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DSC640 T301 Data Presentation & Visualization

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Project Task 1 - Dashboard

A. Introduction

Due to recent unfortunate airline crashes, the passenger is in state of panic. It is very important to find out if air travel is safe. Are there any steps that can be taken to reduce or avoid the occurrence of accidents or crashes? If yes, what are they? To get the answers, I created a dashboard which contained the different visualization to show the current stat.

To build Tableau dashboard I compile data from multiple resources. The first set of data Airline-Safety is coming from Aviation Safety Network database. This data contained information about the fatalities and incidents that took place between 1985-2014. Another dataset is obtained from Kaggle is about the Airline crashed and fatalities happened since 1908.

The purpose of these visualization to get and share the valuable insights with peers and data science management team and based on the facts the well-informed decision can be made to improve the airline safety standards to guarantee safer air travel to passenger.

I used bar and stacked bar charts to show the total number of fatalities based on many factors. These charts are suitable to show total number by category. Also, the pie chart is used to display fatality rates by airline.
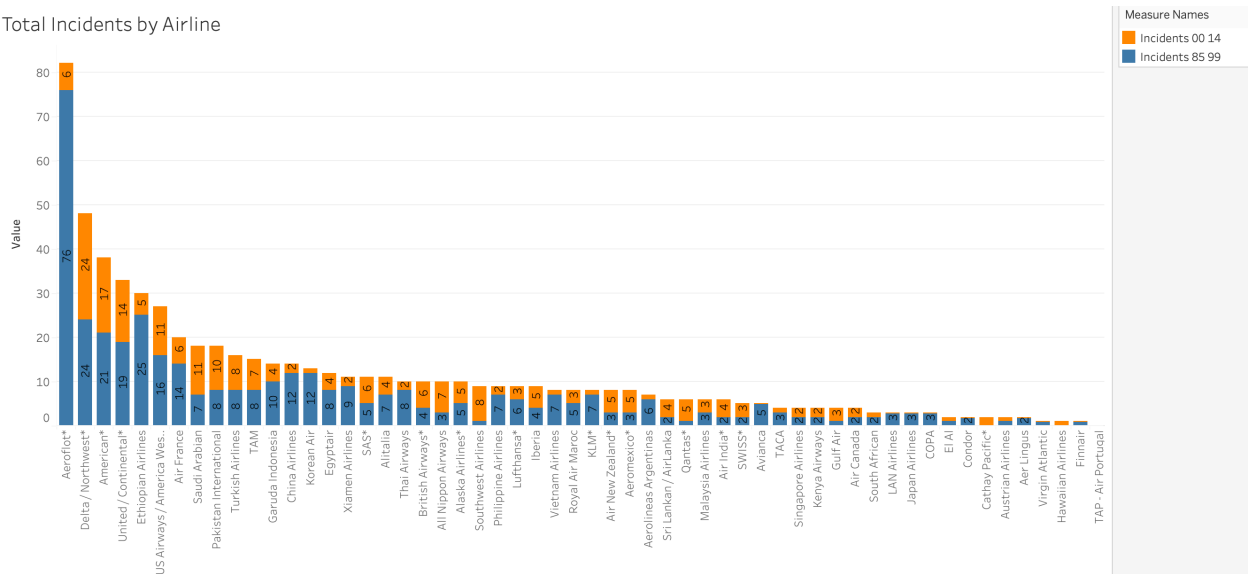
The orange color is used mostly to represent the total number of fatalities in multiple visualization to represent the caution or area in process of improvement, green color brings the positivity, so it is used for survivors.

B. Visualizations

I have done the following visualization:

1. Total Incidents by Airline

Total Incidents by Airline

The stacked bar chart is used to show total number of incidents happened by airlines during the period of 1985 to 2014. The Aeroflot Airline has most incidents (82), as recorded following by Delta/Northwest airline with 48 incidents and American airline with 33 incidents.
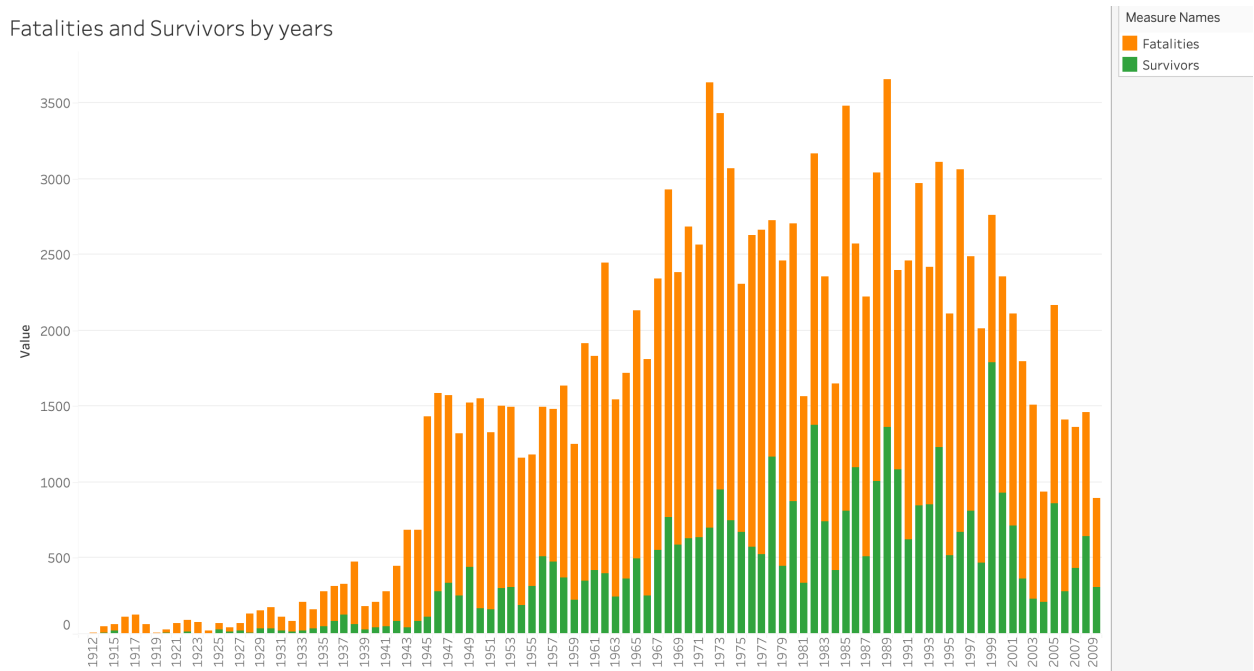
## 2. Fatalities by Countries

Fatalities by Countries
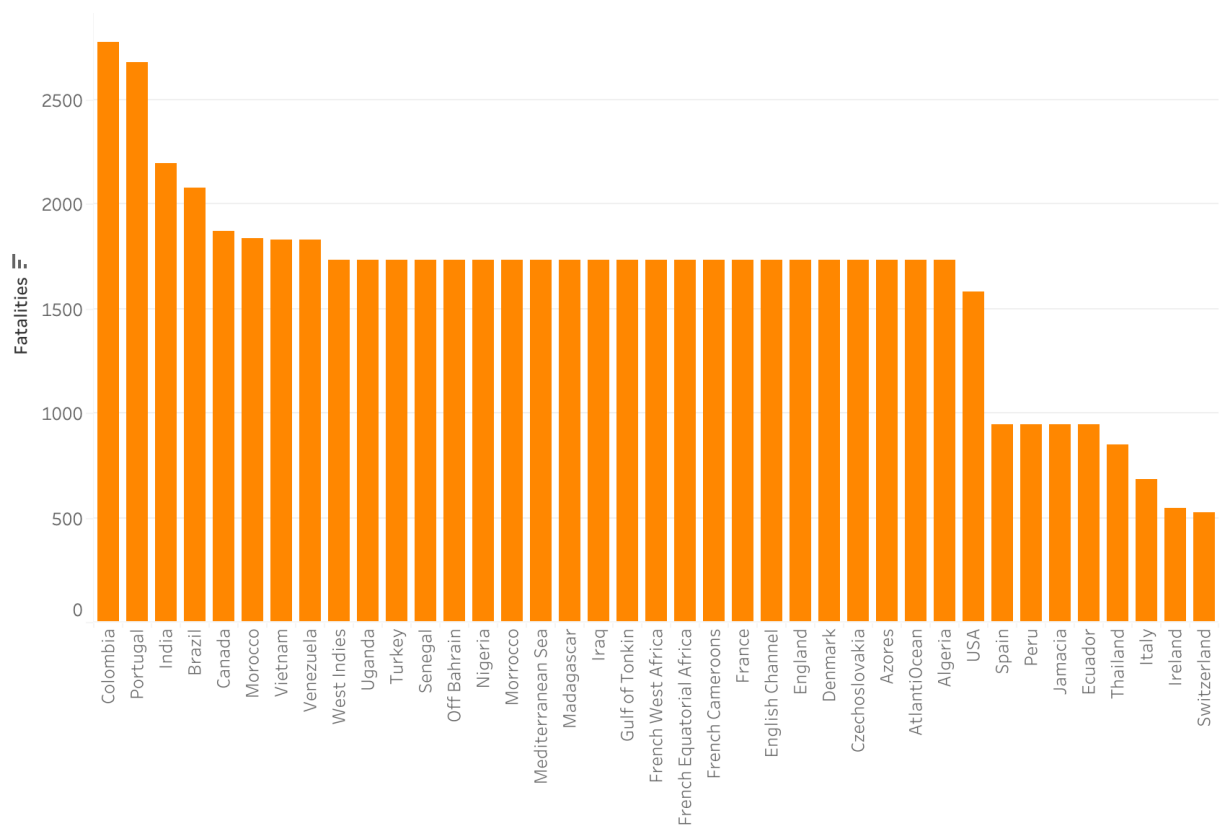
Bar chart is used to show the number of fatalities by Country. This chart helps us to see the top 5 countries where maximum fatalities happened during period of 1985 – 2014 are Columbia, Portugal, India, Brazil, and Canada.

