Introduction

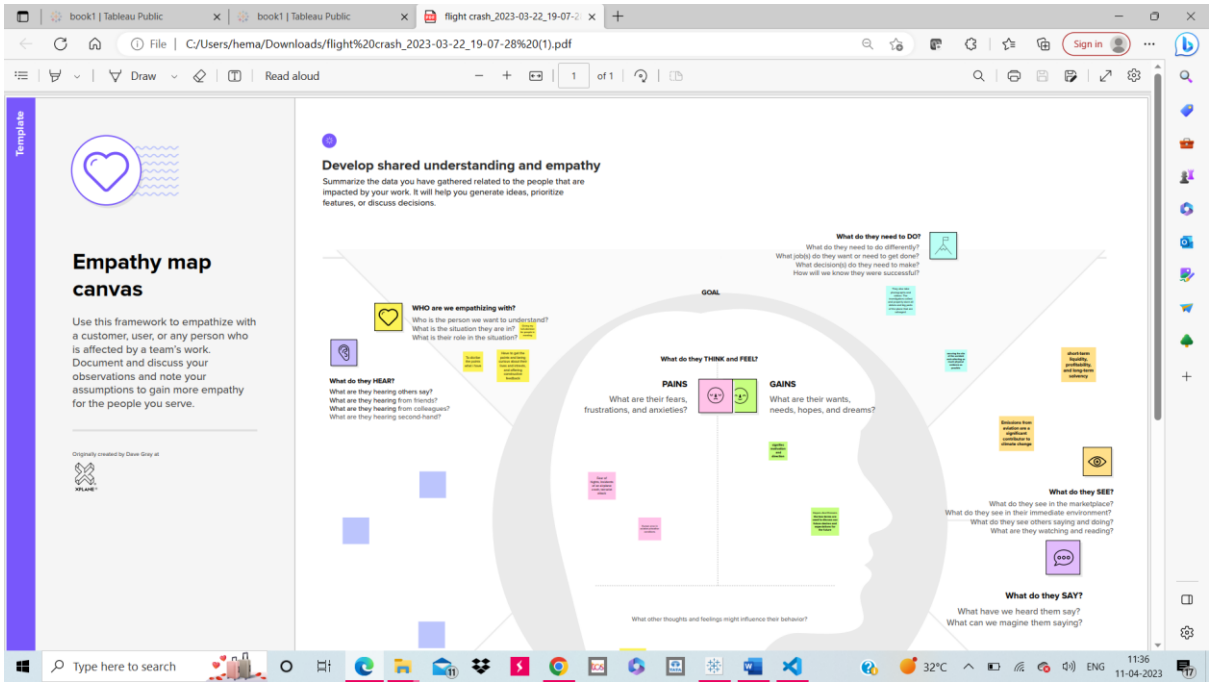
This study is focused on an airplane crash case to analyze and identify the accident contributing factors. The accident occurred on 27th of December 1991 in a few minutes after a Scandinavian Airlines System plane departed from Stockholm on a route to Copenhagen, Denmark. It was found that the cause of this accident is a combination of several factors. Errors can result from ambiguously written procedures, inadequate training, unexpected operational situations or individual judgments. Situational awareness, environmental and crew coordination factors, as well as shortcomings in pilot technical knowledge, skills and experience, also can cause incidents. Other mistakes might be the result of improper airspace design or crew coordination.

Purpose:

