

# How to Survive a Plane Crash<sup>1</sup>

## What are Your Chances?

Excellent, to be honest. Few people die in airplane crashes; the odds are many millions to one against your being involved in any sort of serious aircraft accident, and even if you are, your chances of surviving it are very high (96% of passengers survived all US aircraft accidents from 1983–2000). In the two years (2007–2008) prior to this writing, there were 17 million US domestic flights, carrying 1.5 billion passengers; there were **no** passenger fatalities. Air travel is by far the safest form of transportation (on a miles travelled basis), and that includes walking. It certainly includes driving, a **truly** dangerous proposition.

Why read this essay, then? Because complacency is rarely prudent. And because of another surprising statistic: it's widely estimated that as many as 30% of those who **have** died in airplane accidents *could have survived if they'd responded better to the emergency*. Should the unimaginable ever come to pass, wouldn't you rather be one of that fortunate third?

So the bottom line is clear: you'll probably never be in an air accident of any kind, and you'll probably be just fine if you are. But if you're not, due attention paid to the measures discussed here can improve your survival odds by a staggering 30%.

## Survive an Airplane Crash?



When most people conjure up images of plane crashes, they include massive fireballs, dense smoke clouds, crushed buildings, & scorched landscapes. And some crashes<sup>2</sup> are like that, visually spectacular and emotionally indelible. Not all such crashes are 100% fatal, though, including that of the Air France A-340 that crashed<sup>3</sup> in Toronto during a 2005 landing, when it overshot the runway, broke apart, and caught fire (as pictured at left). But all 309 passengers and crew survived.

There are two morals to that particular crash. First, “It ain’t over ‘til it’s over.” Believing that their flight had safely concluded, passengers on board began clapping once the plane had touched down. But some fifteen seconds later, things started to go terribly wrong. So always remain alert and prepared until after the plane has successfully slowed down to taxi speed.

Second, never give up. Remind yourself that “**I can** survive and **I will** survive”, and do absolutely all that you can to ensure it, no matter how frightening the situation or how “certain” the outcome might appear. Should death ever stare you in the face, look back resolutely and without blinking.

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<sup>1</sup> by Doug Dymont (OneBag.com), with major contributions from David Rowell (TheTravelInsider.com)

<sup>2</sup> An Air France Concorde that crashed on takeoff is recorded in many YouTube videos, including this documentary piece: <http://www.youtube.com/watch?v=U6SkoXveFV0>

<sup>3</sup> The ill-fated Flight 383 is profiled in this YouTube video: <http://www.youtube.com/watch?v=sCX1Rsmq8g8>

# The Evacuation Imperative

Some of the passengers in the Toronto Air France crash attempted to, or did, take their carry-on items with them. Never do this! The key to survival in airplane disasters (after surviving the impact) is *getting off the plane*.

The FAA requires that a plane be capable of being emptied of passengers in ninety seconds<sup>4</sup>. Aircraft manufacturers must demonstrate this by simulating an emergency evacuation, in near darkness, with pillows and blankets randomly obstructing the aisles, and only half the emergency exits working. It can be argued that even this test is unrealistic, as it hardly replicates a plane broken in two, filled with smoke and screaming, panic-stricken passengers<sup>5</sup>. Most real-life situations, though, involve fewer people aboard the plane<sup>6</sup>, so the ninety-second goal is probably reasonable.

But a minute and a half isn't much time, even when you're prepared. So forget the carry-ons, and everything else. Don't pause for a **moment** when exiting: retrieving/carrying stuff will slow you — and all those behind you — down. If people in front of you are trying to grab things, assertively insist that they don't, or push on past them. Your laptop is assuredly valuable, but nothing is **that** valuable.

## Preparation: Before Takeoff

Your most important chore prior to takeoff, therefore, is to *determine your evacuation plan*. If you know your seat assignment, thinking about the best exits can begin prior to boarding, using on-line seat maps<sup>7</sup>. But seating and planes change, and passenger loading will affect your decisions in any case, so don't come to any final conclusions until shortly before takeoff.

