NTSB National Transportation Safety Board

General Aviation and the NTSB Most Wanted List

Earl F. Weener, Ph.D.
Member, NTSB

North Texas Business Aviation Safety Show-Down

September 23, 2015

N6529R - B36TC Bonanza

NTSB Mission

The NTSB is an independent US federal agency charged with determining the probable cause(s) of transportation accidents, making recommendations to prevent their recurrence, conducting special studies and investigations, and coordinating resources to assist victims and their families after an accident.

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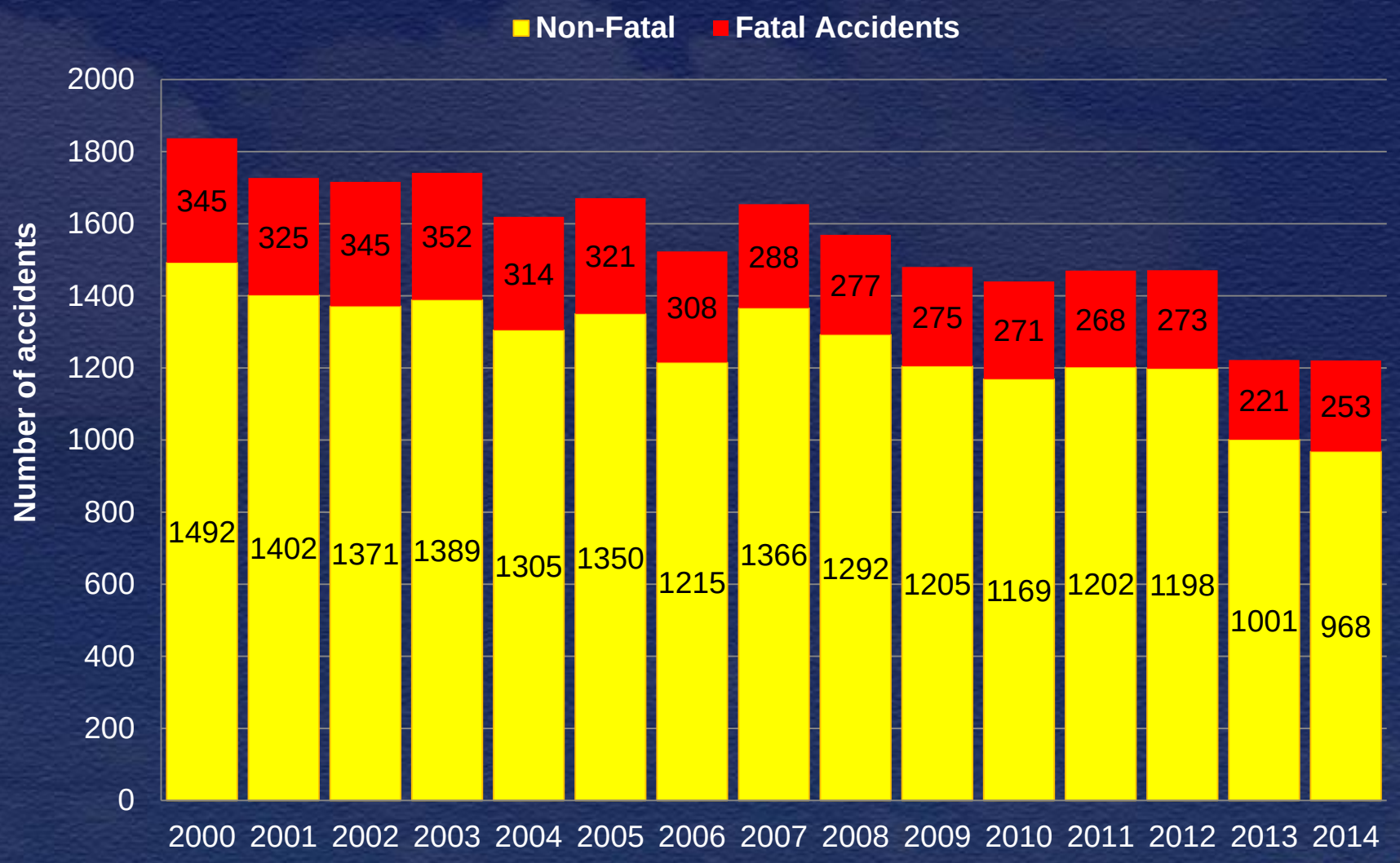
Topics

- General Aviation Accident Trends
- Most Wanted List – 2015
  - Distractions
  - Substance Impairment
  - Fitness for Duty
  - Procedural Compliance
  - Loss of Control

All GA Accidents



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GA Accident-involved Fatalities

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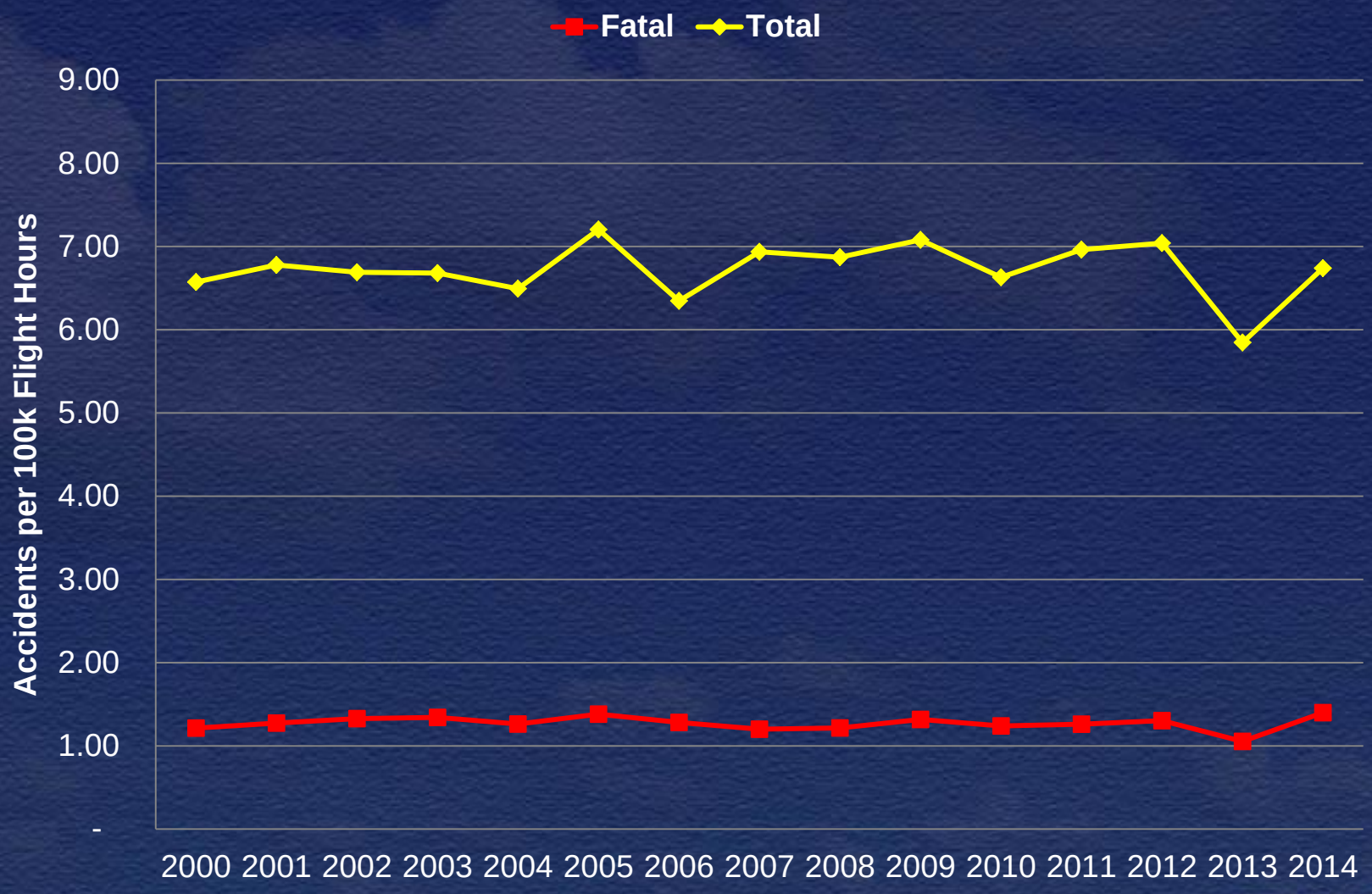
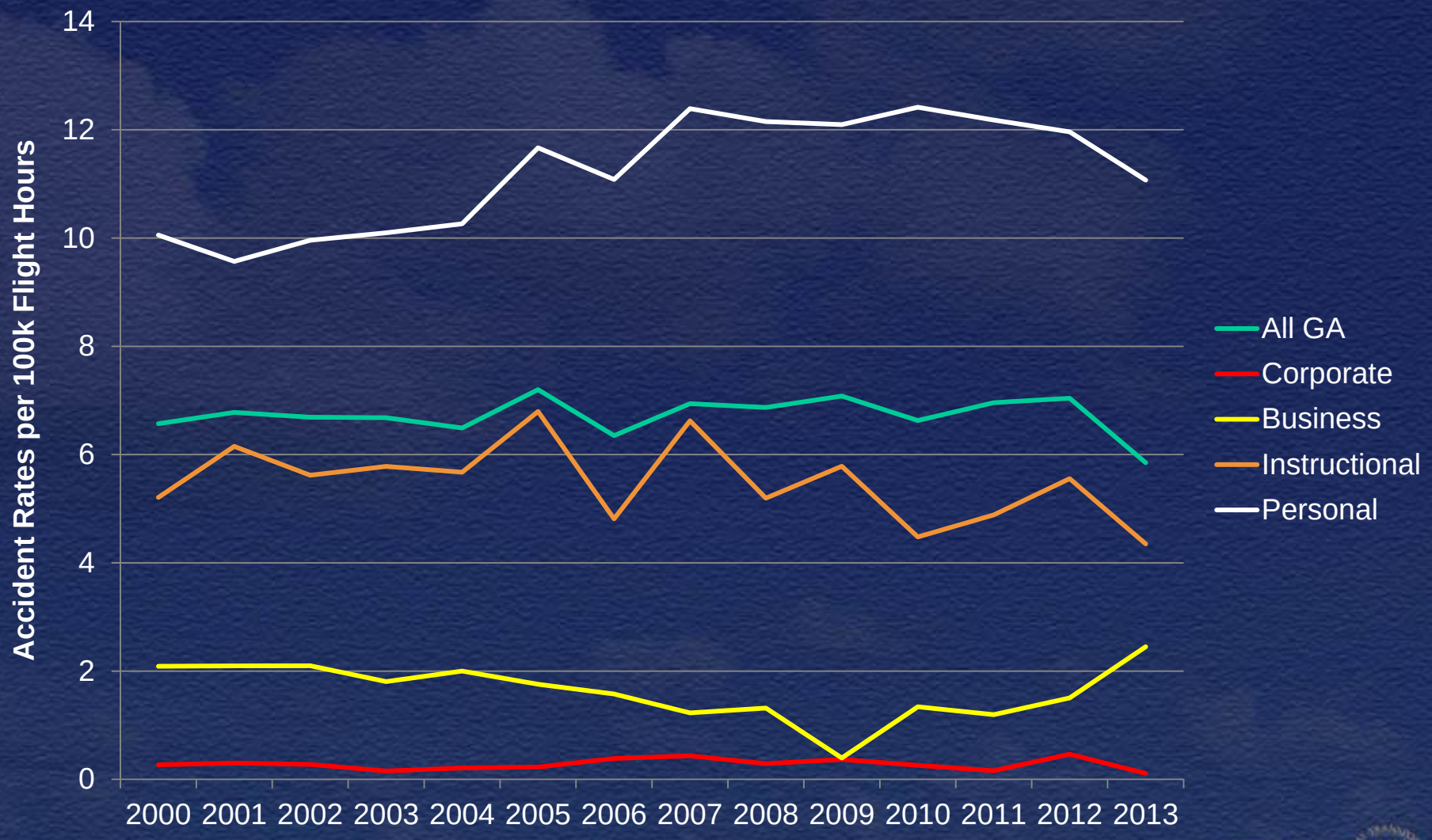
GA Accident Rates



