THE TRAGEDY OF A FLIGHT - A COMPREHENSIVE CRASH ANALYSIS

CATEGORY: DATA ANALYTICS WITH TABLEAU

TEAM ENROLLED FOR THE PROJECT:

TEAM SIZE ： 4

TEAM LEADER ： B.PRIYADHARSHINI

TEAM MEMBER : P.NITHARSANA

TEAM MEMBER : P.SINDHUJA

TEAM MEMBER : V.NANDHINI

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 analyzed 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

It performed to determine the cause of errors once an accident has happened and it is used to analyze a database of past accident in order to prevent an accident from happening. It is not only used for investigation but also for educational purpose which is used to help the decision makers understand the nature, causes and injury outcomes of crashes. This information provides context for the design of strategies and inventions that will reduce crashes and their consequences.

2. PROBLEM DEFINITION & DESIGN THINKING

2.1 Empathy Map:

Empathy map

Use this framework to develop a deep, shared understanding and empathy for other people. An empathy map helps describe the aspects of a user's experience, needs and pain points, to quickly understand your users' experience and mindset.

Build empathy

The information you add here should be representative of the observations and research you've done about your users.

Says
What have we heard them say?
What can we imagine them saying?

- Won't travel in a flight anymore
- Chance to get claustrophobia
- Lament about safety
- Felt sensation of weightlessness

Thinks
What are their wants, needs, hopes, and dreams? What other thoughts might influence their behavior?

- Wanted the chance for living
- Think about any miracles happened to get rid of this situation
- Expecting the hopeful statement from the management
- Expecting the exit way

HAWKER

Does
What behavior have we observed?
What can we imagine them doing?

- Screaming with nervous
- Sat blindly with swither
- Longing for their loved ones
- Felt scary

Feels
What are their fears, frustrations, and anxieties? What other feelings might influence their behavior?

- Being out of control may cause panic attack
- Drained or even short of breathe
- Worrying about their families
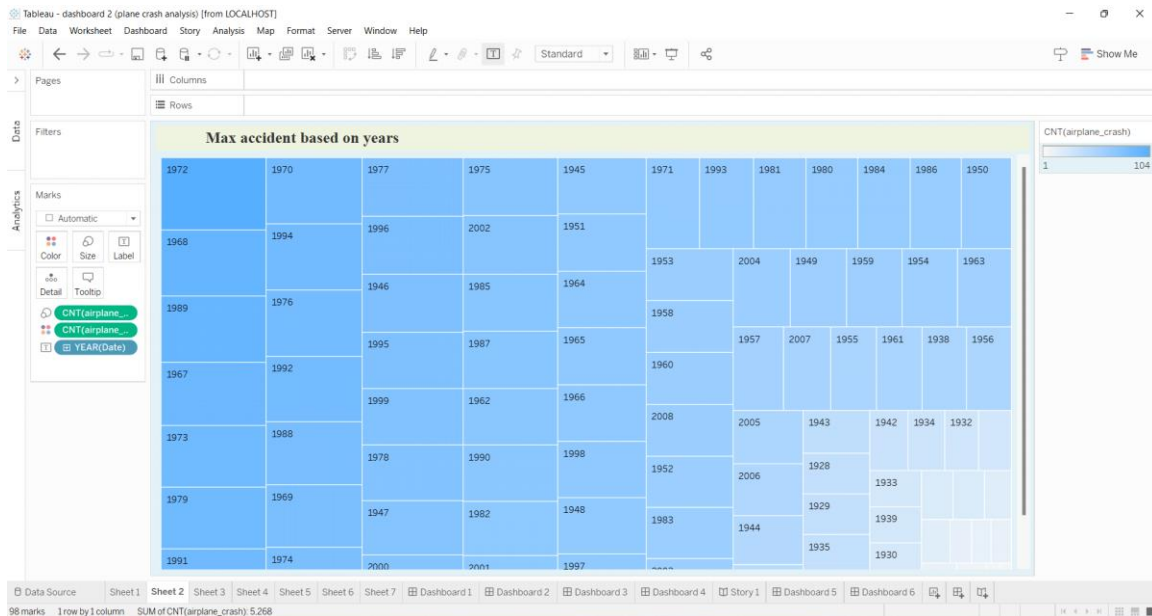- Get aviophobia

