AIRPLANE CRASH

Thiruvalluvar College, Papanasam.

Bsc.Mathematics

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1.Introduction

1.1 Overview

The definition of plane crash in the dictionary is an accident in which an aircraft hits lands or water and is damaged or destroyed. Pilot error is the number one cause of aviation accidents. Piloting an aircraft requires lengthy training, a knowledge of the mechanical components of an aircraft, and hand-eye coordination skills to effectively and safely maneuver an aircraft. Pilots also have to think ahead. However, crashes are most likely to occur in single engine planes and typically in general aviation rather than on commercial airlines. In fact, 79 percent of all aircraft accidents and 72 percent of fatal crashes involved single engine planes.

The thought of being involved in a plane crash isn't a pretty one. The fear so many people experience when flying is often linked to the worry that something might end up going wrong and you'll be totally and utterly helpless.

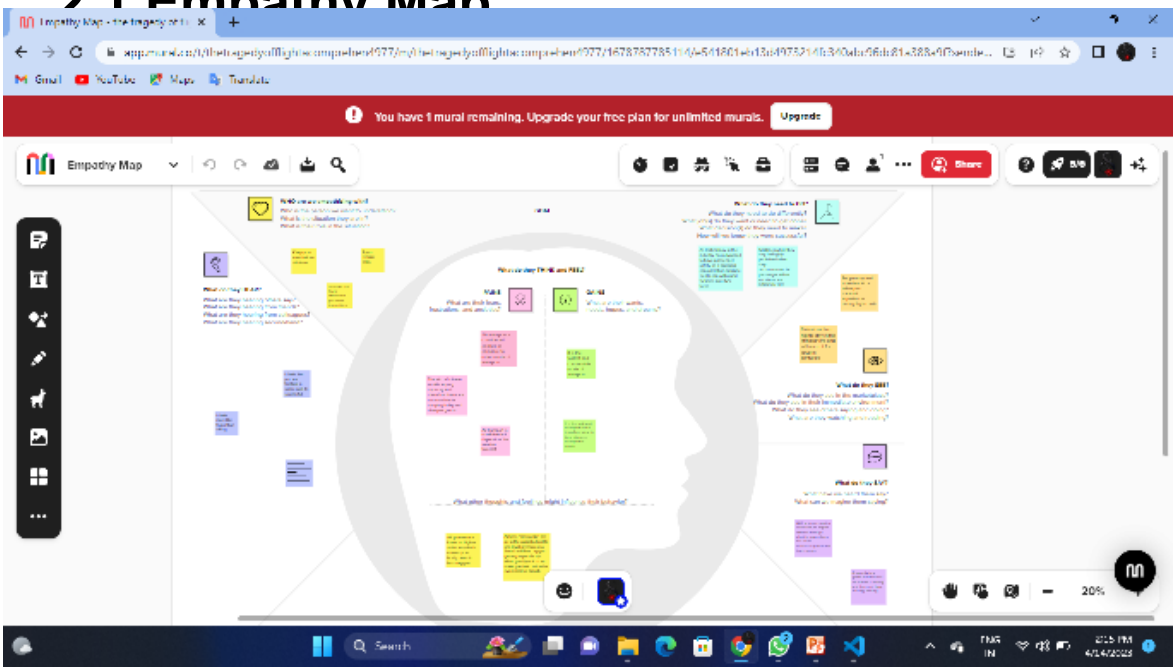
1.2 Purpose

Aviation accident analysis is performed to determine the cause of errors once an accident has happened. It is also used to analyze a database of past accidents in order to prevent an accident from happening.

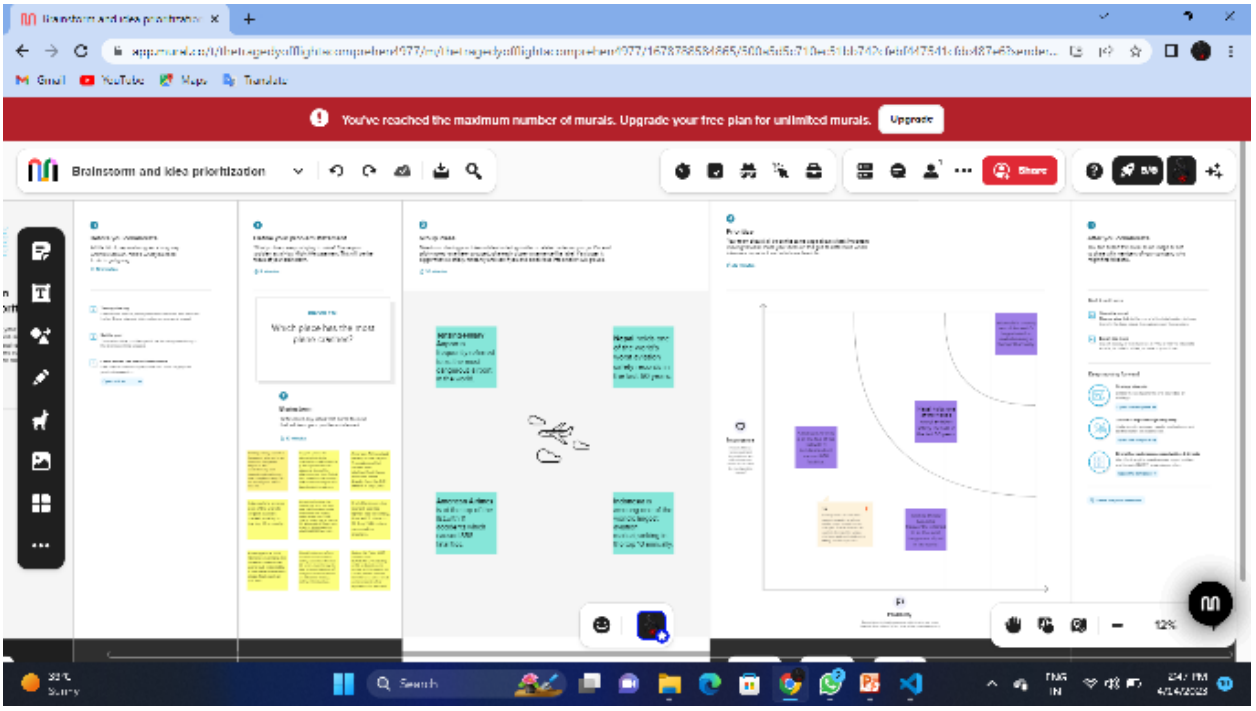
2.Problem Definition & Design Thinking

Which place has the most plane crashes?

