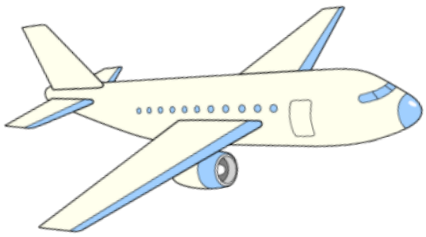
SMARTBRIDGE
Let's Bridge the Gap

Smart Internz

THE TRAGEDY OF FLIGHT:

A COMPREHENSIVE CRASH ANALYSIS

Project Based Experiential Learning Program



Miniproject on

THE TRAGEDY OF FLIGHT:

A COMPREHENSIVE CRASH ANALYSIS

BACHELOR OF SCIENCE

in

PHYSICS

By

T.JESINTHPRADEEPA

K.ANNA PACKIA

M.SHIVASHRI

K.JAYALAKSHMI

Mentored by

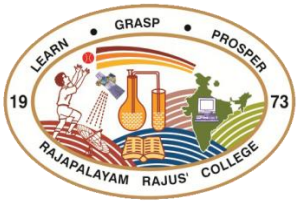
Dr. V.MONIHA, M.Sc., M.Phil., Ph.D.

Assistant professor,

Department of Physics,

Rajapalayam Rajus' college,

Rajapalayam.



RAJAPALAYAM RAJUS' COLLEGE

ALinguistic MinorityCo-Educational Institution & Affiliatedto MaduraiKamaraj University

Reaccredited B++byNAAC(CGPA 2.93)inIII cycle

RAJAPALAYAM

CONTENT

A COMPREHENSIVE CRASH ANALYSIS

1)INTRODUCTION :

1.1) Overview :

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.

1.2) Purpose :

The purpose of analyzing airplane crashes is to identify the causes and contributing factors of the accident, with the goal of improving aviation safety and preventing similar accidents from occurring in the future. This analysis involves investigating the events leading up to the accident, the

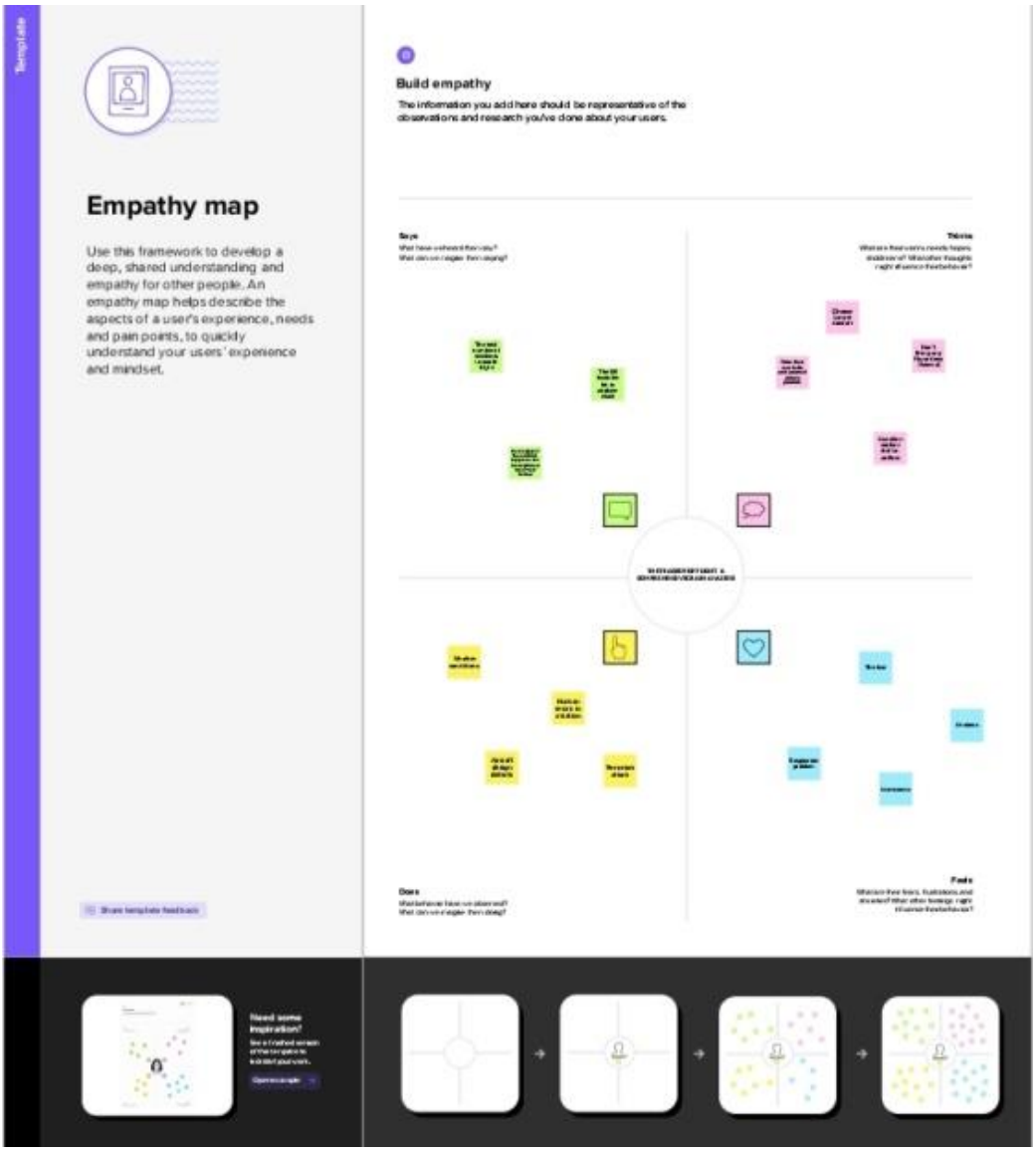
technical failures or malfunctions that may have occurred, and the decisions made by the pilots and other personnel involved in the operation of the aircraft.

