



# Ground Accident Prevention The Foundation's Answer

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# GAP Purpose

**GAP is a project to reduce accidents and incidents that:**

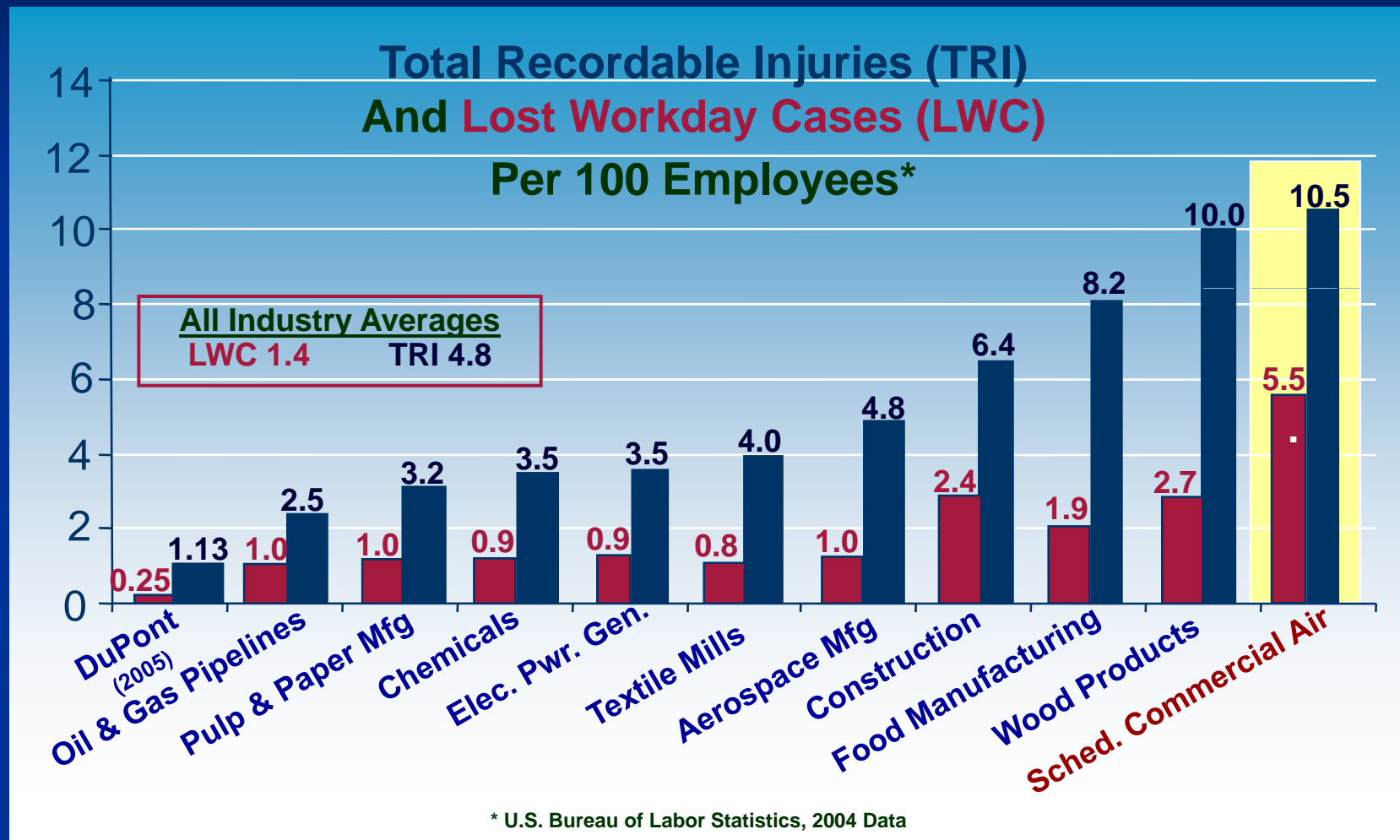
- **Occur during ground operations on airport aprons (including adjacent taxiways),**
- **Occur during the movement of aircraft in and out of hangars,**
- **Directly affect airport operations and/or result in injuries or damage to serviceable aircraft, facilities or ground-support equipment.**

# Why Ramp Safety?

**Safety -**

“Freedom from danger, risk or injury”

# State Of Commercial Aviation



# Where Airline Injuries Occur



# Impacts

(Estimated industry average rates)  
Per 1,000 Departures

## Globally/Year

- |                               |     |         |
|-------------------------------|-----|---------|
| ➤ Ground Accidents/Incidents: | 1.0 | 27,000  |
| ➤ Injuries (incl. Deaths):    | 9.0 | 243,000 |

## Operational Impacts

- Employee/asset productivity and effectiveness (People, aircraft, equipment availability)
- Service quality and operating efficiency
- Cost and schedule risks
- Customer satisfaction and brand management

