The tragedy of flight : A comprehensive crash analysis

1.Introduction

1.1 Overview

An **aviation accident** is defined by the Convention on International Civil Aviation Annex 13 as an occurrence associated with the operation of an aircraft, which takes place from the time any person boards the aircraft with the *intention of flight* until all such persons have disembarked, and in which (a) a person is fatally or seriously injured, (b) the aircraft sustains significant damage or structural failure, or (c) the aircraft goes missing or becomes completely inaccessible. Annex 13 defines an **aviation incident** as an occurrence, other than an accident, associated with the operation of an aircraft that affects or could affect the safety of operation.

A hull loss occurs if an aircraft is damaged beyond repair, lost, or becomes completely inaccessible.

The first fatal aviation accident was the crash of a Rozière balloon near Wimereux, France, on June 15, 1785, killing the balloon's inventor, Jean-François Pilâtre de Rozier, and the other occupant, Pierre Romain. The first involving a powered aircraft was the crash of a Wright Model A aircraft at Fort Myer, Virginia, in the United States on September 17, 1908, injuring its co-inventor and pilot, Orville Wright, and killing the passenger, Signal Corps Lieutenant Thomas Selfridge.

1.2 Purpose

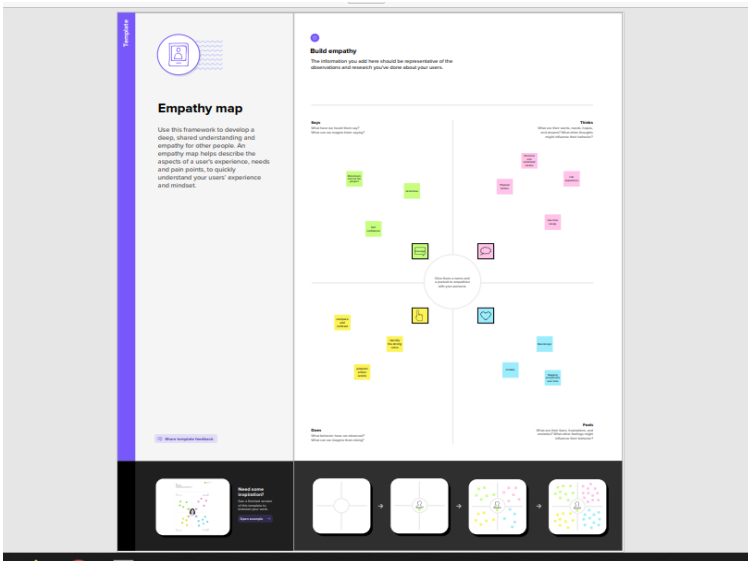
An airplane crash analysis is a detailed investigation into the causes of an aviation accident. The goal of an airplane crash analysis is to identify any factors that contributed to the accident,

with the ultimate goal of improving safety and preventing future accidents. The process of conducting an airplane crash analysis typically involves the collection and analysis of a wide range of data, including information about the aircraft and its systems, the operators, and any other relevant factors. This data is typically collected from Kaggle. Once the data has been collected, it is analysed through tableau, to identify any potential causes of the accident. The results of an airplane crash analysis are typically published in a report, which may include recommendations for improving safety and preventing similar accidents in the future. These recommendations may be implemented by the relevant authorities or industry organizations.

