

Flight Risk

I'm sure all of us have seen a paper airplane before, the concept of flying objects dates way back into history, likely since the first land ancestor saw Pterodactyls in flight. However, since the "discovery" of paper, and when I say discovery, there are obviously ancient forms of writing surfaces, like this one depicting Ramses the Great in the Battle of Dapur.



Photo Credit:

<https://www.ancienthistorylists.com/egypt-history/top-10-outstanding-ancient-egyptian-paintings/>

The modern paper airplane we know and love was designed by Jack Northrop, co-founder of the Lockheed aircraft corporation, in the early 1930's, according to the Smithsonian National Air and Space Museum.

John Knudsen "Jack" Northrop (1895 - 1981), was an American aircraft designer and industrialist. He founded the famed Northrop Corporation in 1939 (https://en.wikipedia.org/wiki/Jack_Northrop).



(<https://www.zvab.com/Portrait-Jack-Northrop-Jack/5927593532/bd>)

Credit:

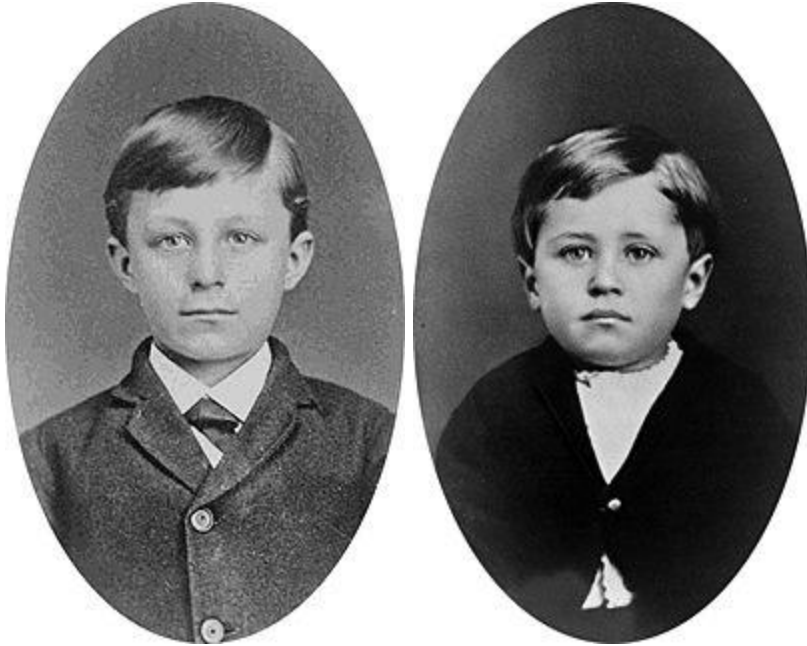
<https://howthingsfly.si.edu/ask-an-explainer/who-created-paper-airplane-0>

This has been greatly improved into a 75 yard long flyer designed by John Collins, and launched by Joe Ayooob.
(<https://www.popularmechanics.com/flight/how-to/a7561/the-secrets-of-the-world-record-setting-paper-plane-7013184/>)



Here's the link to a video that teaches you how to make it.
(<https://www.youtube.com/watch?v=JV2aMbGtmZE>)

But then again, we can't actually travel on these airplanes. But that all changed in the beginning of the 1900s, when the Wright Brothers invented the world's first successful motor-operated airplane. Here is Wilbur and Orville to the right as boys in 1876. ["Aww" sound effect.](#)
(https://en.wikipedia.org/wiki/Wright_brothers)



