Statistical Summary of Commercial Jet Airplane Accidents

Worldwide Operations
1959 - 2010

1959

2010

Contents

Published by:
Aviation Safety
Boeing Commercial Airplanes
P.O. Box 3707 M/C 07-32
Seattle, Washington 98124-2207, U.S.A.
(425) 237-3086
E-mail: statsum@boeing.com
http://www.boeing.com/news/techissues/pdf/statsum.pdf
June 2011

Introduction

The accident statistics presented in this summary are confined to worldwide commercial jet airplanes that are heavier than 60,000 pounds maximum gross weight. Within that set of airplanes, there are two groups excluded:

1) Airplanes manufactured in the Commonwealth of Independent States (CIS) or the Union of Soviet Socialist Republics (USSR) are excluded because of the lack of operational data; and

2) Commercial airplanes operated in military service. (However, if a military-owned commercial jet transport is used for civilian commercial service, those data will be included in this summary.)

The following airplanes are included in the statistics:

717	DC-8	A300	BAe 146	F-28	Concorde	L-1011	BAC 1-11	Comet 4
707/720	DC-9	A300-600	Avro RJ-70/-85/-100	F-70				Trident
727	DC-10/MD-10	A310	CRJ-700/-900/-1000	F-100				Caravelle
737	MD-11	A320/321/319/318	EMB-170/-190					Mercure
747	MD-80/-90	A330						CV-880/-990
757		A340						VC-10
767		A380						
777								

Flight operations data for Boeing airplanes are developed internally from airline operator reports. Flight operations data for non-Boeing airplanes are compiled from www.ascendworldwide.com, by Ascend. The source of jet airplane inventory data is Jet Information Services, Inc.

Accident data are obtained, when available, from government accident reports. Otherwise, information is from operators, manufacturers, various government and private information services, and press accounts.

Readers may note that cumulative accident totals from year to year may not exactly correlate with the expected change from the previous year's accidents. This is a result of periodic audits of the entire accident history for updates to the data.

Definitions related to development of statistics in this summary are primarily based on corresponding International Civil Aviation Organization (ICAO), National Transportation Safety Board (NTSB), and Flight Safety Foundation (FSF) terms as explained in the next section.

Definitions

Airplane Accident: An occurrence associated with the operation of an airplane that takes place between the time any person boards the airplane with the intention of flight and such time as all such persons have disembarked, in which:

- Death or serious injury results from:
  - Being in the airplane; or
  - Direct contact with the airplane or anything attached thereto; or
  - Direct exposure to jet blast;

  Excluding:
    - Fatal and nonfatal injuries from natural causes; and
    - Fatal and nonfatal self-inflicted injuries or injuries inflicted by other persons; and
    - Fatal and nonfatal injuries of stowaways hiding outside the areas normally available to the passengers and crew; and
    - Nonfatal injuries resulting from atmospheric turbulence, maneuvering, loose objects, boarding, disembarking, evacuation, and maintenance and servicing; and
    - Nonfatal injuries to persons not aboard the airplane; or
- The airplane sustains substantial damage; or
- The airplane is missing or is completely inaccessible.

The following occurrences are **not** considered airplane accidents – those that are the result of experimental test flights or the result of a hostile action, including sabotage, hijacking, terrorism, and military action.

Note: This is generally consistent with the ICAO and the NTSB definition of an accident (see the Referenced ICAO and NTSB Definitions section). The differences are:

1) *The ICAO and NTSB references to "aircraft" were changed to "airplane" and references to propellers and rotors were eliminated; and*

2) *This publication excludes events that result in nonfatal injuries from atmospheric turbulence, maneuvering, etc.; nonfatal injuries to persons not aboard the airplane; and any events that result from an experimental test flight or from hostile action, such as sabotage, hijacking, terrorism, and military action.*

Note: Within this publication, the term "accident" is used interchangeably with "airplane accident."

Definitions (continued)

Destroyed: The estimated or likely cost of repairs would have exceeded 50 percent of the new value of the airplane had it still been in production at the time of the accident.

Note: This definition is consistent with the FSF definition. NTSB defines "destroyed" as damaged due to impact, fire, or in-flight failures to an extent not economically repairable.

Fatal Injury: Any injury that results in death within 30 days of the accident.

Note: This is consistent with both the ICAO and the NTSB definitions.

Major Accident: An accident in which any of three conditions is met:

- The airplane was destroyed; or
- There were multiple fatalities; or
- There was one fatality and the airplane was substantially damaged.

Note: This definition is consistent with the NTSB definition. It is also generally consistent with FSF, except that FSF confines multiple fatalities to occupants. ICAO does not normally define the term "major accident".

Serious Injury: An injury which is sustained by a person in an accident and which:

- Requires hospitalization for more than 48 hours, commencing within seven days from the date the injury was received; or
- Results in a fracture of any bone (except simple fractures of fingers, toes, or nose); or
- Involves lacerations which cause severe hemorrhage, nerve, muscle, or tendon damage; or
- Involves injury to any internal organ; or
- Involves second- or third-degree burns, or any burns affecting more than 5 percent of the body surface; or
- Involves verified exposure to infectious substances or injurious radiation.

Note: This is consistent with the ICAO definition. It is also consistent with NTSB's except for the last bullet item, which is not included in the NTSB definition.

Definitions (continued)

Substantial Damage: Damage or failure which adversely affects the structural strength, performance, or flight characteristics of the airplane, and which would normally require major repair or replacement of the affected component.
Substantial damage is **not** considered to be:

- Engine failure or damage limited to an engine if only one engine fails or is damaged
- Bent fairings or cowlings
- Dents in the skin
- Small puncture holes in the skin
- Damage to wheels
- Damage to tires
- Damage to flaps
- Damage to engine accessories
- Damage to brakes
- Damage to wingtips

Note 1. – This is generally consistent with the NTSB definition of substantial damage except: 1) It deletes reference to "puncture holes in the fabric" and "ground damage to rotor or propeller blades"; and 2) It deletes "damage to landing gear" from the list of items not considered to be substantial damage.

Note 2. – ICAO does not define the term substantial damage. Still, the above definition is generally consistent with the ICAO definition of structural damage contained within part (b) of the ICAO accident definition.

Boeing Terms

The terms on this page were created by Boeing for this publication and do not have corresponding equivalents in ICAO, NTSB, etc.

Accident Rates: In general, this expression is a measure of accidents per million departures. Departures (or flight cycles) are used as the basis for calculating rates, since there is a stronger statistical correlation between accidents and departures than there is between accidents and flight hours, or between accidents and the number of airplanes in service, or between accidents and passenger miles or freight miles. Airplane departures data are continually updated and revised as new information and estimating processes become available. These form the baseline for the measure of accident rates and, as a consequence, rates may vary between editions of this publication.

Airplane Collisions: Events involving two or more airplanes are counted as separate events, one for each airplane. For example, destruction of two airplanes in a collision is considered to be two separate accidents.

Fatal Accident: An accident that results in fatal injury.

Hull Loss: Airplane totally destroyed or damaged and not repaired. Hull loss also includes but is not limited to events in which:

- The airplane is missing; or
- The search for the wreckage has been terminated without it being located; or
- The airplane is completely inaccessible.

Note: Neither ICAO nor NTSB has a definition for hull loss.

Exclusions

Certain airplanes and events are excluded from consideration as accidents in this summary. This is a complete list of those exclusions.

Excluded Airplanes

Airplanes manufactured in the Commonwealth of Independent States (CIS) or the Union of Soviet Socialist Republics (USSR) are excluded because of the lack of operational data. Commercial airplanes operated in military service are also excluded. (However, if a military-owned commercial jet transport is used for civilian commercial service, those data are included in this summary.)

