# Introduction

Passenger air travel can be a source of panic due to the unfortunate and sometimes fatal occurrence of airline crashes. It is imperative to establish whether airline travel is genuinely hazardous or if incidents and fatalities were unavoidable occurrences, as safety concerns in air travel continue to escalate. The dashboard presents various visual representations of Airline Safety data on fatalities and incidents that took place between 1985-1999 and 2000-2014. This data is sourced from Aviation Safety Network's database, together with supplemental data on airline crash data dating back to 1908, obtained from Kaggle.

These visualizations serve the crucial purpose of providing the teams with valuable insights into the different scenarios of airline fatalities from 1985 to 2014. These scenarios are divided into two periods: 1985-1999 and 2000-2014. The primary objective is to empower the Data Science team and Business to make well-informed decisions that will enhance airline safety standards and guarantee safer air travel.

# Visualizations

The types of visualizations built are as follows:

1. Bar and Stacked Bar charts – I have included mostly bar charts to display the number of fatalities based on numerous factors. I selected bar charts as they are the most suitable to represent fatality numbers by category.
2. Line Chart –I utilized a Line chart to illustrate the trends in fatalities over the years. This is a suitable way to display a linear visualization based on yearly data.
3. Pie Chart and Donut Chart – In my opinion, Pie and Donut charts are the most effective tools for visually representing categorical data and occurrence rates. Specifically, I utilized a Pie chart to display fatality rates per country, and a Donut chart to illustrate fatality rates per airline.

## Fatalities per Airline between 1985 to 1999

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The above stacked bar chart displays the number of fatalities for airlines during the periods of 1985-1999 and 2000-2014, using shades of red to represent fatalities. The objective of this chart is to determine which airline had the highest and lowest fatalities during these two periods. Additionally, this visualization shows the number of fatalities per year, which allows us to compare the increase/decrease in fatalities across years. Upon examining the chart, it is evident that Egyptair had the most fatalities in 1999 with a total of 217 passengers.

## Fatalities per Airline between 2000 to 2014

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Between 2000 and 2014, the airline with the highest number of fatalities was Air France, which had a total of 337. This number was significantly higher than the lowest sum of fatalities, which belonged to Southwest Airlines at 0. In fact, Air France accounted for 38.51% of all fatalities across the nine airlines examined

## Overall Fatality Rates by Airline

A screenshot of a graph

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This visualization shows the fatal rates of various airlines. Upon examining the chart, it is apparent that Air France had the highest number of fatalities, with a sum of 1734, followed by Avianca and Alitalia. Southwest Airlines had the lowest number of fatalities, with a sum of zero. Air France accounted for 28.29% of the total number of fatalities.﻿

## Fatalities by Year

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This line chart depicts the number of fatalities per year, allowing us to observe trends over time. By analyzing the spikes in fatalities, we can identify potential reasons for the increase. From the above chart, we can see that the number of Fatalities started trending down in 1999, falling by 40.10% (389) in 10 years.﻿﻿ ﻿﻿ ﻿﻿The number of Fatalities dropped from 970 to 581 during its steepest decline between 1999 and 2009.﻿﻿ ﻿﻿ ﻿

## Fatalities Rate by Country

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The Pie chart displays the fatality rate for each country. It is apparent that the United States accounted for 14.71% of the total fatalities.

## Total Fatalities between 1985 to 1999 per airline

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Description automatically generated

This bar chart displays the total number of reported fatalities in the Airline Safety data between 1985 and 1999. We can see from the chart, that China Airlines reported the highest number of fatalities at 535, followed by Japan Airlines and Korean Air. China Airlines accounted for 8.50% of total fatalities during this period. The number of fatalities across the fifty-six airlines ranged from 0 to 535. It is worth noting that the figures from Airline Safety data differ from the airline crash data available on Kaggle.

## Total Incidents Per Airline

A screenshot of a computer

Description automatically generated with low confidence

This visualization presents data from the Airline Safety dataset, highlighting the total number of incidents reported during two distinct periods: 1985-1999 and 2000-2014. From the stacked bar chart, it is evident that Aeroflot\* was responsible for 18.91% of all incidents during 1985-1999.

## Passengers on Board vs Number of Fatalities

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Description automatically generated

The goal of this chart is to determine the ratio of passengers on board to the number of fatalities. This visual representation will aid in assessing the nature of the fatalities and their effect on the number of passengers on board.

## Fatalities by Location

A map of the world

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This chart shows the geographic location of countries and the number of fatalities. This view can be further drilled down to address any location-specific issues, if any.

# Ethical Implications

Ensuring data accuracy is crucial, especially when the data is obtained from a public website rather than an airline-specific one. It is difficult to ascertain the accuracy of such data. According to chart #6, there is a discrepancy between the Airline Safety data and the airline crash data provided on Kaggle, which brings into question the reliability of the data source.