RASG-PA

# Annual Safety Report

2023

Thirteenth edition

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# Disclaimer

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The RASG-PA Annual Safety Report aims to provide an overview of the results of the safety data review, and the safety initiatives and activities undertaken by the group during the specified period. It is intended to enhance awareness and promote a culture of safety among its members and other stakeholders.

While every effort has been made to ensure the accuracy and completeness of the information presented in this report, there may be unintentional errors or omissions.

Safety risks, practices and regulations change over time. The information presented in this report is based on RASG-PA safety practices up until the specified date. Subsequent developments or changes may not be reflected in this report.

This report contains data obtained from various sources, including internal records, third-party reports, and expert opinions. RASG-PA does not independently verify the information from these sources and disclaims any responsibility for inaccuracies or misinterpretations.

The information provided in this report does not constitute legal advice or guidance. It is intended solely for informational purposes.

This report may contain forward-looking statements that involve risks and uncertainties. These statements are based on current expectations and assumptions and are subject to various risks and uncertainties that may cause actual results to differ materially from those expressed or implied in the report.

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# Abbreviations list

| | |
|---|---|
| **ACI/LAC** | Airport Council International – Latin America & Caribbean |
| **AGA** | Aerodromes and Ground Aids |
| **ALTA** | Latin American and Caribbean Air Transport Association |
| **ANS** | Air Navigation Services |
| **ATR** | Regional Transport Airplanes |
| **AVG** | Average |
| **BCAST** | Brazilian Commercial Aviation Safety Team |
| **CANSO** | Civil Air Navigation Services Organisation |
| **COCESNA** | Central American Corporation for Air Navigation Services |
| **CST** | Collaborative Safety Team |
| **FDAP** | Flight Data Analysis Program |
| **GASP** | Global Aviation Safety Plan |
| **GREPECAS** | CAR/SAM Planning and Implementation Regional Group |
| **GTE** | GREPECAS Scrutiny Working Group |
| **IATA** | International Air Transport Association |
| **ICAO** | International Civil Aviation Organization |
| **IFALPA** | International Federation of Air Line Pilots' Associations |
| **IOSA** | IATA Operational Safety Audit |
| **PA-RAST** | Pan America – Regional Aviation Safety Team |
| **PBN** | Performance based Navigation |
| **RASG-PA** | Regional Aviation Safety Group – Pan America |
| **RSA** | RASG-PA Safety Advisory |
| **SMRT** | Safety Monitoring and Report Team |
| **SMS** | Safety Management System |
| **SSP** | State Safety Program |
| **UAS** | Unmanned Aircraft Systemt |
| **RPAS** | Remote Piloted Aircraft System |
| **SRVSOP** | Regional Safety Oversight Cooperation System |
| **USOAP** | Universal Safety Oversight Audit Program |

# Co-chairs Statement

**RASG-PA**
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# Andrew Larsen

**Associate Director, Standards at Transport Canada Civil Aviation**
**States Co-chair, RASG-PA**

Since its inception almost 15 years ago, the RASG-PA has served as a vital platform to promote aviation safety and to raise awareness on safety concerns in the Pan-America Region. This platform has had a positive impact on our common goal of delivering a safe and efficient air transportation system, while empowering States to address safety challenges and mitigate risks by facilitating collective knowledge exchange, expertise sharing, and safety-related information dissemination. The group plays a pivotal role in capacity building initiatives, providing States with tools, training, and technical assistance to enhance safety capabilities. As we continue to collectively move beyond the global pandemic, more States in our region have recognized the added value and mutual benefit of participating in RASG-PA. Over the course of 2022, we have seen a constant growth in participation at RASG-PA and PA-RAST meetings, which is a positive sign of active engagement in our region, and we look forward to this valuable participation continuing moving forward.

The importance of RASG-PA extends to industry stakeholders as well as to States. By involving airlines, airports, and manufacturers in its activities, the RASG-PA fosters a collaborative partnership between States and industry representatives. This cooperation ensures that safety initiatives are aligned with industry realities and practical implementation considerations. To further strengthen this type of industry-regulator collaboration, in 2022, RASG-PA adopted a strategy to promote the development of Collaborative Safety Teams (CST) in the Pan America Region. The strategy is intended to effectively support and promote the adoption of State and Region level CSTs and seeks to foster safety collaboration between PA-RAST and local CSTs.

The success of RASG-PA is crucially dependent on the active involvement of member States and industry stakeholders in the Region. Through your participation, we are developing practical solutions, influencing safety standards, and enabling others to learn best practices from safety experts in the region, while moving forward with SMS & SSP implementation. In short, together, we are shaping the future of aviation safety in our region. If you aren't already a member of RASG-PA, I invite you to take part in our initiatives, working groups, and events, enrich our discussions, share data, learn from peers, and share your experiences.

We encourage all of you to join and collaborate with us; take this opportunity to make a tangible difference and create a lasting impact on aviation safety! Thank you for the continued support and collaboration.

# Javier Alejandro Vanegas

**Director Latin America and Caribbean Affairs, CANSO**
**Industry Co-chair, RASG-PA**

Established in 2008, the Regional Aviation Safety Group - Pan America (RASG-PA) was the first of its kind globally. The RASG-PA guarantees seamless coordination of safety initiatives and develops products to enhance civil aviation safety. One of the great successes of the RASG-PA is its unique approach to incorporate States, International Organizations, and Industries under a single roof to work towards risk mitigation in the Pan America region.

In 2022, RASG-PA assigned more than 50.000,00 USD to develop safety projects. The positive and tangible results include implementing the Collaborative Safety Team (CST) in Mexico, an preparing the ground for CSTs in Chile, and Peru this year, and setting up more CSTs in the following year (Dominican Republic and Costa Rica in 2024), the publication of Safety Advisories like Mitigations of Controlled Flight Into Terrain, Mode Awareness and Energy State Management Aspects of Flight Deck Automation, and Compatibility Issues Between Required Landing Performance and Touchdown Zone Definition, the turbulence tool kit, and the implementation of other projects following a data-driving approach.

In addition, to create more benefits for the Region, the RASG-PA and the GREPECAS are strengthening their coordination and collaboration efforts and identifying data-sharing opportunities to harmonize procedures to avoid duplication of efforts. The RASG-PA and GREPECAS are closely working on the implementation of the CAR and SAM Runway Safety Tools (RST), PBN procedures in a visual runways, a project on language proficiency in Air Traffic Services, mitigation of CFIT accidents, general considerations on possible interference caused by the 5G network, and Unmanned Aircraft System (UAS) and Remote Piloted Aircraft System (RPAS).

We thank RASG-PA members who work tirelessly in building and executing initiatives that contribute to keeping our aviation system safe. It is the participation of all that makes the difference, and we encourage everyone to join the RASG-PA. This 2023 RASG-PA Annual Safety Report marks the thirteen´s edition, and you will have the opportunity to understand how you and your organization can actively participate in RASG-PA´s initiatives by sharing safety data or contributing to our working groups. See you at the next RASG-PA event.

# RASG-PA Chairmanship

RASG-PA Chairmanship is composed of two Co-Chairpersons:

From ESC member States/Territories

**Wagner Souza (Brasil)**
Co-Chairperson representing the States

From ESC member International Organizations/Industry

**Javier Vanegas (CANSO)**
Co-Chairperson representing the Industry and International organizations

Additionally

**Andrew Larsen (Canada)**
Vice Co-chairperson

# RASG-PA Excecutive Steering Committee

The Executive Steering Committee is currently made up of the following members:

| States/Territories | International Organizations/Industry |
|---|---|
| Argentina | Airbus |
| Brazil | ALTA |
| Canada | ATR |
| Chile | Boeing |
| Colombia | CANSO |
| Guatemala | Embraer |
| Trinidad and Tobago | Flight Safety Foundation |
| United States of America | IATA |

# The role of ICAO

ICAO plays a crucial role in ensuring the safe, orderly, efficient, and sustainable development of international civil aviation by establishing global standards, facilitating cooperation, and assisting member States in implementing effective aviation practices.

ICAO Assembly Resolution A36-7 relative to Global Planning for Safety and Efficiency, recognizes the importance of regional and national plans and initiatives based on the global framework for effective implementation; and that further progress in improving global safety and efficiency of civil aviation is best achieved through a cooperative, collaborative and coordinated approach in partnership with all stakeholders under the leadership of ICAO. Under this mandate, the Regional Aviation Safety Group - Pan America (RASG-PA) was created in May 2008, with the objective of developing initiatives for aviation safety, in order to reduce aviation risks. in the Region, promote its implementation by all stakeholders and improve the harmonization and coordination of efforts.

Following the example of RASG-PA, the ICAO Council approved in May 2020 the creation of equivalent groups in all regions of the world, with the aim of supporting a regional performance framework for the management of safety.

In this context, the ICAO NACC and SAM Regional Offices play a key role of coordination, communication and neutrality among all RASG-PA members and stakeholders, as well as with ICAO Headquarters and the other RASGs. in other Regions, to ensure and support the implementation of global, regional and national safety plans.

**Map of RASGs and ICAO Regional Offices**

# Word from our members

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## José Ricardo Botelho

**ALTA Executive Director & CEO**

Recognizing that safety is a basic human need and the number one value in the aviation industry, ALTA's mission is to coordinate the collaborative efforts of its members and regional authorities to develop a safer, more efficient, and environmentally responsible air transport in Latin America and the Caribbean.

ALTA works tirelessly to continually raise aviation safety standards in the region, with its main activities including participation in RASG-PA initiatives and the work of its Safety & Ops Committee.

Year after year, we witness how our industry is strengthening and raising its standards to achieve an even safer future. In the Pan American region, the role of RASG-PA is crucial in this progress, as the Group supports the NACC and SAM Regions in establishing objectives, priorities, indicators, and the setting of measurable targets to address safety-related deficiencies in each region while ensuring consistency of action and coordination of efforts.

The collaborative work carried out by RASG-PA applies modern safety management tools to remain ahead of any risks to commercial aviation, and to collaborate towards achieving the highest level of safety in the Pan American Region.

It is a great privilege for ALTA to be part of RASG-PA.

## Nathalie Tarnaud Laude

**ATR Aircraft CEO**

Flight safety is at the heart of everything we do. Commercial aviation boosts the economy, opens new markets, and provides access to essential and sustainable services for millions of citizens around the world. From a flight safety perspective, we must never let our guard down. This relies upon every aviation leader working together as demonstrated by the RASG-PA activities.

ATR greatly appreciates RASG-PA's equal commitment to flight safety, driving air navigation and flight operations improvements in the regions we serve. We look forward to many years of collaboration in the interests of every ATR operator, passenger, and the aviation industry.

## Edwin F. Kelly

**Director • Department of Civil Aviation of Aruba**

Aruba is a relatively small island in the Caribbean, part of the NACC region. With its economy highly dependent on tourism, a sustainable and safe aviation ecosystem is of vital importance. Therefore, despite it's relatively small size, Aruba's drive and ambition to optimize the safety performance of the whole aviation eco-system is extremely high.

