of incidents, accidents and crashes happened in 2025 are depicted (chart 1) according to the month of their occurrence. The most “dangerous months” turned out to be June, July and September.

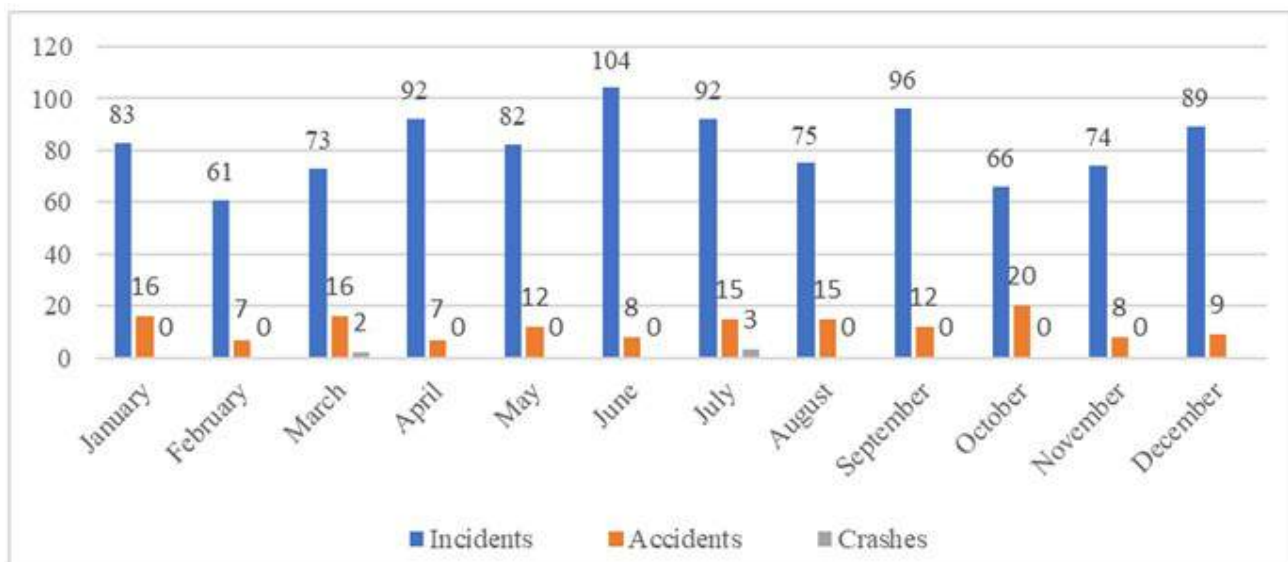


Chart 1. The distribution of aviation events by months for 2025

The primary factors contributing to aviation incidents and accidents occurrence in 2025 are shown on the chart (chart 2) below.

