

Business Aircraft Safety

ALAR Update

**FLIGHT
SAFETY**



F O U N D A T I O N

Jim Burin

Director of Technical Programs

What is the Flight Safety Foundation ??

- **Independent**
- **Non-Profit**
- **International**

Founded in 1947 by Aviation Industry

Prime Safety Concerns

- **CFIT**
- **Approach and landing**
- **Loss of control**
- **Human Factors**

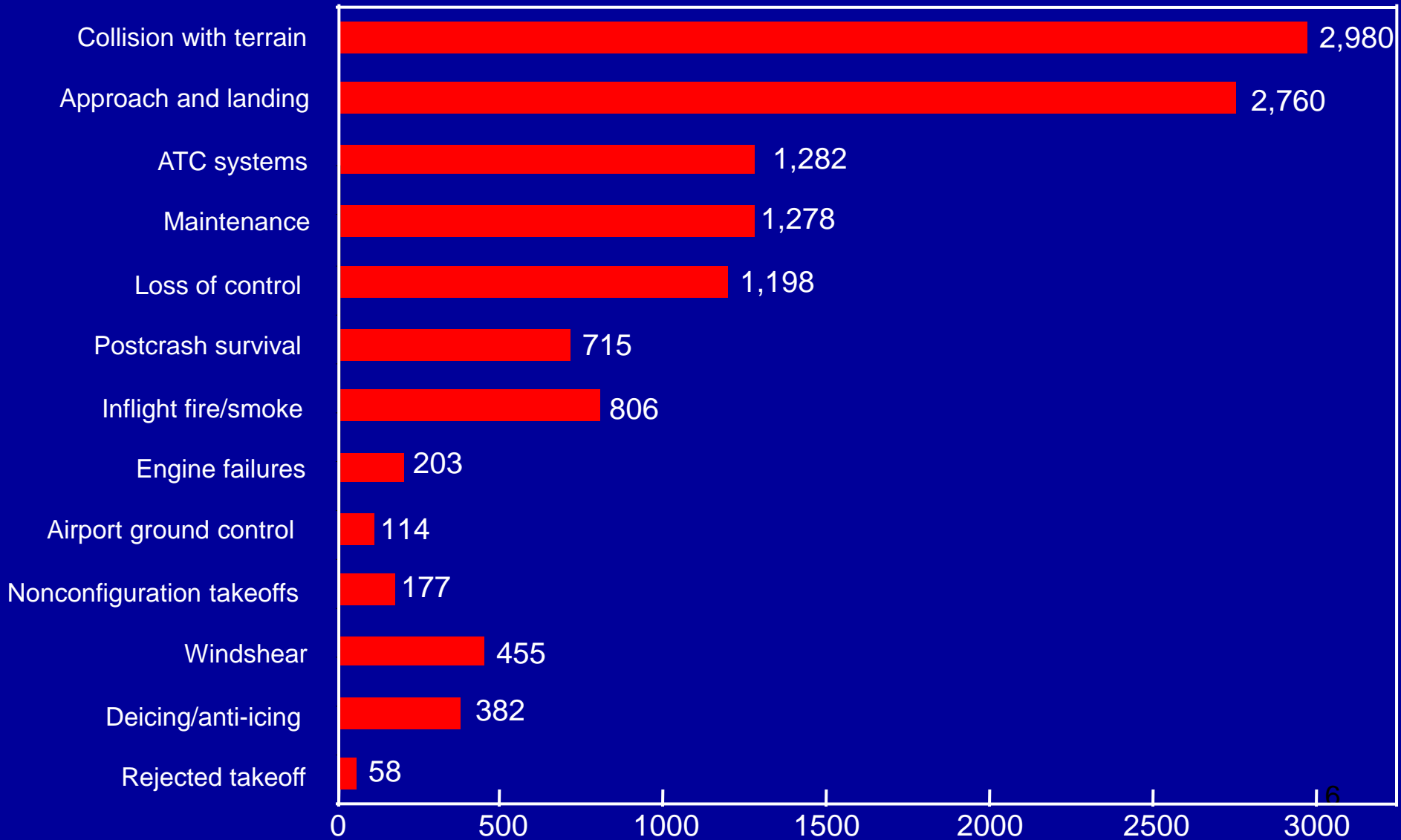
FSF Goal:

**Make Aviation Safer by Reducing
The Risk of an Accident**



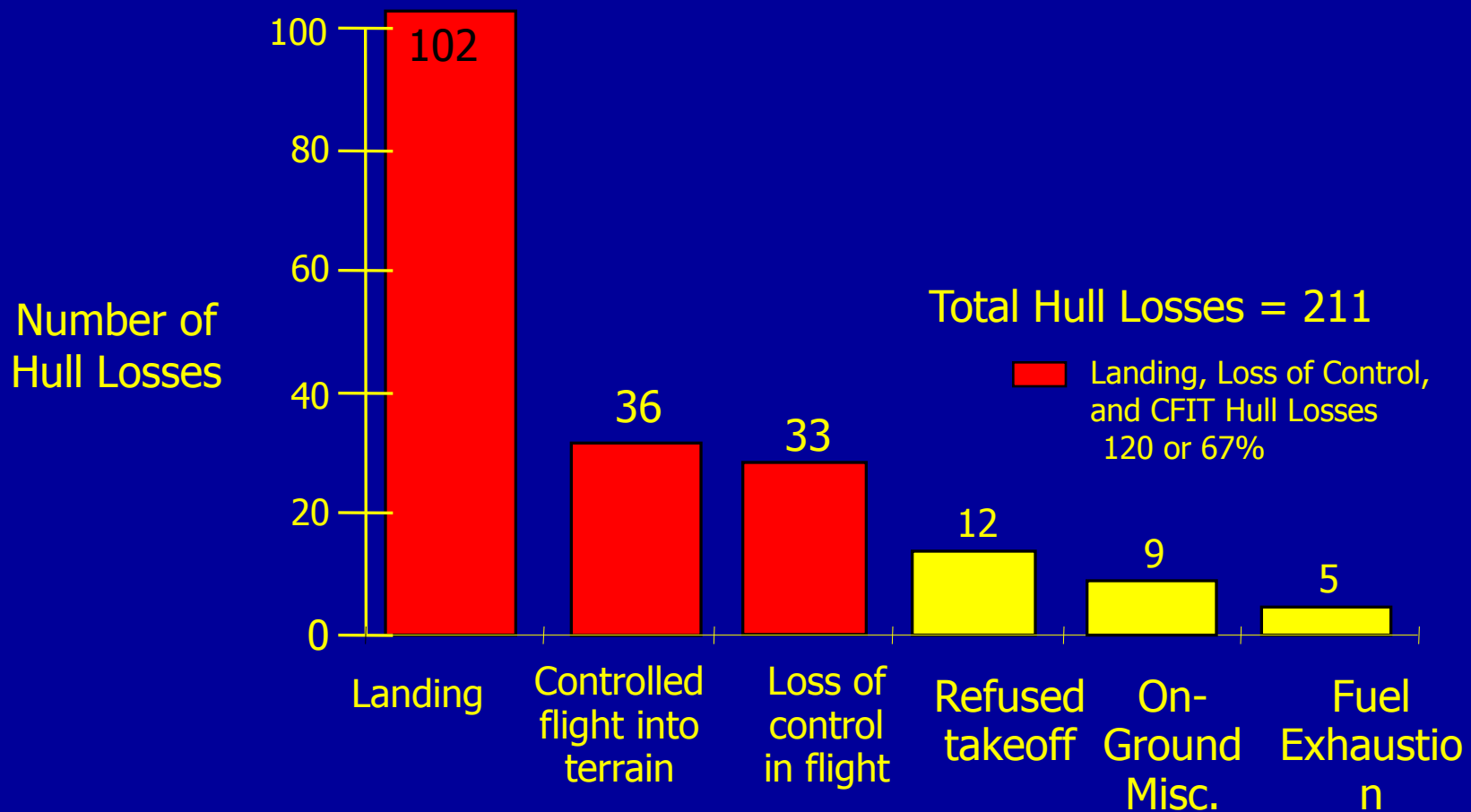


Safety Fatality Data - Circa 1992



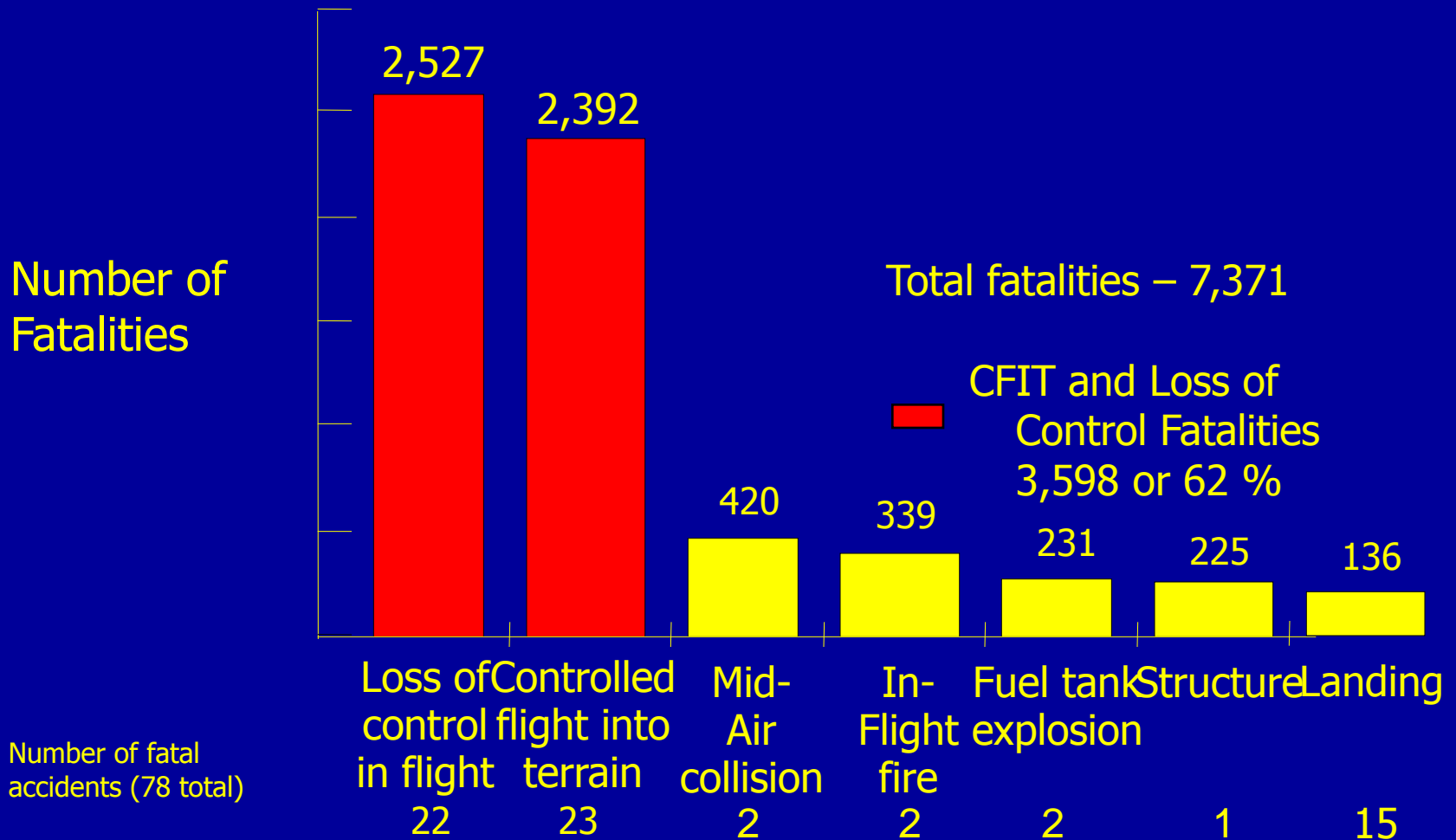
Worldwide Airline Hull Loss Accidents

Classified by Accident Type 1995 – 2008



Worldwide Airline Fatalities

Classified by Accident Type 1995 – 2008



1990 -1999 Corporate Aircraft ALA Summary

	<u>Total</u>	<u>Fatal</u>
Accidents	195	54
ALA	97 (50%)	36 (66%)
CFIT	40 (21 %)	26 (48%)

Hull Loss Accidents

Business Jets

1 January to 31 December 2005

Date	Operator	Aircraft	Location	Phase	Fatal
1 January	Jet Services	Citation II	Ainsworth, NE, USA	Approach	0
28 January	Million Air	Learjet 35	Kansas City, MO, USA	Landing	0
2 February	Platinum Jet	Challenger 600	Teteroboro, NJ, USA	Takeoff	0
21 February	Scott Aviation	HS 125	Bromont, Canada	Approach	0
16 February	Circuit City Stores	Citation V	Pueblo, CO, USA	Approach	8
24 February	Colima State Gov	Westwind	Morelia, Mexico	Enroute	7
8 March	Air Global	Citation I	Caracas, Venezeula	Approach	2
9 May	Compas Acquisitions	Sabeliner	Brownwood, TX, USA	Takeoff	0
15 May	Weibel Scientific	Citation I	Atlantic City, NJ, USA	Landing	0
20 May	Jet 2000	Falcon 20	Moscow, Russia	Descent	0
15 July	Aspen Aviation	Learjet 35	Vail, CO, USA	Landing	0
1 September	USA Jet	Falcon 20	Elyria, OH, USA	Takeoff	0
16 September	Viacao Cometa	Citation 525	Rio de Janerio, Brazil	Climb	2
5 November	Houston Cardiac Assoc	Citation I	Houston, TX, USA	Takeoff	2
28 December	Skyward Aviation	Lear 35	Truckee, CA USA	Landing	2