We consider RASG-PA as a unique and unprecedented partnership between States and the industry that would offer several unique benefits to us. Being part of the RASG-PA allows us to benefit from analysis results based on a significant amount of data (statistically relevant as well as relevant to our region), that we would otherwise not have. It assists us in establishing objectives, priorities, indicators and the setting of measurable targets to address safety-related deficiencies on a national level, while ensuring consistency of action and coordination of efforts. It also provides us with feedback and best practices that can be implemented in a pro-active, and even predictive, fashion. On the other side, RASG-PA provides us with a platform whereby we can provide the necessary input that is relevant to the specific context and needs of a small island like Aruba. For these reasons, Aruba is committed to remaining an active member and participant of the RASG-PA.

# 2022 in review

## Pan America

**11,788,191**
total departures

**37.8 %**

**1,232,547,531**
Total passengers

**1,007,852,863**
Domestic Passengers

**224,694,668**
International passengers

**584**
Airlines

**8,103**
city pairs

**13,765**
total eet

**+6.5%**
AVG Fleet recovery from COVID (2019vs2022)

**-10.8%**
Pax recovery from COVID

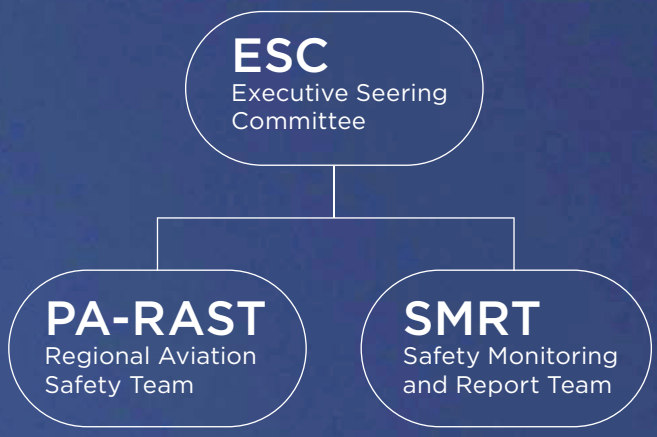
# Our purpose

RASG-PA serves as regional cooperative for integrating global, regional, national, and industry efforts in continuing to enhance aviation safety in the Region. RASG-PA eliminates duplication of effort through the establishment of cooperative regional safety initiatives and activities. This coordinated approach significantly reduces both financial and human resource burdens on States and allows for the delivery of measurable safety improvements.

The RASG-PA mission is to reduce fatality risk in commercial aviation by ensuring prioritization, coordination and implementation of data-driven safety enhancement initiatives in the Pan American Region through the active involvement of all civil aviation stakeholders.

The RASG-PA vision is to remain ahead of any risks to commercial aviation, and to collaborate towards achieving the highest level of safety in the Pan American Region.

## RASG.PA
Organizational Chart



# 2022 Safety Factsheet

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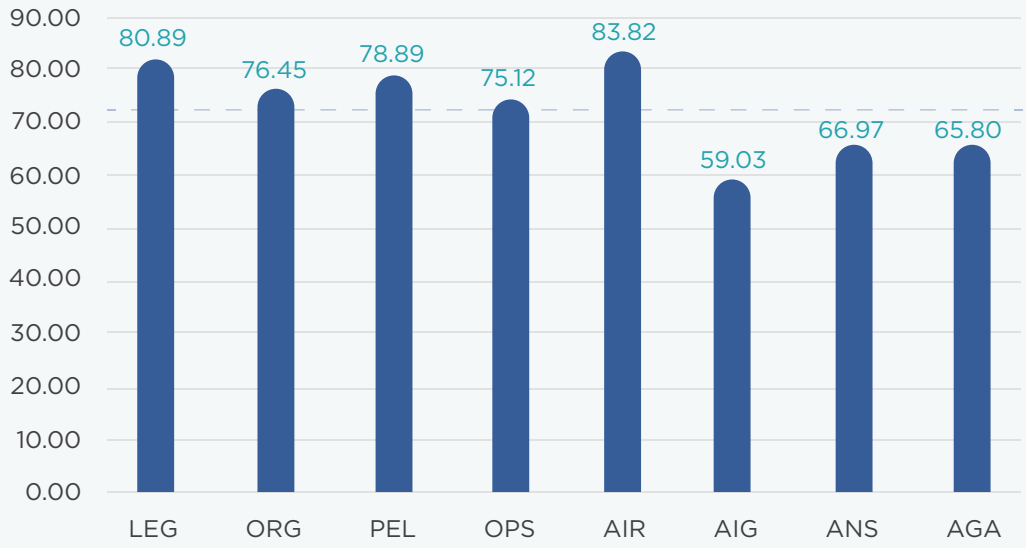
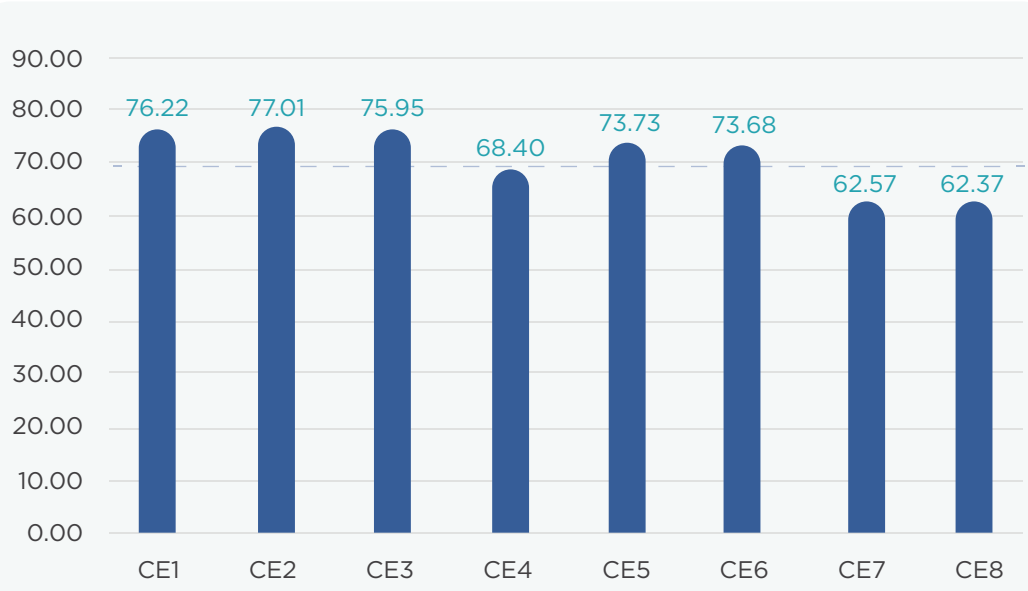
## Effective Implementation by Area




## Effective Implementation by Critical Element




## Unsatisfatory PQ Matrix

This graphic depicts Average Findings per Area and Critical Elements of the USOAP.

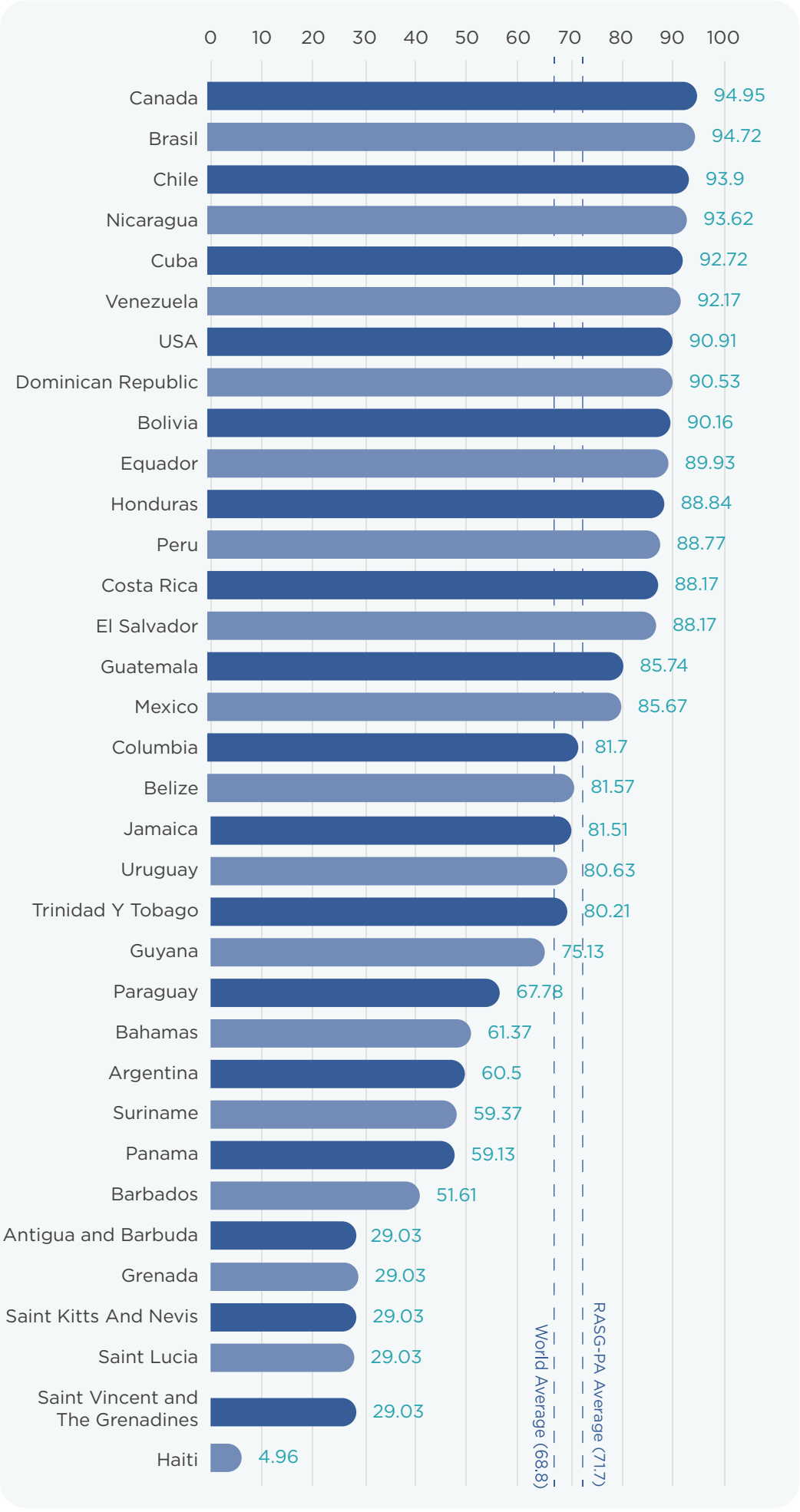
| | LEG | ORG | PEL | OPS | AIR | AIG | ANS | AGA |
|---|---|---|---|---|---|---|---|---|
| CE1 | 1.74 | 0.00 | 0.00 | 0.37 | 0.00 | 3.51 | 0.86 | 0.57 |
| CE2 | 2.00 | 0.00 | 1.37 | 2.54 | 3.23 | 3.37 | 1.86 | 4.74 |
| CE3 | 0.00 | 1.83 | 1.29 | 1.23 | 0.54 | 3.77 | 4.14 | 1.54 |
| CE4 | 0.00 | 0.09 | 1.63 | 1.40 | 1.11 | 1.94 | 5.31 | 2.26 |
| CE5 | 0.49 | 0.26 | 1.40 | 3.40 | 2.69 | 16.57 | 0.31 | 3.89 |
| CE6 | 0.00 | 0.00 | 6.29 | 14.34 | 3.94 | 0.00 | 6.74 | 16.06 |
| CE7 | 0.00 | 0.00 | 3.29 | 3.20 | 1.77 | 0.00 | 17.06 | 11.40 |
| CE8 | 0.00 | 0.00 | 2.03 | 1.29 | 1.37 | 4.23 | 2.74 | 3.60 |

## Effective Implementation by Country

The level of Effective Implementation has slightly decreased in the region as a result of two audit activities, and the revision 2020 of the Protocol Questions of the USOAP questionnaire.