2.2 Ideation and Brainstorming Map:

3.RESULT

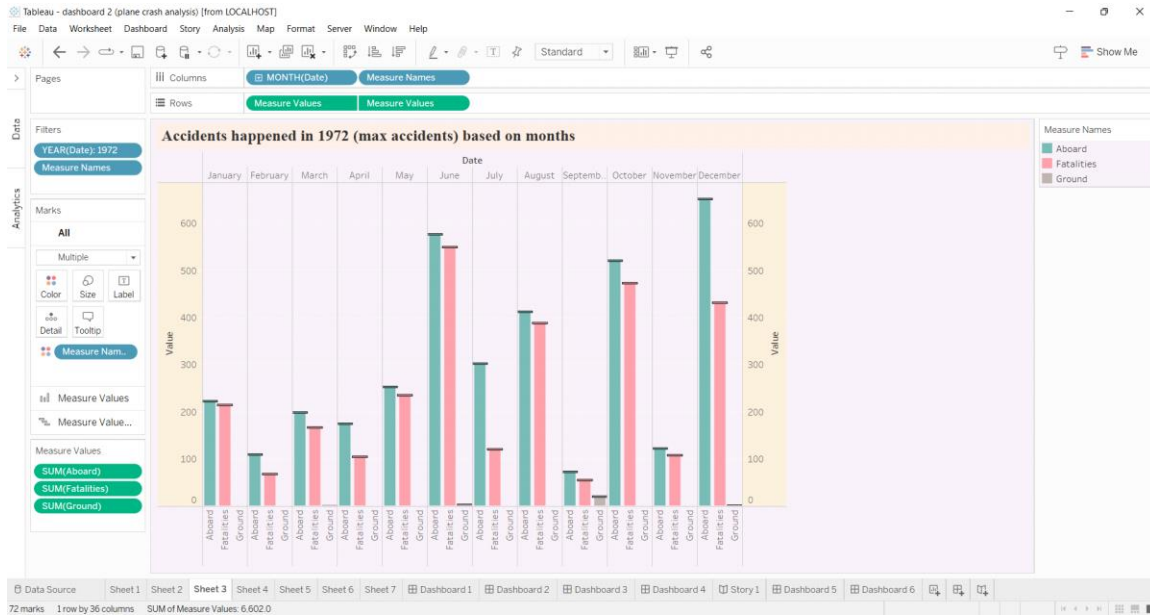The output are in the form of graphical representation so i have attached those screenshots

