



ICAO

SAFETY

Safety Report



Coordinated, Risk-based Approach to Improving Global Aviation Safety

The air transport industry plays a significant role in global economic activity and development. One of the key elements to maintaining the vitality of civil aviation is to ensure safe, secure, efficient and environmentally sustainable operations at the global, regional and national levels.

A specialized agency of the United Nations, the International Civil Aviation Organization (ICAO) was established in 1944 to promote the safe and orderly development of international civil aviation throughout the world.

ICAO promulgates Standards and Recommended Practices (SARPs) to facilitate harmonized regulations in aviation safety, security, efficiency and environmental protection on a global level. Today, ICAO manages over 12 000 SARPs across 19 Annexes and five Procedures for Air Navigation Services (PANS) to the Convention on International Civil Aviation (Chicago Convention), many of which are constantly evolving in tandem with the latest developments and innovations. ICAO also serves as the primary forum for cooperation in all fields of civil aviation among its 193 Member States.

Improving the safety of the global air transport system is ICAO's guiding and most fundamental strategic objective. The Organization works constantly to address and enhance global aviation safety through the following coordinated activities:

- Policy and standardization;
- Monitoring of key safety trends and indicators;
- Safety analysis;
- Specific programmes to address safety issues; and
- Implementation support.

The ICAO Global Aviation Safety Plan (GASP) presents the global strategy for the continuous improvement of aviation safety. The purpose of the GASP is to continually reduce fatalities, and the risk of fatalities, by guiding the development of a harmonized aviation safety strategy.

This edition of the safety report provides accident statistics and analysis for the year 2021 as well as updates on GASP indicators associated with the goals and targets set out in the GASP. Results of analysis from the 2017–2021 safety reports are used as benchmarks for comparison, however it should be noted that the data presented in this report may not exactly match earlier editions due to updates made during the intervening period.

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Note: The ICAO regions based on the Member States accredited to each ICAO Regional Office are used in the report and are listed in [Appendix 1](#). This document focuses primarily on scheduled commercial flights. The scheduled commercial flights data was based on the Official Airline Guide (OAG) combined with internal ICAO preliminary estimates.



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Executive Summary

ICAO reports that global passenger traffic recovered modestly in 2021 with 2.3 billion passengers worldwide or 49 per cent below pre-pandemic (2019) levels, up from the 60 per cent drop seen in 2020, the first year of the pandemic when only 1.8 billion passengers took to the air, compared to 4.5 billion in 2019. As indicated in Chart 1, the number of flight departures for scheduled commercial operations increased by approximately 11 per cent with around 25 million departures in 2021, compared to around 22.5 million in 2020.

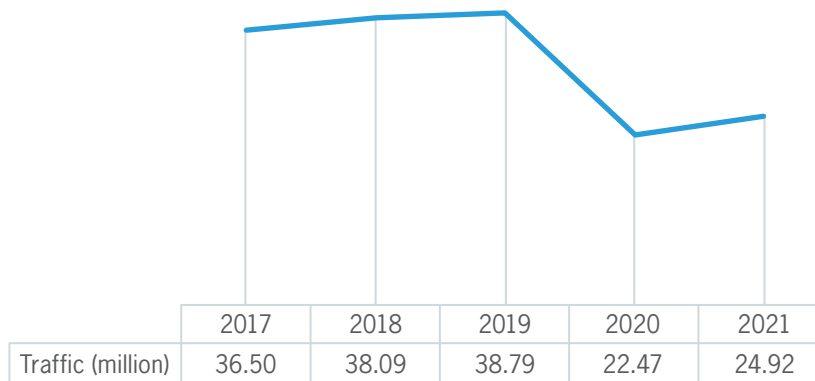


Chart 1. | Global traffic of flight departures

Yearly accident statistics indicate a decrease in the global accident rate in 2021. From 2020 to 2021, there was no change in the total number of accidents, as reported by States. The global accident rate of 1.93 accidents per million departures in 2021 decreased by 9.8 per cent from the 2020 rate of 2.14 accidents per million departures. As defined in ICAO Annex 13 — *Aircraft Accident and Incident Investigation*, the accidents used for these statistics were reviewed and validated by the ICAO Occurrence Validation Study Group (OVSG), formerly Safety Indicators Study Group (SISG), and involved scheduled commercial operations of aircraft with a certified maximum take-off weight (MTOW) of over 5 700 kg.

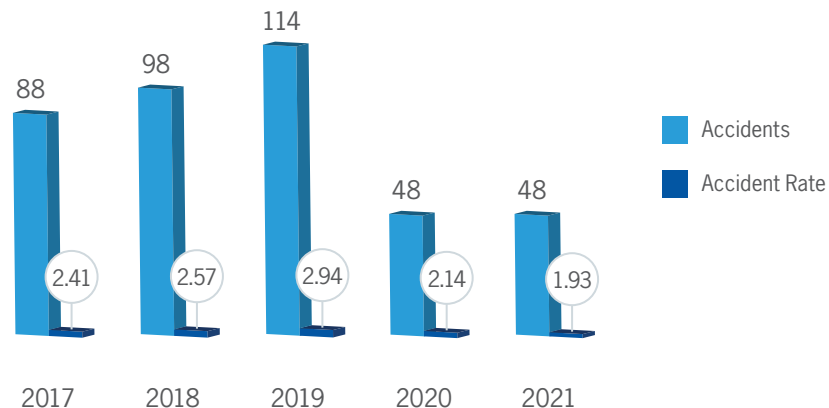


Chart 2. | Accident records: 2017-2021 scheduled commercial operations

In 2021, scheduled commercial air transport accidents resulted in 104 fatalities representing a decrease from 298 in 2020. The number of fatal accidents remained the same with four in 2021. Figure 1 shows the number of fatal accidents by ICAO regional office area of accreditation. Charts 3 and 4 present data related to accidents of scheduled commercial operations.