According to the GASP, by 2024, States should achieve a 75 per cent EI score. By the end of 2022, 22 of the 34 (64.7%) RASG-PA Member States have reached that mark.

However, RASG-PA average EI of 71.7 is above world EI average of 68.8.

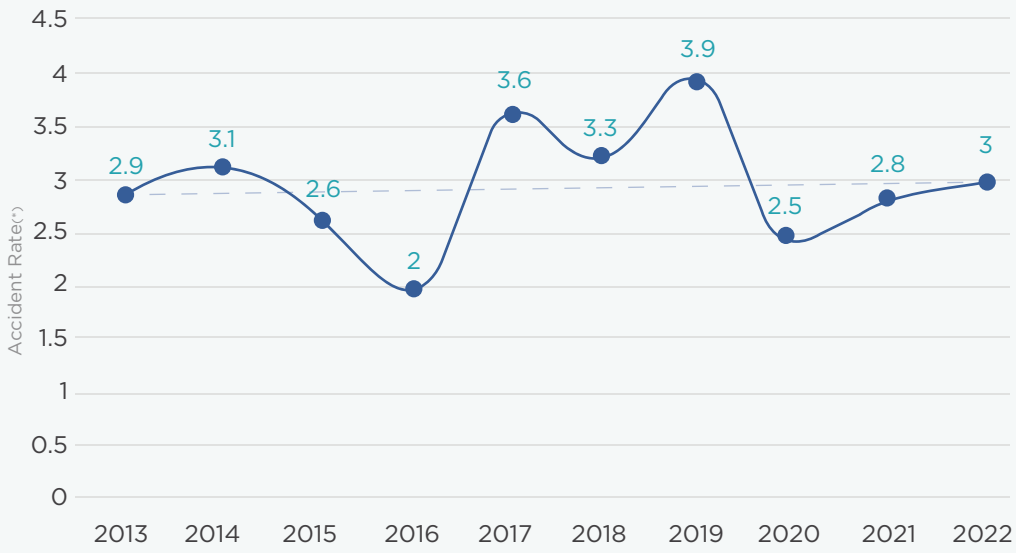


## 10 Years Accident Rate

The accident rate has had an unstable behavior during the last 10 years, maintaining an average rate of around 3 accidents per million departures. The rate has started to increase in the last 3 years, as traffic has picked up after the Covid-19 pandemic.

World accident rate in 2022 was 2.14.

*Accident Rate per Million Departures. Commercial, Scheduled operations above 5.700 kg.



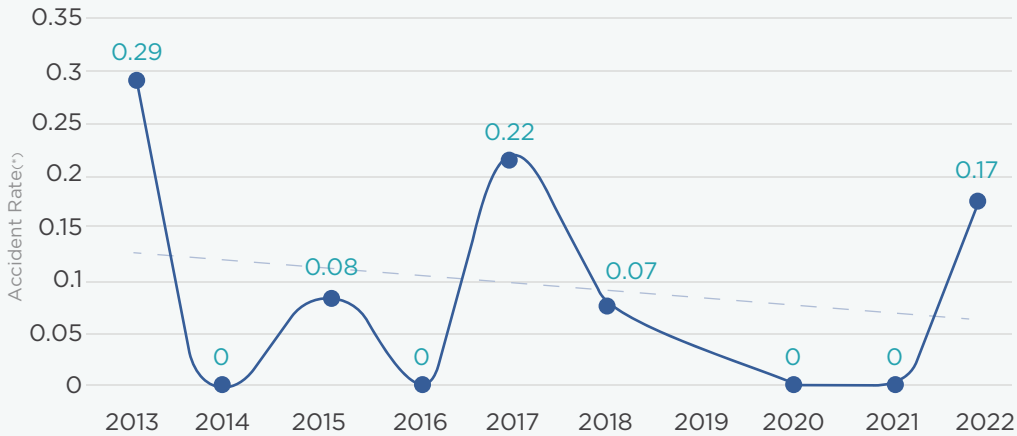

Source: ICAO iStars 4.0 - https://istars.icao.int/Sites

## 10 Years Fatal Accident Rate

The trend of the rate of fatal accidents in the region has remained low in the last 10 years. Its behavior is very sensitive due to the very low number of fatal accidents.

World fatal accident rate in 2022 was 0.23.

*Accident Rate per Million Departures. Commercial, Scheduled operations above 5.700 kg.

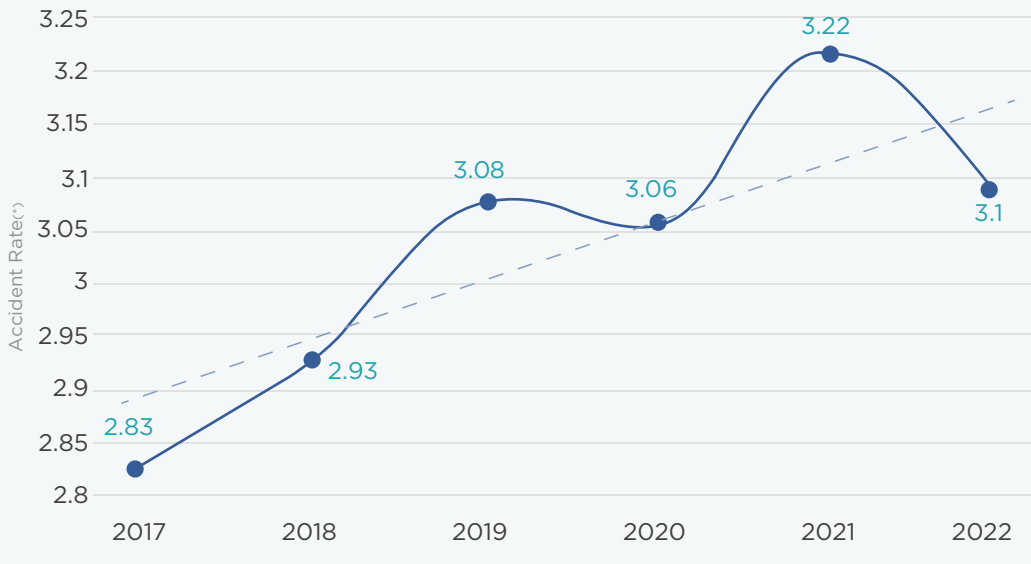



Source: ICAO iStars 4.0 - https://istars.icao.int/Sites

## 5 Year Accident Rate Moving Average

The 5-year accident rate moving average since 2017 shows an increasing trend, however the trend since 2019 is downward.

*Accident Rate per Million Departures. Commercial, Scheduled operations above 5.700 kg.

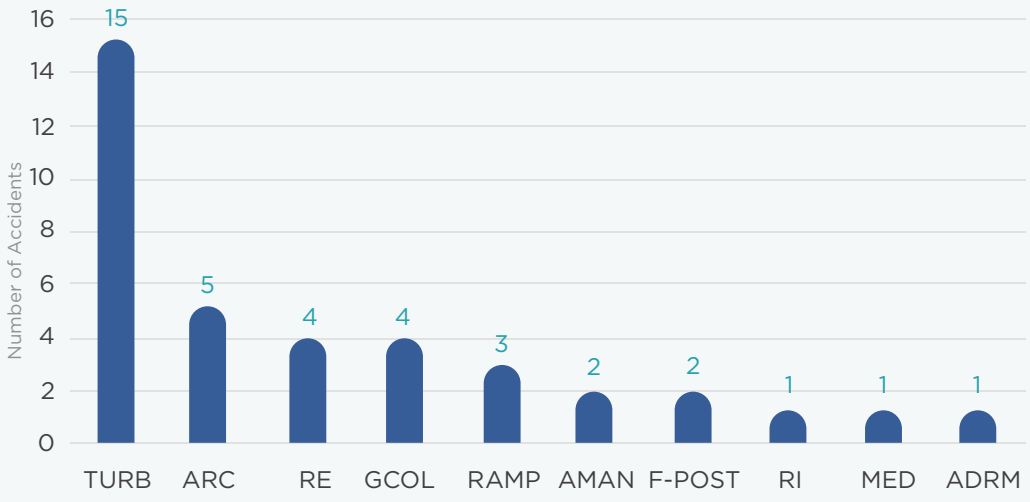



Source: ICAO iStars 4.0 - https://istars.icao.int/Sites

## Accidents by Category

Turbulence continues to be the main accident category for the fifth consecutive year, however there have been no fatalities under this category.

AMAN Abrupt maneuver
ARC Abnormal runway contact
ARDM Aerodrome
F-POST Fire/smoke (post-impact)
GCOL Ground collision
MED Medical
RAMP Ground handling
RE Runway excursion
RI Runway incursion
TURB Turbulence encounter

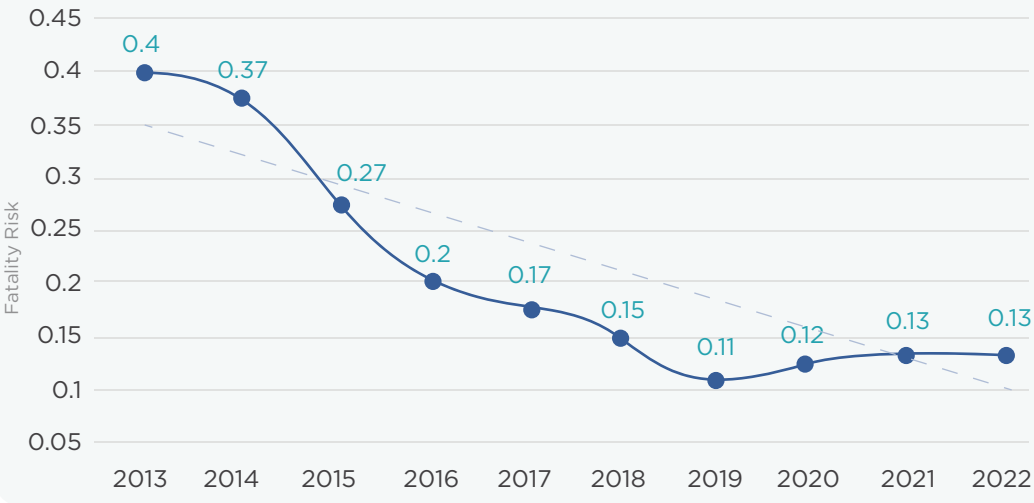



Source: ICAO iStars 4.0 - https://istars.icao.int/Sites

## 10 Year Fatality Risk

Fatality risk is a measure of a person's (passenger or crew) chance of perishing in an accident on a randomly chosen flight.

