



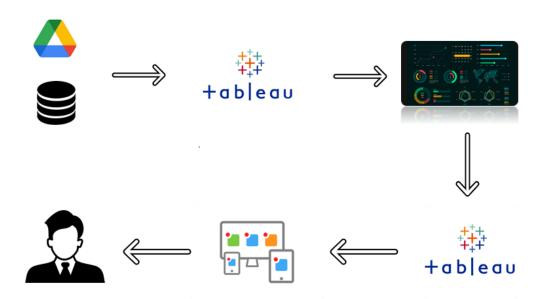
# THE TRAGEDY OF FLIGHT: A COMPREHENSIVE CRASH ANALYSIS

**Project Based Experiential Learning Program** 

# The Tragedy of Flight: A Comprehensive crash analysis

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.

#### **Technical Architecture:**



# **Project Flow**

To accomplish this, we have to complete all the activities listed below,

- Define Problem / Problem Understanding
  - o Specify the business problem
  - o Business requirements
  - o Literature Survey
  - o Social or Business Impact.
- Data Collection & Extraction from Database
  - Collect the dataset,
  - o Storing Data in DB
  - Perform SQL Operations
  - o Connect DB with Tableau
- Data Preparation
  - Prepare the Data for Visualization
- Data Visualizations
  - o No of Unique Visualizations
- Dashboard
  - o Responsive and Design of Dashboard
- Story
  - o No of Scenes of Story
- Performance Testing
  - o Amount of Data Rendered to DB '
  - o Utilization of Data Filters
  - o No of Calculation Fields
  - No of Visualizations/ Graphs
- Web Integration
  - o Dashboard and Story embed with UI With Flask
- Project Demonstration & Documentation
  - o Record explanation Video for project end to end solution
  - o Project Documentation-Step by step project development procedure

# Milestone 1: Define Problem / Problem Understanding

#### **Activity 1: Specify the business problem**

Refer Project Description

#### **Activity 2: Business requirements**

A business requirement for a comprehensive crash analysis of The Tragedy of Flight would likely include the following elements:

- Detailed information about the crash, including the date, time, location, and weather conditions at the time of the incident.
- A thorough analysis of the events leading up to the crash, including any mechanical failures or human errors that may have contributed to the incident.
- A review of the flight data and cockpit voice recordings to gather additional information about the events leading up to the crash.
- Interviews with the flight crew, passengers, and any witnesses to the crash to gather additional information about the incident.

#### **Activity 3: Literature Survey (Student Will Write)**

A literature survey is a method of researching existing literature and studies related to a specific topic. In the context of analysing the airplane crash, a literature survey would involve reviewing studies and articles that have been published on the topic of airplane crash, as well as studies specific to crash analysis. The literature survey would include sources such as academic journals, industry reports, and online articles. The literature survey would also explore any existing research on airplane crash, and would aim to identify any unique challenges or opportunities that to overcome crash.

# **Activity 4: Social and Business Impact.**

Social Impact: The analysis can provide closure to the families and loved ones of the victims of the crash, as well as to the broader public. It can also help to improve public confidence in the aviation industry by identifying and addressing any safety issues that may have contributed to the incident.

Business Impact: The analysis can have significant business implications for the airline and aircraft manufacturer involved in the incident. If the analysis finds that the crash was caused by mechanical or design issues, the manufacturer may be liable for damages and may face significant financial losses. The airline may also face legal claims and reputational damage.

# Milestone 2: Data Collection & Extraction from Database

Data collection is the process of gathering and measuring information on variables of interest, in an established systematic fashion that enables one to answer stated research questions, test hypotheses, and evaluate outcomes and generate insights from the data.

#### **Activity 1: Collect the dataset**

Please use the link to download the dataset: Link

#### **Activity 1.1: Understand the data**

Data contains all the meta information regarding the columns described in the CSV files. we have provided 8 CSV files:

- 1. Date
- 2. Location
- 3. Operators
- 4. Route
- 5. Type
- 6. Aboard
- 7. Fatalities
- 8. Ground

#### **Column Description for Date:**

- 1. date: This column represents the dates.
- 2. Location: This column represents the accident locations.
- 3. Operators: This column represents the accidents which made by operators.
- 4. Route: This column represents the airplane route.
- 5. Type: This column represents the airplane type.
- 6. Aboard: This column represents the count of people aboard.
- 7. Fatalities: This column represents the count of death.
- 8. Ground: This column represents the count of people grounded.