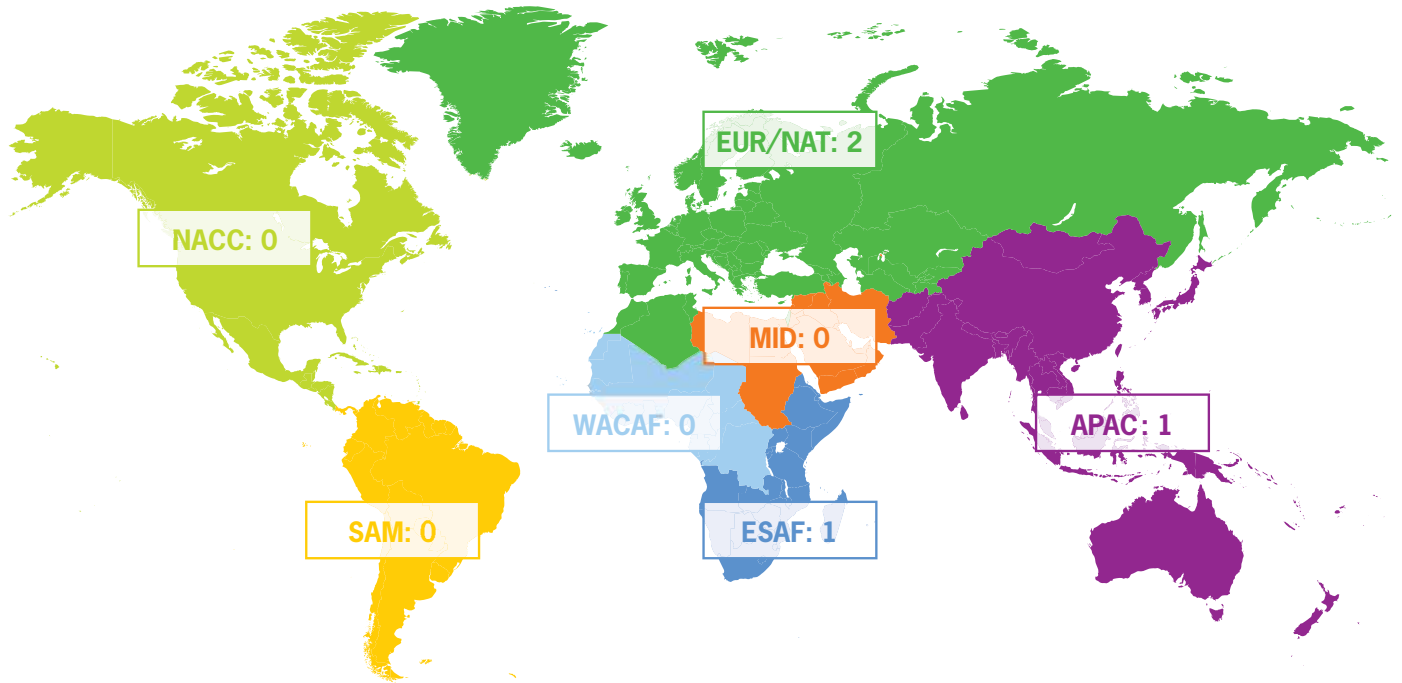


Figure 1. | Number of fatal accidents by ICAO region in 2021

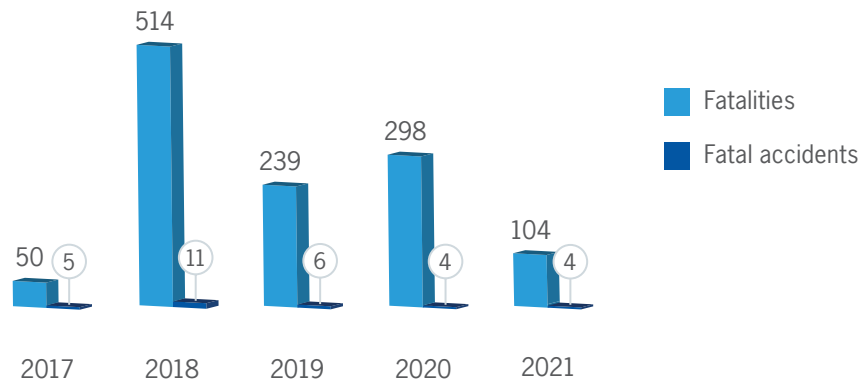


Chart 3. | Fatal accident records: 2017-2021 scheduled commercial operations

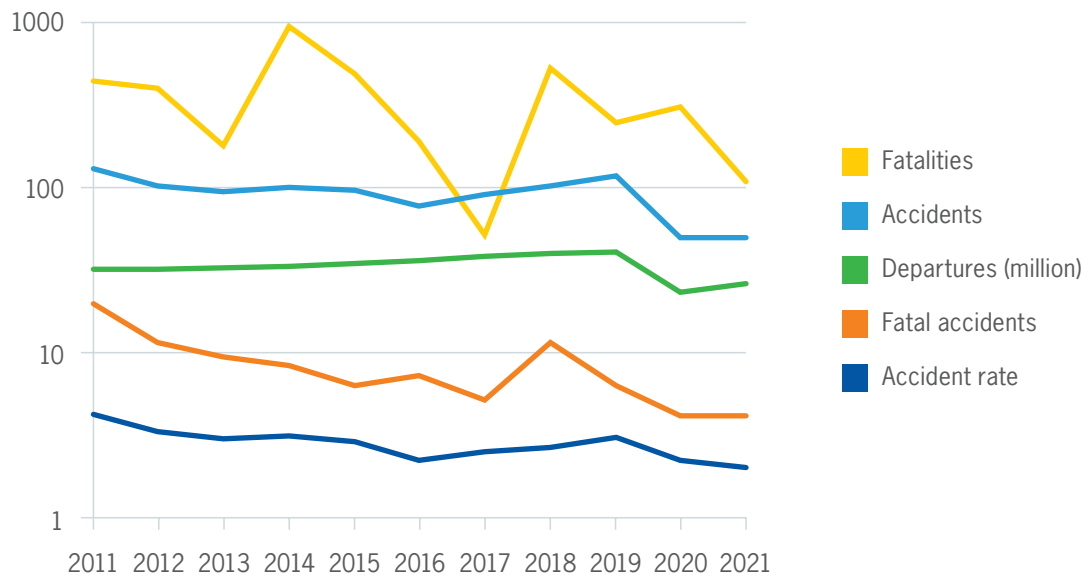


Chart 4. | Historical trends for scheduled commercial operations

The COVID-19 pandemic has posed significant challenges to aviation safety. ICAO is focused on a safe, secure and sustainable recovery of the aviation system from the effects of the pandemic. This is being assured through the Council Aviation Recovery Taskforce (CART) Key Principles and Recommendations most recently updated in October 2021. The High-level Conference on COVID-19 (HLCC 2021), held from 12 to 22 October 2021, was broadcasted virtually from Montréal under two technical streams: the Safety Stream and the Facilitation Stream. Under the Safety Stream, a total of 147 recommendations were agreed to by the Conference covering vast subjects related to aviation safety, including safety and operational measures related to the COVID-19 pandemic.