2.Problem defining and design thinking

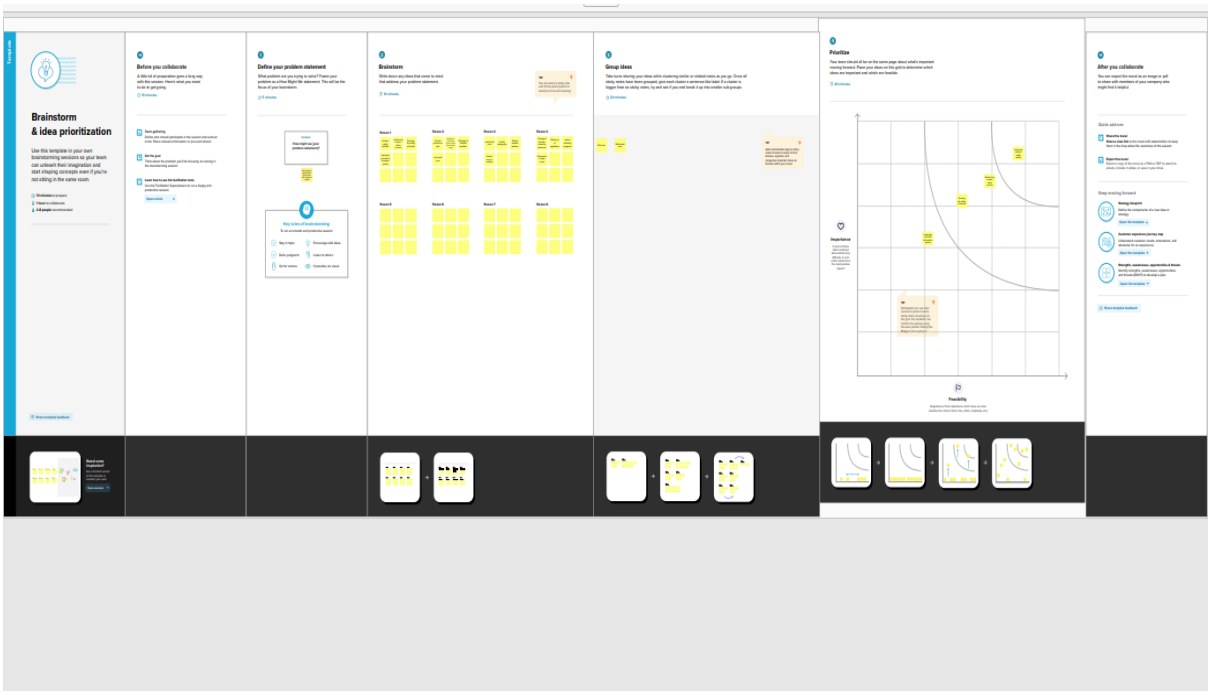
2.1 Empathy map

The empathy map is given below :



