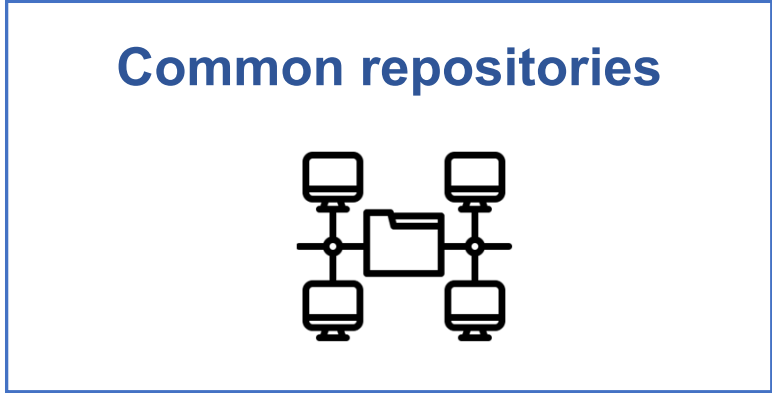




Collection & Analysis of Safety Data Colombia - ARCM

Accident Investigation Technical Directorate - Colombia





Accident Investigation Data

Accident Investigation Technical Directorate



- Data is registered in ECCAIRS and Excel
- And it is transcribed / analyzed in Power Bi

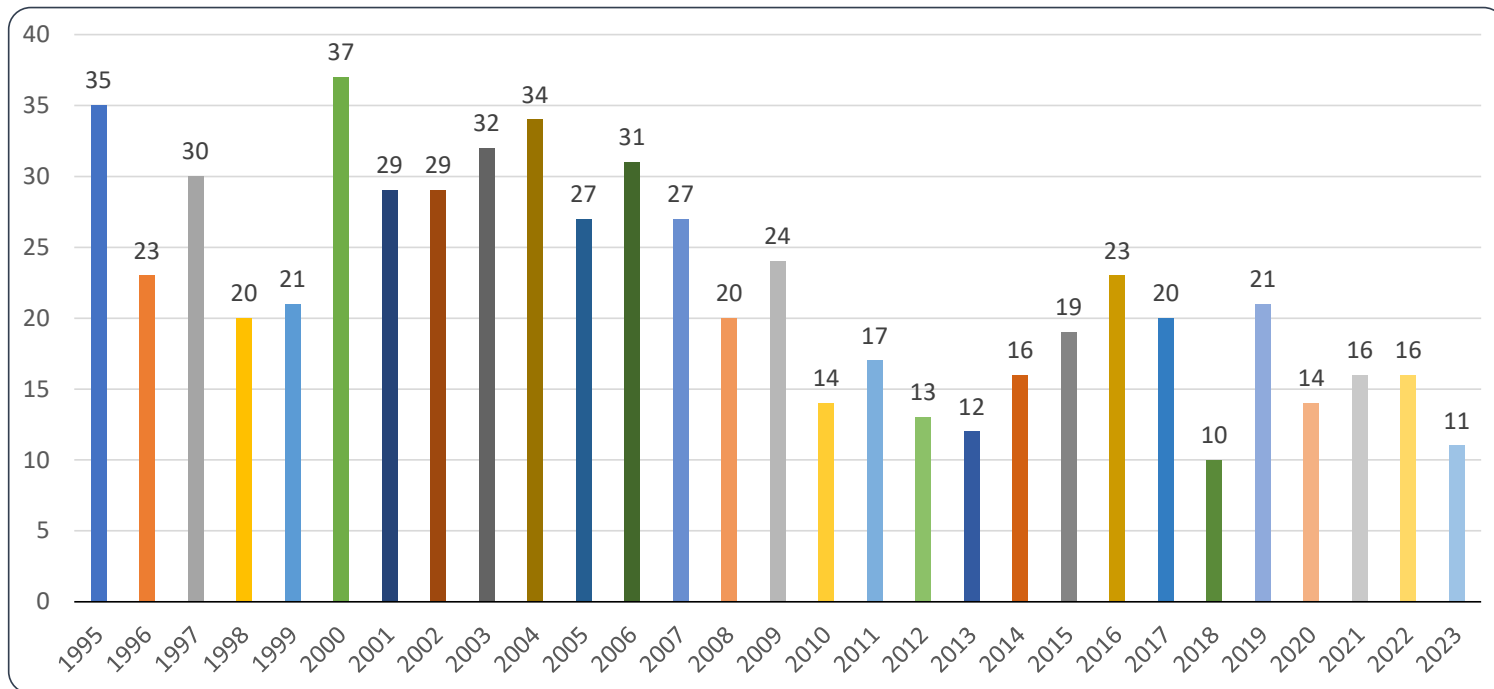
12 areas of registration – 141 parameters

1. Event identification (5)
2. Event location (19)
3. Operator, type of activity (6)
4. Event description (2)
5. Operation details (16)
6. Damage and injuries (22)
7. Crew information (18)
8. Aircraft, engine, maintenance (21)
9. Conclusions and risk analysis (14)
10. Causes analysis (7)
11. Internal control (4)
12. Closing and publication (7)