3. *Fatalities and Survivors by years*

Fatalities and Survivors by years

The next chart is stacked bar chart which is used to represent the number of fatalities and survivors by years. As we can see from above chart that survival rate was high compared to fatal rate in year 1999 which show improvement from past years. But again after 1999 the survival rate is getting lower from fatal rate. Using this information, we can see what strategy and process were used in year 1999 which help us improving the survival rate.

4. *Total Fatalities by Airline(1985-1999)*

Total Fatalities by Airline(1985-1999)
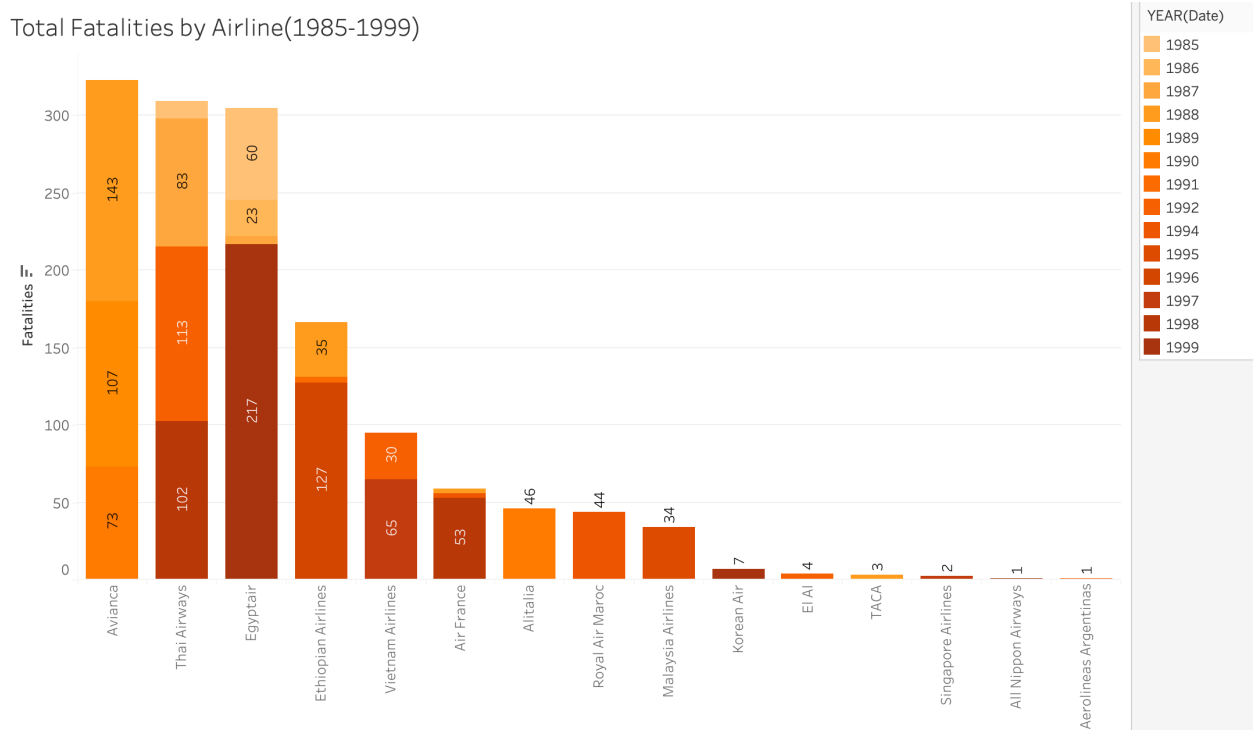
I used the stacked bar to show the total fatalities happened during years of 1985-1999 by Airline. The shades represent the years from 1985-1999. As we can see from above chart that Avianca is the airline with most fatalities over the period, but all the fatalities happened during 1988-1990. The EgyptAir airline had the maximum fatalities of 217 passengers in year 1999.