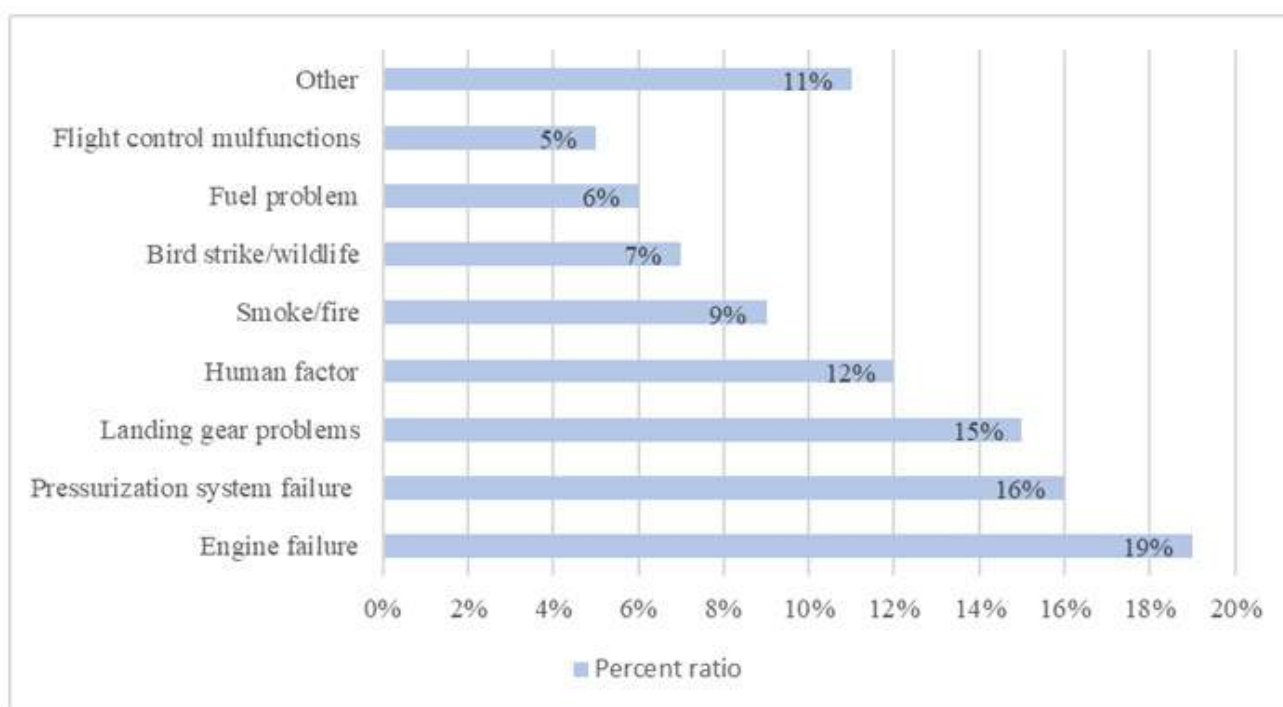


Chart 2. The percentage ratio of aviation incidents, accidents and crashes for 2025

The data reveal four primary categories of aviation related safety events, attributable to various system failures and operational issues:



1. Engine failure related events (19%). The main causes are metal fatigue, manufacturing faults, FOD ingestions. The major consequences include forced landings, rejected take offs, fuselage failures. Illustrative cases include: UPS MD11 at Louisville on Nov 4th 2025, burst into flames on takeoff · Delta B763 over Atlantic on Oct 21st 2025, engine shut down in flight · Edelweiss A343 near Jeddah on Nov 10th 2025, engine shut down after fire indication · Spicejet B738 near Kolkata on Nov 9th 2025, engine shut down in flight [1].

2. Pressurization system failure related events (16%). The main causes are human errors, material fatigue, engineering fault, failure of the aircraft pressurization system. The major consequences are pilot's incapacitation, health problems of passengers or crew members. Illustrative cases include: Volaris A21N near Las Vegas on Oct 12th 2025, loss of cabin pressure; ANZ A320 at Auckland on Nov 15th 2025, hydraulic problems · United B737 at Albuquerque on Jun 12th 2025, cabin pressure problems; Malaysia B738 near Bintulu on Oct 21st 2025, loss of cabin pressure [1].

3. Human factor related events (12%). The main causes include ATCOs and pilots mistakes, procedural violations, interaction problems, lack of skills and feeling fatigue. The major consequences are loss of separation, aircraft collisions, aircraft damage. Illustrative cases include: Ryanair B738 at Cluj on Nov 3rd 2025, first officer incapacitated; PIA A320 at Lahore on Jan 17th 2025, landed on wrong runway; ITA A339 at Los Angeles on Oct 31st 2025, turned wrong on departure; Smartwings B38M at Marsa Matruh on Jul 16th 2025, QNH error [1].

4. Landing gear problems related events (15%). The main causes are bird strikes, rough landings, structural failure, mechanical defects, foreign object damage. The major consequences are diversions to alternate aerodromes, aborted take-offs, passenger evacuation. Illustrative cases include: Westjet B738 at Sint Maarten on Sep 7th 2025, main gear collapse; American B738 at Dallas on Feb 10th 2024, overran runway on landing; Republic E175 at Boston on Jul 14th 2025, tail strike on landing; AZAL A320 at St. Petersburg on Oct 20th 2025, landing gear problems [1].

In conclusion, based on this analysis, the following recommendations will help to improve flight safety and reduce the number of incidents and accidents in the future:

1. In case of engine failures, we suggest that personnel must provide predictive maintenance by using vibration and oil debris monitoring (HUMS) to detect bearing fatigue and turbine wear before critical failure occurs. Furthermore, it is important to apply strict Foreign Object Debris (FOD) control procedures on aprons and runways.

2. In case of landing gear problems dual inspection protocols regarding removal of landing gear safety pins and locks must be provided.

3. In case of pressurisation system problem, we suggest airlines/authorities improving immediate oxygen mask discipline by flight crew before cabin announcements and also usage of non-



destructive testing (ultrasonic/X-ray) of door surrounding structures and window frames on high-cycle aircraft.

4. In case of human factor, the installations of cabin altitude warning repeaters in the flight deck will be of much use. Pilots must be better trained to initiate emergency descent immediately without waiting for ATC clearance.

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