Excluded Events

- Fatal and nonfatal injuries from natural causes;
- Fatal and nonfatal self-inflicted injuries or injuries inflicted by other persons;
- Fatal and nonfatal injuries of stowaways hiding outside the areas normally available to the passengers and crew;
- Nonfatal injuries resulting from atmospheric turbulence, maneuvering, loose objects, boarding, disembarking, evacuation, and maintenance and servicing;
- Nonfatal injuries to persons not aboard the airplane;
- Experimental test flights (however, maintenance test flights, ferry, positioning, training, and demonstration flights are not excluded);
- Sabotage, hijacking, terrorism, and military action.

Referenced ICAO and NTSB Definitions

International Civil Aviation Organization (ICAO) and National Transportation Safety Board (NTSB) definitions are included below for reference.

Accident

ICAO defines an **accident** as follows:

An occurrence associated with the operation of an aircraft which takes place between the time any person boards the aircraft with the intention of flight until such time as all such persons have disembarked, in which:

a) A person is fatally or seriously injured as a result of:
   - Being in the aircraft, or
   - Direct contact with any part of the aircraft, including parts which have become detached from the aircraft, or
   - Direct exposure to jet blast,

   except when the injuries are from natural causes, self-inflicted or inflicted by other persons, or when the injuries are to stowaways hiding outside the areas normally available to the passengers and crew; or
b) The aircraft sustains damage or structural failure which:
   - Adversely affects the structural strength, performance, or flight characteristics of the aircraft, and
   - Would normally require major repair or replacement of the affected component,

   except for engine failure or damage, when the damage is limited to the engine, its cowlings or accessories; or for damage limited to propellers, wing tips, antennas, tires, brakes, fairings, small dents or puncture holes in the aircraft skin; or
c) The aircraft is missing or is completely inaccessible.

NTSB defines an **aircraft accident** as follows:

Aircraft accident means an occurrence associated with the operation of an aircraft which takes place between the time any person boards the aircraft with the intention of flight and all such persons have disembarked, and in which any person suffers death or serious injury, or in which the aircraft receives substantial damage.

Referenced ICAO and NTSB Definitions (continued)

Serious Injury

ICAO defines **serious injury** as follows:

An injury which is sustained by a person in an accident and which:

a) Requires hospitalization for more than 48 hours, commencing within seven days from the date the injury was received; or
b) Results in a fracture of any bone (except simple fractures of fingers, toes, or nose); or
c) Involves lacerations which cause severe hemorrhage, nerve, muscle, or tendon damage; or
d) Involves injury to any internal organ; or
e) Involves second or third degree burns, or any burns affecting more than 5 percent of the body surface; or
f) Involves verified exposure to infectious substances or injurious radiation.

NTSB defines **serious injury** as follows:

Serious injury means any injury which:

1) Requires hospitalization for more than 48 hours, commencing within 7 days from the date the injury was received;
2) Results in a fracture of any bone (except simple fractures of fingers, toes, or nose);
3) Causes severe hemorrhages, nerve, muscle, or tendon damage;
4) Involves any internal organ; or
5) Involves second- or third-degree burns, or any burns affecting more than 5 percent of the body surface.

Substantial Damage

NTSB defines **substantial damage** as follows:

Damage or failure that adversely affects the structural strength, performance, or flight characteristics of the aircraft, and that would normally require major repair or replacement of the affected component. Engine failure or damage limited to an engine if only one engine fails or is damaged, bent fairings or cowling, dented skin, small puncture holes in the skin or fabric, ground damage to rotor or propeller blades, and damage to landing gear, wheels, tires, flaps, engine accessories, brakes, or wingtips are not considered “substantial damage.”

ICAO does not define the term **substantial damage**.

2010 Airplane Accidents

All Accidents – Worldwide Commercial Jet Fleet

Event Date	Airline	Model (A/P Age in Years)	Type of Operation	Accident Location	Phase of Flight	Event Description	Damage Category	Hull Loss	Injury Category	Onboard Fatalities / Occupants (External Fatalities)	Major Accident
2-Jan-10	Compagnie Africaine d'Aviation	727 (29)	Charter Cargo	Kinshasa, Congo DR	Landing	The crew reported an hydraulic problem shortly after takeoff and elected to return. The airplane touched down normally, but veered off the runway, collapsing the landing gear. There were no injuries.	Destroyed	X			X
15-Jan-10	Iran Air	F100 (19)	Sched Pax	Isfahan, Iran	Landing	The airplane's nose landing gear collapsed after a hard landing. The airplane stopped on the runway. There were no injuries.	Substantial				
16-Jan-10	Utair	737-500 (15)	Sched Pax	Moscow, Russia	Taxi	The airplane's nose gear collapsed when it departed the runway during exit onto a taxiway. Light snow was reported at the time. There were no injuries.	Substantial				
19-Jan-10	Mexicana Airlines	A318 (5)	Sched Pax	Cancun, Mexico	Takeoff	During the takeoff roll, after the airplane had begun rotation, the fan cowls on the left engine opened and were torn off. Parts of the cowls struck the engine pylon, the wing and the rear fuselage. The crew elected to return where a safe landing was carried out. There were no injuries.	Substantial				
25-Jan-10	Ethiopian Airlines	737-800 (8)	Sched Pax	(near) Beirut, Lebanon	Climb	The airplane crashed into the Mediterranean sea shortly after takeoff from Beirut. The accident happened in darkness and in poor weather with heavy rain associated with local thunderstorm activity.	Destroyed	X	Fatal	90/90 (0)	X
30-Jan-10	Spring Airlines	A320 (< 1)	Sched Pax	Shenyang, China	Landing	Following a reportedly normal approach, the airplane suffered a tail strike on landing. There were no injuries.	Substantial				
6-Feb-10	SAS	MD-82 (18)	Charter Pax	Grenoble, France	Landing	During the landing flare, a high rate of descent developed and the airplane suffered a heavy tail strike. There were no injuries.	Substantial				
11-Feb-10	Click Mexicana	F100 (18)	Sched Pax	Monterrey, Mexico	Landing	The left main landing gear failed to fully extend on approach. After touchdown, the airplane veered off the runway onto soft ground. There were no injuries.	Substantial				
13-Feb-10	Southwest Airlines	737-700 (4)	Sched Pax	(near) Santa Clarita, USA	Approach	During approach the flight crew responded to a Traffic and Collision Avoidance System (TCAS) Resolution Advisory (RA). As a result of the avoidance maneuver one flight attendant was injured.			Serious		
1-Mar-10	ACT Airlines	A300-B4 (29)	Charter Cargo	Bagram, Afghanistan	Landing	During landing rollout, the airplane's left main landing gear collapsed. The airplane came to a stop off the left side of the runway, resting on its left wing, left engine, and rear fuselage. There were no injuries.	Substantial	X			
1-Mar-10	Air Tanzania	737-200 (23)	Sched Pax	Mwanza, Tanzania	Landing	On landing, the airplane veered off the runway. It ran roughly parallel to the runway until the nose gear dug in, and collapsed. There were no injuries.	Substantial	X			