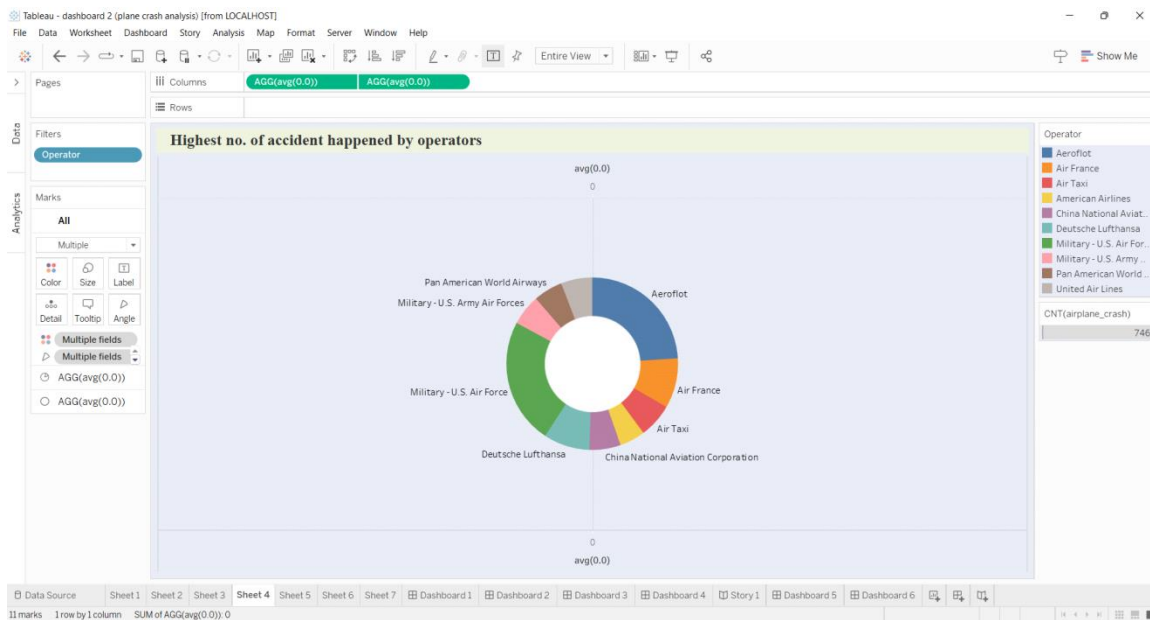## Visualization 1: Comparing aboard vs fatalities vs ground
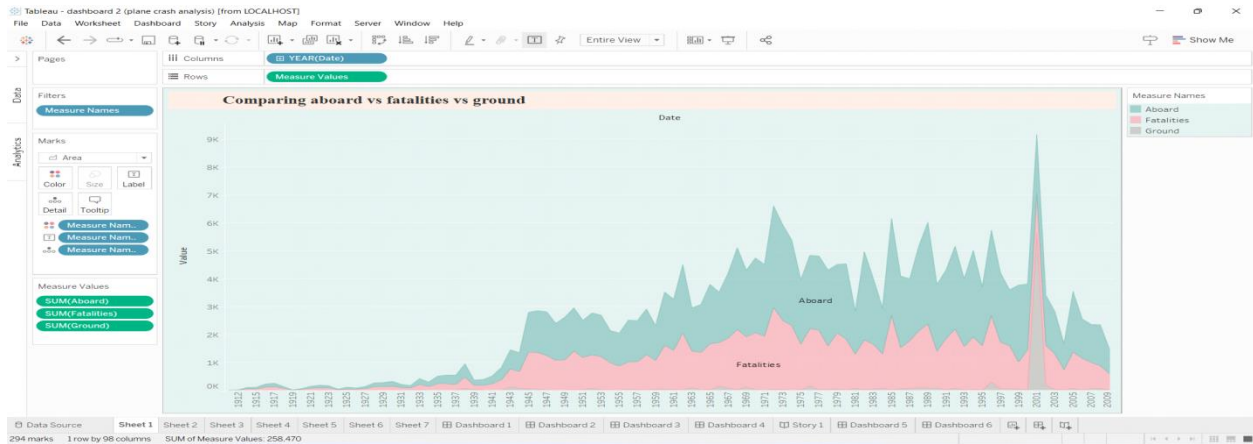
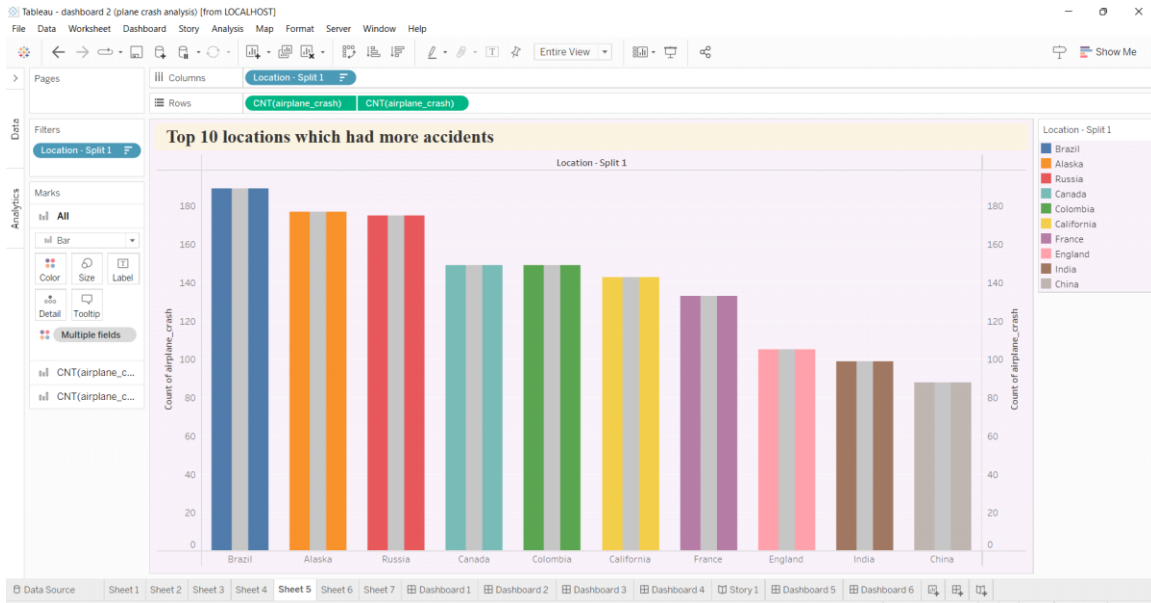## Visualization 2: Max accidents based on years