The investigation may be conducted by various organizations, including government agencies, such as the National Transportation Safety Board (NTSB) in the United States, or international bodies such as the International Civil Aviation Organization (ICAO). The investigation process typically involves examining the wreckage, analyzing flight data and cockpit voice recordings, conducting interviews with witnesses and involved parties, and reviewing relevant policies and procedures.

The results of the investigation are used to develop recommendations and implement changes to improve aviation safety. These may include changes to aircraft design, modifications to procedures and protocols, enhancements to training and education programs, or revisions to regulatory policies and standards. Ultimately, the goal of analyzing airplane crashes is to reduce the risk of future accidents and ensure the safety of passengers and crew.

2)PROBLEM DEFINITION & DESIGN THINKING :

2.1) Empathy Map :



Says :

- The US leads the list in airplane crash (5445 deaths)
- The total fatalities due to aviation accidents since 1970 is 83,772. The total number of incidents is 11,164.
- In the past 30 years, the world witnessed 720 aeroplane crashes, where the death toll from crashes in the mountainous country is the highest.
- The majority of the incident happen on the runway during takeoff and landing.

Think :

- Turbulence – A sudden , violent shift in airflow
- Choose larger aircraft.
- Wore their seat belts and assumed a brace position.
- Don’t bring any hazardous material.

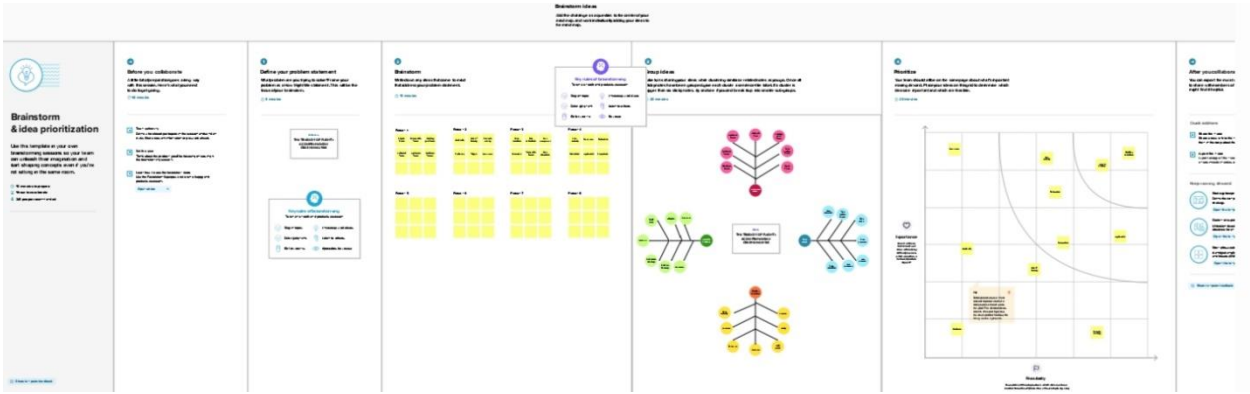
Does :

- Human errors in aviation.
- Weather condition.
- Aircraft design defects.
- Terrorism attack.

