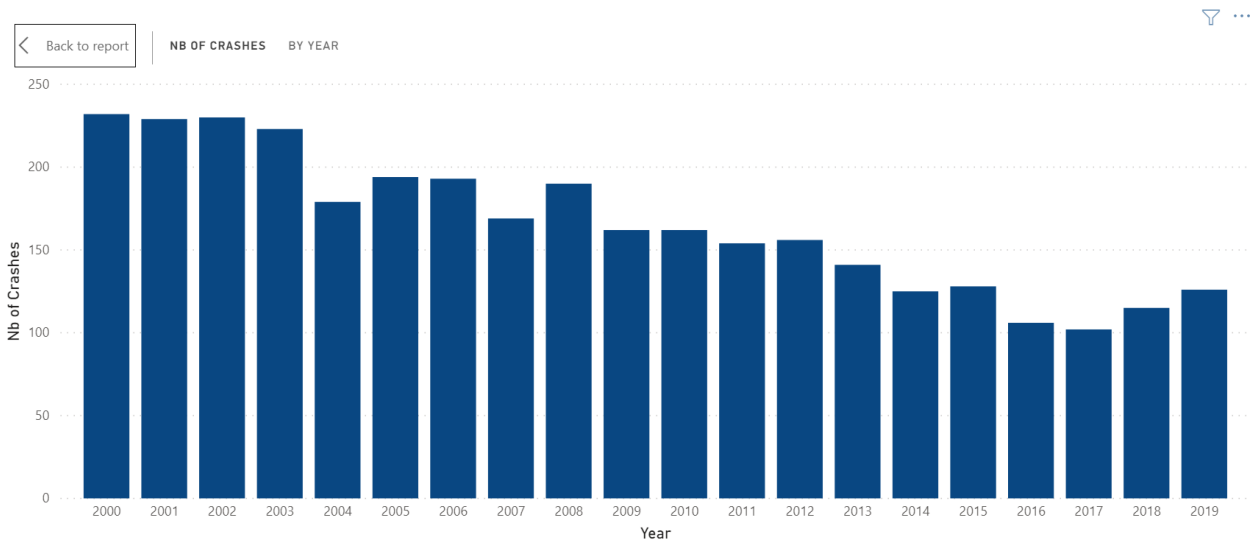
Meiners 2.3 Project Task 1 Dashboard

Due to recent unfortunate airline crashes, the media has been promoting statistics stating air is no longer a safe way to travel. The news and media outlets have been bombarding the public with reports and figures about the trends of airline safety and that things are not looking good. What was previously thought as the safest way to travel, especially when compared to automobiles, is now being presented as one of the most dangerous to the public. But are any of these claims based on facts?

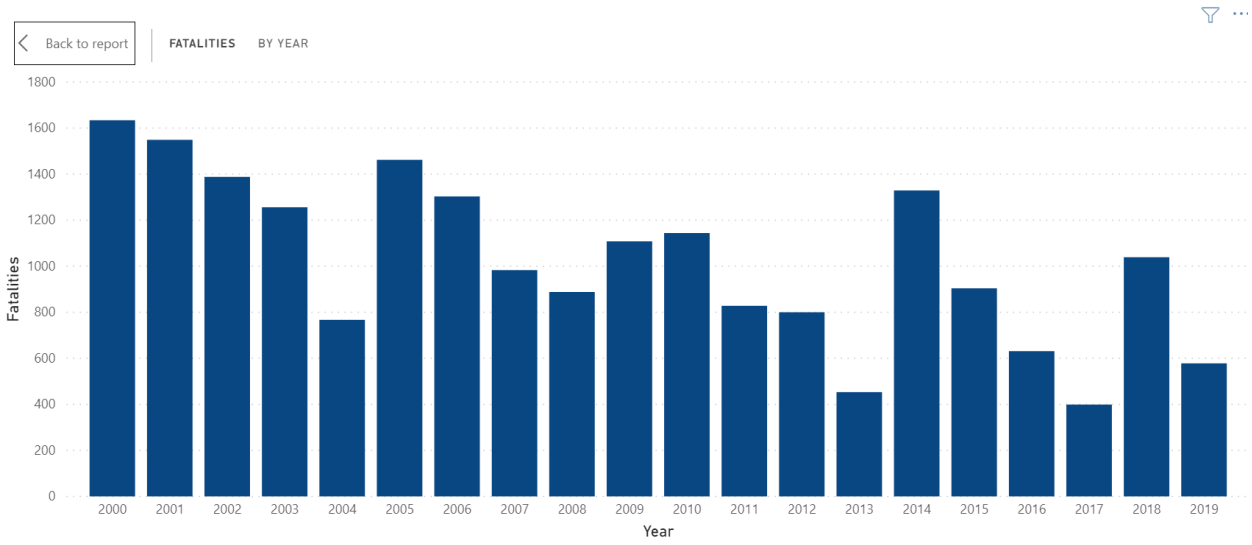
You work for an airline on the data science team as a data analyst and are a resident data visualization expert. You have been tasked with helping multiple groups in the organization combat this negative publicity and help tell the airline's side of the story. There is a fear internally about what this type of media coverage will do to airline sales and how it could impact the future of the company. Not only do they need you to help create some internal communications, but you will also be tasked with what is published to the public and the media.