*The 2011 GA Survey is currently not available. FAA is actively engaged in re-calibration efforts and expect to have validated 2011 data published at a later date.

Accident Rates per 100k Flight Hours



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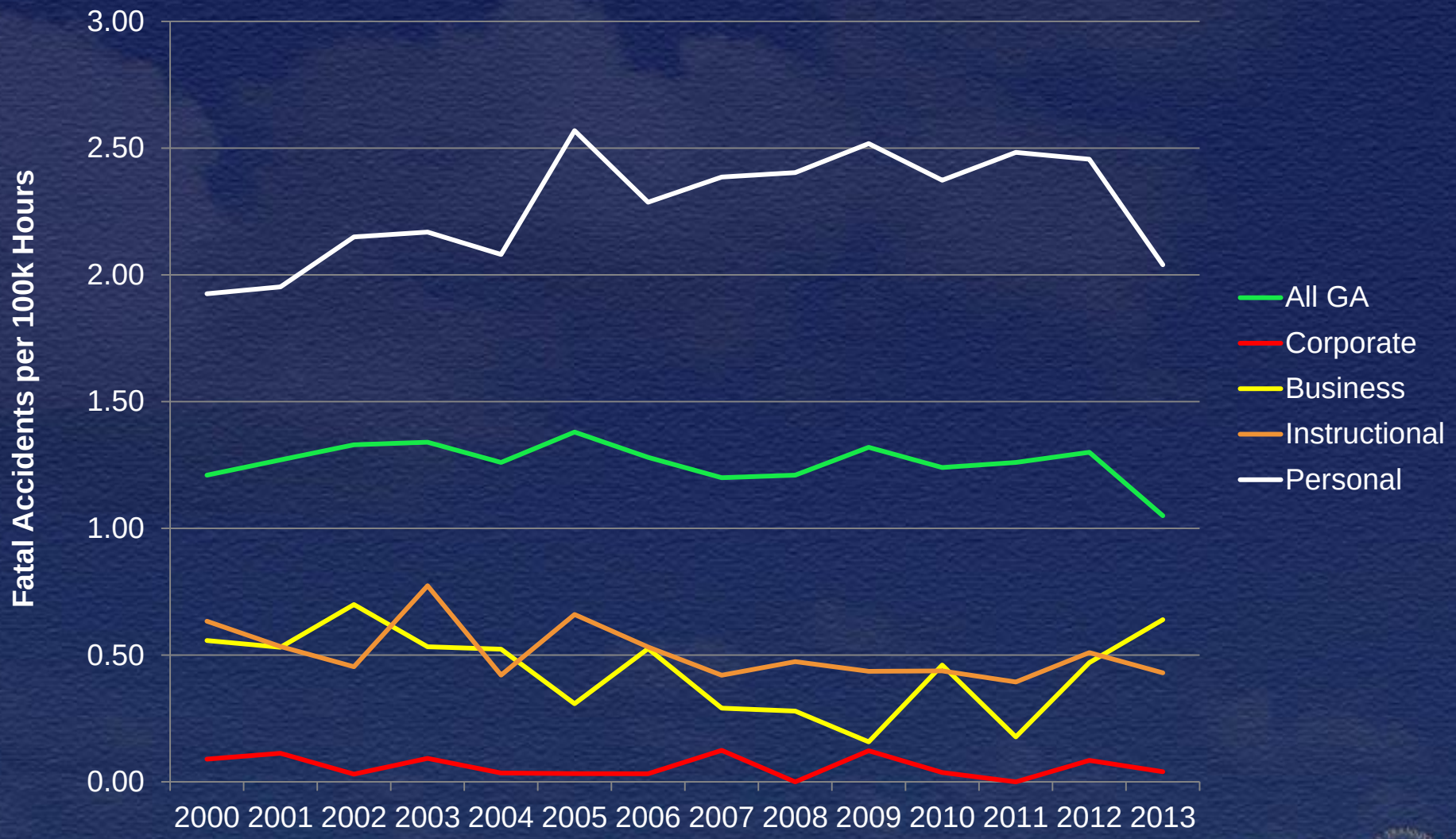
Fatal Accident Rates per 100k Flight Hours



*The 2011 GA Survey is currently not available. FAA is actively engaged in re-calibration efforts and expect to have validated 2011 data published at a later date.

Defining Events – Part 91 Ops

Business	Instruction	Personal
1. Loss of Control	1. Loss of Control	1. Loss of Control
2. CFIT	2. Midair	2. Powerplant Fail
3. Fuel	3. Powerplant Fail	3. CFIT
4. Component Fail	4. CFIT	4. Other
5. Powerplant Fail	5. Other	5. Component Fail

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Why GA on the Most Wanted List?