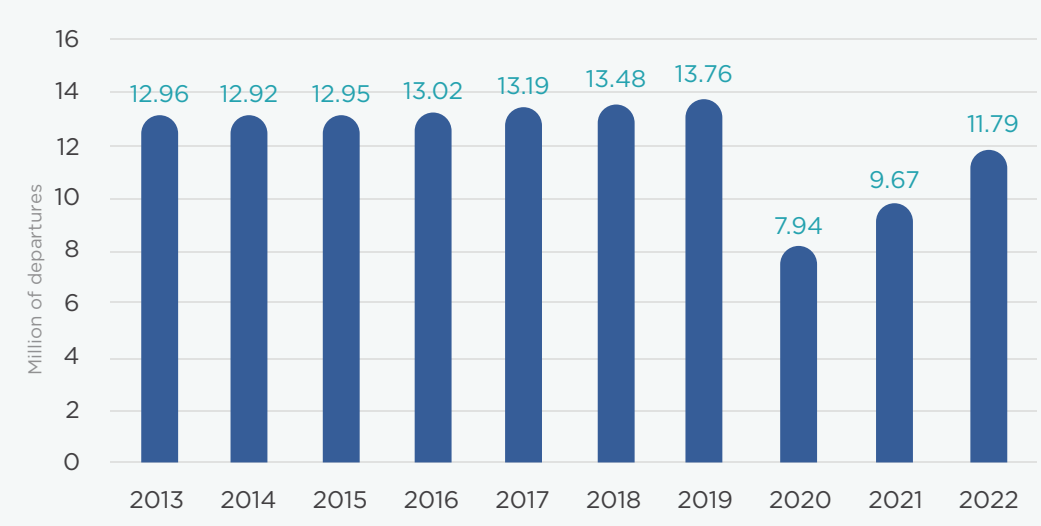
Fatality Risk in the region has remained consistently below worldwide average.




Source: IATA Annual Safety Report:
https://www.iata.org/en/publications/safety-report/

## Traffic in millions of departures

The traffic behavior of the last 3 years has been marked by a rapid post-covid recovery.
The accident rate has increased in the last three years along with this traffic growth, however, the fatality risk has remained stable.




Source: ICAO iStars 4.0 - https://istars.icao.int/Sites

# Our GASP indicators

## Data up to 31st December 2022

| Name of the indicator | Target | 2021 Value | 2022 Value | YoY Difference |
|---|---|---|---|---|
| 5 year accident rate | Maintain a decreasing trend of global accident rate | 3.21 | **3.09** | -0.12 |
| Accident rate | | 2.8 | **2.97** | +0.17 |
| Fatal accidents | | 0 | **2** | +2 |
| Fatal accident rate | | 0 | **0.17** | +0.17 |
| Fatality risk | | 0.23 | **0.11** | -0.12 |
| Average EI | All States to improve their score for the effective implementation (EI) by 2022 to 75 per cent | 72.16 | **71.7** | -0.46 |
| Percentage of States above 75% EI | | 72.2 | **65.56** | -6.64 |
| SSP foundation implementation regional average | By 2022, all States to implement the foundation of an SSP | 70.44 | **70.6** | +0.16 |
| SSP Establishment regional average | | 31.73 | **28.55** | -3.18 |
| Percentage of States that have Submitted their National Safety Plans | By 2022, all States to contribute information on safety risks, including SSP safety performance indicators (SPIs), to their respective regional aviation safety group (RASGs) | 43.32 | **73.53** | -30.21 |
| Number of IOSA operators | By 2022, increase the number of service providers participating in the corresponding ICAO-recognized industry assessment programmes | 81 | **78** | -3 |
| AGA Average Regional EI | By 2022, all States to implement the air navigation and airport core infrastructure | 63.89 | **64.38** | +0.49 |
| ANS Average Regional EI | | 67.68 | **66.96** | -0.72 |
| Percentage of certified aerodromes | | 53.14 | **58.85** | +5.71 |
| Percentage of aerodrome with RST | | 46.54 | **45.67** | -0.87 |

# High Risk Categories

The High-Risk Categories (HRC) of occurrences stem from the ICAO Global Aviation Safety Plan (GASP, Doc 10004) with five main areas identified:

## Controlled flight into terrain (CFIT)

## Loss of control in-flight (LOC-I)

## Mid-air collision (MAC)

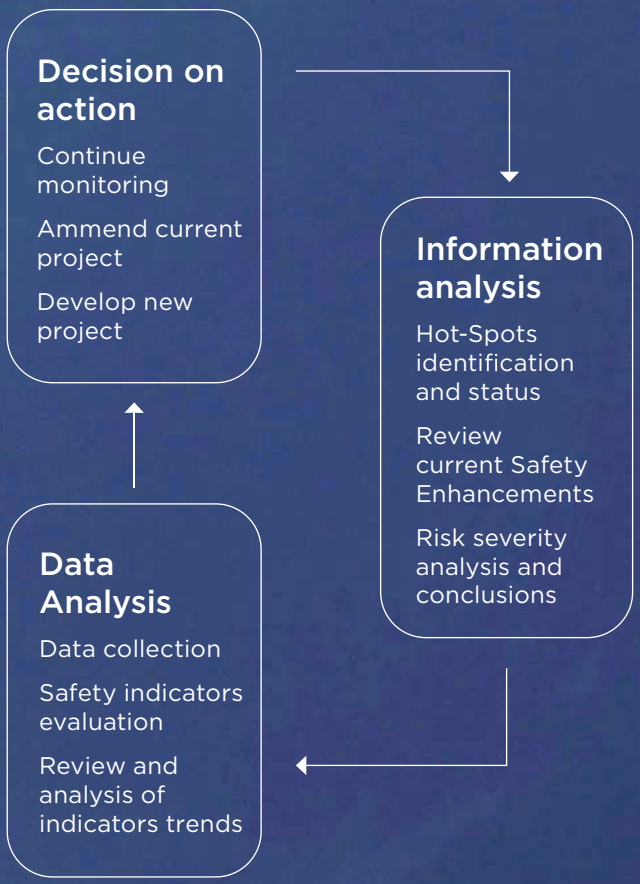
## Runway excursion (RE)

## Runway incursion (RI)

In the RASG-PA, work activities sounding the HRC's are data-driven using information from the IATA Global Aviation Safety Data Management (GADM) program, and the FAA Aviation Safety Information Analysis and Sharing (ASIAS) system, amongst other information sources to monitor trends, identify risk, develop projects, advisories, guidance, and other mitigation activities.

Additionally, RASG-PA uses a project-based methodology. All the group's activities arise from the risks identified through data analysis and information exchange with service providers and States. Mitigation initiatives have a champion, a deadline, a defined deliverable, and follow-up metrics.

The process as informed by the de-identified and aggregated data/information provided, is made possible through the collaborative agreements with each entity responsible for managing its data. The overall process in which data review process follows is as seen below:



# Controlled Flight Into Terrain (CFIT)

## Definition

Controlled Flight Into Terrain is defined as an in-flight collision or near collision with terrain, water, or obstacle without indication of loss of control, in other words, the aircraft is inadvertently flown into terrain or an obstacle. These accidents are generally characterized by the flight crew's loss of situational awareness in the approach and landing phase of flights. Source:

https://www.skybrary.aero/articles/controlled-flight-terrain-cfit

## Available RASG-PA products

RASG-PA Safety Advisory 07 – "Mitigations for Controlled Flight Into Terrain" (November 2022).

https://www.icao.int/RASGPA/Pages/RASGPA-SA.aspx

## Current projects

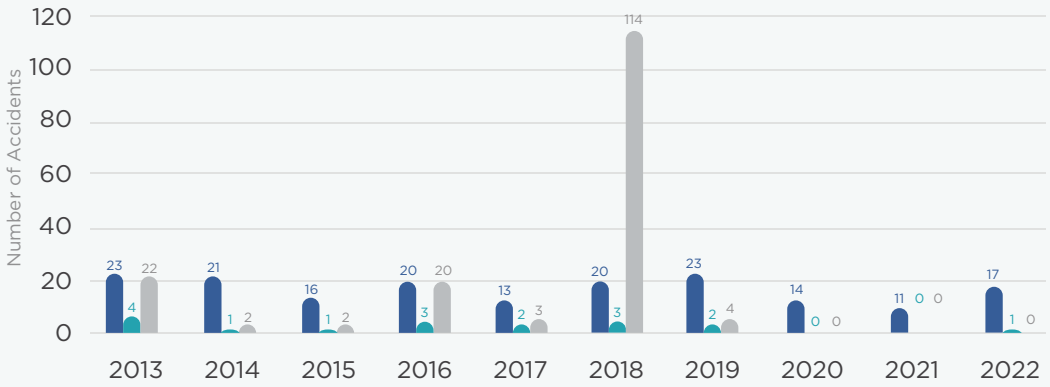
Revision of the RASG-PA SAFETY ADVISORY 07 addressing areas of concerns (informed by surveys to the states and operators in the PA region) associated with TAWS and obstacle and terrain databases among operators and States (Under development for 2023).

## Team composition

USA (Champion), Aruba, Canada, Dominican Republic, IATA and ICAO.

## 10 Years of CFIT Accidents

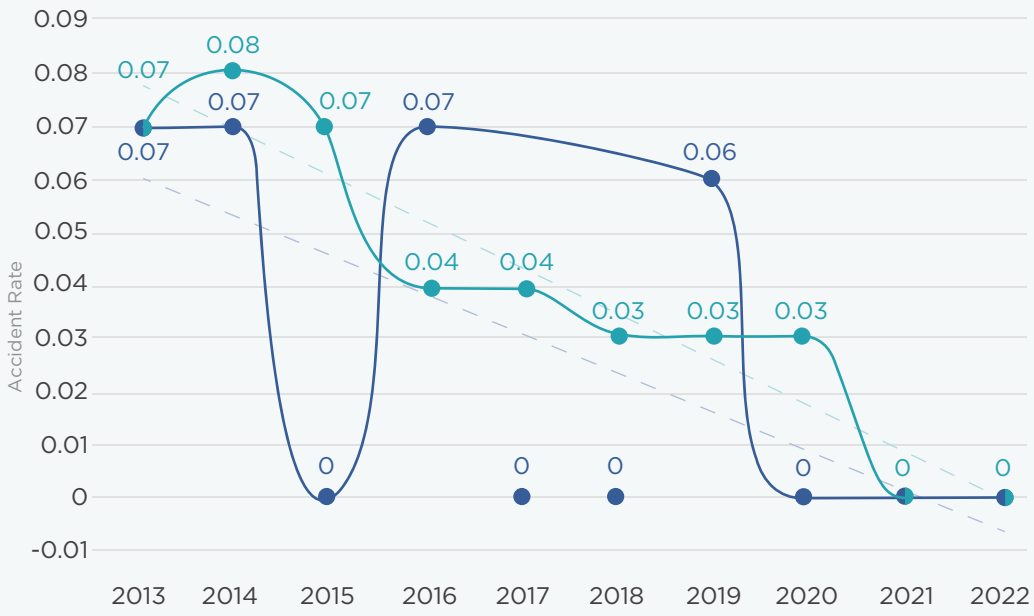
- Accidents
- Fatal accidents
- Fatalities on board