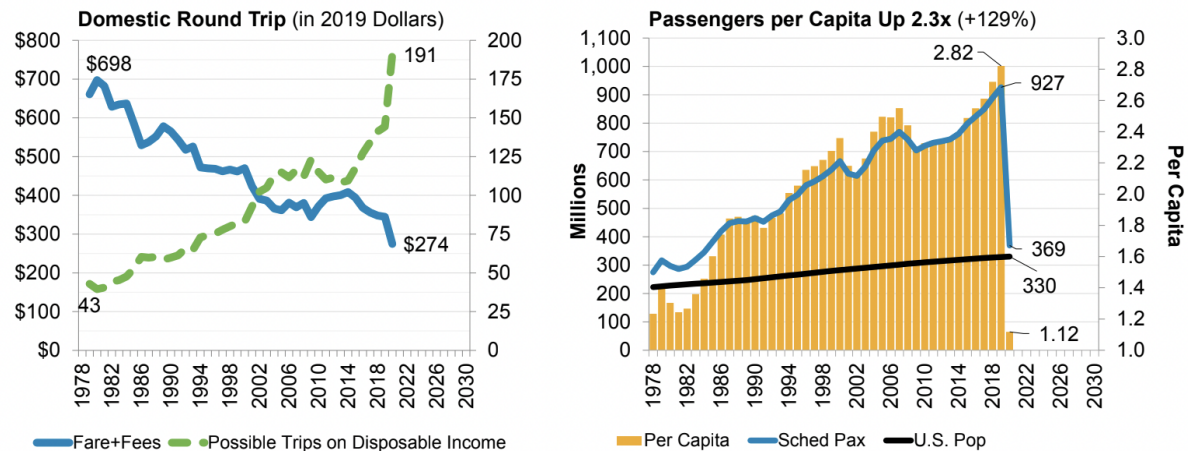
In the 1940s, aircrafts played a significant role in WWII. Here are four women WASP (from left) Frances Green, Margaret Kirchner, Ann Waldner and Blanche Osborn leave their B-17, called Pistol Packin' Mama, during ferry training at Lockbourne Army Air Force base in Ohio. The women were not yet allowed to be a part of the military until the 1970s.

<https://www.npr.org/2010/03/09/123773525/female-wwii-pilots-the-original-fly-girls>

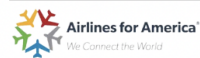


The times have changed, not only for women's rights, but also for the world of technology. Ever since then, the airline industry has boomed.

As Real Airfares Plunged Since Deregulation, Growth in Flyers Sharply Exceeded Population Ancillary Services Included, 2020 Domestic Air Travel Was ~61% Cheaper Than in 1980



Source: Bureau of Economic Analysis, Bureau of Labor Statistics and Bureau of Transportation Statistics (DB1B via Airline Data Inc. and T1 scheduled service for U.S. airlines)



<https://www.airlines.org/dataset/a4a-presentation-industry-review-and-outlook/>

However, the villain in our story is one thing that sends shivers and disgust down the spine. The terrorist act of 9-11 has left a big societal PTSD in our brains. The shadow it has created in our minds strengthened our association of flying with its potential risks.

