ICAO

SAFETY

Safety Report

2017 Edition

A Coordinated, Risk-based Approach to Improving Global Aviation Safety

The air transport industry plays a major 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 created 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 harmonised regulations in aviation safety, security, efficiency and environmental protection on a global basis. ICAO is the primary forum for co-operation in all fields of civil aviation among its 191 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 coordinated activities and targets outlined in its Global Aviation Safety Plan (GASP), available from the ICAO web site (www.icao.int).

The GASP initiatives are monitored by ICAO's appraisal of global and regional aviation safety metrics on the basis of established risk management principles — a core component of contemporary State Safety Programmes (SSP) and Safety Management Systems (SMS). In all of its coordinated safety activities, ICAO strives to achieve a balance between assessed risk and the requirements of practical, achievable and effective risk mitigation strategies.

This report provides updates on safety indicators, including accidents that occurred in 2016, and related risk factors. Results of analysis from the 2012–2016 reports are used as benchmarks for comparison, although it must be noted that numbers presented in this report may not exactly match those of the earlier reports due to the data having been updated in the intervening period.

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Note:

The ICAO RASG regions are used in the report and are listed in Appendix 2. 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.

Contents

Executive Summary

Accident statistics for the last five years show a decrease in both the number of accidents as well as the accident rate. In 2016 the downward trend in the number of accidents continued with 75 accidents reported by States representing a 18 per cent decrease from 2015. Over the same period there was in increase in scheduled commercial departures which result in a global accident rate of 2.1 accidents per million departures, down by 25 per cent from the 2015 rate of 2.8 accidents per million departures.

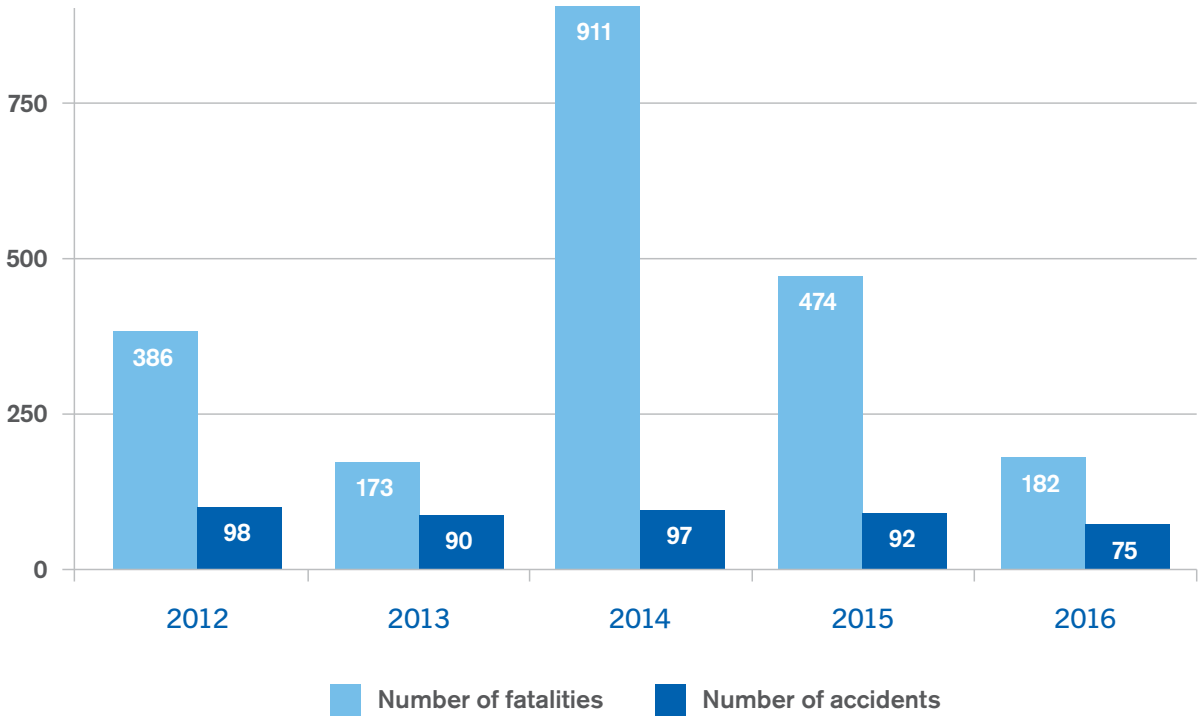
Commercial air transport accidents in 2016 resulted in 182 fatalities, which is a return to a similar level as 2013 when there were 173 fatalities. The two intervening years had seen a spike in fatalities due to a number of acts of unlawful interference that resulted in a large number of casualties.

At the 39th Session of the ICAO Assembly in October 2016 the ICAO Council adopted a number of resolutions related to acts of unlawful interference, including:

- Urging States to support the *Convention on the Suppression of Unlawful Acts Relating to International Civil Aviation* (Beijing Convention of 2010) and the Protocol Supplementary to the *Convention for the Suppression of Unlawful Seizure of Aircraft* (Beijing Protocol of 2010.)

- Promulgating ICAO policies related to the safeguarding of international civil aviation against acts of unlawful interference.

Chart 1: Accident Records: 2012–2016 Scheduled Commercial Flights



ICAO is committed to improving aviation safety and enabling seamless cooperation and communication among stakeholders. ICAO continues to collaborate with established regional bodies/organizations, such as Regional Aviation Safety Groups (RASGs) and Regional Safety Oversight Organizations (RSOOs), and to promote and develop the capacity building and implementation support necessary to address emerging safety issues.

The reduction in the accident rate from 2.8 to 2.1 accidents per million departures represents the lowest rate ever. It is noteworthy that the Africa-Indian Ocean (RASG-AFI) region did not have any safety-related fatal accidents in 2016; the second year without a fatal accident for this region. The sole fatality in AFI was a suicide bomber whose laptop bomb blew a hole in the fuselage of his aircraft, sucking the bomber out of the aircraft. Two others aboard the aircraft were injured.

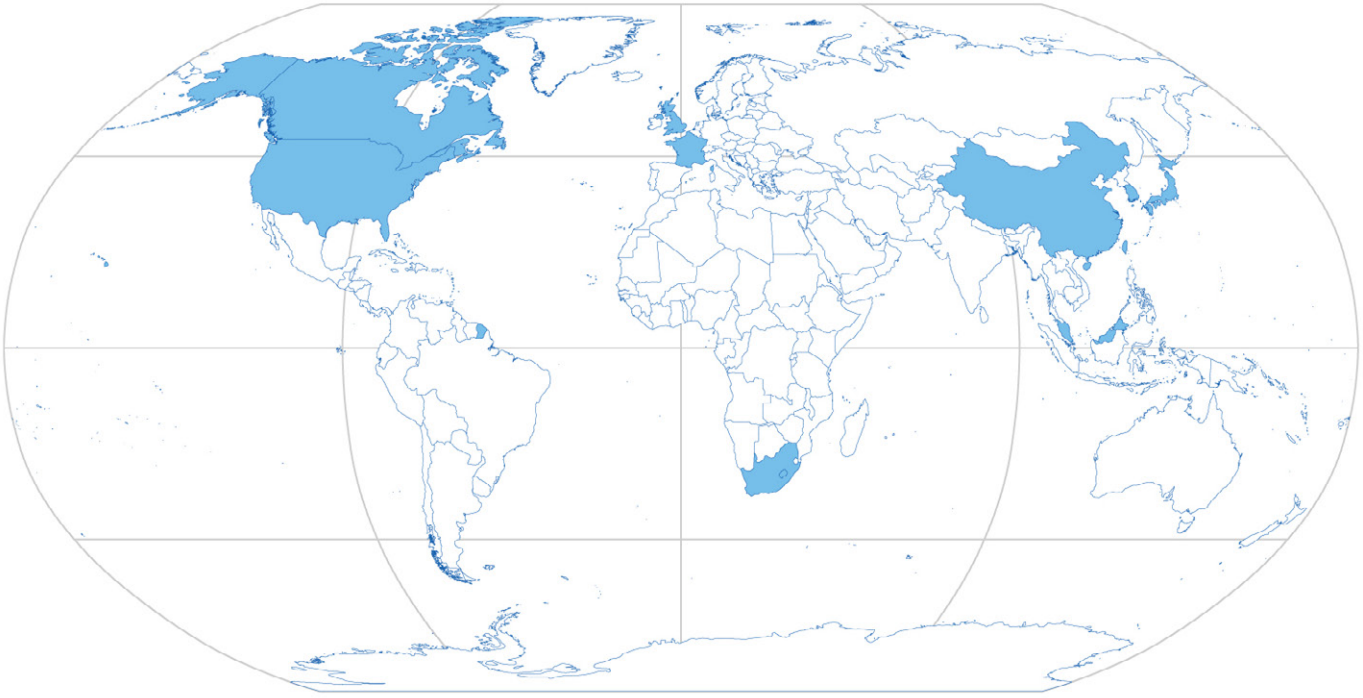
ICAO is working in partnership with the international aviation community to achieve future safety improvements, with an emphasis on improving safety performance. This report provides a summary of key indicators with reference to the 2012–2016 period.

Aviation Safety Implementation Assistance Partnership (ASIAP)

Technical assistance is a major component of ICAO's "No Country Left Behind" (NCLB) initiative which focuses on assisting all States on priority basis to provide support for implementation of ICAO SARPs under all ICAO strategic objectives. Building partnerships and pooling resources among States, international organizations, development institutions and industry is essential for collaboration on and contribution to technical assistance for effective implementation of SARPs and policies by States with sustainable results.