	A	B	C	D	AC	AD	AE	AF	AG	AI	
1	Identificación del evento				Resumen			Datos de la operación			
2	Código investigación	Clasificación	Matrícula	Fecha	ActAerea	ActAerea1	Título del evento	Título del evento	Resumen del evento	Ad. de Origen	Ad. de destino
3											
40	COL-21-73-GIA	1. Accidente	HK4511	12/18/21	Transporte comercial no regular	Taxi aéreo				SKCL	AD. IMPROV
41	COL-21-75-GIA	1. Accidente	HK1405	12/18/21	Trabajos aéreos especiales	Aviación agrícola				SKCE	SKCE
42	COL-21-70-GIA	2. Incidente grave	HK5232	12/12/21	Transporte comercial no regular	Ambulancia aérea			In the takeoff run maneuvering, wit	SKVV	SKHZ
43	COL-21-69-GIA	2. Incidente grave	HK5136G	12/08/21	Aviación privada	Aviación privada				SKGY	SKPP
44	COL-21-60-GIA	1. Accidente	HK1399	10/16/21	Trabajos aéreos especiales	Aviación agrícola	Pérdida de control en tierra y excurs		El 02 de junio de 2021, durante el at	SQGE	SQGE
45	COL-21-55-GIA	1. Accidente	HK5032	10/10/21	Transporte comercial no regular	Taxi aéreo	Excursión de pista lateral por falla d		El 12 de febrero del 2021, la aeron	SKMU	SKYG
46	COL-21-58-GIA	2. Incidente grave	N742AV	10/08/21	Transporte comercial regular	Transporte regular de pasajeros	Pérdida de control en vuelo durante		Durante la ejecución de actividades	SKIB	SKIB
47	COL-21-53-GIA	1. Accidente	HK4311	09/28/21	Trabajos aéreos especiales	Mantenimiento de tendido eléctrico	Encuentro con turbulencia severa		En cumplimiento del vuelo LA4011 d	SKGO	SKPE
48	COL-21-52-GIA	1. Accidente	HK3353	09/25/21	Transporte comercial no regular	Taxi aéreo	Pérdida de potencia durante el asce		Durante la ejecución de un vuelo de	AD. IMPROV	SKGY
49	COL-21-51-GIA	2. Incidente grave	HK4773	09/24/21	Transporte comercial no regular	Taxi aéreo	Retracción inadvertida del tren de n		Durante la ejecución de una maniob	SKIM	SKVV
50	COL-21-47-GIA	1. Accidente	HK4404	09/08/21	Transporte comercial no regular	Taxi aéreo	Pérdida de sustentación posterior a		Durante el despegue por la pista 11	SKMD	AD. IMPROV
51	COL-21-46-GIA	2. Incidente grave	HK3200G	08/31/21	Aviación privada	Aviación privada	Pérdida de control en vuelo durante		La aeronave Bell 206B-III, matrícula	SKBO	SKCU
52	COL-21-41-GIA	2. Incidente grave	HK1833	08/30/21	Transporte comercial no regular	Ambulancia aérea	Falla del tren de aterrizaje durante		El 08 de diciembre del 2021, la aero	SKPD	SKVV
53	COL-21-43-GIA	2. Incidente grave	HK5087	08/20/21	Transporte comercial no regular	Taxi aéreo	Incursión de pista de aeronave		El 31 de agosto de 2021, a las 14:33	SKCL	SKLY
54	COL-21-45-GIA	2. Incidente grave	HK4933	08/18/21	Trabajos aéreos especiales	Aerofotografía	Pérdida de control durante el aterriz		El 14 de julio de 2021, la aeronave C	SKGY	SKGI
55	COL-21-39-GIA	1. Accidente	HK2803	07/25/21	Transporte comercial no regular	Ambulancia aérea	Falla de componente motriz		El 10 de marzo de 2021, la aeronave	SQNE	SKMU
56	COL-21-34-GIA	2. Incidente grave	HK5182G	07/21/21	Centro de instrucción	Centro de instrucción	Ejecución de aterrizaje con los tren		El 20 de agosto de 2021, la aeronav	SKGO	SKGO
57	COL-21-38-GIA	2. Incidente grave	HK3065	07/21/21	Transporte comercial no regular	Taxi aéreo	Excursión de pista durante el despeg		El 16 de octubre de 2021, la aeronav	SKUI	SKBS
58	COL-21-33-GIA	1. Accidente	HK1522	07/14/21	Transporte comercial no regular	Taxi aéreo	Contacto fuerte con la superficie dur		El 21 de julio de 2021, después de e	SKMU	SQNE
59	COL-21-30-GIA	1. Accidente	HK2820	07/08/21	Transporte comercial no regular	Taxi aéreo	Contacto con el terreno antes del in		El 28 de febrero de 2021, la aeronav	SKVV	
60	COL-21-29-GIA	2. Incidente grave	HK2021	06/28/21	Trabajos aéreos especiales	Aviación agrícola	Contacto anormal con la pista, pérd		Contacto anormal con la pista, pérd	SKNP	SKNP
61	COL-21-26-GIA	1. Accidente	HK4953	06/04/21	Trabajos aéreos especiales	Aviación agrícola	Colisión contra el terreno durante u		El 08 de enero de 2021, la aeronave	SKGM	SKGM
62	COL-21-25-GIA	2. Incidente grave	HK5040	06/02/21	Transporte comercial regular	Transporte regular de pasajeros	Colisión contra el terreno durante m		Hacia las 09:41HL la aeronave despe	SKYP	SKBO
63	COL-21-20-GIA	1. Accidente	HK1477	05/30/21	Trabajos aéreos especiales	Aviación agrícola	Colisión con semovientes durante el		El 06 de abril del 2021, la aeronave	SQGN	SQGN
64	COL-21-18-GIA	1. Accidente	HK4418G	05/16/21	Centro de instrucción	Centro de instrucción	Colisión con obstaculo durante el at		El 08 de septiembre de 2021, el heli	SKGY	SKEJ
65	COL-21-15-GIA	1. Accidente	HK5162	04/13/21	Trabajos aéreos especiales	Aviación agrícola	Colisión con la superficie durante de		La aeronave de Transporte no Regul	SKGM	SKGM
66	COL-21-14-GIA	2. Incidente grave	HK3561G	04/06/21	Aviación privada	Aviación privada	Aterrizaje fuerte durante un vuelo d		Durante la ejecución de una maniob	SKMD	SKSR
67	COL-21-10-GIA	2. Incidente grave	YV506T	03/11/21	Transporte comercial regular	Transporte regular de carga	Aterrizaje fuerteAterrizaje fuerte		Durante la ejecución de una maniob	SKBO	AD. EXT
68	COL-21-09-GIA	2. Incidente grave	HK1010G	03/04/21	Centro de instrucción		Aterrizaje forzoso en campo no prep		El 13 de abril de 2021, la aeronave t	SKEJ	SKEJ
69	COL-21-08-GIA	1. Accidente	HK2006	02/28/21	Transporte comercial no regular		Aterrizaje de emergencia por falla d		El 25 de julio de 2021, la aeronave C	SKMU	SKNF
70	COL-21-07-GIA	2. Incidente grave	HK2713	02/12/21	Transporte comercial no regular				El 4 de junio de 2021, la aeronave A	SKLT	SKGY
71	COL-21-03-GIA	2. Incidente grave							El 2021 la aeronave	SKRG	SKBO
72	COL-21-02-GIA									SKMH	SKMU
73	COL-21-										SKGY