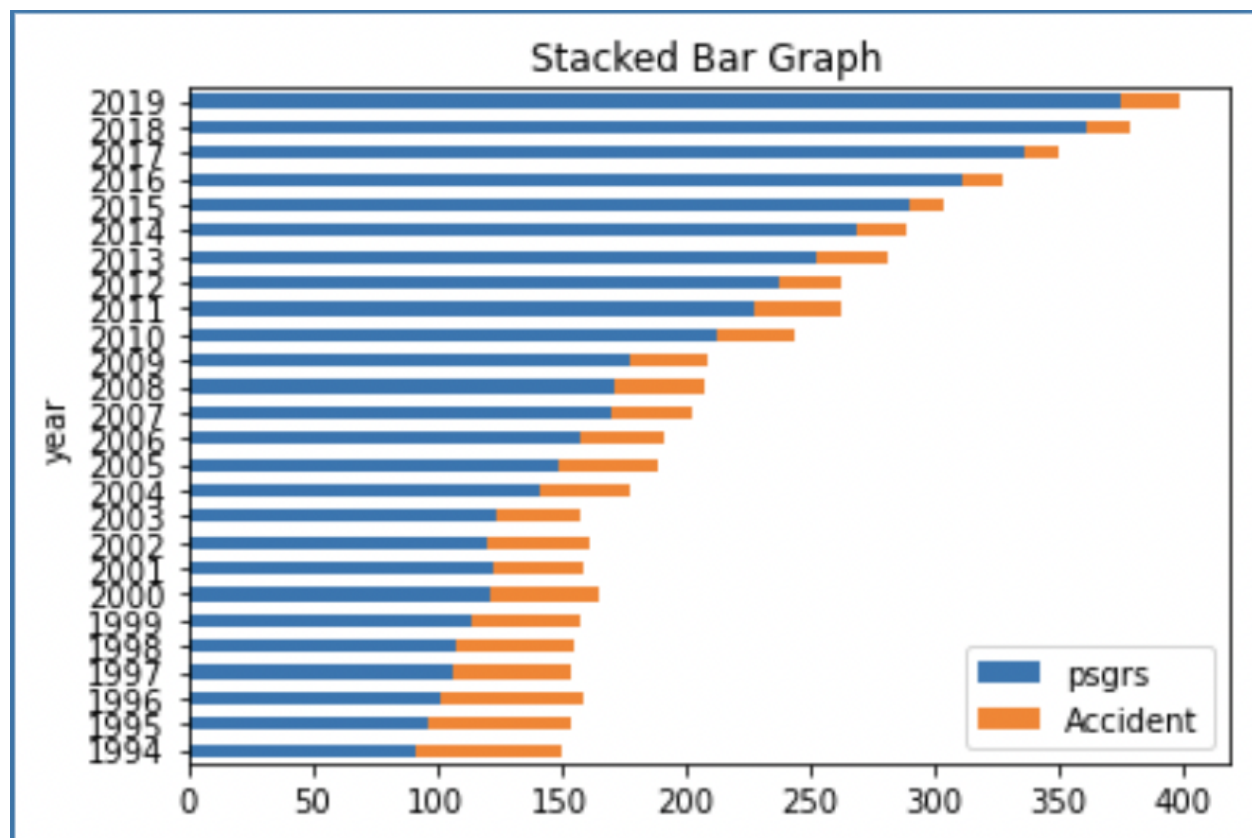
(<https://www.vox.com/2016/9/9/12839824/9-11-anniversary-terrorist-attack-safer-today>)



However, according to recent data, the safety of flying has greatly improved throughout the years, and the technology has advanced to a point where a dichotomy is evident between our unease and the infinitesimal probability of risk in air traveling.

The following analysis suggests that recent years of collected data challenges the public fear of the risk of flying as a tool of transportation, and leads to the conclusion that if anything, flying has proven to be a much safer method of travel throughout the decades of its development. I've collected various types of data surrounding the risks of flying and compares the evidence of decrease of the risks to the recent trend of the other main method of travel - driving.