## Financial Impacts (Annual Costs)

- |                               |         |
|-------------------------------|---------|
| ➤ Ground accidents/incidents: | \$4.2   |
| ➤ Injuries:                   | \$5.8B  |
| ➤ Total:                      | \$10.0B |

# Airline Ground Damage Cost Model

- Models Approximate Costs
  - Direct Costs
  - Indirect Costs
- Applicable to Single Operator, World-Wide Fleet, or Airport
- Available at [www.flightsafety.org](http://www.flightsafety.org)

# GAP Cost Insights

➤ **Medium Asian Airline  
(50 Aircraft)**

**Mix of 15% narrow –  
85% wide body**

- **Ground Incident  
\$10,303,626**
- **Personal Injury  
\$10,719,828**

**Total  
\$21,023,454**

➤ **Large European Airline  
(179 Aircraft)**

**Mix of 80% narrow –  
20% wide body**

- **Ground Incident  
\$36,001,333**
- **Personal Injury  
\$35,556,888**

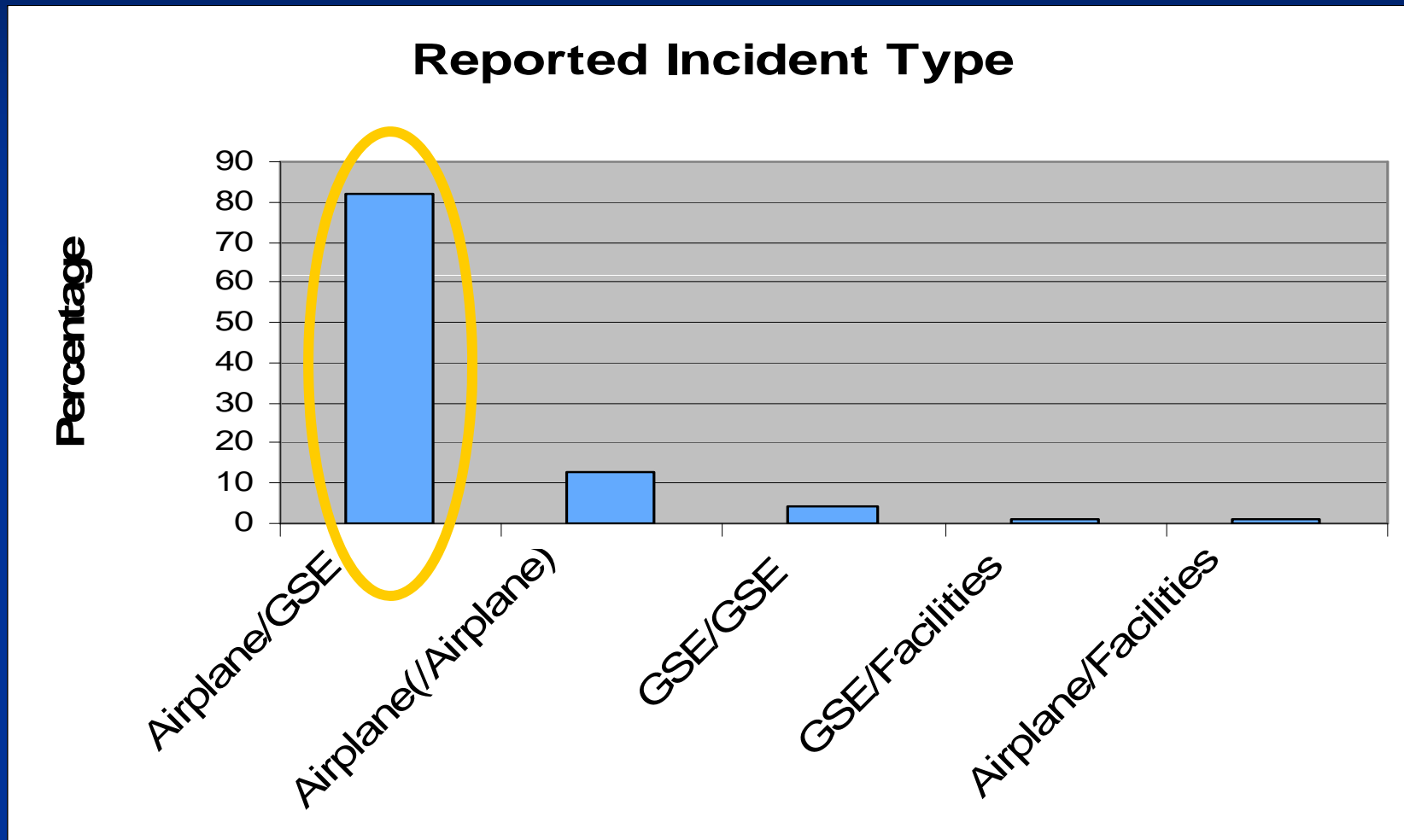
**Total  
\$71,568,221**



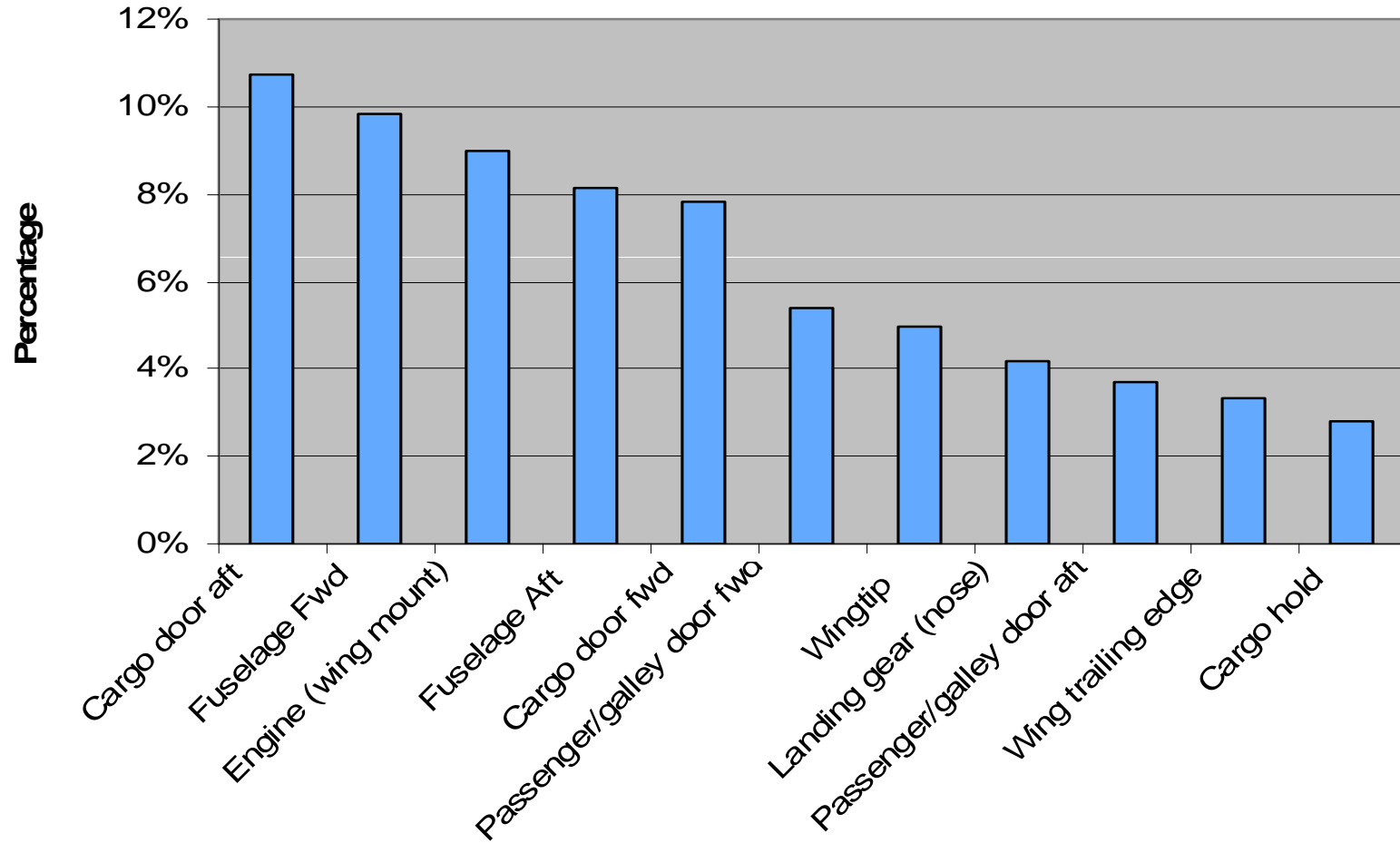
# Data Base - Current Limitations

- Data collection ongoing
- Injury costs based on USA Bureau of Labor Statistics
- Over representation of Catering Data
- Under-representation of:
  - US airlines
  - Ground service providers