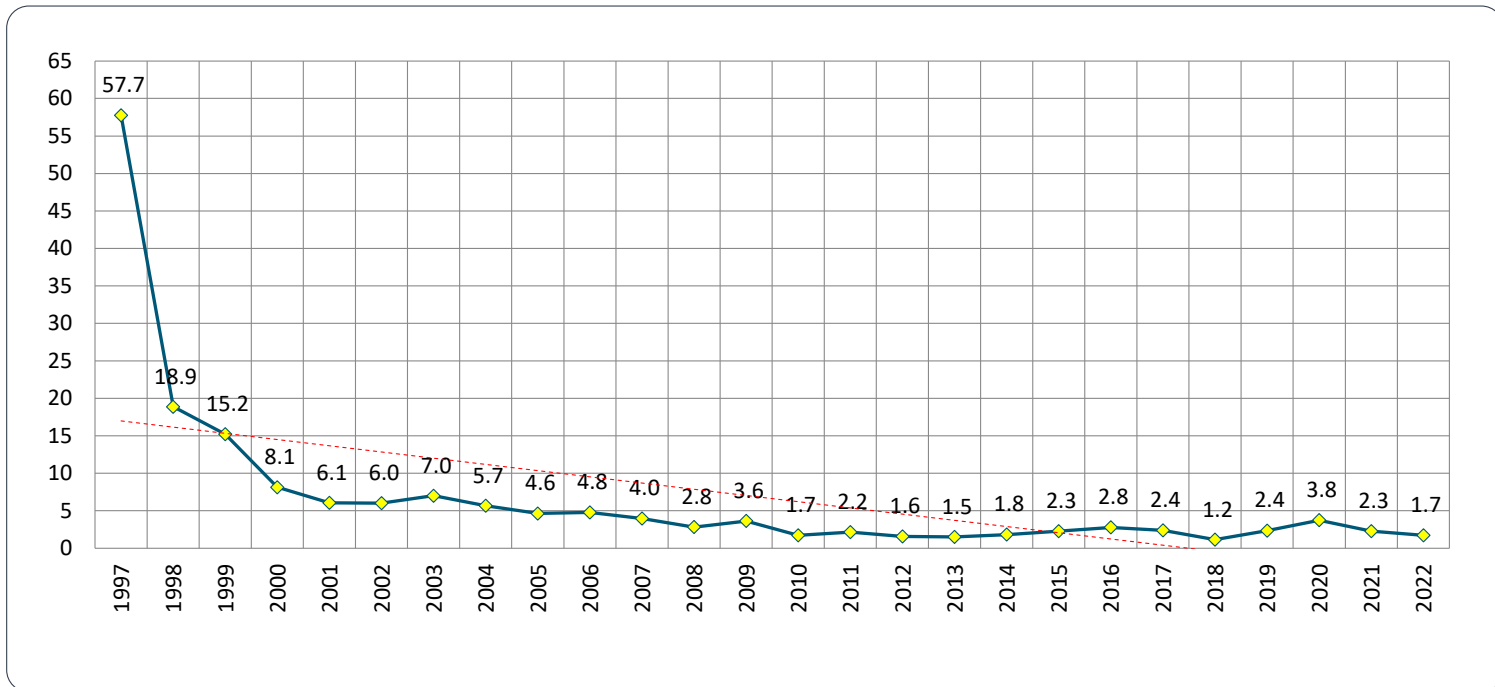
Data registration

Final reports, published (or next to be) since 1995 - Colombia

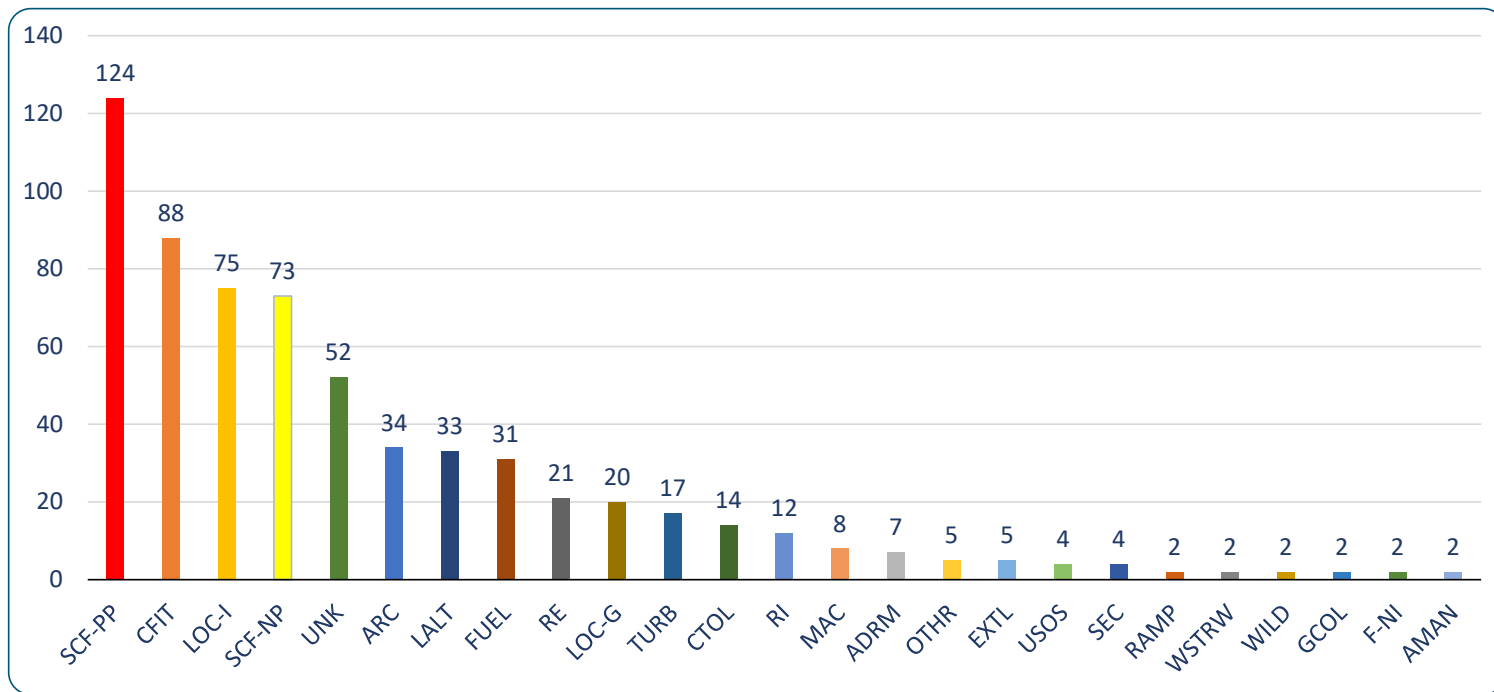


Accident rate - Colombia

Number of accidents per 100.000 flights



Accidents per occurrence category 1997 – 2022 - Colombia



Repository: standardization and data security



ICAO / Safety / Air Navigation Bureau / Accident Investigation Section (AIG) / ADREP Taxonomy

- About AIG
- Accident Investigation Authorities Addresses
- Accident Reporting
- e-Library of Final Reports
- Protection of Investigation Records
- Safety Recommendations addressed to ICAO
- Safety Recommendations of Global Concern (SRGC)
- Investigative Technologies and Techniques
- Investigations During Pandemics
- Media Protocols
- AIG Panel
- Flight Recorder Specific WG
- Taxonomy for ADREP reporting
- Documents
- Related links

ADREP Taxonomy

ADREP taxonomy is a compilation of attributes and the related values. The links below are to the more prominent attribute and value lists:

- Entities and attributes
- Aircraft category
- Aviation operations
- Damage aircraft
- Descriptive factors
- Explanatory factors
- Events
- Event phases
- Geographical areas
- Injury level
- Landing gear type
- Mass group
- Occurrence category
- Occurrence classes
- Organizations/Persons
- Propulsion type

Share this page:

ADREP TAXONOMY

Repository: standardization and data security

Loading data from Excel using existing tools



European Commission



T-REX
Tool for Rolling-your-own ECCAIRS data using eXcel

Dashboard analysis

- 10 different pannels of analysis
 - *Absolute frequencies*
 - *Cumulate frequencies*
 - *Evolution of frequencies*
 - *Criticality measure*
 - *Risk evaluation*
 - *Flight plan*
 - *Crew Details*
 - *Failure components analysis*
 - *Geographic location*



Up to 12 charts per pannel, and 37 different atributes to correlationate with filters

