International Civil Aviation Organization
Second Regional Aviation Safety Group – Pan America Meeting (RASG-PA/02)
(Bogota, Colombia, 3-6 November 2009)

Agenda Item 7: **NAM/CAR/SAM Sub-Regional Flight Safety Initiatives**

Safety Information Report

(Presented by the Secretariat)

SUMMARY

This working paper presents a proposal for the effective use of safety data available from different sources to assist RASG-PA in making data-driven decisions as recommended by the ICAO Global Aviation Safety Plan (GASP).

This working paper is related to the following focus area objectives of Global Safety Initiative (GSI) # 3 of the GASP:

Objective # 3 "Collate regional safety data."
Objective # 4 "Implement international sharing of data/global data reporting system."

It is also related to GSI # 12, *"Use of technology to enhance safety"* Best Practice (BP) 12 a-1 a: "Establish data-driven, prioritized list of known and highly likely regional aviation safety threats" and BP 12 a-1-b "Use consensus-based process to provide qualitative threat assessment as appropriate."

1. Introduction

1.1. As indicated in the ICAO Global Aviation Safety Plan, safety is a "performance expectation," which raises the issue of the best way to measure risk. The GASP highlights that "*a most effective quantitative risk management programme would be one in which information sharing is the norm.*"

1.2. RASG-PA needs to take a proactive or predictive approach to risk assessment, which requires an innovative safety-related data collection and analysis approach to formulate safety strategies.

1.3. Objective 3c of the Global Aviation Safety Roadmap (GASR) highlights that in many States, the level of activity is too low to permit reliable safety analysis. In addition, it is more difficult to establish an open reporting system in smaller States where the aviation community is made up of a small group of individuals who know each other personally. The collation of data at the regional level overcomes this problem. Moreover, many of the safety problems are regional in nature and are best addressed at the regional level.

1.4. BPs 3C-1 to 3 call for an entity to be designated in each region as the focal point for collating safety data using common methodologies analyzing and taking action at regional and State levels to correct deficiencies and categorizing safety data based on the ICAO common taxonomy.

1.5. Also, BP 12a-1 calls for the establishment of a data-driven, prioritized list of known and highly likely regional aviation safety threats and for the use of a consensus-based process to provide qualitative threat assessment as appropriate and includes as metrics "*Data-driven current list of prioritized regional safety threats.*"

1.6. On 3 March 2009, at the request of Brazil, a teleconference was held between several members of the RASG-PA Executive Steering Committee (ESC) including Brazil, USA, ACSA, IATA, ALTA, ICAO, and Boeing to discuss the different sources of safety data and how this data could be used by civil aviation authorities. Several of the participants in the teleconference offered safety data information, and it was agreed that the results of an analysis of this safety data would be included in this working paper for the second RASG-PA ESC meeting. The objective would be to illustrate a method that could be used to analyze and categorize safety data and provide RASG-PA with a valuable tool for decision-making.

1.7. A working paper was presented to the RASG-PA ESC meeting (Lima, Peru, 24-25 March 2009) and ESC adopted conclusion RASG-PA ESC/2/10 as follows:

Conclusion RASG-PA ESC/2/10 Working Paper on Safety Information

That:

a) the working paper should continue as a "living document" to assist RASG-PA in the development of future work programmes and to prioritize RASG-PA efforts based upon data-driven identified risks. Moreover, this document will form the basis for a future RASG-PA annual safety report;

b) in the future, the data gathered and analyzed should create a more proactive and predictive approach towards risk analysis;

c) the Regions should increase the rate of reporting accidents and serious incidents through the use of ECCAIRS; and

d) RASG-PA members will use the CAST/ICAO Taxonomy.

1.8. This working paper is presented to RASG-PA in line with the above conclusion and shows the chief aviation hazards identified by the RASG-PA ESC/2 supported by different data-driven sources. The data is only forensic; however, it is expected that in the future proactive and predictive data could be incorporated.

2. Definition of the Problem

2.1 At present there are many sources of safety data. However, in order to provide valuable information, this safety data needs to be categorized and processed using the ICAO common taxonomy.

2.2 ICAO, IATA, CAST, and BOEING were requested to present their safety data statistics as an Appendix to this working paper. The statistics account for the last ten years in the NAM/CAR/SAM Regions. Each organization was asked to use their data to identify the top ten safety risks in the regions.

2.3 The data provided is included as **Appendices A through D** of this paper.

3 Analysis

3.1 RASG-PA ESC/02 made a comparative analysis of the categories of accidents and incidents that occurred most often using the four data sets as presented to the ESC (see Table 1). The results showed a significant degree of commonality.

Table # 1
Main Aviation Hazards for the NAM/CAR/SAM Regions

	ICAO	IATA	BOEING	CAST
1	Runway Excursions	Runway Excursions	Runway Excursions	LOC-I
2	Airworthiness SCF-PP	CFIT	CFIT	CFIT
3	En Route	In-flight Damage	LOC-I	Runway Excursions

3.2 Based on the data provided, the ESC concluded that the top three data-driven risk areas based on the data presented by ICAO, IATA, BOEING and CAST were:

- Runway Excursions
- CFIT (controlled flight into terrain)
- LOC-I (loss of control in flight)
- The next risk area was identified as En Route.

4 Conclusions

4.1 As expressed in the GASR, accident rate data represents a reliable source for measuring safety performance. There are several excellent sources of accident rates which are maintained throughout the aviation industry and should be considered a vital component to any risk measurement effort.

4.2 This paper represents the first coordinated effort among stakeholders in the Pan American region in reaching consensus on the top aviation safety hazards using different sources of available key information.

4.3 The next step for RASG-PA is to decide, based on the GASR, on the implementation of coordinated mitigation strategies.

4.4 This paper should be considered as a starting point for the production of a RASG-PA annual safety report to be used by all aviation safety stakeholders to focus their resources on agreed mitigation strategies.

4.5 As a step forward in maturing a RASG-PA annual safety report, a layout of report contents is provided for comment by RASG-PA members as **Appendix E** to this working paper.

5. Action suggested

5.1 The meeting is invited to:

a) take note and provide comments on the information contained in this working paper;

b) request organizations that maintain regional safety data to consider the sharing of that safety information as a contribution to the RASG-PA Annual Safety Report;

c) note the need to improve the production of proactive and predictive safety data information; and

d) make comments on the proposed layout of a future RASG-PA Annual Safety Report.

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Appendix A

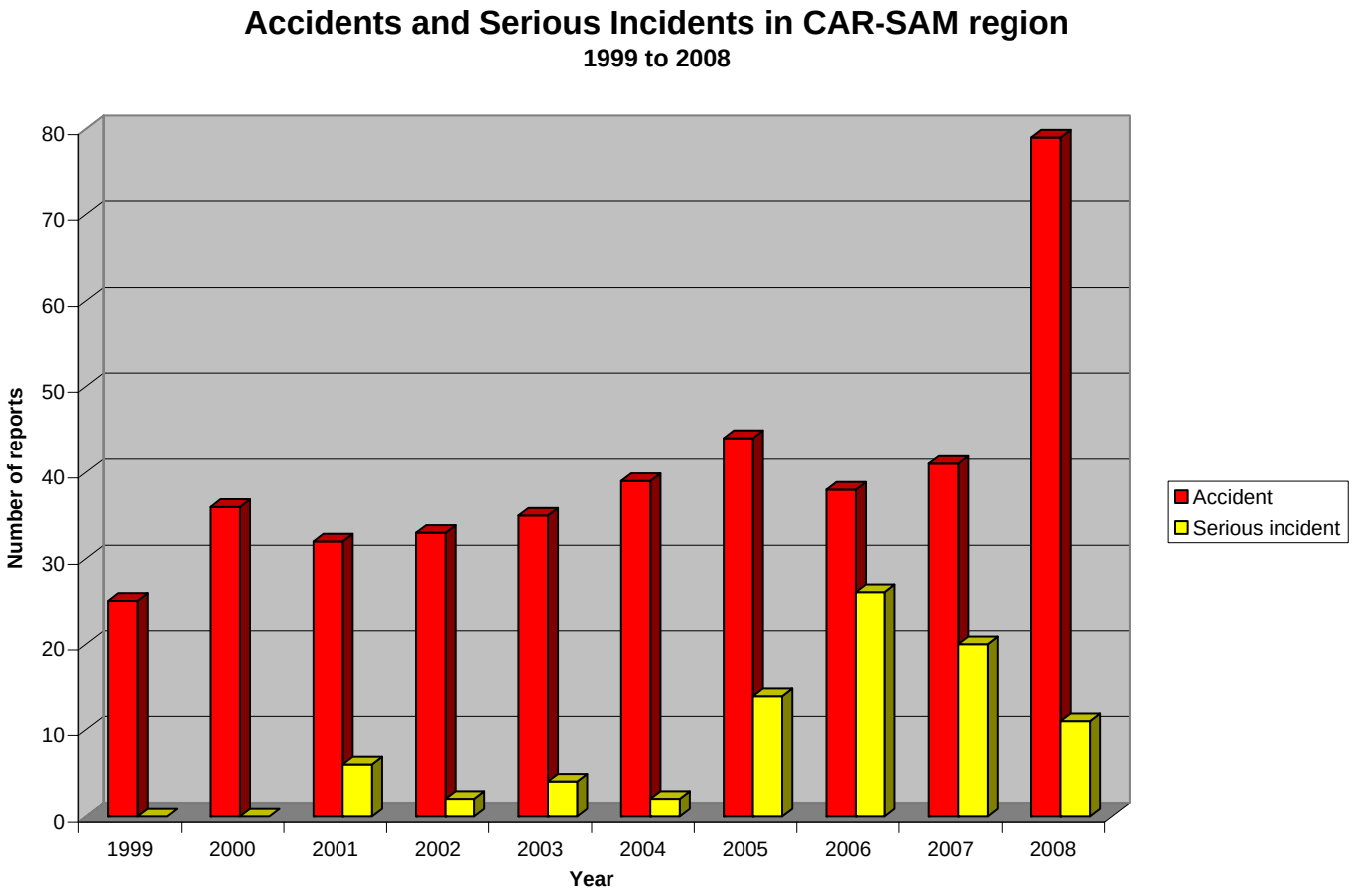
ICAO Accidents and Serious Incidents Data
CAR-SAM Region

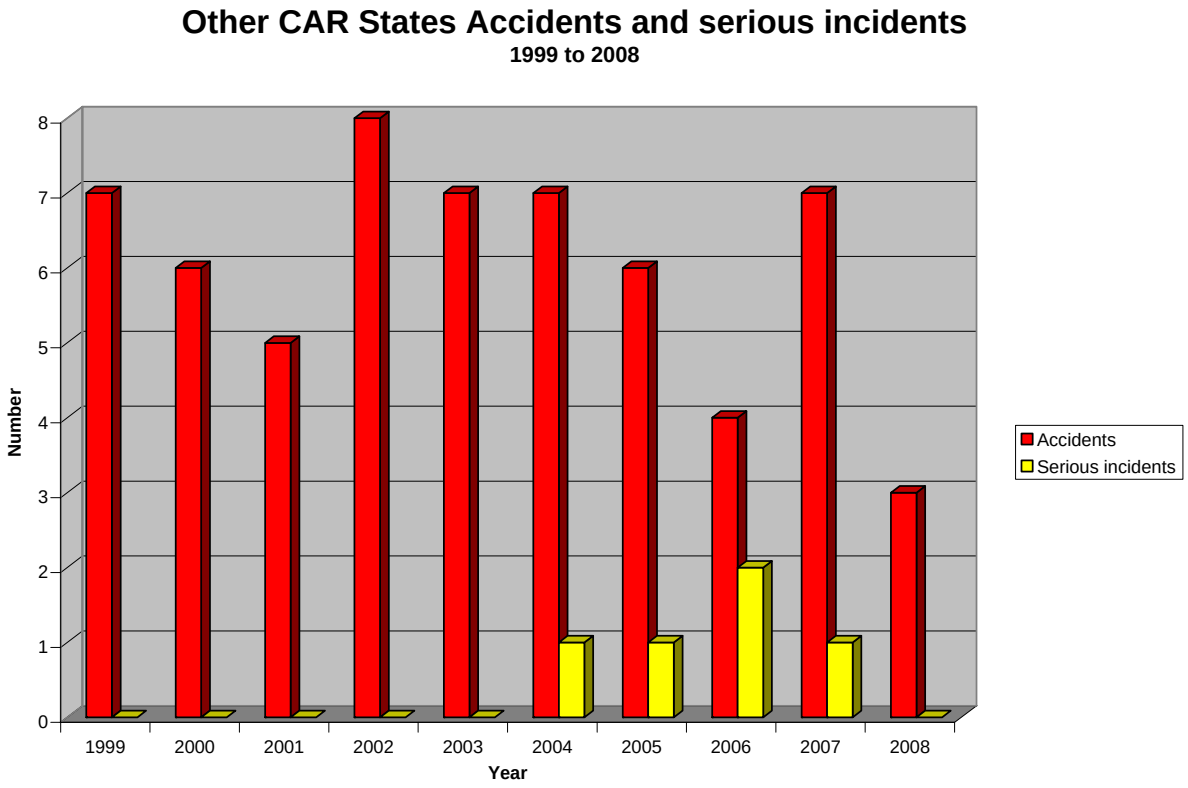
The request was to assess the reports received from the CAR-SAM Region available in the ADREP/ECCAIRS database.