Visualization 3: Accidents happened in 1972 (max accidents) based on months
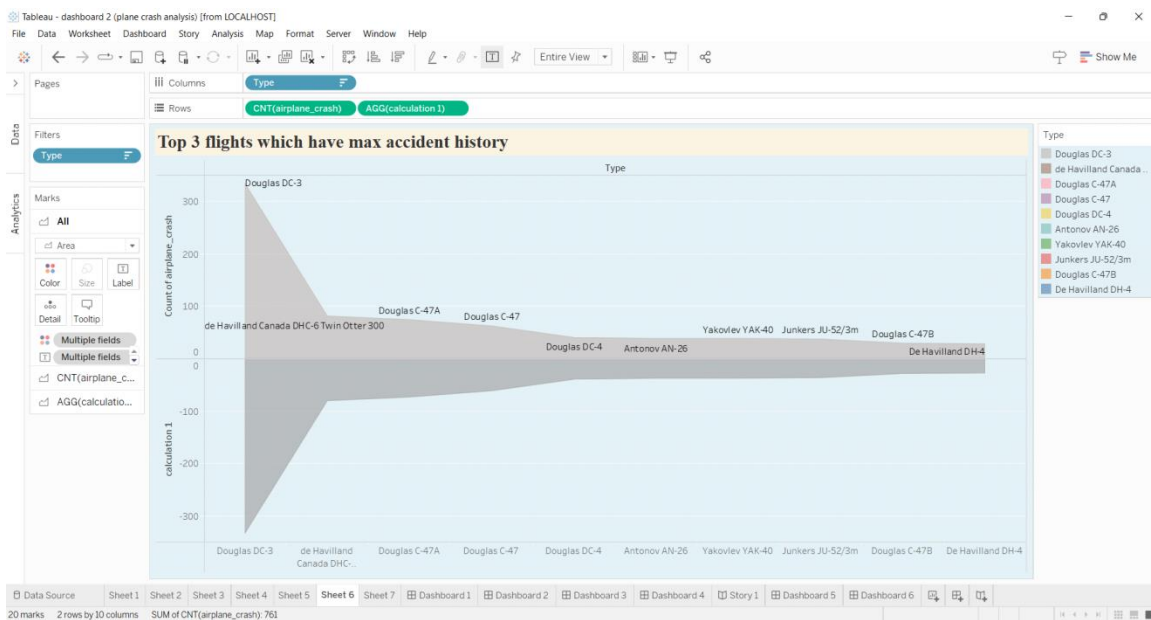