In response to existing and emerging trends, ICAO is working in partnership with the international aviation community to achieve future safety improvements, with an emphasis on improving safety performance and reducing operational safety risk through the support of standardization, implementation and monitoring. The 2022 edition of the Safety Report provides accident statistics and analyses, as well as an update to the GASP indicators linked to Goal 1 and related targets of the GASP with reference to the 2017–2021 time period.

More information about the GASP Goals and targets can be found at www.icao.int/gasp.

Accident Statistics and Analysis – Scheduled Commercial Air Transport

The safety performance of the GASP is measured by a series of metrics as defined by the GASP indicators set in its 2020-2022 edition. Goal 1 of the GASP is to achieve a continuous reduction of operational safety risks. This reduction is achieved by a series of actions targeting the high-risk categories of occurrences (HRCs). The target associated with this goal (Target 1.1) calls for the decrease of the global accident rate for commercial scheduled operations. Several indicators are linked to this target including number of accidents, fatal accidents and fatalities by State, region or globally, as well as accident rates (i.e. number of occurrences per million departures). GASP indicators also include the percentage of occurrences related to the HRCs.

Overall Safety Performance Indicator – Global Accident Rate

ICAO's global accident rate provides an overall indicator of safety performance for air transport operation. The accident rate is based on scheduled commercial operations involving fixed-wing aircraft with a certified MTOW over 5 700 kg. Aircraft accidents are reviewed and validated by the ICAO Occurrence Validation Study Group (OVSG) using definitions provided in Annex 13 — *Aircraft Accident and Incident Investigation*.

Data on departures is collated by ICAO's Air Transport Bureau and comprises scheduled commercial operations that involve the transportation of passengers, cargo and mail for remuneration. Estimates are made where data has not been provided by States, and as new data is provided to ICAO, it will be incorporated into the database. It is worth noting that this may cause slight changes to the calculated rates from year to year.

Chart 5 below shows the global accident rate trend (per million departures) over the previous five years, with 2021 having an accident rate of 1.93 accidents per million departures, a decrease of 9.8 per cent from the previous year.

Scheduled commercial accidents in 2021 are listed in [Appendix 2](#).

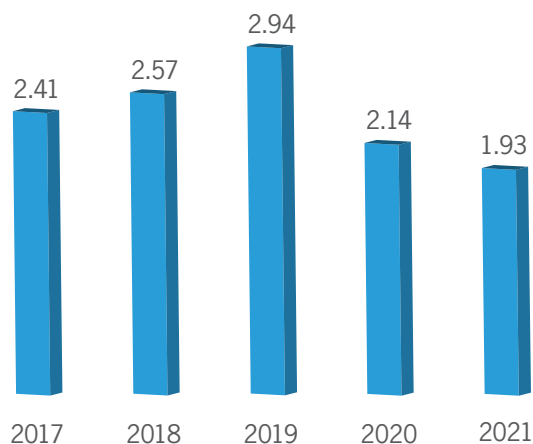


Chart 5. | Global accident rates (accidents per million departures)

Accident and Fatality Trend

The number of worldwide accidents and fatal accidents on scheduled commercial flights during the 2017-2021 period are shown in Chart 6.

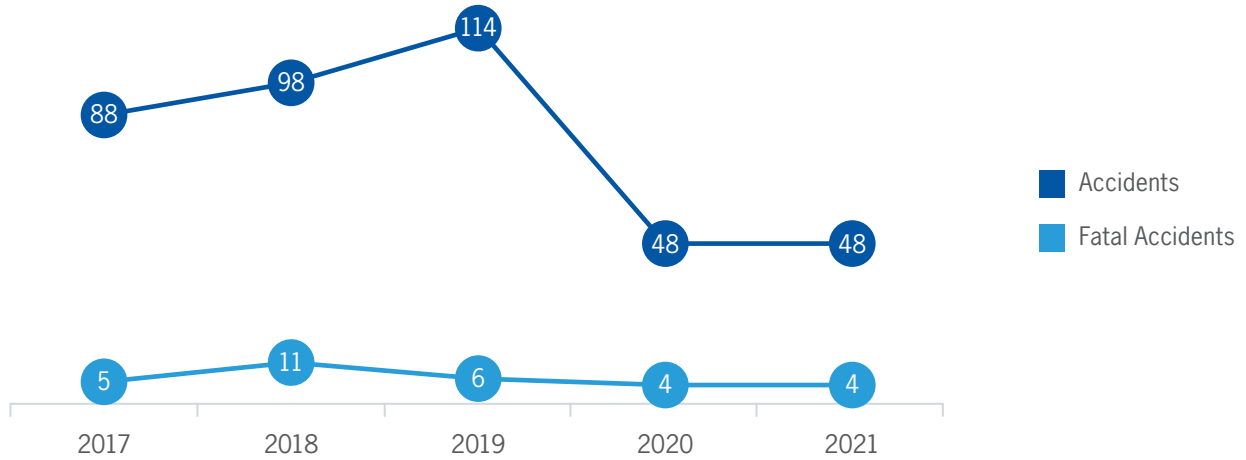


Chart 6. | Accident trend (2017-2021)

Between the years 2017 to 2021, the trend of the annual number of accidents decreased. The highest count recorded within this period was in 2019, with 114 accidents. The number of accidents significantly decreased in both 2020 and 2021; however, it is worth noting that during these two years there was a significant decrease in traffic of passengers and flights due to measures placed by governments aimed at minimizing the spread of COVID-19. The number of fatal accidents per year remained the same in 2020 and 2021. Chart 7 shows the number of fatalities associated with the above-mentioned fatal accidents decreased from 298 in 2020 to 104 in 2021.