Source: IATA Annual Safety Report:
https://www.iata.org/en/publications/safety-report/

## 10 Years of CIFT Accident Rate

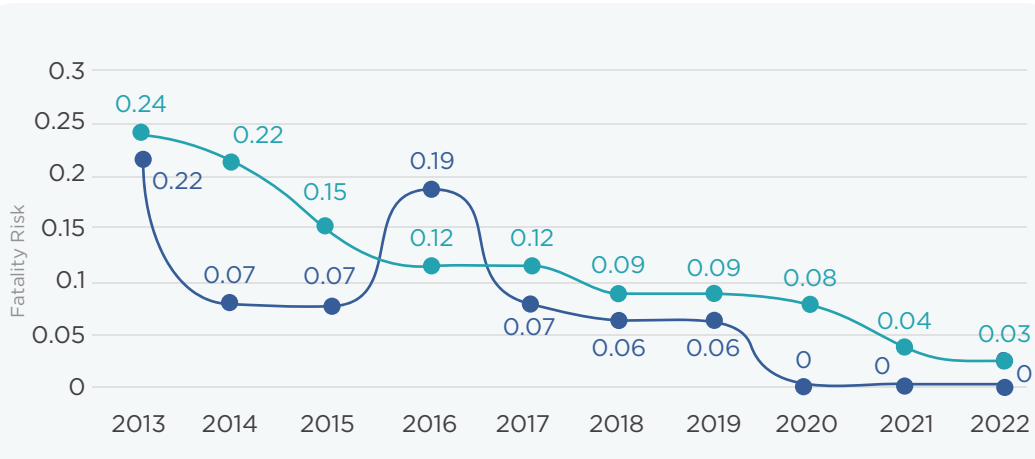
- Accident Rate
- 5 Year Accidents Rate AVG
- Linear (Accidents Rate)
- LInear (5 Years Accidents Rate AVG)




Source: IATA Annual Safety Report:
https://www.iata.org/en/publications/safety-report/

## 10 Years of CFIT Fatality Risk

- Fatality Risk
- 5 Year Fatality Risk AVG
- Linear (Fatality Risk)




Source: IATA Annual Safety Report:
https://www.iata.org/en/publications/safety-report/

# Loss of Control In-Flight (LOC-I)

## Definition

A Loss of Control In-flight (LOC-I) is an accident in which the flight crew was unable to maintain control of the aircraft in flight, resulting in an unrecoverable deviation from the intended flight path.

Accidents categorized as LOC-I often have catastrophic results with very few, if any, survivors. In order to demonstrate that, the industry numbers show the LOC-I category representing only 7% of all accidents during the last 10 years (2013-2022), however it resulted in the highest percentage of fatal accidents (49%) and fatalities (57%). Therefore, there is a high fatality risk associated with these events.

## Available RASG-PA products

RASG-PA Safety Advisory 09 – "Mode Awareness and Energy State Management Aspects of Flight Deck Automation" (November 2022).

https://www.icao.int/RASGPA/Pages/RASGPA-SA.aspx

## Current projects

New RASG-PA Safety Advisory (RSA) to foster manual flight operations in air operators. (Under development for 2023).

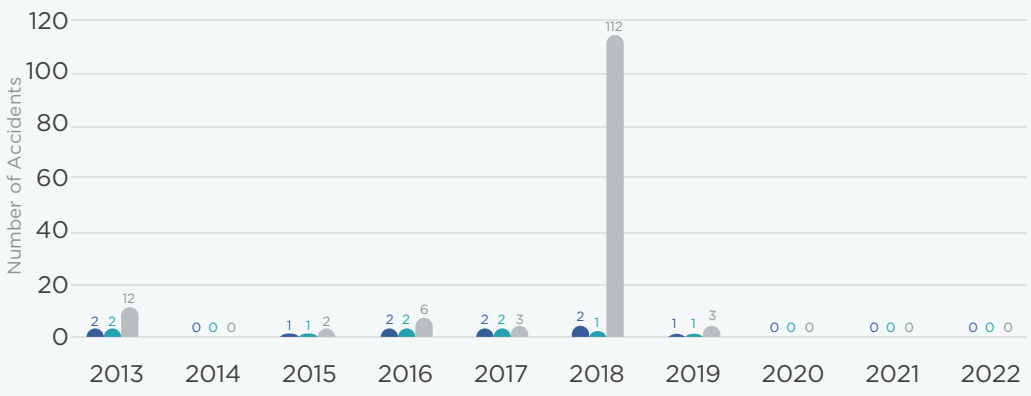
Procedures to improve go-around decision making and outcomes. (Under development for 2023).

## Team composition

Boeing (Champion), Aruba, Brazil, Embraer, IATA, IFALPA, Trinidad and Tobago.

## 10 Years of LOC-I Accidents

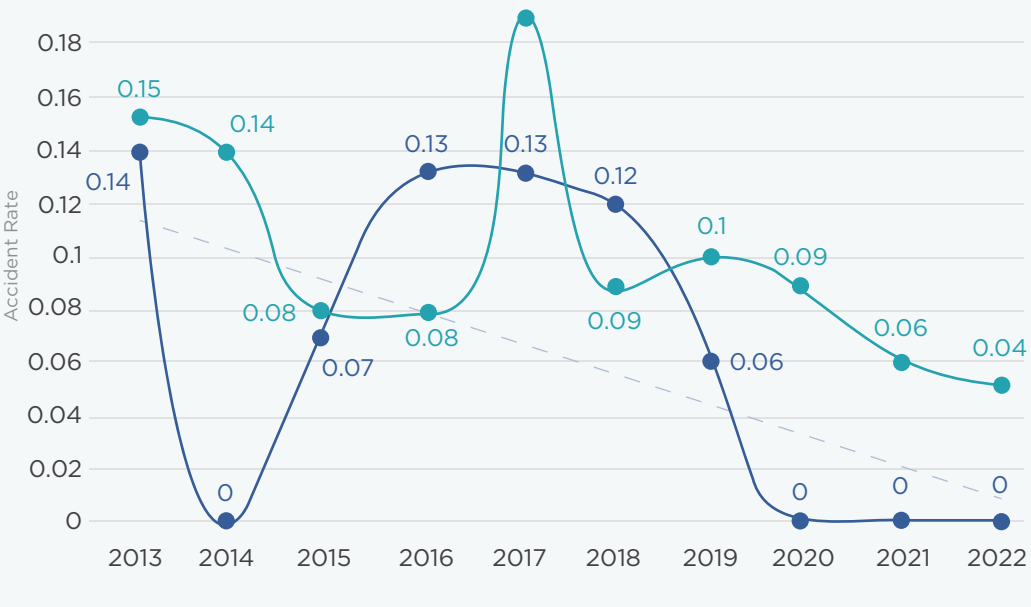
- Accidents
- Fatal accidents
- Fatalities on board




Source: IATA Annual Safety Report:
https://www.iata.org/en/publications/safety-report/

## 10 Years of LOC-I Accident Rate

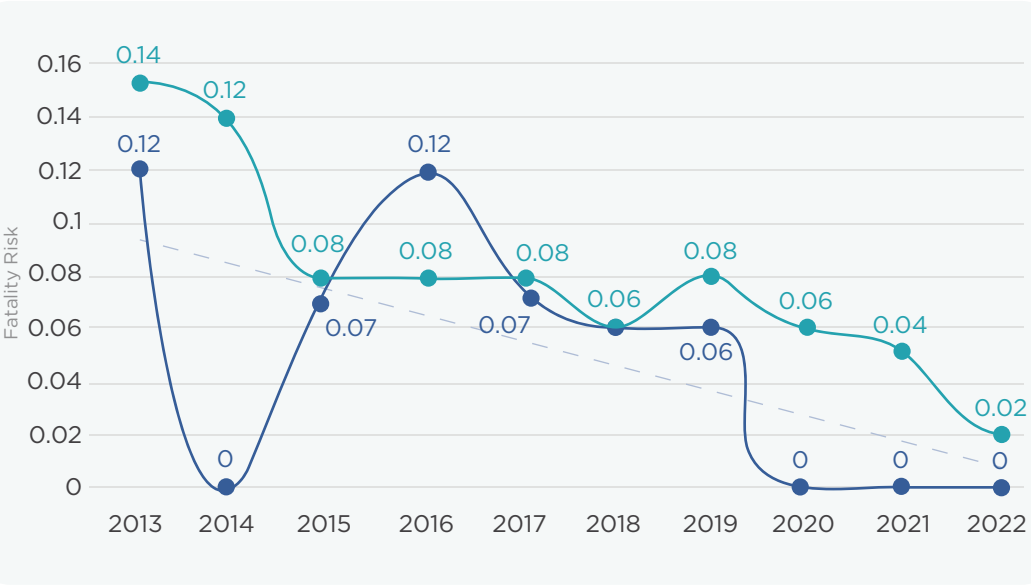
- Accident Rate
- 5 Year Accident Rate AVG
- Linear (Accident Rate)




Source: IATA Annual Safety Report:
https://www.iata.org/en/publications/safety-report/

## 10 Years of LOC-I Fatality Risk

- Fatality Risk
- 5 Year Fatality Risk AVG
- Linear (Fatality Risk)




Source: IATA Annual Safety Report:
https://www.iata.org/en/publications/safety-report/

# Mid Air Collision (MAC)

## Definition

A Mid-Air Collision is an accident where two aircraft encounter each other while both are in flight. Source:

https://www.skybrary.aero/articles/mid-air-collision

## Mitigation strategy

To address this risk in the system, a Joint working group of the CAR/SAM Planning and Implementation Regional Group (GREPECAS) and Regional Aviation Safety Group – Pan America (RASG-PA) was formed and Terms of Reference (ToR) for the joint collaborative work efforts approved in 2022. This ToR's formalize the official working capacity for Air Navigation Services (ANS) safety and Regional Safety group work focused on join risk mitigation in the airspace for the Pan America region. The aim of the group work is the coordination of reported occurrences for the purpose of safety risk mitigation in North America, Central America, and Caribbean (NACC) including the South America (SAM) region by GREPECAS Scrutiny Group (GTE) and Regional Aviation Safety Team – Pan America (RASG-PA) fostering cooperation, information exchange, sharing of experiences and best practices among States and industry stakeholders.

## Available RASG-PA products

Midair collision (MAC) – "Formalization of the Terms of Reference and methodology of collaboration between the GTE and PA-RAST"

https://www.icao.int/RASGPA/Pages/RASGPA-SA.aspx

## Current projects

ATC Best Practices Guidance. (Under development for 2023).

## Team composition

IATA (Champion), Brazil, Colombia, Dominican Republic, Trinidad and Tobago, USA, ALTA, COCESNA, ICAO and IFALPA.