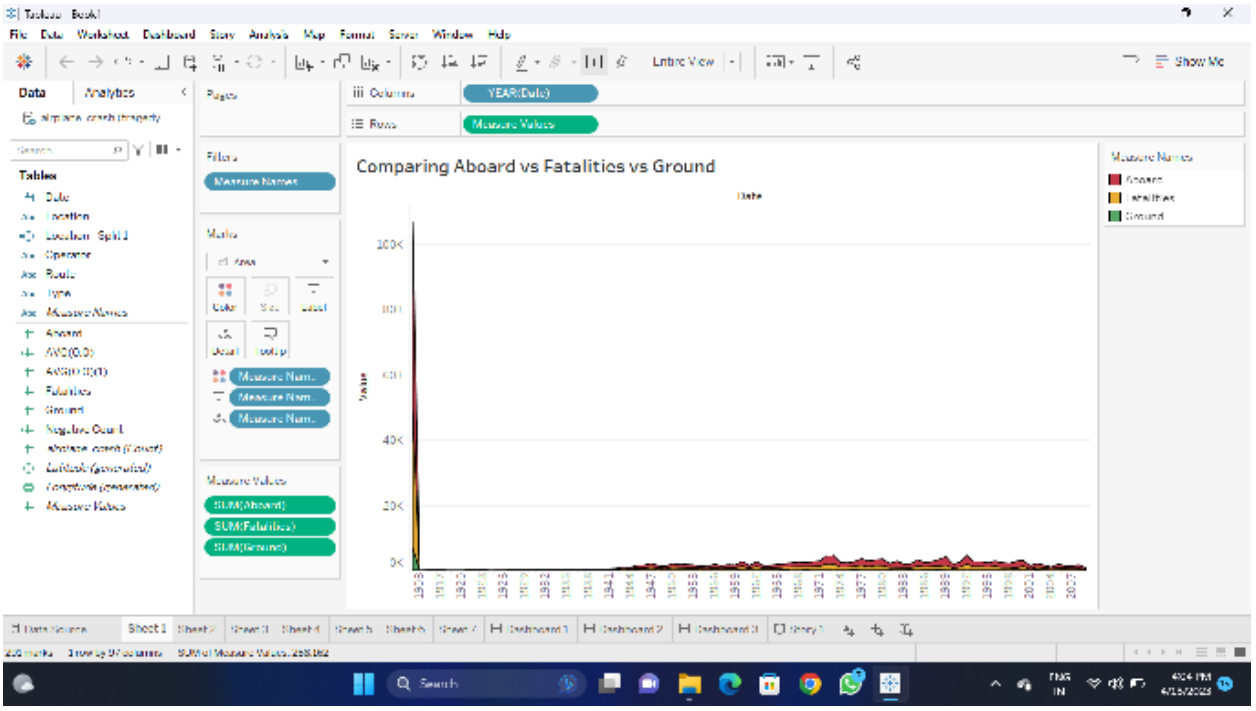
2.1 Empathy Map

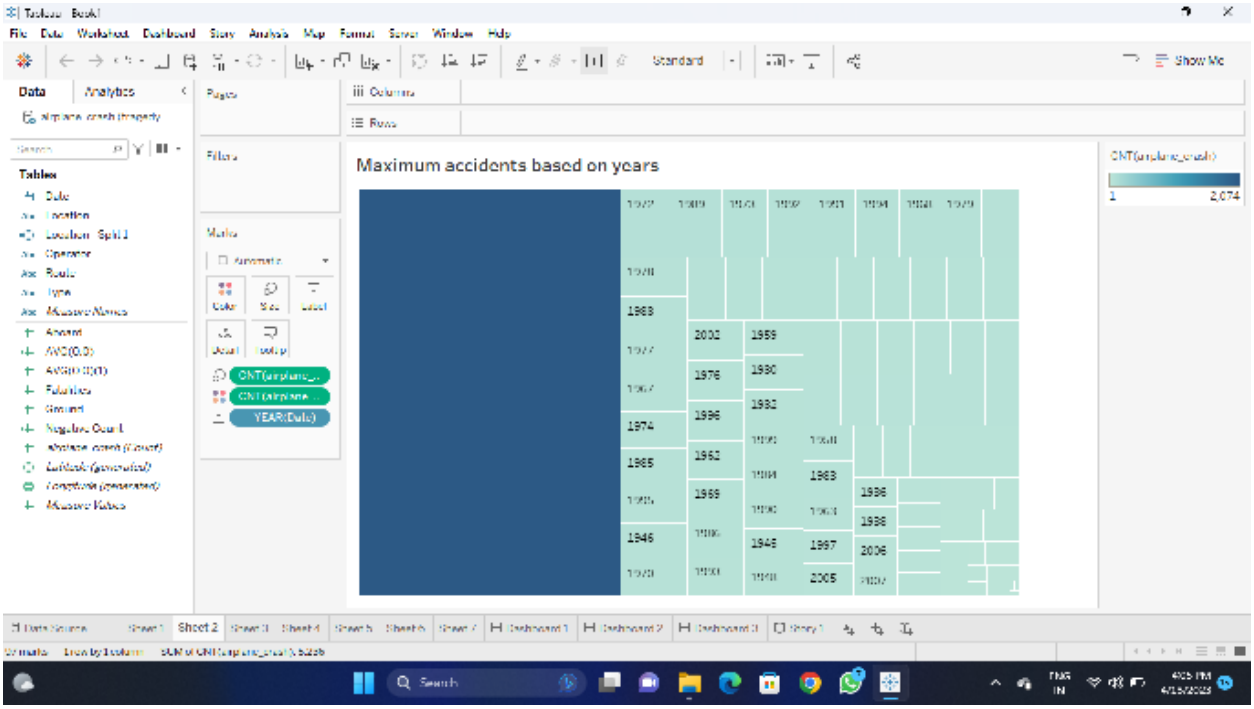


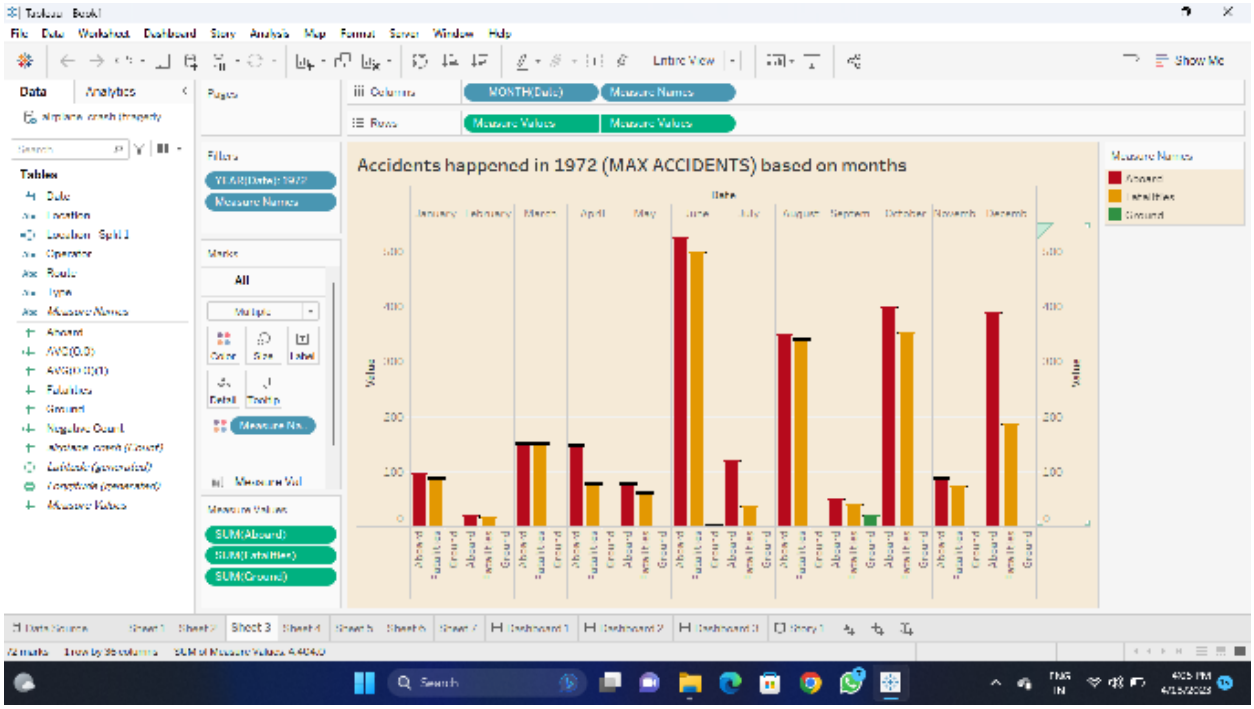
2.2 Brainstorm and idea prioritization

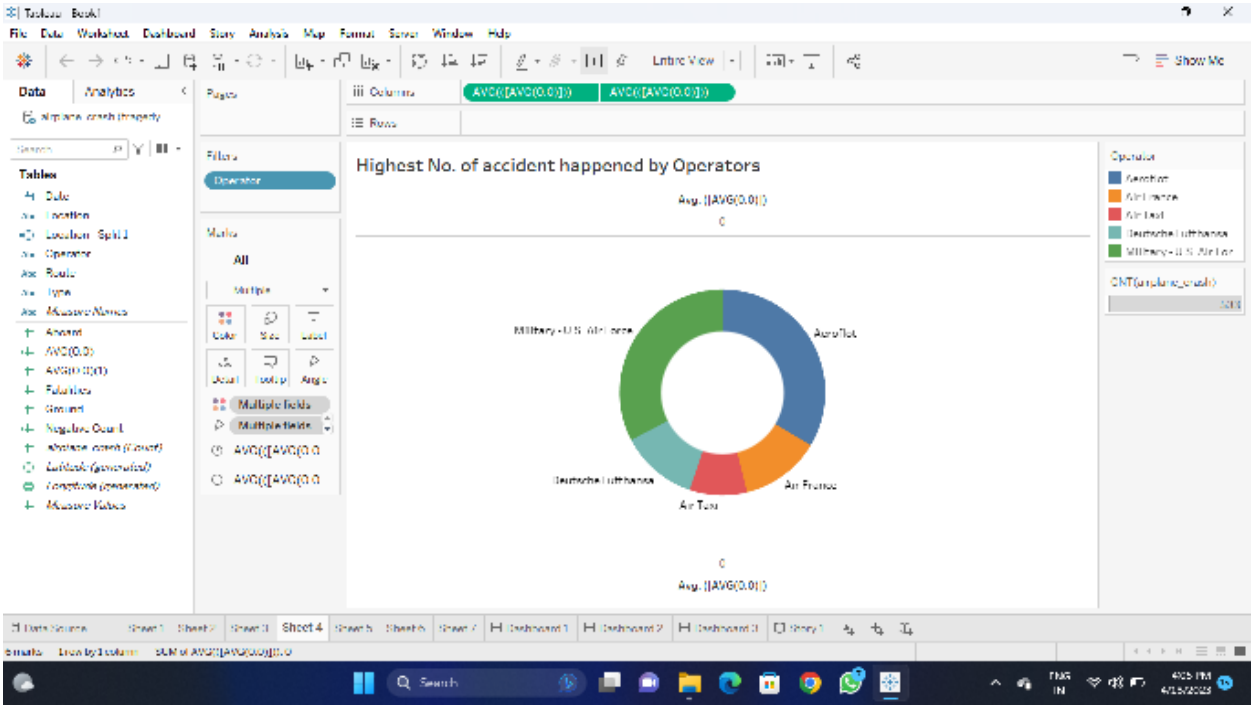


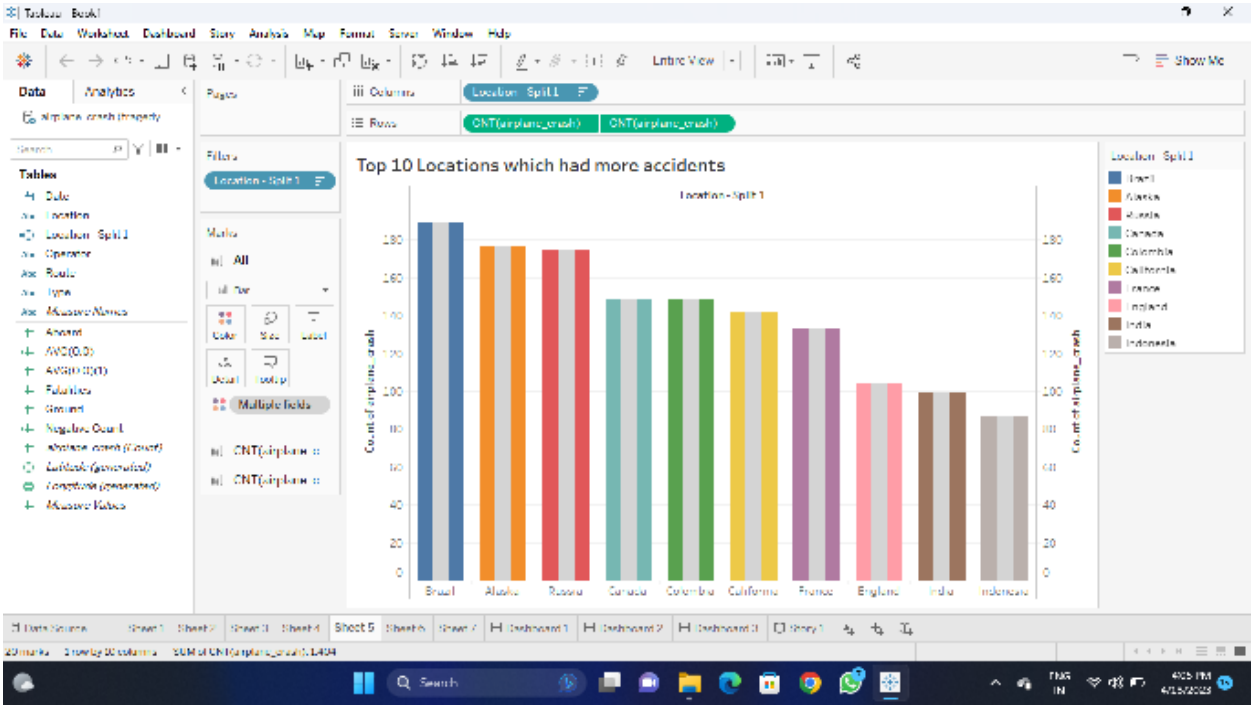
3.Report (Tableau Output)