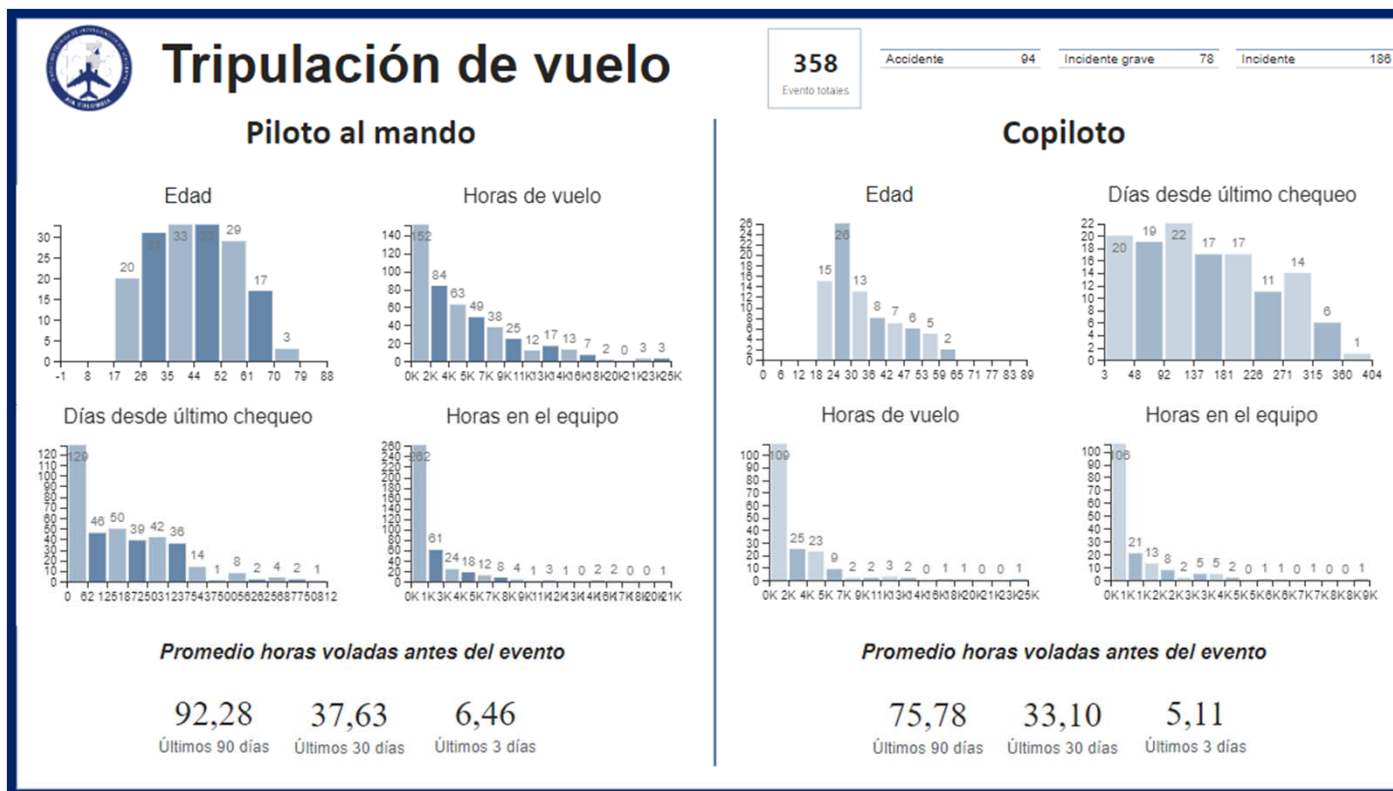
Dashboard analysis: evolution



Dashboard analysis: type of flight, route

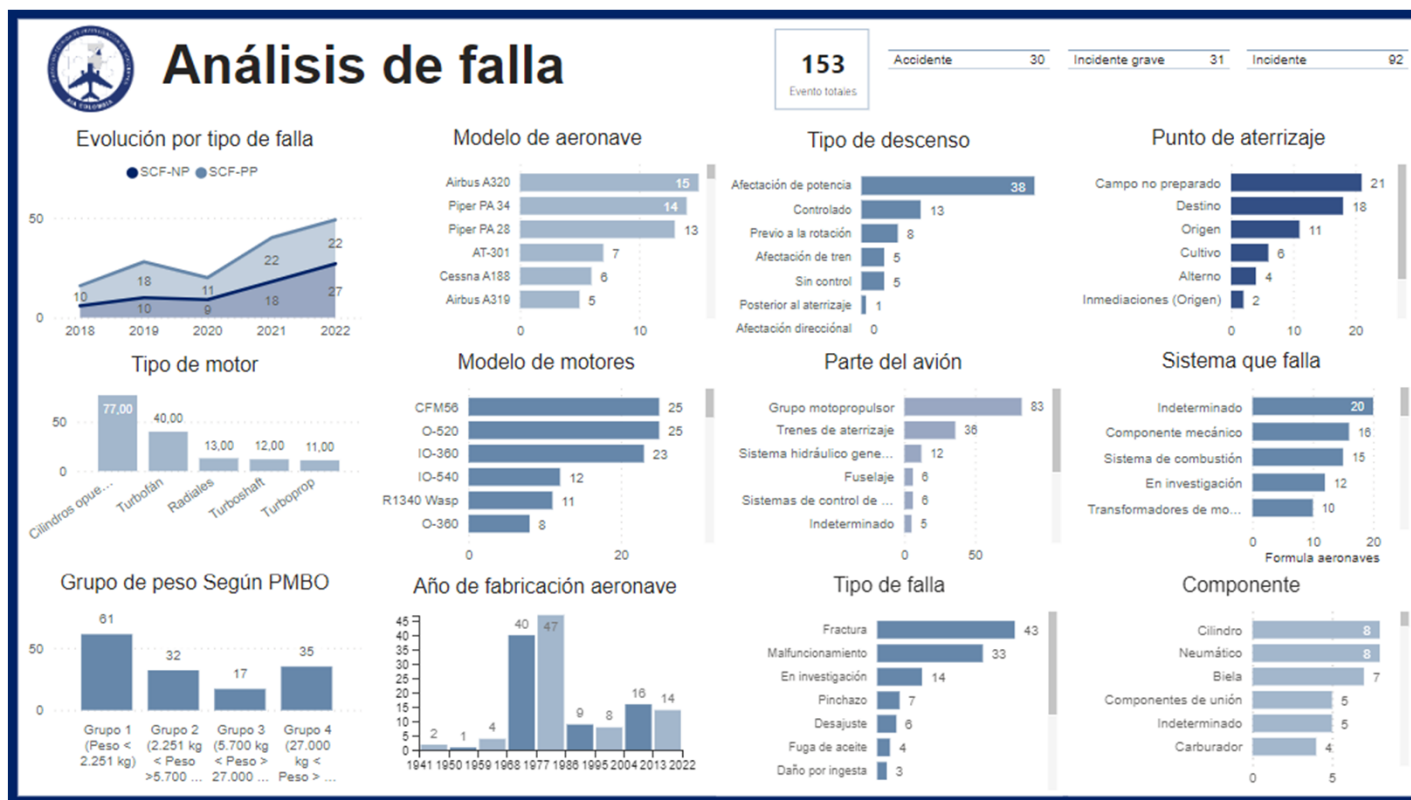


Dashboard analysis: crew



Dashboard analysis

Component failure analysis





SSP data

Safety recommendations



Coordinated procedures between Civil Aviation and Investigation authorities for distribution, implementation and oversight of safety recommendations resulting from investigations



AERONÁUTICA CIVIL
UNIDAD ADMINISTRATIVA ESPECIAL



SSP IRIS: safety reports integrator system

SharePoint Newsfeed OneDrive Sites Miguel Camacho Martinez - ?

Formulario de Reporte Obligatorio de Seguridad

Formularios de Reporte Obligatorio de Seguridad

Fecha de publicación: 1/6/2022

Herramienta para la notificación, recolección, análisis, almacenamiento, protección, intercambio y difusión de información obtenida a través de reportes obligatorios de sucesos o situaciones que afectan la seguridad tanto operacional como de la aviación civil del Sistema Aeronáutico Nacional.

Los eventos que deben reportarse obligatoriamente son aquellos en los que la seguridad de la operación aérea estuvo o pudo estar en peligro o eventos que pudieron haber generado condiciones inseguras.

