

# Perceptions of Safety

---

By Robert Baron, Ph.D

Safety can be defined in many ways. If you asked one hundred people to define the term *safe*, you would probably have as many different definitions as you would the number of people you asked. However, the most common definition of *safe* typically alludes to *freedom from harm*. But that begs to ask the question that, if something is safe, does that necessarily imply that there is complete and total freedom from harm? The answer, of course, is a resounding NO. When something is considered safe it simply means that, mathematically, the risk of some hazard causing injury or death is low enough to be acceptable to most people; it all comes down to probability and severity.

If I am teaching a course in a brand new building, there is a minuscule chance (probability) that the roof may fall in and the result could be catastrophic (consequence). However, the probability of that happening is so low that I'm not overly concerned. As far as the roof caving in, I'll consider myself to be working in a safe environment. On the other hand, if I am teaching a course and there is an electrical extension cord lying around the area where I am presenting, that is another story. In this case there is a very high chance (probability) that I could trip and fall which could result in serious injury (consequence). I would label this an unsafe environment. The hazard (extension cord) needs to be eliminated—or mitigated—to reduce the risk to an acceptable level. Options include putting tape or flexible molding over the cord (risk mitigation) or moving the cord completely out of the foot traffic area (risk elimination).

Aviation is an inherently risky business. Fortunately, in the macro realm, the risks associated with the operation of aircraft have been mitigated to such a degree that—

statistically—air travel is still the safest mode of transportation. However, in the micro realm, there have been, and will continue to be, large swings in airlines' *safety spaces*. A safety space is the zone between production and protection, either of which in the extreme can cause an imbalance in the operating structure, potentially leading to an accident (too little protection) or bankruptcy (too much protection).

Much is happening behind the scenes at airlines to ensure safety. The traveling public is typically unaware of the depth of measures being deployed to ensure a safe flight. Measures that include Safety Management Systems, Aviation Safety Action Programs, Line Operations Safety Audits, Voluntary Safety Programs, Crew Resource Management and Human Factors training, etc. Occasionally, even with these types of proactive measures in place, there will be a breach in the system and an accident will occur. The accident is typically not due to one single event, but rather a string of mostly minor failures that linked together to form an accident chain. Many times the individual at the very end of that chain is simply the enabler for the accident to finally occur.

Airline safety is a very interesting concept in terms of perceptions, particularly from the traveling public's point of view. Many people would not consider flying on a particular airline right after a major accident because they perceive it as too risky. Other people feel that if an airline has not had a major accident then it must be safe. Interestingly, the reverse may be true. Some of the safest airlines in the world may be the ones that have recently experienced an accident. Reactively, this is what it may take for the airline to get a "wakeup call," although many times this wakeup call can be short-lived. On the other hand, airlines that have not had a major accident may be the most vulnerable. The main reason for this is that a certain amount of complacency may develop. This in turn may cause a breach in the safety system.

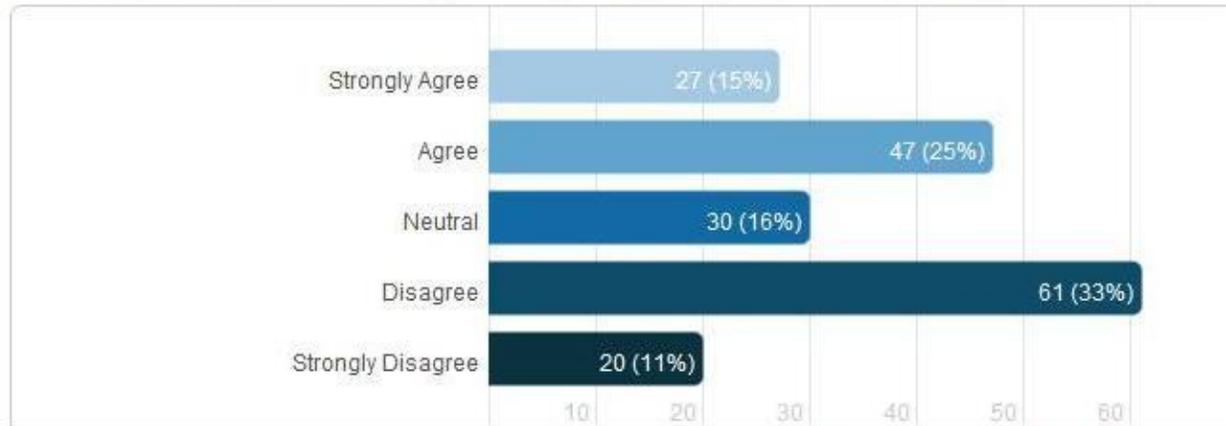
I recently deployed a LinkedIn® poll to capture the flying public's perception of airline safety. I used a simple one sentence statement: *The safest airlines in the world are the ones that have not had a major accident.* The open poll was available to all LinkedIn® users for a period of 30 days (May 2012) and a total of 185 people cast a vote.