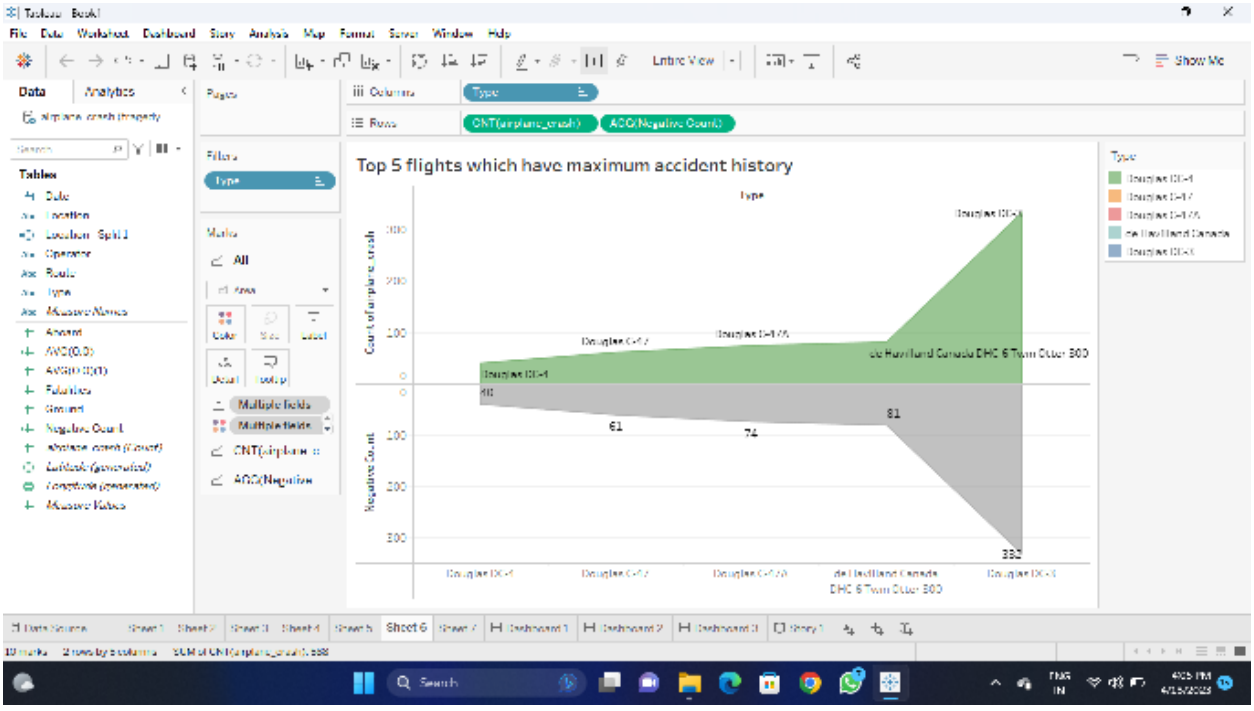


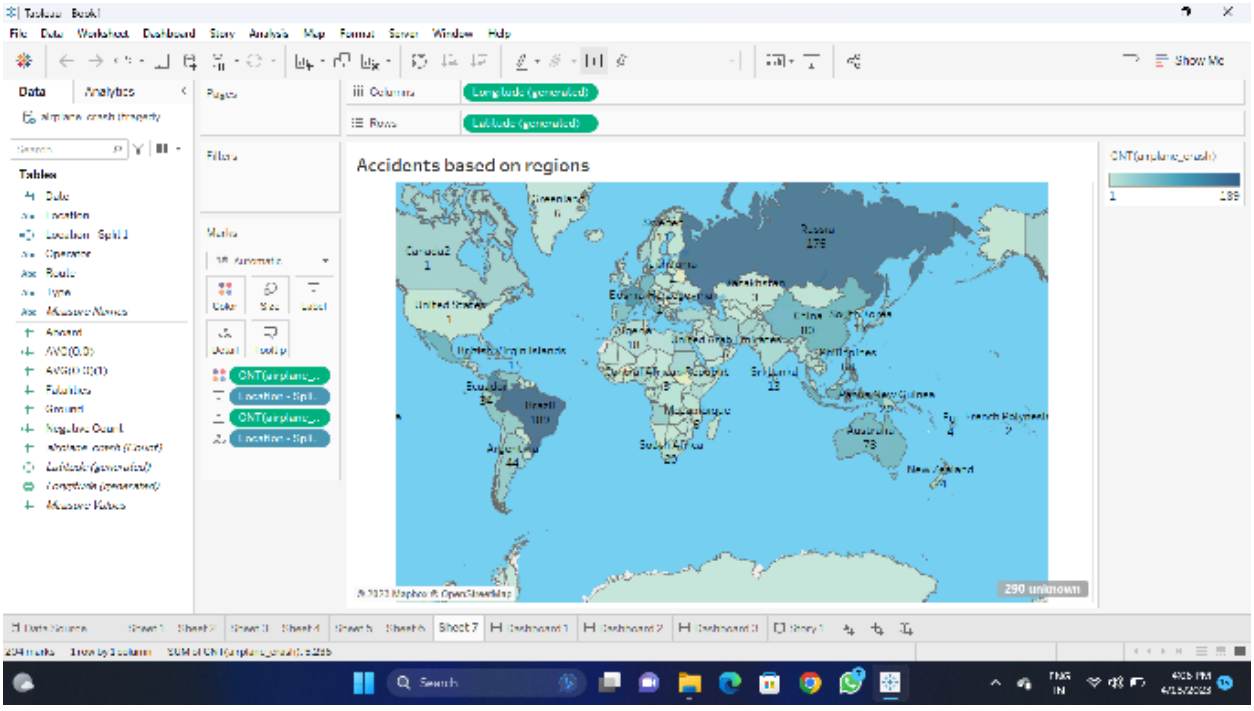

Maximum accidents based on years
CNT(airplane_crash)
1
2,074
YEAR(Date)


Accidents happened in 1972 (MAX ACCIDENTS) based on months
MONTH(Date)
Measure Names
Measure Values
SUM(Aboard)
SUM(Fatalities)
SUM(Ground)


Highest No. of accident happened by Operators
Military - U.S. Air Force
AeroTur
Air France
Air Taxi
Deutsche Lufthansa


Top 10 Locations which had more accidents
Location - Split 1
Count of airplane_crash
Brazil
Alaska
Russia
Canada
Colombia
California
France
England
India
Indonesia


Top 5 flights which have maximum accident history
Type
Count of airplane_crash
Negative Count
Douglas DC-4
Douglas C-47
Douglas C-47A
de Havilland Canada DHC 6 Twin Otter 300
61
74
81
332
Sheet 6


Accidents based on regions
Longitude (generated)
Latitude (generated)
CNT(airplane_crash)
1
189
290 unknown
Sheet 7

4.Advantages and Disadvantages

4.1 Advantages

- 1**. Accident reconstruction**: Crash analysis can help identify the cause of the crash and provide valuable information to help improve safety.

- 2**. Improved safety**: By analyzing crash data, manufacturers and other stakeholders can take preventive measures to reduce the risk of future crashes.

- 3**. Prevention of future crashes**: By analyzing crash data, manufacturers and other stakeholders can identify potential safety issues and take corrective actions to prevent future accidents.

- 4**. Improved design**: Manufacturers can use crash data to improve the design of their vehicles, which can reduce the risk of future crashes.

- 5**. Cost savings**: Accident investigations can save companies money by identifying the cause of the crash, potentially saving them from costly litigation**.**

4.2 Disadvantages

- 1. **Cost**: Crash analysis is an expensive process, requiring specialized equipment and highly trained personnel.

- 2. **Time**: Crash analysis is a time-consuming process as it requires extensive data collection and analysis.

- 3. **Difficulty of Interpretation**: Crash analysis is a very technical process, and the results can be difficult to interpret.

- 4. **Incomplete Data**: Crash analysis can only provide insight into what happened and does not necessarily explain why the accident occurred.

- 5. **Inaccurate Analysis**: If the data collected is incomplete or incorrect, the analysis may be inaccurate or misleading.

5.Applications

- 1. Air Crash Investigation Platform: This platform utilizes advanced analytics and data mining to investigate and analyze airplane crashes. The platform allows users to access detailed reports on past crashes, view various angles of the accident, and identify potential causes.