- NTSB investigates approximately 1500 GA accidents per year over the last decade
- Overall GA accident rate flat
  - Has improved little over the last decade
  - Airline accident rate decreased more than 80%
- Personal flying accident rate
  - Increased 10% over last 10 years
  - Fatal rate decreased 6% over that period
- Business flying accident rate
  - Increased 35% over last 10 years
  - Fatal rate increased 20%
- ***GA safety needs attention***

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NTSB 2015 Most Wanted List

- Disconnect from Deadly Distractions
- End Substance Impairment in Transportation
- Enhance Public Helicopter Safety
- Implement Positive Train Control in 2015
- Improve Rail Tank Car Safety
- Make Mass Transit Safer
- Prevent Loss of Control in Flight in General Aviation
- Require Medical Fitness for Duty
- Strengthen Commercial Trucking Safety
- Strengthen Procedural Compliance

Gray Summit, MO – bus/vehicle/truck crash

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Distraction

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Distraction

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Distraction

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2015 MWL - Distractions

- ***Disconnect from Deadly Distractions***
  - A factor in all modes of transportation
- Aviation emphasis
  - Sterile Cockpit
  - Appropriate use of PEDs
  - Manage distractions

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2015 MWL - Impairment

- ***End Substance Impairment in Transportation***
  - A factor in all modes
- Fatally injured pilots - potentially impairing drugs
  - 11% average 1990 - 1997
  - 23% average 2008 - 2012

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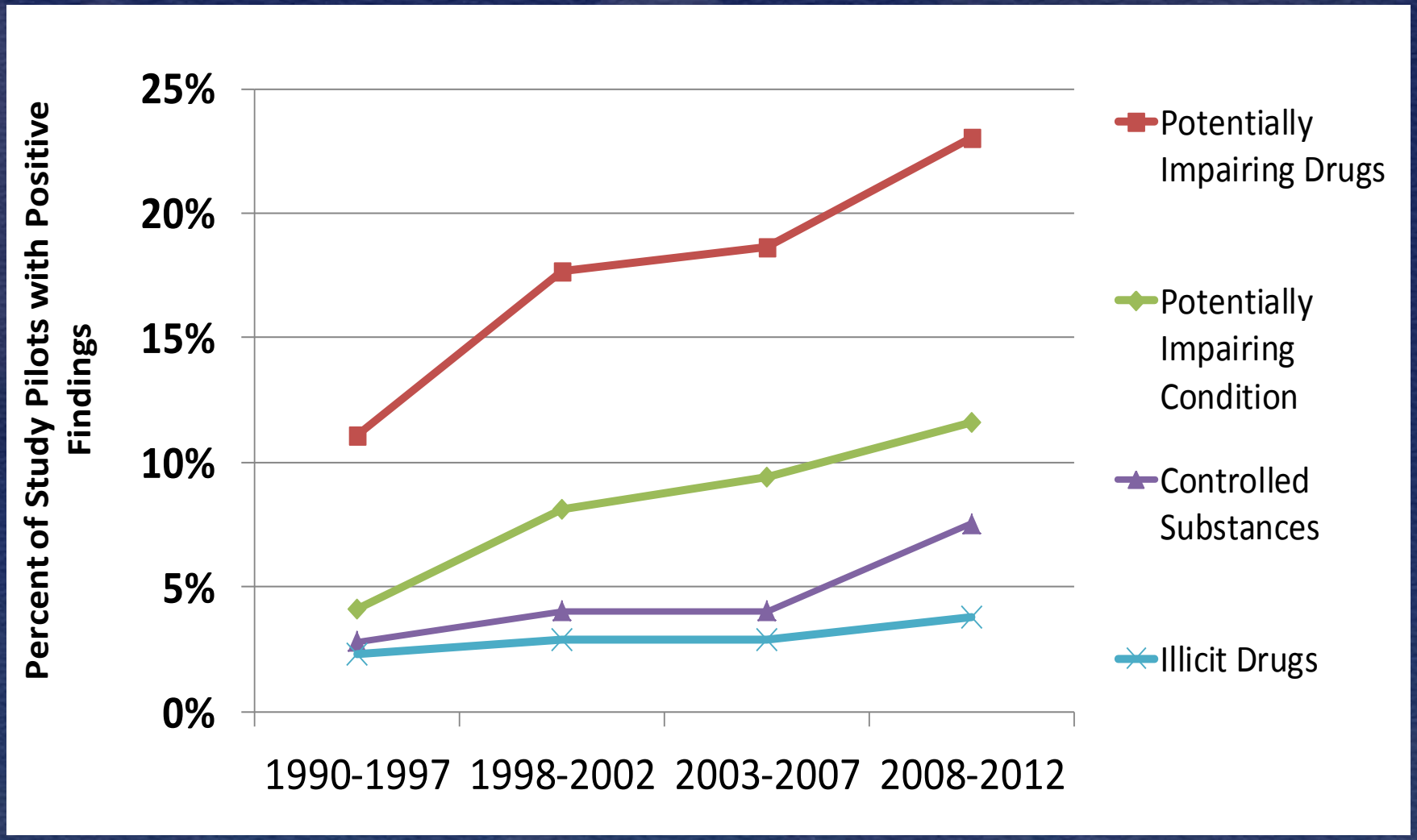
Toxicology Findings by Category, 1990-2012



Most Common Drugs

- Sedating antihistamines
  - Most common category
- Diphenhydramine
  - Most common individual drug
  - Most common potentially impairing drug
  - Use INCREASING

Drug Facts

Active ingredient (in each capsule) — **Purpose**

Diphenhydramine HCl 25 mg ..... Antihistamine

Uses

- temporarily relieves these symptoms due to hay fever or other upper respiratory allergies:
  - runny nose
  - sneezing
  - itchy, watery eyes
  - itching of the nose or throat
- temporarily relieves these symptoms due to the common cold:
  - runny nose
  - sneezing

Warnings

Do not use with any other product containing diphenhydramine, even one used on skin

Ask a doctor before use if you have

- a breathing problem such as emphysema or chronic bronchitis
- glaucoma
- trouble urinating due to an enlarged prostate gland

Ask a doctor [illegible] **are** taking sedatives or tranquilizers

When using this product

- marked drowsiness may occur
- avoid alcoholic drinks
- alcohol, sedatives, and tranquilizers may increase drowsiness
- be careful when driving a motor vehicle or operating machinery
- excitability may occur, especially in children

If preg[illegible] breast-feeding, ask a health profe[illegible] before use.

Keep out of reach of children. In case of overdose, get medical help or contact a Poison Control Center right away. (1-800-222-1222)

Directions

- take every 4 to 6 hours
- do not take more than 6 doses in 24 hours

adults and children 12 years and over	1 to 2 capsules
children 6 to under 12 years	1 capsule
children under 6 years	do not use this product in children under 6 years of age

Other information

- store at 59° to 77°F in a dry place. Protect from heat, humidity, and light.
- **do not use if carton is open or blister unit is broken**
- see side panel for lot number and expiration date