Feels :

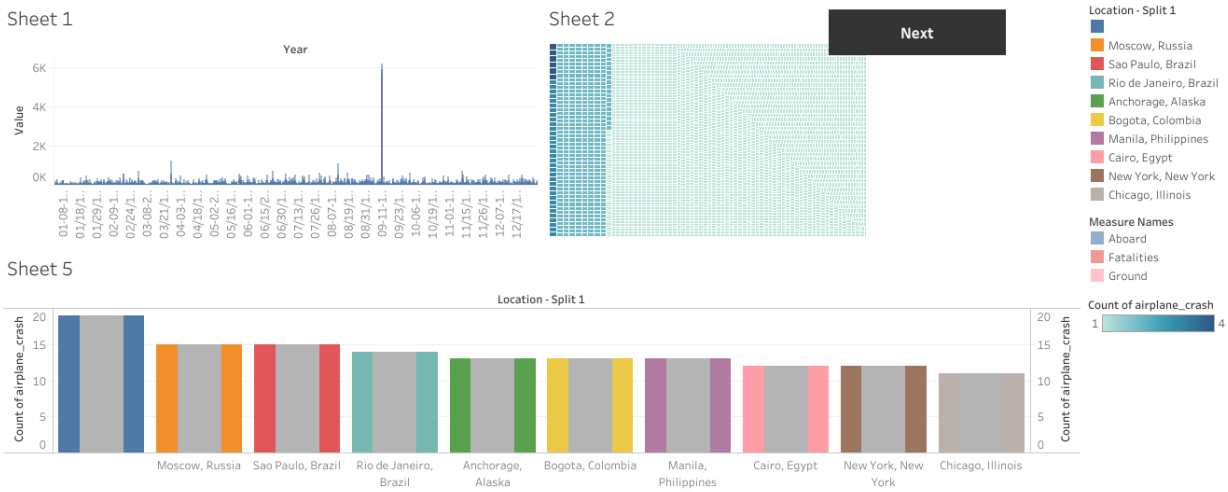
- The fear
- Respiration problem
- Nervousness

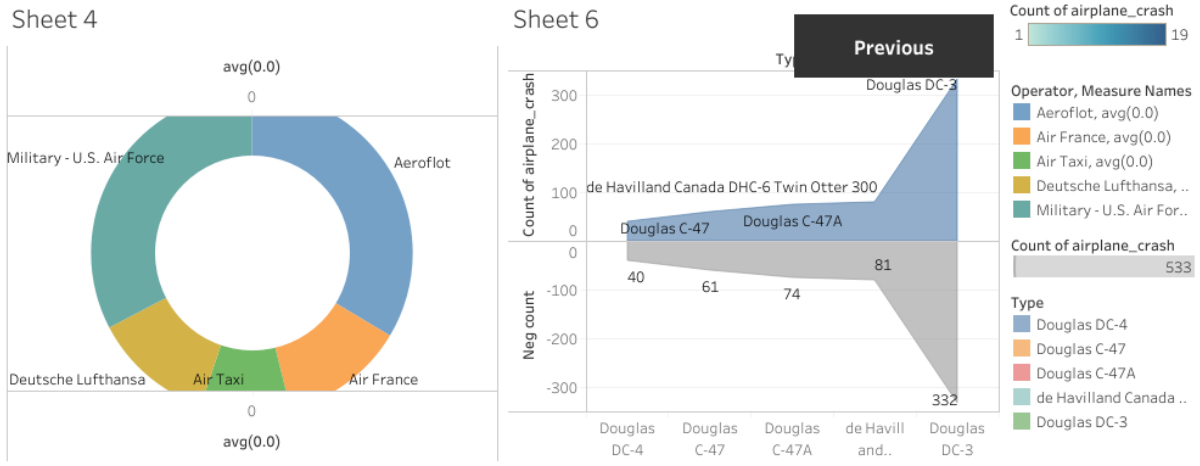
2.2) Ideation & Brainstorming Map :



3) RESULT:

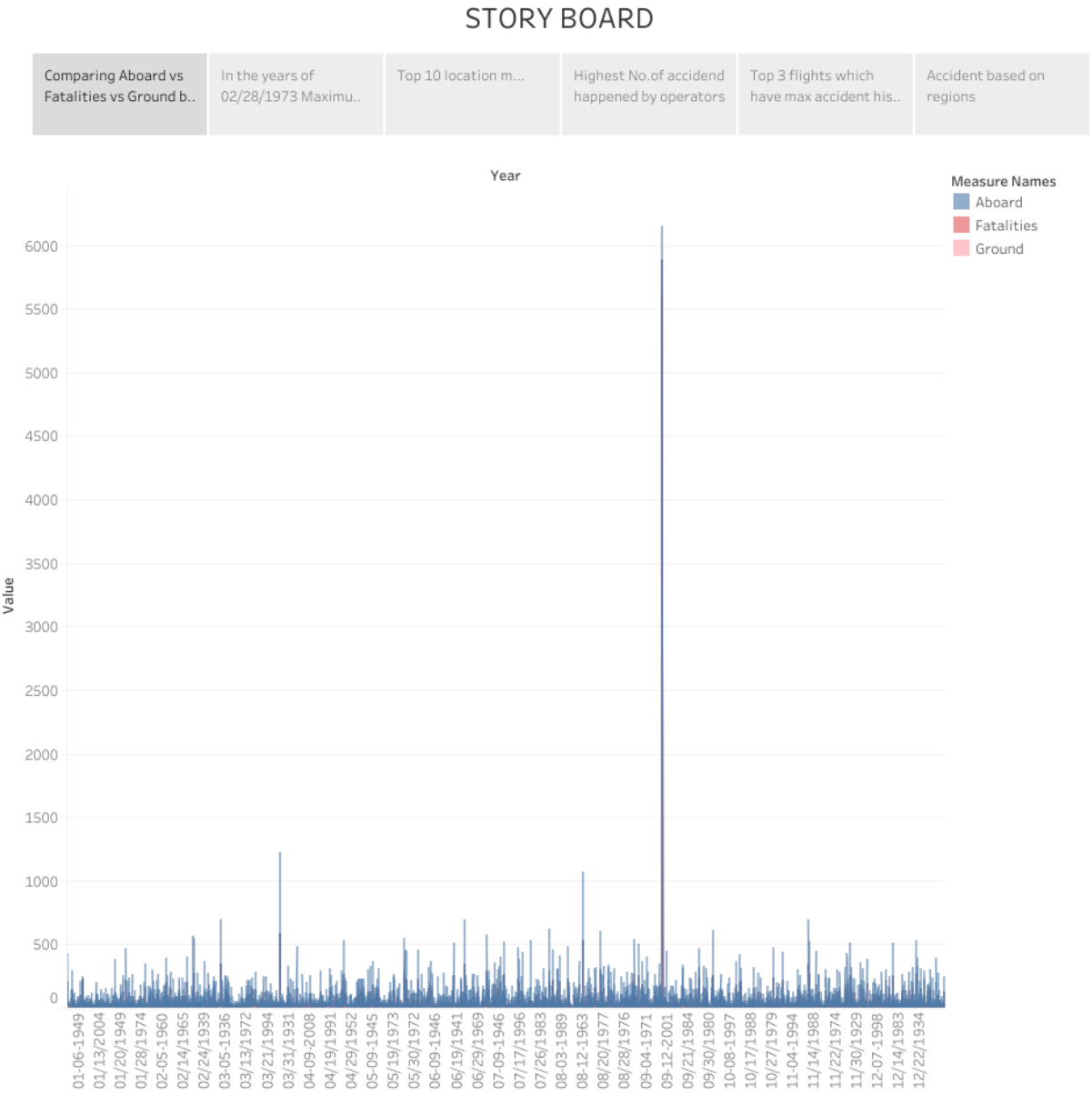
3.1) Dashboard:



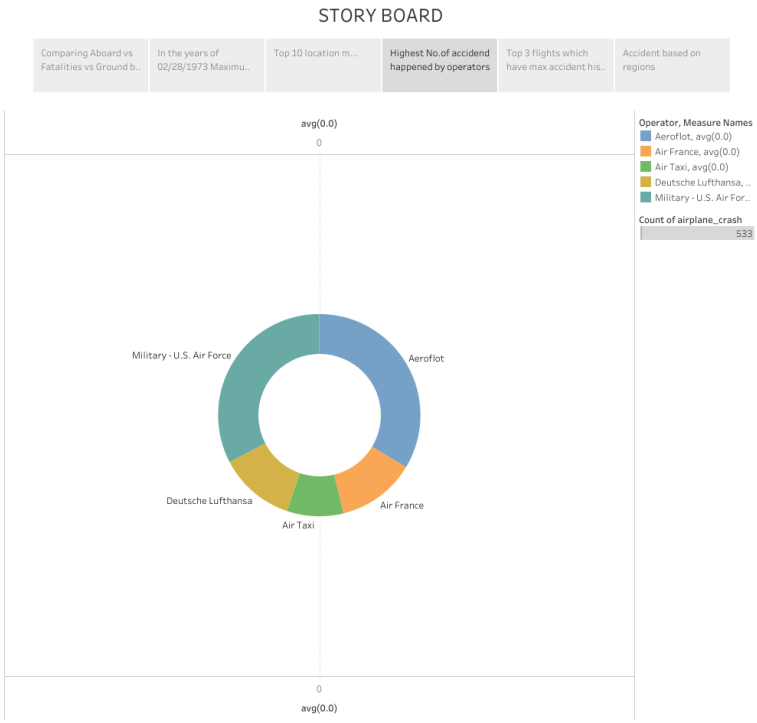


3.2) Story:

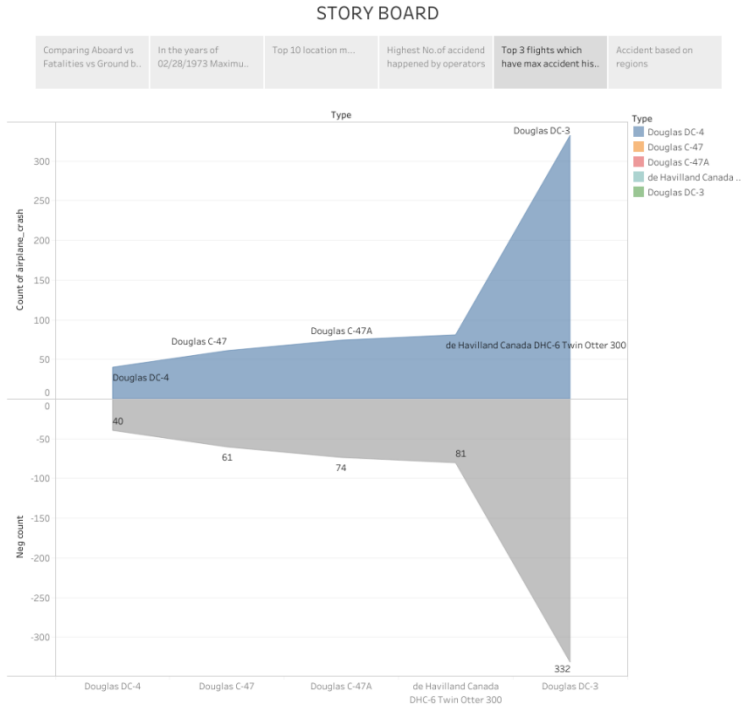
Comparing Aboard vs Fatalities vs Ground



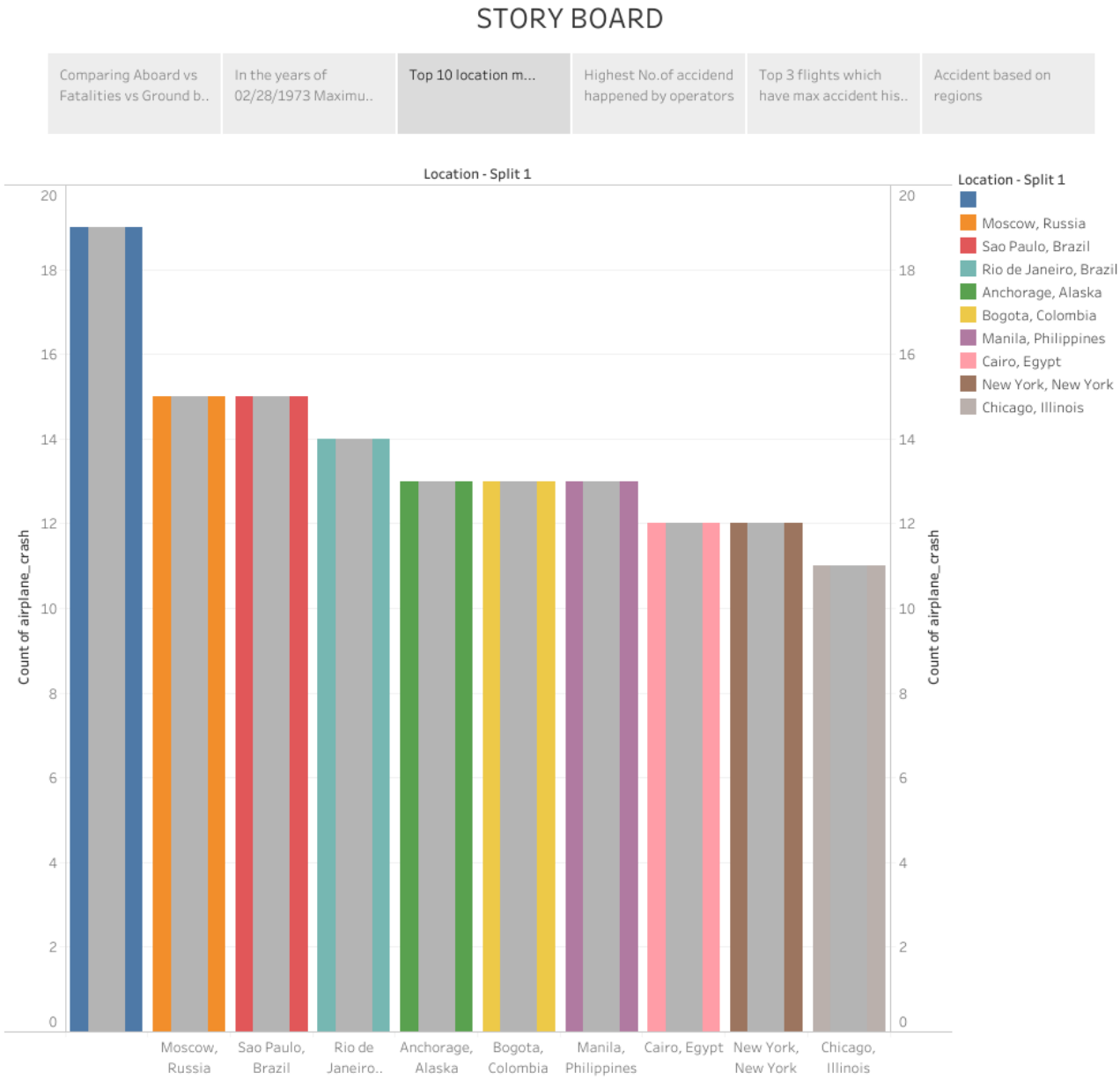
Highest No. of accident happened by Operator :