Major Accidents Business Jets

1 January to 31 December 2006

Date	Operator	Aircraft	Location	Phase	Fatal
2 January	Avcom	Hawker 700	Kharkov, Ukraine	Approach	3
24 January	Goship Air	Citation V	Carlsbad, CA, USA	Landing	4
15 February	Jet 2000	Falcon 20	Kiel, Germany	Landing	0
16 February	Lech Air	Citation I	Busckin, Iraq	Descent	6
2 June	International Jet Charter	Lear 35	Groton, CT, USA	Approach	2
26 June	Great Ideas Corp	Hawker F3	Barcelona, Venezuela	Landing	0
5 July	Vigojet	Saberliner	Mexico City, Mexico	Landing	0
19 July	Tomco II	Citation Encore	Cresco, IA, USA	Landing	2
28 August	Netjets	Hawker 800	Carson City, NV, USA	Descent	0

Source: Ascend

Major Accidents Business Jets

1 January 2007 to 31 December 2007

Date	Operator	Aircraft	Location	Phase	Fatal
7 January	Ahrenkiel Consulting	Premier 1A	St. Tropez, France	Landing	0
9 January	Ameristar Jet Charter	Lear 24	Guadalajara, Mexico	Approach	2
12 January	SunQuest Air Charter	Citation I	Van Nuys, CA, USA	Takeoff	2
24 January	Air Trek Air Ambulance	Citation II	Butler, PA, USA	Landing	0
3 May	Hamilton Ranches	Citation II	Dillon, MT, USA	Approach	2
4 June	Toy Air	Citation II	Milwaukee, WI USA	Climb	6
30 June	IHR Admin Services	Citation I	Conway Field, AK, USA	Landing	1
5 July	Jett Paqueteria	Saberliner	Culiacan, Mexico	Takeoff	3
7 October	Private	Gulfstream II	Santo Domingo, Venezuela	Landing	2
4 November	Reali Taxi Aero	Lear 35	Sao Paulo, Brazil	Takeoff	2
11 November	Jetport Inc	Global 5000	Fox Harbor, Canada	Landing	0
26 December	Jet Connection Business	CL-604	Almaty, Kazakhstan	Takeoff	1