As part of this effort ICAO established the Aviation Safety Implementation Assistance Partnership (ASIAP) during the Second High-level Safety Conference in 2015, as the platform for ICAO and its safety partners to coordinate efforts for the provision of assistance to States. Its members include Canada, China, France, Japan, Malaysia, Republic of Korea, Singapore, South Africa, United Kingdom, United States, Airports Council International (ACI), African Civil Aviation Commission (AFCAC), Airbus, Boeing, the Civil Air Navigation Services Organization (CANSO), the European Aviation Safety Agency (EASA), the International Air Transport Association (IATA), the World Bank and the Arab Civil Aviation Commission (ACAC).

Figure 1: ASIAP State and Organisational Partners



The ASIAP provides communication channels amongst members to facilitate the provision of assistance to States, particularly to those States with Significant Safety Concerns (SSCs) and States with high safety risk exposure identified during the ICAO Universal Safety Oversight Audit Programme (USOAP). The coordination and sharing of information on assistance projects and activities planned and implemented by the partners avoids duplication of efforts and maximizes the effectiveness and efficiency of assistance programmes provided to States.

Since its establishment, the ASIAP has held three face-to-face meetings and seven quarterly teleconferences through which members shared the technical assistance activities undertaken by their entities and agreed upon the way forward, including a methodology for prioritizing States requiring assistance in each region. Details of the ASIAP activities are available at http://www.icao.int/ASIAP.

Additionally, to help identify priority States requiring technical assistance, ICAO has also developed the ASIAP automated prioritization tool using real-time data sourced from the ICAO Universal Safety Oversight Audit Programme (USOAP), integrated Safety Trend Analysis and Reporting System (iSTARS) Safety Margins app and the World Bank Worldwide Governance Indicators (WGI). The methodology is based on the safety margin which is the value above or below the target USOAP effective implementation (EI), obtained from a global linear regression of air traffic versus EI of all audited States. The top five States for each ICAO Regional Office accreditation area are identified if they have a negative safety margin (below the target EI) and overall EI less than 80 per cent by technical area (operations including OPS/AIR/PEL, air navigation including AGA/ANS and support including LEG/ORG/AIG). Political stability and control of corruption conditions are also considered for each identified State. States with SSC and above average GDP per capita are also highlighted. The tool is available at http://www.icao.int/safety/scan/Pages/ASIAP-APP.aspx

Figure 2: Operations Safety Margins (OPS/AIR/PEL)

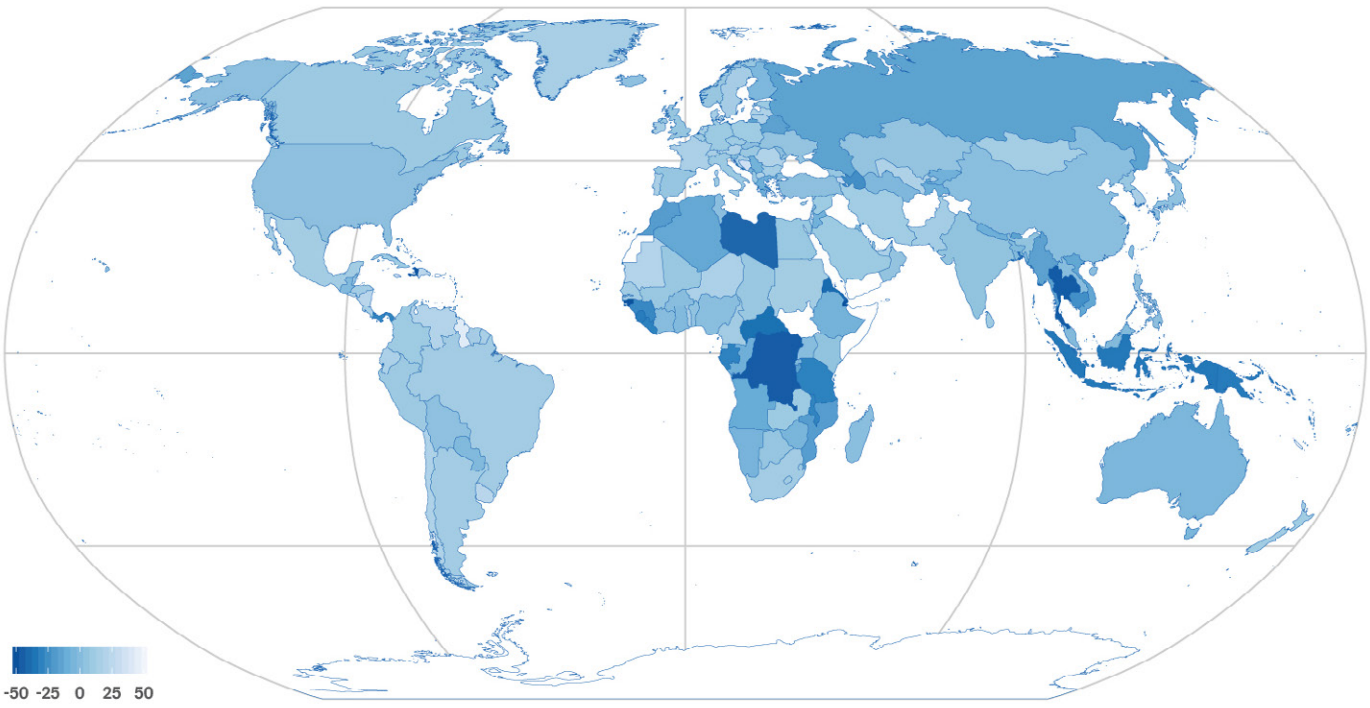


Figure 3: Air Navigation Safety Margins (ANS/AGA)

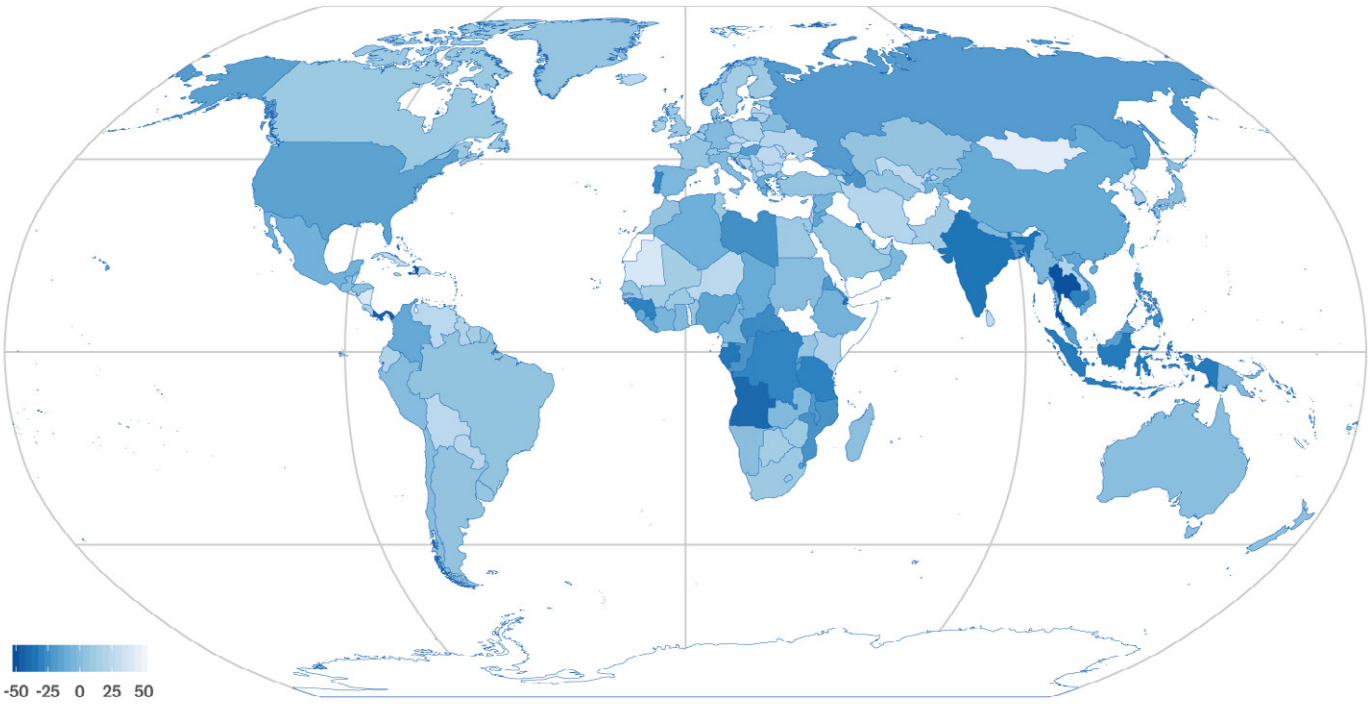
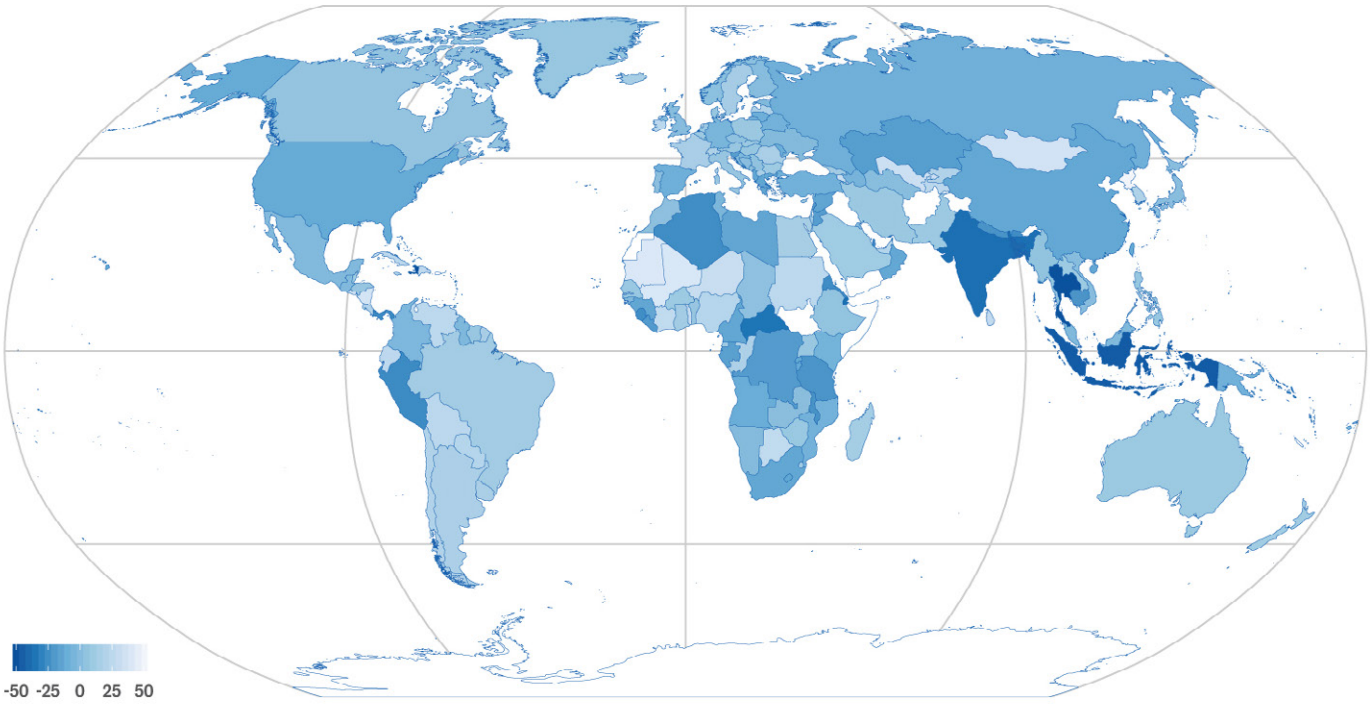