IRIS

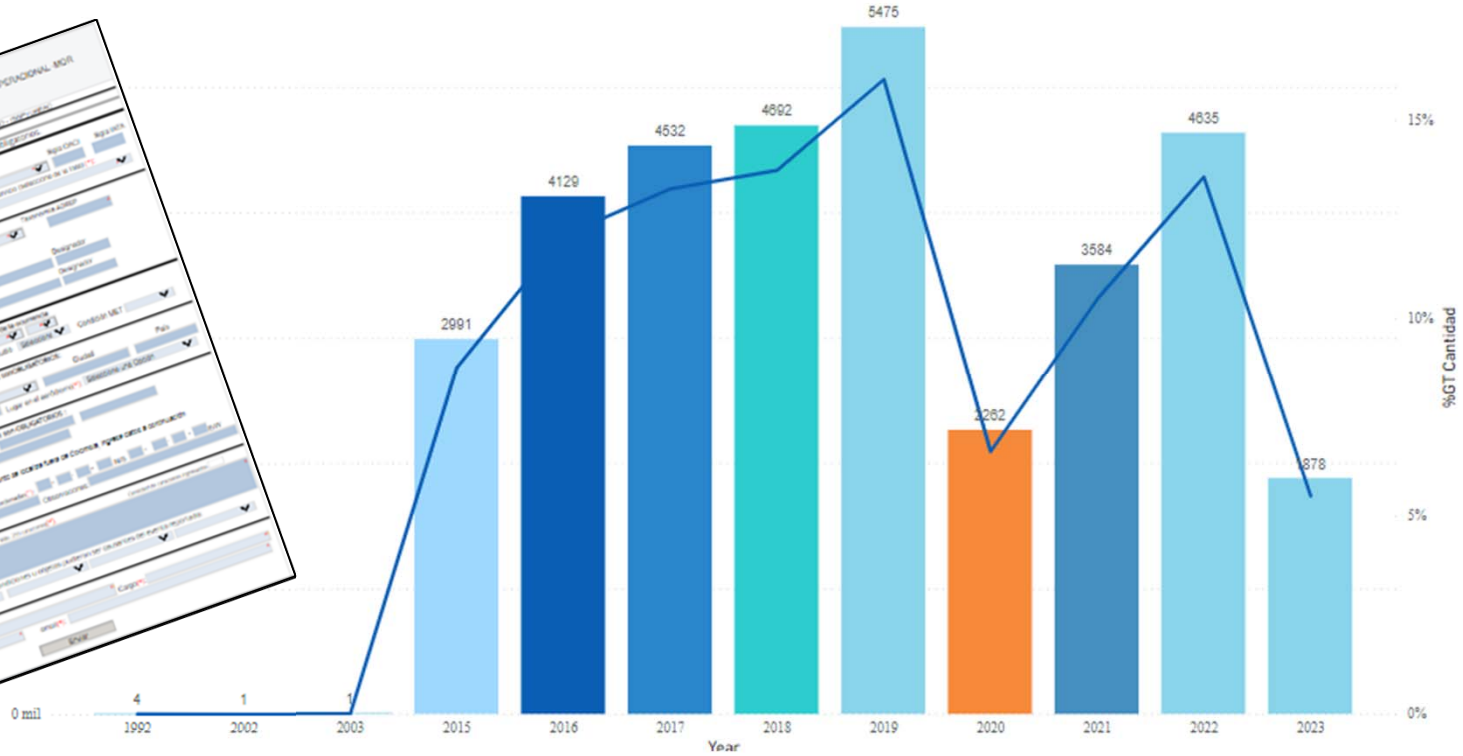
Integrador de Reportes e Información de Seguridad

MOR Reporte obligatorio de eventos de seguridad operacional - MOR Ir » Instructivo diligenciamiento MOR en línea-V2.pdf	BIRD Formulario de reporte de presuntos impactos con fauna rac 14 - BIRD Ir » Instructivo diligenciamiento BIRD en línea-V-02.pdf	ROE Reporte obligatorio de eventos de seguridad de la aviación civil - ROE Ir » Instructivo Reporte Obligatorio de Eventos de Seguridad ROE (Security).pdf
MMPP Notificación de sucesos - discrepancias, incidentes y accidentes - con mercancías peligrosas - MMPP Ir »	MF Reporte de defecto, falla o mal funcionamiento- MF Ir »	

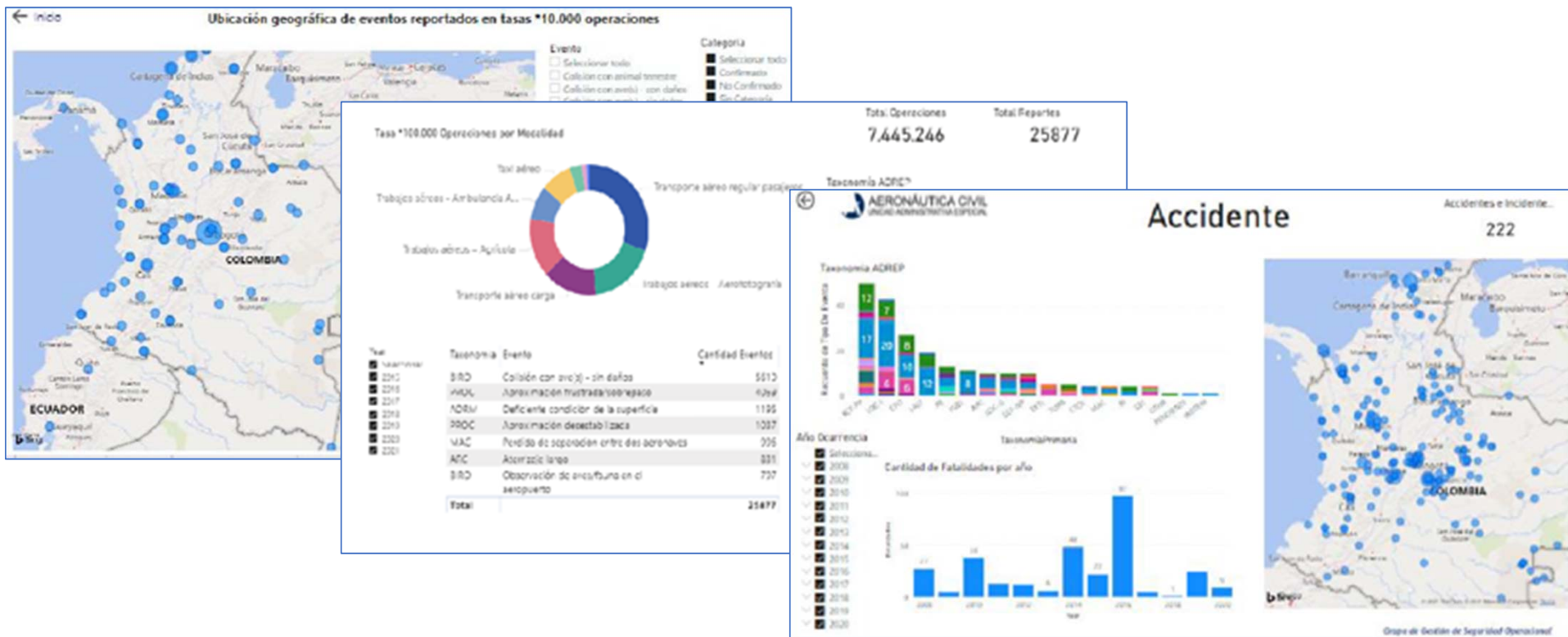
Chat AeroCivil

<https://www.aerocivil.gov.co/autoridad-de-la-aviacion-civil/iris-integrador-de-reportes-e-informacion-de-seguridad-operacional/formulario-de-reportes-obligatorio-de-seguridad>