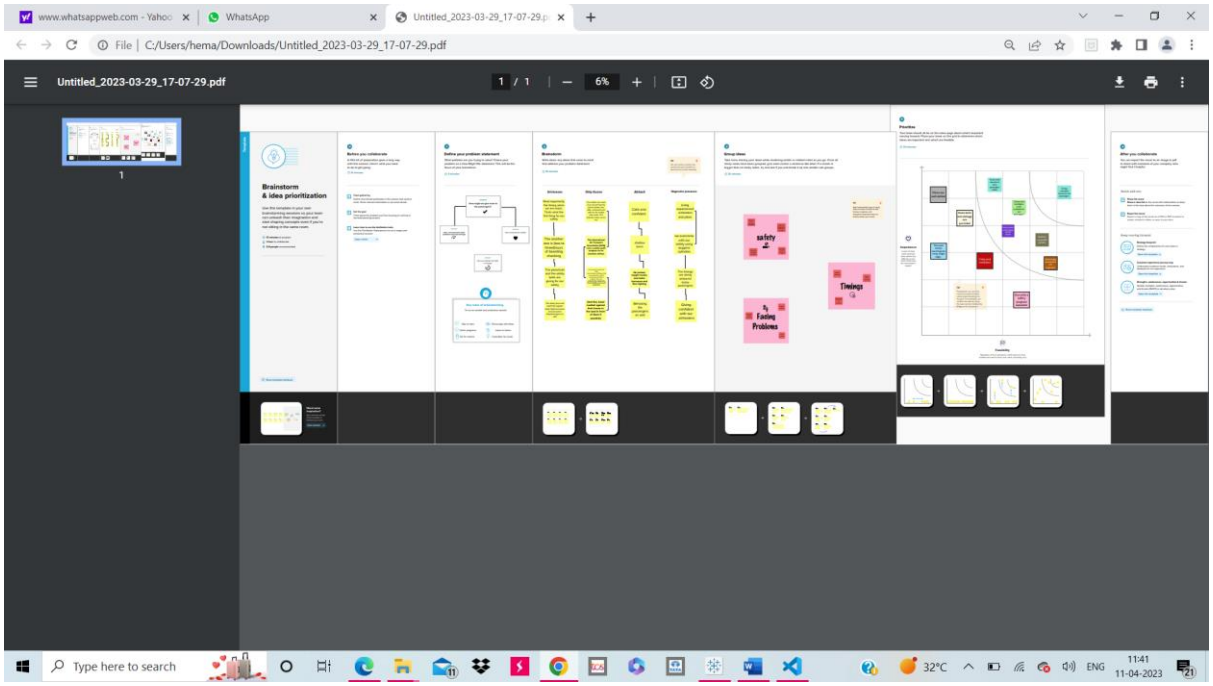
Aviation accident analysis is performed to determine the cause of errors once an accident has happened. In the modern aviation industry, it is also used to analyze a database of past accidents in order to prevent an accident from happening. Many models have been used not only for the accident investigation but also for educational purpose.

Problem Definition And Design Thinking:

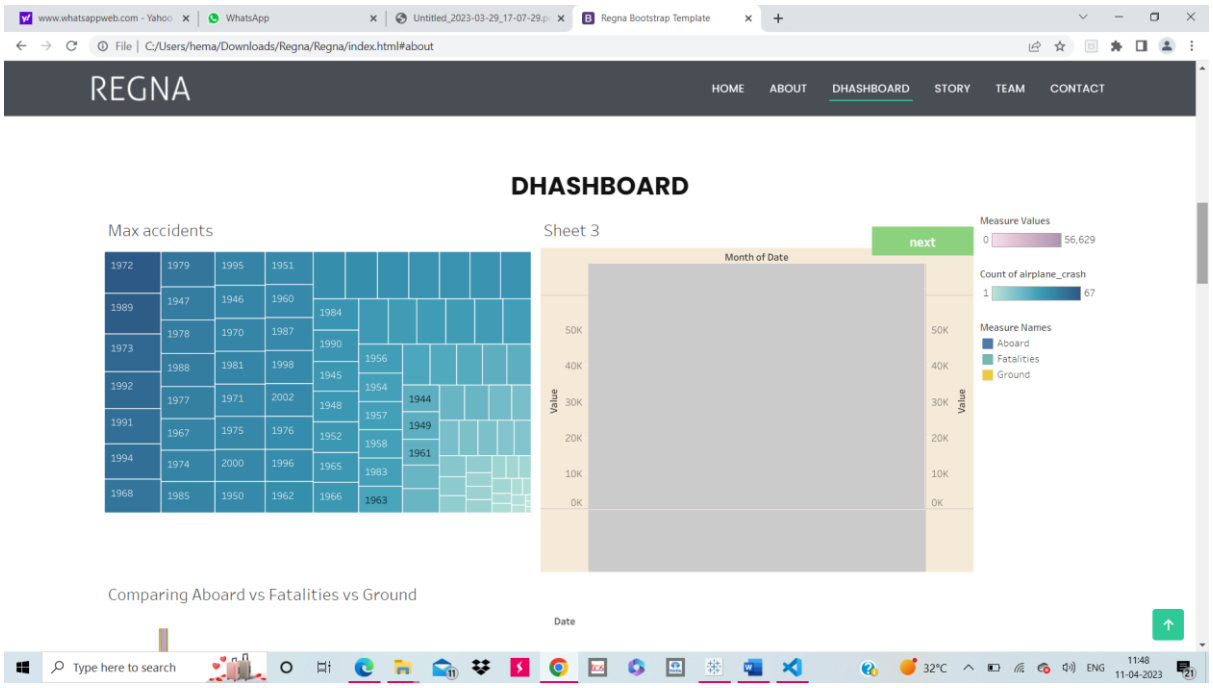
Empathy map:



Ideation And Brainstorming Map:



Result: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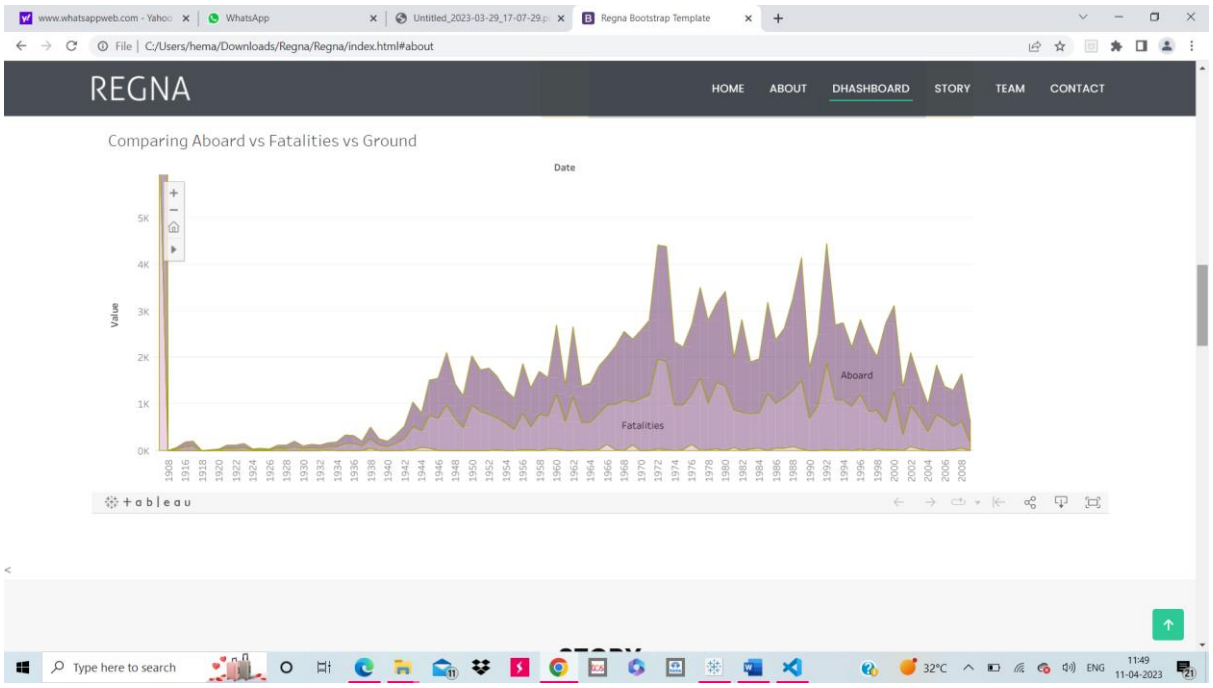
HOME
ABOUT
DHASHBOARD
STORY
TEAM
CONTACT
DHASHBOARD
Max accidents
Sheet 3
next
Month of Date
Measure Values
Count of airplane_crash
Measure Names
Aboard
Fatalities
Ground
Comparing Aboard vs Fatalities vs Ground
Date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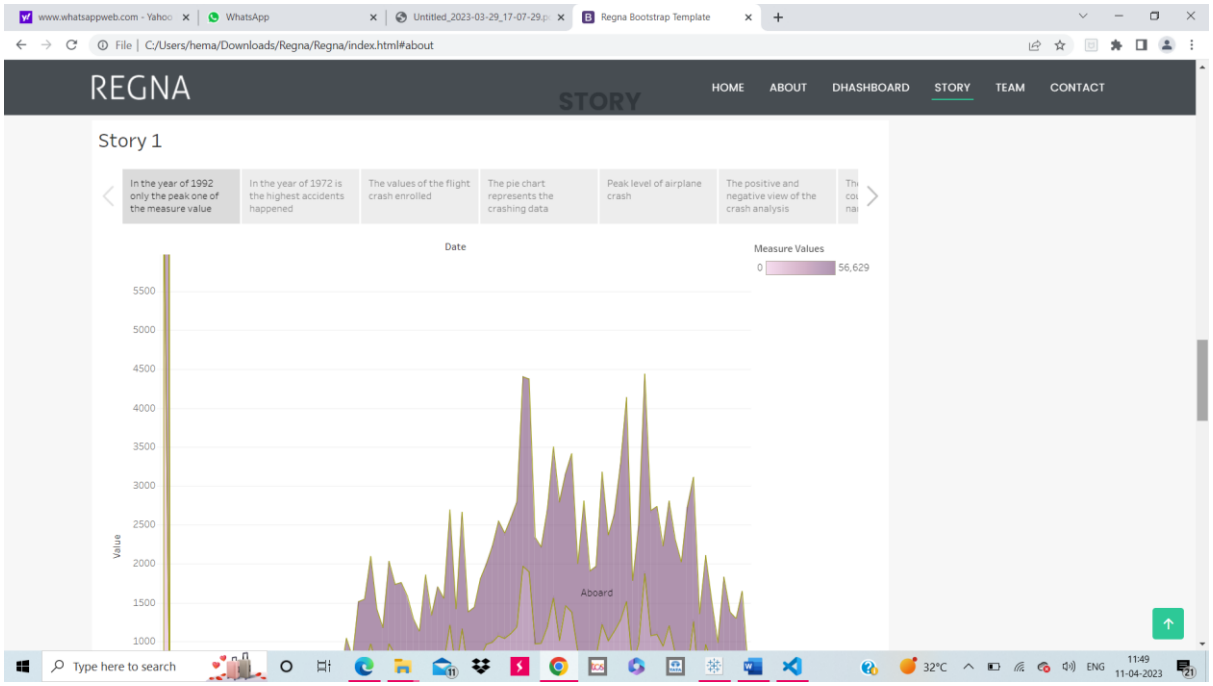