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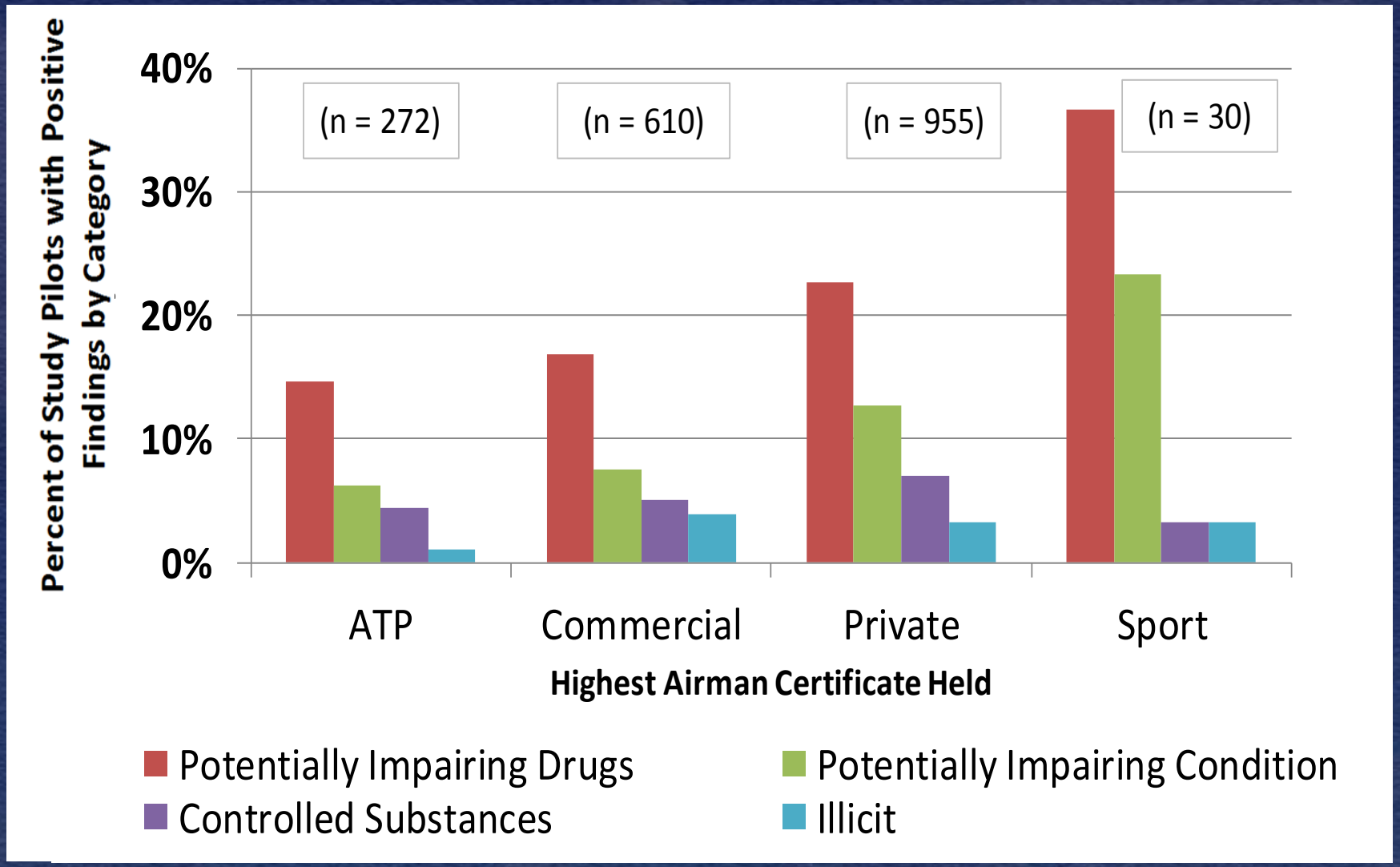
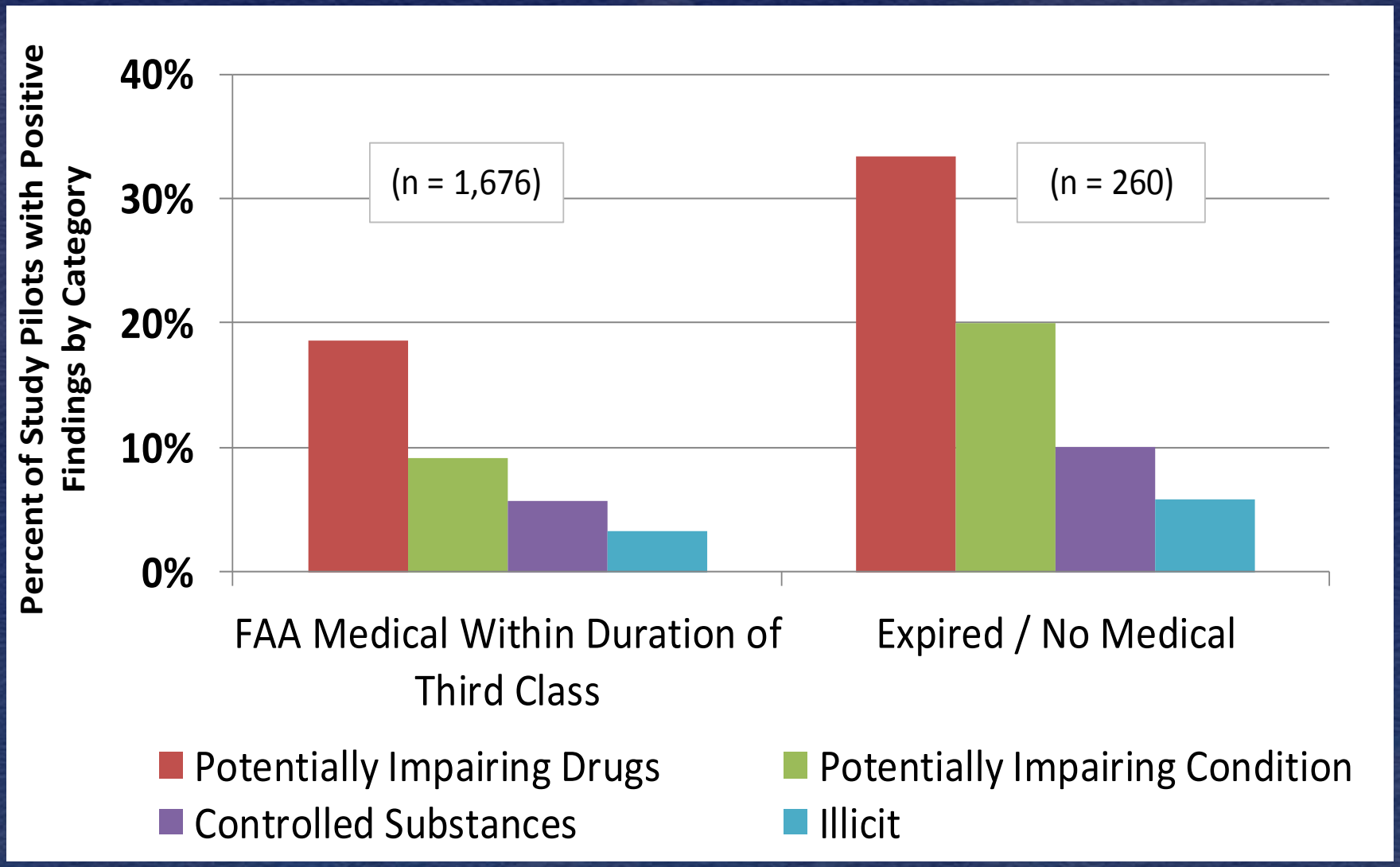
Toxicology Findings by Certificate, 2005-2012



Toxicology Findings by Medical, 2005-2012



Medical Resources for Pilots

- FAA Publications
  - *Medications and Flying*
  - *Guide for Aviation Medical Examiners*
- Aircraft Owners and Pilots Association (AOPA)
  - Member resources

Medical Resources for Pilots

- General Aviation Joint Steering Committee (GAJSC)
  - 2013 Letter to pilots
  - 2014 Initiatives
    - Drug database
    - Training course

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Fitness for Duty

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2015 MWL – Fitness for Duty

- ***Require Medical Fitness for Duty***
  - A factor in all modes
- Airman Medical – fitness at exam time
- Pilots must self-assess fitness
  - Need for appropriate flight preparations
- Focus on medical conditions
  - Example – Obstructive Sleep Apnea
- Enhance medical knowledge

Lubbock, TX – ATR 42-320 Cargo Aircraft

Procedural Compliance

2015 MWL – Procedural Compliance

- ***Strengthen Procedural Compliance***
  - More than a dozen related commercial aircraft accidents in last ten years
  - Equally applicable to corporate and business operations
    - Implement well developed procedures
    - Train to the procedures
    - Emphasize and reinforce operations to the procedures

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Loss of Control

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Loss of Control

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2015 MWL – Loss of Control

- ***Prevent Loss of Control in Flight in General Aviation***
- More than 40% GA accidents were LOC during 2004 – 2014
- Most deadly flight phases
  - Approach to landing
  - Maneuvering
  - Climb