The variables in the poll were *safest airlines* and *major accident*. I was interested in getting a sense of how the traveling public viewed this correlation. The variables themselves were subject to individual interpretation since *safest airlines* is difficult to operationalize and *major accident* can be defined in different ways (without specifically using, for example, the official NTSB definition).

The results of the poll indicated that the majority (33%) of respondents Disagreed with the statement, while 11% Strongly Disagreed, for a total of 44% in the combined Disagree/Strongly Disagree category. These percentages may not come as a surprise, and indeed were indicative of my projected results of the poll. On the other hand, 25% of the respondents Agreed with the statement, while 15% Strongly Agreed, for a total of 40% in the combined Agree/Strongly Agree category. It is interesting to note that when the combined Disagree/Strongly Disagree and Agree/Strongly Agree categories are compared with one another there is an almost even split in the perceptions of safety (44%/40% respectively). Sixteen percent of the respondents chose the Neutral category. See figure below.

## The safest airlines in the world are the ones that have not had a major accident

By Robert (Bob) Baron, Ph.D President/CEO of The Aviation Consulting Group • 185 votes • 14 comments • Ended 01 Jun 2012



Additionally, 14 respondents offered comments to describe the rationale for their vote.

The following select, italicized comments are included along with my response to each:

*“The problem with this assertion is this isn't normalized to volume. A major accident with a small airline holds a lot more weight than with a large airline.”*

Very good point. Larger airlines are *generally* in a better position to “absorb” the accident, especially over time, while smaller airlines may not have the ability to recover from the financial and media damage that inevitably ensues.

*“A new airline can open its doors, have a terrible maintenance training program in place, poor customer service, bad check-in experience, terrible brand value, and prior to the first flight, would easily qualify as ‘the safest airline in the world’ according to your measure.”*

This is an excellent example of how poor quality can run rampant in an airline, and yet, according to the way I worded my statement, still be considered one of “the safest airlines in the world.”

*“The measure of ‘no accidents’ is, by itself, not a meaningful measure.”*

The whole objective of my statement was to investigate whether the travelling public understands this relationship. This particular commenter appears to understand that concept.

*“Airline crash statistics have proven that ‘accidents’ are directly linked to an airline's overall ‘safety’ records.”*

This is an interesting comment. This suggests that airlines with poor safety records have accidents. Could it be that the accidents themselves are the cause of the bad safety records?

*“Would you say an airline is unsafe because a bird flew into an engine? Or because a plane got caught in a downdraft when landing? If an accident was caused by poor maintenance or low standards on pilot training or experience, that's one issue. But does an experienced pilot making a mistake negate everything the airline's done to be safe for decades?”*

This comment brings up a number of interesting points. I agree that a bird strike, or acts of nature, cannot justifiably dictate an airline's safety record. One of the most quintessential examples of this is US Airways Flight 1549, which was ditched in New York's Hudson River in 2009, due to a bird strike and subsequent loss of both engines.

However, the second question is not so clear-cut. Why were the pilots flying through the downdraft to begin with? Thanks to modern technology, the majority of weather-related accidents are preventable; the accidents typically occur, instead, due to decision errors and/or poor judgment by the flight crews, typically exacerbated by stress and pressure.

The last sentence of the comment also raises a fundamentally interesting question, to which my answer would be no. Although many accidents are due to upstream organizational/cultural failures (Swiss cheese model), there will always be aberrations and situational violations that occur at the individual level due to various, sometimes even innate, circumstances. This in itself may not be a good indicator of the overall safety record of an airline.

This poll was not a true scientific measurement of the traveling public's perception of airline safety. The sample size was relatively small, not randomized, and there may have been some respondent bias. For the purpose of this poll, the 30 respondents that replied Neutral did not provide any meaningful data for their perceptions of safety. For these reasons, it would be difficult to infer the results to the broader population (i.e., statistical significance). However, I believe that the data do uncover some interesting points about the public's perceptions of airline safety. Most respondents in this sample did not agree with the poll statement that *the safest airlines in the world are the ones that have not had a major accident*. This was an expected

outcome. Less expected was that, categorically, almost an even percentage of respondents did agree with the poll statement.

In summary, it appears that the public is somewhat split on its perception of airline safety. A lack of accidents does not necessarily indicate that an airline is safe. Paradoxically, some of the safest airlines may be the ones that have recently had an accident. In either case, airlines should constantly strive for the best position in their *safety space*...the perfect balance of production and protection.

---

[Dr. Robert Baron](#) is the President and Chief Consultant of [The Aviation Consulting Group](#). He performs extensive work in his core specializations of Human Factors (HF), Safety Management Systems (SMS), Crew Resource Management (CRM), and Line Operations Safety Audit (LOSA). He consults with, and provides training to, hundreds of aviation organizations on a worldwide basis.

*Article may not be copied, distributed, or used in any way without written permission. Contact Dr. Baron through his [company website](#) for additional information.*