Visualization 4: Highest No.of accident happened by operators

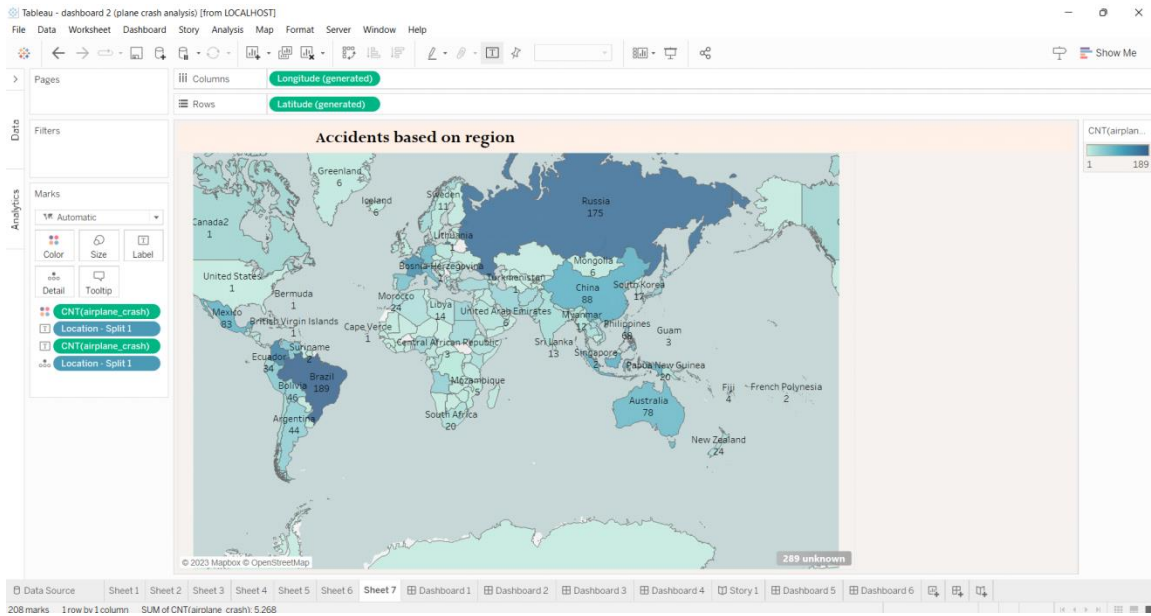# Visualization 5: Top locations which had more accidents