- 2. Air Traffic Control Simulator: This simulator allows users to simulate air traffic control operations in order to practice accident prevention and analyze different scenarios that could potentially lead to a crash.

- 3. Air Crash Event Reconstruction Software: This software helps to reconstruct the events leading up to an airplane crash to better understand the cause. The software allows users to access detailed data such as flight path, altitude, speed, and more.

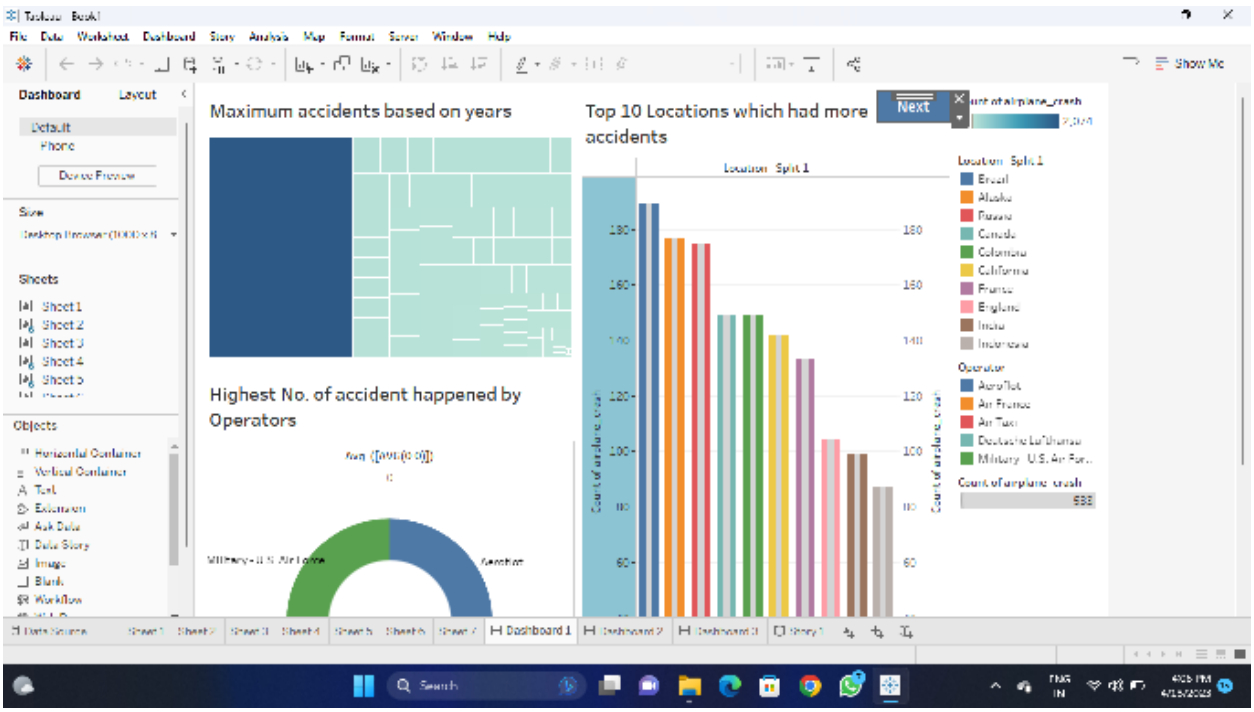
- 4. Aircraft Maintenance Software: This software allows users to track maintenance logs and ensure that aircraft are maintained according to safety standards. The software also helps to identify any potential issues that could lead to an accident.

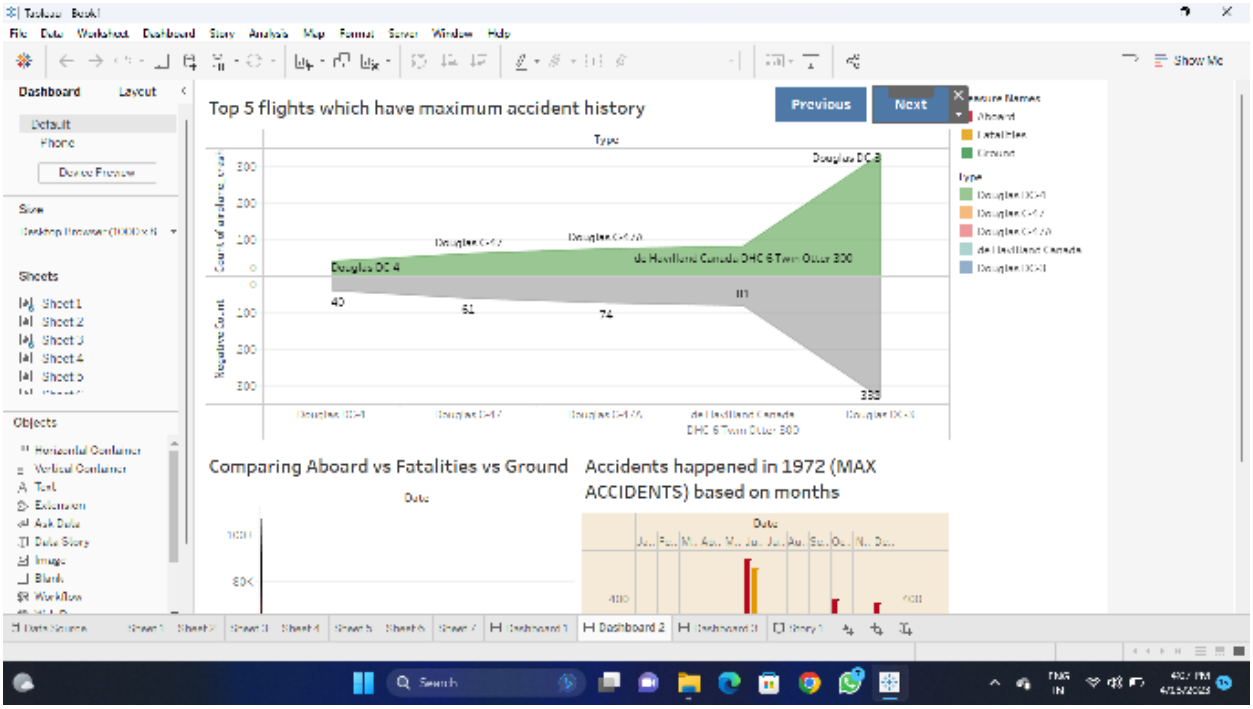
- 5. Airplane Flight Simulator: This simulator allows users to practice flying an airplane in order to gain experience and better understand the mechanics of flying an aircraft. This can help pilots to avoid potential accidents by understanding how to operate the aircraft safely.

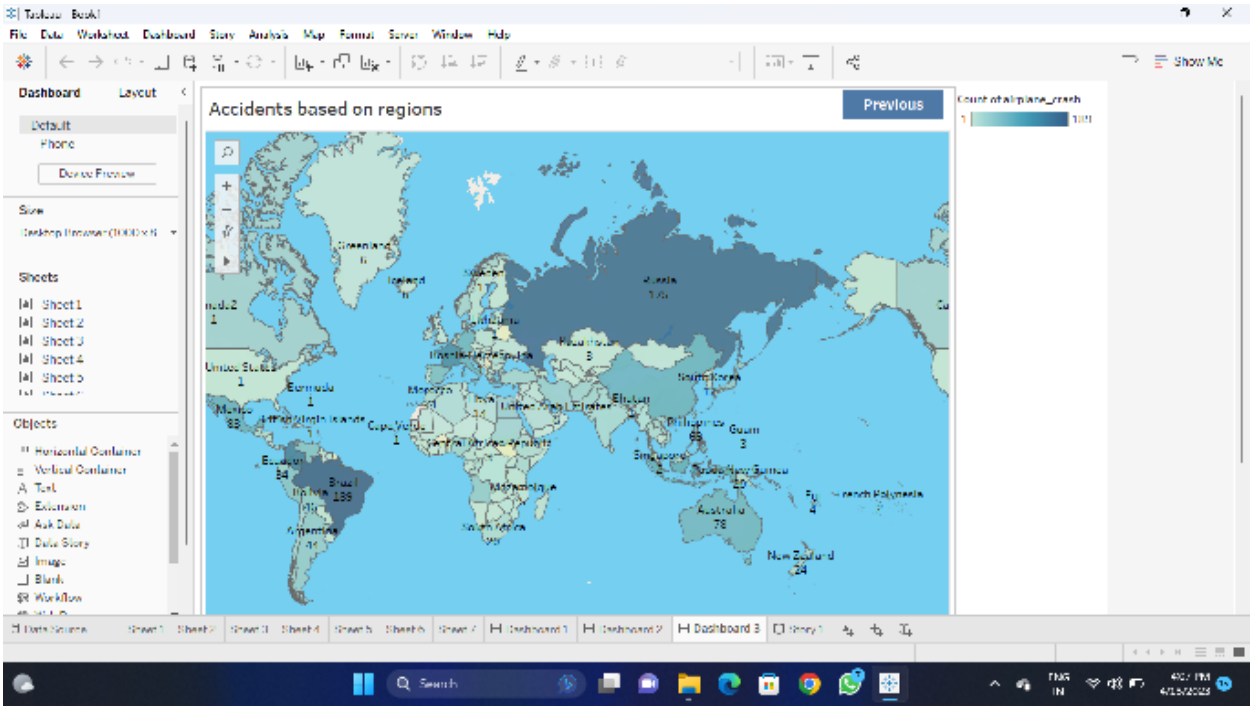
6.Conclusion

- Based on the data from the airplane crash analysis, it appears that pilot error is the most common cause of airplane crashes, accounting for nearly half of all incidents. Other causes of airplane crashes include mechanical failure, adverse weather conditions, and bird strikes. It is important for pilots to receive proper training and adhere to safety protocols in order to prevent accidents. Furthermore, airline companies must ensure that their aircraft are maintained properly and that all components are in good working order.