Major Accidents Business Jets

1 January 2008 to 31 December 2008

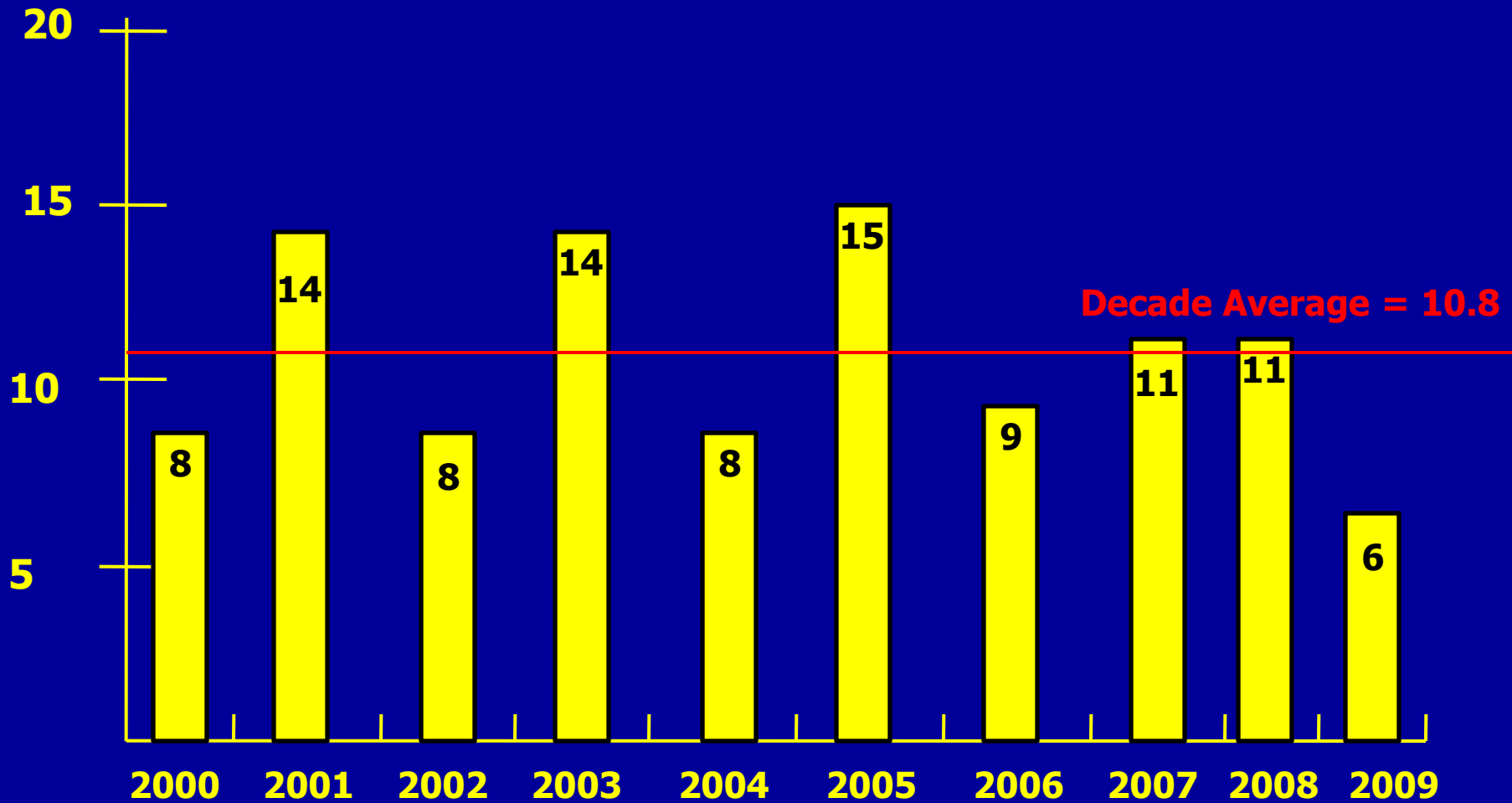
Date	Operator	Aircraft	Location	Phase	Fatal
18 February	Avion Sales	Citation III	Venezuela	Enroute	3
4 March	Southwest Sports Clinic	Citation I	Oklahoma City, USA	Takeoff	5
4 March	Confort Vuela	HS125-800	Monterrey, Mexico	Landing	0
30 March	Relton Muse Aviation	Citation I	London, UK	Climb	5
12 June	FAI Rent-A-Jet	Lear 35	Kisangani, DRC	Takeoff	0
30 July	My Aviation	Eclipse 500	West Chester, PA, USA	Takeoff	0
31 July	East Coast Jets	Hawker 800	Owatonna, MN, USA	Approach	8
18 August	Corus Hardware Corp	Citation I	Santo Domingo, DR	Climb	1
19 September	Inter Travel and Svcs	Lear 60	Colombia, SC, USA	Takeoff	4
4 November	Mexican Government	Lear 45	Mexico City, Mexico	Approach	9
7 December	Tlaxcala State Government	Lear 23	Tlaxcala, Mexico	Approach	2

Major Accidents Business Jets

1 January 2009 to 31 December 2009

Date	Operator	Aircraft	Location	Phase	Fatal
3 January	Aero Jet Services	Lear 45	Telluride, CO, USA	Landing	0
7 February	Air One Executive	Citation III	Trigoria, Italy	Climb	2
12 February	Laret Aviation	Falcon 100	St. Moriz, Switzerland	Landing	2
26 October	S-Air	Hawker-125	Minsk, Belarus	Approach	6
19 November	Pel-Air	IAI Westwind	Norfolk Island, Australia	Approach	0
17 December	Aviation Team	Falcon 20	Great Inagua Island, Bahamas	Enroute	2

Business Jet Major Accidents 2000 through 2009



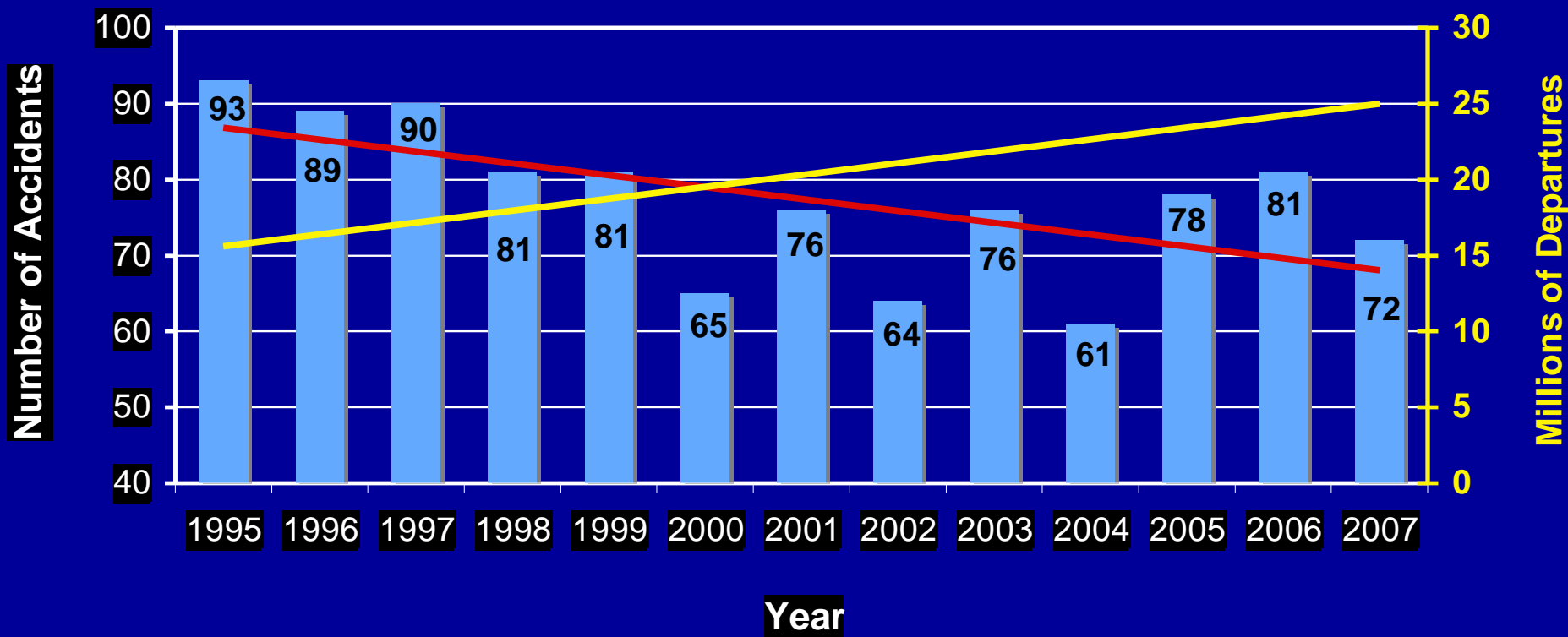


ALAR Updated Data

- **1995 through 2007
(original 1985-1996)**
- **All ALA accidents versus only fatal accidents
(1,007 versus 287 data points)**
- **Fitment of safety equipment less of a factor**
- **More precision approaches (Less NPA)**
- **Top factors still there – slightly different order**
- **Best News: ALA rate down, fatal rate down**