The Sharp Decrease of the Ratio of Risk in Flying

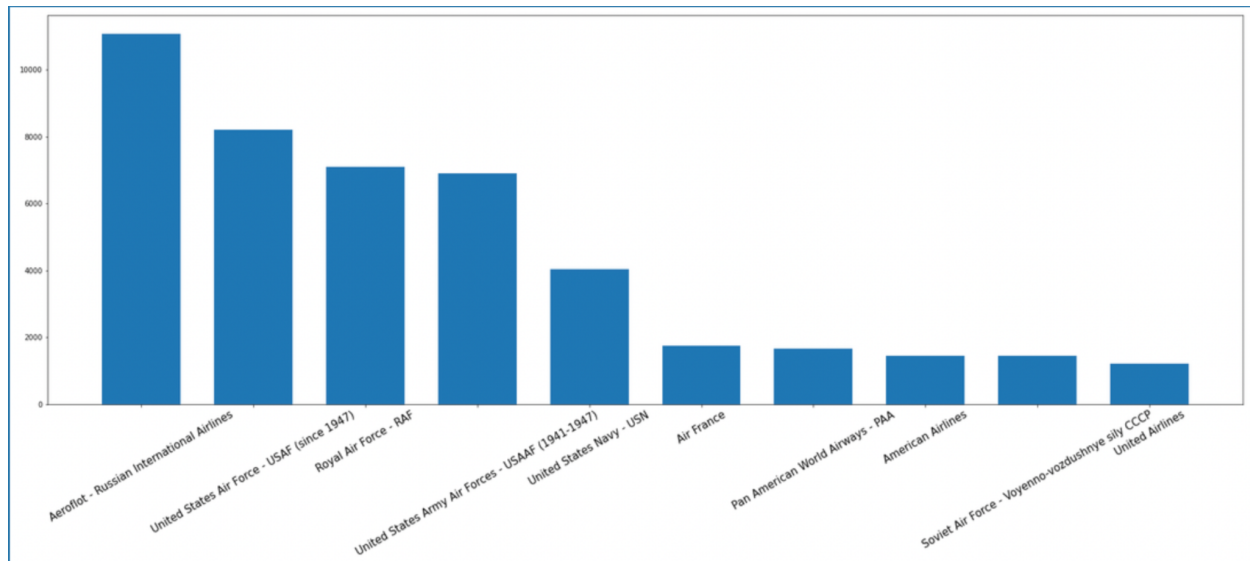


The data shows that as the air travel industry grows, and as the amount of air travelers increases over year-to-year periods, the number of accidents do not increase with the traffic, but rather show observable decreases. The graph shows comparative volume of total passengers, and total accidents on an year-to-year basis.

This should calm our fear of flights as you can observe that the ratio or the likelihood of casualty in air travelings actually decreases throughout the decades, with the advancement of risk-avoidance technologies in the air industry.

The Top Risky Flights Are Non-Commercial

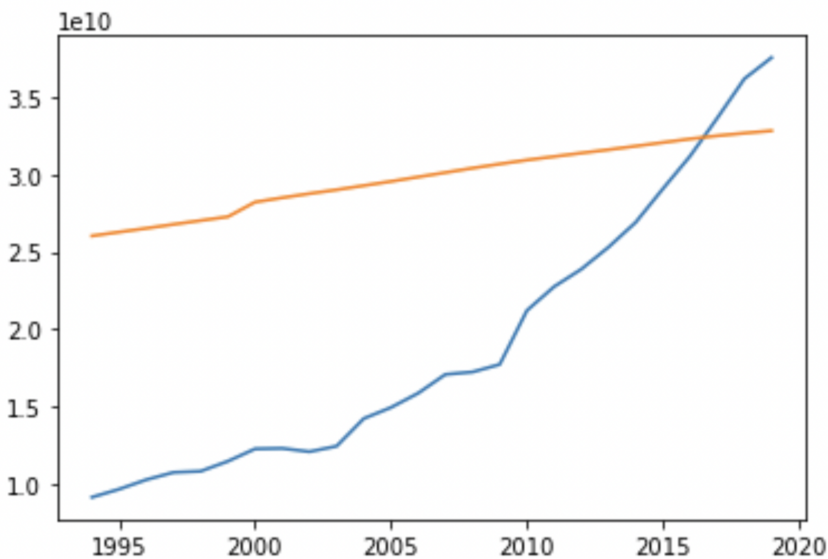
Even amongst the fatalities that do occur in air, the data shows that most of them do not occur in commercial flights. The top 6 out of 10 air transports with the most casualties are actually contributed by military flight facilities.



This can settle the fear of the public of the large amounts of air fatalities, and contribute to logical risk-assessment of the relatively lower risk of commercial flights.