The parameters used for the query were:

- From 1 January 1999 to 31 December 2008
- Include all accidents, serious incidents
- In aircraft mass categories above 2250 kg MTOM
- States included - Argentina, Bolivia, Brazil, Chile, Cuba, Ecuador, Paraguay, Panama, Peru, Uruguay, Venezuela, Costa Rica, El Salvador, Honduras, Nicaragua, Guatemala, Belize, Mexico
- Under other CAR States - Antigua and Barbuda, Anguilla, Aruba, Bahamas, Barbados, Dominica, Dominican Republic, French Antilles, Grenada, Haiti, Jamaica, Netherlands Antilles, Montserrat, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Trinidad and Tobago, British Virgin Islands
- All types of operations.

A total of 487 accident and serious incident records were found and under the other CAR States 65 accident and serious incident records. A breakdown of this information was as follows for the CAR-SAM occurrences:





A distinction was made between the two groups due to the different operational volumes of the States and when the types of aircraft was queried it became apparent that the other CAR group of States is mostly dealing with smaller operators.

No distinction was made relating to the status of the reports involved, for example initial notifications, preliminary, data or unofficial. It was however noted that reporting from the CAR-SAM Region increased after several safety data training courses were presented in the region.

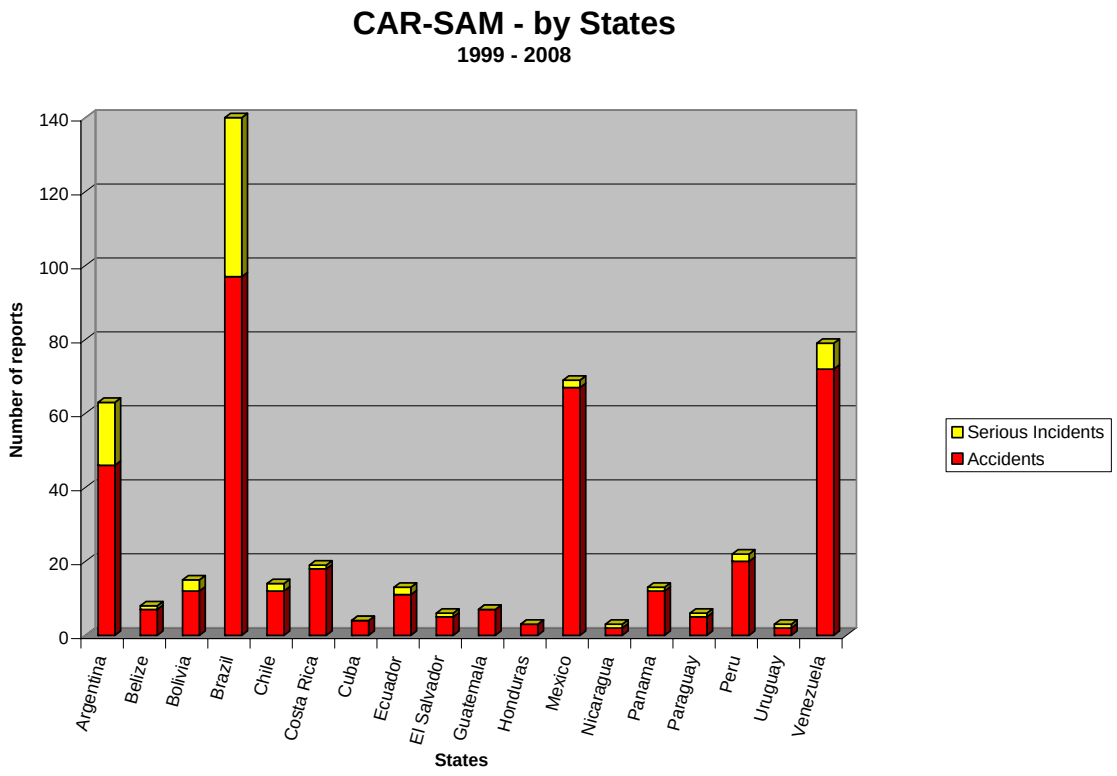
Accidents and serious incidents by States:

The following graph shows the accident and serious incident records available on the ADREP database from the different States in the CAR-SAM Region:

See Next page

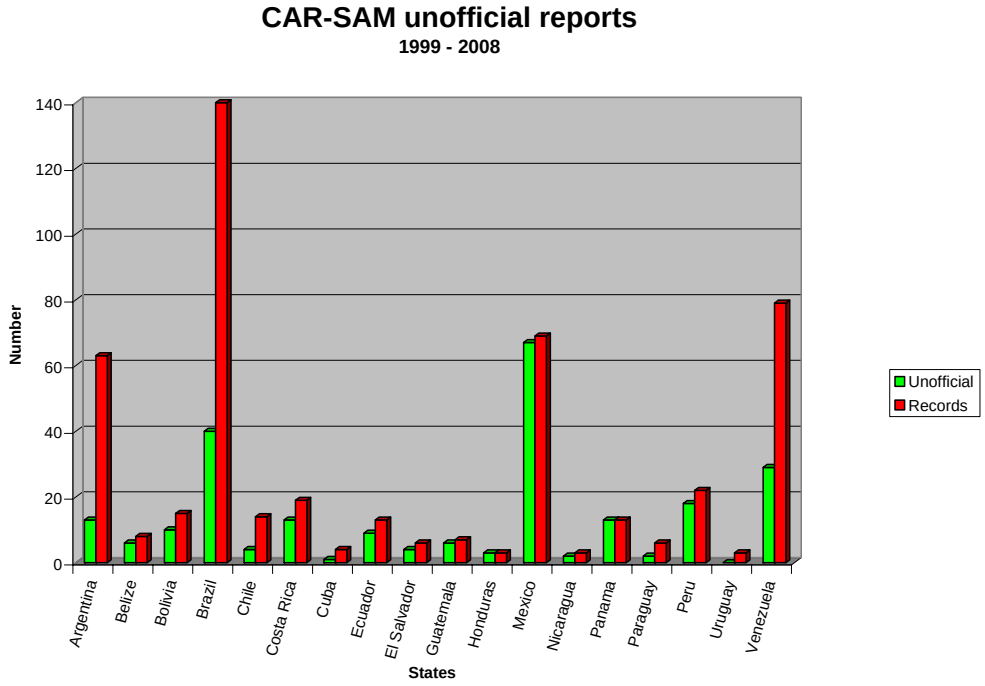
It needs to be noted that although some States have high numbers of accident and serious incident reports on the system, it does not necessary mean that the accident rate in the State is high, but rather that the high number of records may be related to higher levels of aviation activities and higher levels of reporting from the State especially with relation to serious incidents.

The amounts of occurrences of the other CAR States will be dealt with later in this document.



Reporting rate of States:

The status of the reports for each State were queried to determine the amount of unofficial reports on record in order to determine the level of reporting for the States in the CAR-SAM – Region. These reporting requirements are to fulfil the Annex 13 reporting requirements of the State. The following graph was compiled with the information:

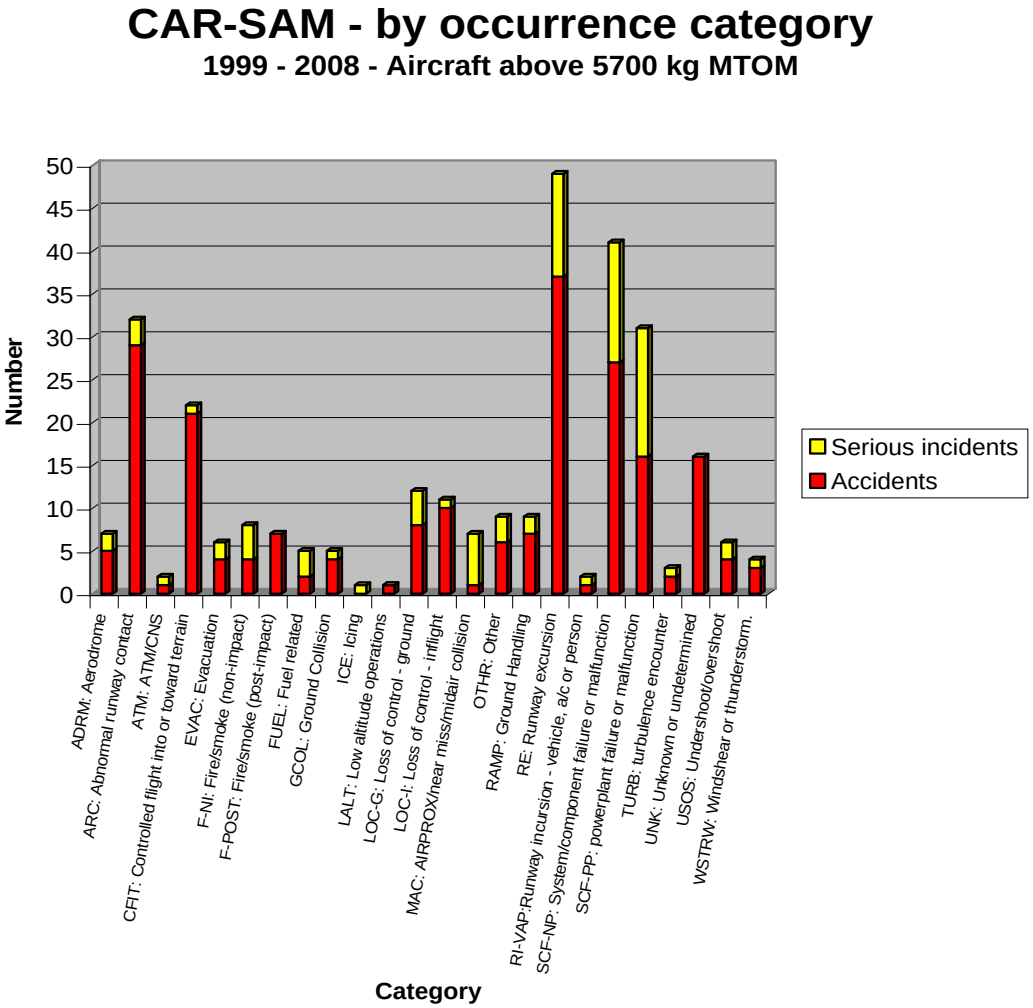


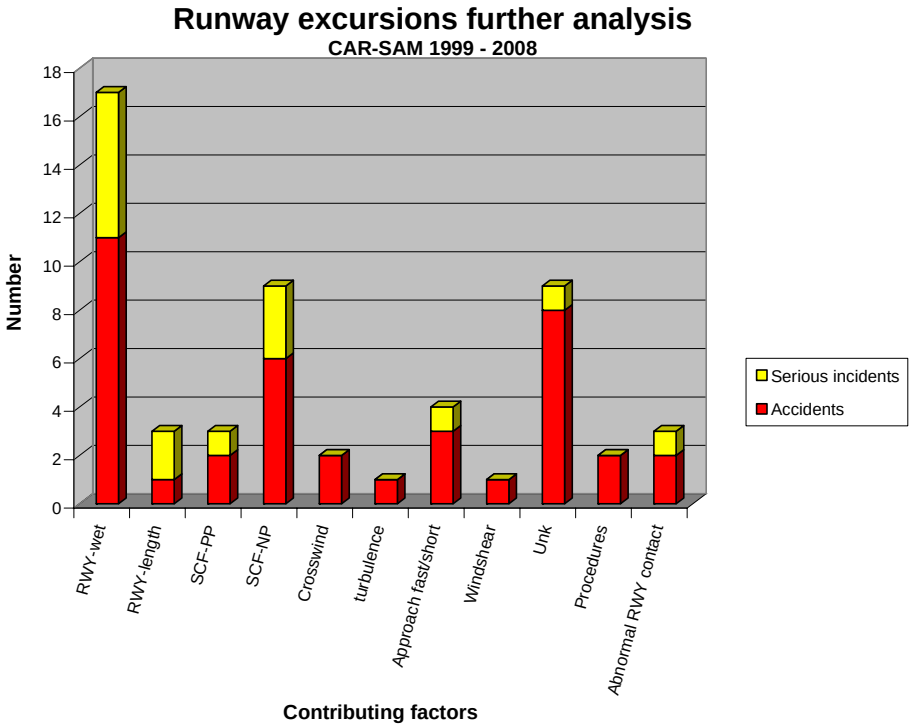
The graph reflects the number of unofficial records on the database in relation to the total number of records per State. Unofficial reports are reports received from media, industry and other sources. Although the concept was that most of the States report well, it appears that only a few States' reporting levels are high. The reporting level of the region was calculated at approximately 50%.

