Voluntary Information Sharing
Partnership for Safety

Sherry S. Borener, Ph.D.
PHMSA Chief Data Officer

AGENDA: TOPICS FOR DISCUSSION TODAY

Overview of the role of information sharing in safety

SMS, Information sharing, and data sharing

- How does information sharing relate to SMS?
- the value of non-punitive reporting programs in improving safety – the aviation safety experience

Advantages and disadvantages of information sharing programs.

- Improved Problem Discovery
- Lack of specifics on why events occur

What is a Data Sharing versus an Information Sharing

- How Much Data is Enough?

How do you protect your data while sharing your information?

- Legal Frameworks for Information and Data Sharing

Conclusions

- How are we going to do this?

SMS - INFORMATION SHARING, AND DATA SHARING

How do non-punitive reporting programs improve safety?

How does information sharing relate to SMS?

PLAN DO CHECK ACT: API 1173 – SMS

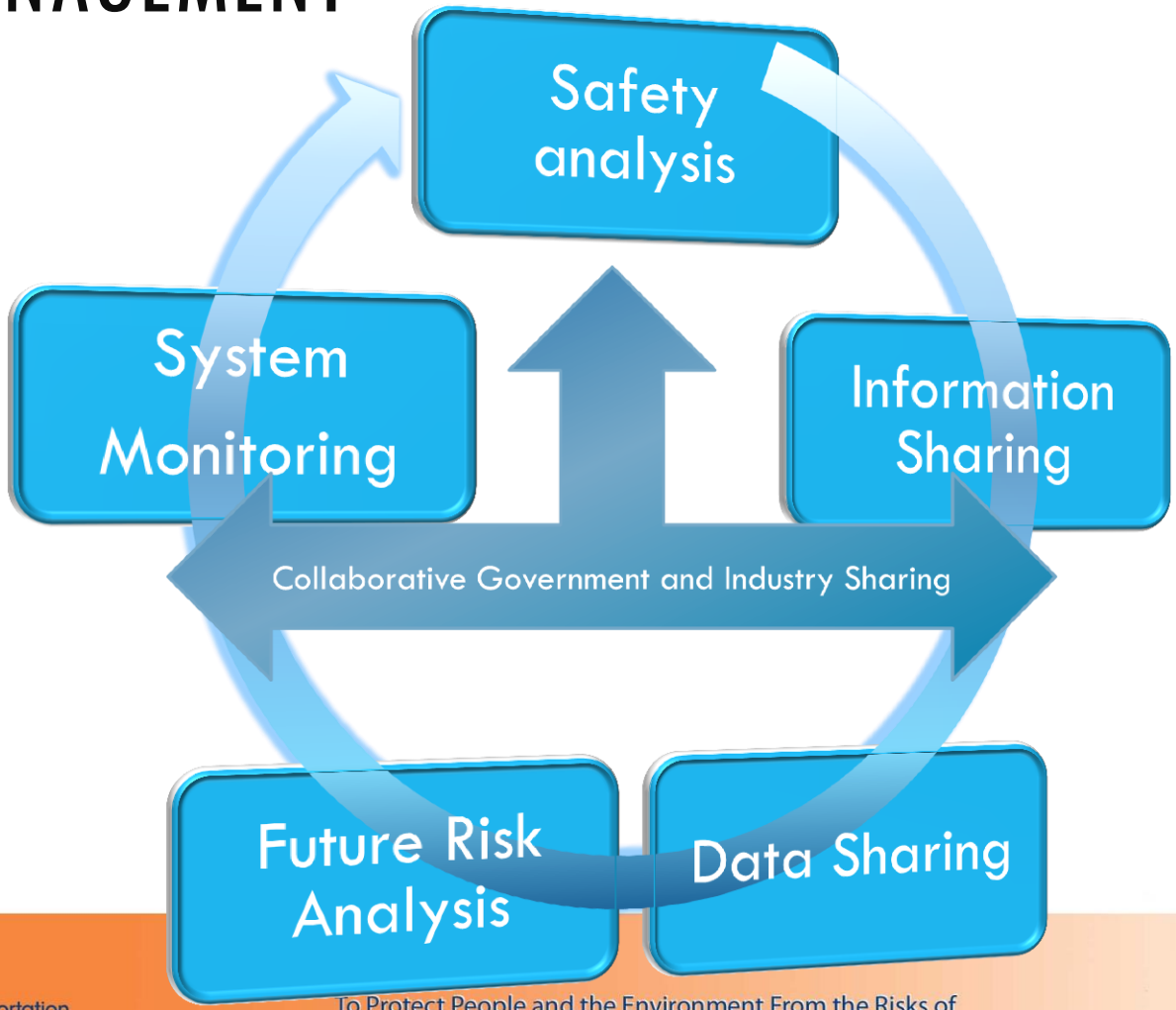
In 2012, following a 2010 oil pipeline accident in Marshall, Michigan, NTSB recommended that API develop a pipeline Safety Management Standard (SMS).