#### **Activity 2: Storing Data in DB & Perform SQL Operations**

Explanation video link:

https://drive.google.com/file/d/1rp1rulk16uJvt7qpOycErzxF0X5nzXiQ/view?usp=share\_link\_

# **Activity 3: Connect DB with Tableau**

Explanation video link:

 $\underline{https://drive.google.com/file/d/1-DIx8H\_0fCeewcuxw83mhgu28m2HDNNi/view?usp=share\_lin}$ 

# **Milestone 3: Data Preparation**

# Activity 1: Prepare the Data for Visualization (Refer this video to understand about data preparation)

Preparing the data for visualization involves cleaning the data to remove irrelevant or missing data, transforming the data into a format that can be easily visualized, exploring the data to identify patterns and trends, filtering the data to focus on specific subsets of data, preparing the data for visualization software, and ensuring the data is accurate and complete. This process helps to make the data easily understandable and ready for creating visualizations to gain insights into the performance and efficiency.

#### **Explanation video link 1:**

https://drive.google.com/file/d/1SRA3ZmvxodiJSLgAFZaOIDdXSHxxyId4/view?usp=sharing

#### **Explanation video link 2:**

https://drive.google.com/file/d/1mXhs6GQLifchb1fxmnfe4hPhOwNKJkDB/view?usp=sharing

#### Milestone 4: Data Visualization

Data visualization is the process of creating graphical representations of data in order to help people understand and explore the information. The goal of data visualization is to make complex data sets more accessible, intuitive, and easier to interpret. By using visual elements such as charts, graphs, and maps, data visualizations can help people quickly identify patterns, trends, and outliers in the data.

#### **Activity 1: Comparing Aboard vs Fatalities vs Ground**

#### **Explanation video link:**

https://drive.google.com/file/d/1wXuvY20B9YCzaezhRpD4pB7Ypc4EpuB5/view?usp=share\_link

#### Activity 2: Max accidents based on years

#### **Explanation video link:**

https://drive.google.com/file/d/1UzizD98RAQSeitiwY7-E9kmdin1fV4WI/view?usp=share\_link

# Activity 3: Accidents happened in 1972 (MAX ACCIDENTS) based on months

#### **Explanation video link:**

https://drive.google.com/file/d/1gWS7PY53qgSaGcv2i7uEGR78i1QnW9D9/view?usp =share link

#### Activity 4: Highest No. of accident happened by Operators

#### **Explanation video link:**

https://drive.google.com/file/d/1QeUL6yrKQMYVbi15OZQl43jiO8tltsPt/view?usp=share\_link

#### Activity 5: Top 10 locations which had more accidents

#### **Explanation video link:**

https://drive.google.com/file/d/11E3mToRabGourPgGEY9aoFLfhRwk2hVq/view?usp=share link

#### Activity 6: Top 3 flights which have max accident history

#### **Explanation video link:**

https://drive.google.com/file/d/1mDUQoPDG\_isOrVaN51K\_zCosVI08szoq/view?usp=share\_link

# Activity 7: Accidents based on regions

#### **Explanation video link:**

https://drive.google.com/file/d/1qkQzPZyMGzNov3INeLsjB2fPtIDWbT1t/view?usp=share\_link

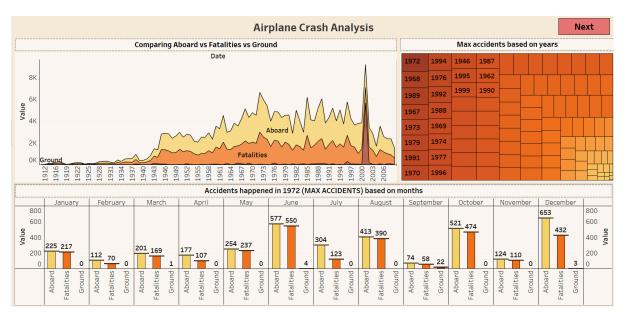
# Milestone 5: Dashboard

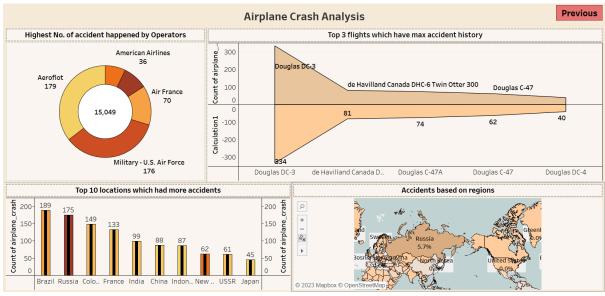
A dashboard is a graphical user interface (GUI) that displays information and data in an organized, easy-to-read format. Dashboards are often used to provide real-time monitoring and analysis of data, and are typically designed for a specific purpose or use case. Dashboards can be used in a variety of settings, such as business, finance, manufacturing, healthcare, and many other industries. They can be used to track key performance indicators (KPIs), monitor performance metrics, and display data in the form of charts, graphs, and tables.