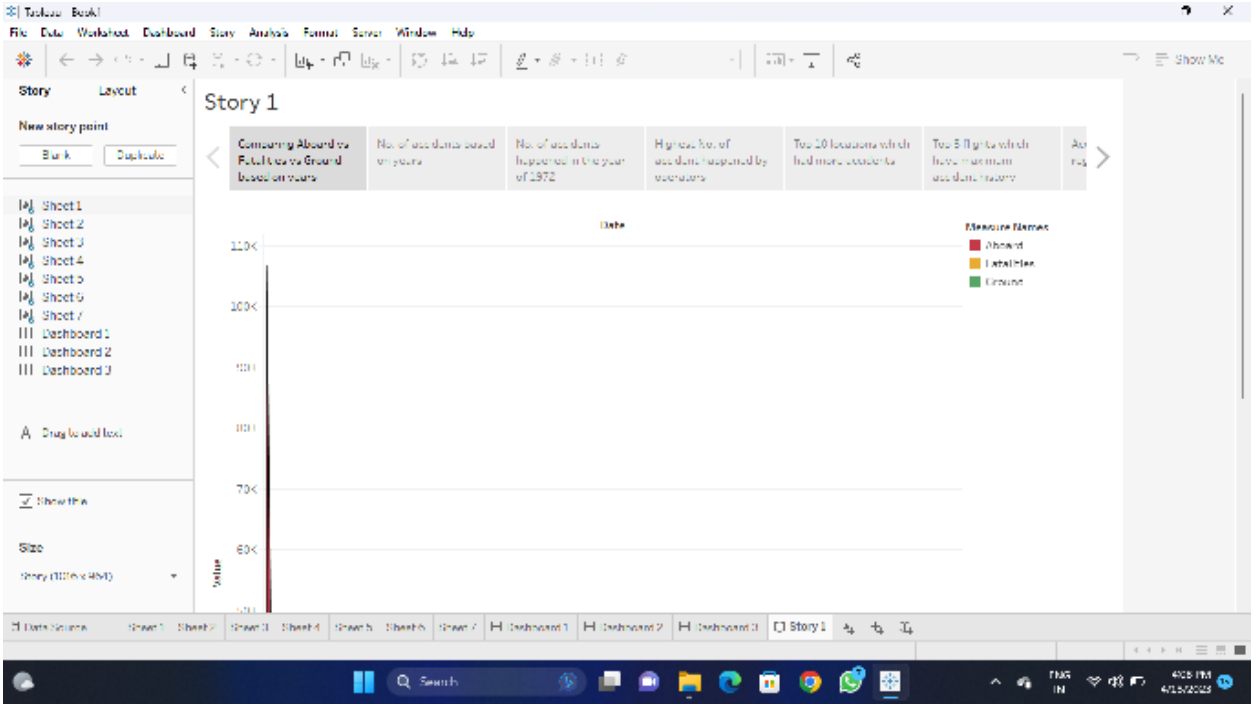
6.1 Dashboard

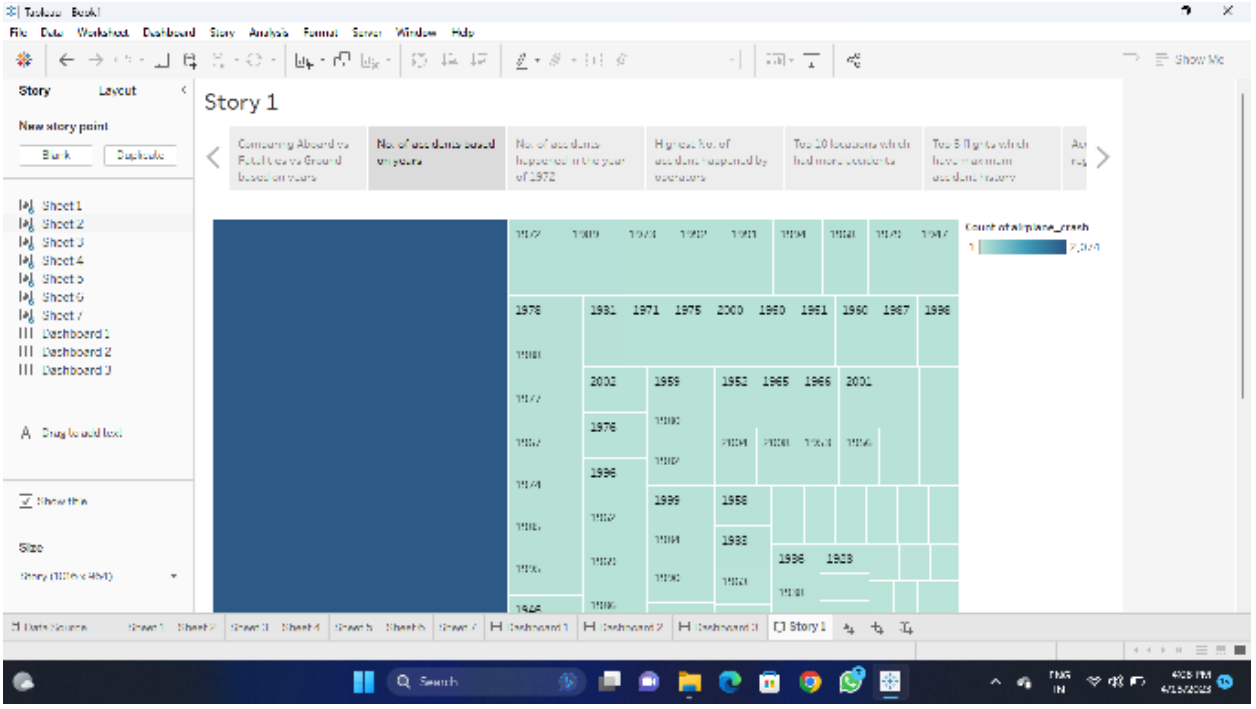


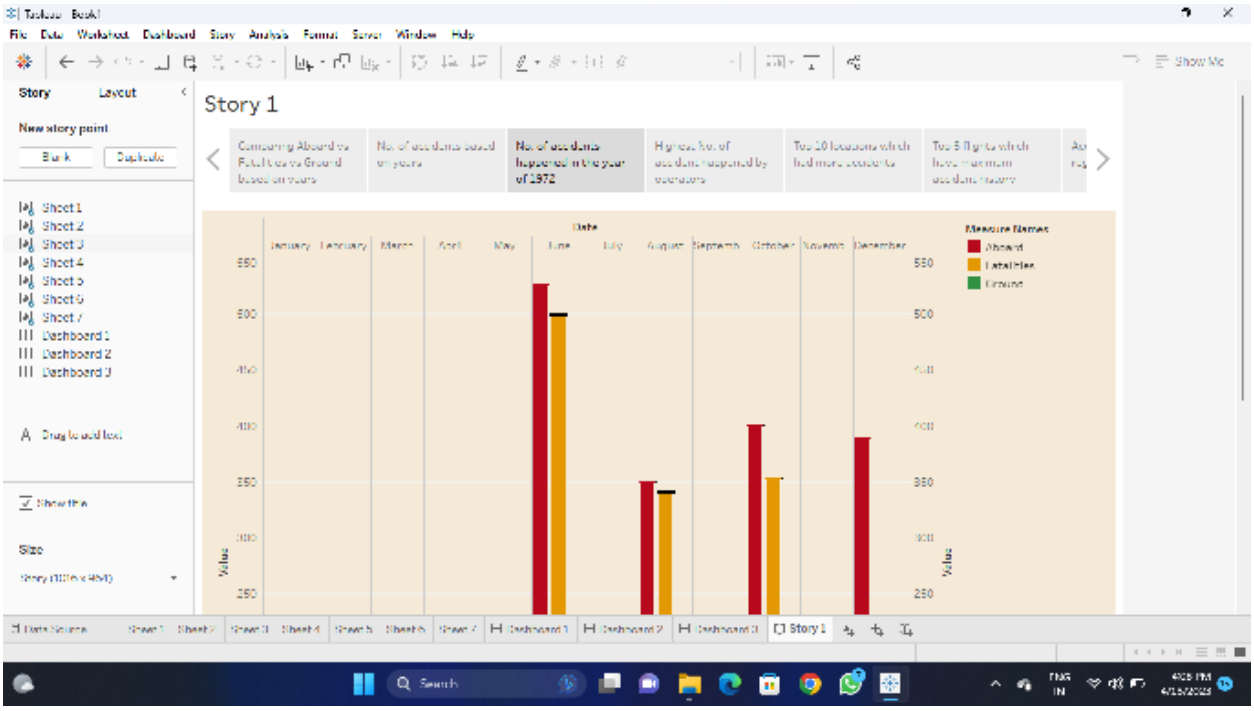

Top 5 flights which have maximum accident history
Previous
Next
Type
Douglas DC-3
Douglas C-47
Douglas C-47A
de Havilland Canada DHC-6 Twin Otter 300
Douglas DC-4
40
61
74
111
333
Comparing Aboard vs Fatalities vs Ground
Accidents happened in 1972 (MAX ACCIDENTS) based on months
Dashboard
Layout
Sheets
Objects

