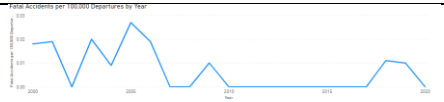
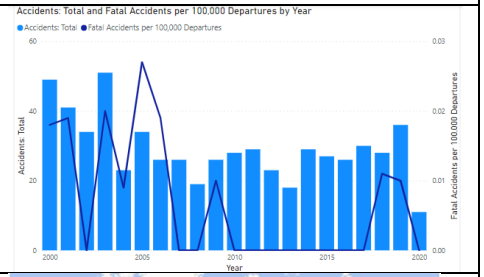
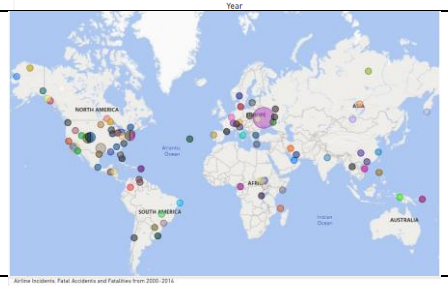
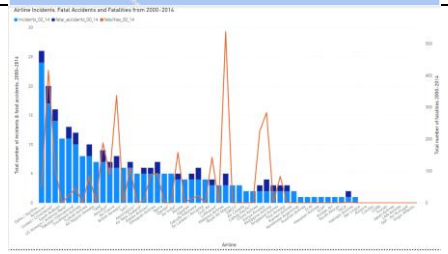
Section	Details
Business Problem	Due to recent unfortunate airline crashes, **the media has been promoting statistics stating air is no longer a safe way to travel**. The news and media outlets have been bombarding the public with reports and figures about the trends of airline safety and that things 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?**
Scenario	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.
Objective	Your first task is to create an **internal dashboard for your peers** and data science management team that outlines the facts – • **What are the stats and what are the trends?** • **Is there any supplemental data that you can use to support that air travel is still in fact the safest?** • **Is there anything politically going on that would cause this type of media attention to be at a peak?** Remember, this is for an internal review by your peers and management – and will likely spark a lot of discussion for how you approach the next level of discussion with your executive leadership team. • **Is there anything to show sales are down or are headed that way?** • **Do the safety incidents appear to be in a specific geographic area or by a specific airline every time?** Do some analysis of the data you have and look for other sources to see what you can find to help inform your internal team. This project is the first of many building on top of the information you find and will present internally and then externally.
Datasets	**Initial Airline Datasets** • Airline Safety, GitHub • Aviation Safety Network, Flight Safety Foundation • Accidents and Fatalities Pery Year **Supplemental Datasets** • Safety Record of U.S. Air Carriers (Part 121 Scheduled Service): 2000 to Present

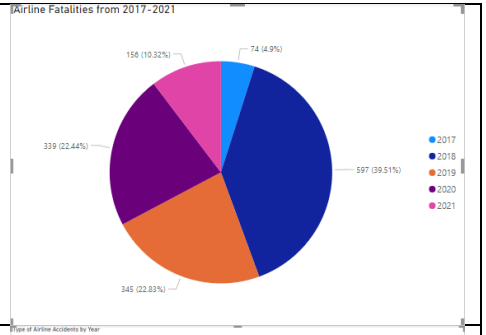
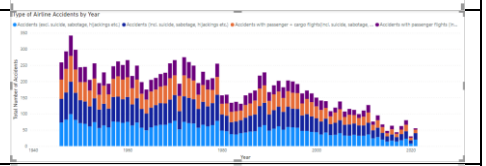
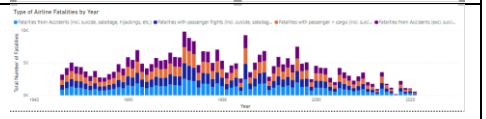
250 Word Summary of Visualizations

Recently, the media has reported that it is no longer safe to travel by air which has caused negative publicity for the airline industry. Based on historical and current airline safety data, a few different visualizations have been created (see table below) to display safety trends. Although it would be ideal to show that airline travel is safe and fatalities do not happen regularly, ethically it is important to include all data (both with positive and negative connotations) to internal teams so that accurate recommended actions can be taken by the company. Also, this transparency in data provides leadership with the information to best communicate with customers and provide them with a transparent plan on how to address their concerns, and ultimately increase revenue. To describe these visualizations to the internal team, they will be added to a simple PowerPoint presentation with a summary of the visualization and the findings in the notes section. This will ensure that the visualization can be easily digested, but the context and findings associated with the visualization can also be included if more information is required by the audience. Overall, the trend from these data visualizations shows a spike in airline fatalities in 2005 and from 2014-2020, and a marked decrease in these fatalities starting in 2021. Additionally, since 1946 airline accidents and fatalities have shown a decrease in frequency, lending itself towards a stronger safety program in the airline industry over time. Perhaps the media may be focusing on a current trend in airline safety without looking at the data over a longer period of time (e.g., 70 years).