The general intent behind a SMS is to 'provide a systematic way to identify hazards and control risks while maintaining assurance that these risk controls are effective,' and they are meant to reflect a 'businesslike approach to safety.'

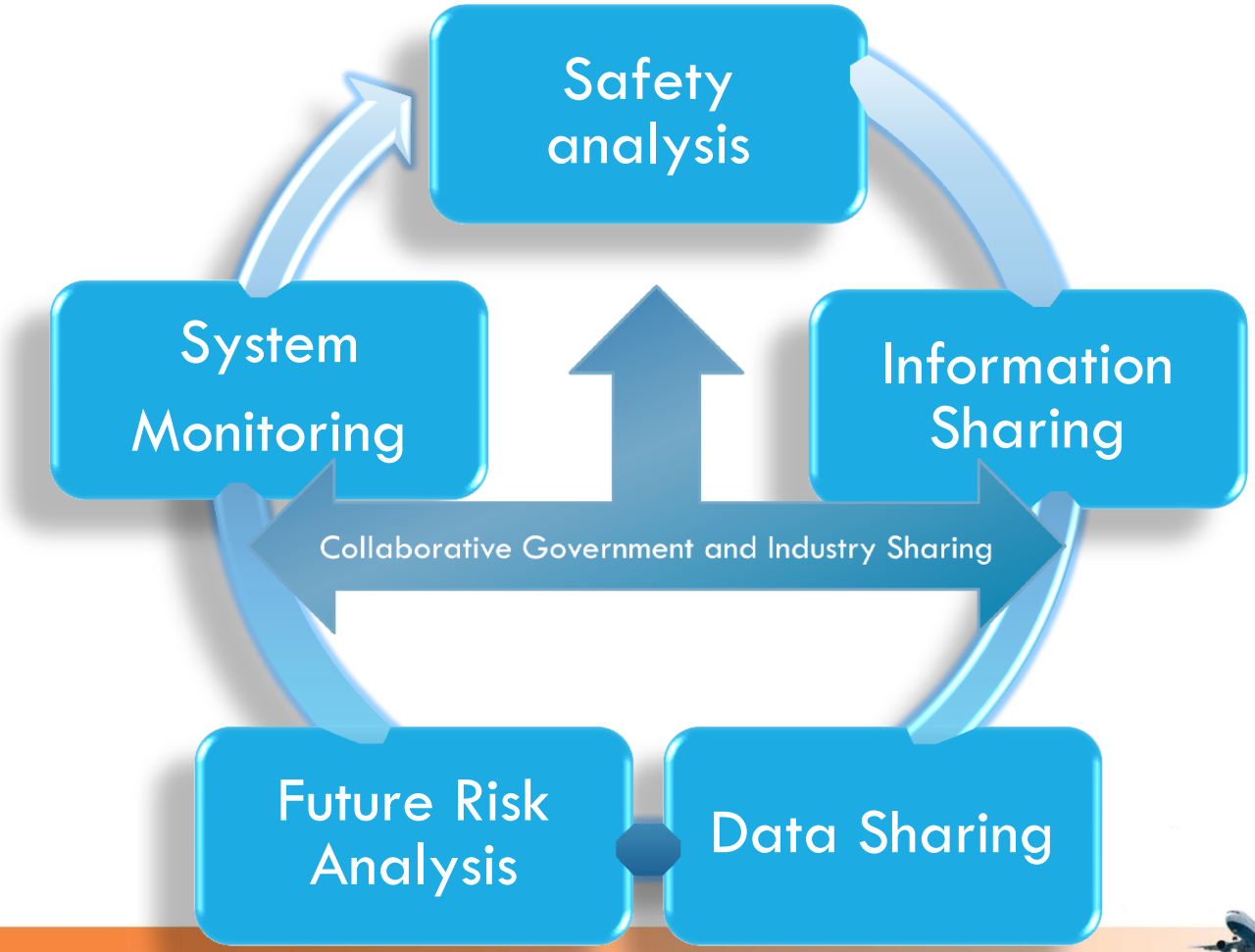
WHAT IS SMS AND HOW DOES IT RELATE TO INFORMATION SHARING?

REACTIVE –> PROACTIVE -> PREDICTIVE

INFORMATION SHARING IS PART OF A CYCLE FOR SMS AND ENTERPRISE RISK MANAGEMENT



INITIALLY, AN SMS ACCOMPLISHES RISK MANAGEMENT USING HISTORICAL DATA.



IT CAN TAKE A LONG TIME…TO IMPLEMENT A FULL SMS PROGRAM

Voluntary Information Reporting Began in 1975 under the NASA ASRS program.

FAA Final Rule on SMS was published on January 8, 2015, providing protections for information sharing under the SMS program.

INFORMATION SHARING

- Advantages and disadvantages of information sharing programs.
  - Improved Problem Discovery
  - Sometimes there is insufficient information to understand causal factors.
- HW Heinrich Industrial Accident Prevention (1931) The Safety Triangle
- Near-Miss Reporting

INFORMATION SHARING

What is the difference between Data Sharing and Information Sharing?