Accidents and serious incidents by occurrence category:

The accidents and serious incidents in the dataset for the CAR-SAM Region was categorized in the categories of the ADREP occurrence category taxonomy. The dataset was queried for aircraft in the mass group of above 5700 kg MTOM. This aircraft mass grouping was chosen to review in order to include aircraft that normally operate in the commercial scheduled and unscheduled type of operations and other commercial operations. The graph below (next page) shows the spread of these categories for the region.

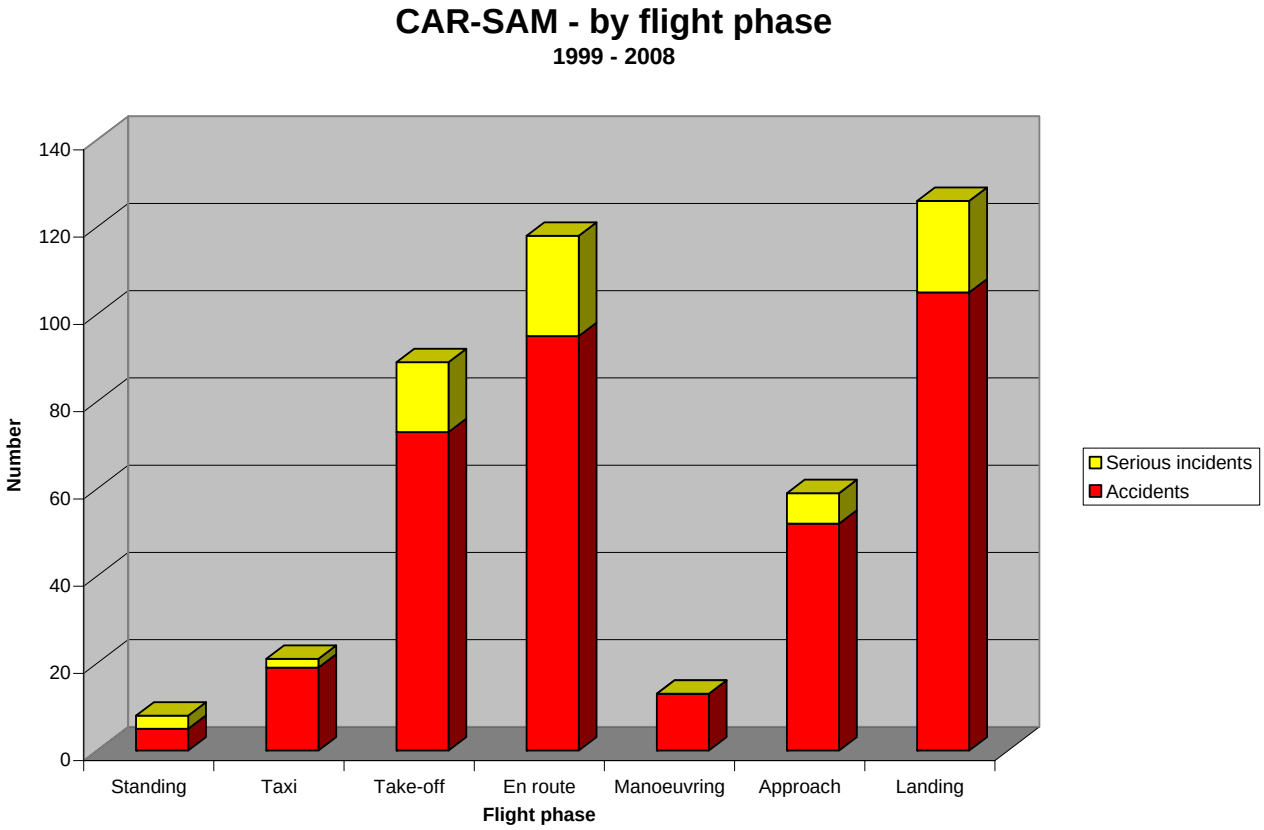
On the graph for the occurrence categories, it can be observed that Runway Excursion accidents and serious incidents are of the highest instances of all the categories. The records of this category of accidents and serious incidents was further analyzed to assess if any further information could be determined as to the contributing factors to runway excursions (graph on lower part of next page). It was apparent from the graph that wet runways were in many cases identified as a contributing factor to the accidents or serious incidents. Similarly, in many of the accidents or serious incidents, aircraft system or component failures contributed to the runway excursions. It was also noted that a high number of either system/component failures and powerplant failures were identified in the records as occurrence categories.





Accidents and serious incidents by flight phase:

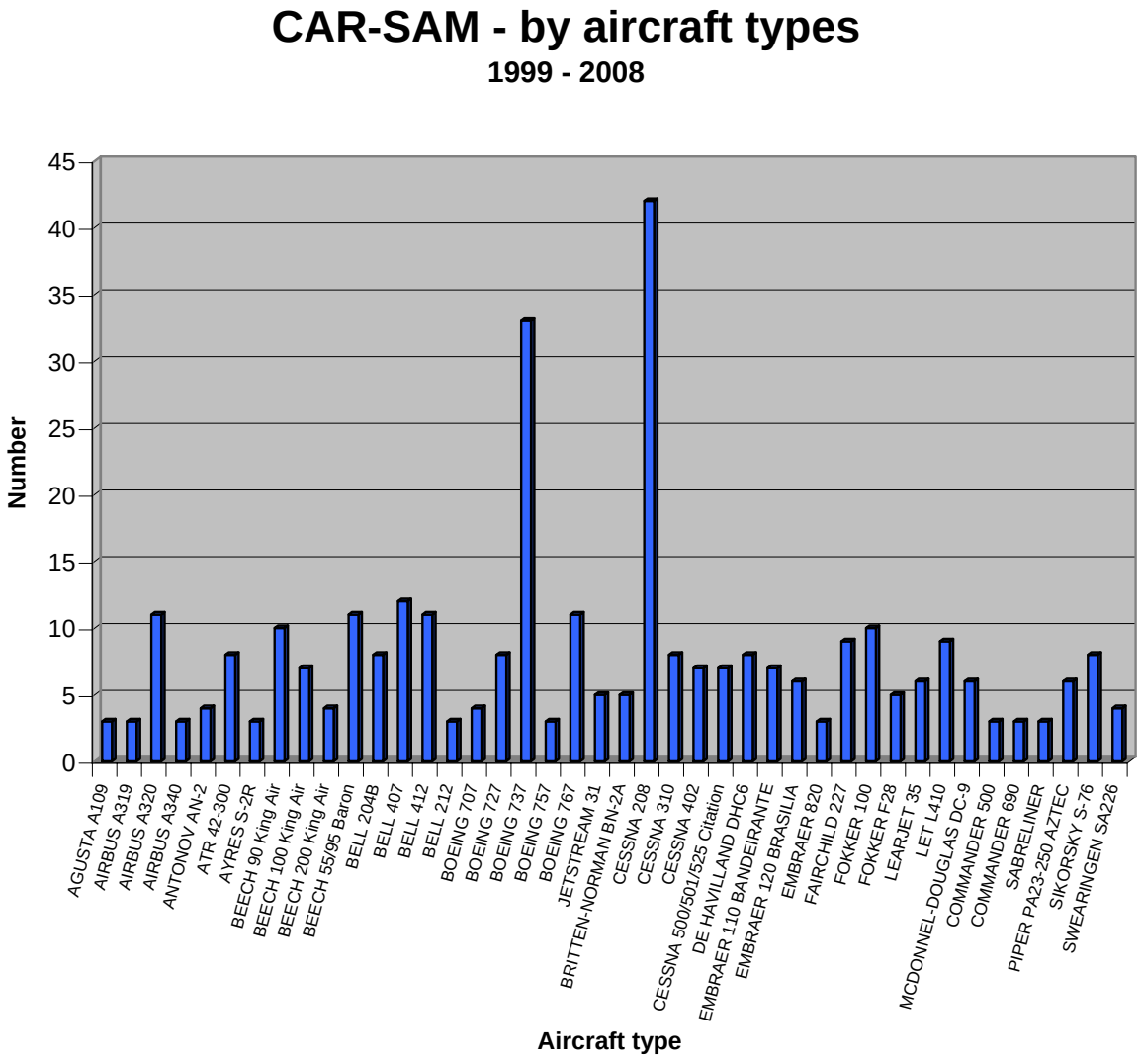
The flight phase during which the accidents and serious incidents occurred in the region was queried from the dataset and the following was determined:



Most of the occurrences happened as is traditionally known during the take-off, approach and landing phases of flight. It is interesting that so many occurrences were during the en-route phase of the flight.

Accidents and serious incidents by aircraft type:

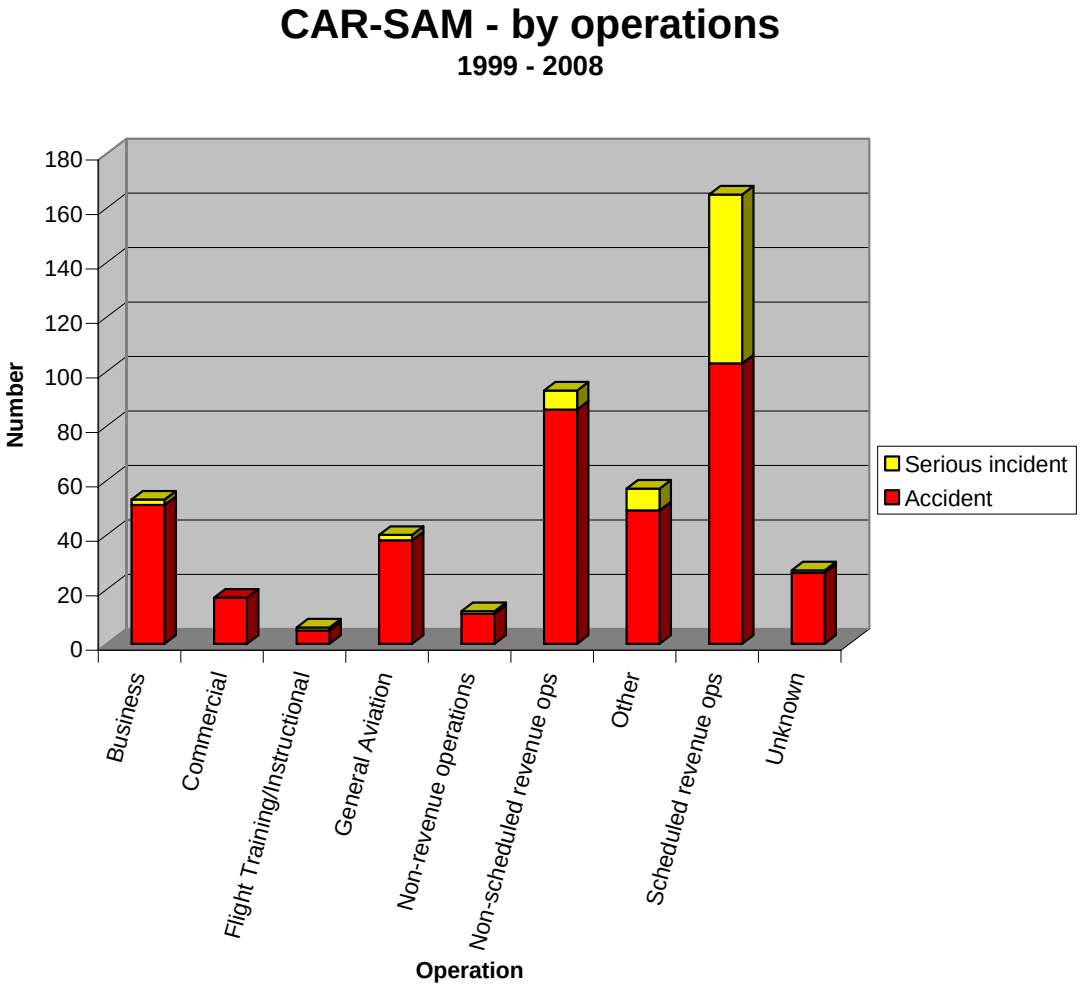
The dataset was queried with relation to the types of aircraft that was involved in the accidents and serious incidents in the dataset for the CAR-SAM Region. The instances where only 1 or 2 occurrences for a certain type of aircraft was recorded was not included in the graph to make the graph easier to read. The graph was as follows:



The Boeing 737's and Cessna 208's are the two types of aircraft that have high levels of accidents and serious incidents, however these are also the types of aircraft that have high levels of utility in the region.