5. Total Fatalities by Airline(2000-2009)

Total Fatalities by Airline(2000-2009)
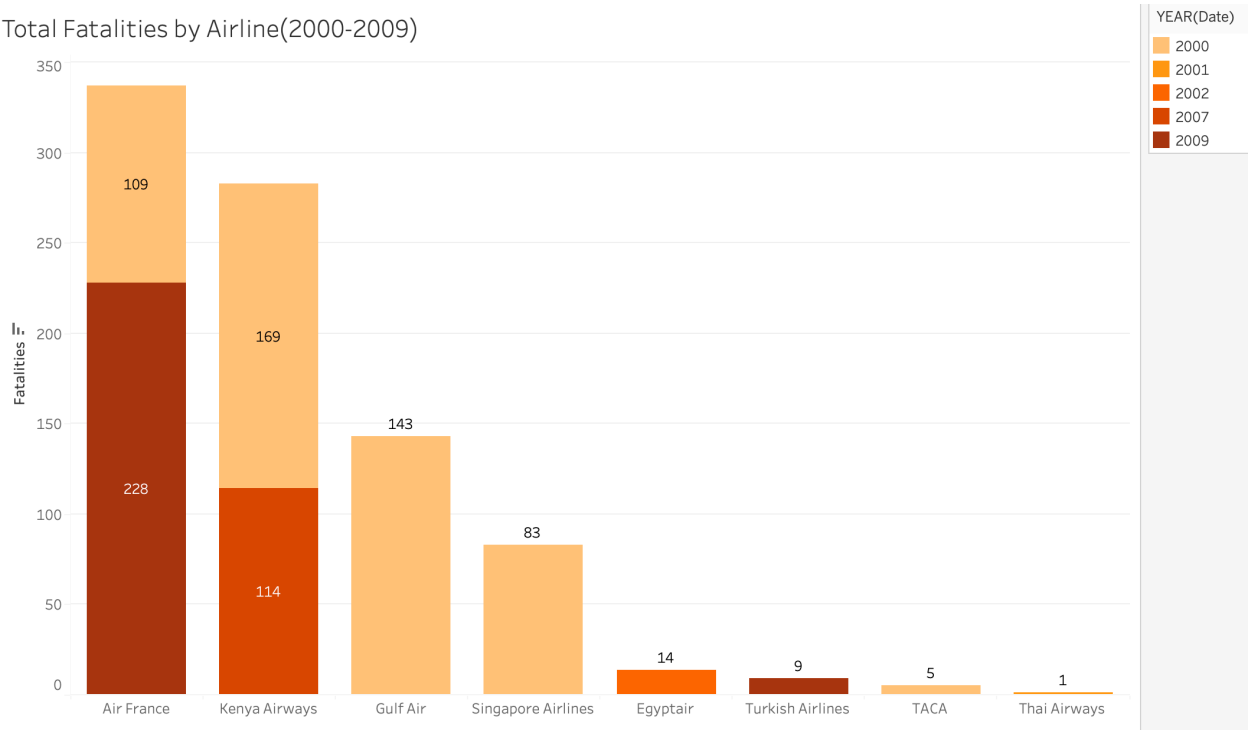
The above stacked bar chart is to represent the total fatalities happened during the years 2000-2009. Looking at the above chart we can clearly see Air France airline has most fatalities of 228 passengers in 2009 and 109 passenger fatalities in 2000. Where as Thai Airway airline had only 1 passenger fatalities in 2001. We can compare both airlines process for improvement.