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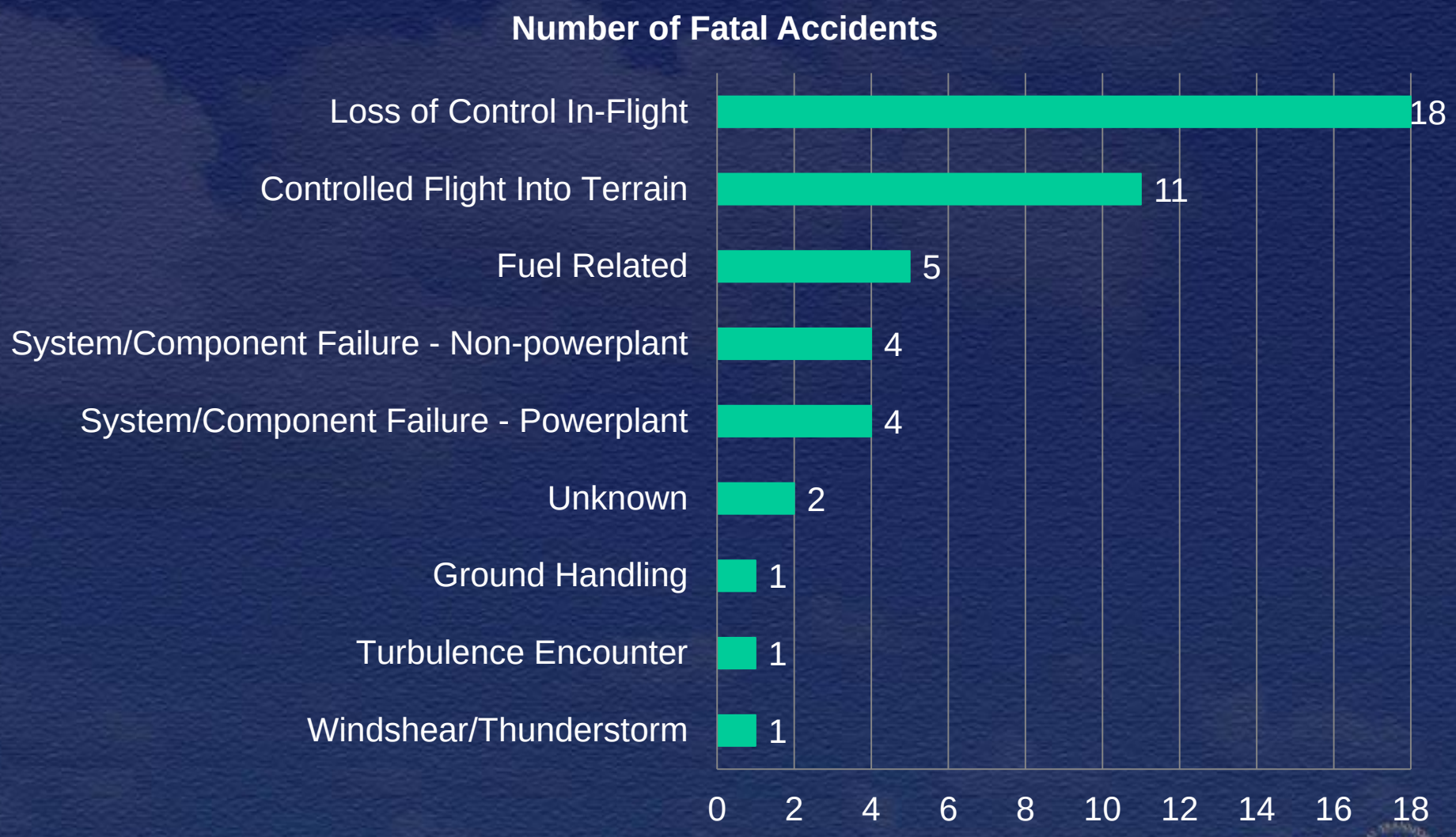
Business Flying, 2008-2014