Accidents and serious incidents by operations type:

The dataset was queried with relation to the operations type the aircraft was involved in during the occurrence. The following graph illustrate the results of the query:



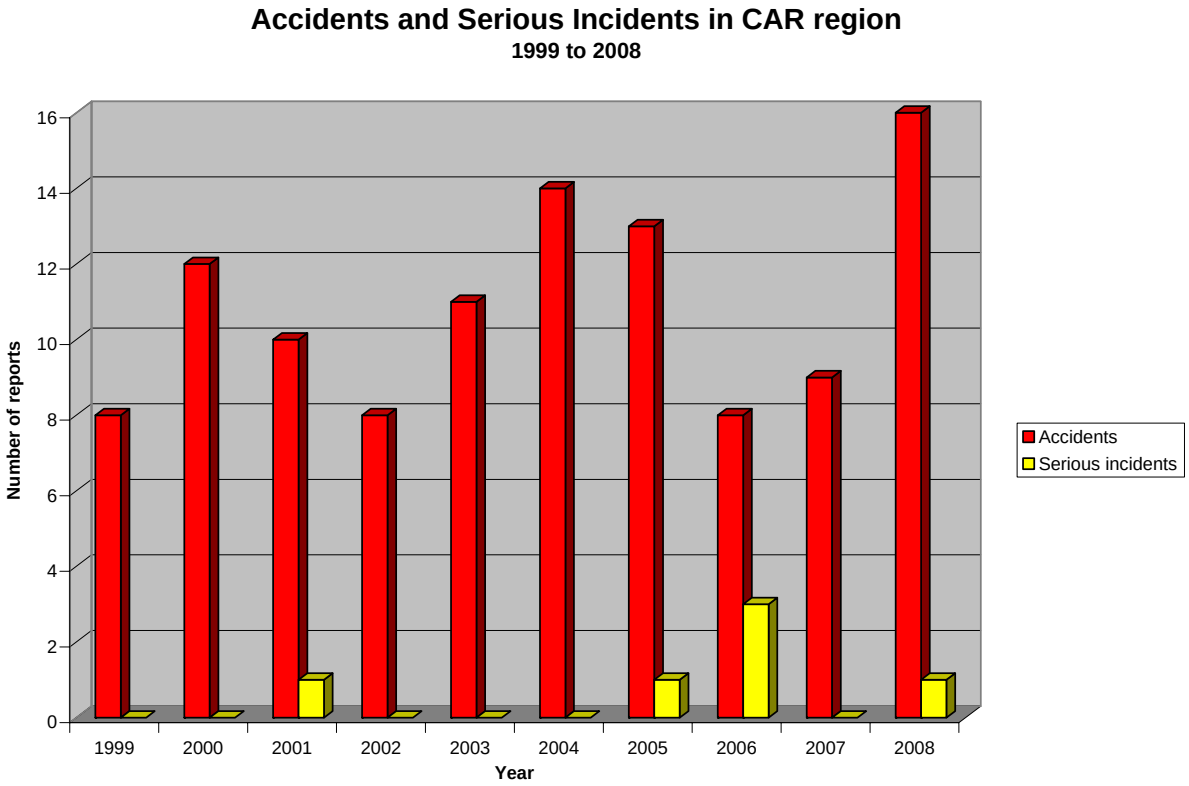
Most of the occurrences occurred during scheduled and non-scheduled revenue operations. It is also interesting to see the number of serious incidents being recorded during scheduled operations.

Sub-Regions in the CAR-SAM Region

Accidents and serious incidents in CAR-Region:

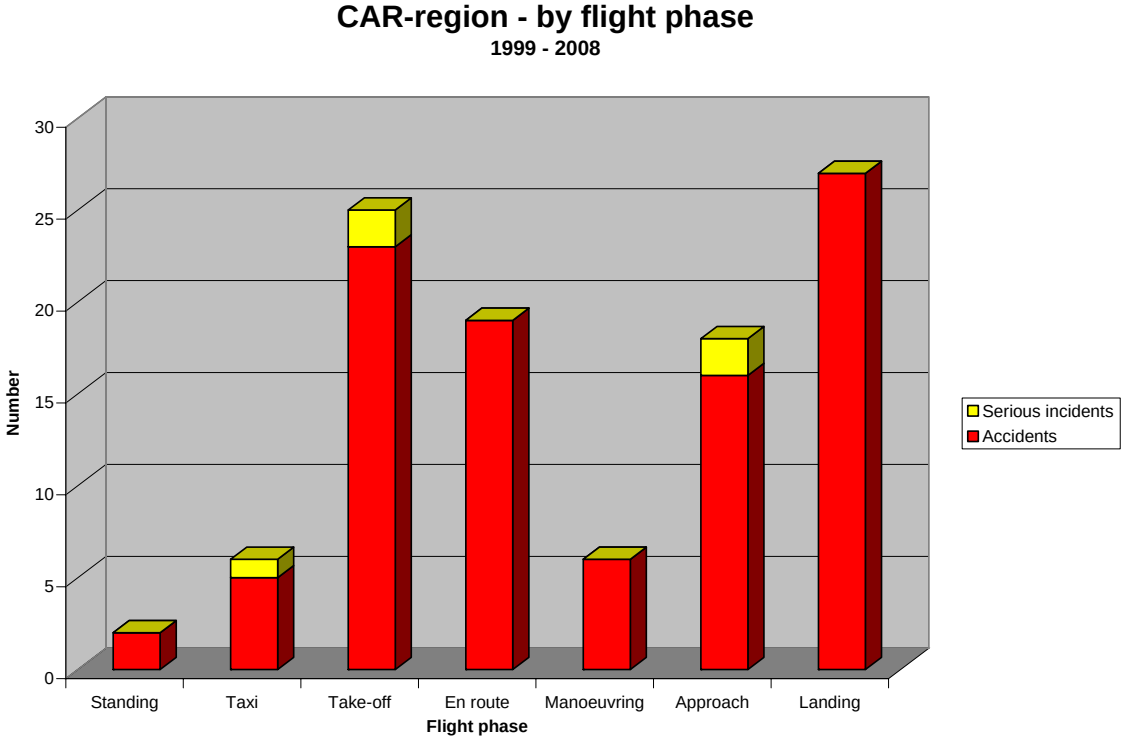
The dataset for the CAR-SAM Region was queried with relation to sub-regions. All the other parameters for the data was kept the same as previously and the CAR Region was taken as a sub-region including the following States:

Costa Rica, El Salvador, Honduras, Nicaragua, Guatemala, Belize, Mexico.
The total number of accidents and serious incidents during the last 10 years from 1999 to 2008 was queried. 115 records were located and the following graph represents this information:



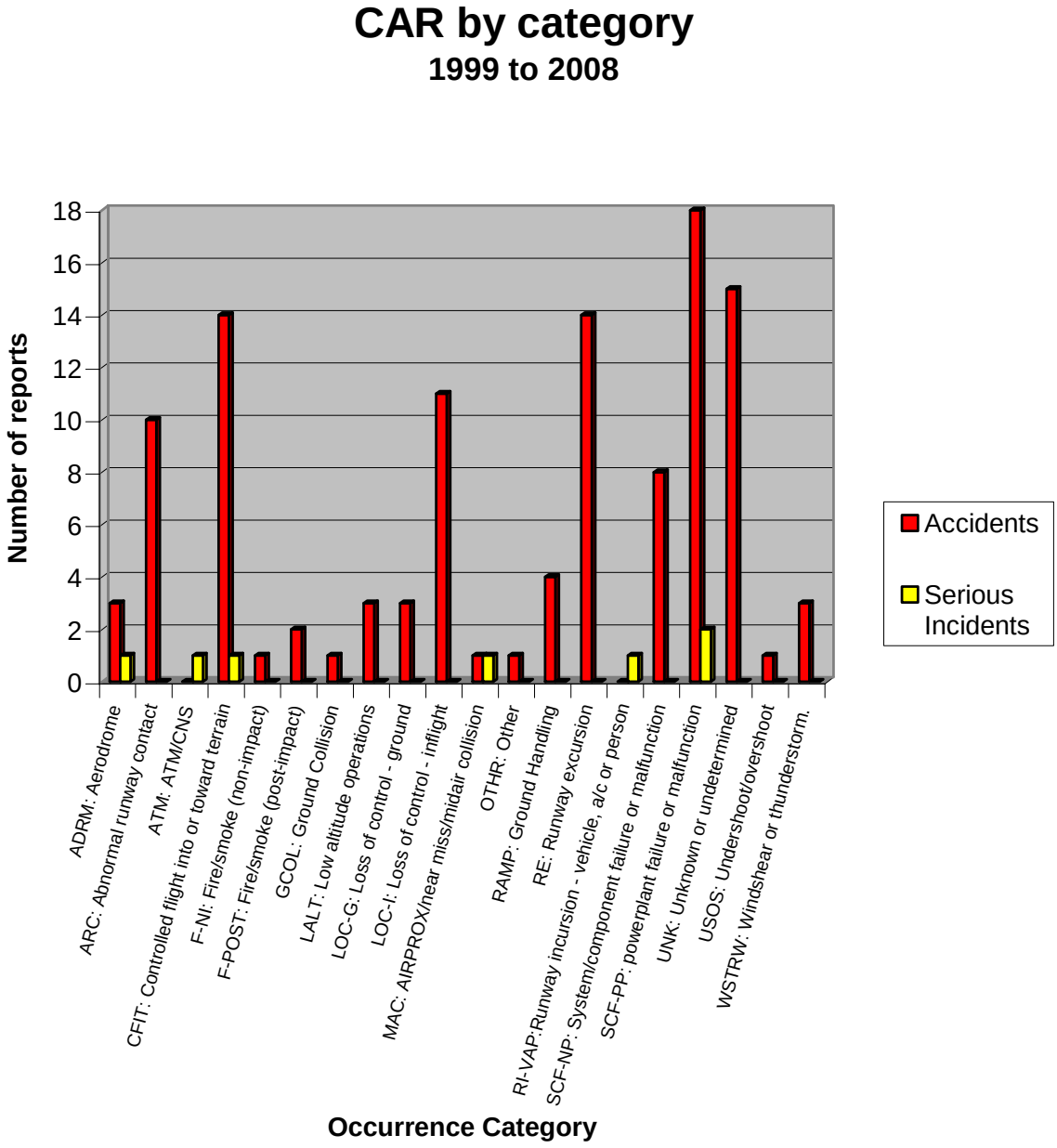
Accidents and serious incidents in CAR by flight phase:

Accessing the database with relation to the flight phase of the occurrences in the CAR-Region the following results were obtained:



Accidents and serious incidents in CAR by occurrence category:

Accessing the dataset with relation to the categories of the accidents and serious incidents and including the aircraft mass group from above 2250 kg MTOM, that occurred in the CAR-



Region the following were obtained:
In this region “powerplant failures” was ascribed in the highest number of records as either the/or one of the occurrence categories. The aircraft in the lower mass categories appear to

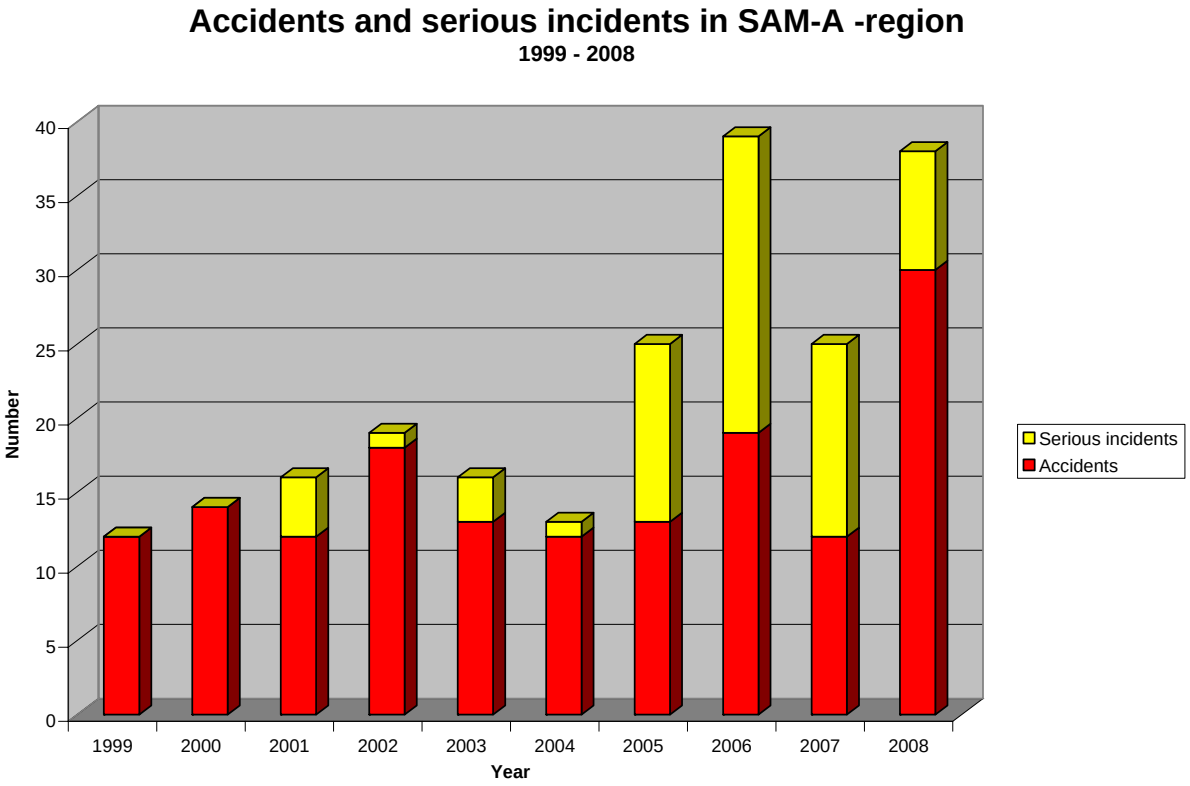
have more powerplant failures, but there are also high numbers of CFIT and runway excursion occurrences in the region.