Fatalities Rate by Airline
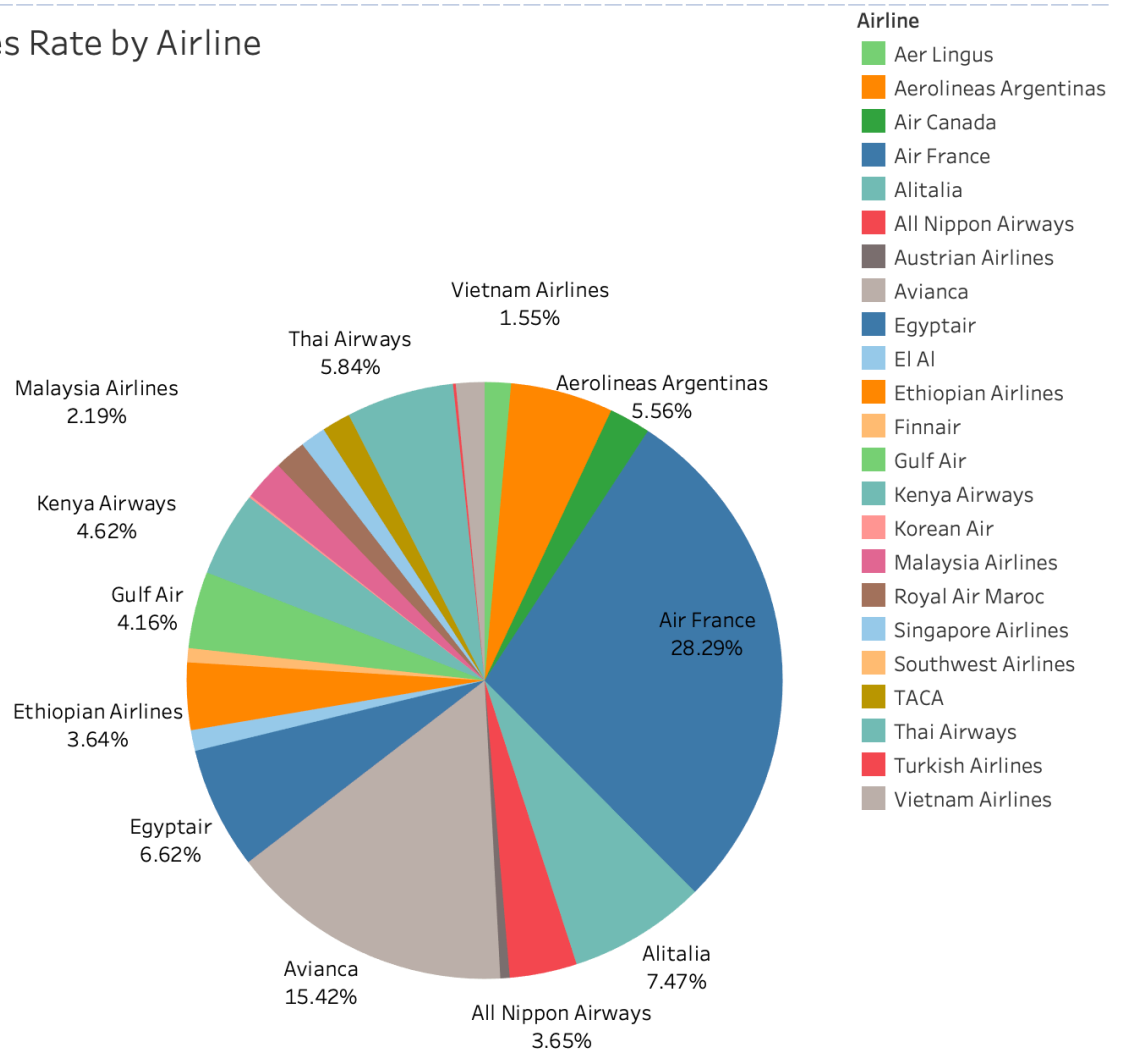
The next chart I use is pie chart to represent the fatalities rate by airline. I used different colors to show the Airline. From above pie chart we can clearly see Air France Airline is accounted for most fatalities of 28.29% (1734) during the period of 1985 to 2014. The Avianca show the fatalities rate of 15.42% and Alitalia Airline show 7.47% of fatal rate.

C. Ethical Implications

- We are in initial stage of the project to see any risk but as part of the project step 1, I noticed the discrepancy between Aviation Safety Network database and data coming from Kaggle like Kaggle data set is for period 1985-2009 and Aviation Safety network show the data for period 1985-2014 we are missing 5 years data for crashes and fatalities.

- The other risk I see is with ensuring data accuracy. Both data set is obtained from public website and none of them is government website, so it is difficult to say if data is accurate.

- All the data used for visualization is decade old and for better decision making it will be beneficial to visualize the recent data which can show the current state of Airlines.

- I also make sure all the ethical analysis guidelines will follow by me while preforming data analysis steps.

D. References:

- Airline Safety dataset - https://aviation-safety.net/

- Airplane Crashes Since 1908: https://www.kaggle.com/datasets/saurograndi/airplane-crashes-since-1908