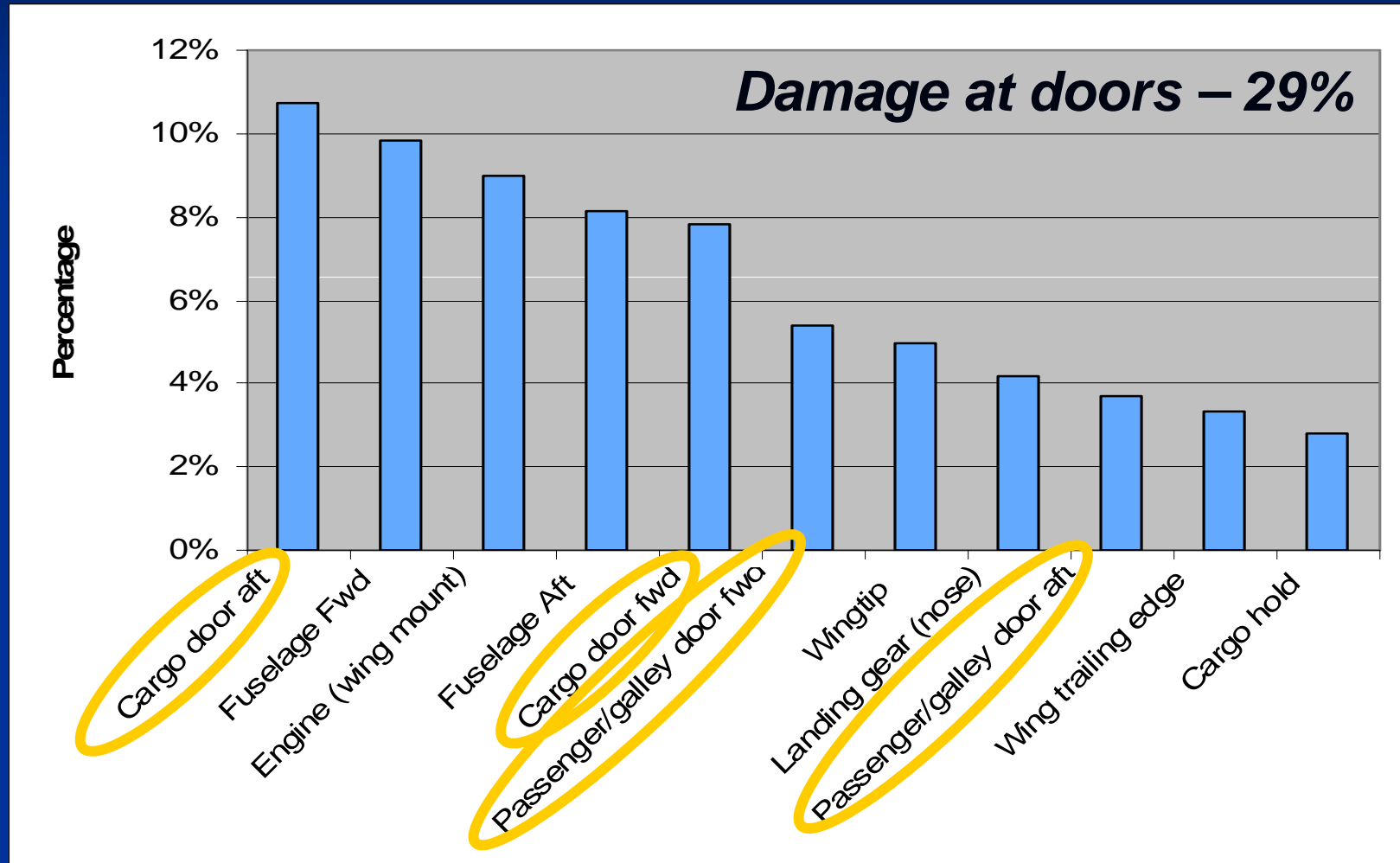
# GAP Data Analysis – Incident Type