Visualization 6: Top 3 flights which have max accident history

Visualization 7: Accidents based on regions

Dashboard 1: Flight crash analysis
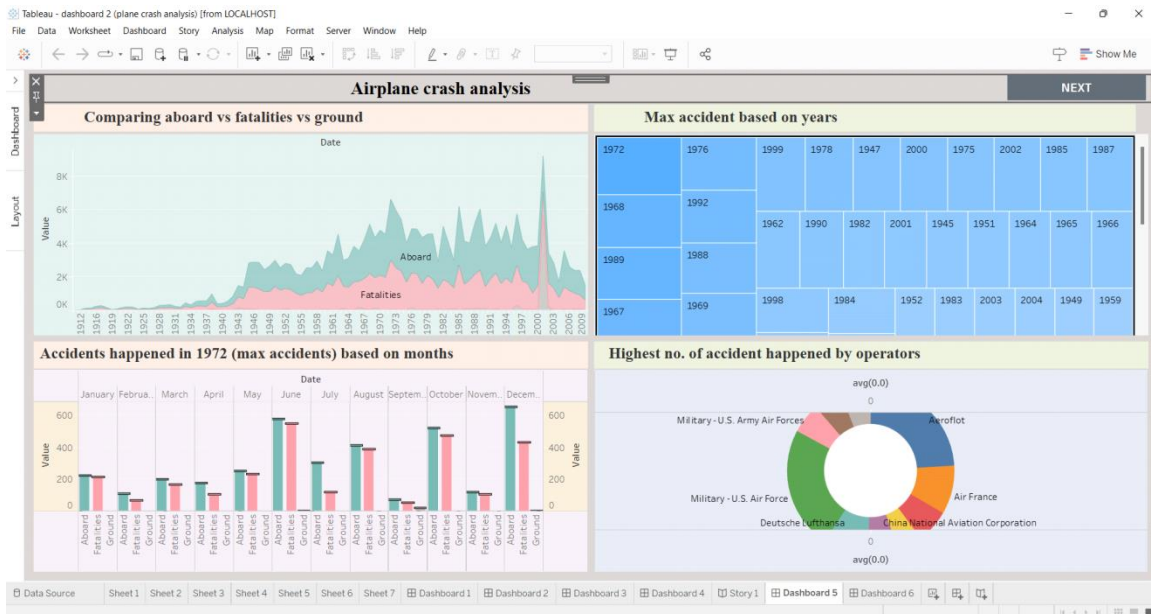