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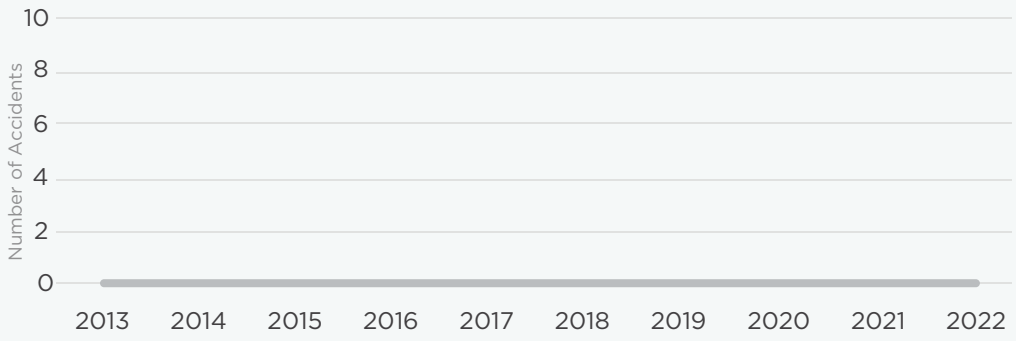
## 10 Years of MAC Accidents

- Accidents
- Fatal accidents
- Fatalities on board

No MAC related accidents registered in the last 10 years.

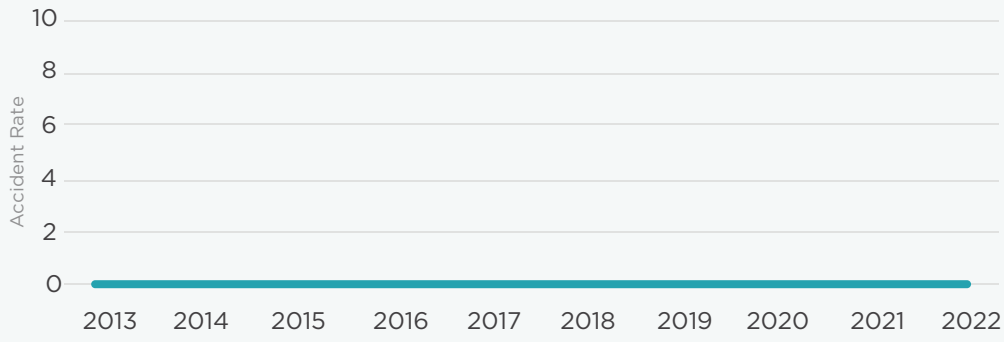



Source: IATA Annual Safety Report:
https://www.iata.org/en/publications/safety-report/

## 10 Years of MAC Accident Rate

- Accident Rate
- 5 Year Accident Rate AVG

No MAC related accidents registered in the last 10 years.

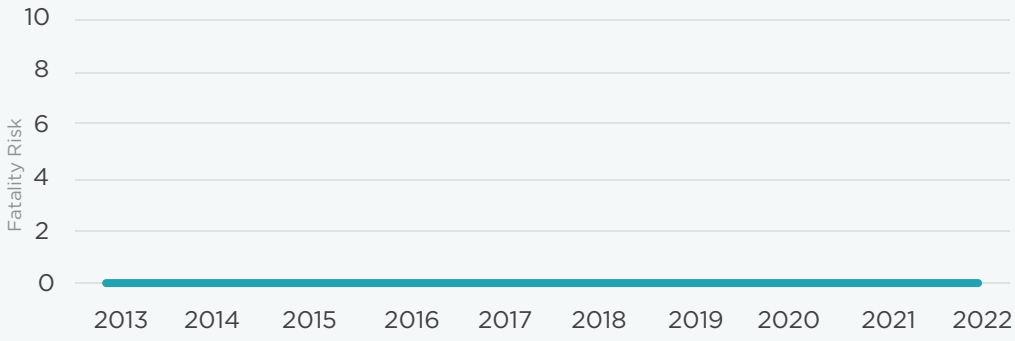



Source: IATA Annual Safety Report:
https://www.iata.org/en/publications/safety-report/

## 10 Years of MAC Fatality Risk

- Fatality Risk
- 5 Year Fatality Risk AVG

No MAC related accidents registered in the last 10 years.




Source: IATA Annual Safety Report:
https://www.iata.org/en/publications/safety-report/

# Runway Excursion (RE)

## Definition

A veer off or overrun off the runway surface. A runway excursion occurs when an aircraft departs the runway in use during the take-off or landing run. The excursion may be intentional or unintentional. Source:

https://www.skybrary.aero/articles/runway-excursion

## Available RASG-PA products

RASG-PA Safety Advisory 08 – "Compatibility Issues Between Required Landing Performance and Touchdown Zone Definition" (November 2022).

https://www.icao.int/RASGPA/Pages/RASGPA-SA.aspx

## Current projects

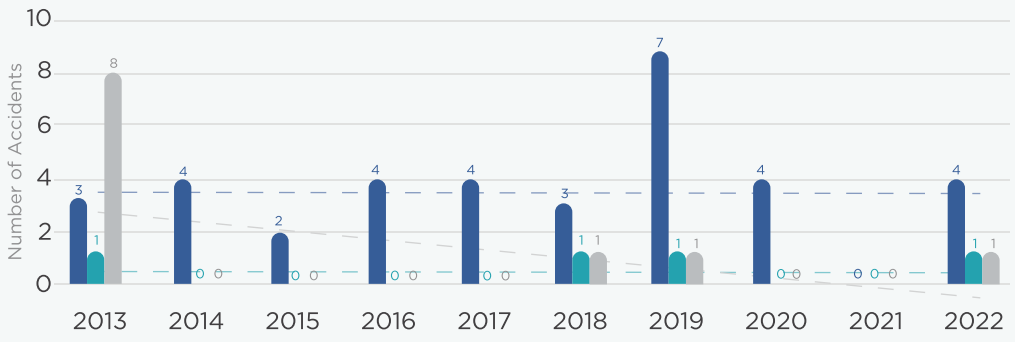
Runway Excursions Toolkit (Under development for 2023).
RASG-PA Safety Advisory on Runway Excursions
(Under development for 2024).

## Team composition

ALTA (Campion), ACI/LAC, BCAST, Boeing,
Embraer, IATA, IFALPA.

## 10 Years of RE Accidents

- Accidents
- Fatal Accidents
- Fatalities on Board
- Linear (Accident)
- Linear (Fatal Accidents)
- Linear (Fatalities on Board)

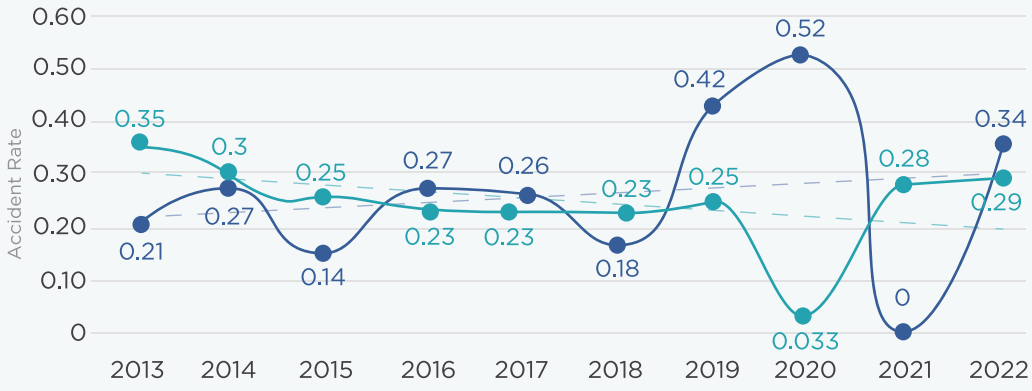



10 year of Runway Excursion accidents, show a flat trend on the number of accidents and number of fatal accidents, however the number of fatalities has decreased. See Fatality Risk below for additional context.

Source: IATA Annual Safety Report:
https://www.iata.org/en/publications/safety-report

## 10 Years of RE Accident Rate

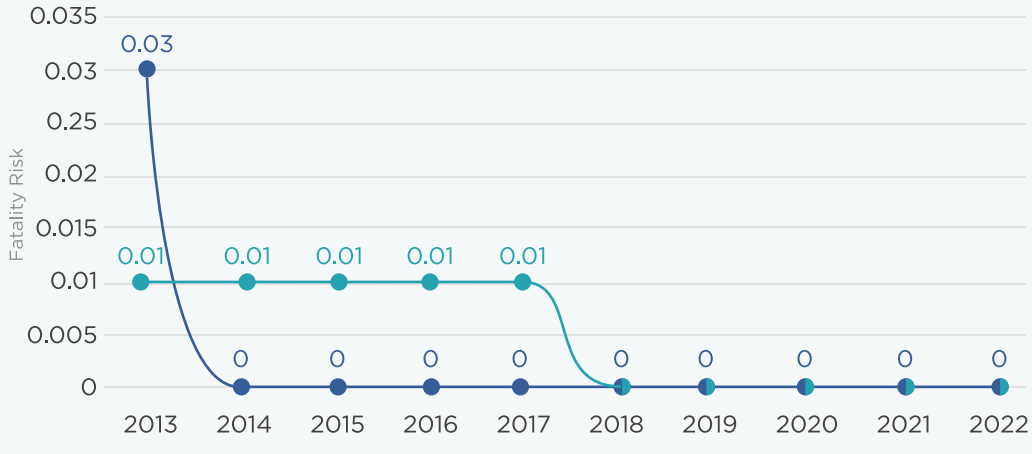
- Accident Rate
- 5 Year Accident Rate AVG
- Linear (Acident Rate)
- Linear (5 Years Accident Rate AVG)




Source: IATA Annual Safety Report:
https://www.iata.org/en/publications/safety-report/

## 10 Years of RE Fatality Risk

- Fatality Risk
- 5 Year Fatality Risk AVG




Source: IATA Annual Safety Report:
https://www.iata.org/en/publications/safety-report/

# Runway Incursion (RI)

## Definition

Any occurrence at an aerodrome involving the incorrect presence of an aircraft, vehicle, or person on the protected area of a surface designated for the landing and take off of aircraft.
Source: https://www.skybrary.aero/articles/runway-incursion

## RI Situation

Accidents related to runway incursions are rare events in the region, however they have the potential to be catastrophic, such as the 2022 accident.

While RI's accident rate is low, the projected increase in traffic throughout the region increases exposure and risk exponentially.

## Current projects

RASG-PA Safety Advisory on Runway Incursions (Under development for 2024).

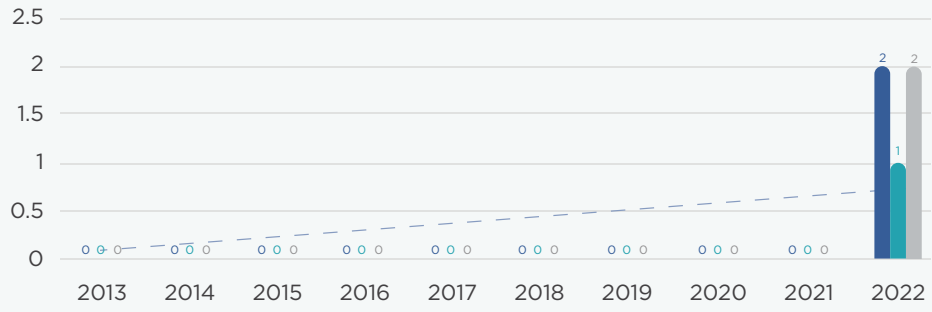
## Team composition

ALTA (Champion), ACI/LAC, BCAST, Boeing, Embraer, IATA, IFALPA.