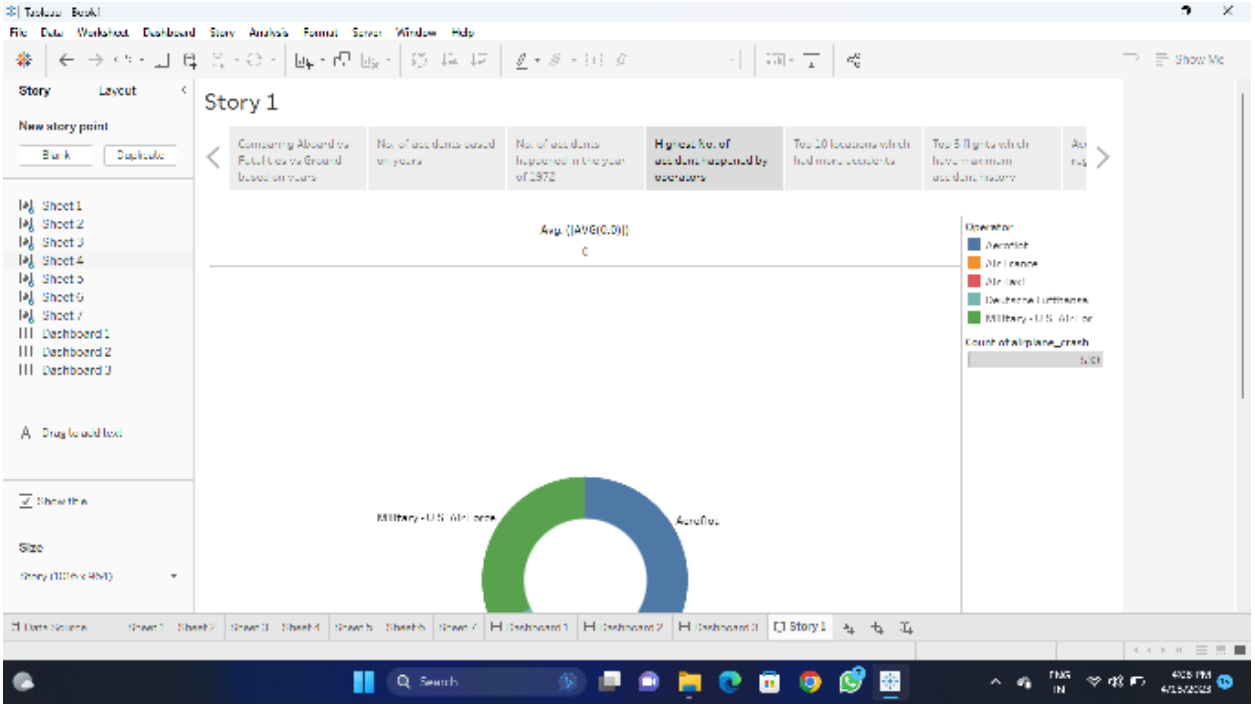

Accidents based on regions
Previous
Dashboard
Layout
Sheets
Objects

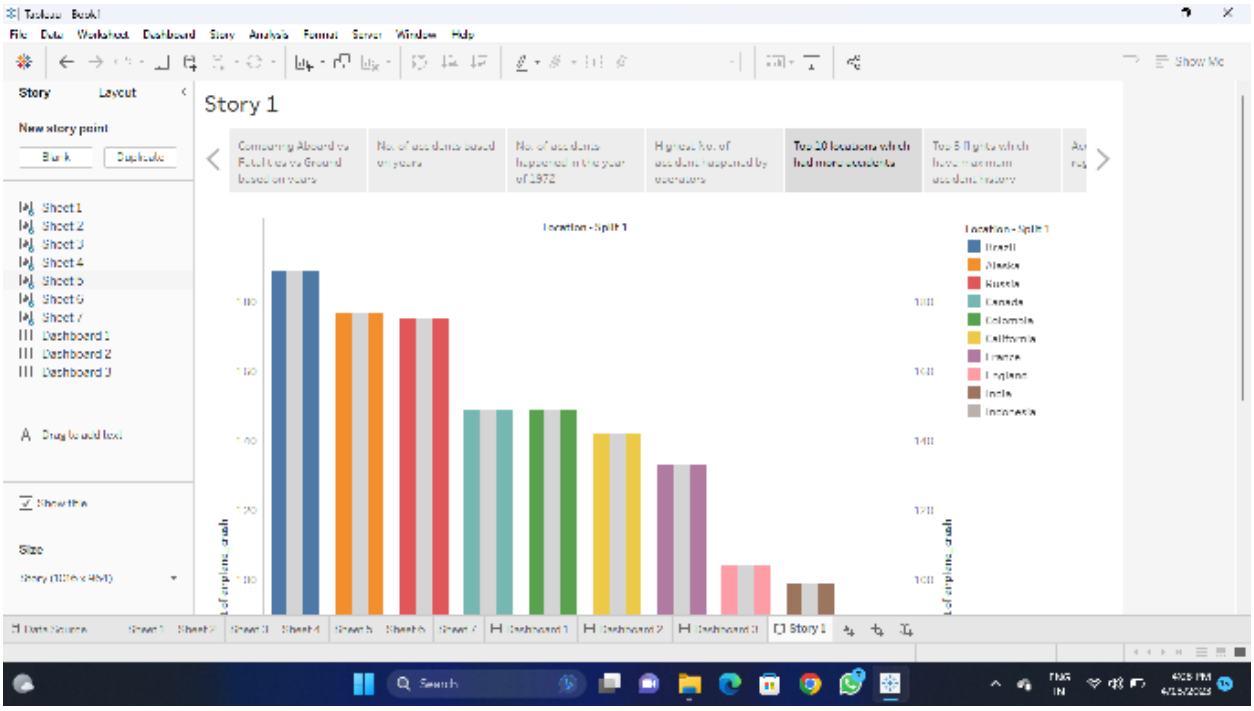
6.2 Story

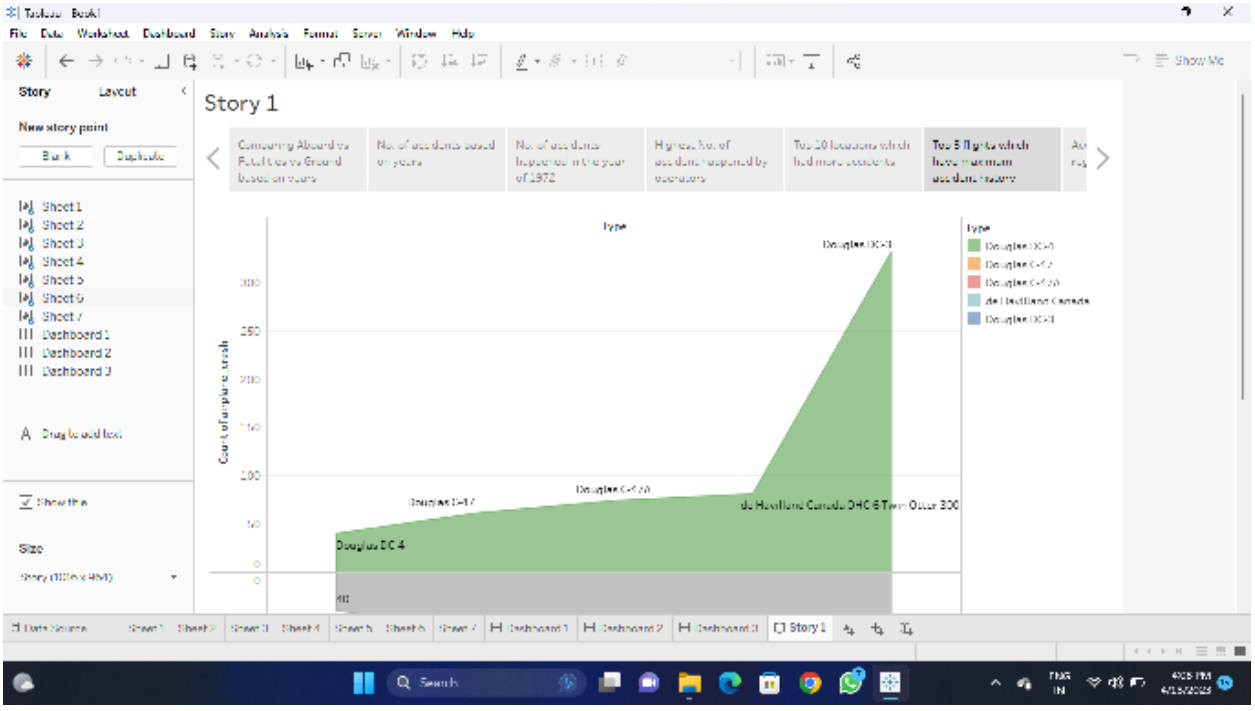

Story 1
Story
Layout
New story point
Blank
Duplicate
Sheet 1
Sheet 2
Sheet 3
Sheet 4
Sheet 5
Sheet 6
Sheet 7
Dashboard 1
Dashboard 2
Dashboard 3
Show title
Size
Date
Measure Names
Value
Story 1