2010 Airplane Accidents

All Accidents – Worldwide Commercial Jet Fleet

Event Date	Airline	Model (A/P Age in Years)	Type of Operation	Accident Location	Phase of Flight	Event Description	Damage Category	Hull Loss	Injury Category	Onboard Fatalities / Occupants (External Fatalities)	Major Accident
4-Mar-10	China Airlines	747-400 (3)	Sched Cargo	Anchorage, USA	Takeoff	The airplane suffered a tail strike on takeoff. It continued to its destination and made an uneventful landing. Inspection revealed extensive damage to the rear lower fuselage. There were no injuries.	Substantial				
4-Mar-10	Cobham Aviation Australia	717 (8)	Sched Pax	Ayers Rock, Australia	Parked	During preparation for departure, a flight attendant fell from the airplane during the passenger door closing operation when the portable stairs were being pulled away. There was no damage to the airplane.			Serious		
2-Apr-10	Egyptair	A330 (4)	Sched Pax	Cairo, Egypt	Taxi	During taxi for departure the crew followed the wrong taxi routing. The left wing struck two light poles. There were no injuries.	Substantial				
9-Apr-10	Southwest Airlines	737-300 (14)	Sched Pax	Los Angeles, USA	Pushback	During pushback operation, an unmanned baggage cart tug contacted the #1 engine cowl, passed under the fuselage, and came to a stop after impacting the #2 engine cowl. There were no injuries.	Substantial				
13-Apr-10	Merpati Nusantara Airlines	737-300 (20)	Sched Pax	Manokwari, Indonesia	Landing	The airplane sustained significant damage when it overran the end of the runway and went down a slope into a small river bed. The accident occurred in daylight but in rain and mist.	Destroyed	X	Serious		X
13-Apr-10	AeroUnion	A300-B4 (31)	Sched Cargo	(near) Monterrey, Mexico	Approach	The airplane impacted the ground approximately 2 km short of the runway during final approach to land. The accident occurred at night in rain showers.	Destroyed	X	Fatal	5/5 (1)	X
12-May-10	Afriqiyah Airways	A330 (< 1)	Sched Pax	(near) Tripoli, Libya	Approach	The airplane impacted the ground approximately 1 km short of the runway on a non-precision approach. The accident occurred at dawn.	Destroyed	X	Fatal	103/104 (0)	X
22-May-10	Air India Express	737-800 (2)	Sched Pax	Mangalore, India	Landing	The airplane landed long, overran the runway, contacted the localizer antenna structure, and went down a steep ravine. It was consumed by fire. The accident occurred in daylight.	Destroyed	X	Fatal	158/166 (0)	X
5-Jun-10	US Airways	A321 (1)	Sched Pax	Charlotte, USA	Parked	The airplane's rudder was struck by another taxiing airplane's wingtip. There were no injuries.	Substantial				
6-Jun-10	Royal Air Maroc	737-400 (19)	Sched Pax	near Amsterdam, Netherlands	Initial Climb	Shortly after takeoff, the airplane suffered multiple bird strikes (geese) to the left engine, lower fuselage, and tail. The crew shut down the engine and turned back to a safe landing. There were no injuries.	Substantial				

2010 Airplane Accidents

All Accidents – Worldwide Commercial Jet Fleet

Event Date	Airline	Model (A/P Age in Years)	Type of Operation	Accident Location	Phase of Flight	Event Description	Damage Category	Hull Loss	Injury Category	Onboard Fatalities / Occupants (External Fatalities)	Major Accident
21-Jun-10	Hewa Bora Airways	MD-82 (26)	Sched Pax	Kinshasa, Congo DR	Takeoff	Damage from a burst tire on takeoff caused the loss of one hydraulic system and led the crew to shut down an engine. During the return to land, the crew were unable to lower all the gear. The airplane veered off the runway after touchdown. There were no injuries.	Substantial				
27-Jul-10	Lufthansa Cargo	MD-11 (17)	Sched Cargo	Riyadh, Saudi Arabia	Landing	The airplane made a hard, bounced landing that heavily damaged the landing gear and fuselage, causing the airplane to veer off the runway. A fire broke out that consumed the airplane. There were several minor injuries.	Destroyed	X			X
28-Jul-10	AirBlue Limited	A321 (10)	Sched Pax	(near) Islamabad, Pakistan	Approach	The airplane crashed into a hillside apparently during the downwind leg of a circling visual approach. The accident occurred in daylight but in adverse weather conditions.	Destroyed	X	Fatal	152/152 (0)	X
28-Jul-10	Mauritania, Airways	737-700 (9)	Sched Pax	Conakry, Guinea	Landing	The airplane overran the runway on landing, impacted the localizer antenna supports and stopped after the nose gear collapsed. There were no injuries.	Substantial	X			
12-Aug-10	Azerbaijan Airlines	A319 (4)	Sched Pax	Istanbul, Turkey	Landing	Following a VOR/DME approach, the airplane reportedly landed long. To avoid an overrun, the pilot attempted to steer the airplane onto a taxiway. It overran the taxiway which caused the nose landing gear to collapse. There were no injuries.	Substantial				
16-Aug-10	Aires Colombia	737-700 (7)	Sched Pax	San Andres Island, Colombia	Landing	The airplane touched down short of the runway threshold. The fuselage broke into three main sections which came to rest on the runway. The accident occurred at night in rainy, gusty weather.	Destroyed	X	Fatal	2/121 (0)	X
20-Aug-10	Chanchangi Airlines	737-200 (27)	Sched Pax	Kaduna, Nigeria	Landing	The airplane undershot on approach, striking the localizer antenna and approach lights before touching down short of the runway threshold. It came to a stop on the runway, where it was evacuated. There were no injuries.	Substantial				
24-Aug-10	Henan Airlines	EMB 190 (2)	Sched Pax	Yichun, China	Final Approach	Following a non-precision approach, the airplane undershot the normal approach, impacted treetops before touching down and came to a stop about 1000m short of the runway. The airplane was consumed by fire. The accident occurred at night in reported foggy conditions.	Destroyed	X	Fatal	42/96 (0)	X