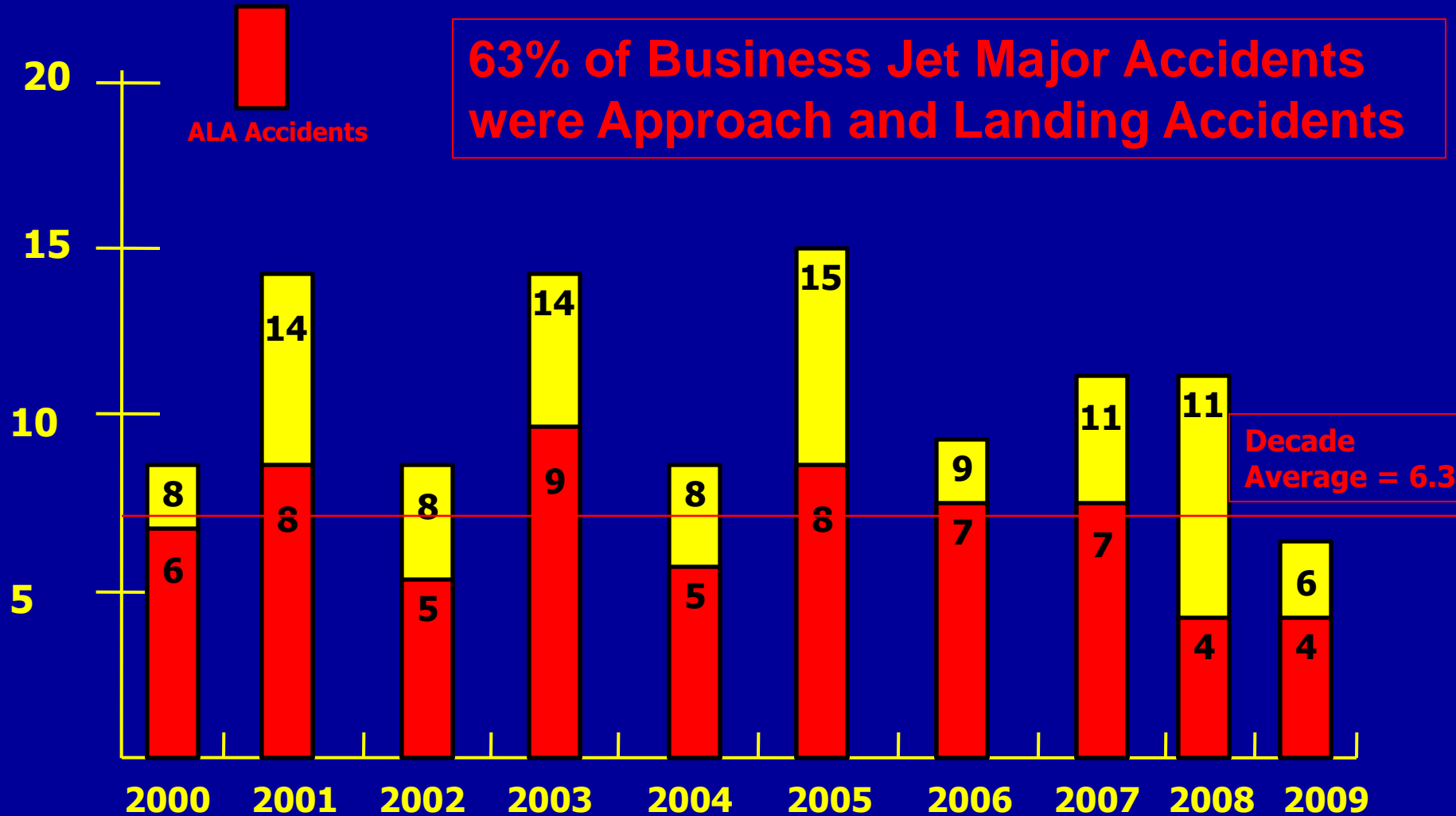
Approach-and-landing Accidents

1995 through 2007 (1007 accidents)





Business Jet Major Accidents 2000 through 2009



Runway

Confusion



Safety

Incursion



Excursion



Runway Safety Accident Data

1995–2008

1,429 Total Accidents

(Substantial and Major Damage, Western- and Eastern-built Turbojets and Turboprops)

	<u>Number</u>	<u>Percent of Total</u>
Incursions:	10 (.7/year)	.6%
Confusion:	4 (.3/year)	.3%
Excursions:	417 (29.8/year)	29%

Runway Excursion:

When an aircraft on the runway surface departs the end or the side of the runway surface.

Runway excursions can occur on takeoff or on landing.

They consist of two types of events:

Veer-Off: Excursion in which an aircraft departs the side of a runway

Overrun: A runway excursion in which an aircraft departs the end of a runway

Runway Safety Data

1995–2008

Runway Excursion Data

- 36% of jet accidents**
- 24% of turboprop accidents**

Business Jet Accidents

1991 - 2002

Total Accidents: 251

Excursions: 63

Excursion %: 25.1%



Runway Safety

Fatality Data

1995–2008

1,429 Total Accidents

492 fatal accidents (33%)

Number of Fatal Accidents (Onboard Fatalities)

Incursions: 5 (129)

Confusion: 2 (132)

Excursions: 34 (712)





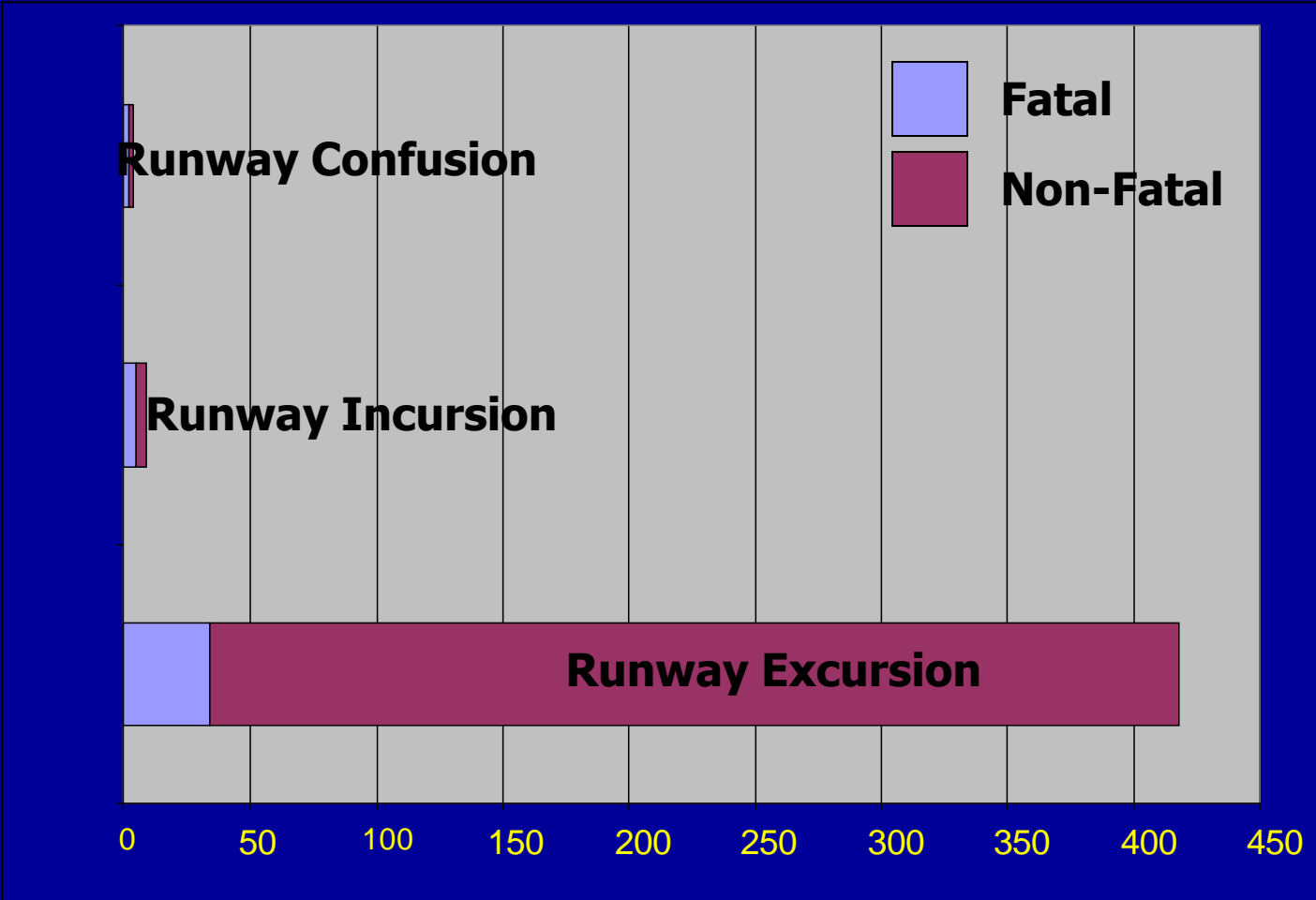
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USA JET