What are the Pros and Cons of each?

Information sharing may be easier to achieve, but will provide less granularity on the causes of error.

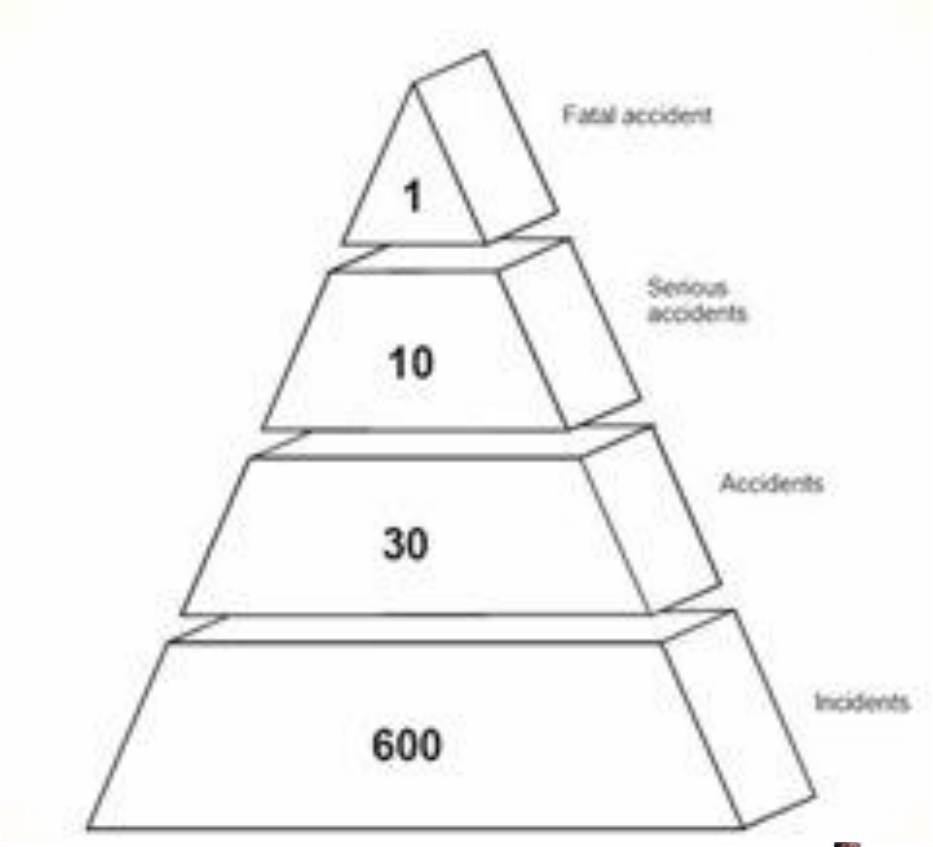
Today, in a culture of safety, when an adverse event occurs, the focus is on *what went wrong*, **not** *who caused the problem.*

- **Near-Miss** Reporting
- Identifying **Hazards**
- Understanding what went **wrong**
- *Understanding what went **right***

WHY NEAR-MISS REPORTING? THE SAFETY PYRAMID

1969 Frank Bird investigated insurance data to support the Henrich Triangle (1931).

For every reported major injury (resulting in fatality, disability, lost time or medical treatment), there were 9.8 reported minor injuries (requiring only first aid). This relationship between fatalities, injuries, accidents and incidents can be extended to near-misses and unsafe behavior.



THE SAFETY TRIANGLE INDUSTRY EXPERIENCE

This 2003 Conoco Phillips Marine study provided the data in this version of the pyramid.

NEAR-MISS REPORTING:

Near Miss Reporting:

- If you **observe** a near-miss, **report** it. Reporting is easy, confidential, and essential to preventing similar events from recurring. Safety begins with you! *(BSEE)*

- The primary mission of the FAA is to promote aviation safety. To further this mission, the FAA instituted a voluntary ASRP on April 30, 1975, designed to encourage the identification and reporting of deficiencies and discrepancies in the system. *(FAA)*

CRITICAL ELEMENTS OF A SUCCESSFUL VOLUNTARY INFORMATION SHARING PROGRAM

1. ESTABLISH TRUST AND BUILD CONFIDENCE.
2. ASSOCIATE WITH EVERYONE INVOLVED IN THE PROCESS (LABOR, MANAGEMENT AND GOVERNMENT).
3. FOCUS ON THE SAFETY MISSION – ESTABLISH A NON-PUNITIVE REPORTING ENVIRONMENT.
4. ESTABLISH INFORMATION AND DATA GOVERNANCE – ORGANIZATIONAL CONTROLS THAT DEFINE THE WAY THAT DATA WILL BE EXCHANGED, HANDLED AND USED.
5. MAKE THE INFORMATION EXCHANGE COLLABORATIVE AND AS OPEN AS IS REASONABLY POSSIBLE.
6. ACT ON RESULTS ! DEMONSTRATE THE VALUE OF INFORMATION SHARING.