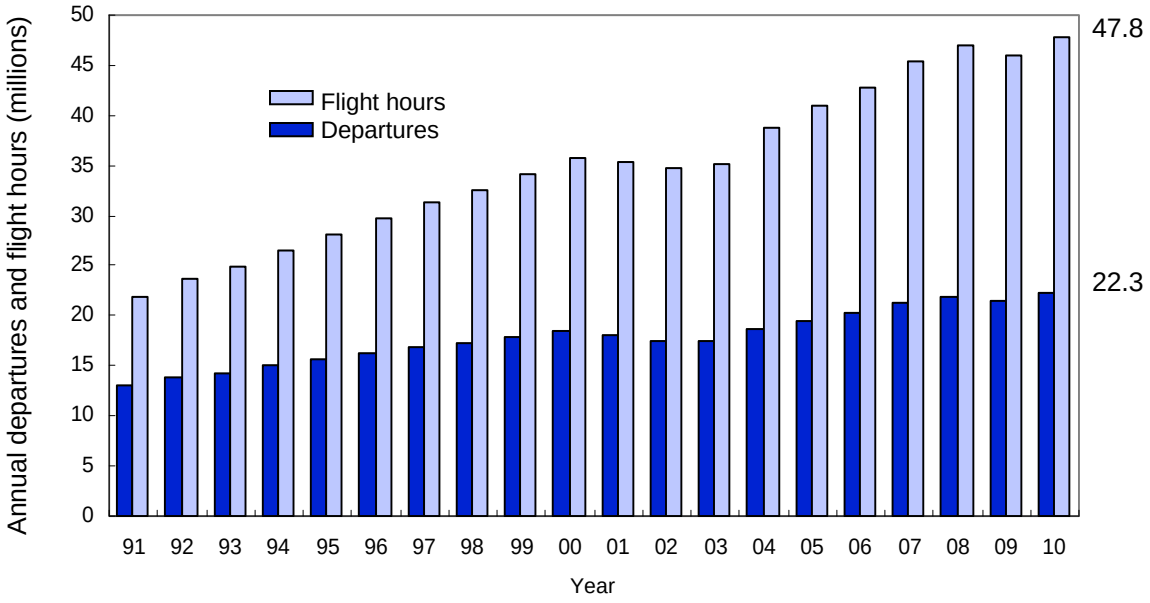
2010 Airplane Accidents

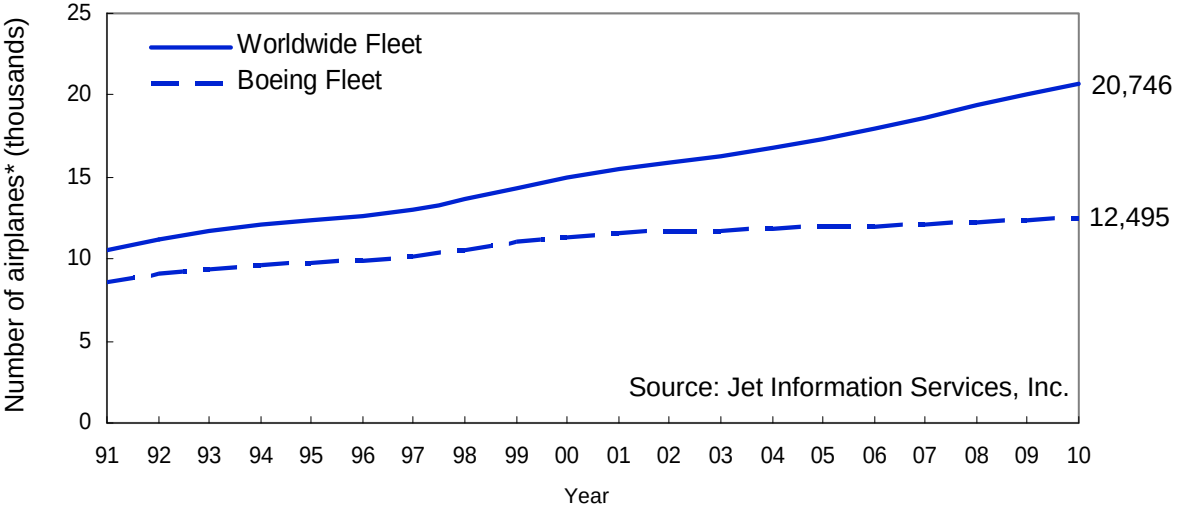
All Accidents – Worldwide Commercial Jet Fleet

Event Date	Airline	Model (A/P Age in Years)	Type of Operation	Accident Location	Phase of Flight	Event Description	Damage Category	Hull Loss	Injury Category	Onboard Fatalities / Occupants (External Fatalities)	Major Accident
26-Aug-10	Iran Aseman Airlines	F100 (17)	Sched Pax	Tabriz, Iran	Landing	The airplane overran the runway on landing. It came to a stop about 500 m past the runway when its nose landing gear went into a drainage channel and its nose hit the ground. There were several minor injuries.	Substantial	X			
3-Sep-10	UPS	747-400 (2)	Sched Cargo	(near) Dubai, India	Cruise	In cruise, upon reporting a fire and smoke in the flight deck, the crew requested an emergency descent and return. After overflying the airport, the airplane began a turn, descended rapidly, and crashed.	Destroyed	X	Fatal	2/2 (0)	X
6-Sep-10	easyJet	A320 (5)	Sched Pax	London, United Kingdom	Parked	A flat bed truck, that was maneuvering into position, struck the airplane's bulk cargo door and surrounding structure. There were no injuries.	Substantial				
24-Sep-10	Wind Jet	A319 (5)	Sched Pax	Palermo, Italy	Landing	On a VOR approach, the airplane touched down short of the runway after encountering thunderstorms and windshear. It impacted the localizer antenna and came to rest off the side of the runway. There were minor injuries.	Substantial	X			
25-Sep-10	Atlantic Southeast Airlines	CRJ900 (1)	Sched Pax	New York, USA	Landing	The crew broke off the initial approach when the right main landing gear failed to extend. The airplane touched down and came to a stop on the runway resting on its right wing. There were no injuries.	Substantial				
3-Oct-10	Thomsonfly	767 (15)	Sched Pax	Bristol, United Kingdom	Landing	The airplane touched down hard on the runway causing buckling of the upper fuselage skin as well as significant internal structural deformation and failure. There were no injuries.	Substantial				
31-Oct-10	Turkish Airlines	A310 (22)	Sched Cargo	Casablanca, Morocco	Landing	The airplane lost directional control during the landing roll and veered off the side of the runway. There were no injuries.	Substantial				
2-Nov-10	Lion Air	737-400 (19)	Sched Pax	Pontianak, Indonesia	Landing	The airplane overran the runway on landing. It came to rest in soft ground; all landing gear were damaged. There were no injuries.	Substantial				
4-Nov-10	Global Air	737-200 (35)	Charter Pax	Puerto Vallarta, Mexico	Landing	The airplane landed with the nose landing gear retracted. The airplane came to rest on its nose on the runway. There were no injuries.	Substantial				
4-Nov-10	QANTAS	A380 (2)	Sched Pax	near Batam Island, Indonesia	Cruise	The airplane suffered an uncontained engine failure shortly after takeoff during climb. There were no injuries.	Substantial				
10-Nov-10	Kuwait Airways	A300-600 (18)	Sched Pax	Kuwait City, Kuwait	Parked	After a fire indication, the flight crew elected to return. The airplane stopped on the runway where passengers evacuated using the escape slides.			Fatal	1/238 (0)	
40	Total Accidents							16		555 Onboard (1) External	11

Departures, Flight Hours, and Jet Airplanes in Service*

Worldwide Operations 1991 Through 2010





- 586 million departures since 1959 (445 million on Boeing airplanes)
- 1,043 million flight hours since 1959 (797 million on Boeing airplanes)

* Certified jet airplanes greater than 60,000 pounds maximum gross weight, including those in temporary non-flying status and those in use by non-airline operators. Excluded are commercial airplanes operated in military service and CIS/USSR-manufactured airplanes.

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Accident Summary by Type of Operation

Worldwide Commercial Jet Fleet

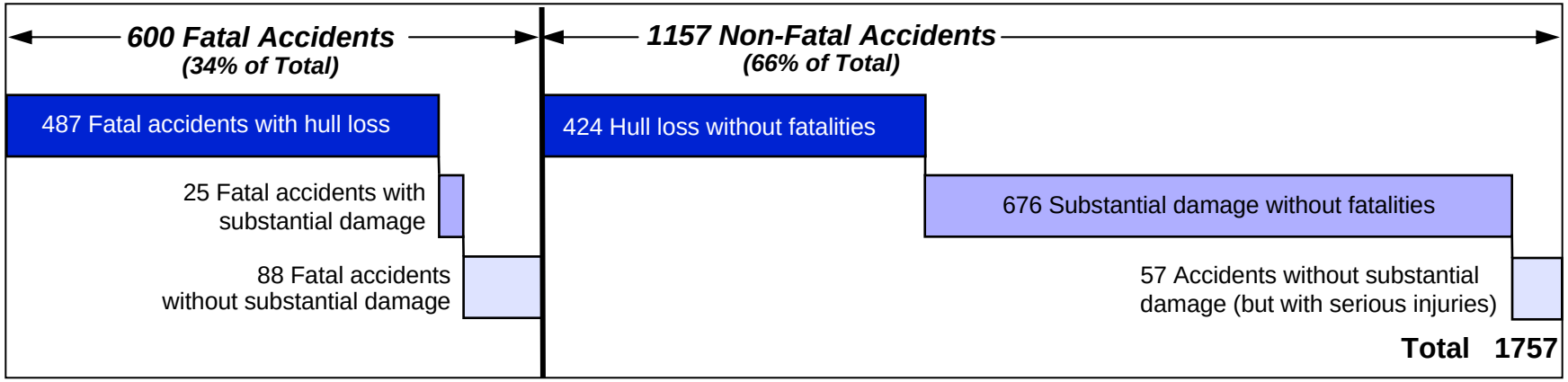
Type of operation	All Accidents		Fatal Accidents		Onboard Fatalities (External Fatalities)*		Hull Loss Accidents	
	1959-2010	2001-2010	1959-2010	2001-2010	1959-2010	2001-2010	1959-2010	2001-2010
Passenger	1,390	308	481	69	28,381 (777)	4,711 (157)	669	132
– *Scheduled*	*1,276*	*287*	*436*	*67*	*24,267*	*4,707*	*602*	*126*
– *Charter*	*114*	*21*	*45*	*2*	*4,114*	*4*	*67*	*6*
Cargo	250	80	75	15	262 (330)	46 (74)	169	50
Maintenance test, ferry, positioning, training, and demonstration	117	11	44	3	208 (66)	17 (0)	73	8
Totals	1,757	399	600	87	28,851 (1,173)	4,774 (231)	911	190
U.S. and Canadian Operators	541	75	178	12	6,158 (381)	265 (15)	219	29
Rest of the World	1,216	324	422	75	22,693 (792)	4,509 (216)	692	161
Totals	1,757	399	600	87	28,851 (1,173)	4,774 (231)	911	190