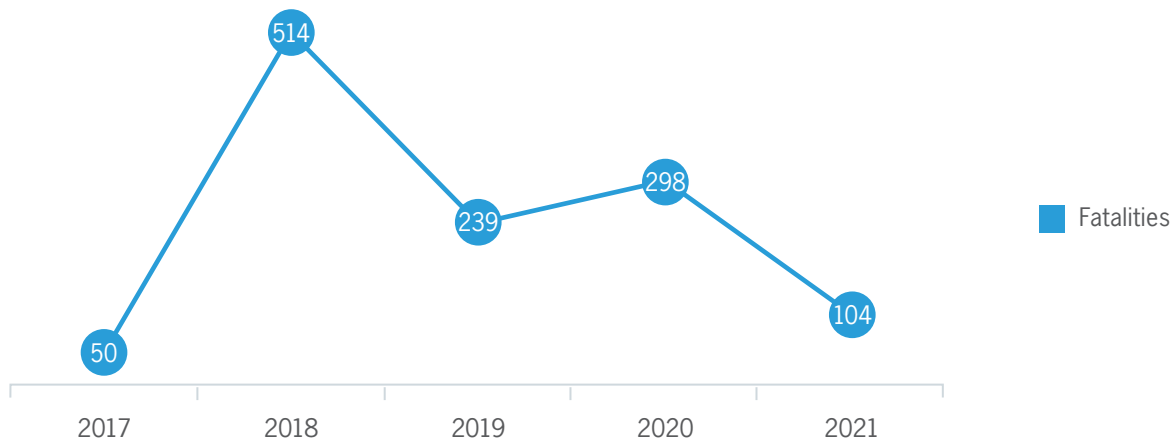


Chart 7. | Fatalities trend (2017-2021)

Accidents Overview by Occurrence Category

ICAO Member States are required to report accidents and serious incidents in accordance with Annex 13 through the ICAO Accident/Incident Data Reporting (ADREP) system. The OVSG validates and categorizes the accidents for commercial operations, including scheduled and nonscheduled, involving aircraft with a certified MTOW over 5 700 kg using the Commercial Aviation Safety Team (CAST)/ICAO Common Taxonomy Team (CICTT) taxonomy for occurrence categories. Detailed information about the CICTT occurrence categories can be found in [Appendix 2](#).

Charts 8 to 11 provide an overview of the accidents in 2021 for scheduled commercial operations by CICTT occurrence categories. The turbulence encounter (TURB) occurrence category accounted for the most accidents that caused serious injuries to air crew or passengers. The four fatal accidents fall into two categories: two controlled flight into or toward terrain (CFIT) accidents, with 32 fatalities and two aircraft destroyed; two loss of control in-flight (LOC-I) accidents, with 72 fatalities and two aircraft destroyed. The accidents that caused substantial damage to the aircraft involved the following six occurrence categories: abrupt maneuver (AMAN); abnormal runway contact (ARC); ground collision (GCOL); icing (ICE); ground handling (RAMP); and system/component failure or malfunction (non-powerplant) (SCF-NP).