Figure 4: Support Safety Margins (LEG/ORG/AIG)



Safety Oversight and USOAP CMA Status

Each ICAO Member State should establish and implement an effective safety oversight system addressing all areas of aviation activities that reflects the shared responsibility of States and the broader aviation community. The Universal Safety Oversight Audit Programme Continuous Monitoring Approach (USOAP CMA) measures the effective implementation of a State's safety oversight system.

To standardize the conduct of audits under USOAP CMA, ICAO has established protocol questions (PQs) that are based on the Chicago Convention, safety-related ICAO SARPs established in the Annexes to the Convention, Procedures for Air Navigation Services (PANS), ICAO documents and guidance material. Each PQ contributes to assessing the effective implementation of one of the eight critical elements (CEs) in one of the eight audit areas. The use of standardized PQs ensures transparency, quality, consistency, reliability and fairness in the conduct and implementation of USOAP CMA activities.

A comprehensive analysis of USOAP results can be found in the report on Universal Safety Oversight Audit Programme Continuous Monitoring Approach (USOAP CMA) Results - 1 January 2013 to 31 December 2015.

Chart 2: Global Audit Results (average effective implementation percentage by audit area)

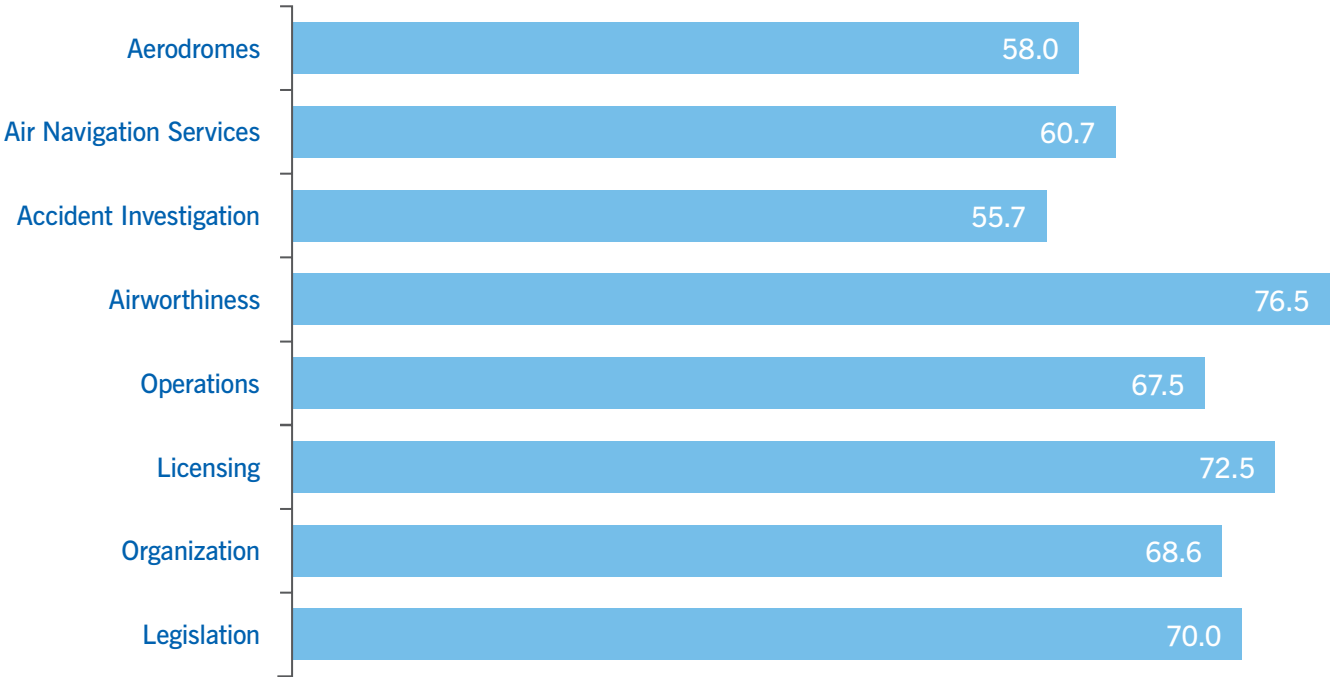
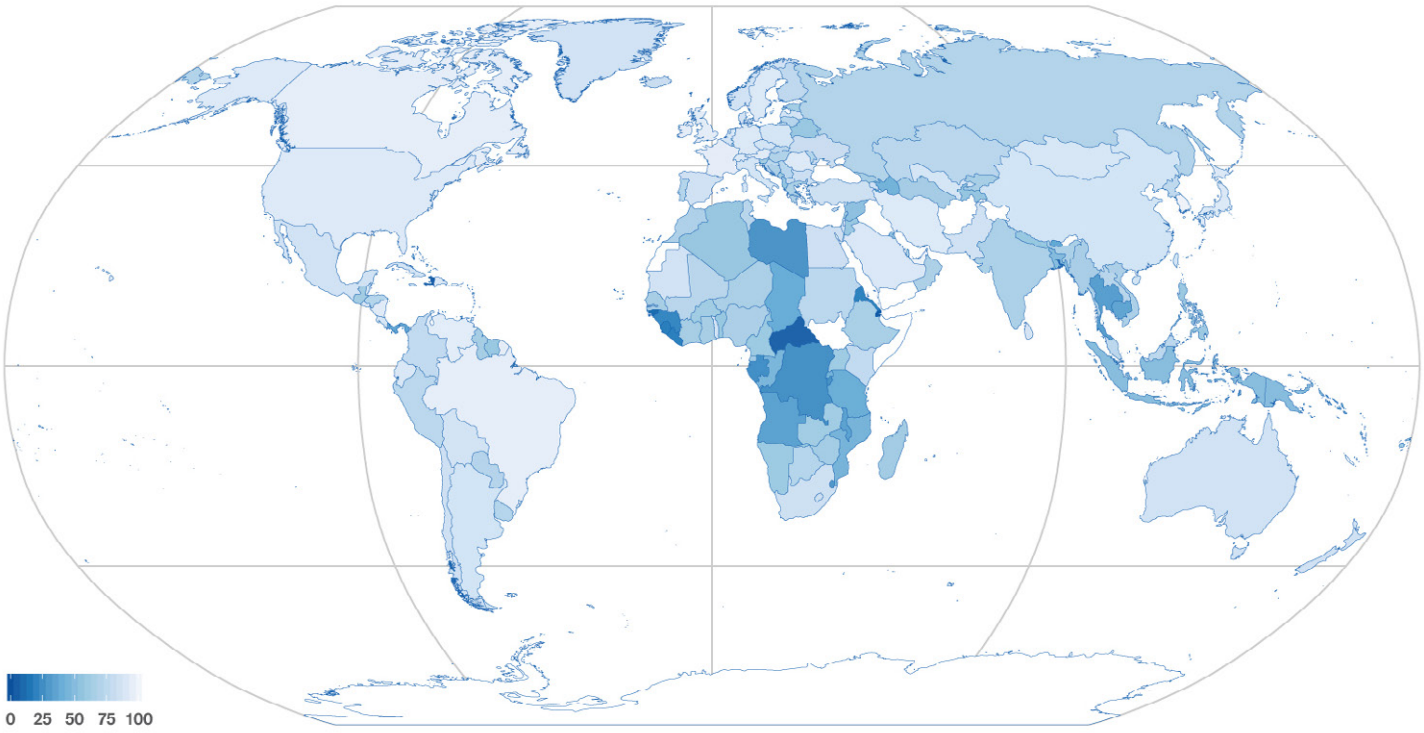