By Mary Montserrat-Howlett

Fatal and Non-Fatal Runway Accidents by Type, 1995 Through 2008



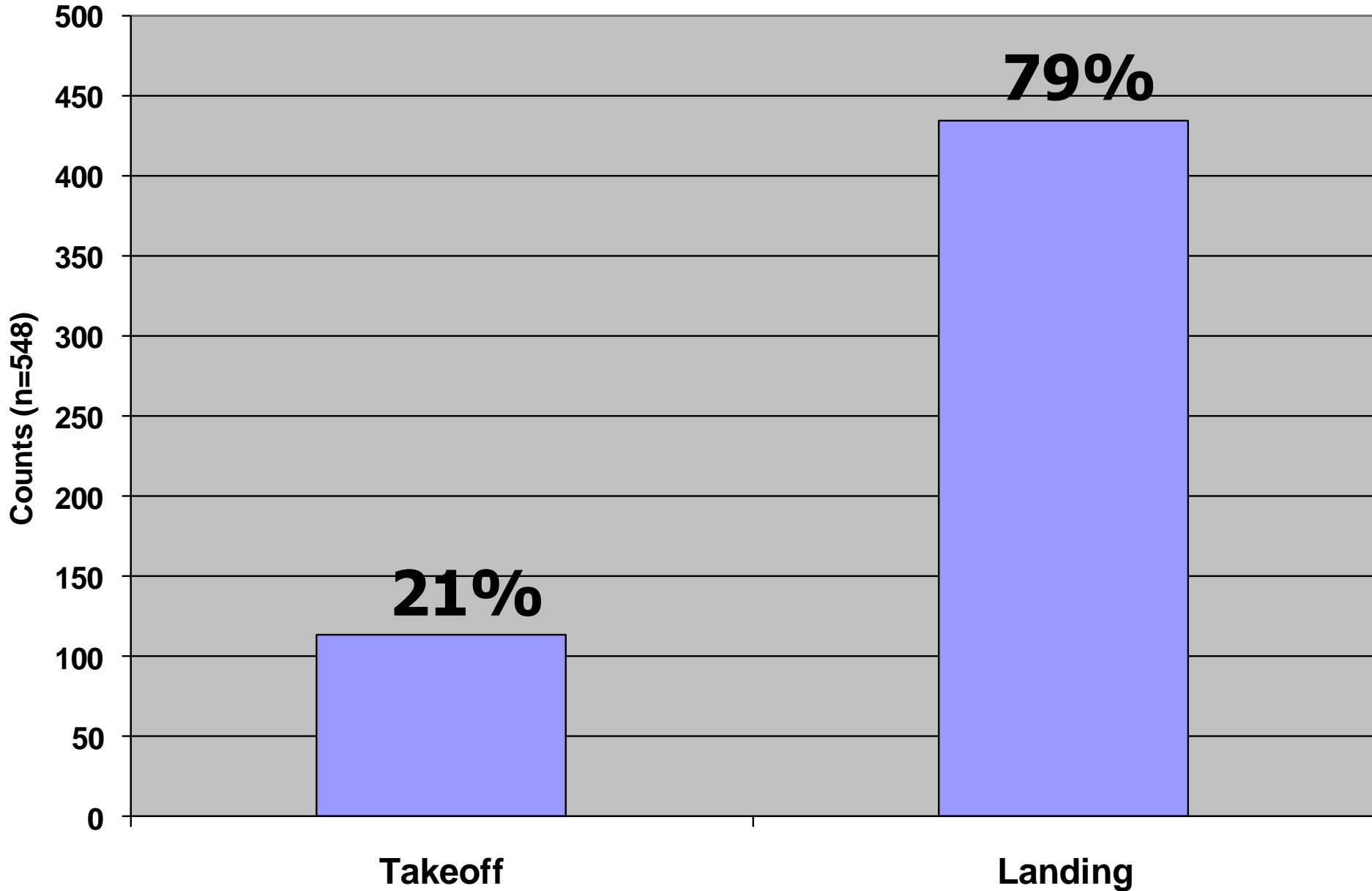
Number of Accidents



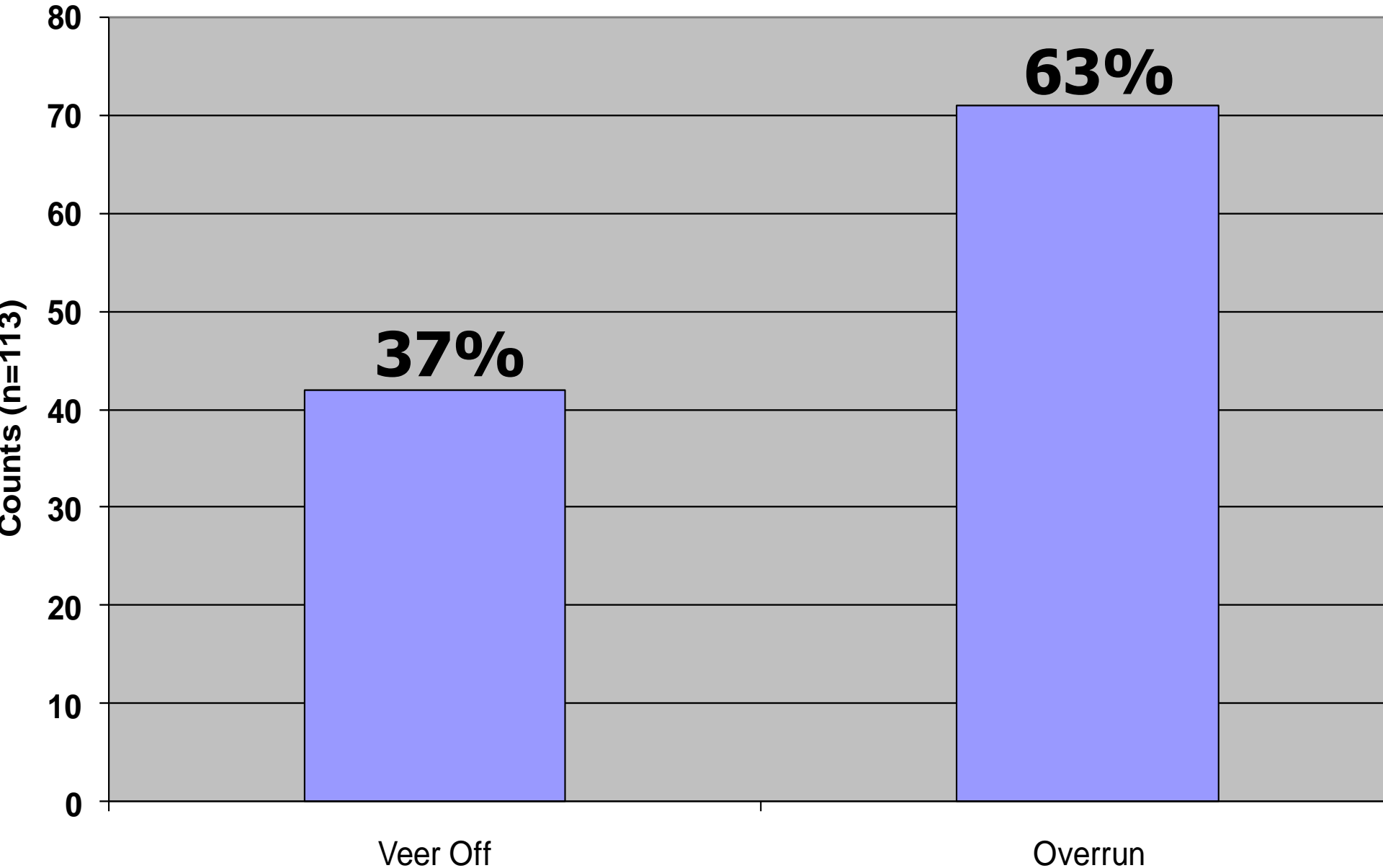
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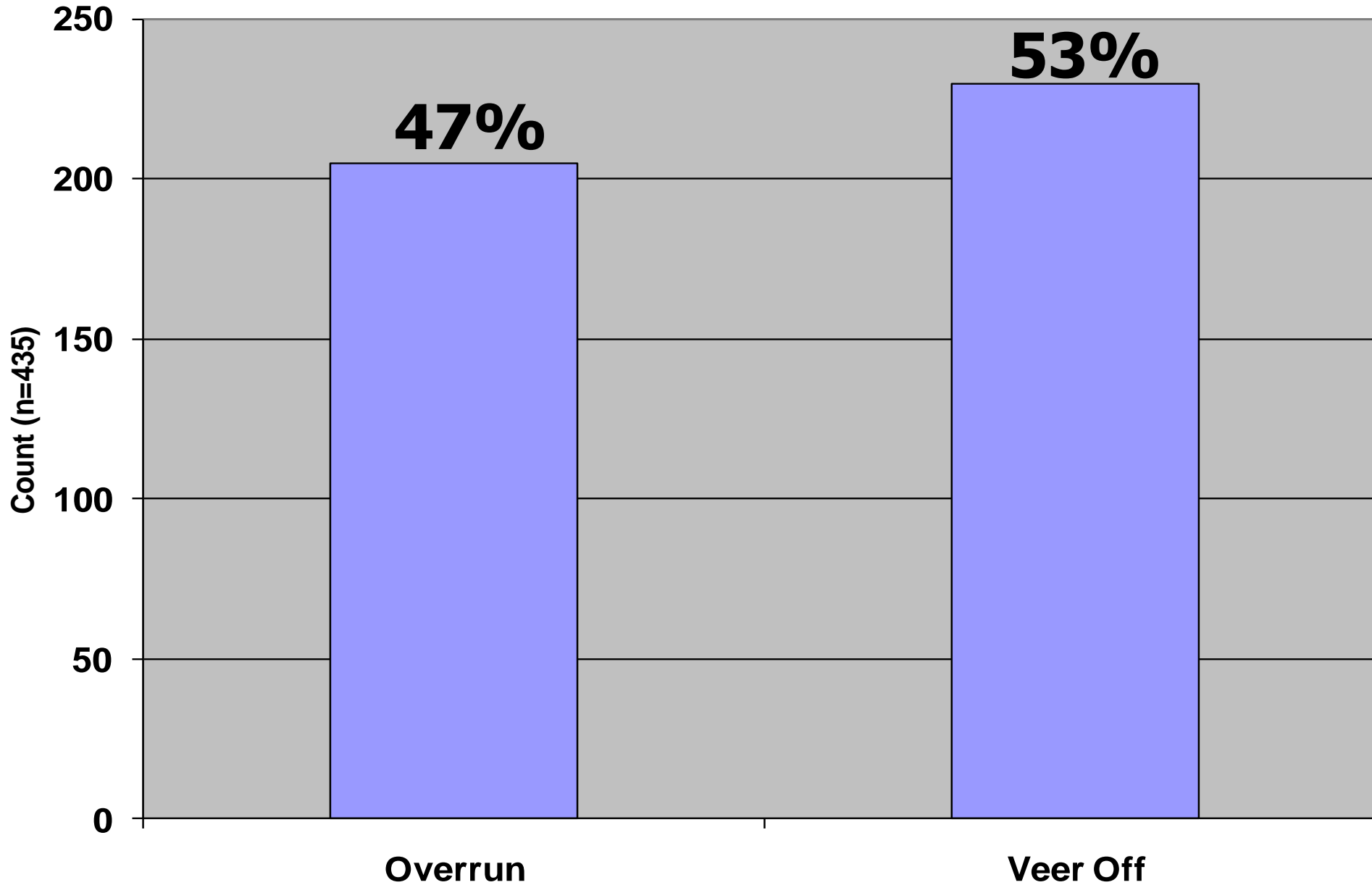
Runway Excursions - Type