### *Choose Your Best and Alternate Exits*

Remember that potential exits can be behind as well as ahead of you (and, on twin-deck aircraft such as 747s and A380s, upstairs and downstairs as well). And although the flight attendants suggest that you simply note your nearest exit, there are actually five factors that should influence your selection of preferred evacuation routes:

**Exit Proximity:** Determine the distance (number of rows, for example) between you and the nearest exits, in all directions. Closer is better.

**Exit Capacity (Door vs. Wing):** Door exits, because they are larger and have more surrounding open space, can generally accommodate more passengers per minute than over-wing exits (which are narrower and require that you climb up and squeeze through, after first navigating a narrow passageway between two rows of seats). It's difficult to quantify the "value" of a door exit compared

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<sup>4</sup> This is based on expert opinion that, following a crash, less than a two-minute window exists before the presence of flames/smoke/sinking/etc. dramatically decreases the likelihood of survival.

<sup>5</sup> Even a simulated evacuation is not without peril, however: an FAA review of 19 full-scale evacuations found that almost 5% of the 5,797 evacuees were injured in the process.

<sup>6</sup> The evacuation test for the new A380 was completed in 77 seconds, with 853 passengers and 20 crew; typically, though, an A380 is expected to carry about 500 passengers and less than 20 crew.

<sup>7</sup> Seat maps can be found at Web sites such as [seatguru.com](http://seatguru.com) and [seatexpert.com](http://seatexpert.com). If you can reserve your seat ahead of time, pick a good one!

to a window one, but it's probably worth a couple of extra rows of proximity (i.e., worth travelling two extra rows to get to a door, all other things being equal).

**Exit Loading:** Exits at the extreme front and rear of a plane serve passengers from one direction only, whereas other exits generally have people converging on them from both the front and rear (over-wing exits are often paired, allowing one to serve each direction). Again, it's hard to quantify the benefit, but probably worth a couple of additional rows of distance to get to a less congested exit.

**Intervening Passengers:** Be sure to factor in the number of people between you and the exits. In aircraft that are not operating at capacity, the rear sections tend to be more sparsely occupied than the forward ones, which will mean fewer folks vying for the rear exits.

**Water Landing Issues:** Over-water flights introduce a couple of additional concerns. First, when a plane makes a water landing, it tends to sink from the rear (in many aircraft, use of the rear-most exits is prohibited following water landings); consequently, you should give preference to moving forward in such a situation. Second, aircraft rated for over-water flight have life rafts, typically kept in ceiling compartments and deployed through the over-wing exits; such rafts are greatly to be preferred over the detachable/floating slides<sup>8</sup> on the exit doors of many planes. You can determine what your plane provides in this regard by reading the emergency instruction brochure; there are supposed to be enough rafts for all passengers, plus a spare, but it is impossible to predict how many will be successfully deployed in an actual emergency. Nonetheless, this information should inform your choice of primary and alternative exits.

## *Make Note of Your Emergency Exit Choices*

Don't expect to remember your carefully evaluated exit plans in the heat of an emergency, surrounded by pandemonium and failed lighting systems; write them down instead. On the back of a business card, boarding slip, or similar, make a note of the locations of your preferred exits (Forward or aft? How many rows? Left or right?), and keep it in a handy location to be reviewed during the "full alert"<sup>9</sup> periods of your flight.

## *Flashlights (Torches)*

Many aircraft emergencies involve the loss of power and, consequently, the failure of cabin lighting; smoke can also dramatically reduce the ability to see one's surroundings. So it's difficult to over-emphasize the importance of carrying your own source of quality illumination, in the form of a powerful, reliable, rugged, long-lasting, waterproof flashlight (torch).

Such a light is highly useful in a variety of travel situations: navigating dark streets, late night reading, finding your way to the toilet, exploring lava tubes in Hawai'i, and locating items in an overhead compartment on a night flight. But nowhere is it more likely to save your life than in the event of a plane crash (or hotel fire).

Fortunately, thanks to modern LED technology, this critical survival tool can also be surprisingly small and lightweight. Expect to spend around \$50 for a top-of-the line light<sup>10</sup>, and expect to be amazed at its

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<sup>8</sup> Such slides are not true life rafts, but merely large floating buoyancy aids; they help evacuees stay afloat (though still in the water), and keep them together, but offer no protection against what could be the most serious enemy: hypothermia.