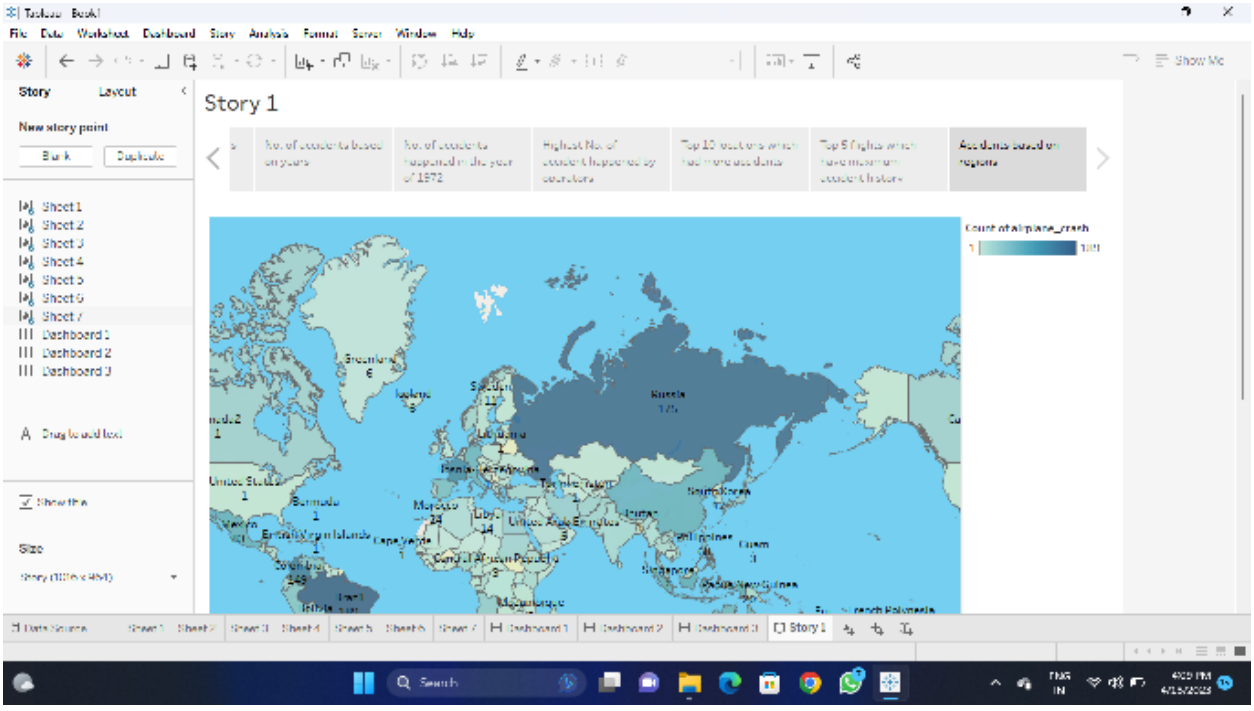

Story 1
Story
Layout
New story point
Blank
Duplicate
Sheet 1
Sheet 2
Sheet 3
Sheet 4
Sheet 5
Sheet 6
Sheet 7
Dashboard 1
Dashboard 2
Dashboard 3
Show title
Size
Count of airplane_crash
1978
1981
1971
1975
2000
1950
1951
1960
1987
1996
2002
1959
1952
1965
1966
2001
1976
1999
1958
1998
1928
Story 1


Story 1
Date
Measure Names
Aboard
Fatalities
Ground
Value


Story 1
Avg. (|AVG(0.0)|)
Operator
Aeroflot
Air France
Air Taxi
Deutsche Lufthansa
Military - U.S. Air Force
Count of airplane_crash
Aeroflot


Story 1
Location - Split 1
Sheet 1
Sheet 2
Sheet 3
Sheet 4
Sheet 5
Sheet 6
Sheet 7
Dashboard 1
Dashboard 2
Dashboard 3
Story 1


Story 1
Type
Douglas DC-4
Douglas C-47
Douglas C-47A
de Havilland Canada DHC-6 Twin Otter 300
Douglas DC-3
Sheet 1
Sheet 2
Sheet 3
Sheet 4
Sheet 5
Sheet 6
Sheet 7
Dashboard 1
Dashboard 2
Dashboard 3
Story 1



7.Future Scope

In the future, the analysis of airplane crashes could be improved by collecting even more data from the aircraft during flight. This could include a variety of data such as the position of the aircraft, the speed, altitude, and other factors. This data could then be used to create predictive models that would better identify the potential causes of airplane crashes. Additionally, the use of advanced technologies such as artificial intelligence and machine learning could help to better analyze airplane crash data and provide better insights into the underlying causes. Finally, the use of data visualization techniques could help to make the analysis of airplane crashes more accessible to the general public.

8.Appendix

Source code

```
<!DOCTYPE html>
<html lang="en">

<head>
  <meta charset="utf-8">
  <meta content="width=device-width, initial-scale=1.0"
name="viewport">

  <title>SHPVIBE - Airplane Crash</title>
  <meta content="" name="description">
  <meta content="" name="keywords">

  <!-- Favicons -->
  <link href="assets/img/favicon.png" rel="icon">
  <link href="assets/img/apple-touch-icon.png" rel="apple-
touch-icon">

  <!-- Google Fonts -->
  <link href="https://fonts.googleapis.com/
css?family=Open+Sans:300,300i,400,400i,600,600i,700,700i|Jo
st:300,300i,400,400i,500,500i,600,600i,700,700i|Poppins:300,
300i,400,400i,500,500i,600,600i,700,700i" rel="stylesheet">

  <!-- Vendor CSS Files -->
```

```
 <link href="assets/vendor/aos/aos.css" rel="stylesheet">
  <link href="assets/vendor/bootstrap/css/bootstrap.min.
css" rel="stylesheet">
  <link href="assets/vendor/bootstrap-icons/bootstrap-icons.
css" rel="stylesheet">
  <link href="assets/vendor/boxicons/css/boxicons.min.css"
rel="stylesheet">
  <link href="assets/vendor/glightbox/css/glightbox.min.
css" rel="stylesheet">
  <link href="assets/vendor/remixicon/remixicon.css"
rel="stylesheet">
  <link href="assets/vendor/swiper/swiper-bundle.min.css"
rel="stylesheet">

  <!-- Template Main CSS File -->
  <link href="assets/css/style.css" rel="stylesheet">

  <!--
==========================================================
========* Template Name: Arsha - v4.9.1
  * Template URL: https://bootstrapmade.com/arsha-free-
bootstrap-html-template-corporate/
  * Author: BootstrapMade.com
  * License: https://bootstrapmade.com/license/f

==========================================================
========= -->
</head>

<body>
```

```
<!-- ======= Header ======= -->
 <header id="header" class="fixed-top ">
   <div class="container d-flex align-items-center">

     <h1 class="logo me-auto"><a href="index.html">SHPVIBE</
a></h1>
     <!-- Uncomment below if you prefer to use an image logo --
>
     <!-- <a href="index.html" class="logo me-auto"><img
src="assets/img/logo.png" alt="" class="img-fluid"></a>-->

     <nav id="navbar" class="navbar">
       <ul>
         <li><a class="nav-link scrollto active"
href="#hero">Home</a></li>
         <li><a class="nav-link scrollto" href="#about">About</
a></li>
 <li><a class="nav-link scrollto" href="#team">Dashboard</
 a></li>

          <li><a class="nav-link scrollto" href="#pricing">Story</
 a></li>

          <li><a class="nav-link scrollto"
 href="#contact">Contact</a></li>
          <li><a class="getstarted scrollto" href="#about">Get
 Started</a></li>
        </ul>
        <i class="bi bi-list mobile-nav-toggle"></i>
      </nav><!-- .navbar -->

    </div>
 </header><!-- End Header -->
```

```
<!-- ======= Hero Section ======= -->
 <section id="hero" class="d-flex align-items-center">

   <div class="container">
     <div class="row">
       <div class="col-lg-6 d-flex flex-column justify-content-center pt-4 pt-lg-0 order-2 order-lg-1" data-aos="fade-up" data-aos-delay="200">
         <h1>Airplane Crash analysis</h1>
         <h2>Airplane Crashes and Fatalities Since 1908</h2>
         <div class="d-flex justify-content-center justify-content-lg-start">
           <a href="#about" class="btn-get-started scrollto">Get Started</a>
           <a href="https://www.youtube.com/@thesmartbridge/videos" class="glightbox btn-watch-video"><i class="bi bi-play-circle"></i><span>Watch Video</span></a>
         </div>
       </div>
       <div class="col-lg-6 order-1 order-lg-2 hero-img" data-aos="zoom-in" data-aos-delay="200">
         <img src="assets/img/a1.jpg" class="img-fluid animated" alt="">
       </div>
     </div>
   </div>

 </section><!-- End Hero -->

<main id="main">
       <!-- ======= About Us Section ======= -->
   <section id="about" class="about">
     <div class="container" data-aos="fade-up">
```

```
<div class="section-title">
        <h2>About Project</h2>
      </div>

      <div class="row content">
        <div class="col-lg-6">
          <p>
```