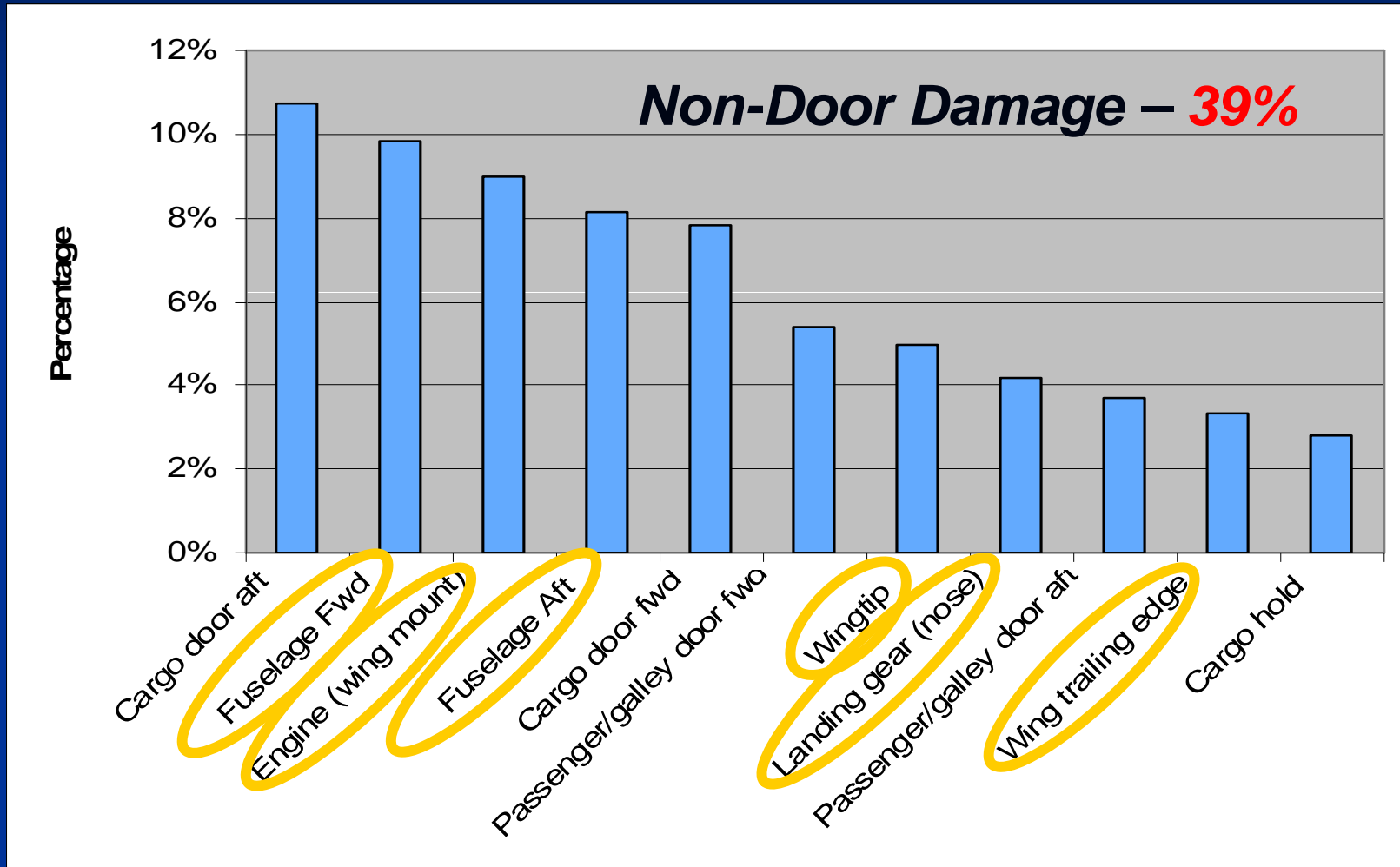
# Aircraft Damage Location



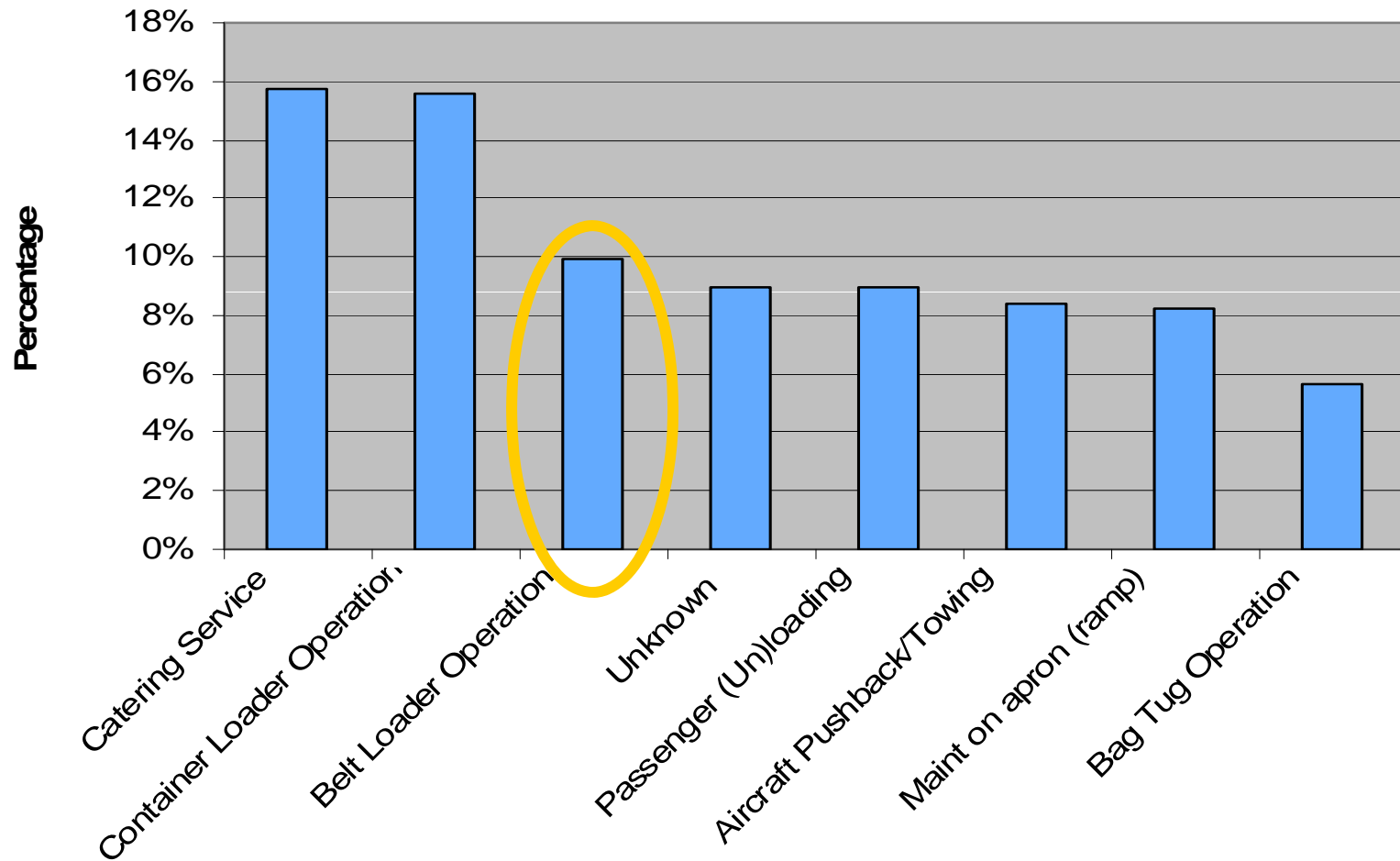