Top 3 flights which have max accident history :

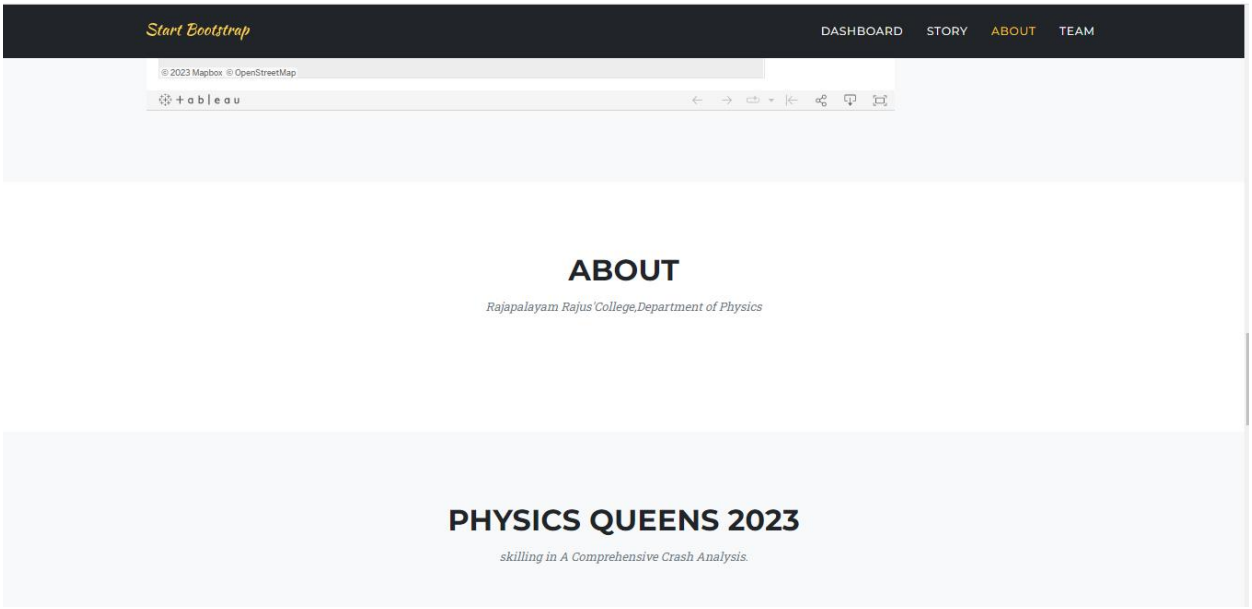


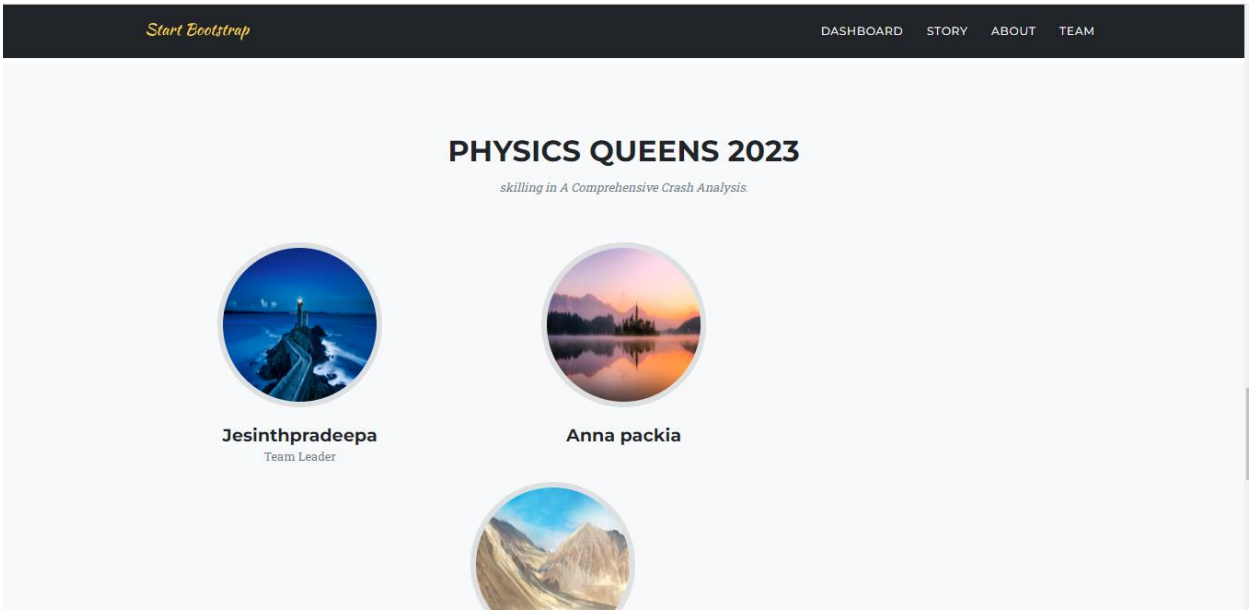
Top 10 locations which had more accidents :