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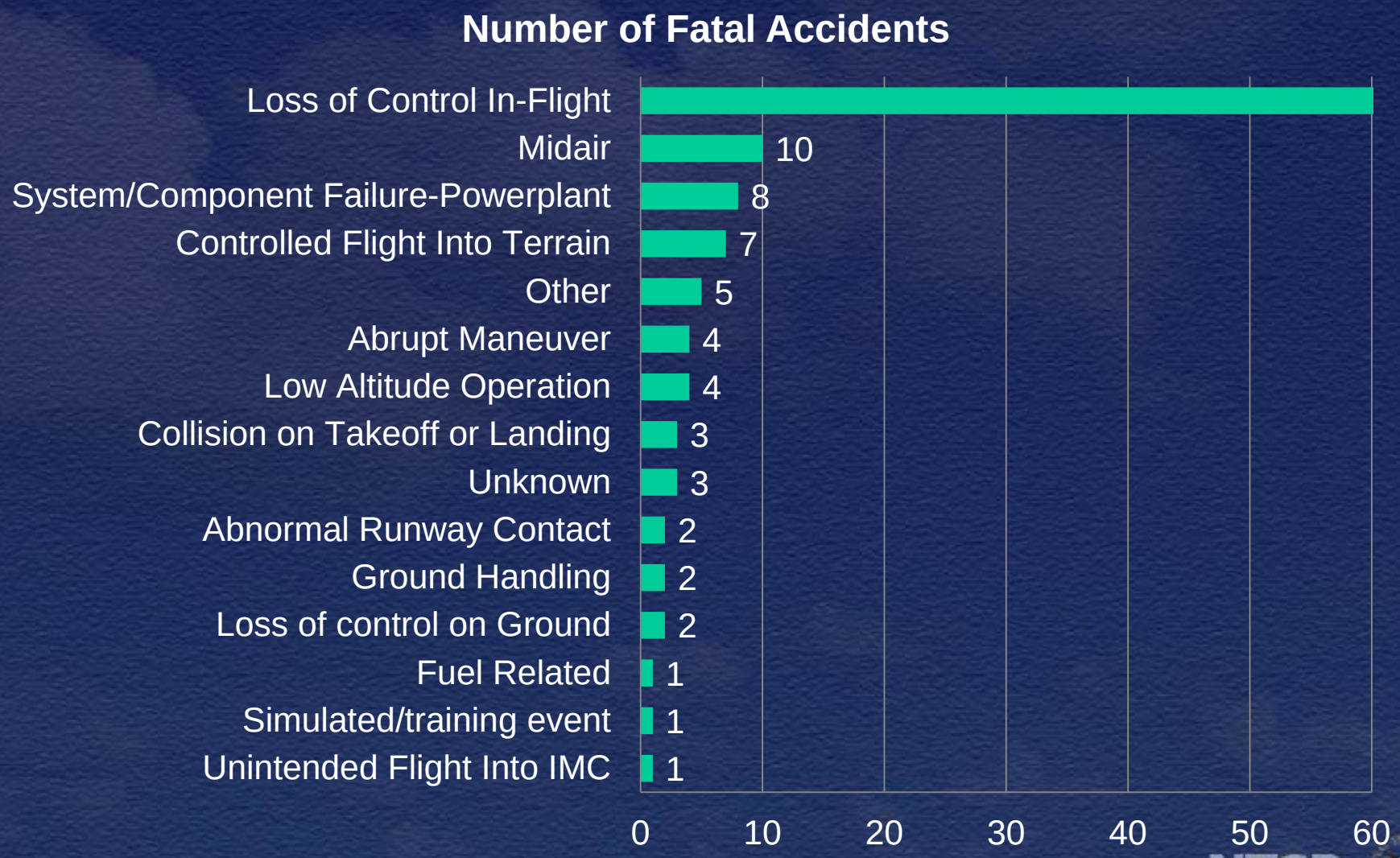
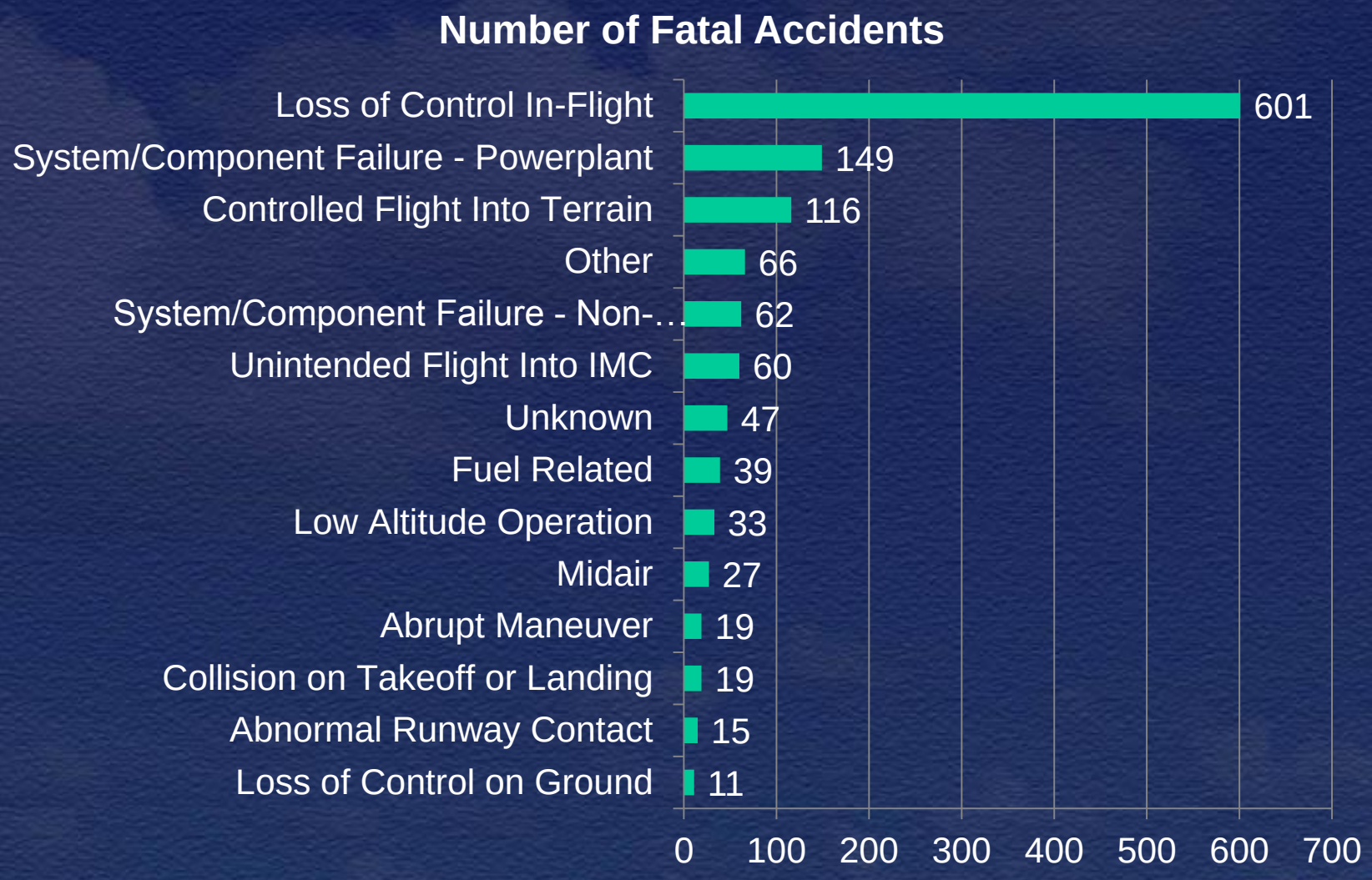
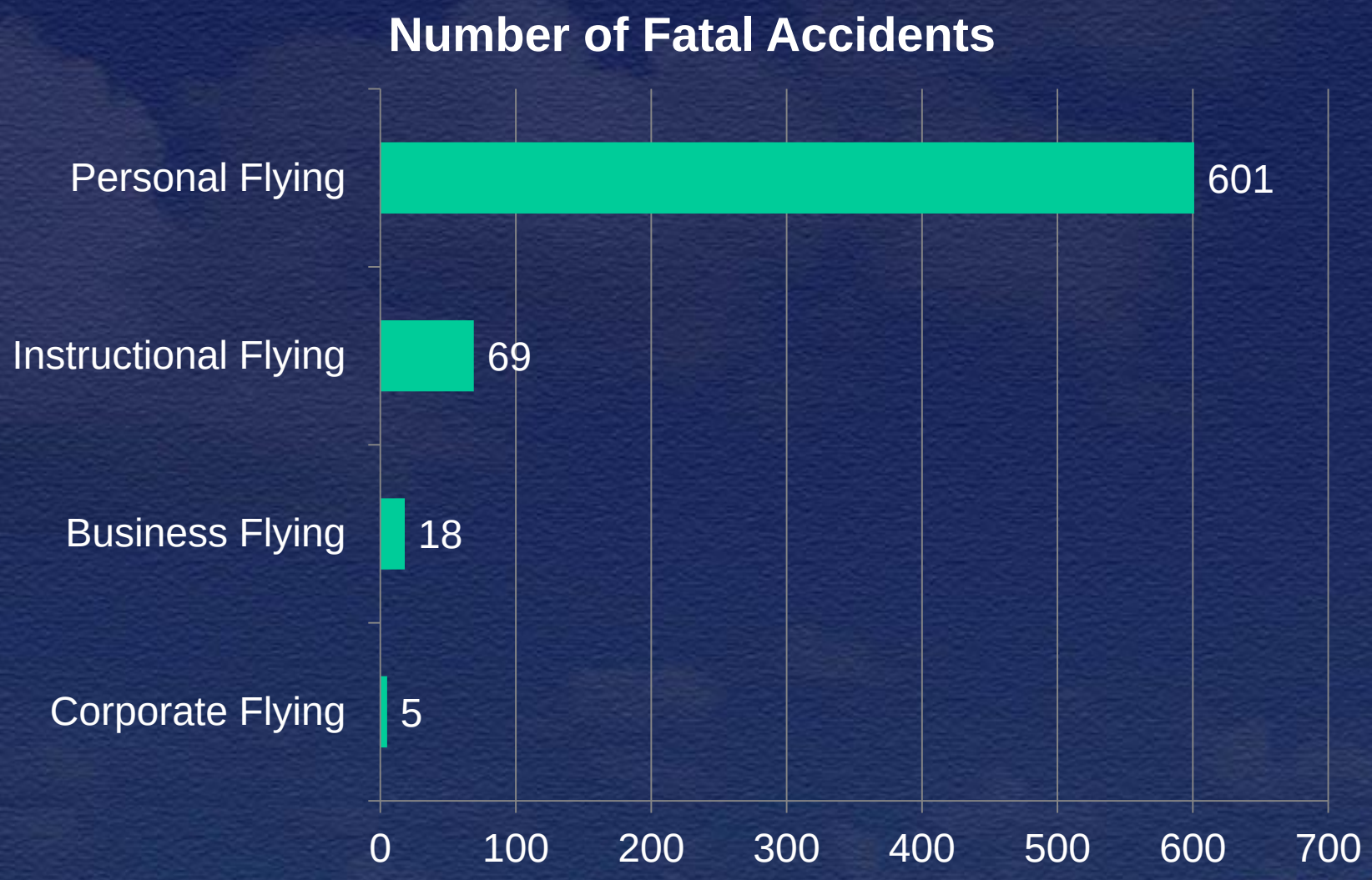
Instructional Flying, 2008-2014



Personal Flying, 2008-2014



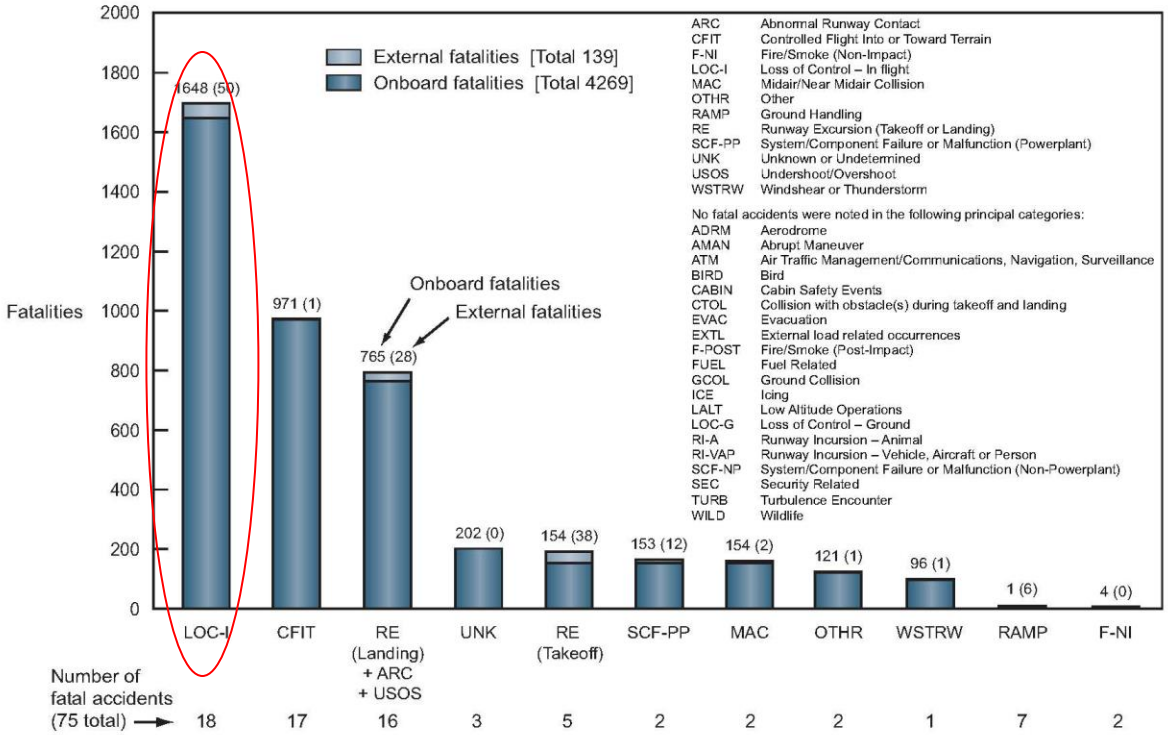
Loss of Control In-Flight, 2008-2014



Boeing Annual Statistical Summery

Fatalities by CAST/ICAO Common Taxonomy Team (CICTT) Aviation Occurrence Categories