EXISTING INFORMATION SHARING PROGRAMS

Some existing programs and positive impacts:

- Department of Interior Bureau of Safety and Environmental Enforcement ***SafeOCS***
- Aviation Safety – Commercial Aviation Safety Team (CAST)
  - Aviation Safety Analysis and Information Sharing System (ASIAS)

InfoShare

- **Plenary Session**
  - 900-1000 registered participants
- **Domain Specific Tracks**
  - Flight OPS, Maintenance, Dispatch, Cabin, Ground Ops
- **Best Practices, Leadership sessions**
  - Directors of Operations/Chief Pilots/Directors of Safety
  - Directors of Maintenance/Chief Inspectors/Directors of Safety
- **Over a 100 safety topics and best practices**
- **Informs CAST & ASIAS of safety issues**
  - ASIAS leverages InfoShare to identify systemic risks
  - CAST leverages InfoShare to inform its safety risk portfolio

SafeOCS

BUREAU OF SAFETY AND ENVIRONMENTAL ENFORCEMENT (BSEE)

This safety program collects and analyzes reports of equipment failure and near-miss events on the OCS. Currently, SafeOCS has two components:

- Mandatory reporting of BOP equipment failure data, as required by the BSEE Well Control Rule 30 CFR 250.730 (c).
- Voluntary reporting of near-miss incidents occurring on the OCS.

Whether you are an employee, operator, or employer in the offshore oil and gas industry, your participation is vital.

Help us keep the OCS safe! If you **observe** a near-miss, **report** it. Reporting is easy, confidential, and essential to preventing similar events from recurring. Safety begins with you!

https://near-miss.bts.gov

DATA SHARING: DETAIL AND BIG DATA

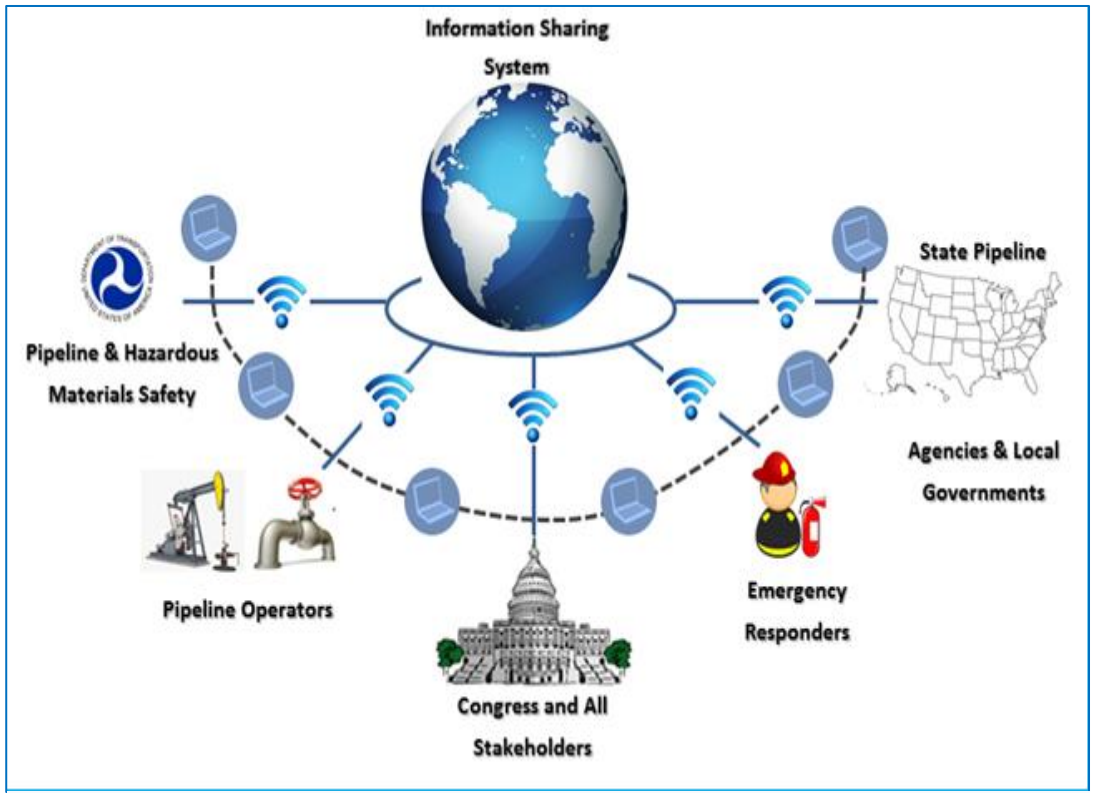
What is a Data Sharing versus an Information Sharing

- How much data is enough?
- How do we protect that data?
- Who has access and to what?

What is the difference between Data Sharing and Information Sharing?

What are the Pros and Cons of each?