Mandatory occurrence report (MOR) Events without safety effects



Mandatory occurrence report (MOR) Events without safety effects - Analysis



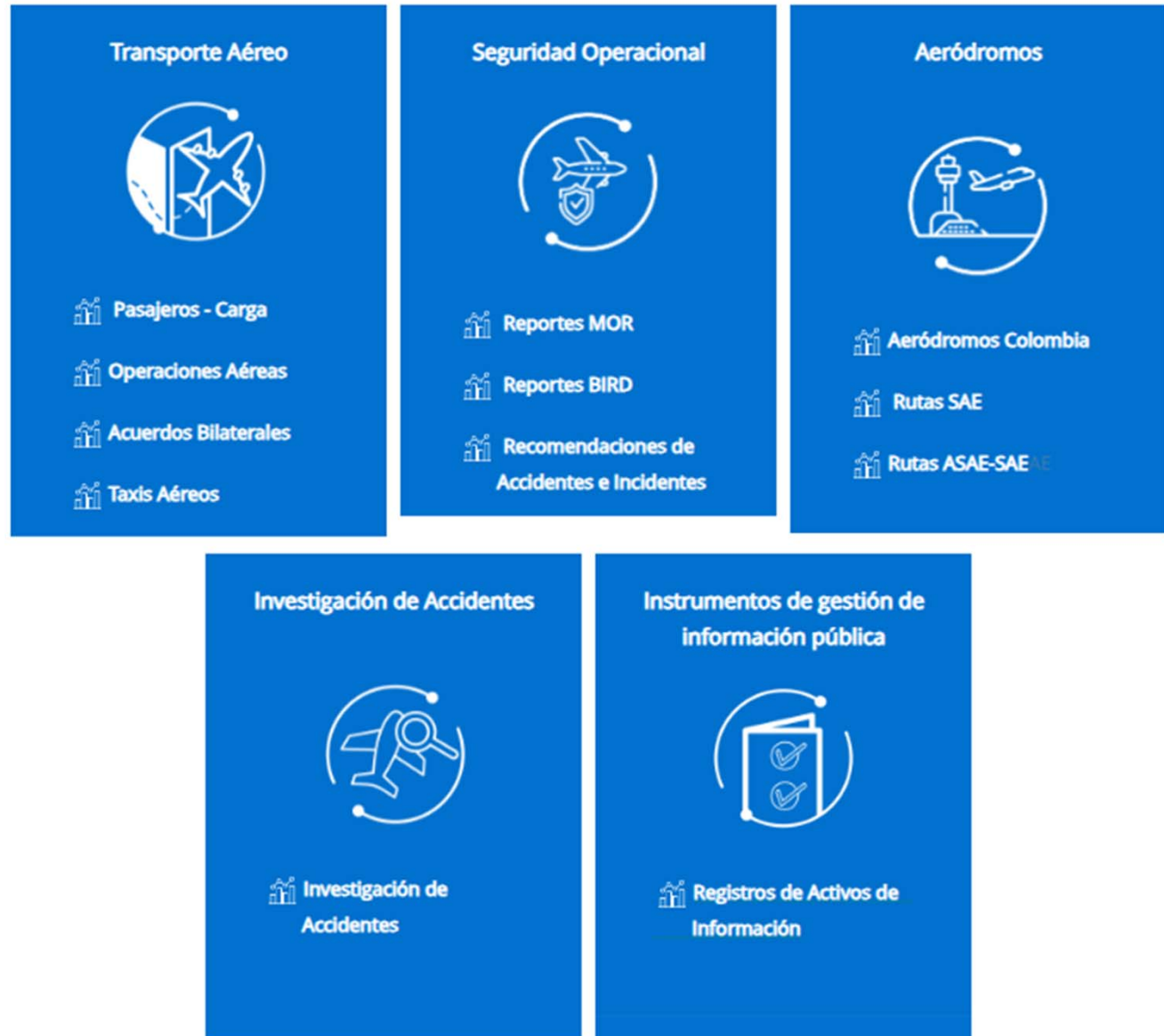


Aeronautical Data Observatory

Accident Investigation Technical Directorate

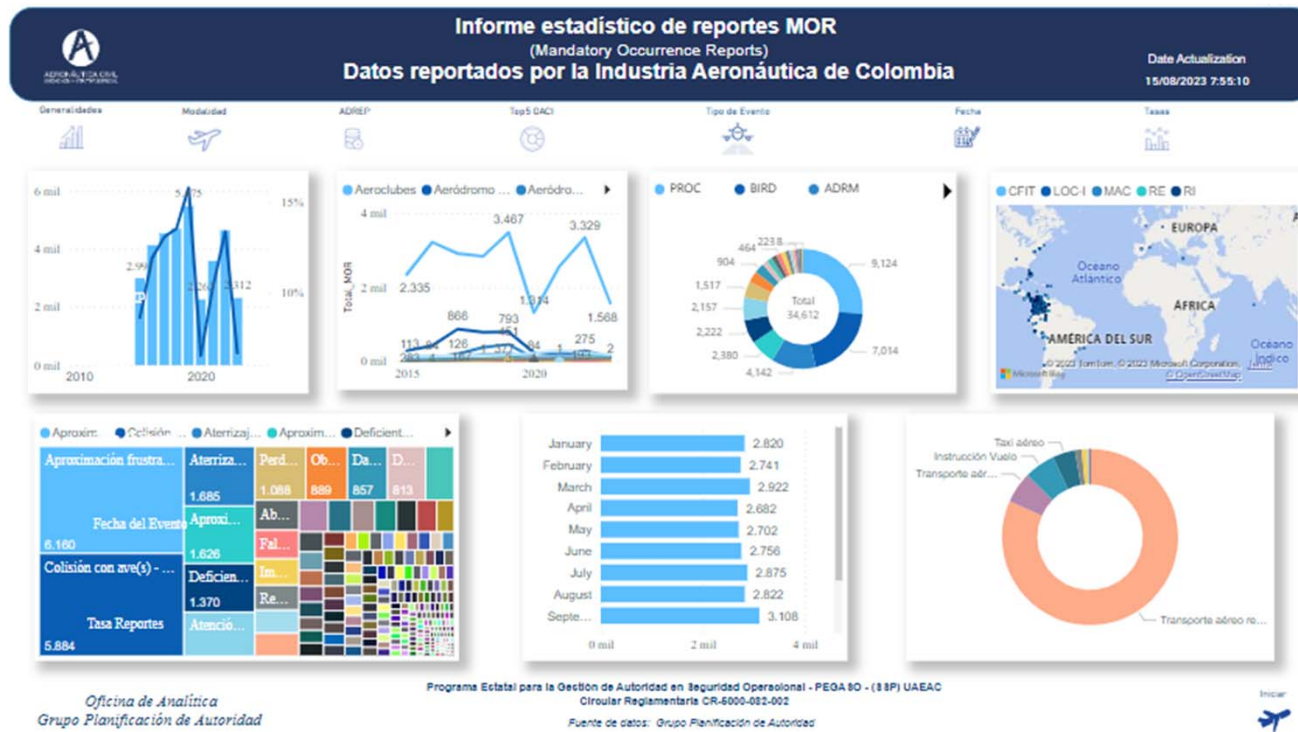
Aeronautical Data Observatory (ODA)

- Air transport
- **Safety**
- Aerodromes
- **Accident investigation**
- Public management instruments



Aeronautical Data Observatory (ODA)

Safety Information



Risk analysis – Based on investigation data

- **Operational**
 - Encounters with turbulence.
 - Safety of cabin crew.
 - Landings in special conditions.
 - Lack of analysis of the performance of the aircraft on takeoff.
 - Indiscipline.
- **Maintenance**
 - Non-compliance with Bulletins
 - Landing gear system failures.
 - Failures with electronic components.
- **ATS**
 - Errors in radar control
 - Complacency

Scheduled aviation and multi engine jets

- **Operational**
 - Absence of own standars.
 - Lack of knowledge or application of basic flight principles.
 - Routine, complacency.
- **Maintenance**
 - Conventional engine failures.
 - Inappropriate maintenance procedures.
 - Poor supervisión of contractors.
- **Organizational**
 - Poor or no implementation of SMS.
 - No risk management.
 - Poor communication between areas.
- **Aerodromes (uncontrolled)**
 - Non-compliance of approved conditions.
 - Infrastructural risks.
 - Absence of safety programs.