Fatal Accidents – Worldwide Commercial Jet Fleet – 2003 Through 2012



ARC	Abnormal Runway Contact
CFIT	Controlled Flight Into or Toward Terrain
F-NI	Fire/Smoke (Non-Impact)
LOC-I	Loss of Control – In flight
MAC	Midair/Near Midair Collision
OTHR	Other
RAMP	Ground Handling
RE	Runway Excursion (Takeoff or Landing)
SCF-PP	System/Component Failure or Malfunction (Powerplant)
UNK	Unknown or Undetermined
USOS	Undershoot/Overshoot
WSTRW	Windshear or Thunderstorm

No fatal accidents were noted in the following principal categories:

ADRM	Aerodrome
AMAN	Abrupt Maneuver
ATM	Air Traffic Management/Communications, Navigation, Surveillance
BIRD	Bird
CABIN	Cabin Safety Events
CTOL	Collision with obstacle(s) during takeoff and landing
EVAC	Evacuation
EXTL	External load related occurrences
F-POST	Fire/Smoke (Post-Impact)
FUEL	Fuel Related
GCOL	Ground Collision
ICE	Icing
LALT	Low Altitude Operations
LOC-G	Loss of Control – Ground
RI-A	Runway Incursion – Animal
RI-VAP	Runway Incursion – Vehicle, Aircraft or Person
SCF-NP	System/Component Failure or Malfunction (Non-Powerplant)
SEC	Security Related
TURB	Turbulence Encounter
WILD	Wildlife

Note: Principal categories as assigned by CAST.

For a complete description of CICTT Aviation Occurrence Categories, go to: http://www.intlaviationstandards.org/

22

2012 STATISTICAL SUMMARY, AUGUST 2013

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Primary category of accidents

- Personal flying – LOC
- Instructional flying – LOC
- Business flying – LOC
- Corporate flying – LOC
- Airline flying – LOC

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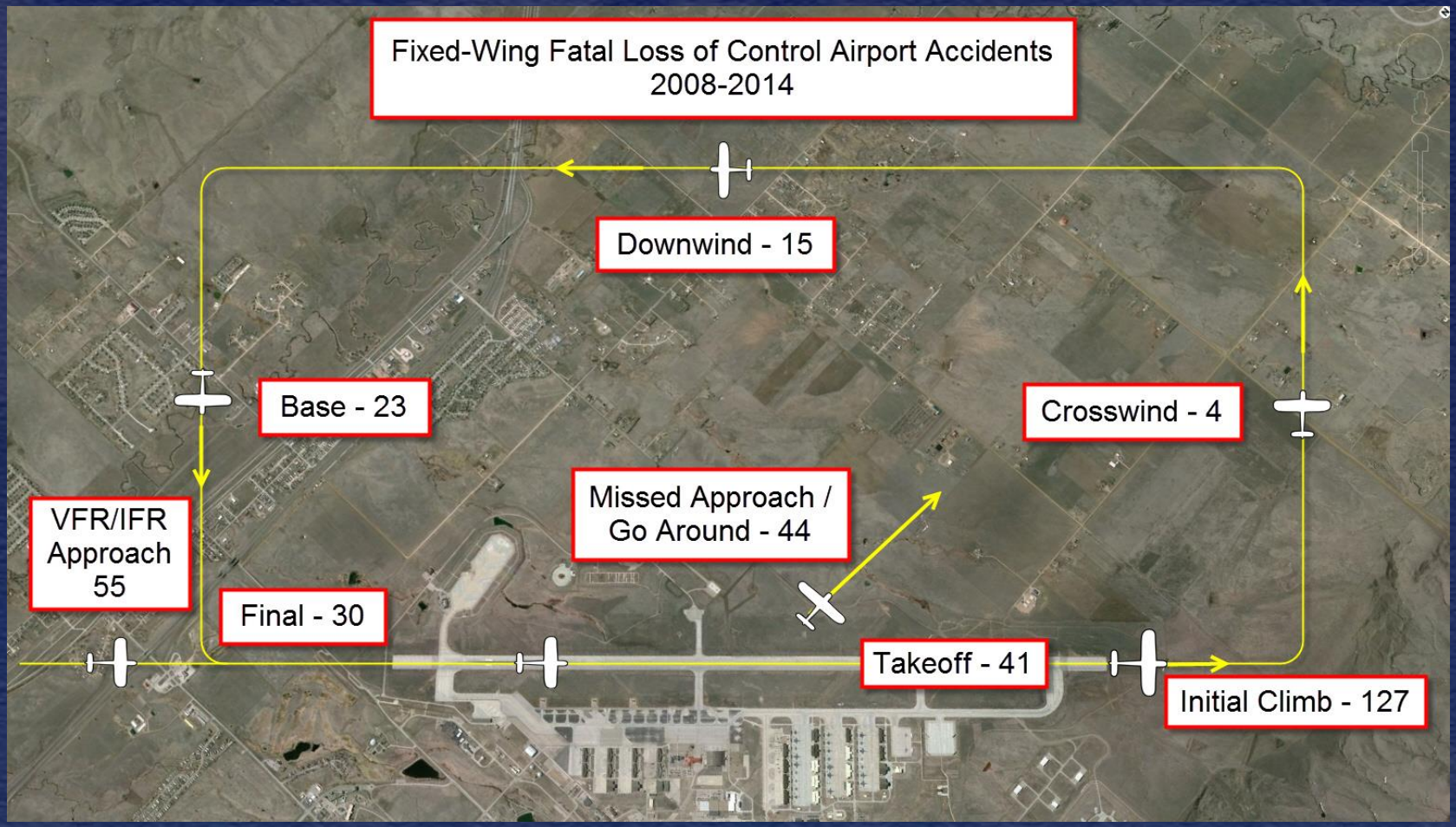
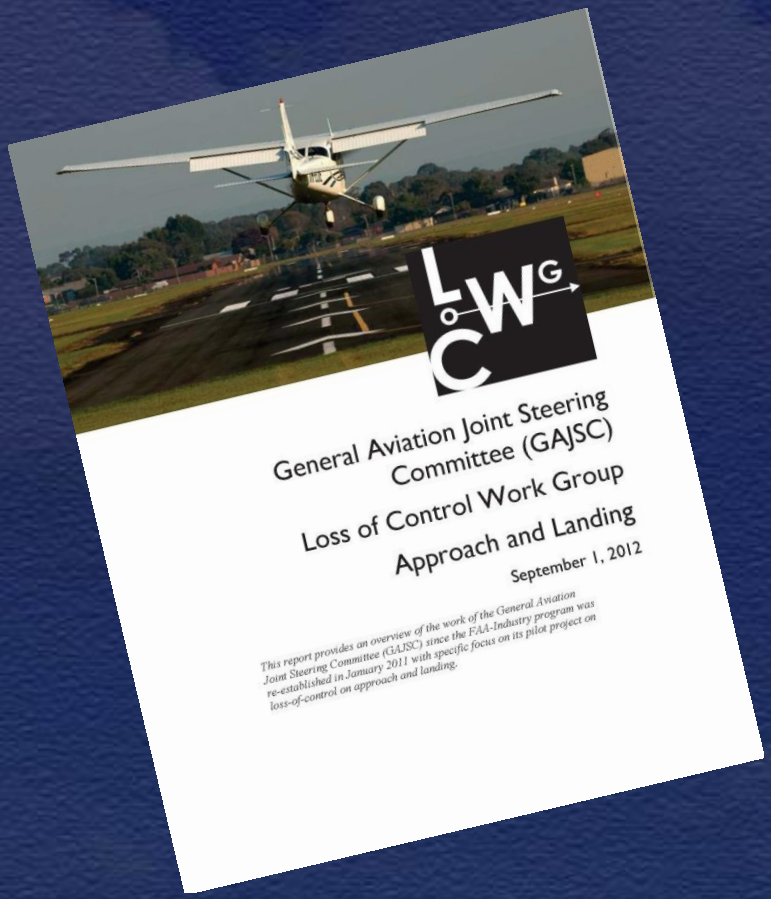
Fatal Airport LOC 2008-2014