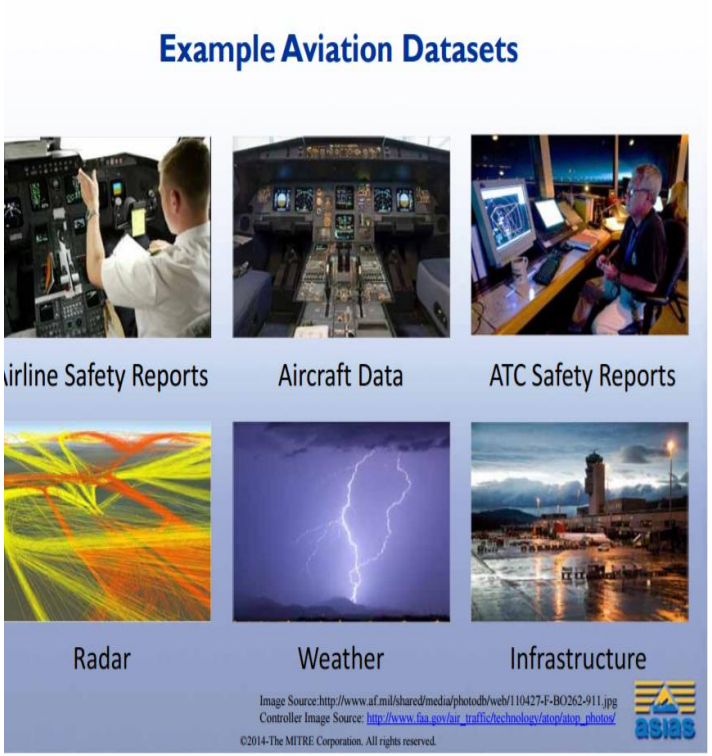
Data sharing improves fidelity; study results can be implemented in specific terms.

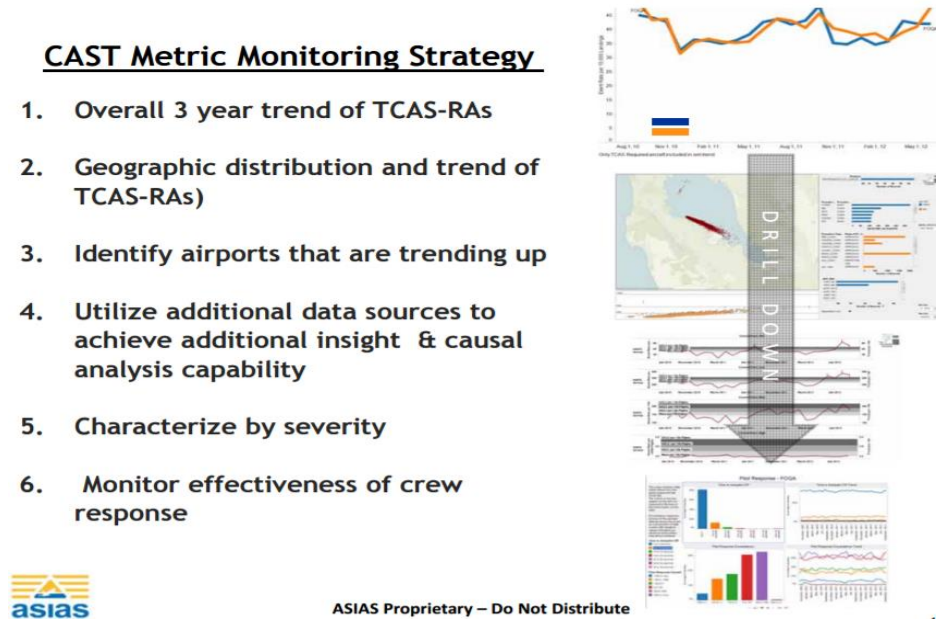


- *Big Data,* ***Predictive Analytics***
- *Real-time* ***Risk*** *Assessment Calculation*
- *Large data base management*
- *Coordination of client applications*
- *Protection of proprietary data*

AN SMS ALSO ACCOMPLISHES RISK ANALYSIS AT THE *CONSTITUENT ELEMENT* LEVEL OF A SYSTEM, WHERE HAZARDS ARE IDENTIFIED.

DATA AND INFORMATION SHARING





IN-LINE-INSPECTION DATA IS *CONSTITUENT* DATA ON PIPELINE BEHAVIOR

- Standardized Test Facilities and Benchmarking
- Developing industry-wide analytical support

PRCI Completes Development of a ILI Performance Test Loop for Liquid Coupled Technologies

http://prci.org/index.php/site/news_single/prci_completes_development_of_a_ili_performance_test_loop_for_liquid_couple/

SOME EXAMPLES OF DATA SHARING PROGRAMS

Federal Aviation Administration – Commercial Aviation Safety Team

Implemented Information Sharing (ASRS, ASAP, ATSAP)

Also Implemented a detailed data sharing program to detect anomalies system-wide.