Figure 5: USOAP Overall Effective Implementation



States, listed in alphabetical order, with an EI **above** the global average of 64.7 per cent (as of 31 May 2017):

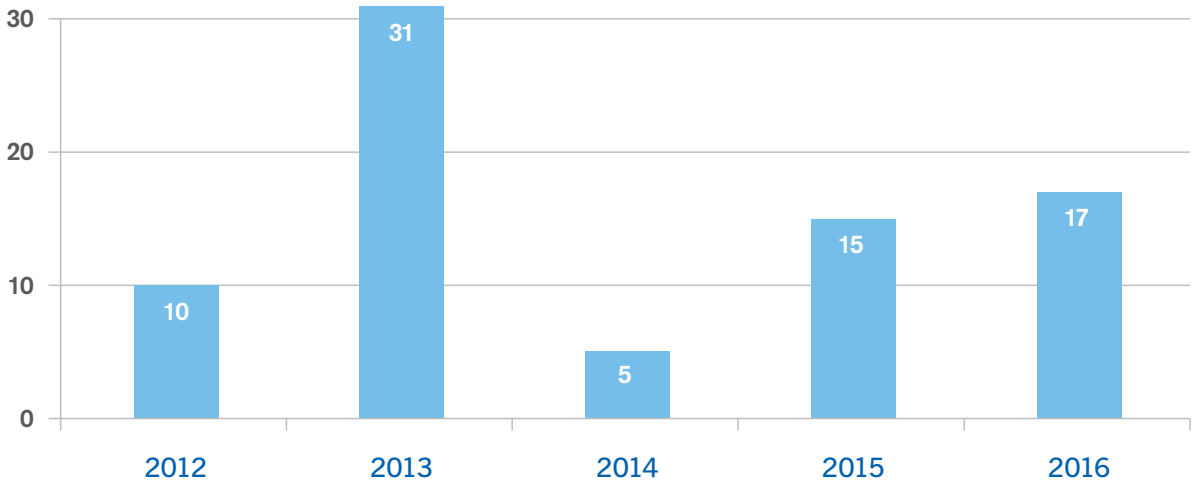
Argentina
Armenia
Australia
Austria
Bahrain
Belgium
Belize
Bolivia (Plurinational State of)
Bosnia and Herzegovina
Botswana
Brazil
Brunei Darussalam
Bulgaria
Cabo Verde
Canada
Chile
China
China, Hong Kong Special Administrative Region
China, Macao Special Administrative Region
Colombia
Costa Rica
Croatia
Cuba
Cyprus
Czech Republic
Democratic People's Republic of Korea
Denmark
Dominican Republic
Ecuador
Egypt
El Salvador
Ethiopia
Finland
France
Gambia
Germany
Greece
Honduras
Hungary
Iceland
India
Iran (Islamic Republic of)
Ireland
Israel
Italy
Jamaica
Japan
Kazakhstan
Kenya
Lao People's Democratic Republic
Latvia
Lithuania
Luxembourg
Malaysia
Maldives
Mali
Malta
Mauritania
Mauritius
Mexico
Mongolia
Morocco
Myanmar
Netherlands
New Zealand
Nicaragua
Niger
Nigeria
Norway
Oman
Pakistan
Paraguay
Peru
Poland
Portugal
Republic of Korea
Republic of Moldova
Romania
Russian Federation
San Marino
Saudi Arabia
Serbia
Singapore
Slovakia
South Africa
Spain
Sri Lanka
Sudan
Sweden
Switzerland
The former Yugoslav Republic of Macedonia
Togo
Trinidad and Tobago
Tunisia
Turkey
Ukraine
United Arab Emirates
United Kingdom of Great Britain and Northern Ireland
United States of America
Uruguay
Uzbekistan
Venezuela (Bolivarian Republic of)
Viet Nam

Safety Recommendations Addressed to ICAO

Following an aircraft accident the State of Occurrence will either initiate an investigation or delegate the investigation to another State. In either case the State Conducting the Investigation may make Safety Recommendations (SR) which it may address to other States – for example: the State of Design of an aircraft – or to ICAO if the investigators have suggestions for changes to ICAO documents. Annex 13 – *Aircraft Accident and Incident Investigation* states that SRs addressed to ICAO must be accompanied by a letter that outlines the specific action that is being proposed to be undertaken by ICAO. Within ninety days of receiving an SR ICAO will respond to the originating body with: actions taken by ICAO, actions intended to be taken by ICAO, or reasons why no action will be taken by ICAO. Some of the SRs addressed to ICAO are forwarded to relevant expert groups which may lead to amendments and/or developments of ICAO documents.

In 2016, ICAO received seventeen SRs from eight States. These recommendations are available at https://www.icao.int/safety/airnavigation/AIG/Pages/Safety-Recommendations-addressed-to-ICAO.aspx. The chart below depicts the number of SRs addressed to ICAO in the past five years.

Chart 3: Safety Recommendations received by ICAO for the period 2012–2016



Accident Statistics

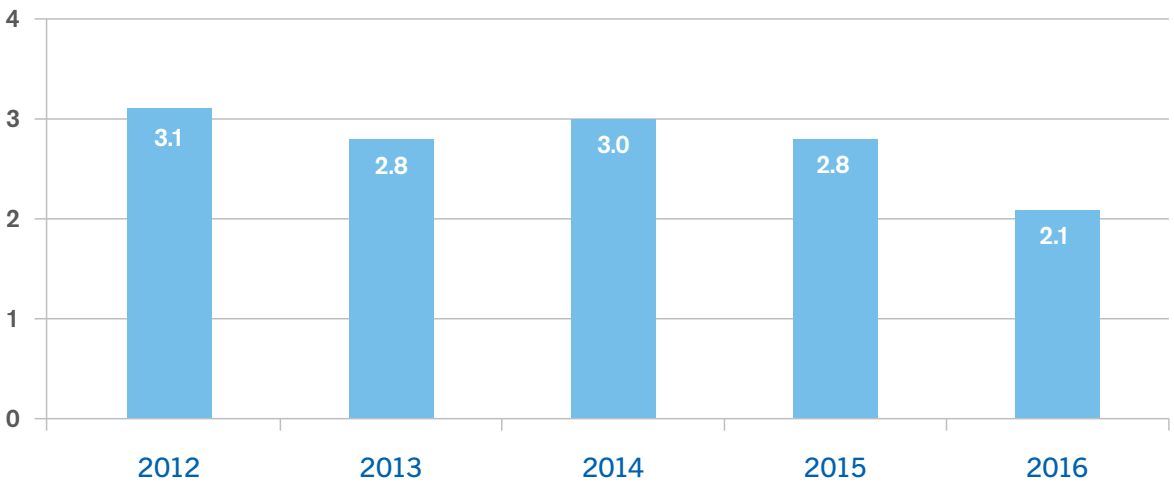
ICAO's primary indicator of safety in the global air transport system is the accident rate based on scheduled commercial operations involving fixed-wing aircraft with a maximum take-off weight (MTOW) greater than 5700 kg. Aircraft accidents are categorized using the definition provided in Annex 13 — *Aircraft Accident and Incident Investigation* and the details of each accident have been reviewed by the ICAO Safety Indicators Study Group (SISG) to assure the accuracy of the data.

Departures data is collated by the ICAO Air Transport Bureau using a combination of inputs. Estimates are made where data has not been provided by States, otherwise State data and commercial sources are used to obtain the best estimate of actual aircraft movements. As new data is provided to ICAO it will be incorporated into the database which may result in small changes to the calculated rates from year to year.

Chart 4 below shows the accident rate trend (per million departures) over the previous five years, with 2016 having an accident rate of 2.1 accidents per million departures, the lowest ever recorded.

More accident statistics can be found in Appendix 1.

Chart 4: Global Accident Rates (accidents per million departures)



Regional Accident Statistics

To further analyse the state of aviation safety, the accident data for scheduled commercial air transport is categorized according to RASG regions. The tables below provide details on the state of aviation safety in different RASGs for 2016 in the context of global outcomes.

The sharp fall in the accident rate of the AFI region, from 7.3 in 2015 to 1.2 in 2016, illustrates the volatile nature of this statistic due to the small number of departures in this region. For this reason, these numbers should be considered in the context of the total number of accidents.

Table 1: Departures, accidents and fatalities by RASG region

RASG	Estimated Departures (millions)	Number of Accidents	Accident Rate (per million departures)	Fatal Accidents	Fatalities
AFI	0.9	1	1.2	1	1
APAC	10.7	19	1.8	2	50
EUR	8.7	24	2.8	2	64
MID	1.3	3	2.3	2	67
PA	13.3	28	2.1	0	0
WORLD	**34.9**	**75**	**2.1**	**7**	**182**

Table 2: Share of traffic and accidents by RASG region

RASG Region	Share of Traffic	Share of Accidents
AFI	2.5%	1.3%
APAC	30.7%	25.3%
EUR	24.9%	32.0%
MID	3.7%	4.0%
PA	38.1%	37.3%

RASG regions are shown in Appendix 2.