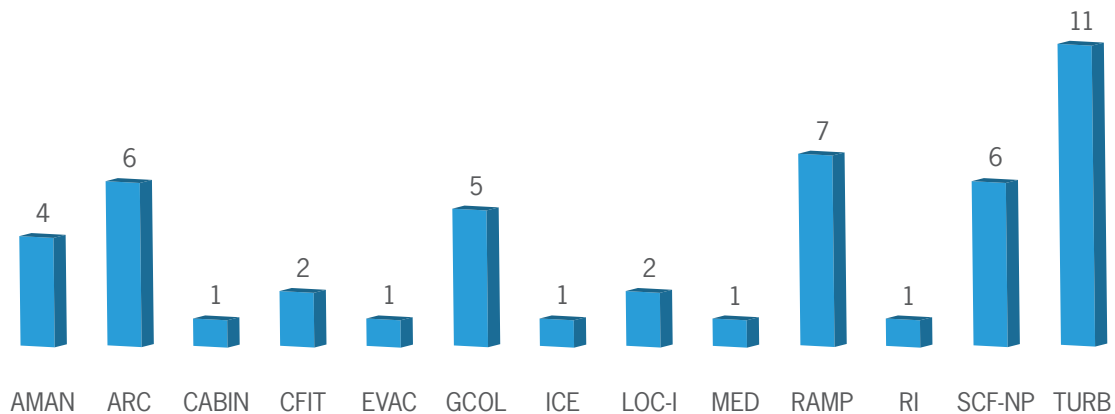


Chart 8. | Total accidents by occurrence category in 2021

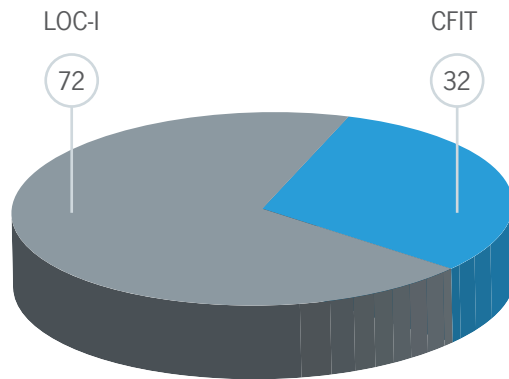


Chart 9. | Total fatalities by occurrence category in 2021

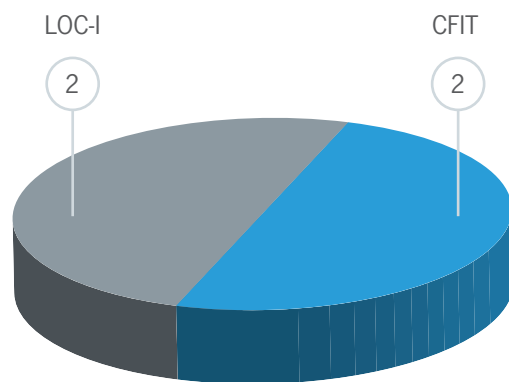


Chart 10. | Total fatal accidents by occurrence category in 2021

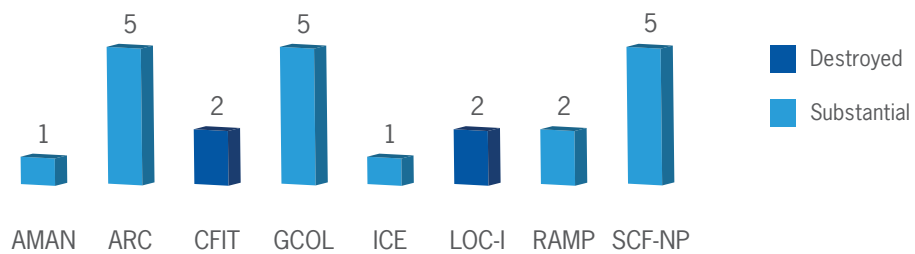


Chart 11. | Aircraft damage by occurrence category in 2021

High-risk Categories of Occurrences

Based on actual fatalities, high fatality risk per accident or the number of accidents and incidents, as well as results from the analysis of safety data collected from proactive and reactive sources of information from ICAO and other non-governmental organizations, ICAO has identified five high-risk categories of occurrences (HRCs) as global safety priorities in the 2020-2022 edition of the GASP:

- controlled flight into terrain (CFIT);
- loss of control in-flight (LOC-I);
- mid-air collision (MAC);
- runway excursion (RE); and
- runway incursion (RI).

In the GASP, ICAO identifies a series of global high-risk categories of occurrences that need to be addressed to mitigate the risk of fatalities.

Chart 12 below shows that in 2021, the five HRCs for scheduled commercial air transport operations represented 100 per cent of all fatalities, 100 per cent of fatal accidents, 10.4 per cent of the total number of accidents and 17.4 per cent of the accidents that destroyed or caused substantial damage to aircraft.

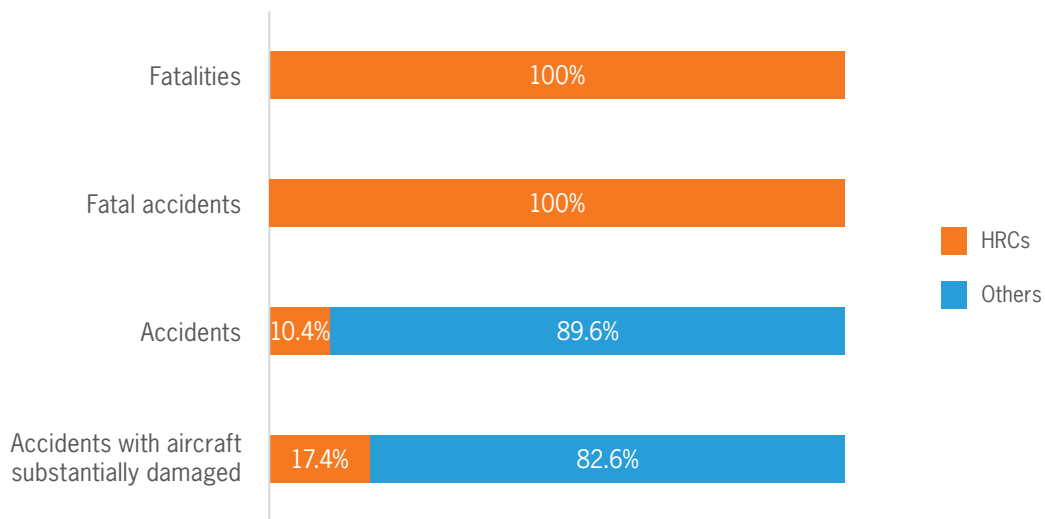


Chart 12. | HRC accident distribution in 2021

A breakdown of the five HRCs in 2021 and the respective distribution of fatalities, fatal accidents and accidents are shown in Chart 13 below. Accidents related to CFIT accounted for 30.8 per cent of total fatalities, 50 per cent of total fatal accidents though only 4.2 per cent of all accidents in 2021. There were two accidents related to LOC-I that represented 50 per cent of fatal accidents with 69.2 per cent of total fatalities in 2021. There was one accident related to RI that represented 2.1 per cent of total accidents with no fatalities. There were no accidents related to MAC and RE in 2021 for scheduled commercial operations involving aircraft with a certified MTOW over 5 700 kg. However, there were five RE related accidents for nonscheduled commercial operations with aircraft substantially damaged in 2021.

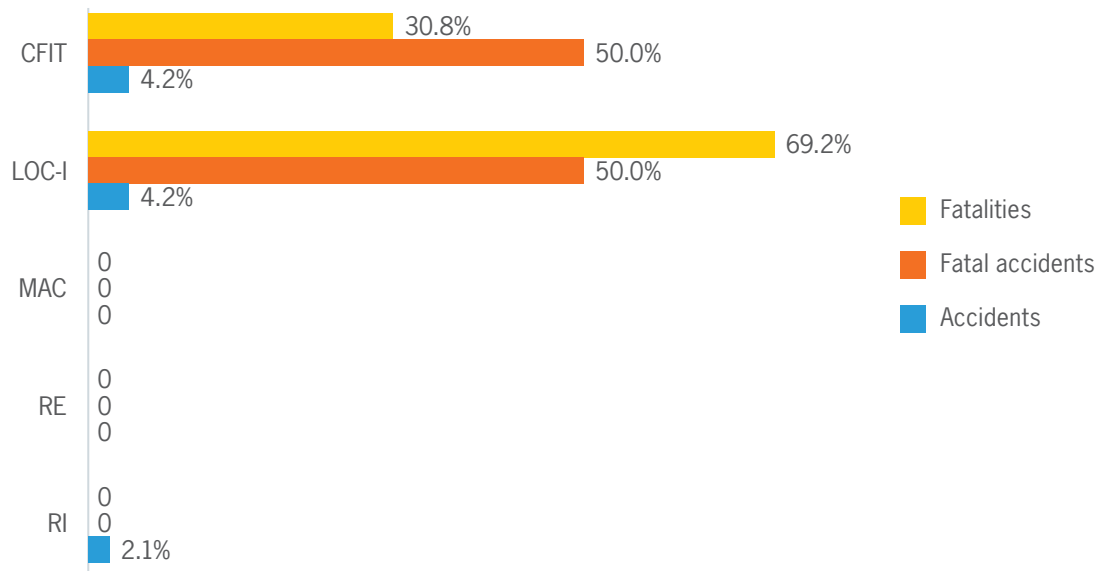


Chart 13. | High-risk category accident overview for 2021

Regional Accident Statistics

To further analyze the state of aviation safety, the accident data for scheduled commercial air transport operations is categorized according to ICAO region based on the contracting States accredited to each ICAO regional office, by State of Occurrence. Table 1 and Chart 14 provide details on the state of aviation safety in different regions for 2021 in the context of global outcomes. The States included in each ICAO region used in this report can be found in [Appendix 1](#).