WHAT IS ASIAS?
AVIATION SYSTEM INFORMATION ANALYSIS AND SHARING

A collaborative Government and Industry initiative on data sharing and analysis to proactively discover safety concerns before accidents or incidents occur, leading to timely mitigation and prevention.

ASIAS PARTICIPANTS

Airlines

AirTran Airways
Alaska Airlines
American Airlines
American Eagle
Atlantic Southeast Airlines
Chautauqua Airlines
CitationAir
Comair
CommutAir
Compass Airlines
Continental Airlines
Delta Airlines
Empire Airlines
ExpressJet
Frontier Airlines
GoJet Airlines
Gulfstream International
JetBlue Airways
Miami Air International
Piedmont Airlines
Pinnacle Airlines
Republic Airlines
Shuttle America
SkyWest Airlines
Southwest Airlines
Sun Country Airlines
Trans States Airlines
United Airlines
United Parcel Service
US Airways

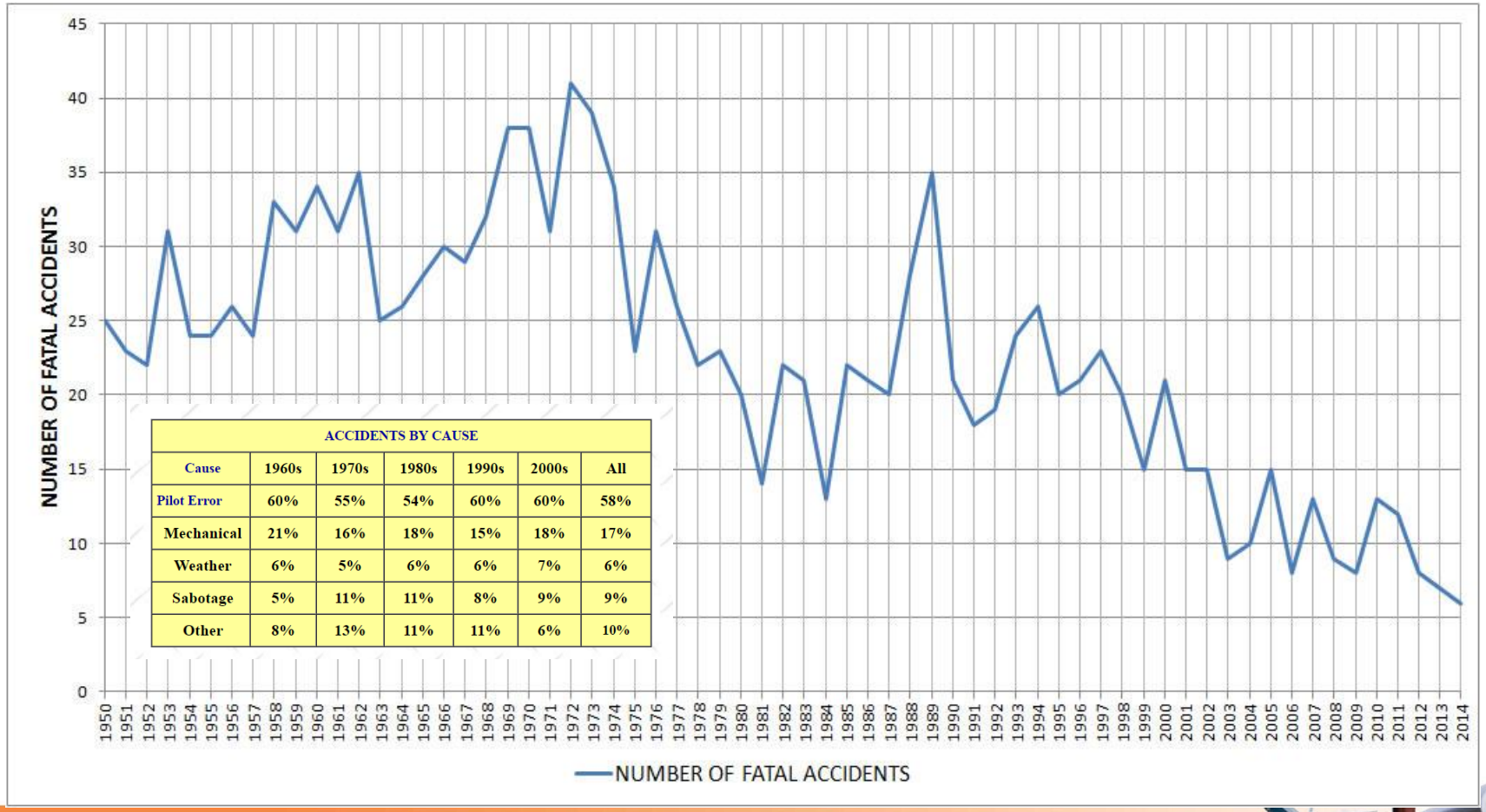
Government

FAA
NASA

Industry

AIA
ALPA
ATA
Boeing
NATCA

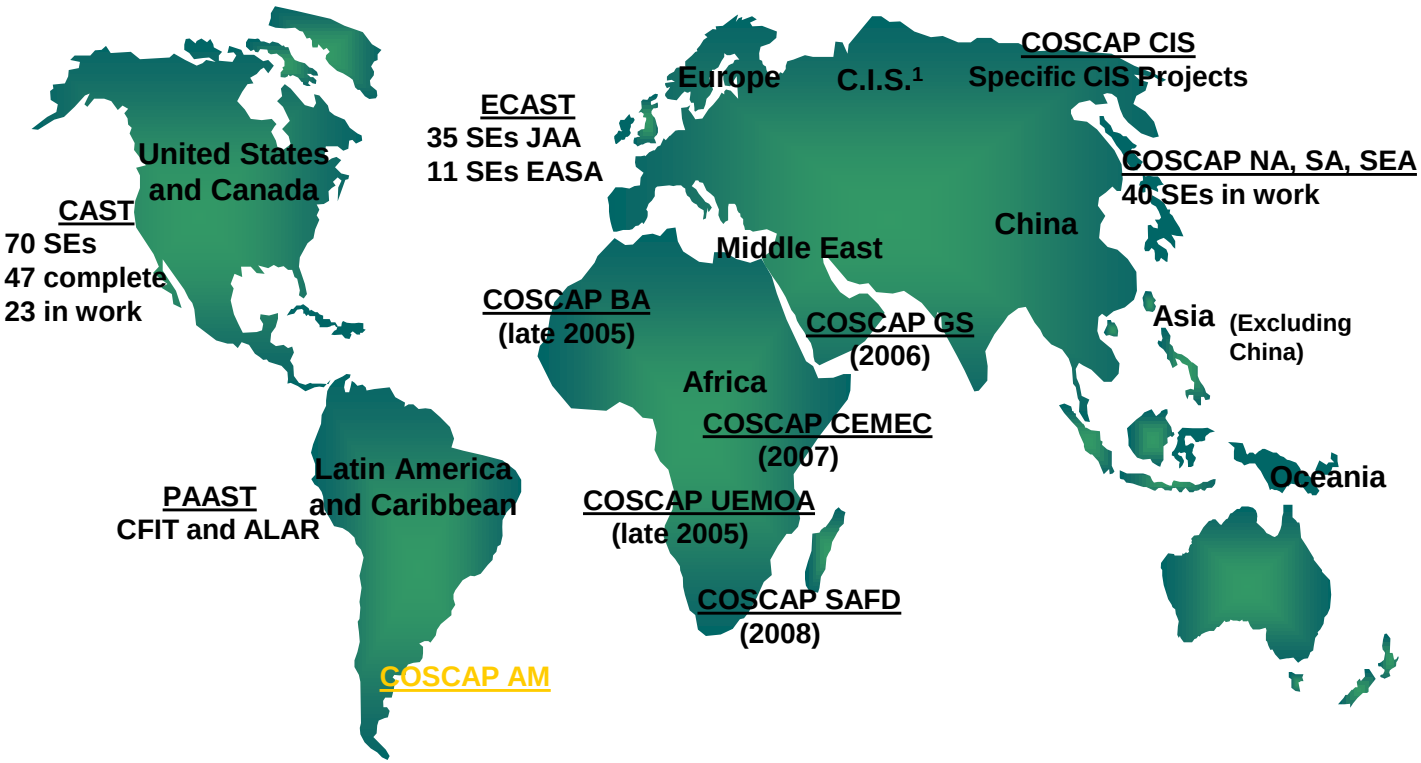
NUMBER OF FATAL AIRCRAFT ACCIDENTS



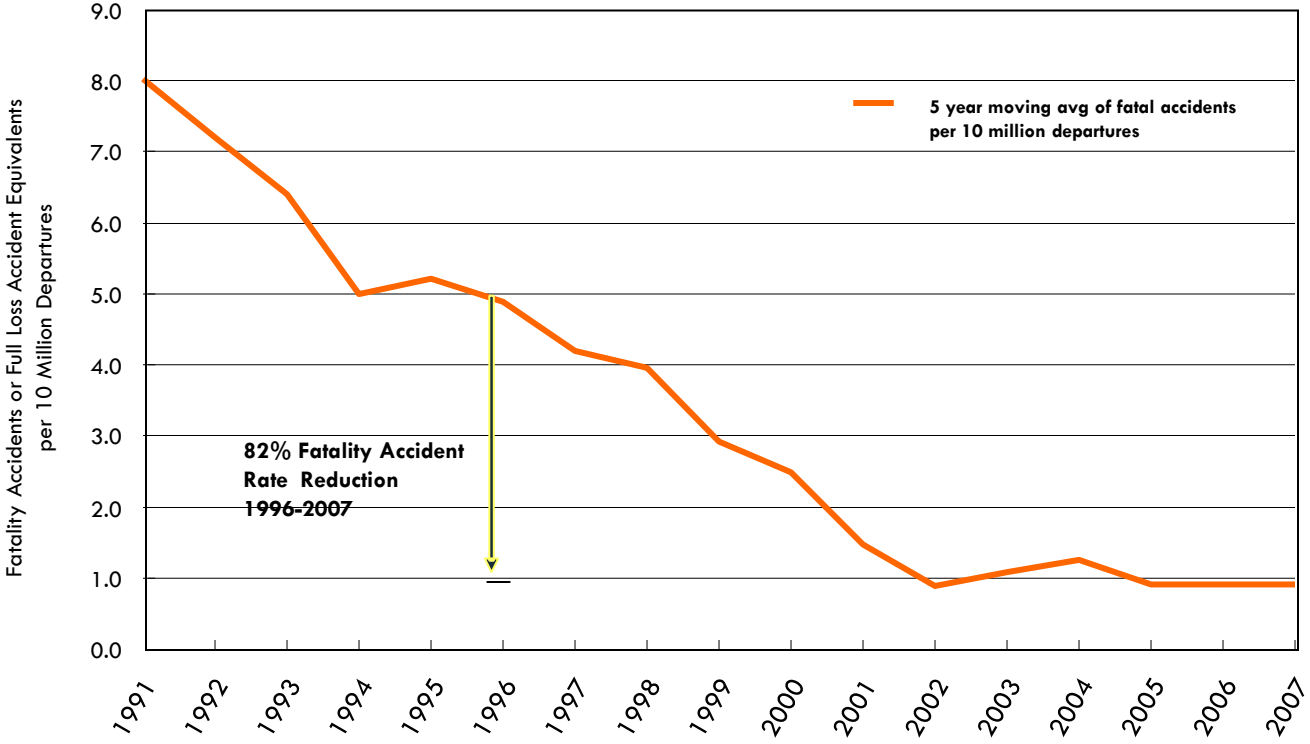
ACCIDENTS BY CAUSE

Cause	1960s	1970s	1980s	1990s	2000s	All
Pilot Error	60%	55%	54%	60%	60%	58%
Mechanical	21%	16%	18%	15%	18%	17%
Weather	6%	5%	6%	6%	7%	6%
Sabotage	5%	11%	11%	8%	9%	9%
Other	8%	13%	11%	11%	6%	10%

INTERNATIONAL PERSPECTIVE
CAST SAFETY ENHANCEMENTS



Fatal Accident Rate and Full Airplane Loss Equivalents Rate for Part 121 Operations (5 year moving average)