GSIE Harmonized Accident Rate

In the spirit of promoting aviation safety, the Department of Transportation of the United States, the Commission of the European Union, the International Air Transport Association (IATA) and ICAO signed a Memorandum of Understanding (MoU) on a Global Safety Information Exchange (GSIE) on 28 September 2010 during the 37th Session of the ICAO Assembly. The objective of the GSIE is to identify information that can be exchanged between the parties to enhance risk reduction activities in the area of aviation safety.

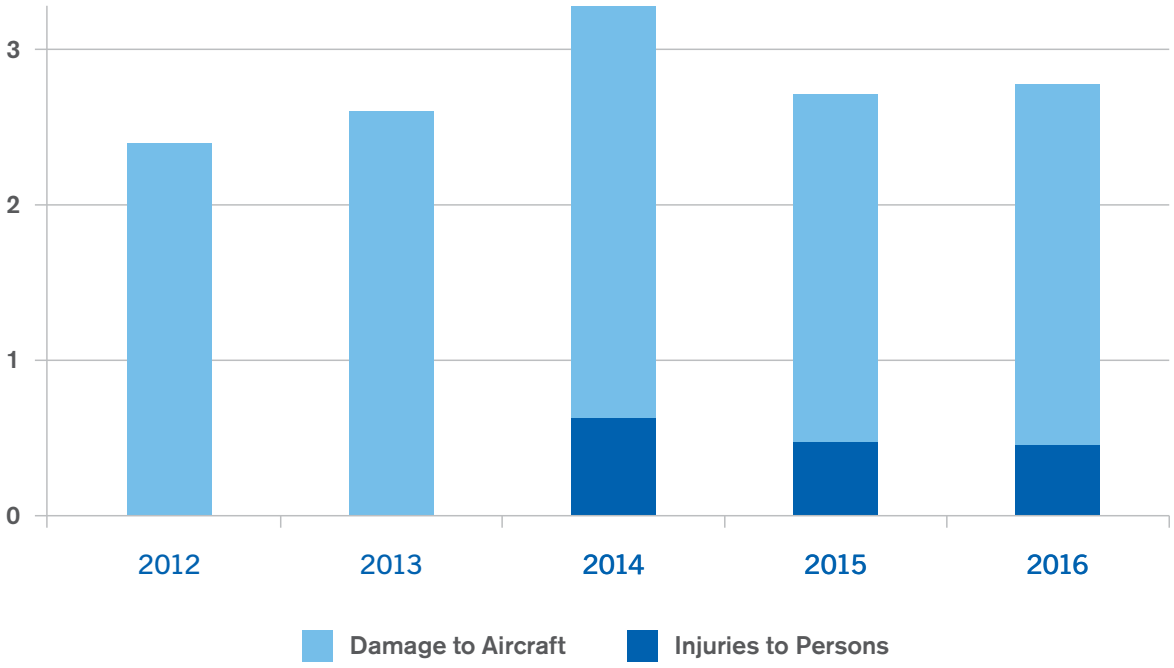
The GSIE developed a harmonized accident rate beginning in 2011. This was accomplished through close cooperation between ICAO and IATA to align accident definitions, criteria and analysis methods used to calculate the harmonized rate which is considered a key safety indicator for commercial aviation operations worldwide. The joint analysis includes accidents meeting Annex 13 criteria for all typical commercial airline operations for scheduled and non-scheduled flights.

Starting in 2013, ICAO and IATA have increasingly harmonized the accident analysis process and have developed a common list of accident categories to facilitate the sharing and integration of safety data between the two organizations.

Harmonized Analysis of Accidents

A total of 113 accidents were considered as part of the harmonized accident criteria in 2016. These include scheduled and non-scheduled commercial operations, including ferry flights, for aircraft with a maximum certificated take-off weight above 5700kg. The GSIE harmonized accident rate for the period from 2012 (the first year the rate was calculated) to 2016 is shown in Chart 5 below. Since 2014 the rate of accidents has been broken down by operational safety component: accidents involving damage to aircraft with little or no injury to persons and accidents that included serious or fatal injuries to persons.

Chart 5: GSIE Harmonized Accident Rate (accidents per million sectors)



Definitions and Methods

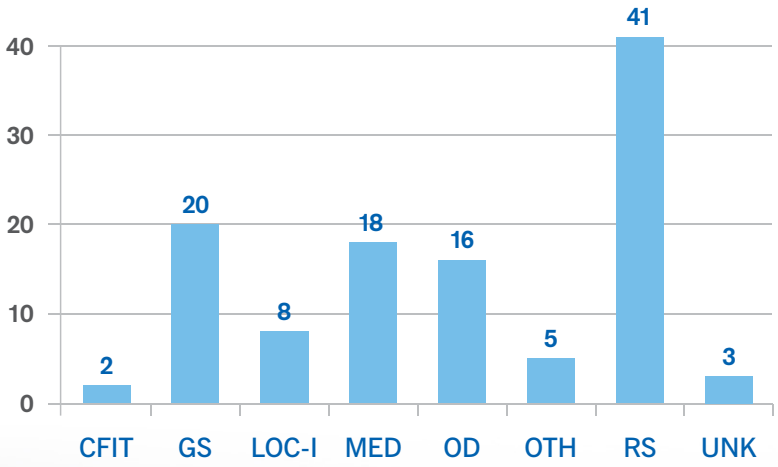
In order to build upon the harmonized accident rate presented in the last two safety reports, ICAO and IATA worked closely to develop a common taxonomy that would allow for a seamless integration of accident data between the two organizations. A detailed explanation of the harmonized accident categories and how they relate to the Commercial Aviation Safety Team/ICAO Common Taxonomy Team (CICTT) occurrence categories can be found in Appendix 3.

Accidents by Category

Differences between the approaches of the ICAO (CICTT Occurrence Categories) and IATA (Flight-crew centric Threat and Error Management Model) classification systems required the harmonization of accident criteria to be used. The breakdown of accidents by harmonized category can be seen in Chart 6 below.

Full details of categories can be found in Appendix 3.

Chart 6: Accidents by Category



Accident Categories	
CFIT	Controlled Flight into Terrain
GS	Ground Safety
LOC-I	Loss of Control in-Flight
MED	Injuries to and/or Incapacitation of Persons
OD	Operational Damage
OTH	Other
RS	Runway Safety
UNK	Unknown

Accidents by Region of Occurrence

A harmonized regional analysis is provided using the ICAO RASG regions. The number of accidents and harmonized accident rate by region are shown in Charts 7 and 8 below:

Chart 7: Number of Accidents

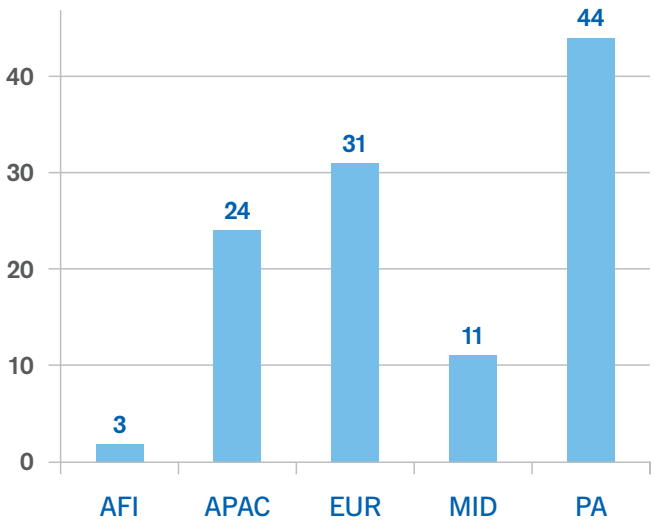
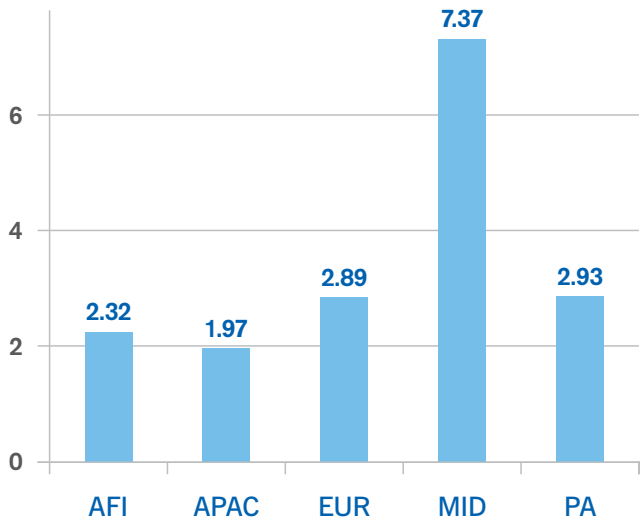


Chart 8: Accident Rate



Future Development

Both ICAO and IATA continue to work closely together and, through their respective expert groups, provide greater alignment in their analysis methods and metrics for the future. This ongoing work will be shared with GSIE participants, States, international organizations and safety stakeholders in the interest of promoting common, harmonized safety reporting at the global level.

Appendix 1

Analysis of Accidents – Scheduled Commercial Air Transport

This appendix provides a detailed analysis of accidents that occurred in 2016. The data used in this analysis are for operations involving fixed-wing aircraft with an MTOW above 5700 kg conducting scheduled commercial air transport operations.