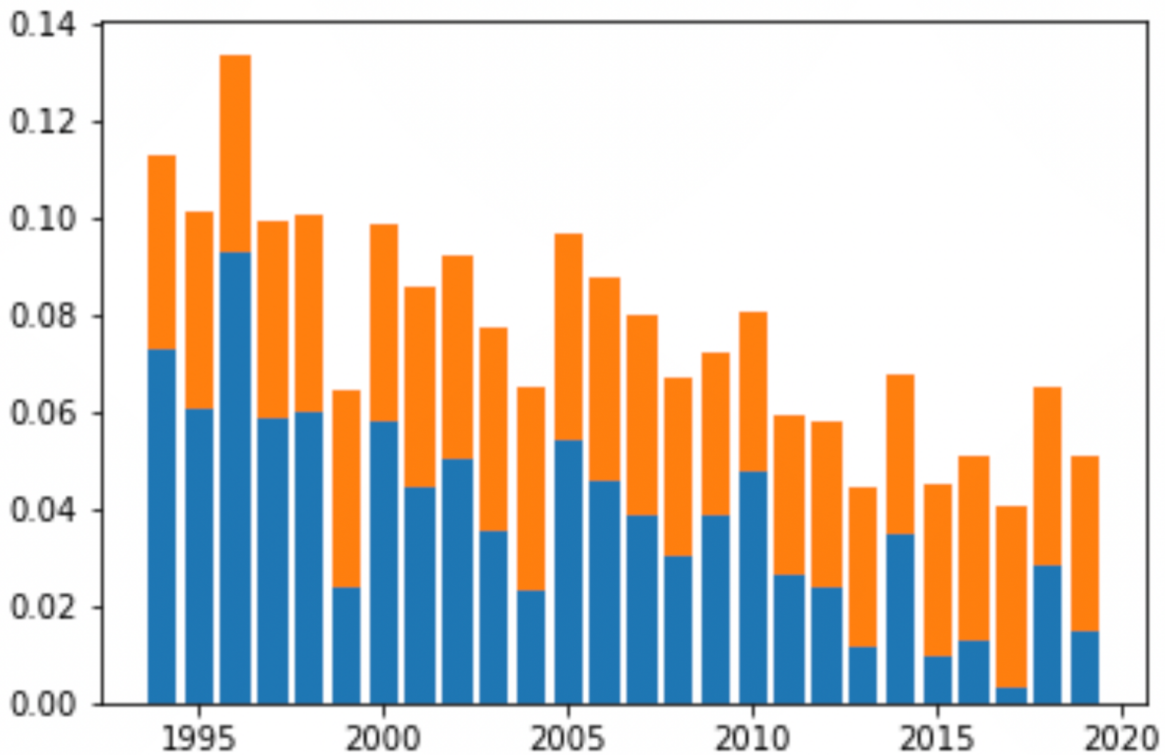
Air Traveling is Growing Exponentially in its Public Acceptance

This line chart helps to observe the growth of the air industry. This graph shows slight exponential growth to the amount of air travelers.



With air travel growing in popularity, it has become a generally accepted method of traveling amongst more and more parts of the world, and should rightly be appreciated as such.

Grand Total Percentage of Flight Risk Has Dramatically Decreased Compared to Driving