ICAO region	Estimated departures	Number of accidents	Accident rate (per million departures)	Fatal accidents	Fatalities
APAC	8 503 311	6	0.71	1	62
ESAF	568 887	1	1.76	1	10
EUR/NAT	5 100 289	12	2.35	2	32
MID	806 274	0	-	-	-
NACC	8 594 991	26	3.03	-	-
SAM	1 159 332	1	0.86	-	-
WACAF	187 378	2	10.67	-	-
World	24 920 462	48	1.93	4	104

Table 1. | Departures, accidents and fatalities by ICAO region based on State of Occurrence in 2021

It is worth noting these statistics are based on ADREP data reported by the State of Occurrence in 2021. Partly due to the small number of departures, some regions experience a large fluctuation in the accident rate from year to year. For this reason, these numbers should be considered in relation to the total number of accidents to gain an overall perspective.

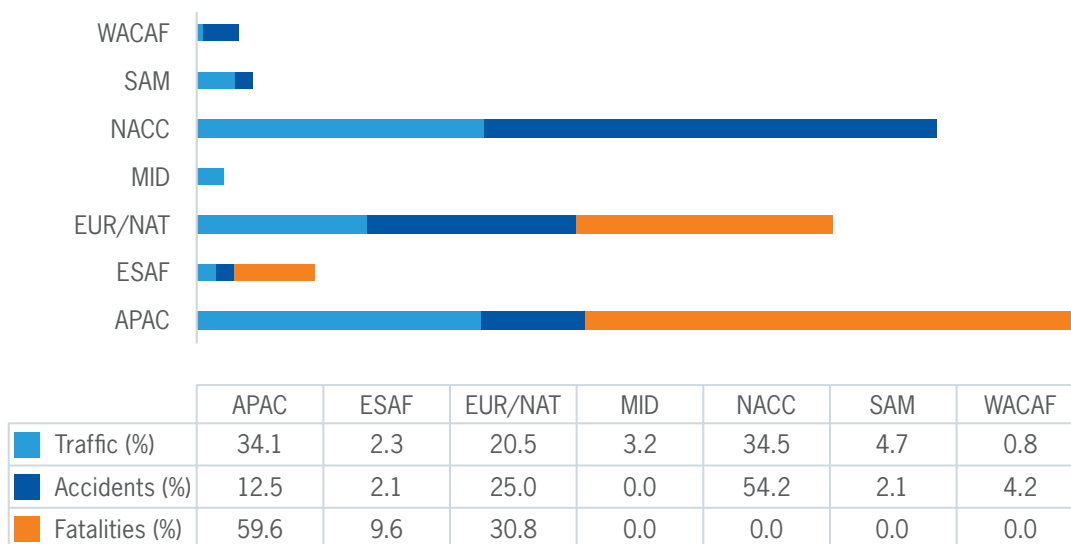


Chart 14. | Share of traffic, accidents and fatalities by ICAO region based on State of Occurrence in 2021

Accidents by ICAO Region

Chart 15 shows the percentage of accidents and related fatalities for each ICAO region based on State of Occurrence for scheduled commercial operations in 2021. States included in each region are listed in [Appendix 1](#).

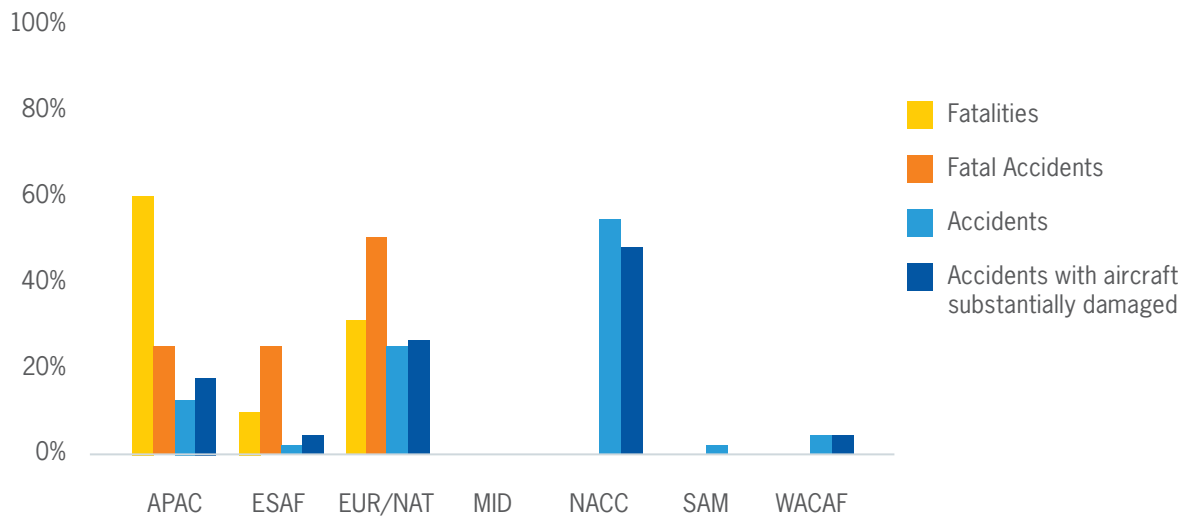


Chart 15. | Accident overview by ICAO region in 2021

In 2021, for scheduled commercial operations involving aircraft with a certified MTOW over 5 700 kg, the ICAO Middle East (MID), North American, Central American and Caribbean (NACC), South American (SAM) and Western and Central African (WACAF) Regions did not experience fatal accidents. Two fatal accidents occurred in the European and North Atlantic (EUR/NAT) Region, accounting for approximately one third of the total fatalities. The Asia Pacific (APAC) Region experienced one fatal accident resulting in nearly 60 per cent of the total fatalities. One fatal accident occurred in the Eastern and Southern African (ESAF) Region, which accounted for approximately ten per cent of the total fatalities.