The visualizations, descriptions, selection reasons, and findings are as follows:

Visualization	Description	Reason for Selection	Findings	Visualization Preview

Line Chart	Displays the number of fatalities in every 100,000 flight departures from 2000-2020	Fatality rates over time show a pattern in safety over all airlines	The number of airline fatalities per 100,000 departures has decreased from 2000-2020 with a spike in in 2005 “the fatal accidents last year tended to involve older aircraft in countries with ‘mediocre safety records’. In addition, none of the major world airlines suffered a fatal crash in 2005.”(Aviation Pros, 2006) & 2018 due to an increase in airline fatalities - “18 jetliner accidents with a total of 561 fatalities” (Goldstein, 2019)	
Bar and Line Chart	Displays the number of fatalities in every 100,000 flight departures and total number of fatalities from 2000-2020	Fatalities and fatality rates over time show a pattern in safety over all airlines	In addition to the fatality rate (number of fatalities in every 100,000 flights), the total number of fatalities was displayed to look for trends. In those years that the fatality rate was high, it did not coincide with a higher number of total fatalities indicating that the number of departures had increased.	
Map Visualization	Displays the number of airline fatalities by location in 2022	Fatalities by location shows a potential pattern in if the fatalities are clustered in any area(s)	Global airline fatalities are scattered throughout the world, with the highest air fatalities being associated with Ukraine as a result of the Russia-Ukraine War of 2022 (Wikipedia, 2022)	
Bar and Line Chart	Displays number of airline incidents, fatal accidents, and number of fatalities from 2000-2014 by Airline carrier	Incidents, fatal incidents and number of fatalities by Airline carrier shows potential patterns in if the fatalities are clustered in	- Delta Airlines and United Continental have the highest incidents, but very few fatalities. This means that for the airline safety incidents they do have, they result in much lower fatalities indicating a strong safety program - American Airlines, Air France, Maylasia Airlines and Kenya Airlines have a relatively low incident rate compared to a higher rate of fatalities. This means that for the airline safety incidents they do have, they result in higher fatalities and a weaker safety program	

Pie Chart	Displays number of airline fatalities by year from 2017 to 2021	The percentage of fatalities by year shows a potential trend in how air fatalities may have improved over time	Airline fatalities in 2021 has decreased to almost its second lowest only to 2017, which displays a trend in decreased airline fatalities and effectiveness of airline safety programs	
Stacked Bar Chart	Displays number of airlines accidents from 1946- 2021	Total Airline accidents over time show a potential pattern in safety over all airlines	Airline accidents have down a downward trend from 1946 to 2021 which lends itself towards air travel being a safe mode of transportation over time	
Stacked Bar Chart	Displays number of airlines fatalities from 1946- 2021	Total Airline fatalities over time show a potential pattern in safety over all airlines	Airline fatalities have down a downward trend from 1946 to 2021 which lends itself towards air travel being a safe mode of transportation over time	

References

1. Goldstein, M. (2019, May 7). *After 900% increase in 2018, airline fatalities rising again*. Forbes. Retrieved September 15, 2022, from https://www.forbes.com/sites/michaelgoldstein/2019/05/07/after-900-increase-in-2019-airline-fatalities-rising-again/?sh=6218f0e67190
2. Wikipedia. (2022, September 15). *List of aircraft losses during the Russo-Ukrainian War*. Wikipedia. Retrieved September 15, 2022, from https://en.wikipedia.org/wiki/List_of_aircraft_losses_during_the_Russo-Ukrainian_War
3. Aviation Pros. (2006). *Worldwide plane crash death toll doubles in 2005 | aviation pros*. Retrieved September 15, 2022, from https://www.aviationpros.com/home/news/10403279/worldwide-plane-crash-death-toll-doubles-in-2005