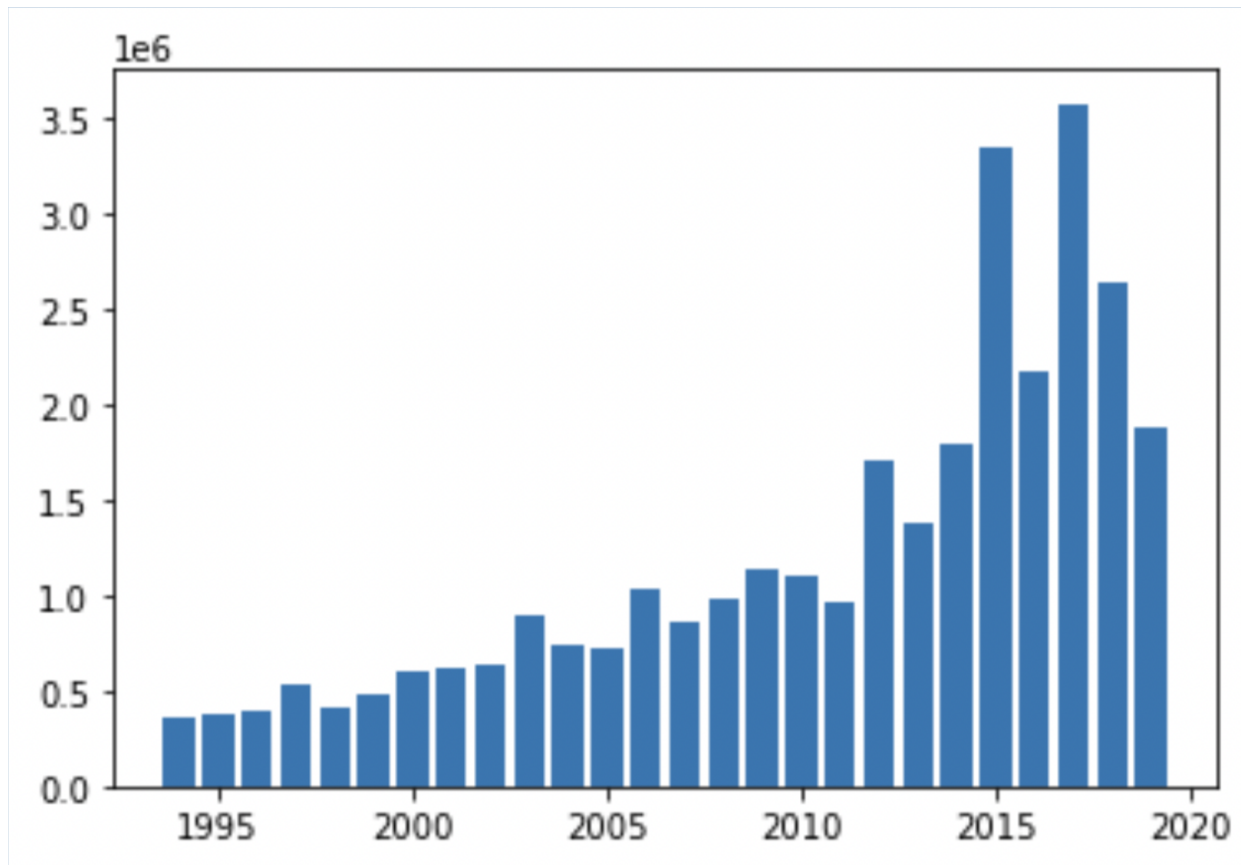
This graph is an adapted version of the previous one, and shows the yearly percentage of the grand total of all air accidents and all driving accidents from the year 1994 to 2019. This shows that the percentage of air incidents is almost ignorable compared to a decade ago; while the risk of driving as a method of travel shows almost no change.

The advancement of safe-keeping technology proves that air-traveling is much safer nowadays, and the decrease of its risk far surpasses that of the risk of driving.

This line chart helps to observe the growth of the air industry. The curve shows slight exponential growth to the amount of air travelers.



Chance of Being in a Flight Accident is Next to Winning the Lottery



This graph shows the significant decrease of the chance of risk by the exponential increasing amounts of flights per accident occurrence. The large number of flights per accident is shown through the volume of the bar chart.

This shows that the risk of traveling is very small, around 1 accident out of 2-3 million flights for the years 2012 to 2019. That's almost comparable with the chance of winning the lottery at 1 in 13 million.

Conclusion

The overwhelming evidence shows that the data clearly points to the insignificance of the risk of flying as a method of travel. Even if you are not convinced yet, air travelling will only become safer and safer. Who knows, maybe one day, driving will be more dangerous than flying.

Data Sources:

<https://github.com/fivethirtyeight/data/tree/master/airline-safety> <https://aviation-safety.net/>

<https://one.nhtsa.gov/Data> <https://data.world/datasets/crash> <http://www.baaa-acro.com/statistics>

SCRIPT

-I'm sure all of us have seen a paper airplane before, the concept of flying objects dates way back into history, likely since the first land ancestor saw Pterodactyls in flight. However, since the "discovery" of paper, and when I say discovery, there are obviously ancient forms of writing surfaces, like this one depicting Ramses the Great in the Battle of Dapur.