*External fatalities include on-ground fatalities as well as fatalities on other aircraft involved.

Accident Summary by Injury and Damage

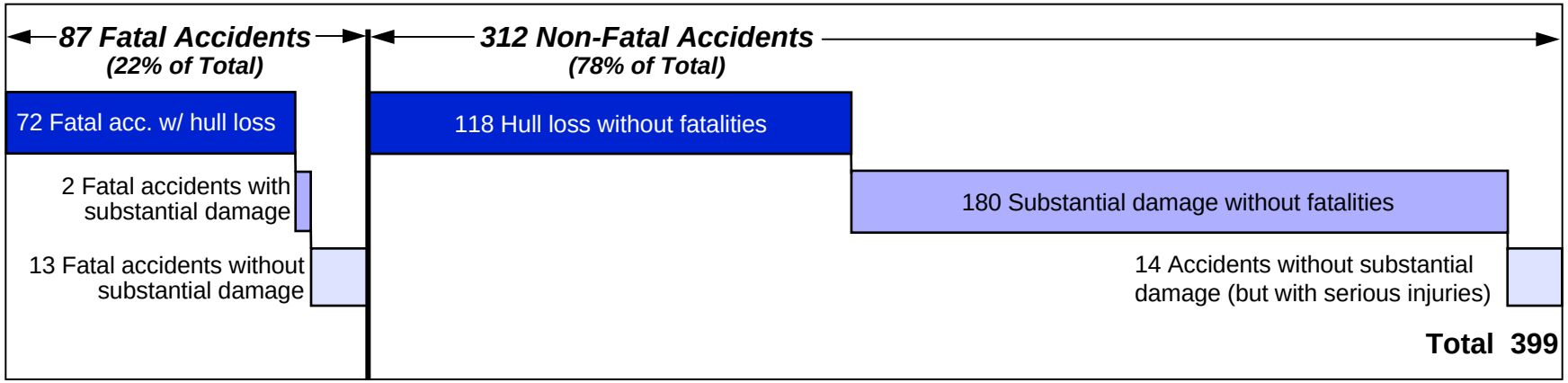
All Accidents – Worldwide Commercial Jet Fleet