<sup>9</sup> The critical "full alert" periods are discussed under "Preparation — During the Flight", on page 5.

<sup>10</sup> My personal choice is a *Fenix L2D CE*. A detailed discussion of this topic can be found at [OneBag.com](http://OneBag.com), under "Tools".

capabilities. Ensure that (1) its batteries are reasonably fresh (for this reason, it's better to select one that uses ubiquitous AA batteries, rather than exotic photo/watch batteries), and (2) you keep it handy: there's no point in having a state-of-the-art survival tool buried somewhere in your luggage.

At night, consider turning off your at-seat light(s) during the "full alert" periods; this allows your eyes to pre-adjust to the darkness in case of an emergency. Most aircraft dim the main cabin lights for nighttime takeoffs and landings; simply take this a step further by turning yours off as well.

## *Appropriate Clothing*

Ideally, clothing should be flame-resistant, snag-resistant, and weather-appropriate.

Fire being an omnipresent concern in any airplane emergency, it's wise to wear clothing that covers you thoroughly (trousers, long-sleeved shirt), and is reasonably flame-resistant. Synthetic materials, especially in clothing that clings to the skin, are inadvisable (this includes nylon stockings); synthetics melt rather than burn, and can result in your own private napalm-like hell. Wool is a reliable choice, followed by linen and cotton/silk.

Choose clothing that is unlikely to get snagged on things as you're stumbling through the chaotic shambles inside a plane that you're trying to evacuate.

Surviving an emergency landing will be of little solace if you die of exposure an hour or two later. Even a summertime flight from Los Angeles to Europe passes over Arctic ice and snow, where a t-shirt and shorts won't stand you in very good stead! Be sure to have any outdoor clothing items you might need while taking off and landing close at hand (not in the overhead, unless it's for mid-journey weather, like that Arctic ice). Wool is again a good option, even providing some insulation while in the water, without getting too waterlogged.

Your mobility is an essential aspect of your survival ability. During a bad landing, you must protect your feet and legs, so that you can walk to the exit (through broken glass and who knows what else) and away from the crash site. This is no place for sandals and high heels: wear sturdy lace-up shoes, and keep them on your feet during the "full alert" periods (you're unlikely to have time to put them on during an emergency).

## *Infants*

An infant held in your arms is unlikely to survive a hard landing. In approved infant seats, though (especially rear-facing ones), they'll likely fare better than you. You'll have to decide if the risk of a crash landing is high enough to warrant the cost of an additional seat.

## *Smoke Hoods*

A smoke hood can potentially be a life saver, but I am unaware of any currently offered that meet the critical requirements necessary for them to be more than a false promise. A practical smoke hood is a challenging product to produce: it must be easily carried (otherwise it won't be brought along), easily put on (in the most desperate of situations), and provide effective protection against smoke (particulate matter), gasses (carbon monoxide, hydrogen cyanide, various nitrogen and sulfur chemicals, acids, ammonia, and acrolein) and flames (i.e., it will provide some protection for your face and hair, and won't simply melt). The additional fact that smoke hoods generally have a finite life (and thus have an expiration date) means that they have not found a market sufficient to support their manufacture.

An **emergency smoke hood** — made by tying a moist bandanna (or something similar) around your head, covering your mouth and nose — may provide some beneficial effect, but some advance planning will be necessary to ensure that you have the required water ready for use.

## Preparation: During the Flight

If a plane crashes, it will most likely (80% of the time) do so during the first three or final eight minutes of the flight.

When taking off — the most dangerous portion of any flight — the plane is at its highest planned stress: maximum weight, engines running near red line, and full fuel tanks. Beginning when the aircraft reaches its  $V_1$  speed (its “point of no return”, when the pilots must commit to taking off no matter what), and continuing for the first couple of minutes of flight, there are likely no reserves of anything. If anything essential fails, the plane is coming down.