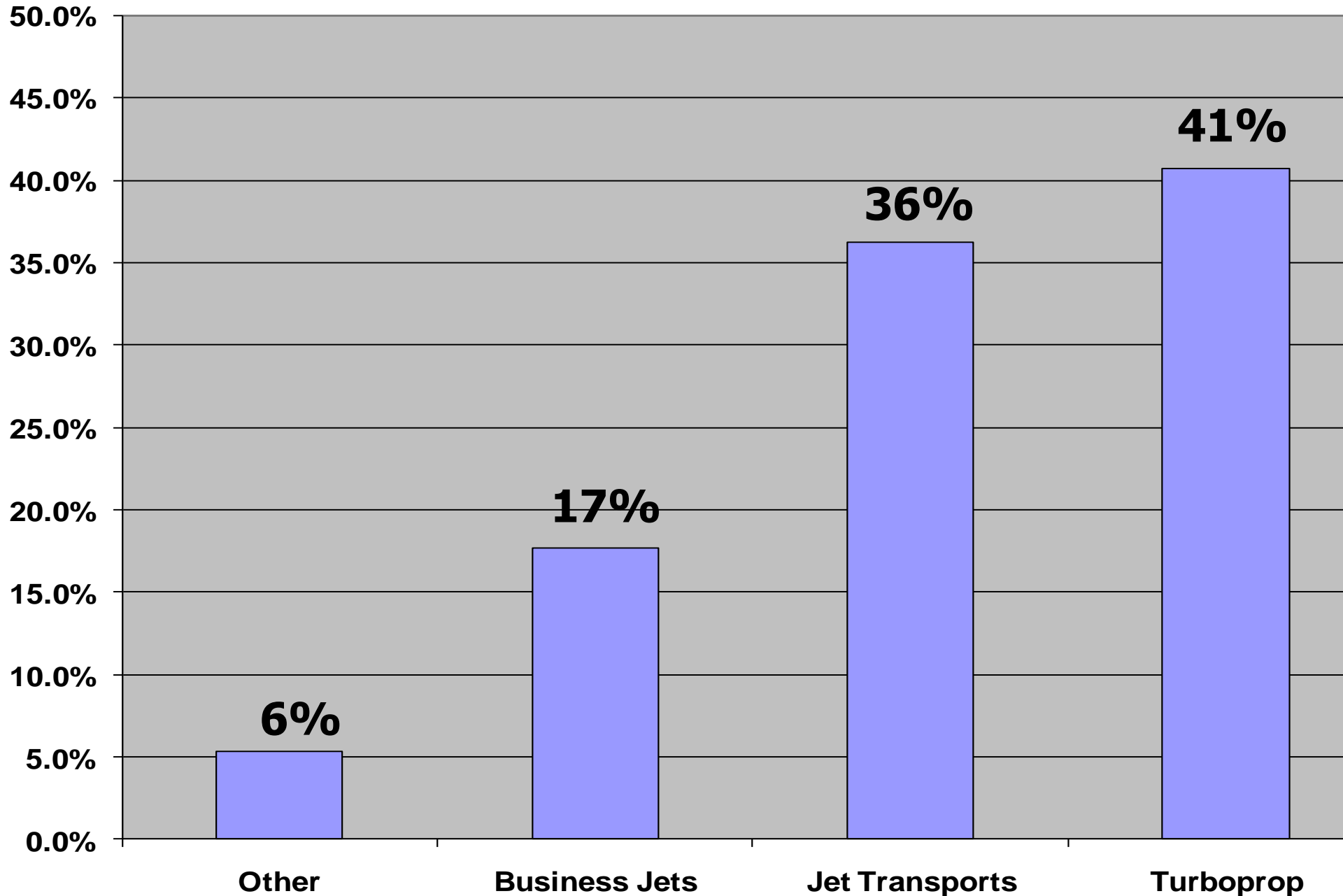
Takeoff Excursions



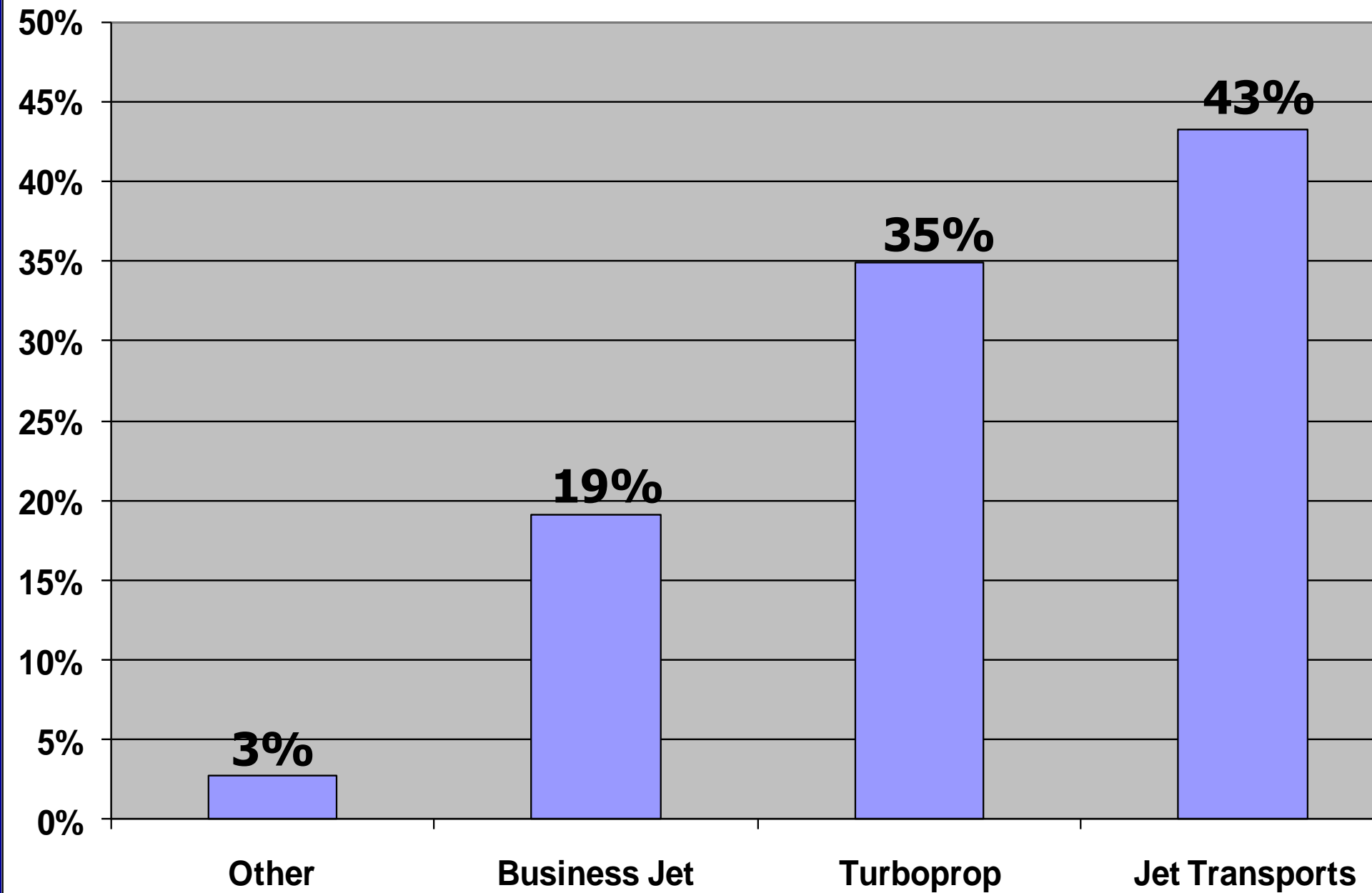
Landing Excursions - Type



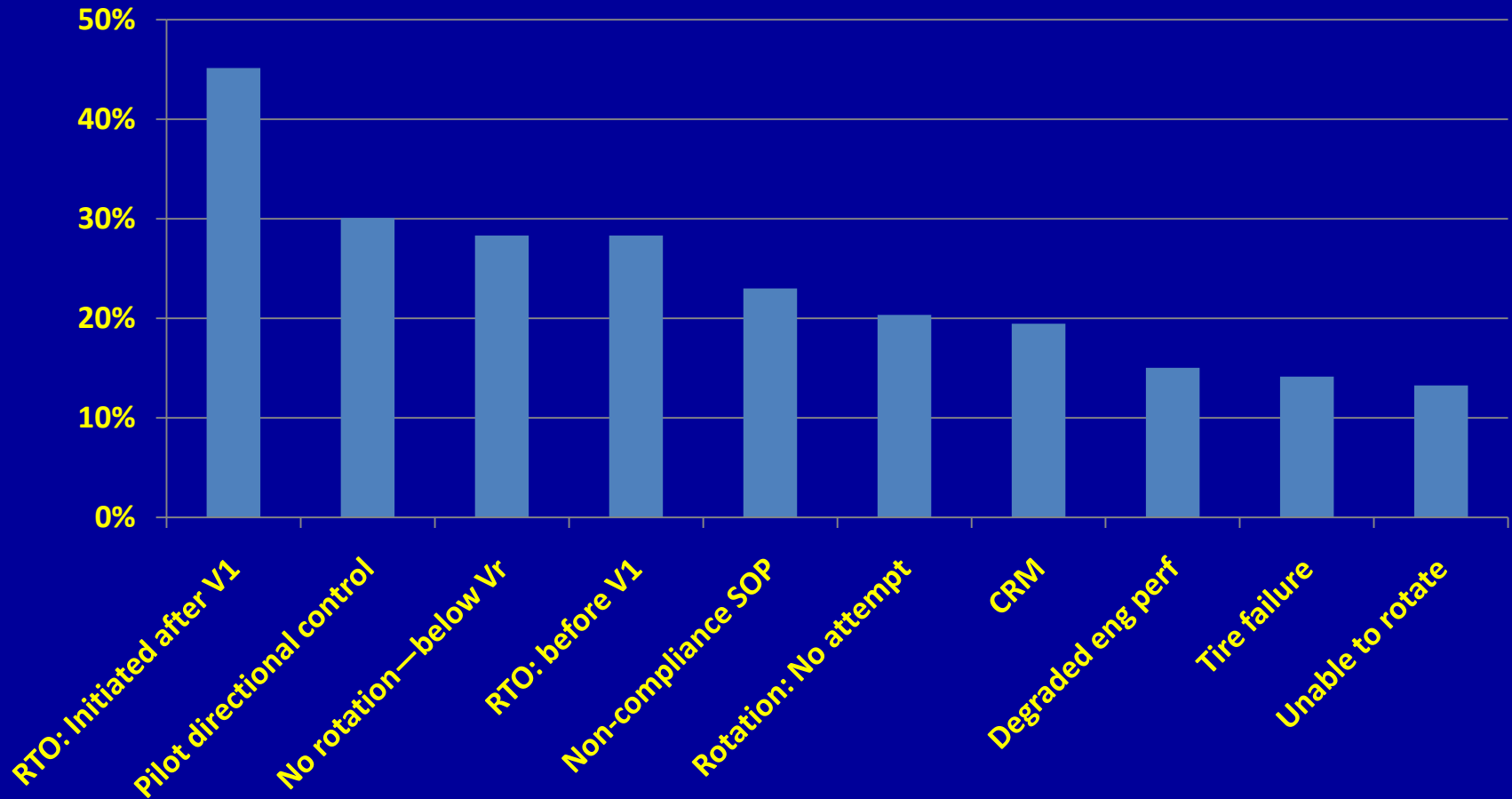
Takeoff Excursions - Fleet Composition



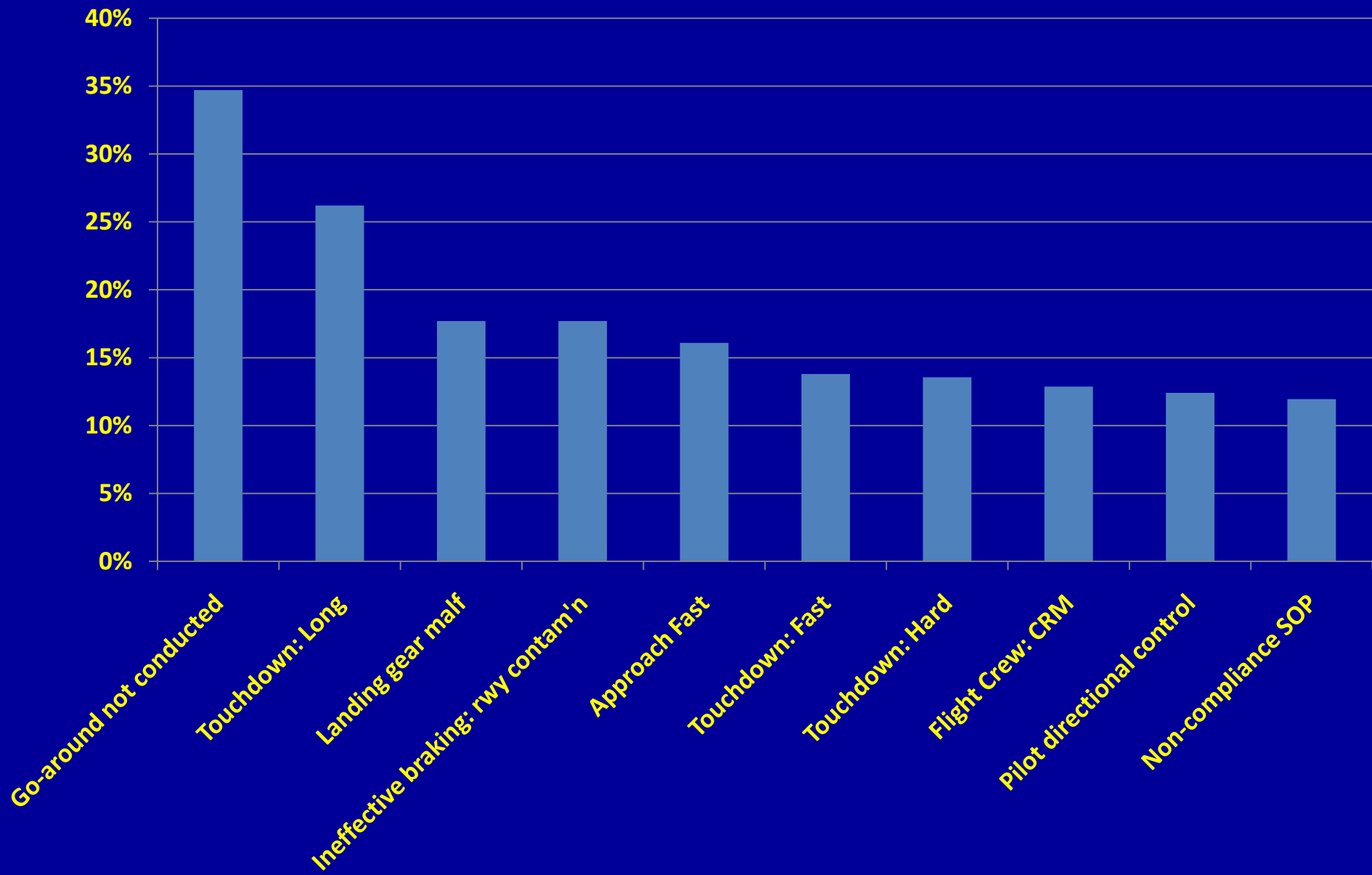
Landing Excursions - Fleet Composition



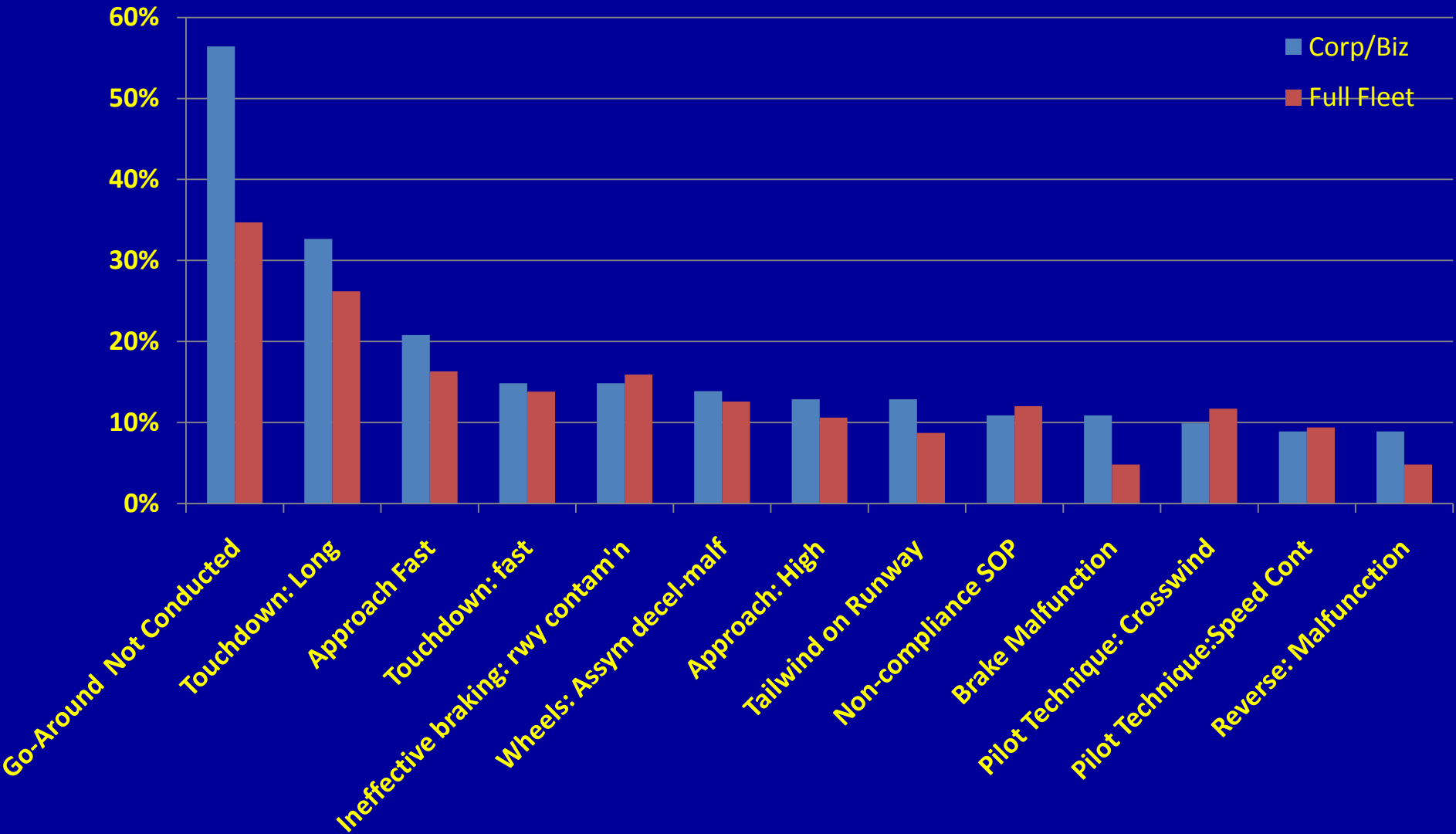
Takeoff Excursions – Top 10 Factors



Landing Excursions – Top 10 Factors



Corp/Biz Aircraft vs. Full Fleet - Landing Excursions



Reducing the Risk of
RUNWAY EXCURSIONS

REPORT OF THE RUNWAY SAFETY INITIATIVE





Flight Safety Foundation

ALAR

W
WINDOWS



M
MACINTOSH

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Approach-and-landing Accident Reduction

Tool Kit

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Official Release v. 3.0



FSF Goal:

Make Aviation Safer by Reducing the Risk of an Accident