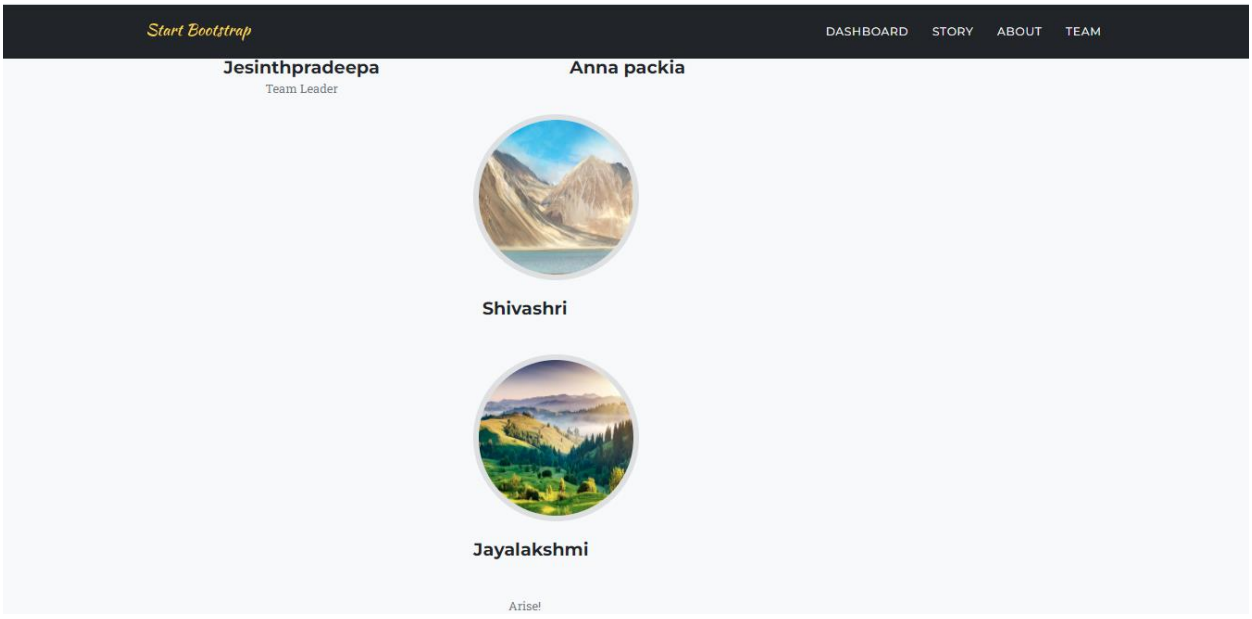


Accidents based on regions :

3.3) About:




Start Bootstrap
DASHBOARD
STORY
ABOUT
TEAM
PHYSICS QUEENS 2023
skilling in A Comprehensive Crash Analysis.
Jesinthpradeepa
Team Leader
Anna packia


Start Bootstrap
DASHBOARD
STORY
ABOUT
TEAM
Jesinthpradeepa
Team Leader
Anna packia
Shivashri
Jayalakshmi
Arise!

4) ADVANTAGES:

- The analysis of airplane crashes helps to identify the root cause of the accident and to develop corrective actions to prevent similar incidents in the future. As a result, this analysis contributes to improving aviation safety and reducing the risk of accidents.
- When the public sees that authorities are conducting a thorough and transparent investigation of airplane crashes, it can increase their confidence in the aviation industry.
- Airplane crash analysis is often used in legal proceedings to determine liability and compensation for damages. A comprehensive analysis can provide evidence to support claims and assist in the resolution of legal disputes.
- Airplane crash analysis can lead to improvements in aircraft design, maintenance, and operations. For example, changes to design and maintenance procedures can improve aircraft reliability and prevent future accidents.
- One of the most significant advantages of airplane crash analysis is that it can help improve aviation safety. By analyzing past accidents, researchers and engineers can identify the causes and contributing

factors of the accidents and develop new safety measures and technologies to prevent similar accidents from occurring in the future.