-The modern paper airplane we know and love was created by famed aircraft designer Jack Northrop. His contributions to the aircraft industry are still being used today. He co-founded Lockheed aircraft, then later formed the Northrop corporation. Both of which are still around and producing billions of dollar of aircraft.

-Paper airplanes have come a long way since their original design, figurative and literally (and temporally?) John Collins designed the current record holder which flew 75 yards and was launched by Joe Ayooob.

-Now, we can't actually travel on these paper airplanes. But that all changed in the beginning of the 1900s, when the Wright Brothers invented the world's first successful powered airplane. Who'd have thought these cutie-pattooties would later invent flight and reshape the modern the world?

-Fast forward to the 1940s, aircraft played a significant role in WWII. These Women Airforce Service Pilots (WASP) Frances Green, Margaret Kirchner, Ann Waldner and Blanche Osborn leave their B-17 [Pistol Packin' Mama], during ferry training at Lockbourne Army Air Force base in Ohio. The women were not yet allowed to be a part of the military until the 1970s.

-The times have changed, not only for women's rights, but also for the world of technology. Ever since then, the airline industry has boomed.

-However, the villain in our story is one thing that sends shivers and disgust down the spine. The 9-11 terrorist attacks created generational trauma that radically altered our society's perception of risk

-I remember that day. The collective effects were profound. It's seminal event of such impact that it completely alters our collect view of risk. There was we saw the world before, and a very different one after. Divided by a single day.

-However, according to recent data, the safety of flying has greatly improved throughout the years, and the technology has advanced to a point where a dichotomy is evident between our unease and the infinitesimal risk of harm during air travel.

-The following analysis suggests that recent data, challenges the public fear of flying risks as a tool of transportation, and leads to the conclusion that if anything, flying has proven to be a

much -safer method of travel throughout the decades of its development. Here are various types of data surrounding the risks of flying. These compare the evidence of decreased risk compared to the most population travel method ... driving.

-The data shows that as the air travel industry grows, and as the amount of air travelers increases over year-to-year periods, the number of accidents do not increase with the traffic, but rather show observable decreases. The graph shows the comparative volume of total passengers, and total accidents on an year-to-year basis.

-This should calm our fear of flight. You can observe that the ratio or the likelihood of casualty in air traveling has actually decreased throughout the decades. The aircraft industry has seen significant safety gains with the application of advanced risk-avoidance technologies.

-Now air fatalities do occur, the data shows that most of them do not occur in commercial flights.

-The top 6 out of 10 air casualties can be attributed military flight facilities.

-This should settle the public fear of mass air fatalities, and contribute to the logical conclusion that commercial flights are relatively low risk.

-This chart helps shows the growth of the air industry and portrays the significant growth in air travelers.

-With the growing popularity of air travel. it has become a generally accepted method of traveling amongst more and more parts of the world, and should rightly be appreciated as such.

-This graph is an adapted version of the previous one, and shows the yearly percentage of the grand total of all air accidents and all driving accidents from the year 1994 to 2019. This shows that the percentage of air incidents is almost ignorable compared to a decade ago; while the risk of driving shows almost no change.

-The advancement of safe-keeping technology proves that air-traveling is much safer nowadays, and the risks of driving greatly outpace the risk of air travel.

-This line chart helps to observe the growth of the air industry. The curve shows slight exponential growth to the amount of air travelers.

-This graph shows the significant decrease of the chance of risk by the exponential increasing amounts of flights per accident occurrence. The large number of flights per accident is shown through the volume of the bar chart.

-This shows that the risk of air travel is very small, around 1 accident out of 2-3 million flights for the years 2012 to 2019. That's almost comparable with the chance of winning the lottery at 1 in 13 million.

-The overwhelming evidence shows that the data clearly points to the insignificance of the risk of flying as a method of travel. Even if you are not convinced yet, air travelling will only become safer and safer. Who knows, maybe one day, driving will be more dangerous than flying.