# Aircraft Damage - Doors



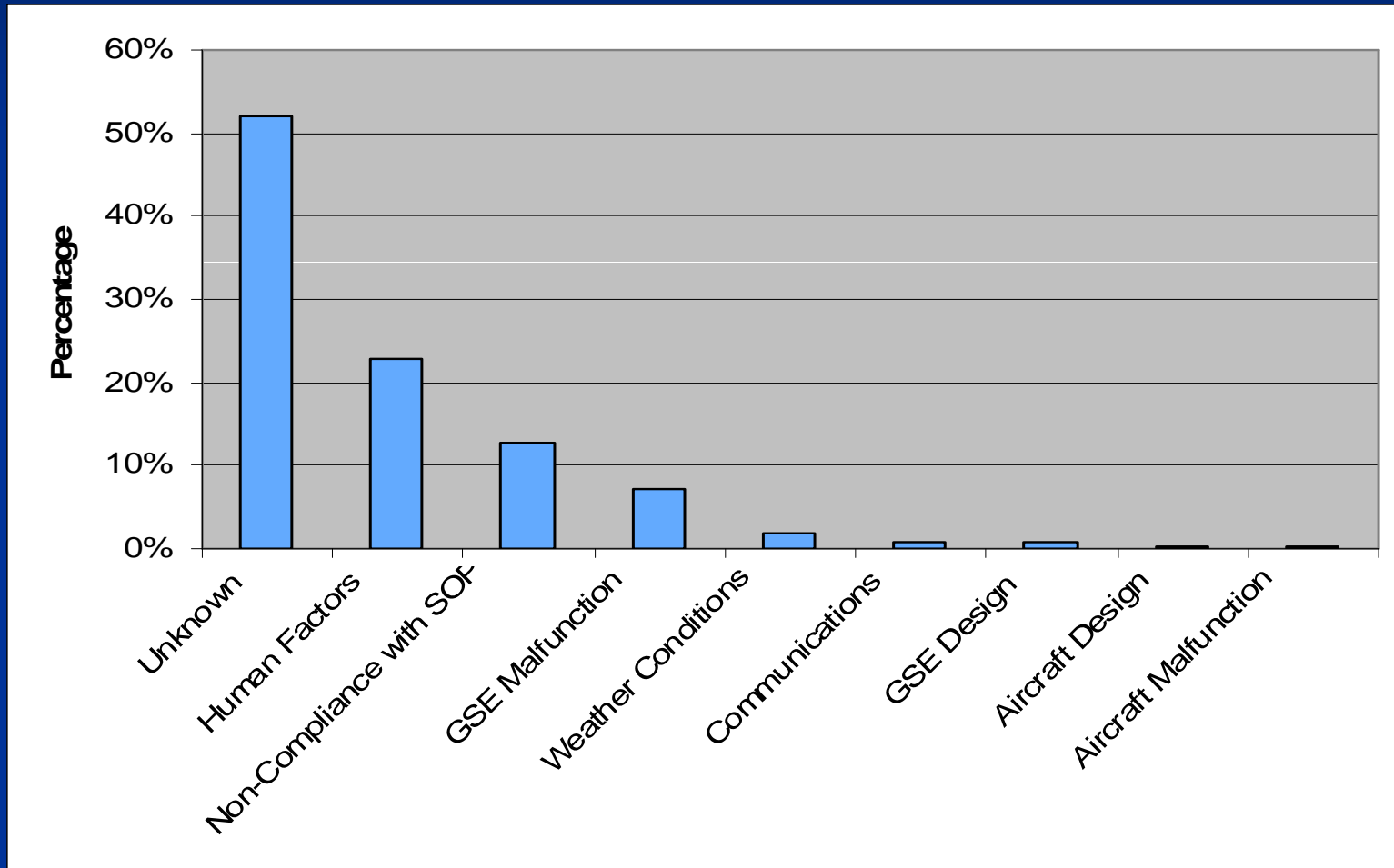
# Aircraft Damage – Driving Around?



