Safety Performance Indicators

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Who are we?

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What is GADM
IATA’s Global Aviation Data Management (GADM) program is a data management platform to improve aviation safety.

What does GADM do
The GADM portfolio integrates all sources of global operational data from various channels and provides the industry with comprehensive and cross-database analysis.
**GADM Databases and Analysis**

**Databases**
Data captured in GADM databases comprises accident & incident reports, ground damage occurrences and flight data from over 470 different industry participants.

- **FDX**: Database of commercial aviation accidents used to create the IATA Safety Report and to identify contributing factors in aviation accidents. More about FDX.
- **GDBB**: Database of FDA (Flight Data Analysis) and FOQA (Flight Operations Quality Assurance) type events that allows the user to identify flight safety issues. More about GDBB.
- **STEADES**: Database of airline incident reports, offering a secure environment for airlines to pool safety information for global benchmarking and analysis needs. More about STEADES.

**Safety Analysis**
GADM provides safety analyses from its databases to derive insights to members.

GADM data contributors have access to benchmark dashboard dashboards and query tools to proactively identify safety risks.
Cabin Safety Analysis

**STEADESTM In-depth analysis**
Cabin PED related incidents 2017

**STEADESTM In-depth analysis**
Unruly passenger incidents 2017

**STEADESTM In-depth analysis**
Door operation and inadvertent slide deployment 2015-2017
Workshop objectives

1. Understand the differences between Safety Performance Objectives, Indicators and targets
2. Describe the difference between leading and lagging Safety Performance Indicators
3. Understand the six steps for SPI development and implementation
4. Recognize the benefits of data sharing across industry
5. Share ideas and suggestions for IATA’s GADM cabin related SPIs and dashboard
The most recent IATA analysis related to injuries sustained in the cabin found that the percentage of cabin crew incapacitation events attributed to turbulence encounters was:

A. 2%
B. 5%
C. 10.5%
The same analysis identified that the leading cause of cabin crew injury on board was:

A. Contact with extreme heat
B. Slips, trips and falls
C. Exposure to glass or sharp objects
In the most recent analysis of inadvertent slide deployments, what percentage were attributed to cabin crew?

A. 38%
B. 69%
C. 75%
In the most recent analysis of PED related incidents in the cabin, how many of the devices which fell into seat mechanisms, became damaged as a result?

A 10, or 38%

B 31, or 69%

C 76, or 57%
Where are you now?
Group exercise

• In your groups, discuss the **SPIs you currently use** in cabin safety at your airline.

• **Agree on TWO SPIs** that you will **present to the room** and explain why and how you use them.
SPI review

• Are these SPIs useful?
• Are you confident that they are delivering the information you need?
• Are they relevant to all of us, or specific only to some?
• Which ones relate to safety events which have already happened?
• Which ones relate to situations or conditions which may affect safety?
• Is there anything missing?
Objectives, Indicators and Targets
The Operator shall have processes in the cabin operations organization for setting performance measures as a mean to monitor the safety performance of cabin operations and to validate the effectiveness of risk controls.

Setting performance measures that are consistent with safety objectives is an element of the Safety Assurance component of the SMS framework.

By setting performance measures, an operator is able to track and compare its operational performance against a target (i.e. the performance objective, typically expressed as a rate or number reduction) over a period of time (e.g. one year). Achievement of the target (or objective) would represent an improvement in the operational performance. The use of performance measures is an effective method to determine if desired safety outcomes are being achieved, and to focus attention on the performance of the organization in managing operational risks and maintaining compliance with relevant regulatory requirements. Performance measures in cabin operations might address, for example, inadvertent slide deployments, turbulence-related injuries in the cabin, fumes or fires, and rapid deplaning/emergency evacuation events.
Safety objectives, SPIs and SPTs

Objective
• Why are you monitoring this activity?

Indicator
• Data based
• How are you doing?

Target
• Data based
• What are you aiming for and by when?
Safety Performance Indicator (SPI)
A data-based parameter used for monitoring and assessing safety performance.