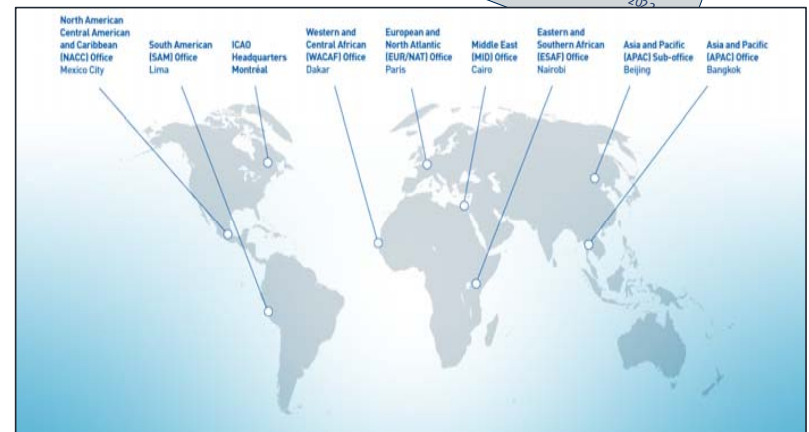
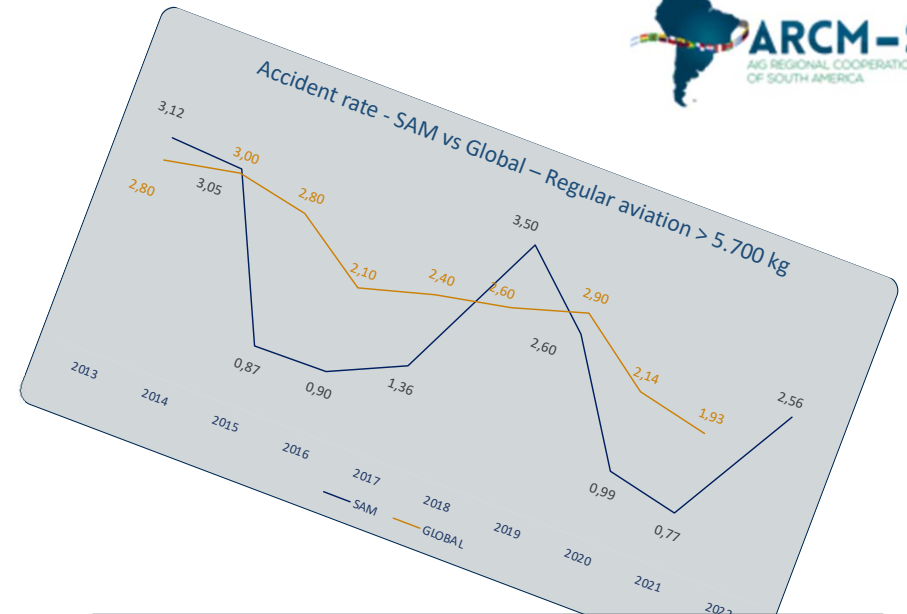
Nonscheduled and agricultural aviation



Regional data integration

Accident Investigation Technical Directorate

Regional data integration



Sharing data with ICAO



- **One common Software**
ECCAIRS 5
- **One common repository**
ICAO – Regional SAM Repository
- **One common language**
ADREP taxonomy
- **Permanent support**
ICAO assists with training and technical support

¿How do we share data?

Data Browser

We can create events individually

The screenshot shows the ECCAIRS 5 Browser application window. It features a menu bar with 'File', 'View', 'Kind', and 'Help'. Below the menu is a toolbar with various icons. The main interface is divided into several sections: 'File' with fields for 'File number' and 'Occurrence status'; 'Headline' with a text input field; 'Where' with 'Local date' and 'UTC date' dropdowns, and 'Where' with 'State/area of occ' and 'Location name' dropdowns; 'Injuries' with a table for 'Fatal', 'Serious', 'Minor', 'None', 'Unknown', and 'Total' counts; 'Weather' with 'Weather conditions' and 'Light conditions' dropdowns; 'Severity' with 'Occurrence class', 'Injury level', 'Highest damage', and 'Third party damage' dropdowns; 'Narrative' with a 'Scheme' dropdown and a large text area; 'Aircraft and operation' with 'Manufacturer/model' and 'Operator' dropdowns; and 'Flight' with a 'Last departure' dropdown. There are 'Add' and 'Remove' buttons at the bottom right.

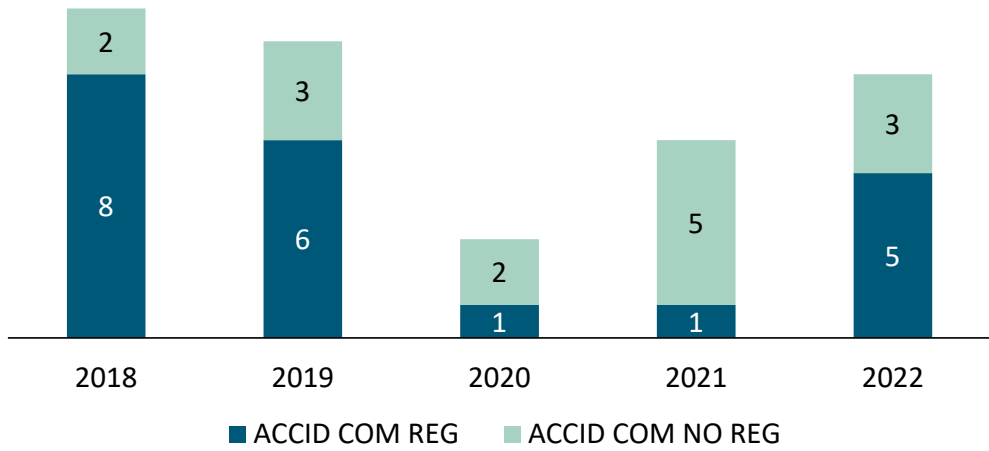
Data Manager

We can upload them with an ECCAIRS 5 File (.e5f)

The screenshot shows the ECCAIRS 5 Data Manager application window. It has a menu bar with 'File' and 'Help'. The interface is split into two main panes. The left pane, titled 'Data Exchanger', contains buttons for 'Load from ESF File', 'Save to ESF File', 'Copy Between Repositories', and 'Purge Occurrence'. The right pane, titled 'Source Configuration Destination Logging activity', contains a table with columns 'File Name', 'Size', 'Modified', 'Total', and 'Path'. Below the table are buttons for 'Add...', 'Remove', 'Clear', and 'View File'. At the bottom right of the right pane, there is a 'Count' field showing '1154' and an 'Execute' button. The status bar at the bottom of the window displays 'JANDRADE AIG Regional Cooperation Mechanism of !', 'SDCPS/COL', and the date/time '7/07/2023 08:37'.

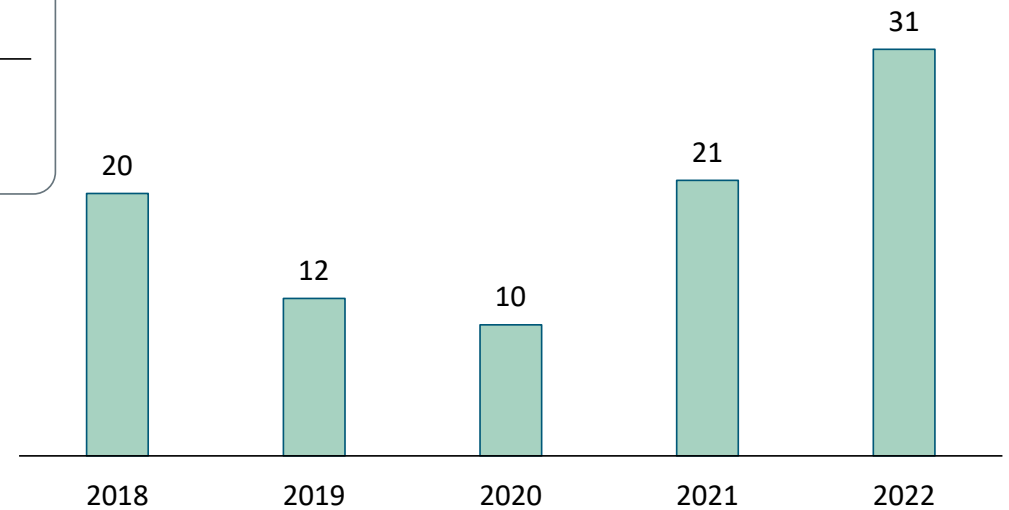
File Name	Size	Modified	Total	Path
Converted Da...	3070728 B...	19/06/2023 S...	1000	C:\Users\jus...
Converted Da...	248386 B...	19/06/2023 S...	154	C:\Users\jus...