LEGAL AUTHORITY

How does the government support the implementation of Voluntary Information Sharing?

Under the umbrella of SMS?

Independently of SMS?

LEGAL AUTHORITY

FAA: 14 CFR Part 193

- Protects data from the Freedom of Information Act
- Protection of Voluntarily Supplied Data
- FAA Orders and Guidance further protect FOQA data

Bureau of Safety and Environmental Enforcement BSEE: 30 CFR 250.730(c) (81 FR 25887, April 29, 2016

- Mandatory reporting of BOP equipment failure data, as required by the BSEE Well Control Rule 30 CFR 250.730 (c).
- Voluntary reporting of near-miss incidents occurring on the OC
- Data Collected by the Bureau of Transportation Statistics

FOR EXAMPLE: FAA SMS RULE PUBLICATION

Information Sharing – Voluntary Information Reporting - Began in 1975.

Final rule published on January 8, 2015 requiring operators authorized to conduct operations under part 121 to develop and implement an SMS

Requires certificate holders under part 119 authorized to conduct operations in accordance with the requirements of part 121 to have an SMS by March 9, 2018

- Certificate holders were required to submit an implementation plan by September 9, 2015
- The implementation plan were required to be approved no later than March 9, 2016

14 CFR PART 5 OUTLINE

Subpart A - General

- Objective: Establish applicability and provide context

Subpart B - Safety Policy

- Objective: Establish objectives, commitment, and accountabilities

Subpart C - Safety Risk Management

- Objective: Identify hazards and analyze, assess, and control risk

Subpart D - Safety Assurance

- Objective: Monitor, measure, and evaluate safety performance and effectiveness of risk controls and take corrective actions

Subpart E - Safety Promotion

- Objective: Competent workforce and communication regarding safety

Subpart F - SMS Documentation and Recordkeeping

- Objective: Documented SMS and records of SMS outputs

CONCLUSIONS

What Next?

VOLUNTARY INFORMATION SHARING

Opportunity for partnerships among industry and with government to improve safety

Near-miss reporting helps to prevent injuries of all types.

More detailed information sharing identifies lower-frequency but potentially high consequence events

Where should an information repository should exist? (Government versus Private?)

Information sharing is also an opportunity to improve how in-line inspection data is shared between operators and service providers and improving global knowledge of the capabilities and limitations of ILI. (this also may help drive R&D priorities)

How can the government facilitate information sharing without revealing proprietary data? What can we do now? How might we build on that trust in the future?

What are the legal options to enable this activity?