High-Risk Accident Occurrence Categories

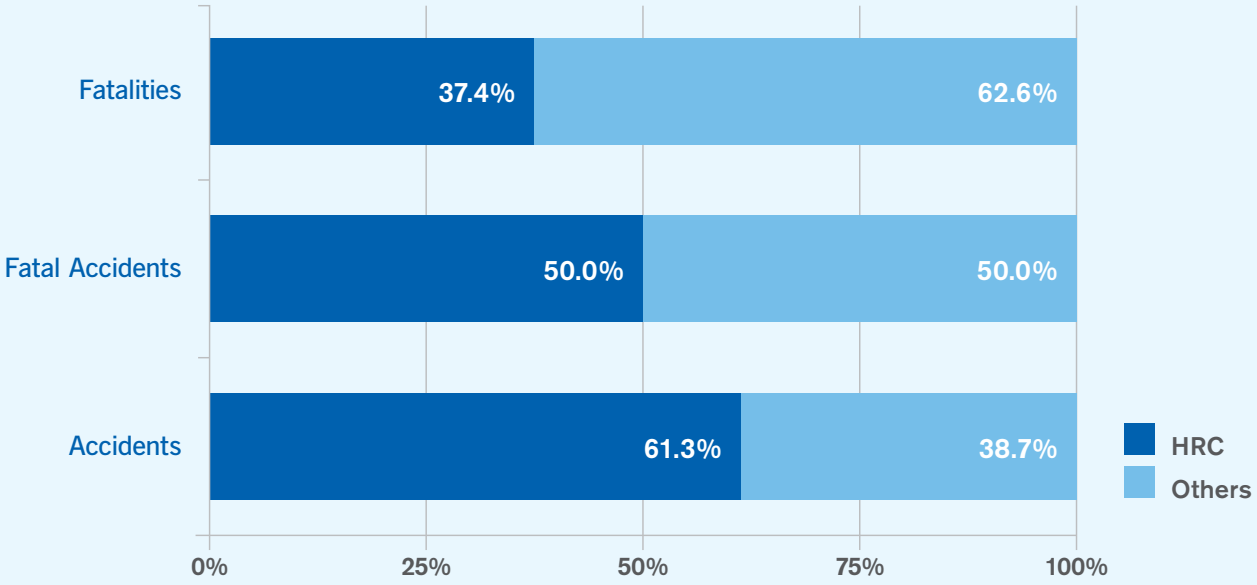
In the 2017–2019 Global Aviation Safety Plan ICAO has included the following three high-risk accident occurrence categories (HRC) as the Global Safety Priorities:

- runway safety related events (RS)[1];
- loss of control in-flight (LOC-I); and
- controlled flight into terrain (CFIT).

ICAO uses these high-risk accident categories as a baseline in its safety analysis.

Chart 9 below indicates that the three categories represented 61.3 per cent of the total number of accidents, 50 per cent of fatal accidents and 37.4 per cent of all fatalities in 2016.

Chart 9: High-risk category accident distribution



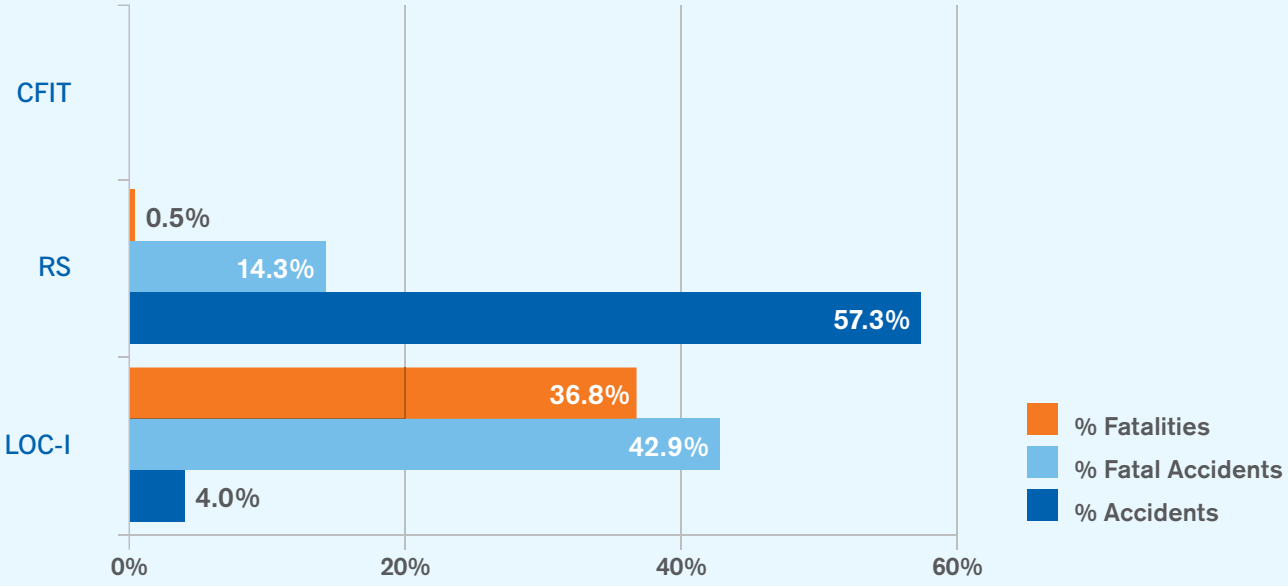
[1] Events related to runway safety include the following ICAO accident occurrence categories: Abnormal Runway Contact, Bird Strike, Ground Collision, Ground Handling, Runway Excursion, Runway Incursion, Loss of Control on Ground, Collision with Obstacle(s), Undershoot / Overshoot, Aerodrome.

Chart 10 below provides a comparison of the distribution of accidents, fatal accidents and fatalities related to the three high-risk occurrence categories in 2016. Accidents related to runway safety accounted for the majority of all accidents during 2016 (57.3 per cent, compared with 53 per cent in 2015), and included a single fatal accident with one fatality. Loss of control inflight (LOC-I) represented 42.9 per cent of fatal accidents (up from 33 per cent in 2015). There have been no CFIT accidents for the past two years.

Notable observations and trends from 2016 accident data include:

- Accidents related to runway safety continue to result in relatively low numbers of fatalities, despite being the highest percentage of accidents.
- Although the LOC-I occurrence category represented only 4 per cent of all 2016 accidents, it remains of significant concern since it accounts for 42.9 per cent of all fatal accidents.
- For the second year in a row there were no CFIT accidents in 2016.

Chart 10: High-risk category accident overview

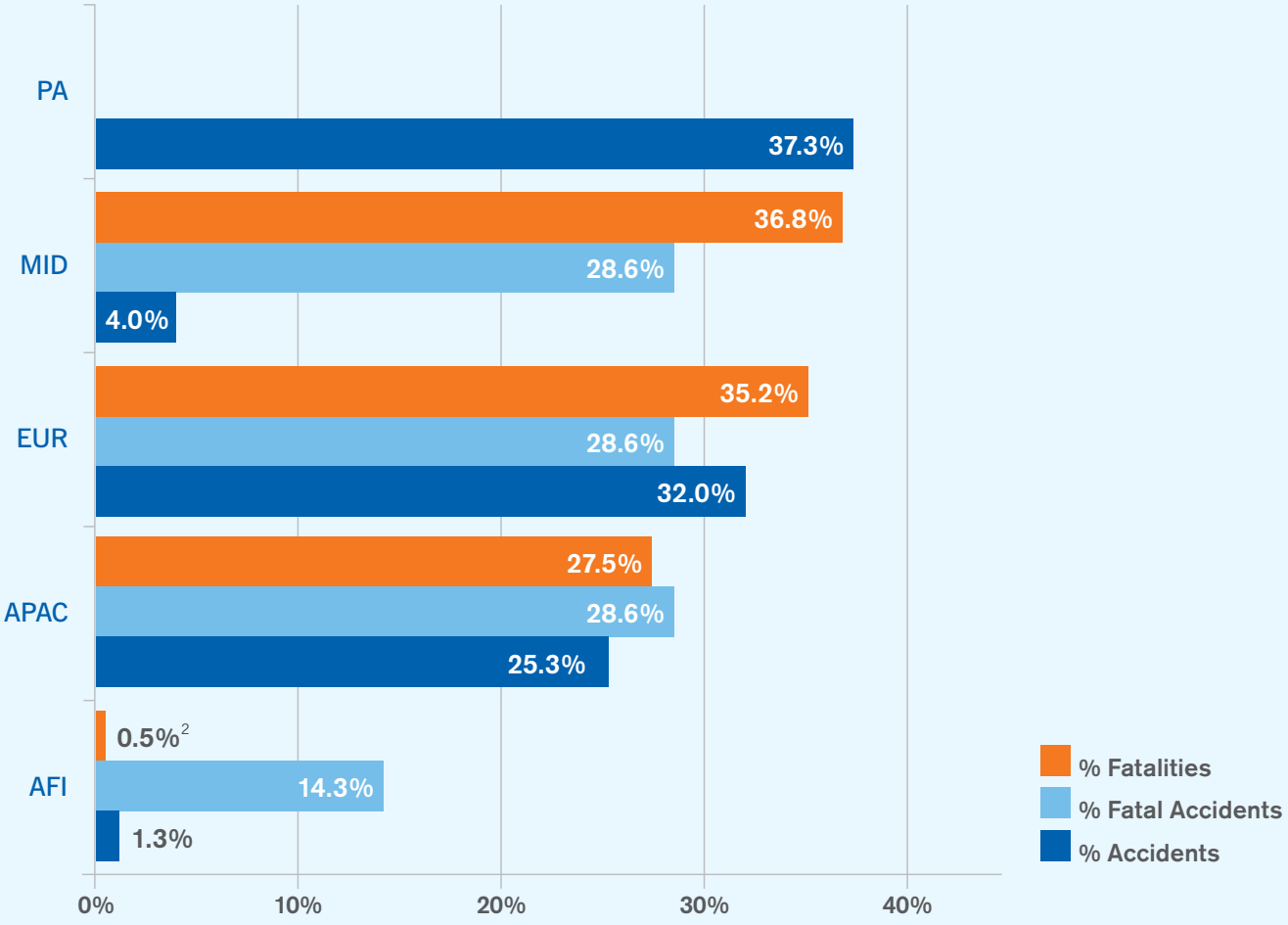


Accidents by RASG Region

Chart 11 below indicates the percentage of accidents and related fatalities by RASG region.