Accidents



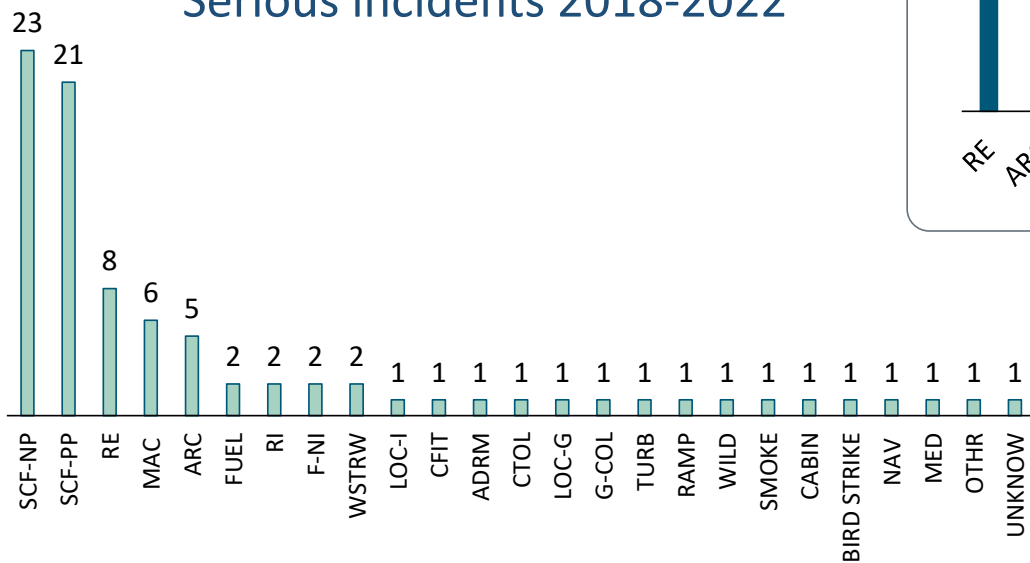
SAM occurrences
Scheduled aviation
MTOW > 5700 kg

Serious incidents

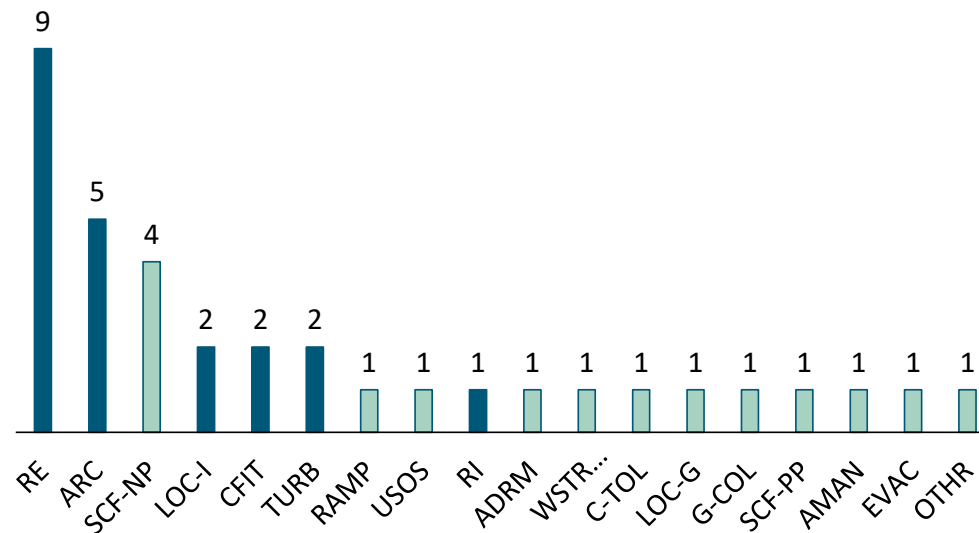


SAM occurrences Scheduled aviation MTOW > 5700 kg

Serious incidents 2018-2022

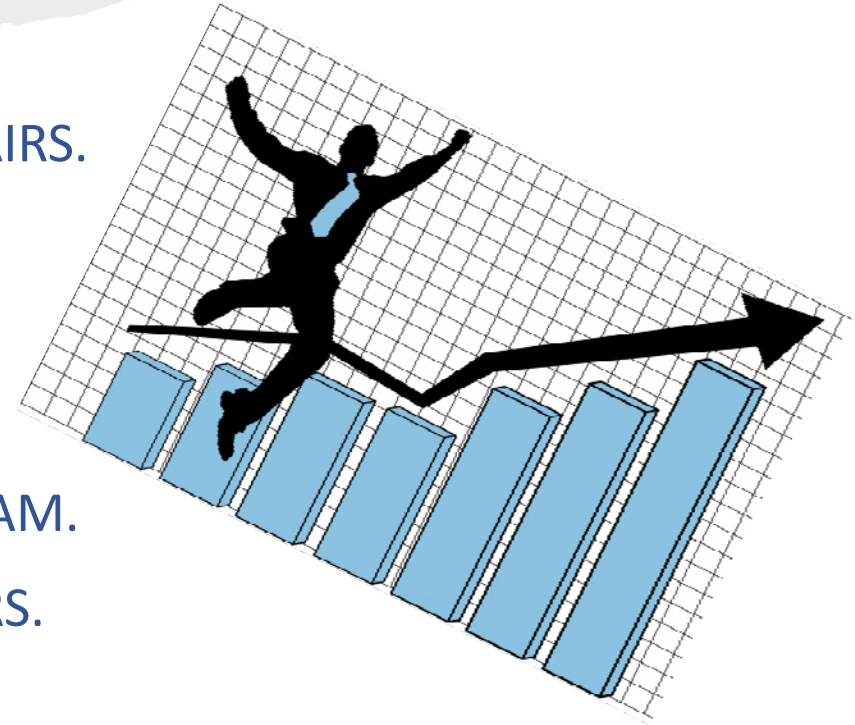


Accidents 2018-2022



SAM achievements

- 100% of States with trained personnel in ECCAIRS.
 - Over 41 specialists in the Region.
- 77% of States using ECCAIRS.
 - Soon they will be 84%.
- 53% of States loading occurrences to SDCPS SAM.
- 46% of States notifying occurrences by ECCAIRS.
- 18% of the States using a custom template.



Accidents analysis project

1

Accidents of
Schedule commercial aviation
from 2013 to 2022



40 Accidents identified,
gained access to the 78% of the final
reports

2

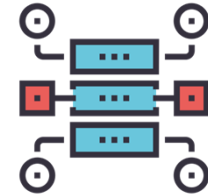
Analyzed and
extracted the data



Over 130 different attributes
One repository
Common taxonomy

3

Model of analysis
Colombian, adapted to ADREP



Occurrence facts
Probable cause
Contributing factors

4

Target



Public
dashboard



Soon

October 2023

Challenges

- Full implementation. All SAM states:
 - Investigating and collecting data from events.
 - Using ADREP Taxonomy on the data manage.
 - Using ECCAIRS 5.
 - Sharing the info with the common repository.
- So, we will have...
 - Data from all accidents, serious incidents and incidents available at ICAO Regional SAM repository.





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