Loss-of-control Working Group



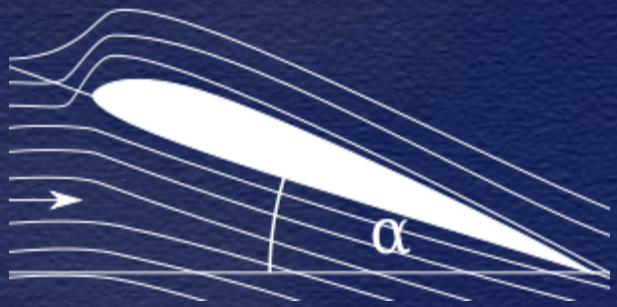
Safety Enhancements Identified

- AOA – New, Current, Retrofit
- Aeronautical Decision Making
- Stabilized Approach
- Single Pilot CRM
- Medication effects
- Weather Technologies
- Etc…

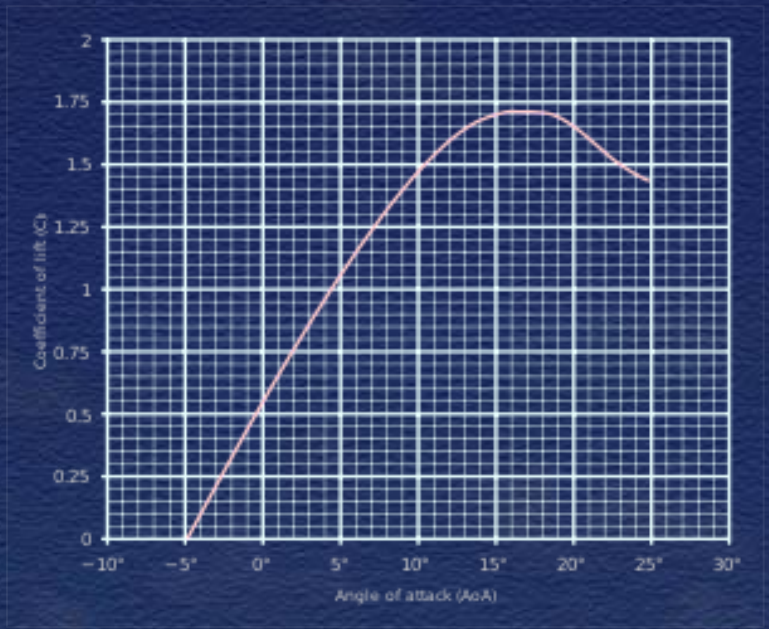
28 Safety Enhancements

Lower Cost AOA Displays

- Stall occurs at a specific Angle-of-Attack
  - But not necessarily at the same airspeed



First of AOA indicators built to ASTM stds and installed as a minor mod



FAA installation policy changed

Stall Recovery

- Reduce the angle-of-attack below stall AOA (Max CL)
  - Push over to eliminate stall warning
- Level wings
- Adjust thrust
  - Avoid overspeed and high G levels
- Pitch back to level flight
- Don't try to "***Power out of a stall***"

NTSB Safety Alerts

- Preventing Aerodynamic Stalls
- Reduced Visual References
- Is Your Aircraft Talking to You
- Risk Management for Pilots
- Risk Management for Mechanics

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SAFETY ALERT
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Preventing Rote Callouts

Confirm Cockpit Indications Before Making Callouts

The problem

- Recent National Transportation Safety Board investigations have identified several instances in which pilots made callouts without first verifying the cockpit indication that corresponded with the callout.
- In these cases, the pilots acted out of habit and made callouts based on what they expected to see regarding the cockpit indication but did not take the time to verify it.
- Examples of accident investigations include the following:
  - A Boeing 757 overran the end of the runway while landing in Jackson Hole, Wyoming. The captain called out "deployed" even though the speedbrakes were not deployed and "two in reverse" even though neither reverser was fully deployed. Both the speedbrakes and the thrust reversers had mechanical defects, and the captain did not manually deploy the speedbrakes when they failed to deploy automatically because, based on his rote callout, he did not recognize that they did not deploy.[1]
  - A Hawker 800 crashed after a late go-around attempt in Owatonna, Minnesota. After touchdown, the copilot called out "we're dumped," but the flaps were not all the way in the lift dump position and the airplane did not slow down as expected, leading the pilot to attempt to go around.[2]

[1] Runway Overrun, American Airlines Flight 2253, Boeing 757-200, N668AA, Jackson Hole, Wyoming, December 29, 2010, Aircraft Accident Report NTSB/AAR-12/01 (Washington, DC: National Transportation Safety Board, 2012).
[2] Crash During Attempted Go-Around After Landing, East Coast Jets Flight 81, Hawker Beechcraft Corporation 125-800A, N818MV, Owatonna, Minnesota, July 31, 2008, Aircraft Accident Report NTSB/AAR-11/01 (Washington, DC: National Transportation Safety Board, 2011).

Available on www.NTSB.gov

Alfred Sheinwold

"Learn all you can from the mistakes of others. You won't have time to make them all yourself"

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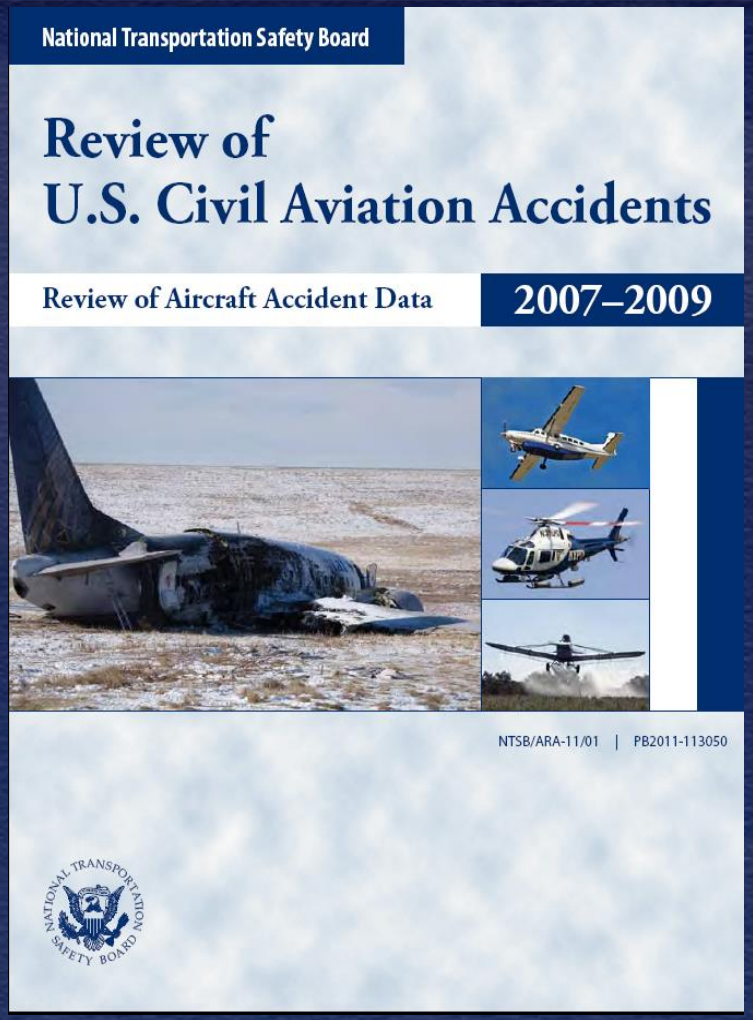
Accident Investigations



- NTSB accident files are on-line
- Many recent accident Dockets are on-line
  - Factual reports,
  - Interviews
  - Photographs
- www.ntsb.gov

http://www.ntsb.gov/doclib/reports/2011/ARA1101.pdf

Douglas Adams

"Human beings, who are almost unique in having ability to learn from the experience of others, are also remarkable for their apparent disinclination to do so."

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Accident Statistics - 2013

- 1,298 Total Accidents (Down from 1,537 in 2012)
  - 236 Fatal Accidents
    - 429 Fatalities
- 1,224 General Aviation Accidents
  - 222 Fatal Accident
    - 390 Fatalities
- 51 Part 135 Accidents
  - 12 Fatal Accidents
    - 30 Fatalities

Preliminary Accident Statistics - 2014

- 1,264 Total accidents (down from 1298)
  - 258 Fatal accidents (up from 236)
- 1,202 General Aviation Accidents (down from 1224)
  - 250 Fatal Accidents (up from 222)
    - 405 Fatalities (up from 380)
- 38 Part 135 Accidents (down from 51)
  - 8 Fatal Accidents (down from 12)
    - 20 Fatalities (down from 30)
- 33 Accidents Business/Corporate

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