When cruising at altitude — perhaps 35,000 ft at 550 mph — there is time for measured responses. Should problems occur, the pilots have about twenty minutes before the plane reaches the ground, time for problem solving, and preparing for any necessary landing, which is thus more likely to be at an airport than somewhere less survivable. This assumes that the wings haven’t fallen off, a highly unlikely event (aircraft being designed such that the airframe can withstand more stress than its passengers: you will perish from violent turbulence before the wings do). The other exception is if cabin pressurization has failed, and the plane must be brought down quickly to 15,000 ft or less, where you can breathe unassisted.

When landing — the second most stressful time of the flight (albeit more stressful for the pilots, as they have much more to do) — the plane has less altitude (under 10,000 ft) and less airspeed (likely 200 mph or less), giving the plane less lift should it suddenly lose engine power, encounter a strong downdraft, or have something else go unexpectedly wrong. Something that might result in a 5,000 ft loss of altitude (which doesn’t much matter at 35,000 ft) becomes extremely serious at 3,000 ft!

### *Be at “Full Alert” During the Critical Periods*

Consequently, **whenever the plane is below 10,000 ft** (normally the first five and last ten minutes of the flight, although the latter can be longer if there’s an extended holding time near the destination airport), **you should be in “full alert” mode**, attentive and fully prepared to respond quickly to any emergency condition.

Take it easy on the drinks prior to boarding and takeoff, and if you plan to take a sleeping pill, wait until the flight is safely at altitude before doing so.

Be ready to assume a sudden brace position, and subsequently evacuate the aircraft, with all necessary safety items immediately at hand (rather than in the overhead locker, or in the bottom of a bag under the seat in front of you).

Review your personal evacuation plan (preferred and alternate emergency exits), checking the note you made to remind yourself of the exact exit locations.

Have your shoes on, be wearing suitable clothing (or have it within reach), and minimize the number of solid/sharp objects you have in your pockets and around you, in order to avoid injuries during the rough and tumble of a crash landing.

Remember that any landing can suddenly and unexpectedly turn bad at any time prior to the plane's stopping. Remain on "full alert" until the plane has slowed to its normal taxi speed.

The most important parts of your "full alert" activity are the mental preparation and the review of your emergency plan. This helps ensure that should a disaster occur (in which your adrenaline-charged body may not be functioning at its intellectual peak), you will attend "by rote" to what needs doing.

## *Review the Safety/Emergency Card*

Another useful task during "full alert" periods is (re)reading the flight safety briefing card. Even though some of its content may be well understood (and even obvious), you will still find information that is specific to your aircraft (and the airline operating it), such as the way in which doors are opened, exit slides are activated, and life rafts are stored/retrieved.

Don't just "skim" the card: carefully inspect it for the details that are specific to your flight, and your evacuation plan. And do it again during the second "full alert" period.

## **Execution: Withstanding the Impact**

There are two main aspects to surviving an airplane crash. The first is withstanding the impact of the crash itself; the second is rapidly evacuating the plane following the crash.

As soon as it is clear that things are becoming serious, you can dramatically improve your chances of survival by calming the people around you — especially those who will be ahead of you in the rush for exits once the plane has come down. Reassure people about the probability of surviving most such situations. Share your own survival plan with them. Suggest which exits people should go to, and remind them not to delay their exit by trying to take anything with them.

Tell them when they get to the exit they should neither pause nor wait for the slide to be clear, and help talk them through assuming a proper brace position.

Create an island of calm in what may be a sea of panic. If those around you act in a calm, rational, efficient manner, you've not only improved their chances of survival, but your own as well, because you'll all get to the exits and out more quickly that way.

Even if it ends up as what appears to be just an overly cautious "emergency" (perhaps due to someone smelling smoke, but no flames visible anywhere), don't relax and treat things as a harmless joke. A seemingly non-threatening smoke smell one minute can become a raging fire all around you in the next. An apparently safe emergency landing might produce overheated brakes that ignite something inflammable, and unexpectedly the plane is ablaze. So remain alert. "It ain't over 'til it's over."

## *Tighten Your Seat Belt*

Fastening your seat belt simply isn't good enough; you must cinch it **tight**. One study suggests that you increase the G-force acting on you by a factor of three for every half inch of slack in your seat belt.

As airplane seat belts are held in position by a friction roller, they work loose fairly quickly. Cinch it tight again several times as you come in for a crash landing.