The countries included in each RASG region are listed in Appendix 2.

Chart 11: 2016 Scheduled Commercial Air Transport Accidents by RASG Region



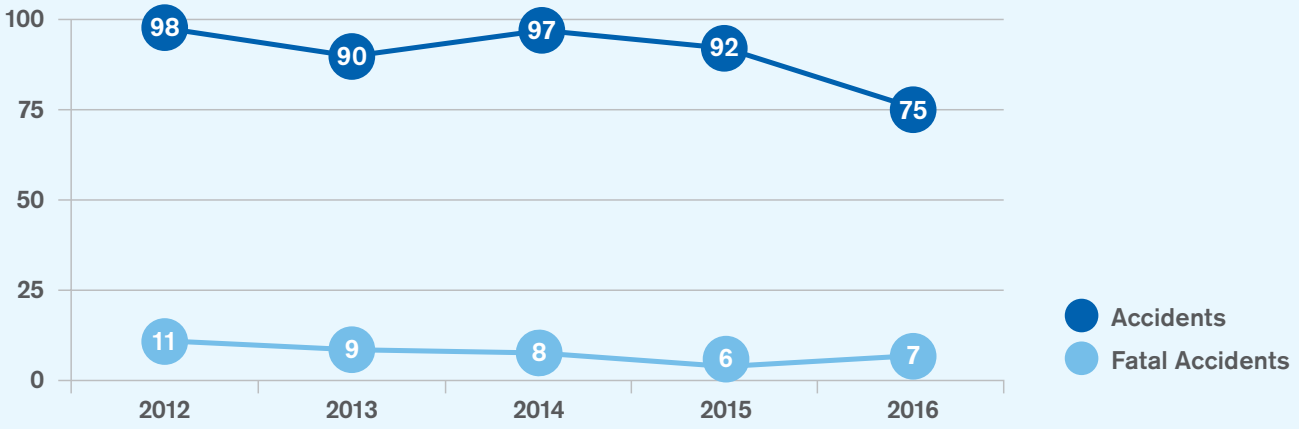
The RASG-PA region is one of the largest by area and represents the highest volume of air traffic - although RASG-APAC is quickly closing the gap. Consequently this region has a higher share of accidents although it is notable that there were no scheduled commercial air transport fatalities in 2016. In 2015 the MID region accounted for 47 per cent of fatalities and it is good to see that this has dropped to 36.8 per cent in 2016.

[2] One fatality due to a security-related event.

Accident Trends

The number of accidents and fatal accidents on scheduled commercial flights during the 2012–2016 period are shown in Chart 12 below.

Chart 12: Accident and fatal accident trend (2012–2016)

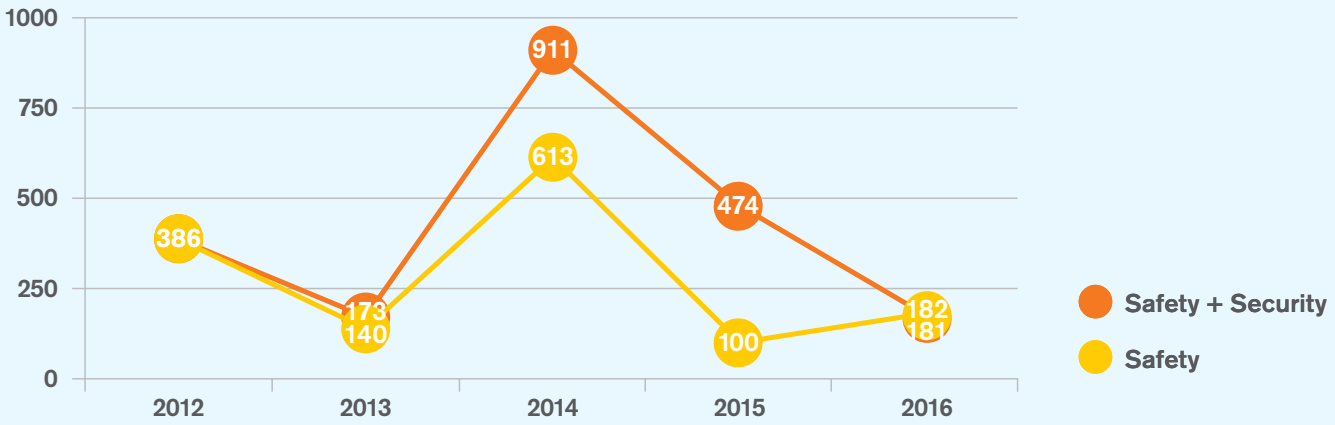


The number of accidents per year has followed a downward trend over the 2012 to 2016 time frame, from 98 accidents in 2012 to 75 in 2016. Over the same period the number of fatal accidents per year has also decreased from 11 to 7.

The number of accidents in 2016 represents an 18 per cent decrease from 92 accidents in 2015. The accident rate improved 21 per cent from 2015 to 2016 due to the combination of fewer accidents and a 5 per cent increase in scheduled commercial departures. The accident rate in 2016, 2.1 accidents per million departures, represents the lowest accident rate ever.

Chart 13 shows the total number of fatalities, associated with both safety and security occurrences, and the number of fatalities associated with safety occurrences only.

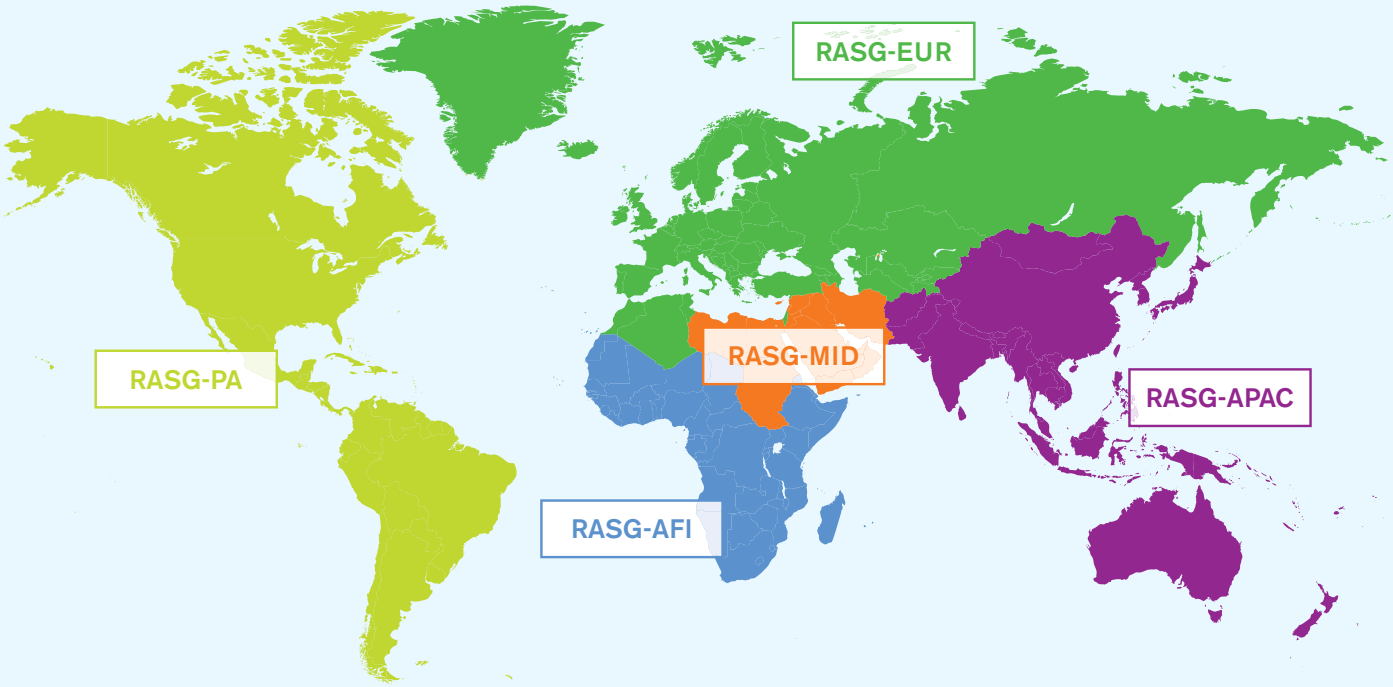
Chart 13: Fatalities trend (2012–2016)



Appendix 2

Regional Aviation Safety Group (RASG) Regions

The assignment of States or areas to specific groupings is for statistical convenience and does not imply any assumption regarding political or other affiliation of States or territories by ICAO.