# **Activity :1- Responsive and Design of Dashboard**

Explanation video link:

https://drive.google.com/file/d/1K8Mhq2HVqyTTGoenaSTI-CPXZvaJh\_q7/view?usp=share\_link





# Milestone 6: Story

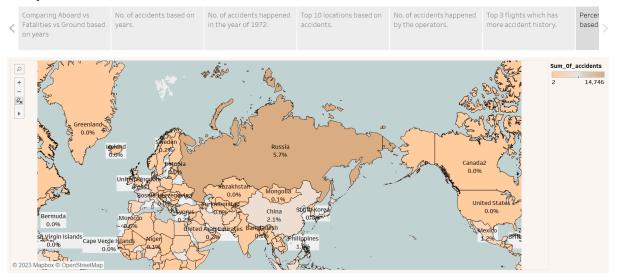
A data story is a way of presenting data and analysis in a narrative format, with the goal of making the information more engaging and easier to understand. A data story typically includes a clear introduction that sets the stage and explains the context for the data, a body that presents the data and analysis in a logical and systematic way, and a conclusion that summarizes the key findings and highlights their implications. Data stories can be told using a variety of mediums, such as reports, presentations, interactive visualizations, and videos.

#### **Activity:1- No of Scenes of Story**

#### **Explanation video**

link: https://drive.google.com/file/d/1wT5k1-g8RlqGkhiUsT9k\_DJ2\_YaePgEY/view?usp=share link

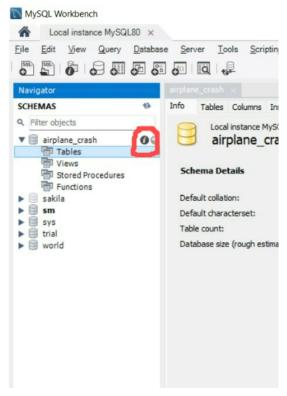
#### Story 1

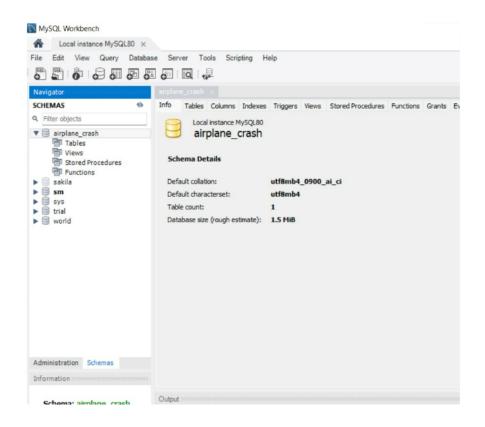


# **Milestone 7: Performance Testing**

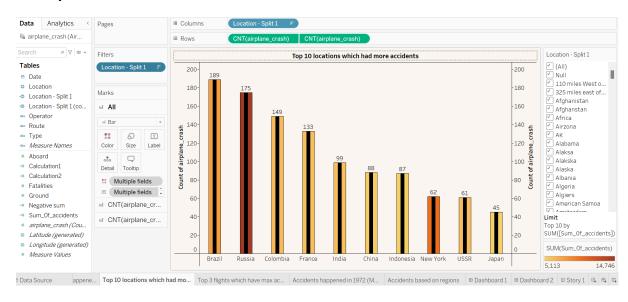
# **Activity 1: Amount of Data Rendered to DB**

- The amount of data that is rendered to a database depends on the size of the dataset and the capacity of the database to store and retrieve data.
- Open the MySQL Workbench, go to the database then click to expand the tables, select the table and click on (i) button to get the information related to table such as column count, table rows etc.