Practice releasing the belt as well; you might think this unnecessary, but accident reports consistently show that some people forget how to release their safety belts. Remember, you usually **lift** the release lever/buckle on airplane seat belts (exactly the opposite of standard automotive seat belts).

## Protect Your Legs

If you break a leg, you probably won't get out of the plane alive. Even if you otherwise damage your leg(s) such that you can't easily walk, you'll dramatically reduce your survivability. So consider your leg position when bracing for an impact.



*Many experts believe that the brace position shown in typical safety card illustrations (as seen at left) is incorrect, and can result in broken legs and ankles.*

Air accident investigators have commented on the prevalence of post-crash passengers with one or both legs broken below the knee; it is believed that this happens because passengers tuck their legs underneath them when bracing. But the sudden deceleration of a crash forces the legs forward, where they then slam up against the bottom edge of the seat ahead, with such a strong impact that the legs break.

So a better technique is probably keeping your legs stretched out in front, close to the bottom of the forward seat, in order that they won't travel as far, and be broken.

## Brace for Impact

The best way to improve your chances of surviving a crash is to brace yourself for the shock of the impact, and not lose consciousness. You've seen crash dummy films: try not to let that happen to you.

The primary function of a proper brace position<sup>11</sup> is simply to place yourself firmly against whatever is in front of you, such that when the sudden deceleration causes you to be thrown forward, you're already in contact with whatever it is you'll hit (normally the seat back in front of you). Don't brace yourself against a video screen; position your head above or below it (lower is generally better).

*(Fighter pilots don't use cushioned seats: they choose to sit in hard, uncomfortable metal ones, because if the ejection rockets fire, they want to be **in contact** with the seat frame, rather than have it slam into their spines. The same principle applies here, just in the opposite direction!)*

The secondary brace function is to stop your limbs and head from flailing about, hitting things during the violent motion of the crash. This is why you wrap your head in your arms, tightly clasping your hands/fingers together. If you have a pillow, blanket, or other potential padding handy, use it as a cushion between you and any nearby hard surfaces that you may strike during the crash stop.

A bad landing can be truly terrifying, very noisy, with extremely violent jerking in all directions. Should all hell seem to be breaking loose, remember that each intermediate impact you survive means that you are that much closer to the end of your ordeal, the plane is now travelling that much more slowly than it was a moment ago, and the chances of a catastrophic finale are that much reduced.

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<sup>11</sup> Wikipedia provides a useful brace position discussion at: [http://en.wikipedia.org/wiki/Brace\\_position](http://en.wikipedia.org/wiki/Brace_position)

Remain in the brace position until the emergency has passed, or until the plane has come to a reasonably complete halt. You can't predict what might happen next when a plane is landing in an adverse situation — it might run off the runway and/or plunge into a huge ditch or down a vertical cliff edge — so keep your seat belt fastened as long as possible.

## Execution: Evacuating the Plane

You're down. Now don't panic. Even if you see that the plane has had its wings ripped off (or is on a terrifying angle, or has broken in two, or is upside down), even if it is dark, and people are screaming all around you, and you smell something burning, don't panic. You're alive. You've made it through the hardest part, and that over which you had the least control. Now all you need to do — as quickly as you are able, before it is no longer possible (due to fire/smoke/sinking) — is get out of the plane.

A key part of a successful evacuation is locating the best exit and then proceeding purposefully to it as rapidly as you can. And the best way to help the most **other people** exit the plane is to get to an exit and leave the plane yourself, as quickly as possible. In a rapidly worsening situation, every **second** of delay that you cause can mean that **one fewer person** can exit the plane.

So gather your emergency survival gear, and turn on your flashlight (whether needed or not — it gives you more authority). If the flight crew is issuing instructions, obey them, even if they seem wrong (because it's a really bad time and place to debate the best evacuation strategy, and you'll likely find that neither the crew nor your fellow passengers will welcome your independent thinking). Preserving order is important, and you don't want to be the spark that changes an obedient group into a rebellious rabble.



*This TACA A320 crashed on landing in Honduras in May 2008, with 140 people on board. 137 survived.*

## Reevaluate Your Exit Choice

If possible, look outside to determine what is happening around the plane. If you see flames outside your window, you'll want to be careful which exit you choose on that side of the plane and might elect instead to try your luck on the other side (unless it's also in flames).