Advantages :

@ Understanding the events that led up to an accident can help to determine the cause.

@ Once the cause of the accident is determined, corrective actions can be taken to prevent the same or similar losses from occurring again.

@ Airlines and aviation organizations continue to adopt more rigorous reporting, training, and improved equipment to continually make flying even safer than in years past.

@ **Federal Aviation Administration (FAA)** regulates aviation safety and pilot certification and operates the air traffic control system

Disadvantages:

@ The physical effects, air crash brings about **death, disability and injuries**. The effects from air crash are determined by among other things, the cause of the crash, the altitude and its speed at the time of crash.

@ Aviation accidents can be traced to a variety of causes, including **pilot error, air traffic controller error, design and manufacturer defects, maintenance failures, sabotage, or inclement weather**.

@ The owner and operator of the aircraft certainly may be liable, manufacturers or maintenance suppliers may be liable in certain circumstances, and even the federal government may bear some responsibility in an aircraft accident.

Applications:

- **Organizational influences**: This layer is about resources management, organizational climate and organizational process. For example, a crew underestimating the cost of maintenance will leave the airplane and equipment in bad condition.
- **Unsafe supervision**: This layer includes inadequate supervision, inappropriate operations, failure to correct a problem and supervisory violation. For example, if emergency procedure training is not provided to a new employee, it will increase the potential risk of a fatal accident.
- **Unsafe action**: Unsafe action is not the direct cause of accident. There are some preconditions that lead to unsafe actions; unstable mental state is one of the reasons for bad decisions.

- **Error and violation**: These are part of unsafe action. Error refers to an individual unable to perform a correct action to achieve an outcome. Violation involves the action of breaking a rule or regulation. All these four layers form the basic component of the Swiss cheese model and accident analysis can be performed by tracing all these factors

Conclution:

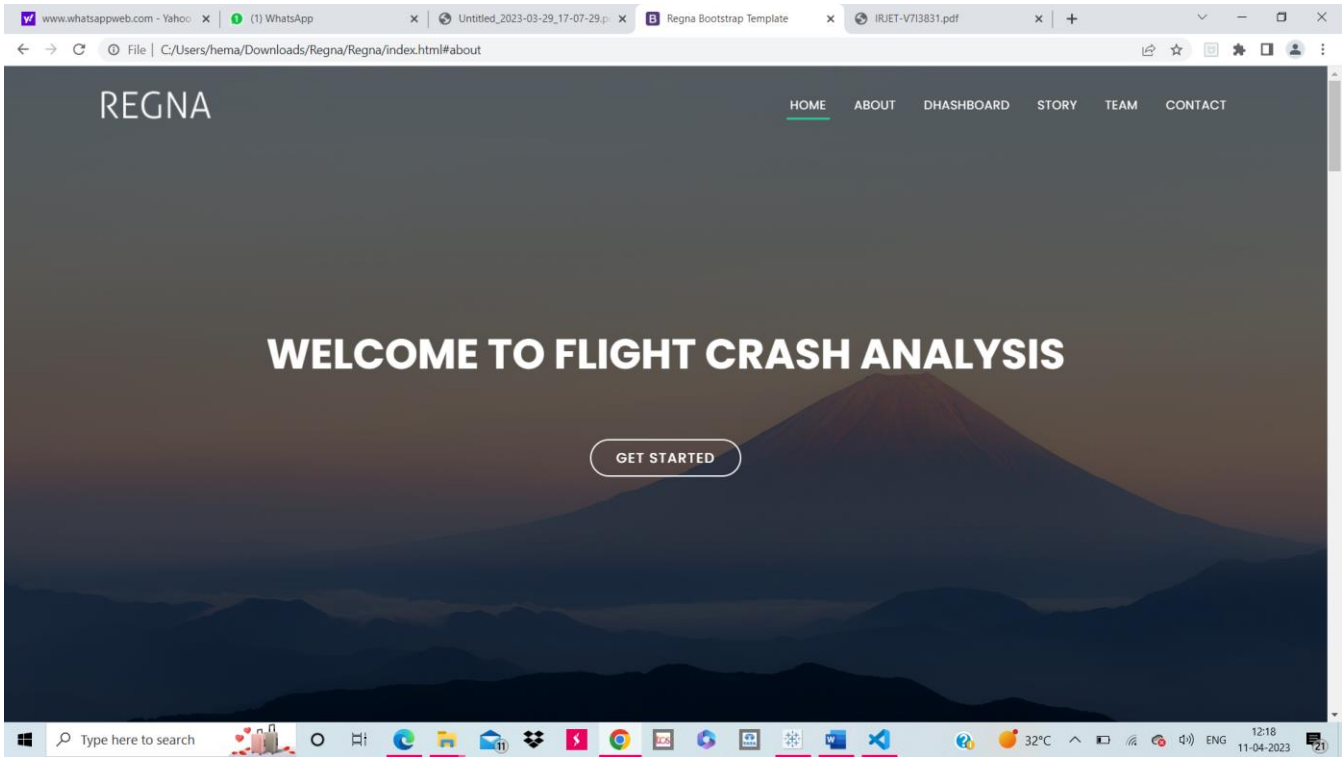
In this Project we have plotted various graphs creating the number of flight crashes that has been showed. We have also develop a dashboard and story. Finally we upload all the files and created a werbside using boostrap template visualization code.

Future Scope:

Redundancy, irrelevant data, noise etc. are removed or none the less reduced to a great extent from a huge dataset having multiple attributes. It comes under the preprocessing step in machine learning. The attributes that add value to the desired output are selected based on the specification of the aviation industry. Every attribute is taken into consideration and its importance is measured by relating it to the output required. The attributes that does not contribute to the result or are of least importance are deleted. The final dataset with the selected features are evaluated to check whether the subset is most relevant for prediction. Also, these attributes are sorted in a specific order from highest to lowest based on its importance on the prediction. As a result, only useful and relevant features are added hence, increasing the accuracy of the prediction.

Companies produce their records for each airplane and hence, these records are collected to form a dataset wherein details about every airplane module are stored hence, a huge dataset comprising of thousands of records is formed. Such datasets are loaded with a large amount of attributes. Numerous attributes are required in order to justify the airplane incident. Hence, the data

in these attributes is unstructured and textual. The dataset has to be brought and cut down in such a manner where the classification algorithms can be performed. The attributes that define the output of the prediction are the target attributes. The target variables depend upon the safety of the airplane.



In today's world there are various types of predicting applications used to analyze and provide solutions to the future records. Airline industry is advancing day by day. Safety measures are taken at every provided situation by the companies. Also, the risk factors are examined for prevention of human loss. A single airplane crash can lead to a great loss of human life and property. There are numerous factors that leads to the airplane crash which are the airplane type, built of the model, weather conditions, make of the airplane, engine type, phase of the flight etc. Hence, taking all these factors into consideration, based on the details of a particular aircraft the analysis of the airplane crash is carried out. In order to predict whether the airplane is safe or at a risk the application is built where these functionalities are processed and the safety is predicted.