Accidents and serious incidents in SAM-A -Region:

The dataset for the SAM-A Region was queried with relation to the CAR-SAM sub-regions. All the other parameters for the data was kept the same as previously and the SAM-A Region was taken as a sub-region including the following States:

Argentina, Brazil and Chile.

The total number of accidents and serious incidents relating to the last 10 years from 1999 to 2008 was queried. 217 records were located and the following graph represents this information:



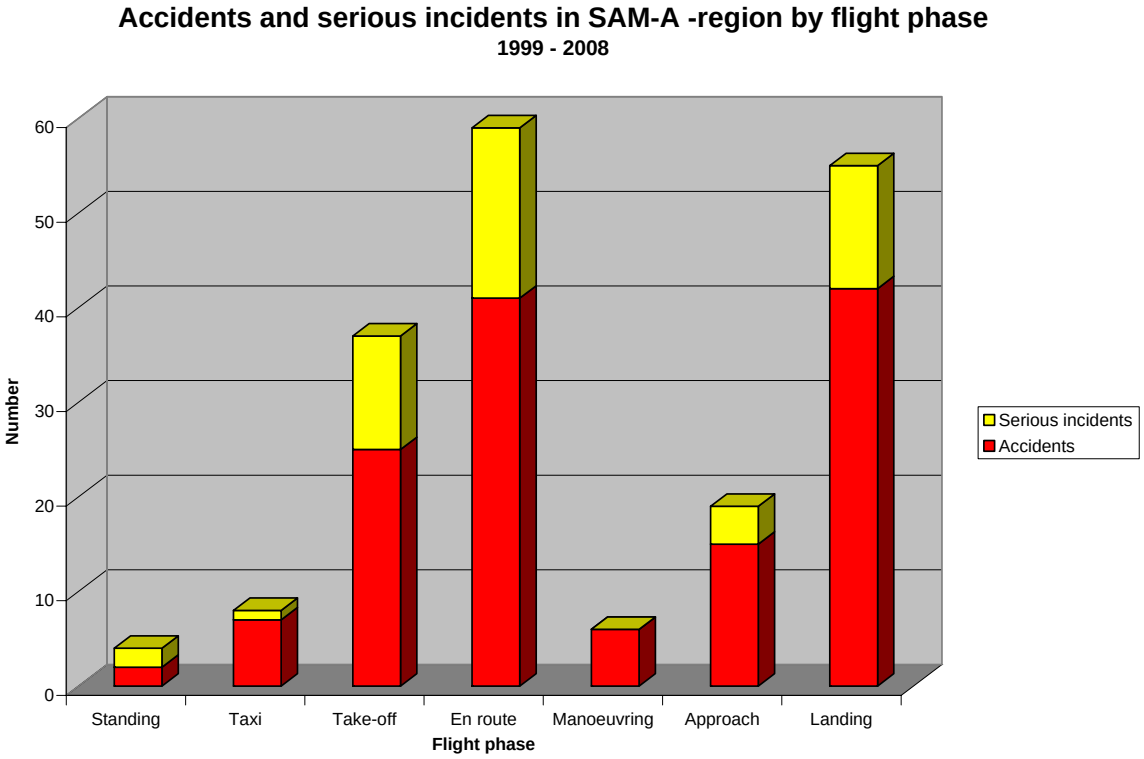
Accidents and serious incidents in SAM-A by flight phase:

Accessing the database with relation to the flight phase of the occurrences in the SAM-A-Region the following results were obtained:

Next page

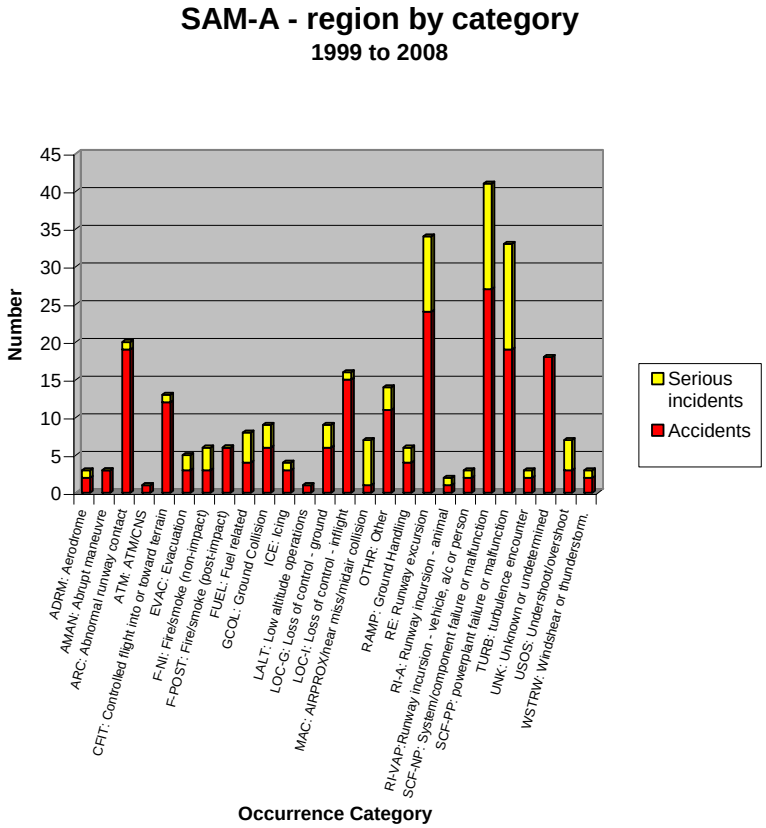
One note that usual higher number of accidents and serious incidents are with relation to the take-off and landing phases of flight. However in the SAM-A Region a higher than usual

number of accidents and serious incidents take place during the en-route phase of flight. This could probably be ascribed to the geography of the region.



Accidents and serious incidents in SAM-A by occurrence category:

Accessing the dataset with relation to the categories of the accidents and serious incidents and including the aircraft mass group from above 2250 kg MTOM, that occurred in the SAM-A-Region the following were obtained:



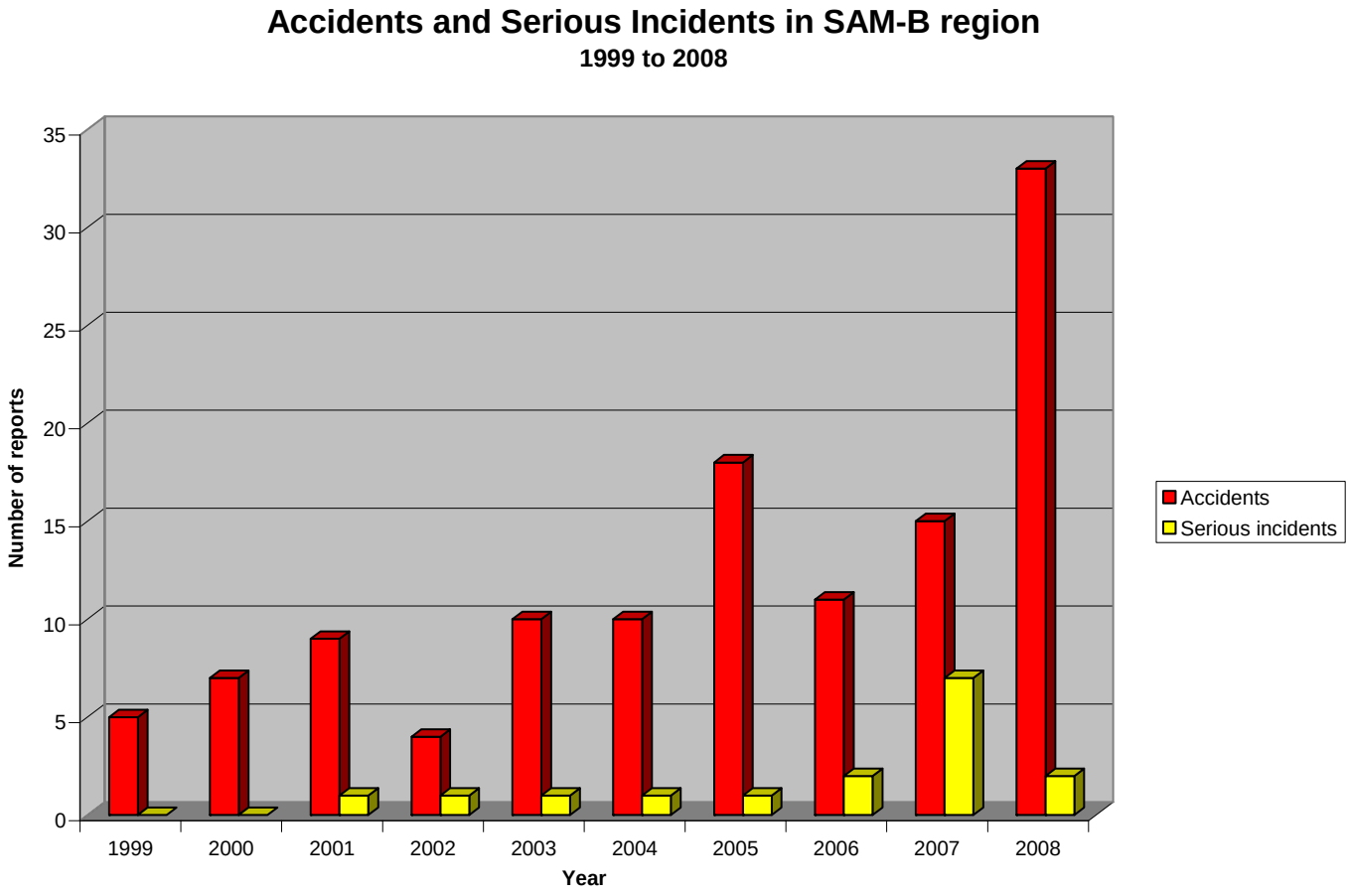
In this region both system/component failures and powerplant failures was the occurrence categories ascribed in the highest number of records as either the/or one of the occurrence categories. The aircraft in the lower mass categories appear to have more aircraft failures, however runway related occurrences like runway excursions and abnormal runway contact still feature in high numbers in the SAM-A -Region.