Take a quick look around you and then toward your preferred exit. Is the path to that exit passable? Is someone opening the exit? Not all exits may open in an emergency: they may be jammed, under water, have slides that failed to open, or lead to something nasty (i.e., fire) outside. Quickly check your alternate exit choices; maybe a path there is unexpectedly better. Panicking passengers, stuff spilled into the aisles, even the plane splitting in two (!) can make the previously best choice no longer a good one. Decide which way to go and head that way, but remain ambivalent about your choice of exit until you are certain that people are using it successfully. Don't confuse people bunching up with their actually leaving the plane

As a rule, there will be less fire toward the front of the plane, and more around the wings where the fuel tanks and engines are (and behind them if the plane was moving forward, trailing fuel and fire).

## *Make Your Way to the Exit*

As you head to your preferred exit, try to determine if people are continuing to use it. Situations can change: the slide might become damaged, or the situation on the ground unsafe, or the life raft full. If you notice that people have stopped going out the exit, consider choosing another one.

Keep your head low if necessary to avoid smoke, but don't risk being pushed over and trampled on.

If there is a massive blockage in the aisle, consider climbing over seat backs (but be alert for people in the seats you're going over).

If you're travelling with others who were seated with you, make sure they are coming along. If your companions are between you and your exit, watch for them as you pass where they were sitting. But if they are in the "wrong direction", or an entirely different part of the plane, they're on their own. You can't block or "go against the flow" of other people. You have a responsibility to yourself, the people who depend on you, and all the other passengers, to quickly leave the plane without impeding others.

It's more than possible that you will encounter people who have reacted to the situation by becoming hysterical, or (more commonly) semi-catatonic. If they are not impeding your progress, ignore them; if this seems harsh, remember that the best help you can provide for the maximum number of people is to **get out of the plane**. If they *are* impeding your progress, speak to them loudly, in short clear phrases, using a "command voice" (like police and flight attendants are taught to use). People have a natural instinct to obey, and if you give clear, simple commands — "Stop!", "Turn Around!", "Go Left!", "Keep Moving!" — they are more likely to follow them. (If you do say "Stop", follow up quickly with another course of action, as people won't stay stopped for long.)

There are times for politeness; this is not one of them. Don't trample people in a stampede to get off the plane, but don't stop in the aisle to tighten your shoelaces, and don't allow people in front of you to dawdle either. In particular, don't let them access the overheads during a time-critical evacuation.

The closer you get to the functioning exit you plan to use, the more certain you can be of your probable survival, and you can consider, if everything else seems appropriate, pausing to help others on the way. But don't slow down anyone else: *it is not for you to decide to reduce the survival chances of the twenty people behind you* so you can help one other person. It may seem heroic to stop and aid the injured and incapacitated, but this is a dangerous illusion. In a life-threatening, time-critical situation, it is possible — even probable — that not everyone will be able to safely exit the plane before it becomes no longer survivable inside. *You don't have the right to choose who lives and who dies*; don't kill more people than you save by delaying your exit from the plane, even by seconds, for any reason.

Once you're actually at the exit, you can choose to leave the plane immediately, or stay for a short while to help others exiting. Only choose to stop and assist if there are not other people already doing so, and if a flight attendant is present, get permission to remain and help.

The main thing to do is to speed people through the door and onto the wing, or down the slide. You want to be averaging **one person every second**, so if you can speed things up by even a tenth of a second, you are increasing the number of people going through the door by ten percent. On the other hand, someone who indecisively wastes time, and takes two seconds while leaving, has "used up" one other person's time.

The most important part of the evacuation is having people flow smoothly through the exits. Keep people jumping — without pausing — onto the slide, and without waiting for those who have already left to get clear at the bottom.

## Exit the Plane

Time is absolutely critical here. You, and everyone else, need to get through that exit as quickly as possible.

At the top of the exit, as soon as you are “next in line”, **immediately exit the plane. Do not wait for the person(s) in front of you to clear the slide** before taking your turn. Do not sit on the edge of the door and gently lever yourself onto the slide; you are not a child trying a playground chute for the first time. **Do not pause, but continue moving through the door, jumping out and into the slide**<sup>12</sup>. Think of it as a giant trampoline.