The first graph below looks at the number of crashes which occur each year for aircraft travel. It can be clearly observed that the rate of crashes has decreased each year and does not support an upward trend of crashes which occur.



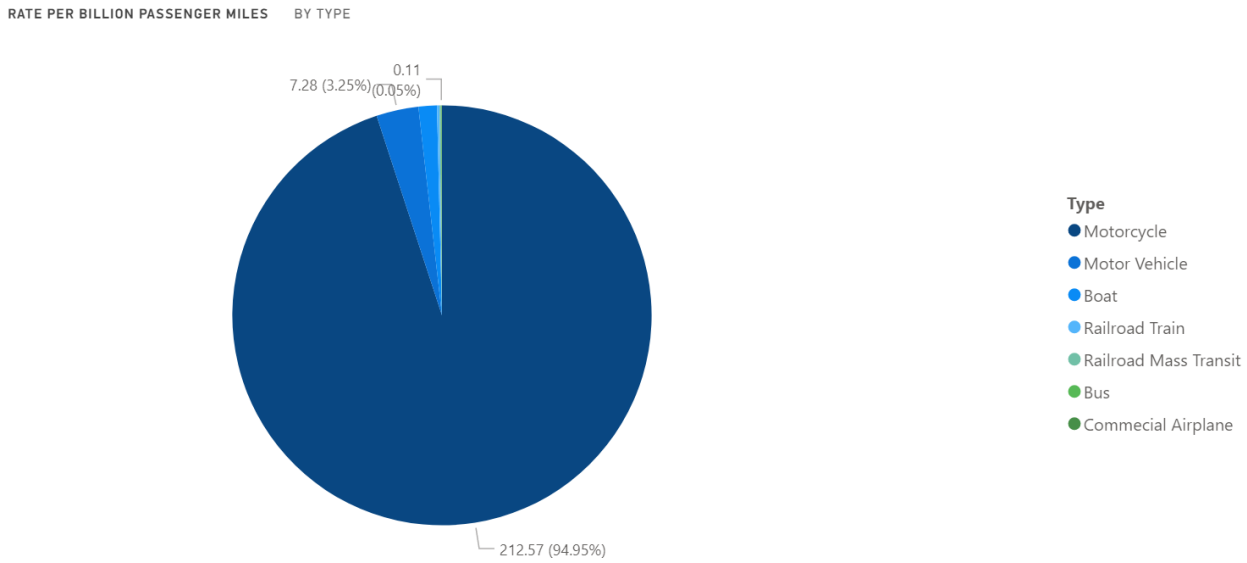
SRC: http://www.baaa-acro.com/statistics

The next chart indicates the number of incidents which are reported each year which are specific to aircraft. The incidents can vary from year to year although there is a well-defined trend that can be observed where incidents are decreasing as time steps forward. This again indicates that the overall number of incidents are decreasing when looking at the trend for a 20-year period.



SRC: http://www.baaa-acro.com/statistics

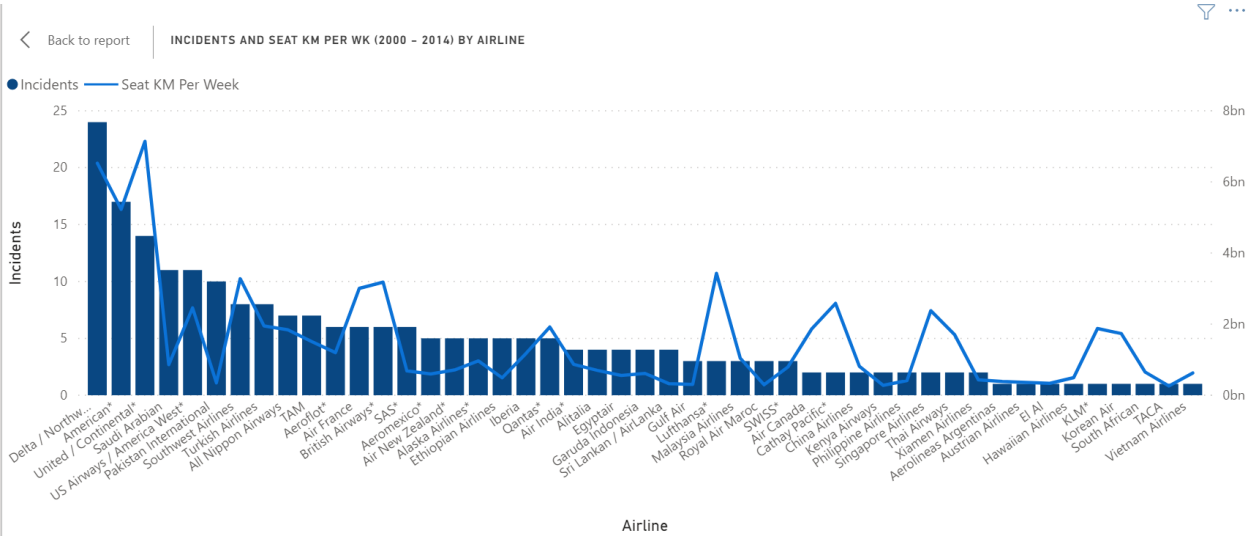
The below table and pie chart reflect the rate of deaths which occur when controlling for the number of miles which are traveled based on the mode of transportation. The timeframe which is being leveraged is from 2000 to 2009. The data clearly indicates that of the categories which are being reviewed, motorcycles have the highest rate of deaths and commercial airline travel has the lowest rate of deaths. This reaffirms that airline travel is substantially safer than many other modes of transportation.