Accidents and serious incidents in SAM-B -Region:

The dataset for the SAM-B Region was queried with relation to the CAR-SAM sub-regions. All the other parameters for the data was kept the same as previously and the SAM-B Region was taken as a sub-region including the following States:

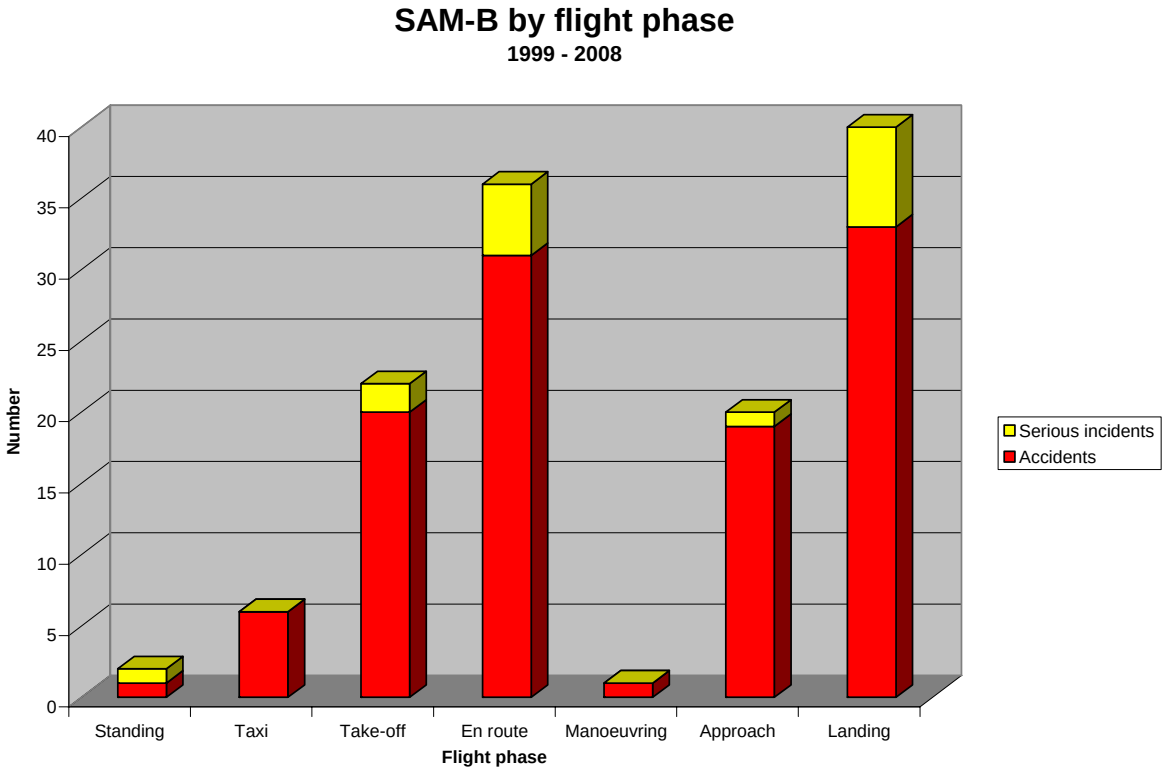
Bolivia, Ecuador, Paraguay, Peru, Uruguay and Venezuela

The total number of accidents and serious incidents relating to the last 10 years from 1999 to 2008 was queried. 138 records were located and the following graph represents this information:



Accidents and serious incidents in SAM-B by flight phase:

Accessing the database with relation to the flight phase of the occurrences in the SAM-B-Region the following results were obtained:



It may be noted that usual higher number of accidents and serious incidents are observed during the take-off and landing phases of flight. However, similar to the SAM-A Region, in the SAM-B Region, in relation, a higher than usual number of accidents and serious incidents take place during the en-route phase of flight. This could probably be ascribed to the geography of the region.

Accidents and serious incidents in SAM-B by occurrence category:

Accessing the dataset with relation to the categories of the accidents and serious incidents and including the aircraft mass group from above 2250 kg MTOM, that occurred in the SAM-B - Region the following were obtained:

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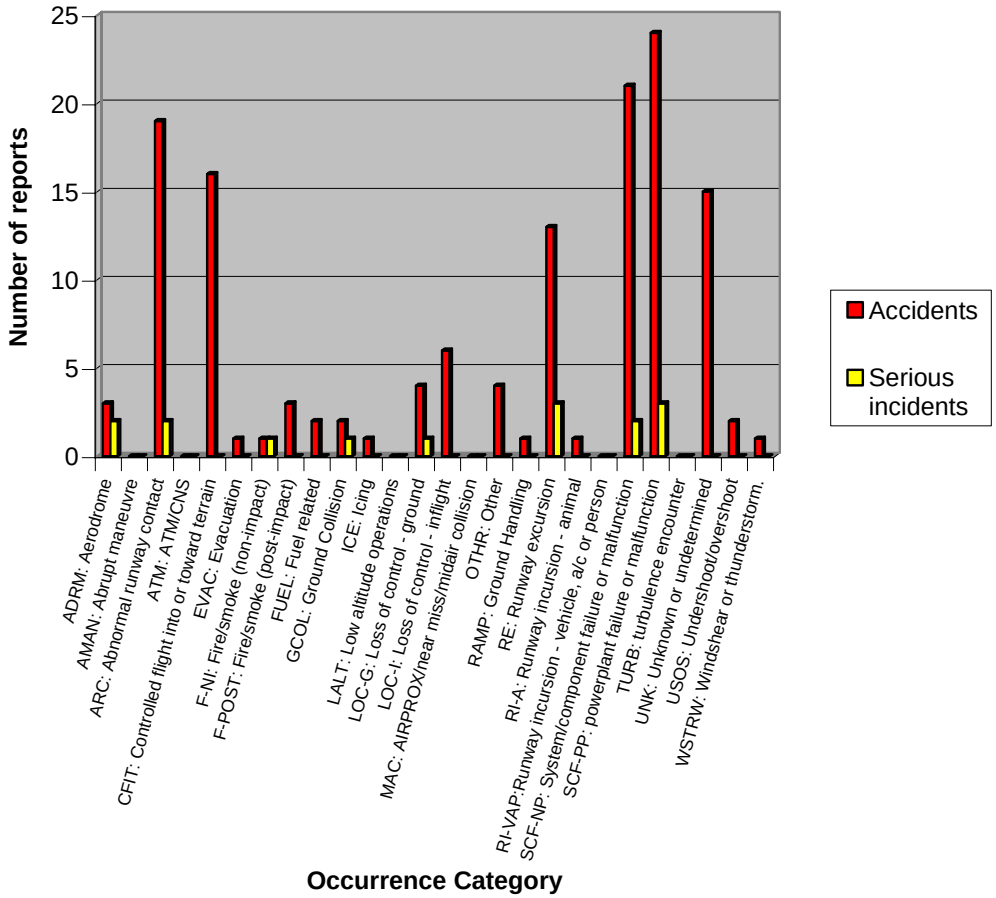
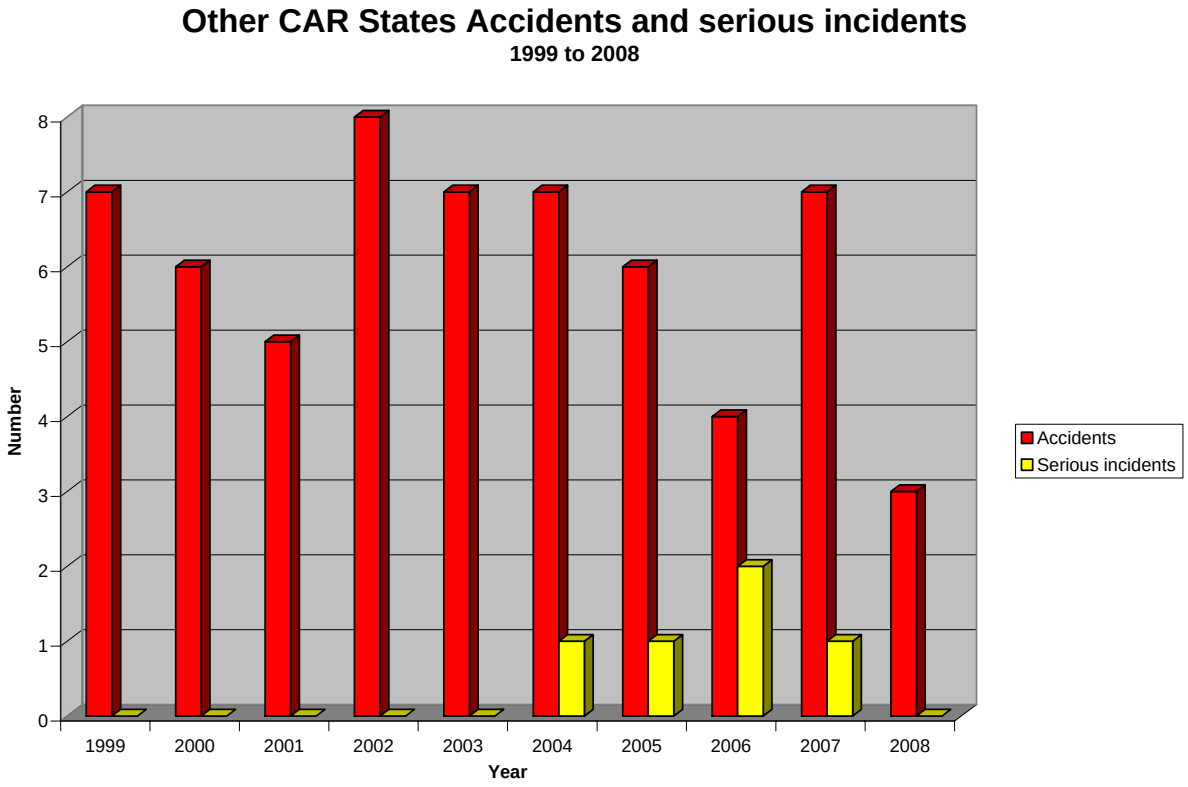


In this region both system/component failures and powerplant failures was the occurrence categories ascribed in the highest number of records as either the/or one of the occurrence categories. The aircraft in the lower mass categories appear to have more aircraft failures, but runway related occurrences like runway excursions and abnormal runway contact still feature in high numbers in the SAM-B -Region. A further observation is that categories like CFIT and loss of control in-flight still feature in this dataset.

Accidents and serious incidents in the other CAR States:

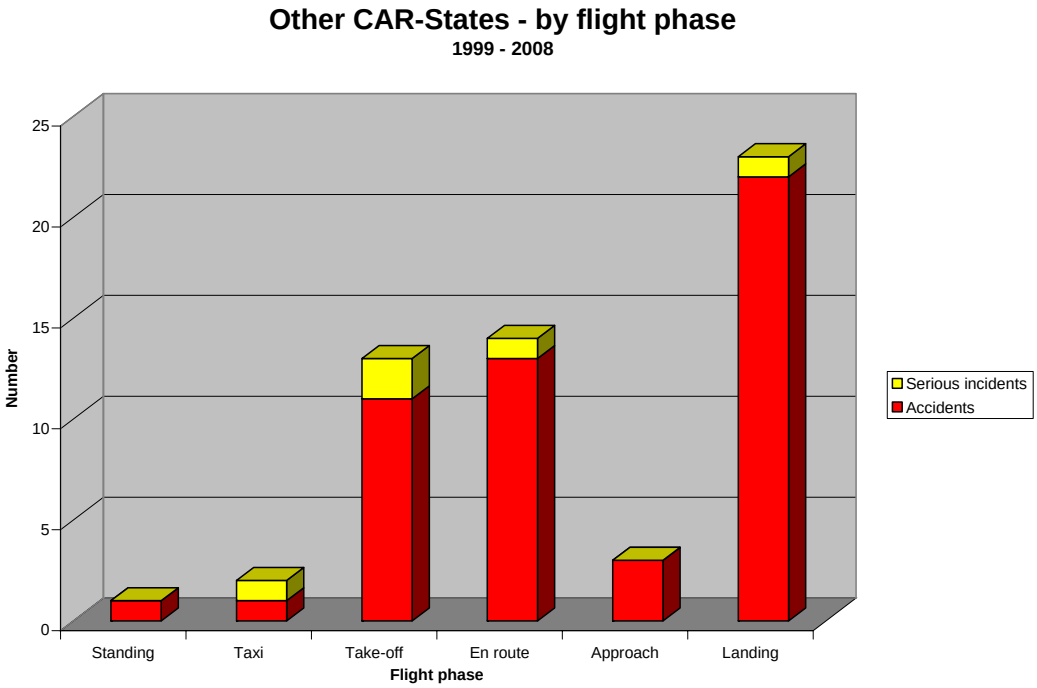
The dataset for the other CAR-States was queried with relation to the CAR-SAM sub-regions. All the other parameters for the data was kept the same as previously and the other CAR-States were taken as the following States:

Antigua and Barbuda, Anguilla, Aruba, Bahamas, Barbados, British Virgin Islands, Dominica, Dominican Republic, French Antilles, Grenada, Haiti, Jamaica, Montserrat, Netherlands Antilles, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Trinidad and Tobago.
The total number of accidents and serious incidents relating to the last 10 years from 1999 to 2008 was queried. 65 records were located and the following graph represent this information:



Accidents and serious incidents in the other CAR-States by flight phase:

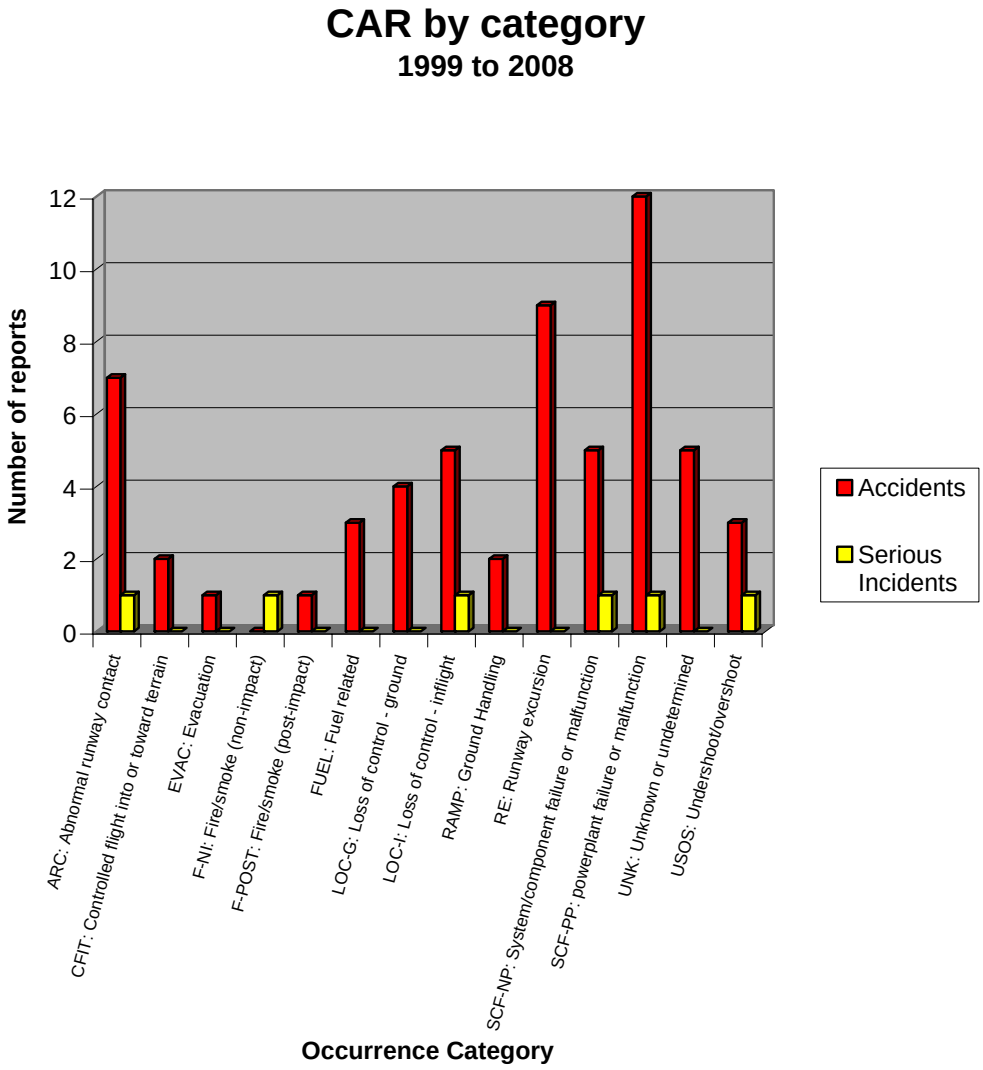
Accessing the database with relation to the flight phase of the occurrences in the other CAR-States produced the following results:



It may be noted that a high instance of accidents and serious incidents are observed during the landing phases of flight. Also similar to the SAM-A Region, in the SAM-B Region, in relation, a relative high occurrence of accidents and serious incidents is observed during the en-route phase of flight.

Accidents and serious incidents in the other CAR-States by occurrence category:

Accessing the dataset with relation to the categories of the accidents and serious incidents and including the aircraft mass group from above 2250 kg MTOM, that occurred in the other CAR-States the following were obtained:



A similar trend of powerplant failures, runway excursions and abnormal runway contact category occurrences are noted in the above information.

Conclusions:

- The number of accident and serious incident reports have been increasing at a regular rate during the last 10 years in the CAR-SAM Region, although it appears that some States have not been reporting at the rate at which is required in Annex 13. The reporting rate for the region is calculated at approximately 50%. This could either be due to an increase in the number of occurrences or an increase in the reporting from the region's States. The increased reporting could further be ascribed to the amount of training that was delivered in the region in the last few years.

- Runway excursions, especially with aircraft in the mass groups above 5700 kg MTOM, seems to be the prominent problem in the CAR-SAM – Region. However, a runway excursion is the consequence of some other contributing factor/s. A further analysis of the runway excursion data indicates that in most cases the runway excursion could be related to a wet runway.

- A further occurrence category that appears to be prominent in accidents and serious incidents in the region is system/component and powerplant failures of the aircraft. This category manifest itself mostly in the aircraft mass group of above 2250 kg MTOM and in the higher mass categories it was less prominent.

- The flight phases the accidents and serious incidents in the CAR-SAM -Region occur are mostly in the area where occurrences usually happen, for example during take-offs and landings. However in the SAM-Region many accidents and serious incidents happen in the en-route phase of the flight. This could probably be ascribed to the geography of the region.

- Besides the problem with the wet runways, it appears that the conditions at the aerodromes do not contribute significantly to the causation of accidents and serious incidents.

- The aircraft types that could be related to many of the accident and serious incident records are the Boeing 737's and the Cessna 208's. There does not seem to be that many Eastern block manufactured aircraft involved in occurrences in the CAR-SAM –Region, which create problems in other regions.

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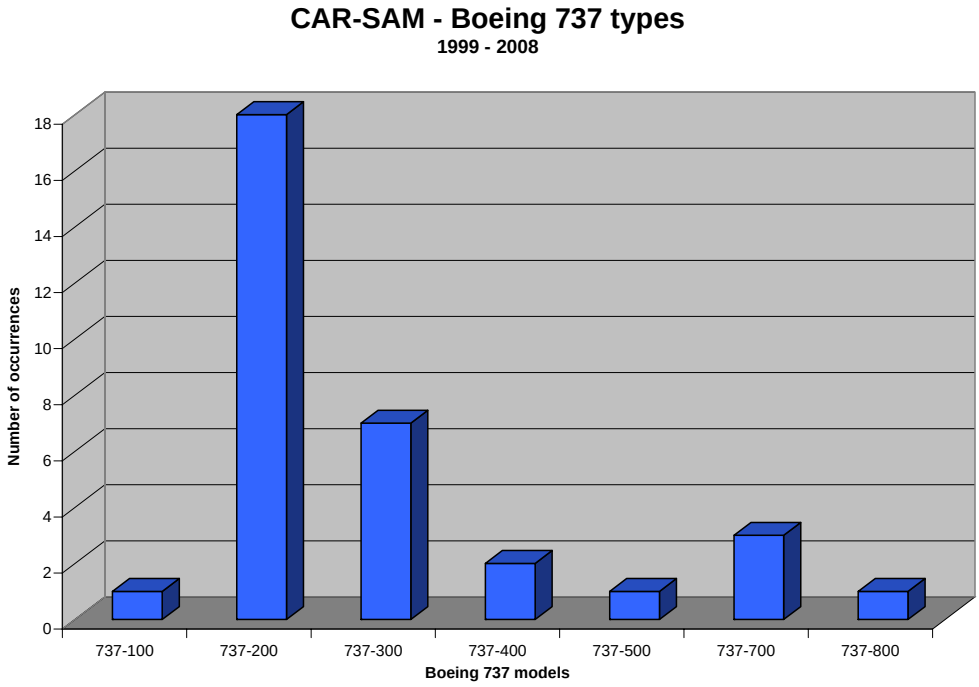
Additional:

Boeing 737s

The concern was with what model Boeing 737 models do the most occurrences happen. The dataset indicate the following:



The data indicates that 4 serious incidents and 3 accidents occurred during the **en-route** phase of flight during the query period from 1999 to 2008.

Accidents:

- Boeing 737-800 involved in mid-air collusion over Brazil
- Boeing 737-200 involved in CFIT accident in Ecuador
- Boeing 737-700 involved in turbulence related accident over Panama where cabin crew member was seriously injured

Serious incidents:

- 3 Boeing 737-300 pressurization incidents in Brazil

- Boeing 737-200 involved in an AIRPROX event over Argentina

Runway excursions when runway is wet

Of the 17 runway excursions related to wet runways 9 was recorded in Brazil and 7 of the occurrences happened towards the south of the State where there is frequent rain. The aerodromes where the runway excursions took place ranged from busy to not so busy aerodromes. Specifically the busy aerodromes one could expect rubber build-up on the runway surface which would cause the runway surface to become very slippery when wet.
A document received from the region indicating the runways that are slippery when wet or more specifically where rubber deposits were observed and reported. 8 aerodromes were indicated and when the accidents and serious incidents related to these aerodromes were queried, only one was implicated with a slippery runway and known rubber deposits, namely Tegucigalpa in the Honduras.

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Appendix B

SAFETY DATA OF CAST

Introduction

CAR/SAM Results of the latest ten years

Top ten safety issues in the region

This data is from 1987 – 2001

1) Controlled Flight into Terrain (CFIT)
2) Loss of Control (LOC)
3) System Component Failure, Powerplant (SCF-PP)
4) System Component Failure, Non-powerplant (SCF-NP)
5) Fuel
6) Runway Excursion
7) Aerodrome (ADRM)
8) Abnormal Runway Contact (ARC)
9) Undershoot, Overshoot (USOS)

Appendix C

SAFETY DATA OF IATA

Safety Report 2008 - Executive Summary

The goal of the IATA Safety Report is to present prevention strategies with the intent of enhancing safety within the air transport industry. These strategies are based on the analytical findings of accidents that occurred in 2008.

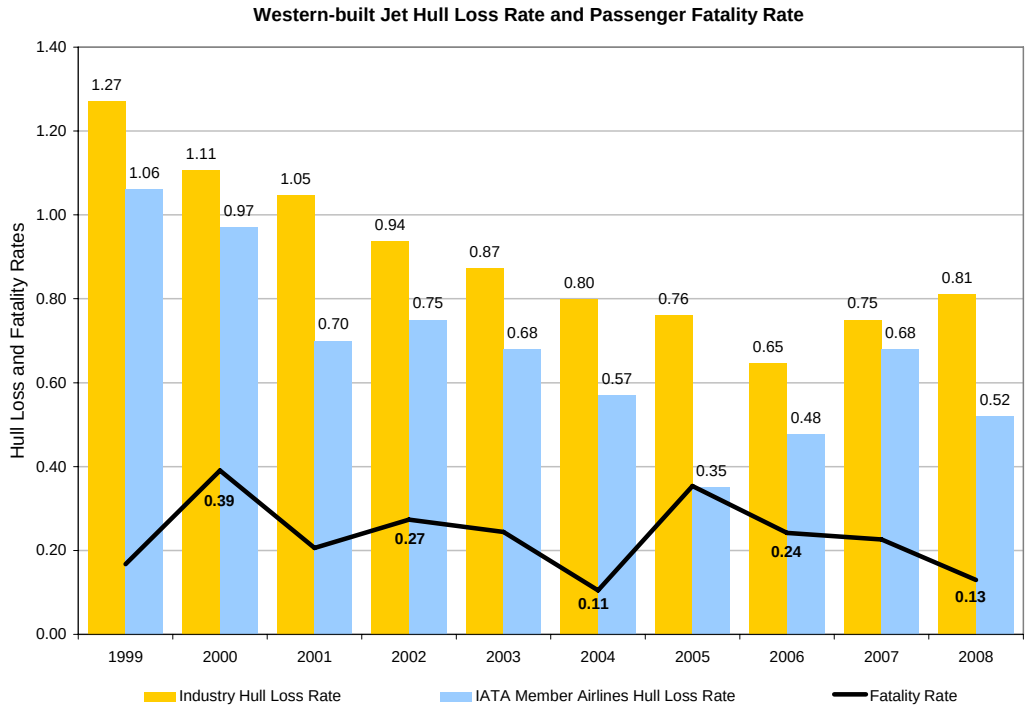
In total, 109 accidents occurred in 2008. Compared to 2007, the breakdown is as follows:

	Jet	Turboprop	Western-built Jet Hull Loss Rate	Fatal Accidents	Fatalities
2008	66	43	0.81	23	502
2007	57	43	0.75	20	692

From a regional perspective, the accident rates in the Commonwealth of Independent States (CIS), Latin America and the Caribbean, the Middle East and North Africa, North America and Europe increased in contrast to 2007. In Africa, Asia / Pacific and North Asia, the accident rates decreased in 2008 compared to 2007.

Overall, IATA member airlines surpassed the industry in terms of safety, with an accident rate of 0.52 western-built jet hull losses per million sectors flown. The accident rate for member airlines declined in comparison to 2007.