### 10 Years of RI Accidents

- Accidents
- Fatal Accidents
- Fatalities
- Linear (Accident)

NOTE: ICAO accident statistics (iStars 4.0) take into account fatalities outside the aircraft (third parties on the surface) as part as accident fatalities. See ICAO Annex 13 definition of accident.

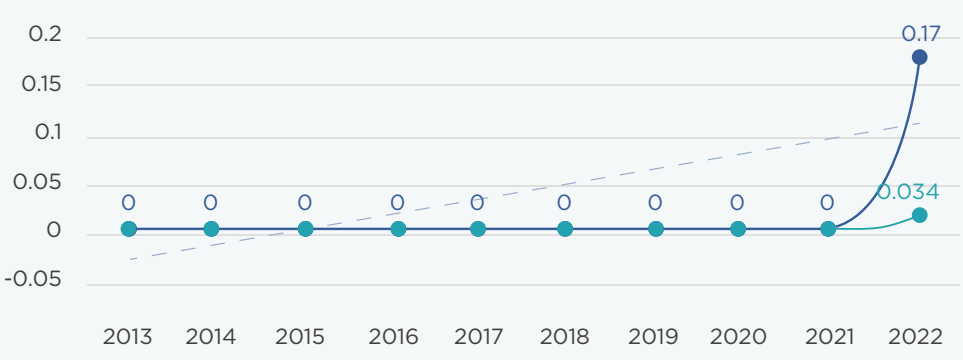



10 year of Runway Incursion accidents show no recorded accidents from 2013 to 2021, and 2 accidents in 2022, one fatal.

Source: ICAO iStars 4.0 https://istars.icao.int

### 10 Years of RI Accident Rate

- Accident Rate
- 5 Year Accident Rate AVG
- Linear (Acident Rate)




Source: ICAO iStars 4.0 https://istars.icao.int

# Keep an eye on

Although they are not considered High Risk Categories for RASG-PA at this time, the data suggests that the following event categories require special attention from States and airlines to ensure that risk levels remain at acceptable levels, and that the necessary mitigation measures are implemented to guarantee the safety of operations.

## Severe weather

In 2022, for the 5th consecutive year, the most common category of accidents in the region was Turbulence. In the last year, this type of event represented 43% of all registered accidents.

Although there have not yet been fatalities under this category, in all the 15 turbulence-related accidents that occurred in 2022, serious injuries were recorded among the occupants.

There is preliminary evidence to suggest that severe weather events have increased in frequency and intensity over time. RASG-PA and its members will continue to work on data analysis and development initiatives aimed at better understanding these phenomena and developing risk mitigation measures.

It is critical that Air Carrier Operations develop policies and procedures for the prevention of Turbulence-Related Injuries. RASG-PA has a collection of resources available in its Turbulence Toolkit:

https://www.icao.int/TASGPA/Pages/TurbulenceToolkit.aspx

## Infrastructure Issues

Through the collaborative work of RASG-PA with States, the existence of deficiencies in airport infrastructure to support safe operations has been identified.

The ICAO Global Air Navigation Plan urges to maintain an increasing trend of States with air navigation and aerodrome infrastructure that meets relevant ICAO Standards.

Among the accidents that occurred in the region in 2022, there were both runway departures and runway incursions, with fatalities.

Although these events are still under investigation, it has been determined from past events that deficiencies in preventive maintenance of the tracks may be a contributing factor for this type of accident. States must make the necessary efforts to achieve certification processes for their aerodromes, and guarantee that they operate in accordance with ICAO standards.

# 2022 RASG-PA Deliverables

**RASG-PA**
Annual Safety Report
2023

# 2022 RASG-PA Deliverables

## RASG-PA Safety Advisory 07 Mitigations for Controlled Flight Into Terrain

This circular is intended to provide recommendations to States and operators with the aim of increasing the strength of the safety barrier provided by the Terrain Awareness and Warning System (TAWS).

https://www.icao.int/RASGPA/Pages/RAGSGPA-SA.aspx

## RASG-PA Safety Advisory 08 Compatibility Issues Between Required Landing Performance and Touchdown Zone Definition

This RASG-PA Safety Advisory serves to raise awareness of certain problems identified by the Brazilian Commercial Aviation Safety Team (BCAST) and directs some possible mitigation strategies for States, airlines, and other stakeholders to better select the most effective ways to implement safety improvement mechanism to maintain an acceptable level of safety.

https://www.icao.int/RASGPA/Pages/RAGSGPA-SA.aspx

## RASG-PA Safety Advisory 09 Mode Awareness and Energy State Management Aspects of Flight Deck Automation

The objective of the Circular is to alert States and air service operators about the importance of air crews knowing the mode of automation in which they operate the aircraft and encourage the adoption of practices to mitigate energy status management risks and mode awareness. Provides a sample automation policy to support the use of aircraft automation.

https://www.icao.int/RASGPA/Pages/RAGSGPA-SA.aspx

## Terms of Reference and methodology of collaboration between the GTE and PA-RAST

The document formalizes the coordination between the Joint GREPECAS Scrutiny Group (GTE) and Regional Aviation Safety Team – Pan America (RASG-PA) to avoid duplication of efforts on upper airspace risk mitigation activities and aims to strengthen the coordination of reported occurrences for the purpose of safety risk mitigation in the North American, Central American and Caribbean (NACC) and South American (SAM) region.

https://www.icao.int/RASGPA/Pages/RAGSGPA-SA.aspx

## PA-RAST Strategy for Collaborative Safety Teams

A high-level policy that allows to identify States where the implementation of a CST is considered a priority and has the conditions of sustainability over time, as well as the principles of follow-up.

https://www.icao.int/RASGPA/Pages/RAGSGPA-SA.aspx

## Amendment to Annex 6 Part I proposed by RASG-PA

This Amendment proposal intends to reduce the minimum weight threshold for aircraft, whose operators are required to implement a Flight Data Analysis Program (FDAP). The project successfully concluded with the approval of the incorporation of the Amendment to Annex 6 Part I proposed by RASG-PA. The amendment consists of expanding the applicability of Flight Data Analysis Programs (FDAP) for operators with aircraft of more than 15,000 kg takeoff weight. The current text is only applicable to aircraft of more than 27,000 kg. The approved amendment will be published in 2024, and will enter into force in 2027.

## Implementation of Performance-Based Navigation (PBN) procedures on a visual runway

As part of a collaborative effort coordinated by RASG-PA, 6 instrument procedures (2 departures, 2 arrivals and 2 approaches) were successfully implemented at the Guapi (SKGP) aerodrome in Colombia. The main results of the project were the drastic reduction of stabilized approaches and hard landings, thus reducing the probability of runway excursions as well as Abnormal Runway Contacts".

NOTE 1: Unstable approaches reduction from 2.5% of all approaches to 0% of all approaches.
NOTE 2: Hard landing reduction from 0.42% of all landings to 0% of all landings.

7

Total Deliverables in 2022

7

States involved in product development

10

International Organizations/Industry involved in product development

# Active Projects

**RASG-PA Turbulence Toolkit**
A collection of turbulence related resources from different Civil Aviation Authorities, Airlines, International Organizations, Safety Task Forces, Accident Investigation Agencies, and others, duly organized and made available to RASG-PA members and other interested parties through the RASG-PA website.
https://www.icao.int/RASGPA/Pages/TurbulenceToolkit.aspx

**Analysis of the risks associated with the condition of the pavements of certain runways in Peru**
A collaborative work between PA-RAST and Peruvian airlines and State Organizations to help mitigate the operational safety risks identified in certain airports in that country, due to the condition of the pavement on the runways. Before the end of 2023

**CSTs Implementation Guide**
Complemented to the strategic document described in 2.1 (e), PARAST is working on the development of a CST implementation guide, which serves to harmonize the implementation and monitoring process, both on the side of the State, and on the side of the PA-RAST itself.
https://www.icao.int/RASGPA/Pages/Library.aspx

**Support for the implementation of the SSP in the CAR Region**
Under this initial phase, in 2023, the Project will conduct a workshop, several onsite assistance missions, virtual assistance on documentation updates and development as well as a technical review of the NACC Strategy and guidance material for Safety data collection matters. The project has received financial support from RASG-PA for USD 35,000.

**Implementation of Performance Based Navigation (PBN) procedures on a visual runway (NACC)**
Based on the good results obtained in the Guapi project, Colombia, this project seeks to implement PBN procedures in a visual track in Mexico before the end of 2024.

**Implementation of Runway Safety Equipment (RST) in the CAR and SAM regions**
The objective of the project is to support the implementation of effective Local Runway Safety Teams at selected States/Aerodromes with the support of RASG-PA Members and Runway Safety Partners1 (RSP) by the end of 2025. The project has received financial support from RASG-PA for USD 15,000.

**Language proficiency in Air Traffic Services** The objective of the project is to implement an efficient and sustainable strategy to improve language proficiency in air traffic services in the Pan-American region, identifying those States that could represent the greatest risk in terms of safety. A pilot project is scheduled for early 2024.

# Collaborative Safety Teams (CSTs)

Recognizing the safety benefits that several States and Industry stakeholders in the Region have experienced in collaborating on the improvement of safety, in 2022, RASG-PA adopted a strategy to promote the development of Collaborative Safety Teams (CST) in the Pan America Region. The strategy is intended to effectively support and promote the adoption of State and Region level CSTs and to foster safety collaboration between PA-RAST and local CSTs.

The strategy identifies

- the need to provide clear and scalable guidance to help States create their own local or regional CST;
- a set of criteria to help make objective decisions on where to allocate efforts;
- a clear roadmap to engage with prioritized States/Regions on CST development
- the need to encourage collaboration between PA-RAST and local CSTs
- to promote CST implementation in the Region.

The CST guidance material, based on collective experience of existing CSTs in the Region provides lessons learned, best practices and other key factors for stakeholders to consider in the development of their CST.
https://www.icao.int/RASGPA/Pages/Library.aspx

# Takeaways and Recommendations

**RASG-PA**
Annual Safety Report
2023

# Takeaways and Recommendations

## Takeways

The following is a list of some of the most relevant elements contained in this report, resulting from the analysis of the 2022 safety information. RASG-PA members are invited to review this information and consider the recommendations below:

### Global Impact

Our region represents almost 40% of the world's air traffic. Therefore, the safety situation in Pan America has a significant impact on global safety.

### Effective Implementation

The regional average for the effective implementation of ICAO Standards is one of the highest in the world. However, there are still significant differences within this average, ranging from 4.96% to 94.95%. The average time since the last audit in Pan America is 6 years.