Safety Enhancement Initiatives

ICAO continues to develop and implement safety enhancement initiatives to support States to meet the goals and targets set in the GASP and to address the HRCs. The following are some of the initiatives ICAO established or implemented to improve safety, as well as to help States recover from the COVID-19 pandemic on aligned and effective basis in 2021.

Global Reporting Format (GRF) for runway surface conditions

The ICAO Global Reporting Format (GRF) for runway surface conditions, applicable 4 November 2021, mitigates the risk of runway excursions. ICAO, in partnership with key international organizations, has been providing support to Member States and industry as they progress their planning and implementation.

The GRF comprises the assessment of runway surface conditions by a trained observer (normally airport operations staff) who, using a globally recognized runway condition matrix, allocates a runway condition code to each third of a runway. This code is complemented by a description of the surface contaminant, including its type, depth and amount of coverage, again per third and using a globally recognized set of descriptors. The outcome of the evaluation is then incorporated into a standard report, the Runway Condition Report (RCR), which is then forwarded to the air traffic and aeronautical information services for transmission to pilots by SNOWTAM, by automatic terminal information service (ATIS) and if necessary, by radio broadcast. More information about ICAO GRF initiatives can be found at www.icao.int/safety/Pages/GRF.aspx and unitingaviation.com/news/safety/looking-beyond-the-pandemic-implementing-the-global-reporting-format-for-runway-surface-conditions.

Introducing the Airborne Collision Avoidance System: ACAS X

Collisions between aircraft are among the most catastrophic accidents imaginable. The risk of collision is reduced by various measures such as pilots exercising “see and avoid” and by making sure that aircraft are safely separated from each other through the separation service provided by air traffic control (ATC). Over the years, numerous aeronautical communications, navigation and surveillance (CNS) systems have been introduced to overcome the limitations of “see and avoid”, to assist ATC in the provision of separation and to prevent errors. The most significant of these is the airborne collision avoidance system (ACAS), which acts as a last resort to ensure safety.

However, airspace is becoming more complex and will soon become more so with the need to accommodate new classes of airspace users, such as unmanned aircraft. To be able to meet the demands for more operational flexibility with a potential reduction of separations, a new type of ACAS – ACAS X has been introduced. More information about ACAS X can be found at unitingaviation.com/news/safety/introducing-the-airborne-collision-avoidance-system-acas-x.

The International Aviation Trust Framework

Aviation is a safety-critical business. With the continuous growth of air traffic and the emergence of “new entrants” with significantly different operational characteristics and needs, the air navigation system is becoming more complex.

To manage this complexity and improve the safety and efficiency of flight operations, the air navigation system must transform, as reflected in ICAO’s Global Air Navigation Plan, and build upon the use of emerging technologies, connectivity and digital information exchange to increase integration, automation and cost-effectiveness. More information about ICAO Trust Framework initiatives that aim to reduce the risk of cyber-attack on the aviation ecosystem and improve its resilience can be found at unitingaviation.com/news/safety/what-is-the-international-aviation-trust-framework.

ICAO State Safety Programme Implementation Assessments (SSPIAs)

The State Safety Programme Implementation Assessment (SSPIA) is a performance-based activity in which ICAO assesses the level of maturity of a State’s safety programme (SSP) by conducting a systematic and objective review of the State’s implementation and maintenance of its SSP using SSP-related PQs. The PQs are reflective of Annex 19 — *Safety Management*, the *Safety Management Manual* (Doc 9859) and other relevant ICAO provisions. More information about the ICAO SSPIAs can be found at unitingaviation.com/news/safety/what-are-icao-state-safety-programme-implementation-assessments.

Appendix 1

ICAO Regions

The ICAO Regions used for statistics in this report are based on the Member States accredited to each ICAO regional office. ICAO maintains seven regional offices to provide closer support and coordination for Member States: Asia and Pacific (APAC) Office; Eastern and Southern African (ESAF) Office; European and North Atlantic (EUR/NAT) Office; Middle East (MID) Office; North American, Central American and Caribbean (NACC) Office; South American (SAM) Office; and Western and Central African (WACAF) Office. More information about ICAO regional offices can be found at www.icao.int/secretariat/RegionalOffice/Pages/default.aspx.



APAC (39)

Afghanistan	Democratic People's Republic of Korea	Malaysia	New Zealand	Solomon Islands
Australia	Fiji	Maldives	Pakistan	Sri Lanka
Bangladesh	India	Marshall Islands	Palau	Thailand
Bhutan	Indonesia	Micronesia (Federated States of)	Papua New Guinea	Timor-Leste
Brunei Darussalam	Japan	Mongolia	Philippines	Tonga
Cambodia	Kiribati	Myanmar	Republic of Korea	Tuvalu
China	Lao People's Democratic Republic	Nauru	Samoa	Vanuatu
Cook Islands		Nepal	Singapore	Viet Nam

ESAF (24)

Angola	Eritrea	Madagascar	Rwanda	Uganda
Botswana	Eswatini	Malawi	Seychelles	United Republic of Tanzania
Burundi	Ethiopia	Mauritius	Somalia	Zambia
Comoros	Kenya	Mozambique	South Africa	Zimbabwe
Djibouti	Lesotho	Namibia	South Sudan	

EUR/NAT (56)

Albania	Cyprus	Israel	North Macedonia	Sweden
Algeria	Czechia	Italy	Norway	Switzerland
Andorra	Denmark	Kazakhstan	Poland	Tajikistan
Armenia	Estonia	Kyrgyzstan	Portugal	Tunisia
Austria	Finland	Latvia	Republic of Moldova	Türkiye
Azerbaijan	France	Lithuania	Romania	Turkmenistan
Belarus	Georgia	Luxembourg	Russian Federation	Ukraine
Belgium	Germany	Malta	San Marino	United Kingdom
Bosnia and Herzegovina	Greece	Monaco	Serbia	Uzbekistan
Bulgaria	Hungary	Montenegro	Slovakia	
Croatia	Iceland	Morocco	Slovenia	
	Ireland	Netherlands	Spain	

MID (15)

Bahrain	Jordan	Qatar	United Arab Emirates
Egypt	Kuwait	Saudi Arabia	Yemen
Iraq	Lebanon	Sudan	
Iran (Islamic Republic of)	Libya	Syrian Arab Republic	
	Oman		