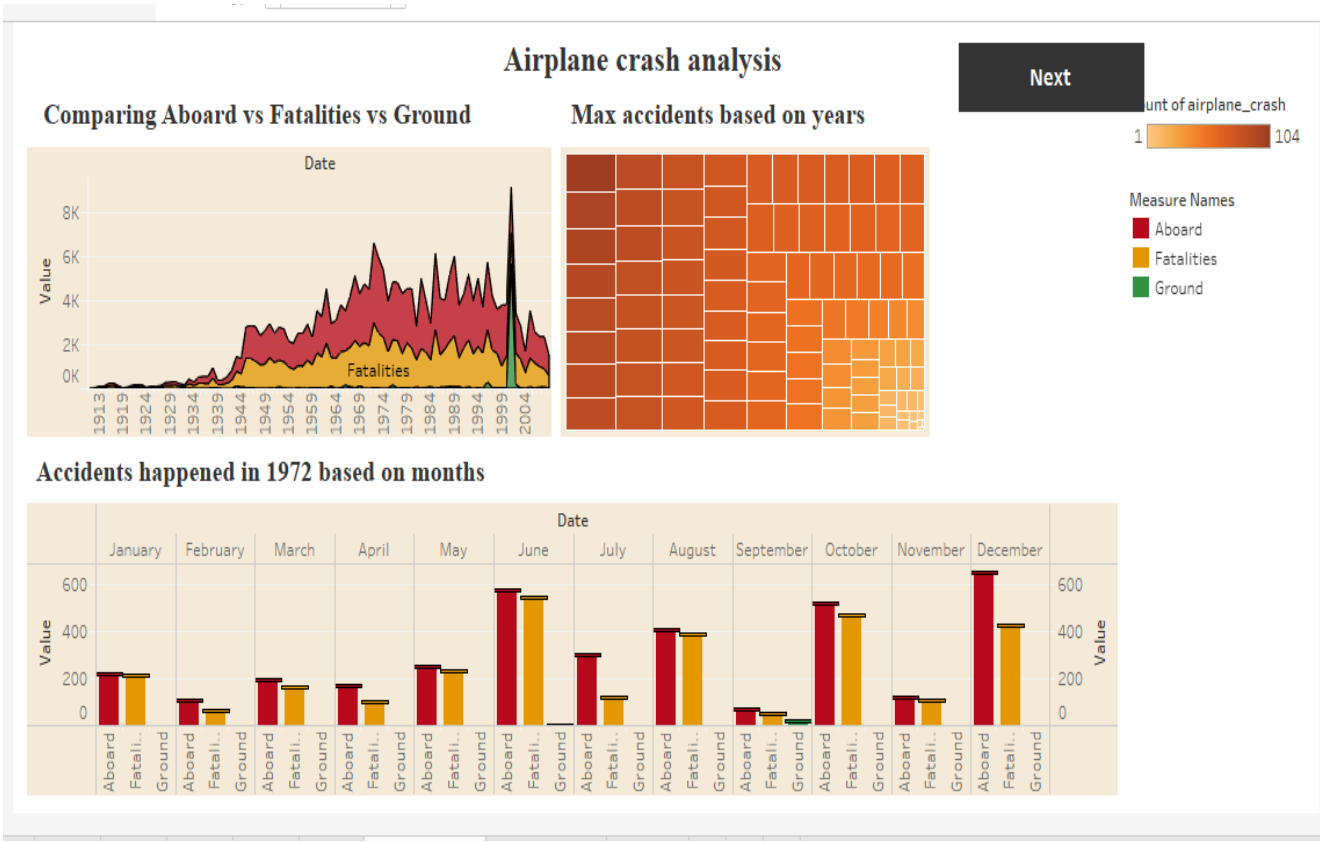
2.2 Ideation and Brainstroming Map

The brainstorming map is given below



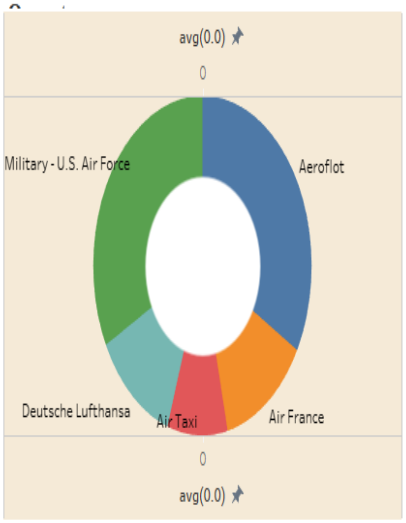
Result

Dashboard and story :