Billion Passenger Miles	Fatalities	Rate per Billion Passenger Miles	Type
195	41467	212.57	Motorcycle
41403	301399	7.28	Motor Vehicle
3	11	3.17	Boat
163	70	0.43	Railroad Train
135	33	0.24	Railroad Mass Transit
2806	304	0.11	Bus
7290	474	0.07	Commecial Airplane

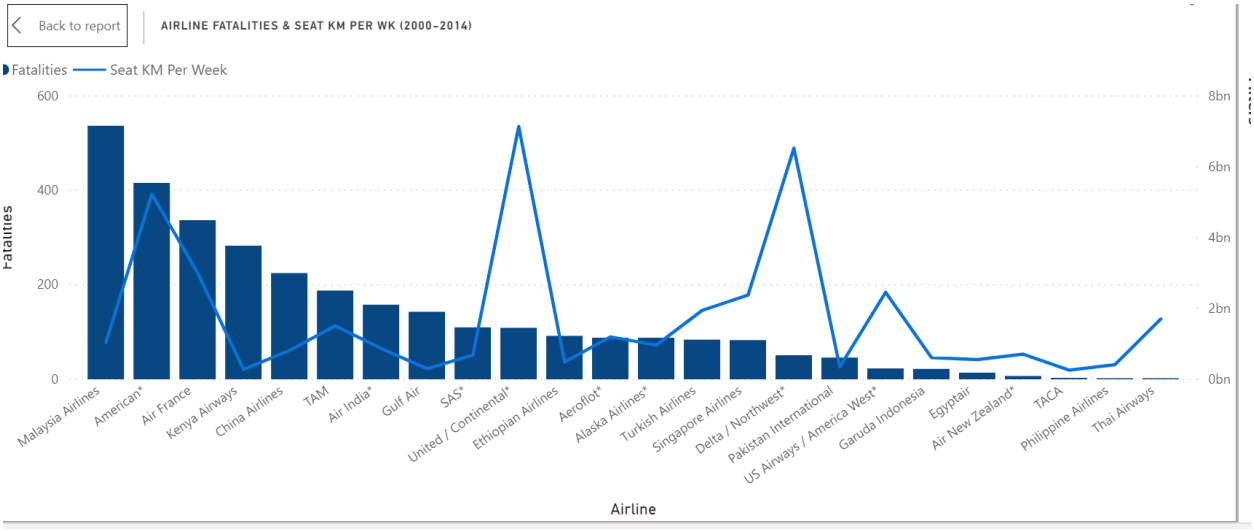
SRC: https://faculty.wcas.northwestern.edu/~ipsavage/436-appendix.pdf

The other item I wanted to look at is the rate of incidents which occur per airline when controlling for the number of passenger kilometers. As is observed in the graph below, the first three airlines with the most incidents also have the most amount of passenger miles which are traveled. After this first group, the number of incidents per airline tends to skew away from the amount of distance which is traveled. This indicates that some airlines have a higher rate of incidents than others and may not be as safe as those who have the same passenger distance with fewer incidents.



SRC: Aviation Safety Network

The final graph looks at the number of fatalities which occur for each airline while observing the number of passenger kilometers. This clearly indicates that Malaysia Airlines has the highest rate of deaths when observing the number of passenger kilometers. This data can be skewed as Malaysia Airlines overall has a lower number of incidents but has had catastrophic crashes which claimed the lives of many people in single events. An airline with a high number of passenger kilometers and a low number of fatalities is relatively safe where the opposite is found when the number of fatalities is elevated with a lower number of passenger kilometers.



SRC: Aviation Safety Network

Conclusion:

The overall safety risk of passenger travel on aircraft has not increased and is trending downwards over the last 20 years. Additionally, the rate of deaths which occur when observing mode of transportation clearly indicate commercial airline travel to be the safest with motorcycle travel resulting in the highest death rate based on distance. Understanding the above points is important when observing airline specific data. There does appear to be airlines which have higher risk than others although this can be skewed if a significant event causes many fatalities in a single incident.