1959 Through 2010



Number of Accidents

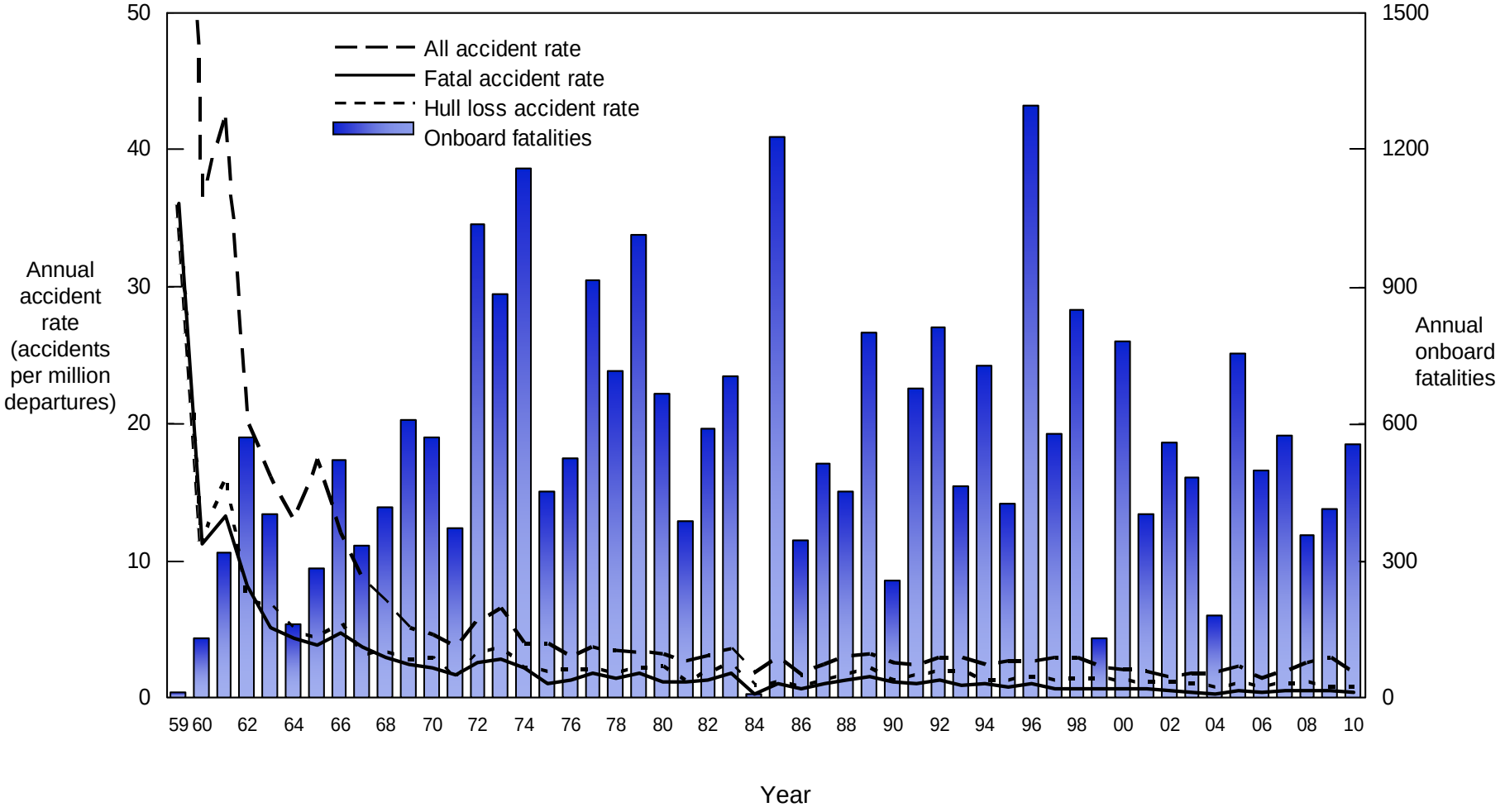
2001 Through 2010



Number of Accidents

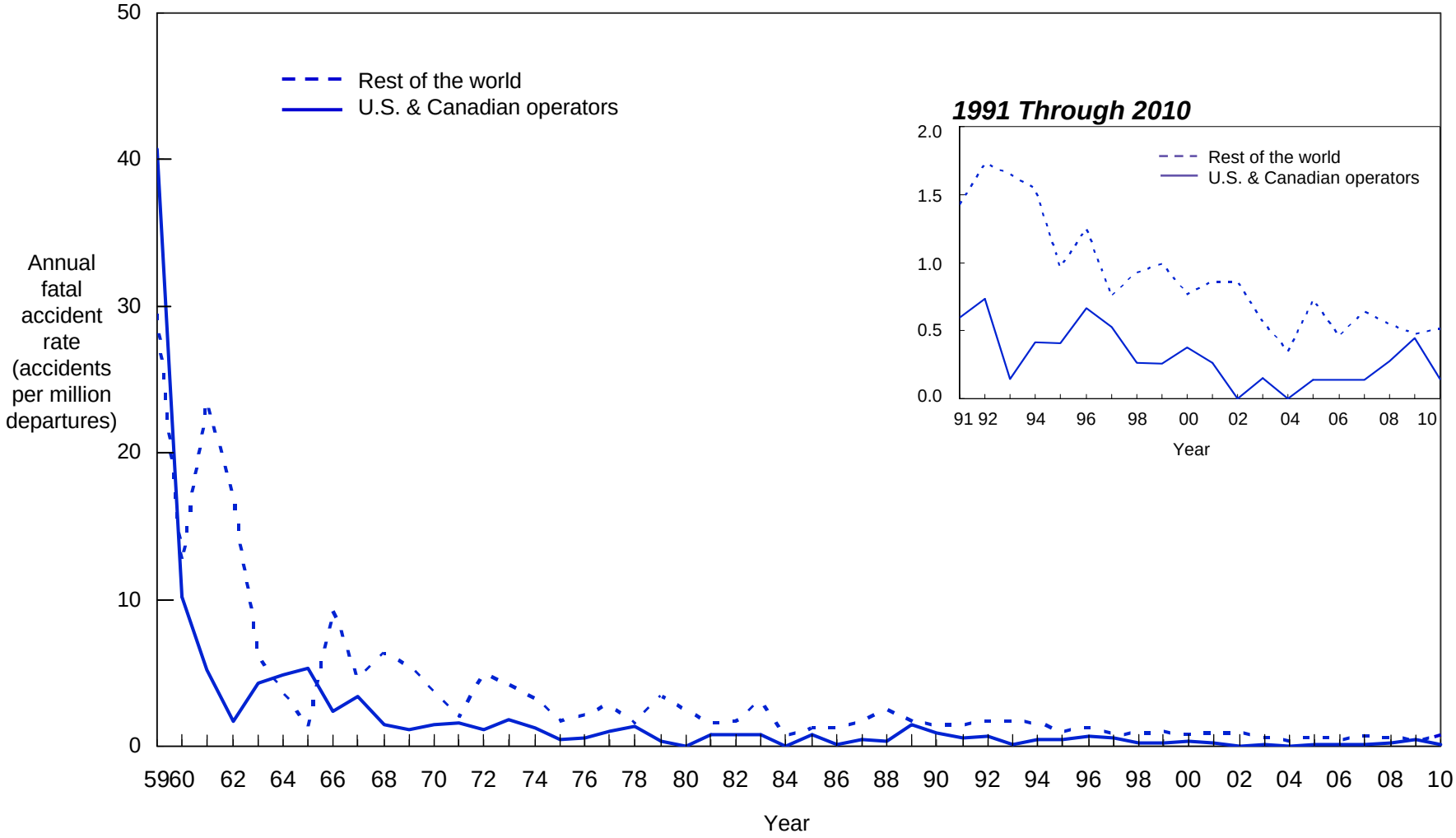
Accident Rates and Onboard Fatalities by Year

Worldwide Commercial Jet Fleet – 1959 Through 2010



U.S. and Canadian Operators Accident Rates by Year

Fatal Accidents – Worldwide Commercial Jet Fleet – 1959 Through 2010



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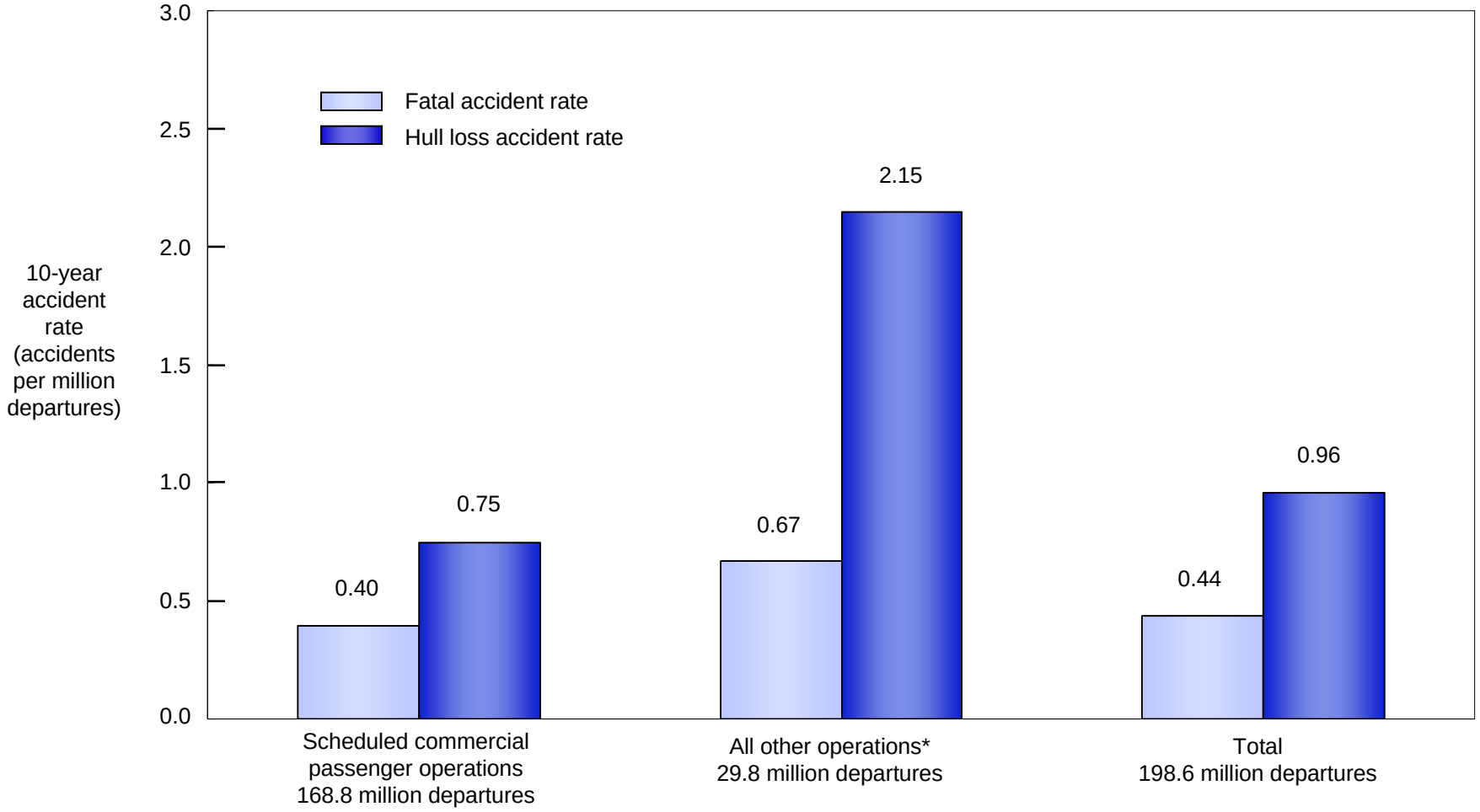
10-Year Accident Rates by Type of Operation