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

```
          </p>
          <ul>
            <li><i class="ri-check-double-line"></i> a) a person is fatally or seriously injured, </li>
            <li><i class="ri-check-double-line"></i> b) the aircraft sustains significant damage or structural failure, or </li>
            <li><i class="ri-check-double-line"></i> c) the aircraft goes missing or becomes completely inaccessible.</li>
          </ul>
        </div>
        <div class="col-lg-6 pt-4 pt-lg-0">
          <p>
            This dataset includes:
          <ul>
            <li><i class="ri-check-double-line"></i> All civil and commercial aviation accidents of scheduled and non-scheduled passenger airliners worldwide, which resulted in a fatality (including all U.S. Part 121 and Part 135 fatal accidents)</li>
```

```
<li><i class="ri-check-double-line"></i> All cargo, positioning, ferry and test flight fatal accidents.</li>
            <li><i class="ri-check-double-line"></i> All military transport accidents with 10 or more fatalities.</li>
            <li><i class="ri-check-double-line"></i> All commercial and military helicopter accidents with greater than 10 fatalities.</li>
            <li><i class="ri-check-double-line"></i> All civil and military airship accidents involving fatalities.</li>
            <li><i class="ri-check-double-line"></i> Aviation accidents involving the death of famous people.</li>
             </ul>
           </p>
            </div>
       </div>

     </div>
   </section><!-- End About Us Section -->

 <!-- ======= Cta Section ======= -->
   <section id="cta" class="cta">
     <div class="container" data-aos="zoom-in">

       <div class="row">
         <div class="col-lg-9 text-center text-lg-start">
           <h3>Call To Action</h3>
           </div>
         <div class="col-lg-3 cta-btn-container text-center">
           <a class="cta-btn align-middle" href="#">Call To Action</a>
         </div>
       </div>

     </div>
   </section><!-- End Cta Section -->
```

```
<!-- ======= Team Section ======= -->
    <section id="team" class="team section-bg">
      <div class="container" data-aos="fade-up">

        <div class="section-title">
          <h2>Dashboard</h2>
           </div>
      </div><div class='tableauPlaceholder'
id='viz1681485913646' style='position: relative'><noscript><a
href='#'><img alt='Dashboard 1 ' src='https:&#47;&#47;public.
tableau.
com&#47;static&#47;images&#47;Bo&#47;Book1_1681231584
0350&#47;Dashboard1&#47;1_rss.png' style='border: none' /
></a></noscript><object class='tableauViz'  style='display:
none;'><param name='host_url' value='https%3A%2F%2Fpublic.
tableau.com%2F' /> <param name='embed_code_version'
value='3' /> <param name='path'
value='views&#47;Book1_16812315840350&#47;Dashboard1?:
language=en-US&amp;:embed=true&amp;publish=yes' />
<param name='toolbar' value='yes' /><param
name='static_image' value='https:&#47;&#47;public.tableau.
com&#47;static&#47;images&#47;Bo&#47;Book1_1681231584
0350&#47;Dashboard1&#47;1.png' /> <param
name='animate_transition' value='yes' /><param
name='display_static_image' value='yes' /><param
name='display_spinner' value='yes' /><param
name='display_overlay' value='yes' /><param
name='display_count' value='yes' /><param name='language'
value='en-US' /><param name='filter' value='publish=yes' /></
object
```

```
></div>                <script type='text/javascript'>                    var
divElement = document.getElementById('viz1681485913646');
var vizElement = divElement.getElementsByTagName('object')[0];
if ( divElement.offsetWidth > 800 ) { vizElement.style.width='1000px';
vizElement.style.height='827px';} else if ( divElement.offsetWidth > 500 ) {
vizElement.style.width='1000px';vizElement.style.height='827px';} else {
vizElement.style.width='100%';vizElement.style.height='1277px';}
var scriptElement = document.createElement('script');
scriptElement.src = 'https://public.tableau.com/javascripts/api/viz_v1.js';
vizElement.parentNode.insertBefore(scriptElement, vizElement);
</script>
    </section><!-- End Team Section -->

    <!-- ======= Pricing Section ======= -->



  <section id="pricing" class="pricing">
      <div class="container" data-aos="fade-up">

        <div class="section-title">
          <h2>Story</h2>
          </div>
      </div><div class='tableauPlaceholder' id='viz1681486031302'
style='position: relative'><noscript><a href='#'><img alt='Story 1 '
src='https:&#47;&#47;public.tableau.
com&#47;static&#47;images&#47;Bo&#47;Book1_16812315840350&#47
;Story1&#47;1_rss.png' style='border: none' /></a></noscript><object
class='tableauViz'  style='display:none;'><param name='host_url'
value='https%3A%2F%2Fpublic.tableau.com%2F' /> <param
name='embed_code_version' value='3' /> <param name='site_root'
value='' /><param name='name'
value='Book1_16812315840350&#47;Story1' /><param name='tabs'
value='no' /><param name='toolbar' value='yes' /><param
name='static_image' value='https:&#47;&#47;public.tableau.
com&#47;static
```

```
&#47;images&#47;Bo&#47;Book1_1681231584035 0&#47;Story1&#47;1.png' /> <param name='animate_transition' value='yes' /><param name='display_static_image' value='yes' /><param name='display_spinner' value='yes' /><param name='display_overlay' value='yes' /><param name='display_count' value='yes' /><param name='language' value='en-US' /><param name='filter' value='publish=yes' /></object></div>                 <script type='text/javascript'>                 var divElement = document.getElementById('viz1681486031302');                    var vizElement = divElement.getElementsByTagName('object')[0];vizElement.style.width='1016px';vizElement.style.height='991px';                    var scriptElement = document.createElement('script');                    scriptElement.src = 'https://public.tableau.com/javascripts/api/viz_v1.js';vizElement.parentNode.insertBefore(scriptElement, vizElement);                </script>
    </section><!-- End Pricing Section -->


 <!-- ======= Contact Section ======= -->
    <section id="contact" class="contact">
      <div class="container" data-aos="fade-up">

        <div class="section-title">
          <h2>Contact</h2>
          </div>

        <div class="row">
 <div class="col-lg-5 d-flex align-items-stretch">
            <div class="info">
              <div class="address">
                <i class="bi bi-geo-alt"></i>
                <h4>Location:</h4>
                <p>xxxxxx Street, xxx, xx 53xxx2</p>
              </div>
```

```
<div class="email">
            <i class="bi bi-envelope"></i>
            <h4>Email:</h4>
            <p>info@example.com</p>
          </div>

          <div class="phone">
            <i class="bi bi-phone"></i>
            <h4>Call:</h4>
            <p>+1 5xxx 5xxx8 5xs</p>
          </div>

          <iframe src="https://www.google.com/maps/
embed?pb=!1m14!1m8!1m3!1d12097.433213460943!2d-74.0062
269!3d40.7101282!3m2!1i1024!2i768!4f13.1!3m3!1m2!1s0x0%3A
0xb89d1fe6bc499443!2sDowntown+Conference+Center!5e0!3m2!
1smk!2sbg!4v1539943755621" frameborder="0" style="border:0;
width: 100%; height: 290px;" allowfullscreen></iframe>
        </div>

      </div>


  <div class="col-lg-7 mt-5 mt-lg-0 d-flex align-items-stretch">
          <form action="forms/contact.php" method="post"
 role="form" class="php-email-form">
            <div class="row">

  <div class="form-group col-md-6">
              <label for="name">Your Name</label>
              <input type="text" name="name" class="form-
 control" id="name" required>
            </div>
```

```
 <div class="form-group col-md-6">
                <label for="name">Your Email</label>
                <input type="email" class="form-control"
name="email" id="email" required>
              </div>
            </div>
            <div class="form-group">
              <label for="name">Subject</label>
              <input type="text" class="form-control"
name="subject" id="subject" required>
            </div>
            <div class="form-group">
              <label for="name">Message</label>
              <textarea class="form-control" name="message"
rows="10" required></textarea>
            </div>
            <div class="my-3">
              <div class="loading">Loading</div>
              <div class="error-message"></div>
              <div class="sent-message">Your message has been
sent. Thank you!</div>
            </div>
            <div class="text-center"><button
type="submit">Send Message</button></div>
          </form>
        </div>

      </div>

    </div>
  </section><!-- End Contact Section -->
```

```
  </main><!-- End #main -->

  <!-- ======= Footer ======= -->
  <footer id="footer">

    <div class="footer-newsletter">
      <div class="container">
        <div class="row justify-content-center">
          <div class="col-lg-6">
            <h4>Join Our Newsletter</h4>

            <form action="" method="post">
              <input type="email" name="email"><input type="submit"
value="Subscribe">
            </form>
          </div>
        </div>
      </div>
    </div>

    <div class="footer-top">
      <div class="container">
        <div class="row">



          <div class="col-lg-3 col-md-6 footer-links">
            <h4>Useful Links</h4>
            <ul>
              <li><i class="bx bx-chevron-right"></i> <a href="#hero">Home</
a></li>
              <li><i class="bx bx-chevron-right"></i> <a
href="#about">About</a></li>
              <li><i class="bx bx-chevron-right"></i> <a
href="#portfolio">Charts</a></li>
              <li><i class="bx bx-chevron-right"></i> <a
href="#team">Dashboard</a></li>
              <li><i class="bx bx-chevron-right"></i> <a
href="#pricing">Story</a></li>
            </ul>
          </div>
```

```
 <div class="col-lg-3 col-md-6 footer-links">
          <h4></h4>
          <ul>

          </ul>
        </div>
        <div class="col-lg-3 col-md-6 footer-links">
          <h4></h4>
          <ul>

          </ul>
        </div>

        <div class="col-lg-3 col-md-6 footer-links">
          <h4>Our Social Networks</h4>

          <div class="social-links mt-3">
            <a href="https://www.linkedin.com/in/
hariprabu741/" class="linkedin"><i class="bx bxl-linkedin"></
i></a>
            <a href="#" class="twitter"><i class="bx bxl-
twitter"></i></a>
            <a href="#" class="facebook"><i class="bx bxl-
facebook"></i></a>
            <a href="#" class="instagram"><i class="bx bxl-
instagram"></i></a>
            <a href="#" class="google-plus"><i class="bx bxl-
skype"></i></a>

          </div>
        </div>

      </div>
    </div>
  </div>
```

```
 <div class="container footer-bottom clearfix">
      <div class="copyright">
        &copy; Copyright <strong><span>SHPVIBE</span></
strong>. All Rights Reserved
      </div>
      <div class="credits">
        <!-- All the links in the footer should remain intact. -->
        <!-- You can delete the links only if you purchased the pro
version. -->
        <!-- Licensing information: https://bootstrapmade.com/
license/ -->
        <!-- Purchase the pro version with working PHP/AJAX
contact form: https://bootstrapmade.com/arsha-free-bootstrap-
html-template-corporate/ -->
        Designed by <a href="https://bootstrapmade.com/
">SHPVIBE</a>
      </div>
    </div>
  </footer><!-- End Footer -->

  <div id="preloader"></div>
  <a href="#" class="back-to-top d-flex align-items-center justify-
content-center"><i class="bi bi-arrow-up-short"></i></a>
```

```
 <!-- Vendor JS Files -->
  <script src="assets/vendor/aos/aos.js"></script>
  <script src="assets/vendor/bootstrap/js/bootstrap.bundle.
min.js"></script>
  <script src="assets/vendor/glightbox/js/glightbox.min.
js"></script>
  <script src="assets/vendor/isotope-layout/isotope.pkgd.min.
js"></script>
  <script src="assets/vendor/swiper/swiper-bundle.min.js"></
script>
  <script src="assets/vendor/waypoints/noframework.
waypoints.js"></script>
  <script src="assets/vendor/php-email-form/validate.js"></
script>

  <!-- Template Main JS File -->
  <script src="assets/js/main.js"></script>

</body>

</html>
```