- Airplane crash analysis can also lead to the development of new technologies and innovations in aviation. For example, accident investigations have led to the development of new cockpit technologies, such as enhanced ground proximity warning systems and better cockpit displays.
- airplane crash analysis provides valuable insights and benefits that can improve aviation safety, training, regulation, technology, and knowledge. By using this information to inform policy and practice, we can help ensure that air travel remains one of the safest modes of transportation.

5) DISADVANTAGES:

- Airplane crashes are relatively rare events, so the sample size available for analysis is small. This can make it difficult to draw statistically significant conclusions.

- The data collected from airplane crashes may be incomplete, inaccurate, or biased. Investigators may face challenges in accessing wreckage, weather conditions, and other key information.
- Airplane accidents can be incredibly complex, involving multiple factors and variables. Identifying the root cause of an accident can be challenging, and there may be multiple contributing factors.
- There may be regulatory constraints on the information that can be shared publicly about airplane accidents. This can limit the scope of analysis and make it difficult to identify and address systemic issues.
- Airplane accidents can be traumatic events, and analyzing them can be emotionally challenging for investigators and stakeholders. It's important to provide support to those involved in the analysis process.
- Investigating airplane accidents can be expensive, requiring significant resources and expertise. This can be a barrier to conducting comprehensive analyses.
- The public may perceive airplane accidents as indicative of systemic problems in aviation, which can damage the reputation of the industry. It's important to communicate accurately about the causes and context of accidents to avoid undue panic or fear.

6) APPLICATION:

- The application could gather data on past airplane crashes from various sources such as aviation authorities, news articles, and accident investigation reports.
- Machine learning algorithms could be used to analyze the collected data and identify patterns and trends in the causes of airplane crashes.
- The application could use the analyzed data and machine learning algorithms to predict the likelihood of a future airplane crash based on various factors such as weather conditions, flight routes, and aircraft models.
- Airplane crash analysis has many applications, including improving aviation safety, developing better aircraft designs, and enhancing emergency response procedures.
- Airplane crash analysis is used to identify the causes of accidents and incidents. By analyzing the data from these events, safety experts can identify patterns and trends that could be indicative of safety issues. This information can then be used to develop safety measures and procedures to prevent future accidents.

- Airplane crash analysis can also be used to inform the design of new aircraft. By studying the failure modes of existing aircraft, designers can identify potential weaknesses and design new aircraft with improved safety features.
- In the event of an airplane crash, emergency response procedures are critical. Airplane crash analysis can be used to identify the most effective response strategies and to train emergency response teams to respond to different types of crashes.
- Airplane crash analysis can also be used by insurance companies to evaluate risk and determine premiums for aviation insurance policies.
- Airplane crash analysis can be used in legal proceedings related to airplane accidents. By analyzing the available data, experts can provide testimony regarding the causes of the accident and any potential liability.

7) CONCLUSION:

Here we analysis the Tragedy of flight : A Comprehensive Crash analysis by empathy map , Brainstorming , Data preparation , Data visualization , Dashboard and story.

8) FUTURE SCOPE:

- Drones have the potential to be used for crash investigation and analysis. They can provide real-time data, images, and video footage from the accident scene, which can help investigators to understand the circumstances that led to the crash.
- Airplane crash analysis can also be used to identify safety measures that can be implemented to prevent accidents from occurring in the future. This could include improvements in aircraft design, better training for pilots and ground crew, and more robust safety procedures.
- With the increasing availability of data and advancements in machine learning, there is a significant opportunity to improve airplane crash analysis. AI and machine learning algorithms can be used to analyze data from multiple sources and identify patterns, trends, and anomalies that could indicate potential safety issues. This can help to prevent accidents from occurring in the future.
- With the advent of big data and machine learning, there is enormous potential for advanced data analysis techniques to be applied to airplane crash analysis. These techniques can be used to identify patterns and

trends that might not be apparent through manual analysis, and to develop predictive models that can help prevent future accidents.

- As new technologies are developed, such as artificial intelligence and drones, there is potential to integrate them into airplane crash analysis. For example, drones could be used to quickly survey and map crash sites, providing valuable information to investigators.
- Airplane crash analysis involves many different stakeholders, including aviation safety experts, aircraft manufacturers, airlines, and regulatory agencies. There is potential for increased collaboration between these stakeholders to share information and work together to improve safety.
- While many airplane crashes are caused by mechanical or technical failures, human factors also play a significant role. Future airplane crash analysis could focus more on identifying and addressing human factors, such as pilot error or fatigue.
- Virtual reality technology can be used to create simulations of airplane crashes, allowing investigators to test different scenarios and analyze the data in a controlled environment. This can help identify potential safety issues and develop better safety measures.

- Overall, there is a lot of potential for future growth and development in the field of airplane crash analysis. By leveraging new technologies and techniques, and promoting collaboration between stakeholders, this field can continue to improve aviation safety and prevent future accidents.