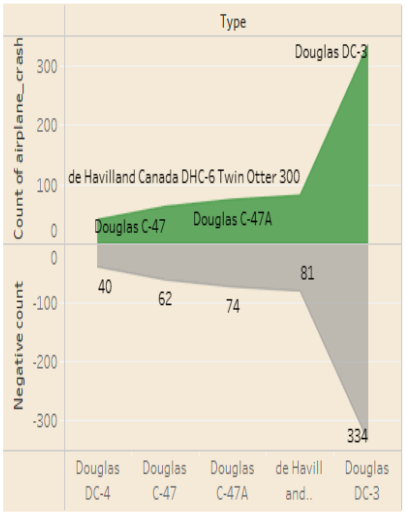


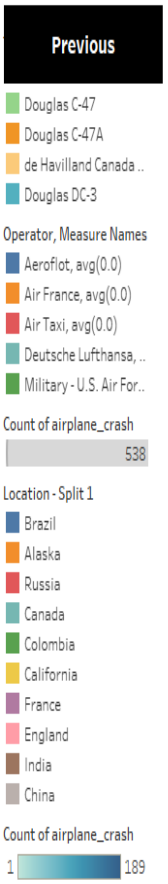
Airplane crash analysis

Highest No.of accident happened by

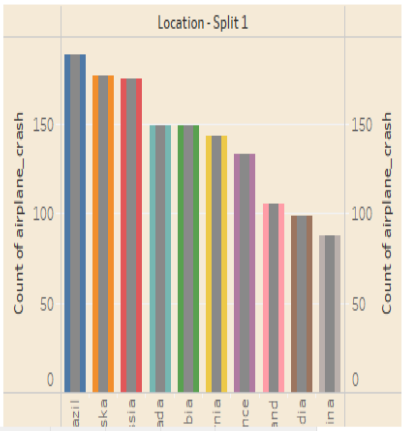


Top 3 flights which have max accident history

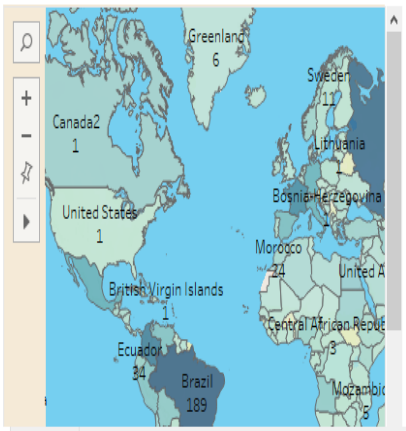




Top 10 locations which had more accidents

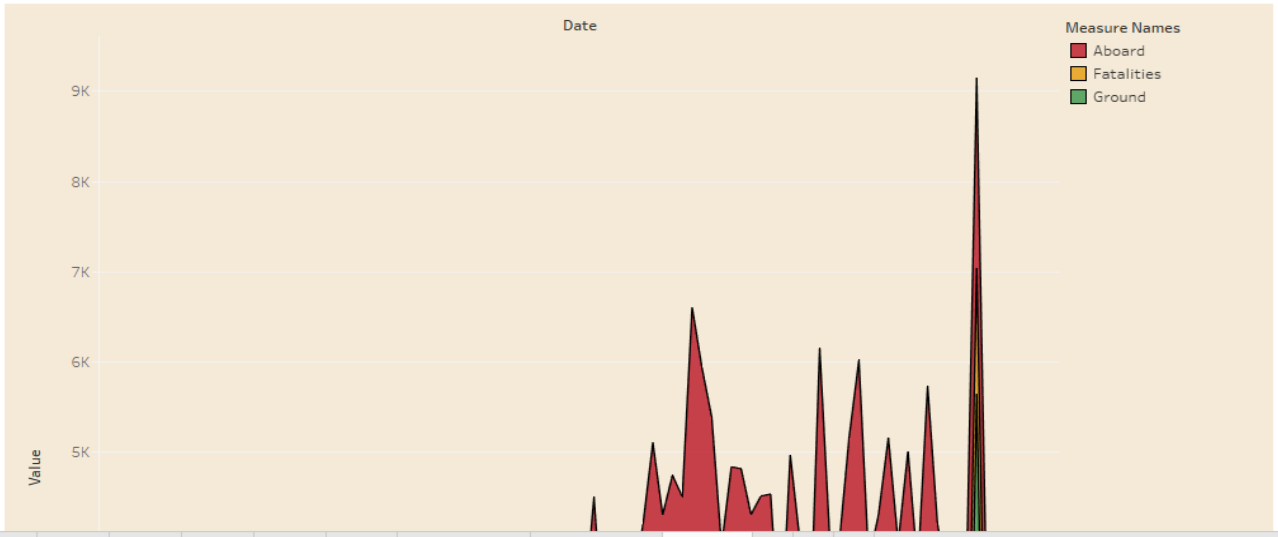


Accidents based on regions



Story Board

In the year of 2001 max accidents happened	In the year of 1972 max accidents happened	In the month of december no. of aboard happened	In the Aeroflot had happened 179 no. of accidents	Top 10 accidents Brasil had made more accidents	Top 3 flights Douglas-3 have max accident history	No ma on



Advantages and Disadvantages

Advantages :

Aircraft is proven to be the safest among all transport modes, but why do they always cause a big social panic and have an influence on economic performances? Even though they are also rare, crash events are nearly always catastrophic. Besides, the media tends to misrepresent the accident causes and usually lacks accurate safety knowledge, giving rise to negative spillover effects not only to air transport users but also to the society.

Individual safety perception toward airlines is a key to selecting which airline to use.

Objective safety may not be an adequate measure for passengers because they cannot correctly comprehend it, so perceived (subjective) safety may be more relevant to them. The origin of safety perception toward airline companies may come from accident history, tangible elements and operation performances of airline service, airfare and media as well as rumor influence.

Disadvantages:

Aviation accidents cannot be 100% avoided, but it is possible to minimize the loss associated

with accidents such as by reducing social panic. Aside from aviation disasters, terrorist
attacks and economic crisis also affect aviation market performances.
The most direct and immediate effect that we can see after accident occurring is stock
price fluctuation. Stock market reaction is a suitable connection to understand passenger
choice behavior. Goh et al. (2014) used ESM (event study method) and CAPM (capital asset
pricing market) model to realize investors' and market confidence after financial crisis.
Flouris and Walker (2005a), Flouris and Walker (2005b) and Walker et al. (2005) also
adopted ESM to examine economic influences by checking short- and long- term stock
performance of airlines and aircraft manufactures after aviation disasters and terror attacks.

Applications :

One important area of improvement is finding correct values for blank cells. Due to the lack of records, some interesting columns that could have potentially expanded the findings had to be removed. Another way to improve the study would be to collect more strongly correlated variables. Although both datasets had quite a number of variables, many variables did not have strong

correlations. By collecting more and better data, this topic can be examined more thoroughly.

Conclusion :

The most prominent finding is that crashes and fatalities have decreased while the number of passengers has increased. Furthermore, patterns on each different variable, such as location, operator, and phase of flight, provide us with deeper insights into the airplane crash patterns.

The main objective of this project is to raise awareness of flight safety and better understand its problems and progress, so that aviation industries can continue to improve. We hope that more information and understanding will lead to industry changes that save lives.

Future scope :

One solution that could help reduce the number of crashes is technological advancement. For example, the development and implementation of Automatic Dependent Surveillance-Broadcast technology will help reduce the risk of airplane collisions and weather-related accidents, provide more efficient routes under adverse weather conditions, and improve situational awareness for pilots . Advancement in technology will be the first step in preventing any further flight accidents.

Apendix :

Source code
file:///C:/Users/user/Desktop/startup-analysis/Airplane%20crash%20analysis/index.html