Safety Performance Target (SPT)
The planned or intended objective for safety performance indicator(s) over a given period of time.
Safety objectives, SPIs and SPTs

Safety objectives must be aligned to SPIs and SPTs to facilitate monitoring and verify achievement

• **Safety Objective:**
  [Airline] will minimize incidents of cabin smoke

• **Safety Performance Indicator/s:**
  1) 0.90 oven smoke incidents per 1,000 departures
  2) 1.3 reports of foreign objects in ovens per 1,000 departures

• **Safety Performance Target/s:**
  1) Reduce oven smoke incidents to 0.65 per 1,000 departures within 1 year
  2) Reduce number of foreign objects discovered in ovens to less than 1 per 1,000 departures
Six steps to SPI management
The six steps at a glance

1. Identify key safety concerns
2. Define lagging SPIs
3. Define leading SPIs
4. Manage results
5. Act on results
6. Evaluate and refine SPIs
What are your current areas of concern?
Identify key safety concerns

• In your groups, identify four current cabin safety risks and concerns which you might want to measure through SPIs.
• Identify and state a safety objective for each.
• Prioritize them and present to the rest of the group.
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Lagging SPIs
Lagging SPIs – Concept

Monitor safety events that have already taken place

High severity  
Low probability

- Accidents
- Serious incidents

Low severity  
High probability

- Safety events that did not manifest in serious incidents or accidents
Lagging SPIs - considerations

Who will use the SPI as source of information?

How will the SPI be used to support decisions?

Lagging SPIs should be action oriented, e.g. “Reduce oven smoke incidents due to foreign objects”
Lagging SPIs – example 1

High severity/Low probability negative outcomes

Number of uncontained oven fires attributed to foreign objects being left in the oven, per 1,000 departures

Low frequency of these events at airline level – meaning that aggregation might be needed for meaningful analyses

• At industry level
• At regional level
• At national level
Lagging SPIs – example 2

Low severity/high probability negative outcomes

Number of oven smoke incidents caused by foreign objects per 1,000 departures

Monitor

• Specific safety concerns
• Effectiveness of safety interventions (e.g. crew checks before switching ovens on, reminders to catering staff etc)
Leading SPIs – Concept

Monitor information on prevailing situations and/or conditions that may affect safety performance

<table>
<thead>
<tr>
<th>They may be Negative</th>
<th>Or Positive</th>
</tr>
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<tbody>
<tr>
<td>• Monitor conditions with potential to contribute to a negative outcome</td>
<td>• Monitor conditions which contribute to safety</td>
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</tbody>
</table>
Leading SPIs - considerations

Who will use the SPI as source of information?

How will the SPI be used to support decisions?

Leading SPIs should be **activity oriented** e.g. “safety briefing completion, seat belt checks etc.”
Leading SPIs – Examples

Negative leading SPIs

Number of reports received relating to crew discovery of foreign objects in the ovens, per 1,000 departures.

Positive leading SPIs

Percentage of compliance with oven clean checks, per 1,000 departures
Targets

• What is realistic?
• Can it be clearly measured?
• Over what timescale?
• What is the acceptable level of risk?
Gathering data
What data might be needed?

- Number of flights, departures, sectors?
- Number of passengers carried?
- Size of fleet?
- Safety reports?
- Training records?
- Specific aircraft tail number/registration?
- Other airline accidents/incidents?
Create a set of SPIs

• In your groups, create a set of SPIs relating to your four identified safety risks / concerns and respective objectives.
  – State your Safety Performance Indicator(s) and target(s) in each case.
  – Include examples of lagging and leading SPIs.
  – Describe from where you will obtain your data.
Managing results
Managing results

Gather data
- From where?
- How often?
- In what format?

Analyze data
- How often?
- By whom?

Report results
- To whom?
- How often?
- In what format?
Reporting results - Examples
Acting on results
Acting on results

Lagging SPIs

- Targets not achieved
- Identify reasons
- Do not wait for poor results

Leading SPIs

- Indicate good result, but lagging SPI does not
- Reconsider leading SPI
- There may be a disconnect between the two
Evaluate and refine
Evaluating and refining SPIs and SPTs

Check
- Ongoing relevance to operation
- Ongoing reliability of data
- Are they precise enough to identify and recognize changes?

Update
- To address changing conditions such as new services, product, procedures etc.

Delete
- When SPIs are no longer relevant
- When improvements result in stable conditions and performance
Summary quiz
Lagging Safety performance indicators relate to safety incidents or accidents which have already happened? Is this;

A True?

B False?
How many Safety performance Indicators should be assigned to each safety objective.

A  Only one

B  Always two or more

C  As many as are useful to help support the objective
The very first step in SPI management is:

A. Define leading SPIs
B. Evaluate and refine
C. Identify key safety concerns
Leading safety performance indicators must always relate to positive conditions. Is this:

A  True?

B  False?
Where next?

IATA’s Safety Performance Indicators Training course (Classroom, 3 days)
https://www.iata.org/training/courses/Pages/safety-performance-indicators-tals50.aspx

IATA Safety Management Systems (SMS) for Airlines (Classroom, 5 days)
https://www.iata.org/training/courses/Pages/sms-airlines-tals01.aspx

IATA Integrated Risk Management Diploma
https://www.iata.org/training/diploma_program/Pages/integrated-risk-management-(irm)-diploma.aspx
Thank you

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