RASG-AFI

Angola
Benin
Botswana
Burkina Faso
Burundi
Cameroon
Cape Verde
Central African Republic
Chad
Comoros
Congo
Côte d'Ivoire
Democratic Republic of the Congo
Djibouti
Equatorial Guinea
Eritrea
Ethiopia
Gabon
Gambia
Ghana
Guinea
Guinea-Bissau
Kenya
Lesotho
Liberia
Madagascar
Malawi
Mali
Mauritania
Mauritius
Mozambique
Namibia
Niger
Nigeria
Rwanda
Sao Tome and Principe
Senegal
Seychelles
Sierra Leone
Somalia
South Africa
South Sudan
Swaziland
Togo
Uganda
United Republic of Tanzania
Zambia
Zimbabwe

RASG-APAC

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

RASG-EUR

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

RASG-MID

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

RASG-PA

Antigua and Barbuda
Argentina
Bahamas
Barbados
Belize
Bolivia
Brazil
Canada
Chile
Colombia
Costa Rica
Cuba
Dominica
Dominican Republic
Ecuador
El Salvador
Grenada
Guatemala
Guyana
Haiti
Honduras
Jamaica
Mexico
Nicaragua
Panama
Paraguay
Peru
Saint Kitts and Nevis
Saint Lucia
Saint Vincent and the Grenadines
Suriname
Trinidad and Tobago
United States
Uruguay
Venezuela

Appendix 3

GSIE Harmonized Accident Categories

Category	Description
Controlled Flight into Terrain (CFIT)	Includes all instances where the aircraft was flown into terrain in a controlled manner, regardless of the crew's situational awareness. Does not include undershoots, overshoots or collisions with obstacles on take-off and landing which are included in Runway Safety.
Loss of Control in-Flight (LOC-I)	Loss of control in-flight that is not recoverable.
Runway Safety (RS)	Includes runway excursions and incursions, undershoot/overshoot, tailstrike and hard landing events.
Ground Safety (GS)	Includes ramp safety, ground collisions, all ground servicing, pre-flight, engine start/departure and arrival events. Taxi and towing events are also included.
Operational Damage (OD)	Damage sustained by the aircraft while operating under its own power. This includes in-flight damage, foreign object debris (FOD) and all system or component failures.
Injuries to and/or Incapacitation of Persons (MED)	All injuries or incapacitations sustained by anyone coming into in direct contact with any part of the aircraft structure. Includes turbulence-related injuries, injuries to ground staff coming into contact with the structure, engines or control surfaces aircraft and on-board injuries or incapacitations and fatalities not related to unlawful external interference.
Other (OTH)	Any event that does not fit into the categories listed above.
Unknown (UNK)	Any event whereby the exact cause cannot be reasonably determined through information or inference, or when there are insufficient facts to make a conclusive decision regarding classification.

Category	CICTT Occurrence Categories	IATA Classification End States
Controlled Flight into Terrain (CFIT)	CFIT, CTOL	CFIT
Loss of Control in-Flight (LOC-I)	LOC-I	Loss of Control In-flight
Runway Safety (RS)	RE, RI, ARC, USOS	Runway Excursion, Runway Collision, Tailstrike, Hard Landing, Undershoot, Gear-up Landing / Gear Collapse
Ground Safety (GS)	G-COL, RAMP, LOC-G	Ground Damage
Operational Damage (OD)	SCF-NP, SCF-PP	In-flight Damage
Injuries to and/or Incapacitation of Persons (MED)	CABIN, MED, TURB	None (excluded in IATA Safety Report)
Other (OTH)	All other CICTT Occurrence Categories	All other IATA end-states
Unknown (UNK)	UNK	Insufficient Information

Appendix 4

List of Scheduled Commercial Accidents in 2016

Date	Model	State	RASG	Fatalities	Risk Category
2016-01-03	EMBRAER ERJ170 100	United States	PA	0	TURB
2016-01-08	BOMBARDIER CL600 2B19	Sweden	EUR	2	LOC-I
2016-01-14	BOEING 737 800	United Kingdom of Great Britain and Northern Ireland	EUR	0	TURB
2016-01-24	MCDONNELL DOUGLAS MD88 80	United States	PA	0	RS
2016-01-28	MCDONNELL DOUGLAS	Islamic Republic of Iran	MID	0	RS
2016-01-28	BOEING 737 700	United States	PA	0	TURB
2016-02-02	AIRBUS A321 100	Somalia	AFI	1	OTH
2016-02-12	LOCKHEED 382 G	United States	PA	0	SCF
2016-02-17	BOEING 737 700	United States	PA	0	RS
2016-02-17	BOEING 737 800	United States	PA	0	RS
2016-02-23	EMBRAER EMB145 MP	United States	PA	0	RS
2016-03-03	BOEING 737	India	APAC	0	SCF
2016-03-05	BOEING 767 300	United States	PA	0	RS
2016-03-09	ANTONOV AN26 B	Bangladesh	APAC	3	LOC-I
2016-03-19	BOEING 737	Russian Federation	EUR	62	LOC-I
2016-03-23	BAE AVRO146RJ 200	Italy	EUR	0	RS
2016-04-04	ATR ATR42	Indonesia	APAC	0	RS
2016-04-04	BOEING 737 800	Indonesia	APAC	0	RS
2016-04-14	BOEING 737 700	United States	PA	0	RS
2016-04-20	BEECH 1900 D	Canada	PA	0	RS
2016-04-28	EMBRAER ERJ190	Ecuador	PA	0	RS
2016-04-28	BOMBARDIER CL600 2B19 100	United States	PA	0	RS
2016-04-28	BOEING 777 200	United States	PA	0	RS
2016-04-30	FOKKER F27 50	Italy	EUR	0	RS
2016-05-04	AIRBUS A330 200	Indonesia	APAC	0	TURB
2016-05-07	ATR ATR72 200	India	APAC	0	RS
2016-05-11	BOEING 777 300	France	EUR	0	RS
2016-05-11	AIRBUS A320	France	EUR	0	RS

Date	Model	State	RASG	Fatalities	Risk Category
2016-05-14	AIRBUS A320 200	United States	PA	0	TURB
2016-05-19	AIRBUS A320 200	Egypt	MID	66	UNK
2016-05-27	BOEING 777 300	Japan	APAC	0	SCF
2016-05-27	BOEING 777 300	Singapore	APAC	0	SCF
2016-05-28	AIRBUS A320 200	United Kingdom of Great Britain and Northern Ireland	EUR	0	RS
2016-05-29	AIRBUS A319 100	United States	PA	0	OTH
2016-06-12	AIRBUS A321 200	United States	PA	0	TURB
2016-06-15	EMBRAER ERJ190 200LR	Spain	EUR	0	RS
2016-06-25	ATR ATR72 200	Myanmar	APAC	0	RS
2016-06-25	EMBRAER ERJ190 100LR	Myanmar	APAC	0	RS
2016-07-01	BOEING 737 800	Belgium	EUR	0	RS
2016-07-07	DE HAVILLAND DHC8 400	Thailand	APAC	0	RS
2016-07-20	SAAB 340 B	United Kingdom of Great Britain and Northern Ireland	EUR	0	RS
2016-07-26	EMBRAER ERJ170 100	United States	PA	0	TURB
2016-07-27	ATR ATR72	Morocco	EUR	0	F-NI
2016-07-28	AIRBUS A321 200	Bermuda	PA	0	TURB
2016-08-03	BOEING 777 300	United Arab Emirates	MID	1	RS
2016-08-03	AIRBUS A319 100	Cayman Islands	PA	0	TURB
2016-08-04	BOEING 737 300	United States	PA	0	RS
2016-08-05	BOEING 737 400	Italy	EUR	0	RS
2016-08-09	BOEING 737 800	United States	PA	0	RS
2016-08-17	BOEING 737 900	United States	PA	0	TURB
2016-08-27	BOEING 737 700	United States	PA	0	SCF
2016-09-11	AIRBUS A320	France	EUR	0	RS
2016-09-13	BOEING 737 300	Indonesia	APAC	0	RS
2016-09-23	BOEING 737 800	Spain	EUR	0	TURB
2016-09-24	DE HAVILLAND DHC8 200	United States	PA	0	RS
2016-09-25	LEARJET 31 A	Indonesia	APAC	0	RS
2016-10-01	AIRBUS A330 300	China	APAC	0	RS
2016-10-04	AIRBUS A319	Germany	EUR	0	RS
2016-10-04	BOEING 737 400	United Kingdom of Great Britain and Northern Ireland	EUR	0	SCF
2016-10-11	ANTONOV AN26	Russian Federation	EUR	0	RS
2016-10-19	AIRBUS A319 100	United Kingdom of Great Britain and Northern Ireland	EUR	0	SCF
2016-10-21	AIRBUS A300 B4	Brazil	PA	0	RS
2016-10-22	ATR ATR72 200	Portugal	EUR	0	RS

Date	Model	State	RASG	Fatalities	Risk Category
2016-10-31	EMBRAER ERJ190 100	Canada	PA	0	OTH
2016-11-10	BOEING 767 300	Japan	APAC	0	TURB
2016-12-04	BOEING 777 300	Portugal	EUR	0	TURB
2016-12-04	AIRBUS A321 200	Thailand	APAC	0	RS
2016-12-07	DE HAVILLAND DHC8 300	Canada	PA	0	OTH
2016-12-07	ATR ATR42 500	Pakistan	APAC	47	SCF
2016-12-13	BOEING 737 800	United States	PA	0	TURB
2016-12-14	DE HAVILLAND DHC8 400	United Kingdom of Great Britain and Northern Ireland	EUR	0	SCF
2016-12-16	BOMBARDIER CL600 2D24 900	Denmark	EUR	0	RS
2016-12-21	AIRBUS A321 200	Philippines	APAC	0	RS
2016-12-23	BOEING 737	Greece	EUR	0	RS
2016-12-25	ATR ATR72 200	Indonesia	APAC	0	RS

Risk Categories

Code	Description
CFIT	Controlled flight into/towards terrain
RS	Runway safety
LOC-I	Loss of control in-flight
F-NI	Fire – non-impact

Code	Description
TURB	Turbulence encounter
OTH	Other
UNK	Unknown
SCF	System component failure

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