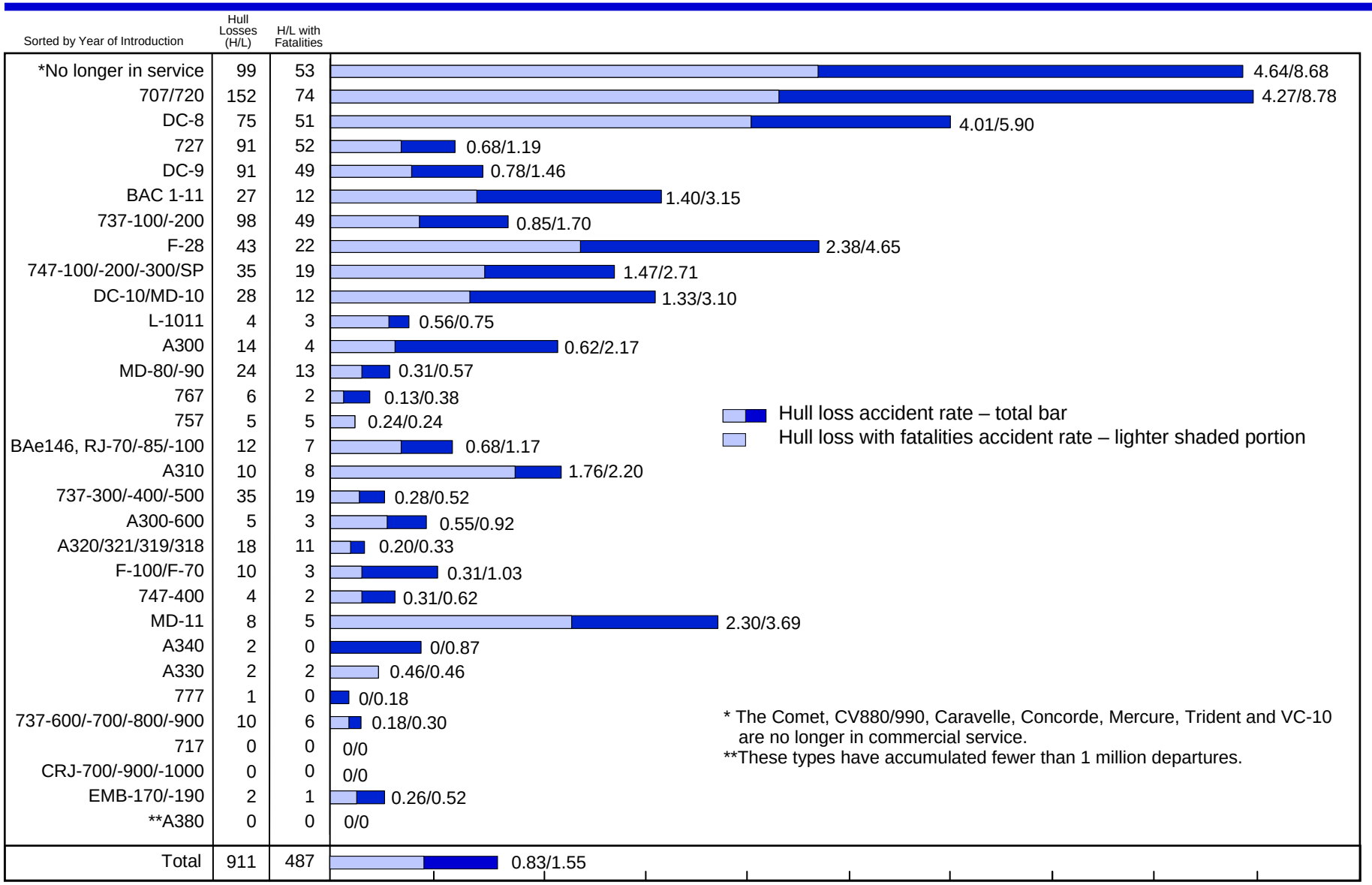
Fatal and Hull Loss Accidents – Worldwide Commercial Jet Fleet – 2001 Through 2010



*Charter passenger, charter cargo, scheduled cargo, maintenance test, ferry, positioning, training, and demonstration flights

Accident Rates by Airplane Type

Hull Loss Accidents – Worldwide Commercial Jet Fleet – 1959 Through 2010



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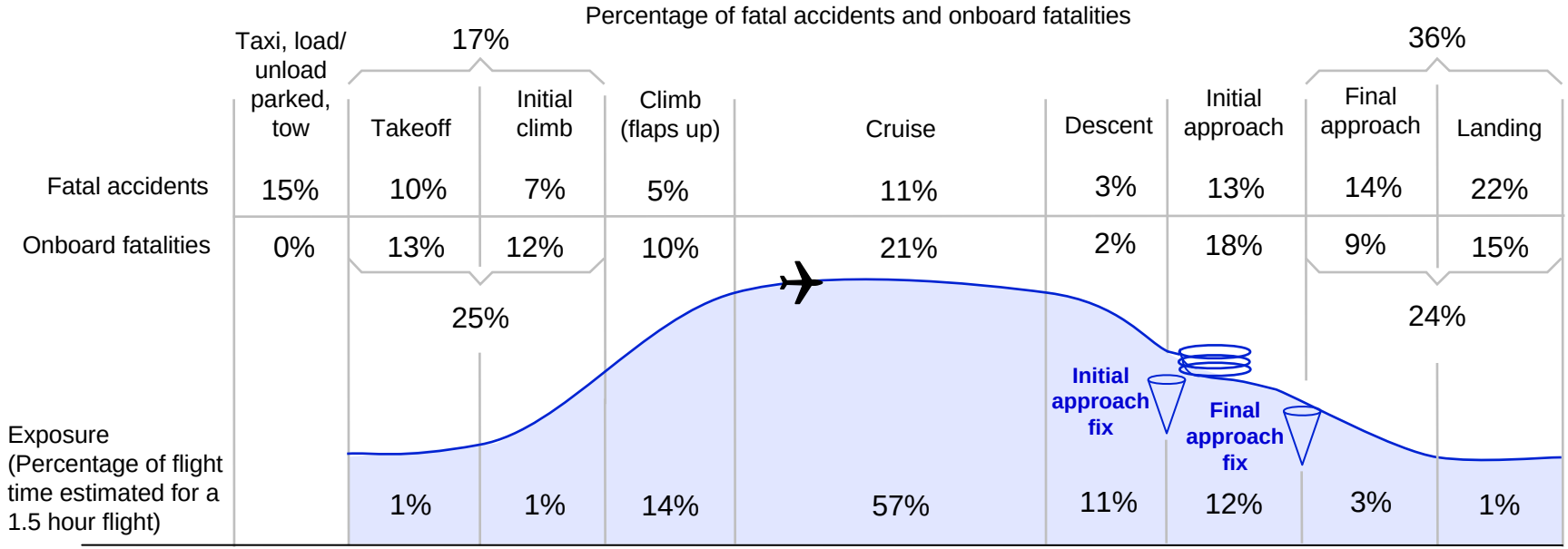
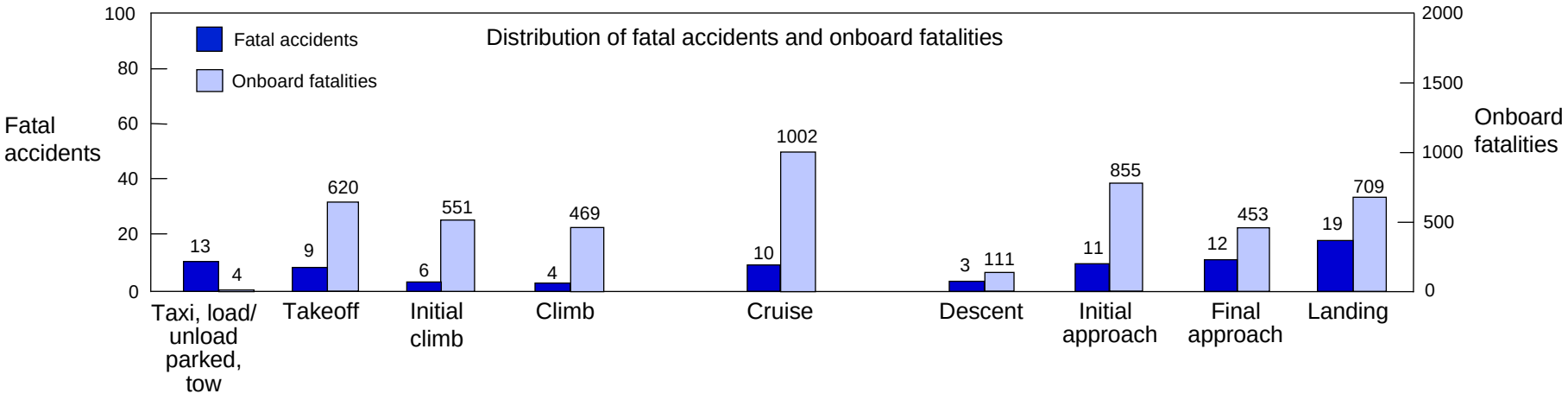
Fatal Accidents and Onboard Fatalities by Phase of Flight