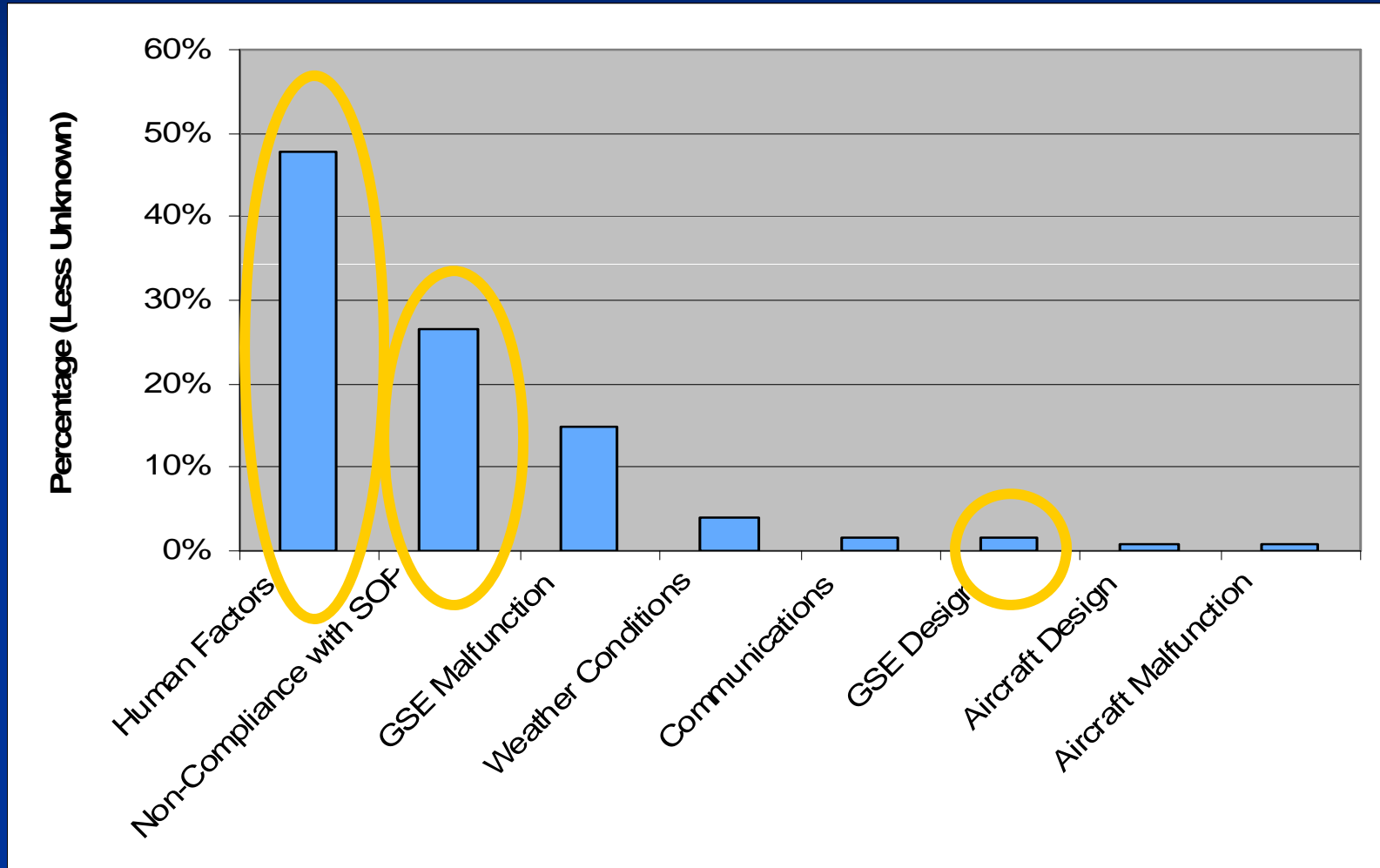
# Incidents by Phase of Operation



# Baggage Operations – Contributing Factors

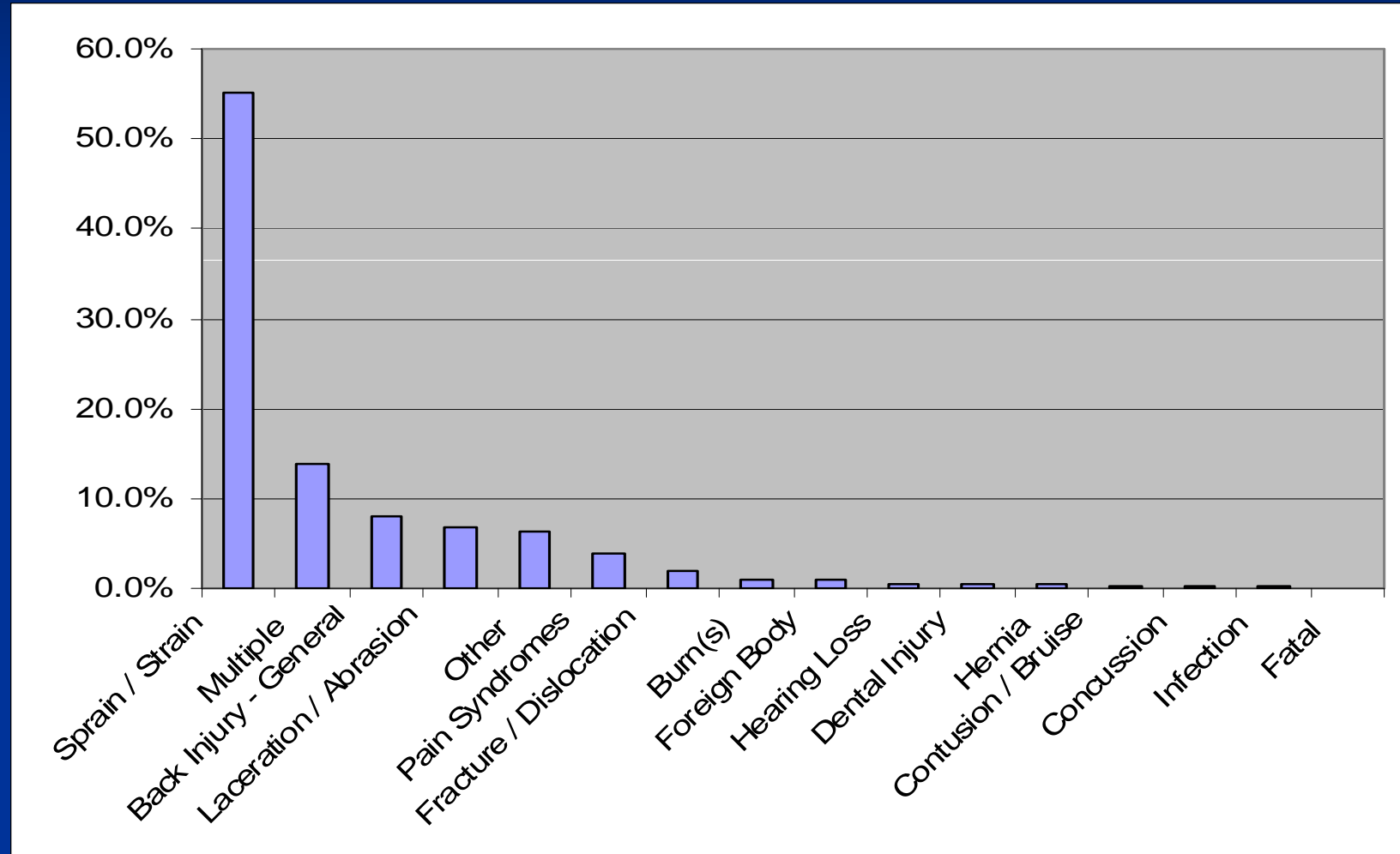


# Baggage Operations – Contributing Factors with “Unknown” Removed





# Baggage Operations - Injuries by Type



# Assumptions - Personal Injuries

## ➤ Costs include

- **Medical: emergency and follow-on**
- **Time off work**
- **OT incurred by others**
- **Training / Retraining**
- **Reporting and Investigation**
- **Operational disruption**
- **Impact to insurance rates**
- **Legal and court costs**
- **Others**

# Sprain / Strain

- **Average Sprain / Strain Injury costs \$18,000 USD**
- **Incident occurs approximately 6.8 incidents per 1,000 flights at an average cost of \$122 per flight**
- **Account for more than 68% of all reported personal injuries**
  - **Most from baggage / cargo handling**

*Economic Values for Evaluation of Federal Aviation Administration  
Investment and Regulatory Programs, FAA-APO-89-10*



# Flight Safety Foundation

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