### State Safety Program

In 2022, the progress of establishing State Safety Programs has slowed down, reaching a plateau of around 30%. This indicates very limited progress in managing aviation risks.

### States' Data Analysis

Until states make advancements in implementing their SSPs, their ability to make strategic safety decisions based on data will be severely limited. This reflects a myopic approach to aviation safety risks.

### Accident Rate

The region has experienced an upward trend in the accident rate, which, coupled with the projection of traffic growth, could negatively impact public perception of aviation safety in the coming years. Fatality risk, however, has a decreasing tendency.

### Fatality Risk

Despite the rising accident rate, the fatality risk trend is declining, aligning with the GASP aspirational safety goal of zero fatalities in commercial operations.

### High-Risk Categories

Despite the numerous efforts and available tools, accidents related to high-risk categories still occur, some resulting in fatalities, and precursor events are still prevalent.

### Turbulence

Turbulence has remained the main category of accidents in the region for at least the past five years; however, its fatality risk currently stands at zero.

### Project-Based Approach

The project-based work methodology has yielded positive results for RASG-PA, enabling more efficient utilization of its resources.

# Recommendations

RASG-PA members should give special attention to the following recommendations and take appropriate measures to promote their implementation, both collaboratively and individually, in order to effectively manage security risks in the Pan American Region:

## Collaborative Safety Teams

As a fundamental aspect of the State Safety Program (SSP), it is essential that Civil Aviation Authorities (CAAs), Accident Investigation Authorites (AIGs), and industry partners work together to establish sustainable and efficient Collaborative Safety Teams (CSTs). Collaborative teams are crucial for effective hazard identification and prioritization of safety risk mitigation measures.

## Communication of RASG-PA Products

RASG-PA offers products to help mitigate safety risks associated with High-Risk Categories and other risks identified through data analysis. It is important for states and industry stakeholders to actively participate in the communication process to raise awareness about the availability of these products.

## States' and Territories Participation in RASG-PA

The participation of states, and territories through their authorities, organizations, and CSTs in RASG-PA meetings and activities is a key element in the hazard identification and risk calibration process, as well as the development of effective mitigation measures.

## RASG-PA Products Feedback

RASG-PA products are developed by specialized teams comprising representatives from states, industry, and international organizations. However, honest and timely feedback from users is essential to ensure their effectiveness. The RASG-PA LinkedIn page is one of the channels available to share your feedback:

https://www.linkedin.com/company/rasg-pa

## SSP Implementation Support

States must build the capacity to effectively manage safety data for informed and timely decision-making. This capability also enhances operational safety in the region. States should actively seek the necessary mechanisms and tools to prioritize the implementation process of their SSPs.

# RASG-PA Meetings

# 2023-2024 Calendar

The following is the list of confirmed RASG-PA meetings for 2023 & 2024

| Meeting | Location | Date |
|---|---|---|
| RASG-PA ESC/38 | Lima, Peru | 24 & 25 May 2023 |
| ALTA Safety Summit | Santiago, Chile | 13 & 14 June 2023 |
| PA-RAST/60 | Washington DC, USA | 22 to 24 August 2023 |
| PA-RAST/61 | Mexico City, Mexico | 17 to 19 October 2023 |
| RASG-PA Safety Day | Santo Domingo, Dominican Republic | 13 November 2023 |
| RASG-PA 13 Plenary Meeting | Santo Domingo, Dominican Republic | 13 & 14 November 2023 |
| PA-RAST/62 | Miami, USA | 6 to 8 February 2024 |
| PA-RAST/63 | Lima, Peru | 23 to 24 April 2024 |
| RASG-PA ESC/39 | Mexico City, Mexico | 29 & 30 May 2024 |
| RASG-PA 14 Plenary Meeting | TBD | 10 & 11 November 2024 |

## Other Safety Meetings

| Meeting | Location | Date |
|---|---|---|
| 1st Infoshare BCAST | Brazil | June 2023 |
| 2nd Inforshare BACST | Brazil | November 2023 |
| SMS Summit Brazil | Brazil | November 2023 |

**Join us for the first iteration of RASG-PA Safety Day. Become a member of our Linkedin page to learn more about this and other events, and to access our products: https://www.linkedin.com/company/rasg-pa**

# Links to Reports and Resources

The following is a list of safety publications from RASG-PA members. Many of these publications contain detailed information about the information contained in this report:

**IATA Annual Safety Report**

**ICAO Safety Reports**

**ICAO Integrated Safety Trend Analysis and Reporting System**

**ICAO GASP Dashboard**

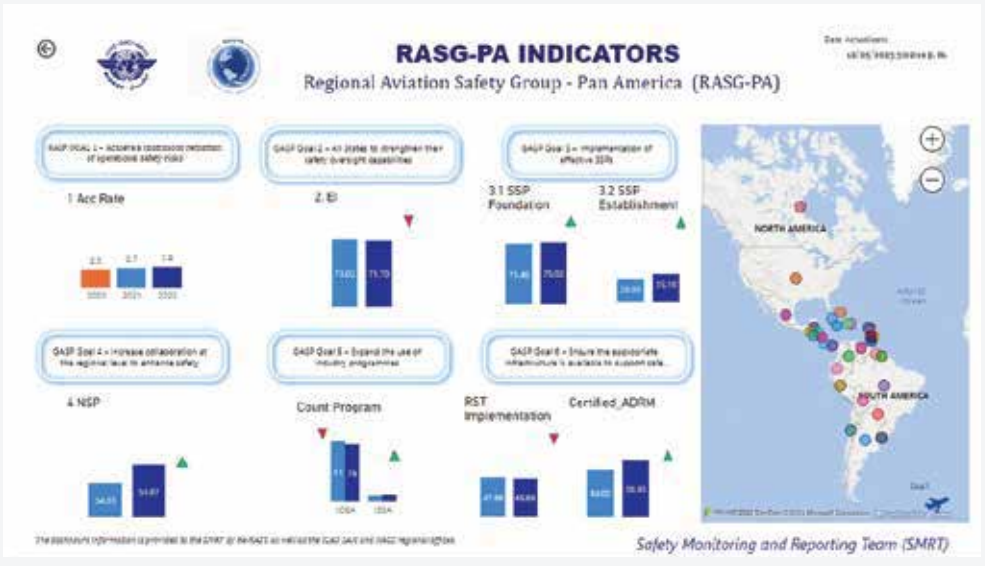
**Boeing Statistical Summary of Commercial Jet Airplane Accidents (1959 – 2021)**

**CANSO Global ANS Performance Report**

**Flight Safety Foundation 2022 Safety Report**

# RASG-PA Dashboard

Additionally, for updated information to its members, the RASG-PA has an informative (Password-protected) Dashboard on the progress of implementation of the Global Aviation Safety Plan in the Pan American Region that is updated quarterly:



# RASG-PA Members

## States


Antigua and Barbuda


Argentina


Bahamas


Barbados


Belize


Bolivia


Brasil


Canada


Chile


Colombia


Costa Rica


Cuba


Dominica


Dominican Republic


El Salvador


Ecuador


Grenada


Guatemala


Guyana


Haiti


Honduras


Jamaica


México


Nicaragua


Panamá


Paraguay


Peru


Saint Kitts and Nevis


Saint Lucia


Saint Vincent and the Grenadines


Surinam


Trinidad and Tobago


United States of America


Uruguay


Venezuela

## Territories


Anguilla


Aruba


Bermuda


Bonaire


Cayman Islands


Curaçao


French Antilles


Montserrat


Puerto Rico


Saba


Sint Eustatius


Sint Maarten


Turks and Caicos Islands


Virgin Islands

## Organizations and Industries












# List of 2022 Accidents in Pan America

(Scheduled, Commercial flights, above 5.7 tons)
Source: OVSG/ICAO

| Date | Aircraft | State of occurrence | Flight phase | Occurence categories | Aircraft damage | Fatalities |
|---|---|---|---|---|---|---|
| 7/25/22 | A320 | Colombia | Taxi | AMAN | None | |
| 7/1/22 | B737 | United States | Landing | ARC | None | |
| 8/6/22 | B757 | United States | Landing | ARC | Substantial | |
| 10/19/22 | DH8C | Canada | Landing | ARC | Substantial | |
| 1/22/22 | A320 | United States | Take-off | ARC, AMAN, RI | Substantial | |
| 6/21/22 | MD80 | United States | Landing | ARC, RE, F-POST, EVAC, SCF-NP | Substantial | |
| 11/19/22 | A320 | United States | En-route | BIRD | Substantial | |
| 5/21/22 | B737 | United States | En-route | CABIN | None | |
| 6/17/22 | A330 | United States | Taxi | GCOL | Minor | |
| 6/17/22 | B777 | United States | Standing | GCOL | Substantial | |
| 9/11/22 | B738 | United States | Taxi | GCOL | Substantial | |
| 9/11/22 | B737 | United States | Taxi | GCOL | None | |
| 10/18/22 | A320 | Canada | Cruise | MED | None | |
| 7/25/22 | B717 | Canada | Standing | RAMP | Substantial | |
| 12/31/22 | E170 | United States | Standing | RAMP | Minor | 1 |
| 3/12/22 | B190 | Panama | Take-off | RAMP, SCF-NP | Substantial | |
| 1/4/22 | JS31 | Honduras | Landing | RE | Destroyed | |
| 4/7/22 | B757 | Costa Rica | Landing | RE | Destroyed | |
| 9/25/22 | B737 | Panama | Landing | RE | Substantial | |
| 11/18/22 | A320 | Peru | Take-off | RI, ADRM, F-POST | Destroyed | 2 |
| 5/25/22 | A320 | United States | En-route | TURB | None | |
| 6/10/22 | B738 | United States | En-route | TURB | None | |
| 8/19/22 | B738 | United States | En-route | TURB | None | |
| 8/29/22 | B717 | United States | En-route | TURB | None | |
| 9/1/22 | B738 | United States | En-route | TURB | None | |
| 9/4/22 | A220 | United States | En-route | TURB | None | |
| 9/29/22 | B737 | United States | En-route | TURB | None | |
| 11/2/22 | A319 | United States | En-route | TURB | None | |
| 11/10/22 | B738 | United States | En-route | TURB | None | |
| 11/28/22 | A330 | Brazil | En route | TURB | None | |
| 11/29/22 | B737 | United States | En-route | TURB | None | |
| 12/3/22 | E170 | United States | Approach | TURB | None | |
| 12/8/22 | B763 | United States | En-route | TURB | None | |
| 12/18/22 | A330 | United States | En-route | TURB | Minor | |
| 12/18/22 | B737 | Guatemala | Enroute | TURB | None | |

**AMAN** Abrupt maneuver
**ARC** Abnormal runway contact

**ARDM** Aerodrome

**BIRD** Bird

**CABIN** Cabin safety events

**EVAC** Evacuation

**F-POST** Fire/smoke (post-impact)

**GCOL** Ground collision

**MED** Medical

**SCF-NP** System/ component failure (non-powerplant)

**RAMP** Ground handling

**RE** Runway excursion

**RI** Runway incursion

**TURB** Turbulence encounter

**RASG-PA**
Annual Safety Report
2023