Worldwide Commercial Jet Fleet – 2001 Through 2010

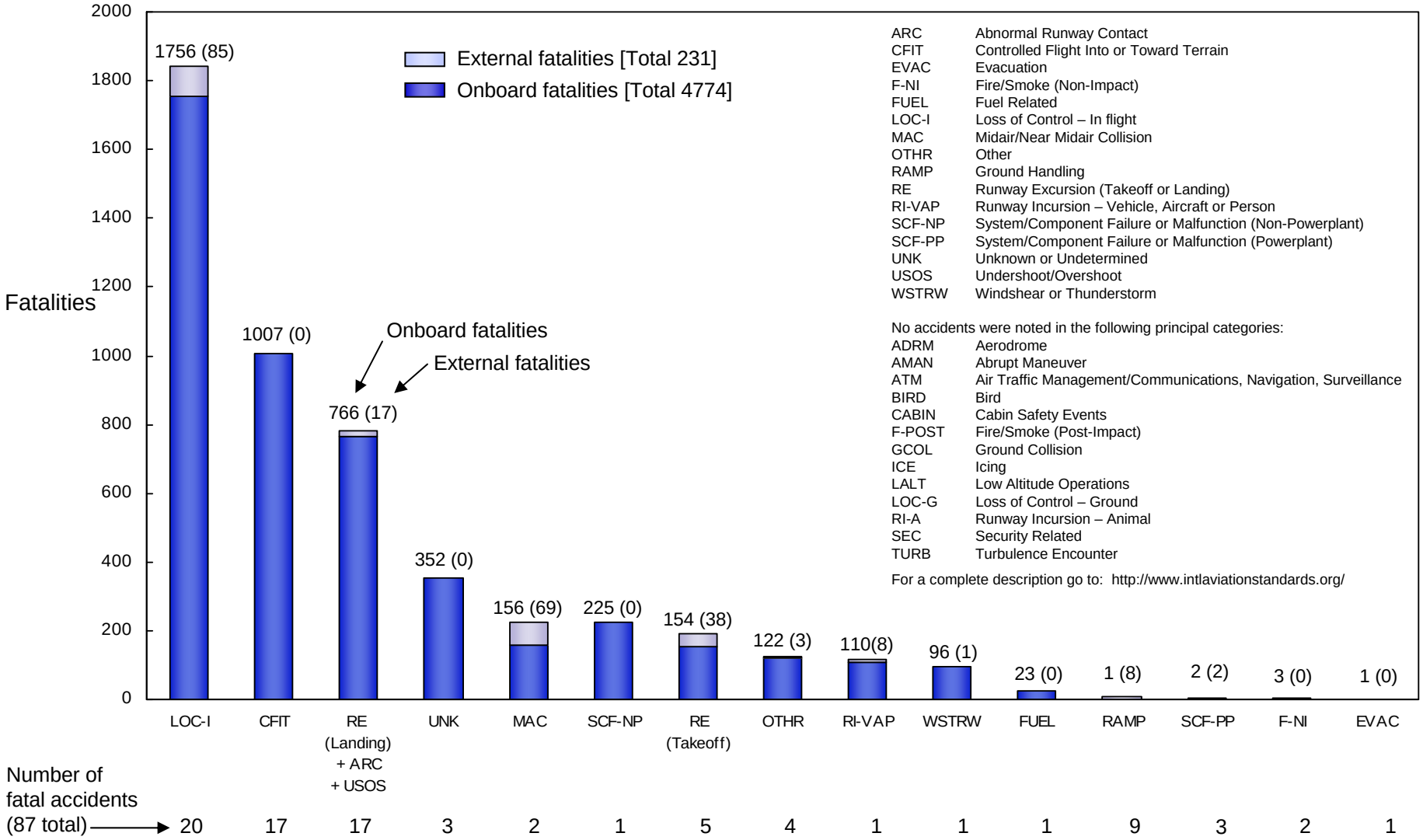


Percentages may not sum to 100% due to numerical rounding.



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

Fatal Accidents – Worldwide Commercial Jet Fleet – 2001 Through 2010



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

No 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
F-POST	Fire/Smoke (Post-Impact)
GCOL	Ground Collision
ICE	Icing
LALT	Low Altitude Operations
LOC-G	Loss of Control – Ground
RI-A	Runway Incursion – Animal
SEC	Security Related
TURB	Turbulence Encounter

For a complete description go to: http://www.intlaviationstandards.org/

Note: Principal categories as assigned by CAST.

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

The International Civil Aviation Organization (ICAO) and the Commercial Aviation Safety Team (CAST), which includes government officials and aviation industry leaders, have jointly chartered the CAST/ICAO Common Taxonomy Team (CICTT). CICTT includes experts from several air carriers, aircraft manufacturers, engine manufacturers, pilot associations, regulatory authorities, transportation safety boards, ICAO, and members from Canada, the European Union, France, Italy, the Netherlands, the United Kingdom, and the United States. CICTT is co-chaired by a representative from ICAO and CAST.

The team is charged with developing common taxonomies and definitions for aviation accident and incident reporting systems. Common taxonomies and definitions establish a standard industry language, thereby improving the quality of information and communication. With this common language, the aviation community's capacity to focus on common safety issues is greatly enhanced.

The CICTT Aviation Occurrence Taxonomy is designed to permit the assignment of multiple categories as necessary to describe the accident or incident. Since 2001, the Safety Indicator Steering Group (SISG) has met annually to assign CICTT occurrence categories to the prior year’s accidents.

In a separate activity, the CAST assigned each accident to a single principal category. Those accident assignments and a brief description of the categories are reported in the preceding chart.

The CAST use of principal categories has been instrumental in focusing industry and government efforts and resources on accident prevention. Pareto charts using principal categories are used by CAST to identify changes to historic risk and to help to determine if the safety enhancements put in place are effective.

For a complete description of the categories go to: http://www.intlaviationstandards.org/

Commercial Airplanes
P.O. Box 3707
Seattle, WA 98124-2207