#### **Activity 2: Utilization of Data Filters**



**Activity 3: No of Calculation Fields** 

#### **Tables**

- □ Date
- Location
- Location Split 1
- Location Split 1 (co...
- Abc Operator
- Abc Route
- Abc Type
- Abc Measure Names
- # Aboard
- -# Calculation1
- # Calculation2
- # Fatalities
- # Ground
- # Negative sum
- # Sum\_Of\_accidents
- # airplane\_crash (Cou...
- Latitude (generated)
- Longitude (generated)
- # Measure Values

# **Activity 4: No of Visualizations/ Graphs**

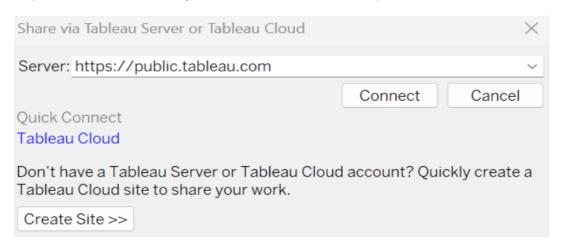
- 1. Comparing Aboard vs Fatalities vs Ground
- 2. Max accidents based on years
- 3. Accidents happened in 1972 (MAX ACCIDENTS) based on months
- 4. Highest No. of accident happened by Operators
- 5. Top 10 locations which had more accidents
- 6. Top 3 flights which have max accident history
- 7. Accidents based on regions

# **Milestone 8: Web integration**

Publishing helps us to track and monitor key performance metrics, to communicate results and progress. help a publisher stay informed, make better decisions, and communicate their performance to others.

#### Publishing dashboard and reports to tableau public

Step 1: Go to Dashboard/story, click on share button on the top ribbon



Give the server address of your tableau public account and click on connect.

Step 2: Once you click on connect it will ask you for tableau public user name and password



Once you login into your tableau public using the credentials, the particular visualization will be published into tableau public

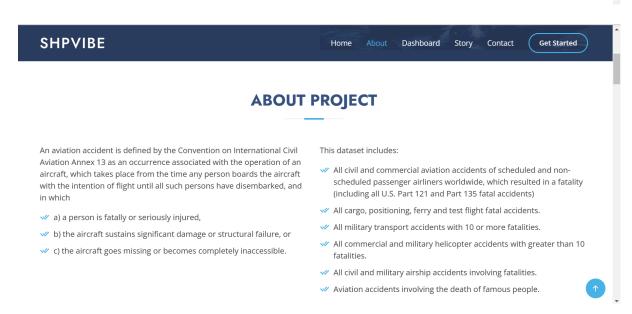
Note: While publishing the visualization to the public, the respective sheet will get published when you click on share option.

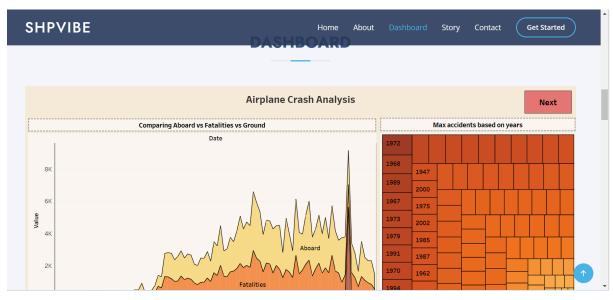
#### Activity 1: Dashboard and Story embed with UI With Flask

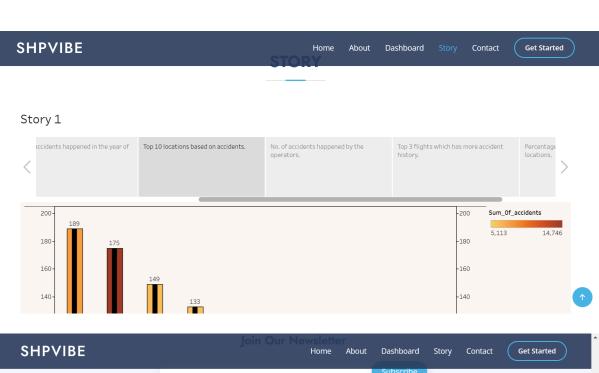
#### **Explanation video link:**

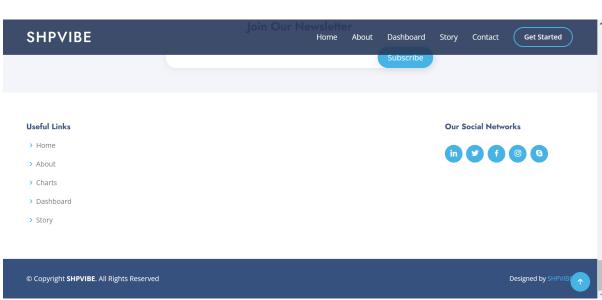
https://drive.google.com/file/d/1\_AqvegIYaRo0U0BtdX-awGY8gFaFx6Ck/view?usp=share\_link











# Milestone 9: Project Demonstration & Documentation

Below mentioned deliverables to be submitted along with other deliverables

Activity 1:- Record explanation Video for project end to end solution

Activity 2:- Project Documentation-Step by step project development procedure

Create document as per the template provided