In 2008, the number of fatalities declined in comparison to the previous year. The fatality rate decreased from 0.23 fatalities per million passengers, in 2007 to 0.13 per million passengers in 2008.



Based on the findings from accident analyses, IATA has developed the following prevention strategies to address the top safety issues, as part of its Six-point Safety Programme:

Runway Excursion Prevention

- Runway excursions were the most frequent type of accident in 2008, accounting for 25% of accidents.
- Over half (57%) of runway excursions resulted in a hull loss and 14% of them involved fatalities.
- Flight crew handling errors, deficient airport facilities and aircraft malfunctions were among the top contributing factors in this type of accident.

Prevention Strategy: IATA will launch the Runway Safety Toolkit in 2009, which will address runway excursions, incursions and runway confusion.

Ground Damage Reduction

- Ground damage was the second most predominant type of accident, following runway excursions.
- Ground damage events accounted for 17% of all of last year's accidents; half of these involved IATA member airlines.
- Well over a third (38%) of ground damage accidents cited ground events, such as errors by ground handling personnel, as a contributing factor.

Prevention Strategy: Following the launch of the IATA Safety Audit for Ground Operations (ISAGO) in 2008, IATA will conduct 80 ISAGO audits in 2009, improving safety while reducing ramp injuries and damage.

Safety Management System Implementation

- In almost a third (30%) of accidents, deficient safety management on the part of the Operator was noted as a contributing factor.
- This includes deficiencies with regards to the Operator's safety policies and objectives, risk management, safety assurance and safety promotion.
- The majority (69%) of accidents involving deficiencies in the Operator's safety management also implicated deficient regulatory oversight by the State.

Prevention Strategy: IATA will deliver new guidance material on Safety Management Systems (SMS) and continue to assist airlines with SMS implementation at an individual and a regional level.

Safety Enhancement in Maintenance Operations

- 15% of accidents in 2008 involved maintenance events.
- In over half (57%) of the accidents involving a maintenance event, deficiencies in the Operator's maintenance operations were also noted as a contributing factor.
- These include: deficiencies in technical documentation, unrecorded maintenance, the use of bogus parts, unapproved modifications and deficient training of maintenance personnel.

Prevention Strategy: IATA's Six point Safety Programme now includes a dedicated segment on safety management in maintenance operations.

Regional Safety Issues

- Operators based in the Commonwealth of Independent States (CIS) and Latin America and the Caribbean, had the highest regional accident rates in 2008 and experienced the highest increase in their accident rates, when compared to 2007.
- Almost a third (30%) of the accidents involving CIS Operators were fatal; over a quarter (26%) of those implicating Latin American and the Caribbean-based carriers, also resulted in fatalities.
- Aircraft malfunctions, deficiencies in the Operator's safety management and the State's regulatory oversight as well as non-adherence to Standard Operating Procedures by flight crews were among the top contributing factors to accidents involving Operators from these two regions.

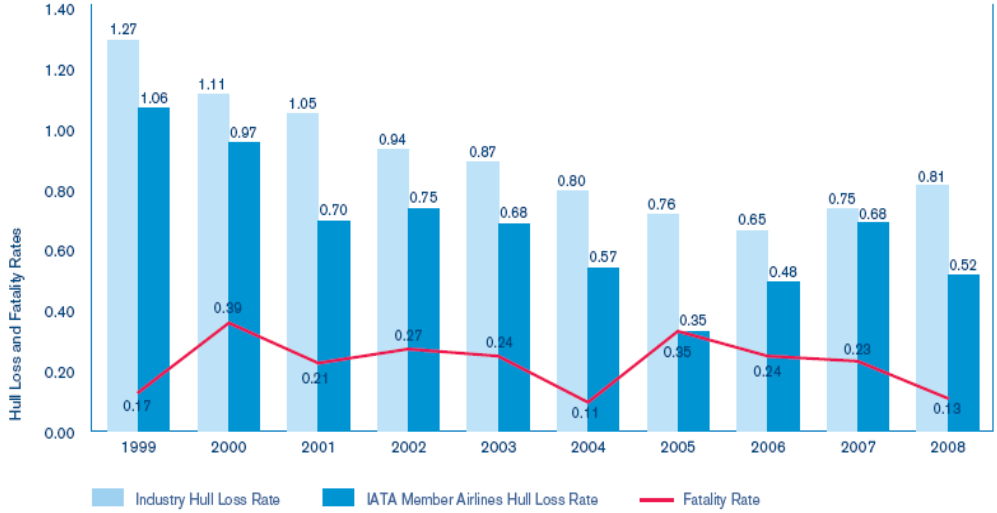
Prevention Strategy: IATA will continue to help its member airlines and partner with non-member airlines, States and other industry stakeholders to improve safety by addressing regional issues and by using well established tools such as the IATA Operational Safety

Audit (IOSA), ISAGO and SMS.

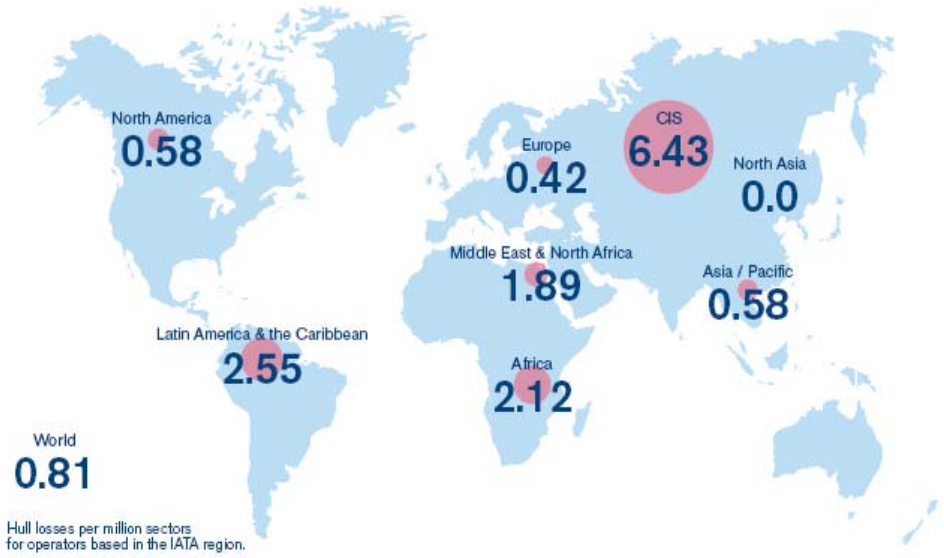
In 2009, IATA focuses on aiding its members through these difficult times, while maintaining safety as a priority. The Global Aviation Safety Roadmap was produced and developed in the interest of establishing a single level of aviation safety worldwide by the Industry Safety Strategy Group (ISSG). IATA plays a key role in this group and in the regional implementation of the roadmap. IATA's safety strategy is coordinated with the roadmap in order to reduce duplication and align efforts worldwide. Through this and other initiatives, IATA is continuing its work with airlines, regulatory authorities and other industry stakeholders to fortify existing safety programmes and introduce new initiatives, which will enhance operational safety on a global scale.

IATA Safety Report 2008

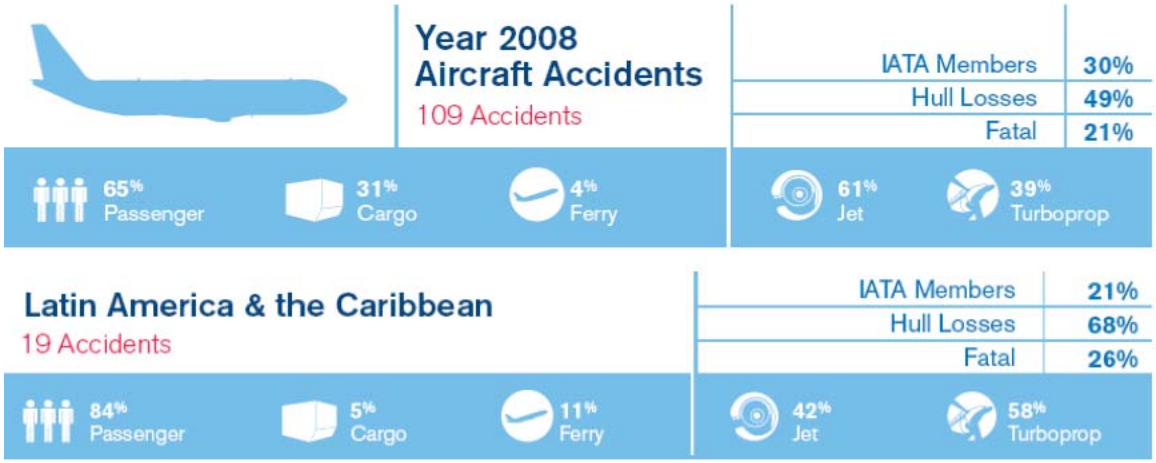
Global Performance



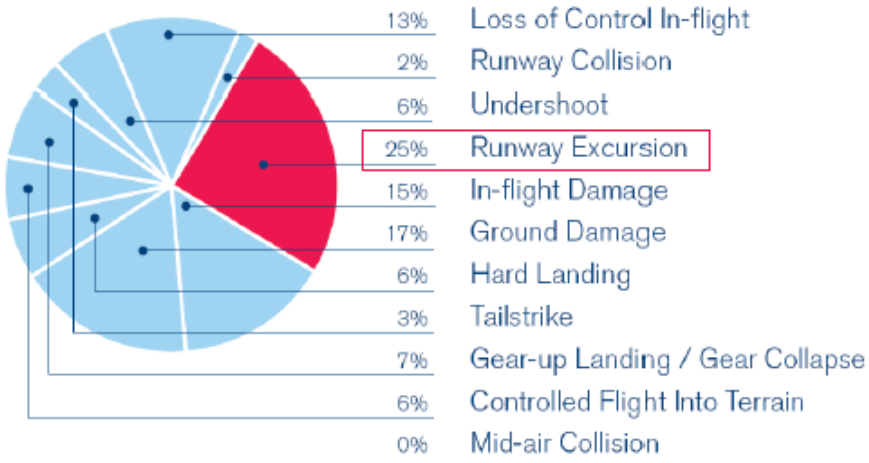
Regional Performance



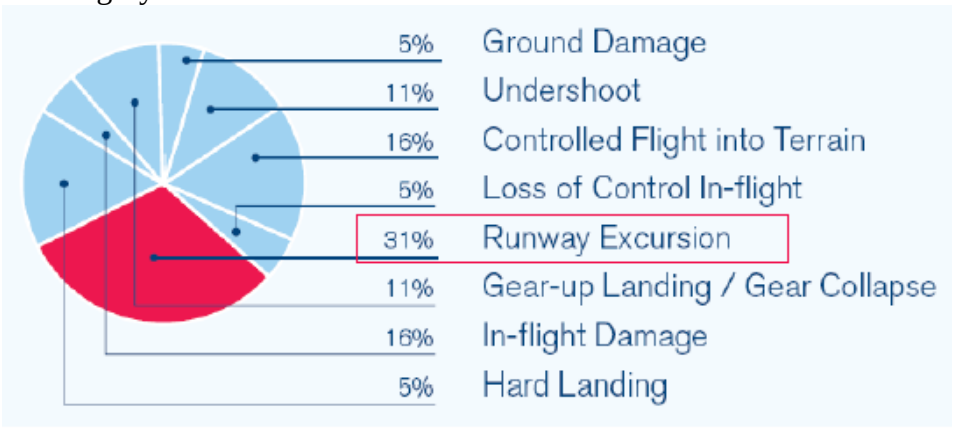
Safety Report Findings: LATAM and the World



Accidents per Category: World

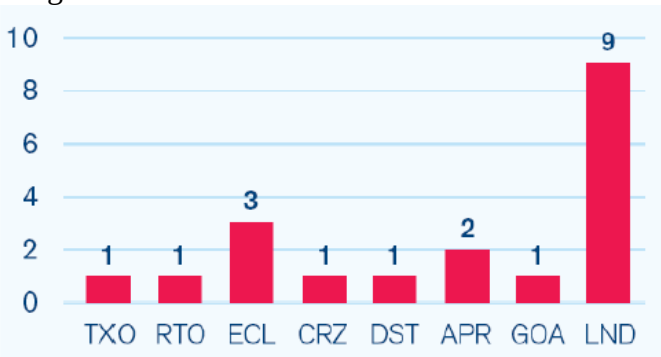


Accidents per Category: LATAM



Accidents per Phase of Flight: World

Accidents per Phase of Flight: LATAM



APPENDIX D

Will be distributed during the Meeting

RASG-PA/02 - NE09
APPENDIX D

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RASG-PA Annual Safety Report

Regional Aviation Safety Group-Panamerican (RASG-PA)