When you have evacuated the plane, decide if you can be helpful at the bottom of the slide, catching people as they come down and pulling them clear in order to encourage those still on the plane to continue coming down quickly. If this isn't an issue, move well clear of the crash site, and encourage others to come with you. Even if the plane isn't on fire, there is no way of knowing if it will suddenly explode in a spectacular fireball. Perhaps some inflammable material is dripping onto something hot, maybe something is smoldering and about to burst into open fire, maybe part of the plane is about to collapse, thereby breaching fuel tanks; many things might go wrong. Move clear of the plane (experts suggest 500 ft upwind as a minimum safe distance).

Normally it is best to remain moderately (but safely) close to the plane wreckage and wait to be rescued, because that will be the easiest target for search and rescue teams to find. Even in the lack of a distress call, the absence of the plane will soon be noticed, and rescue services dispatched quickly.

## Life Jackets

Hold off on inflating life jackets until you are outside the plane. They inflate rapidly, and if you do so too soon, they just get in the way and make it harder for you to proceed to the exit.

An already-inflated jacket is also more vulnerable to being ripped or punctured.

# Additional Considerations

## *Which Are The Safest Commercial Planes?*

Newer, more modern aircraft are generally safer than older ones (a consequence of tightening regulations). Beyond that, the available data are both too subjective and too sparse to arrive at any useful conclusions.

## *Which are the Safest Seats on a Plane?*

Are some plane seats safer than others? Front? Rear? Over-wing? Does it make a difference where you sit? This age-old debate has no shortage of proffered opinions, but very little in the way of proper

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<sup>12</sup> It would be helpful if airlines showed actual plane evacuation videos as part of their safety briefings, teaching passengers what to expect. Fortunately, YouTube has many examples of these; try to watch several to get a feeling for different types of exits and slides. A Boeing 777 evacuation is at: <http://www.youtube.com/watch?v=4TAkAcQOnQY>

supporting evidence. In truth, there have been sufficiently few crashes, with circumstances differing so widely, that it is impossible to develop statistically valid conclusions about general seating areas.

That said, there are a few considerations to keep in mind.

**Rearward facing seats** are quite rare on today's aircraft, but they are safer than those facing forward, as long as nothing facing you is unsecured, and can be thrown into you.

**Aisle seats** are safer than window seats, as their occupants can move toward exits more quickly, not having other passengers between them and the passageway.

**Seats forward and aft of engines** are somewhat safer than those beside engines, as if an engine breaks up it is likely to throw debris out to its sides.

**Seats close to an exit** are arguably the safest of all. Each additional row beyond three or four from an exit lowers your survival chances measurably. If you're seven or more rows from an exit, your chances are greatly reduced.

So your best bet is *an aisle seat, three or fewer rows from an exit*<sup>7</sup>.

## Oxygen Mask Emergencies

If the oxygen masks suddenly drop down from their storage spaces above you, relax. This does not mean that the plane is about to crash and burn.

It simply means there has been a possible or actual loss of cabin pressure; the masks are deploying to provide you with supplemental oxygen until the plane descends to a safe altitude (below 15,000 ft) where there is enough oxygen to breathe unassisted.

But there is still one important thing to remember: **put your mask on first**, before doing **anything** for anyone else.

If cabin pressure is lost, you have a surprisingly brief amount of time before losing your concentration, then losing consciousness. Neither of these conditions is immediately dangerous; a person will quickly recover from either, but only if oxygen is supplied to them fairly quickly.

So don't worry about your spouse, or aged parent, or young child losing consciousness. It is essential that you protect yourself first so that you will then be conscious and **able** to attend to them second.

You will find that extra masks drop (e.g., some rows of three seats have four masks). These spares are intended for infants travelling on laps.

## Recommended Reference Video

The BBC produced an excellent video on How to Survive a Plane Crash. It provides visual presentations of what to expect, and generally reinforces the material in this document. It can be found on YouTube in six parts, beginning at: <http://www.youtube.com/watch?v=BM4VUY8dBDw>