NACC (22)

Antigua and Barbuda	Costa Rica	Grenada	Mexico	Saint Vincent and the Grenadines
Bahamas	Cuba	Guatemala	Nicaragua	Trinidad and Tobago
Barbados	Dominica	Haiti	Saint Kitts and Nevis	United States
Belize	Dominican Republic	Honduras	Saint Lucia	
Canada	El Salvador	Jamaica		

SAM (13)

Argentina	Brazil	Ecuador	Paraguay	Uruguay
Bolivia (Plurinational State of)	Chile	Guyana	Peru	Venezuela (Bolivarian Republic of)
	Colombia	Panama	Suriname	

WACAF (24)

Benin	Chad	Gabon	Mali	Senegal
Burkina Faso	Congo	Gambia	Mauritania	Sierra Leone
Cameroon	Côte d'Ivoire	Ghana	Niger	Togo
Cabo Verde	Democratic Republic of the Congo	Guinea-Bissau	Nigeria	
Central African Republic	Equatorial Guinea	Guinea	Sao Tome and Principe	
		Liberia		

Appendix 2

List of accidents involving scheduled commercial operations of aircraft with a certified MTOW over 5 700 kg in 2021

Local date	Manufacturer/model	State of Occurrence	ICAO Region	Fatalities	Occurrence category
2021-01-09	Boeing 737-500	Indonesia	APAC	62	LOC-I
2021-02-08	Airbus A320-200	United States	NACC		AMAN
2021-02-20	Boeing 737-800	India	APAC		AMAN, GCOL
2021-03-02	Let L410	South Sudan	ESAF	10	LOC-I, SCF-PP
2021-03-15	Boeing 777-200	United States	NACC		TURB
2021-03-16	Mitsubishi CRJ-700ER	United States	NACC		CABIN, OTHR
2021-03-18	Airbus A320-200	Mexico	NACC		SCF-NP
2021-03-28	Embraer EMB145-LR	United States	NACC		TURB, WSTW
2021-05-10	ATR 72-600	China	APAC		ARC
2021-05-12	Boeing 737-800	Spain	EUR/NAT		RAMP
2021-05-21	Boeing 737-700 and 737-800	United States	NACC		GCOL
2021-05-28	Boeing 737-800	United States	NACC		GCOL
2021-05-30	ATR 72-500	Greece	EUR/NAT		SCF-NP, GCOL
2021-06-07	Boeing 737-800	India	APAC		TURB
2021-06-13	Boeing 737-800	Spain	EUR/NAT		RAMP
2021-06-14	ATR 72-600	India	APAC		ARC
2021-06-25	Airbus A321-200	United States	NACC		TURB
2021-06-29	Airbus A350-900	France	EUR/NAT		RAMP
2021-07-04	Airbus A321-200	United States	NACC		TURB
2021-07-06	Antonov An-26	Russian Federation	EUR/NAT	28	CFIT
2021-07-11	Airbus A320-200	Greece	EUR/NAT		SCF-NP
2021-07-16	Antonov An-28	Russian Federation	EUR/NAT		ICE
2021-07-22	Airbus A321-200	United States	NACC		AMAN

Local date	Manufacturer/model	State of Occurrence	ICAO Region	Fatalities	Occurrence category
2021-07-25	Boeing 737-800	Italy	EUR/NAT		TURB
2021-07-31	Boeing 737-800	Spain	EUR/NAT		TURB
2021-08-14	De Havilland DHC8-400	Congo	WACAF		RI
2021-08-21	Airbus A319-100	United States	NACC		TURB
2021-08-23	Boeing 737-900	United States	NACC		EVAC, F-NI
2021-08-25	BEECH 1900	Canada	NACC		SCF-NP
2021-08-27	Mitsubishi CRJ-900	Canada	NACC		ARC, CABIN
2021-09-01	Boeing 767-300	United States	NACC		AMAN
2021-09-04	ATR72-200	India	APAC		TURB
2021-09-12	Let L410	Russian Federation	EUR/NAT	4	CFIT
2021-09-15	Airbus A320-200	Germany	EUR/NAT		RAMP, OTHR
2021-09-17	Mitsubishi CRJ-200	United States	NACC		GCOL
2021-09-23	Airbus A321-200	United States	NACC		ARC
2021-09-27	SAAB 340-B	Sao Tome and Principe	WACAF		RAMP
2021-09-27	Boeing 757-200	United States	NACC		ARC
2021-10-01	Embraer ERJ 175 and ERJ 175	United States	NACC		GCOL
2021-10-08	Boeing 737-800	United States	NACC		TURB
2021-10-23	Embraer ERJ 170-200	United States	NACC		RAMP
2021-11-25	Airbus A320-200	Brazil	SAM		SCF-NP, EVAC
2021-12-05	Airbus A350-900	France (French Guiana)	EUR/NAT		TURB
2021-12-13	Airbus A320-200	United States	NACC		ARC
2021-12-15	Airbus A321-200	United States	NACC		MED
2021-12-21	Airbus A321-200	United States	NACC		RAMP
2021-12-25	Airbus A330-300	Canada	NACC		SCF-NP
2021-12-30	Embraer ERJ 170-100 and Airbus A330-300	United States	NACC		GCOL

CICTT Occurrence Categories

Code	Description
ADRM	Aerodrome
AMAN	Abrupt Maneuver
ARC	Abnormal runway contact
BIRD	Bird
CABIN	Cabin safety events
CFIT	Controlled flight into/towards terrain
CTOL	Collision with obstacles during takeoff and landing
EVAC	Evacuation
F-NI	Fire/smoke (non-impact)
F-POST	Fire/smoke (post-impact)
GCOL	Ground collision
ICE	Icing
LOC-I	Loss of control in-flight
LOC-G	Loss of control-ground
MAC	Airprox/ ACAS alert/ loss of separation/ (near) mid-air collisions
OTHR	Other
RAMP	Ground handling
RE	Runway excursion
SCF-NP	System/component failure (non-powerplant)
SCF-PP	System/component failure (powerplant)
TURB	Turbulence encounter
UNK	Unknown or undetermined
USOS	Undershoot/overshoot
WILD	Wildlife
WSTRW	Wind shear or thunderstorm



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