Dashboard 2: Flight crash analysis
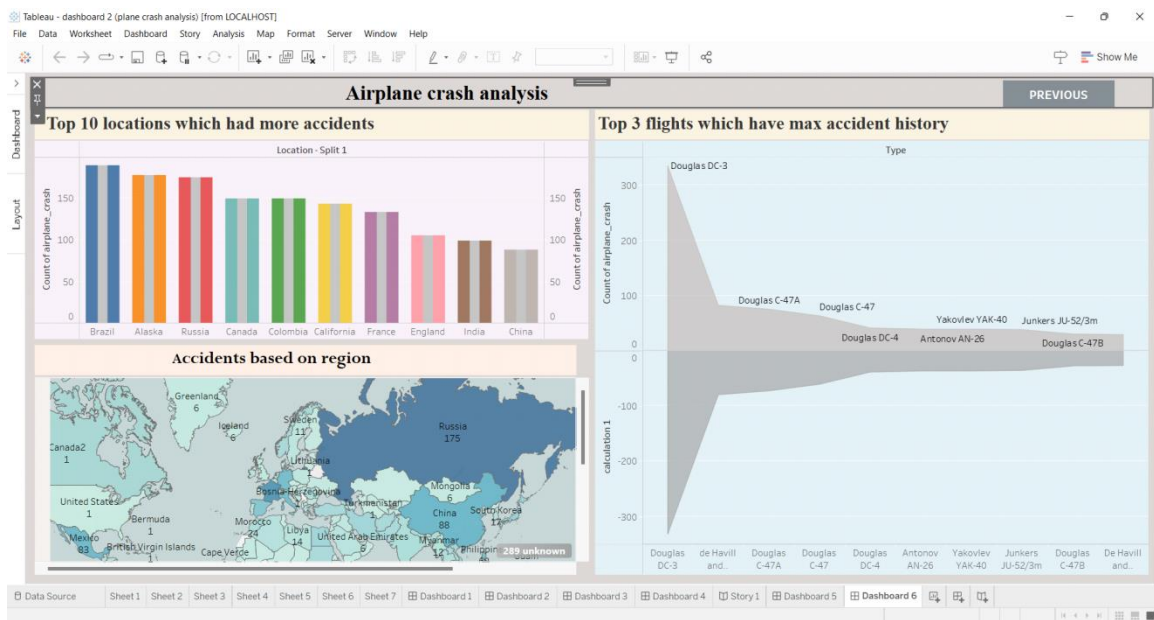
Story
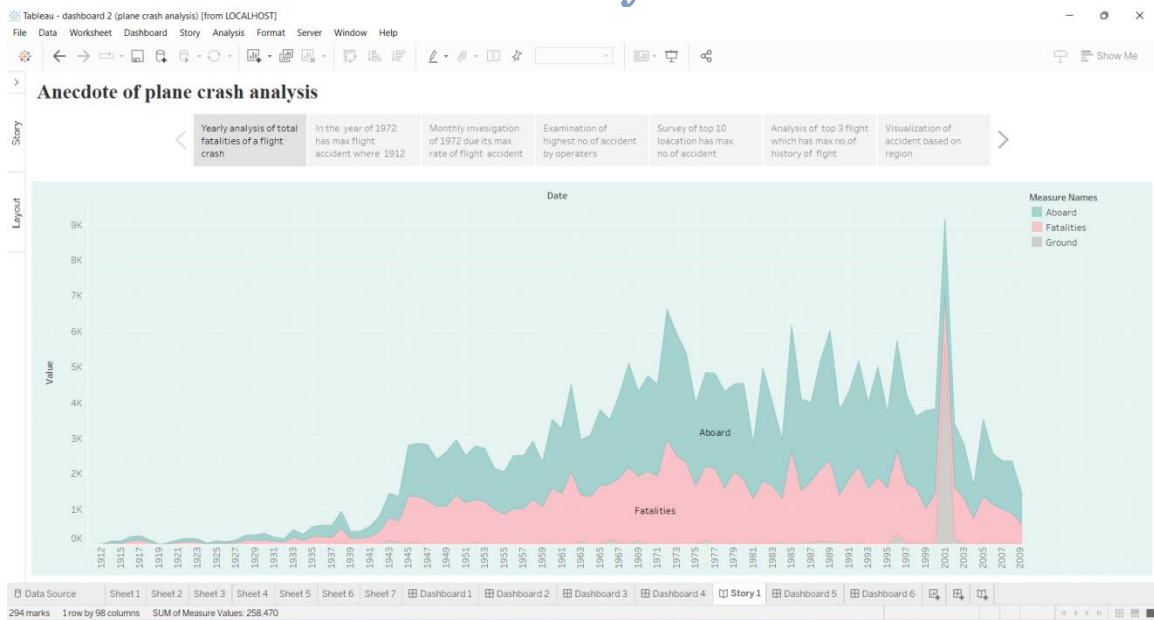
Performance testing
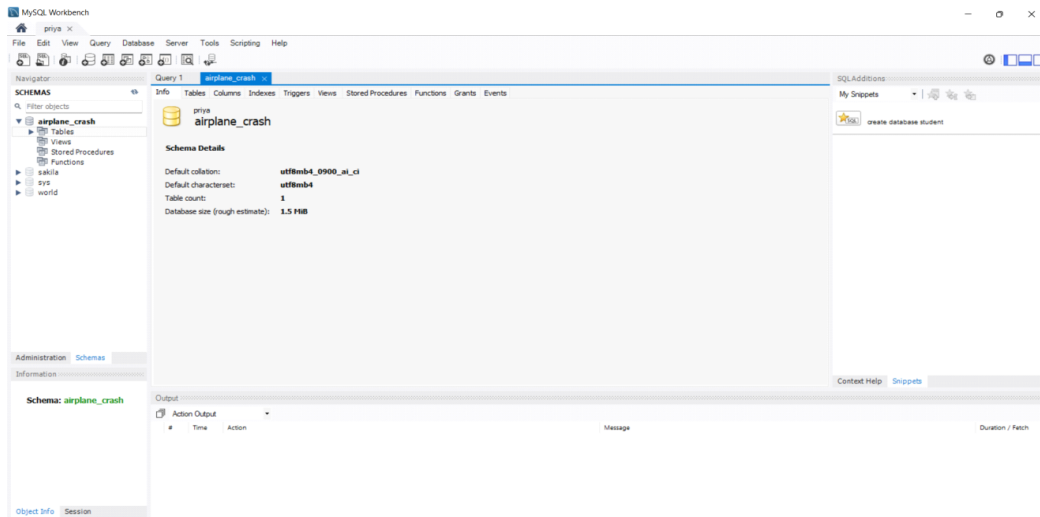
Utilization of data filters
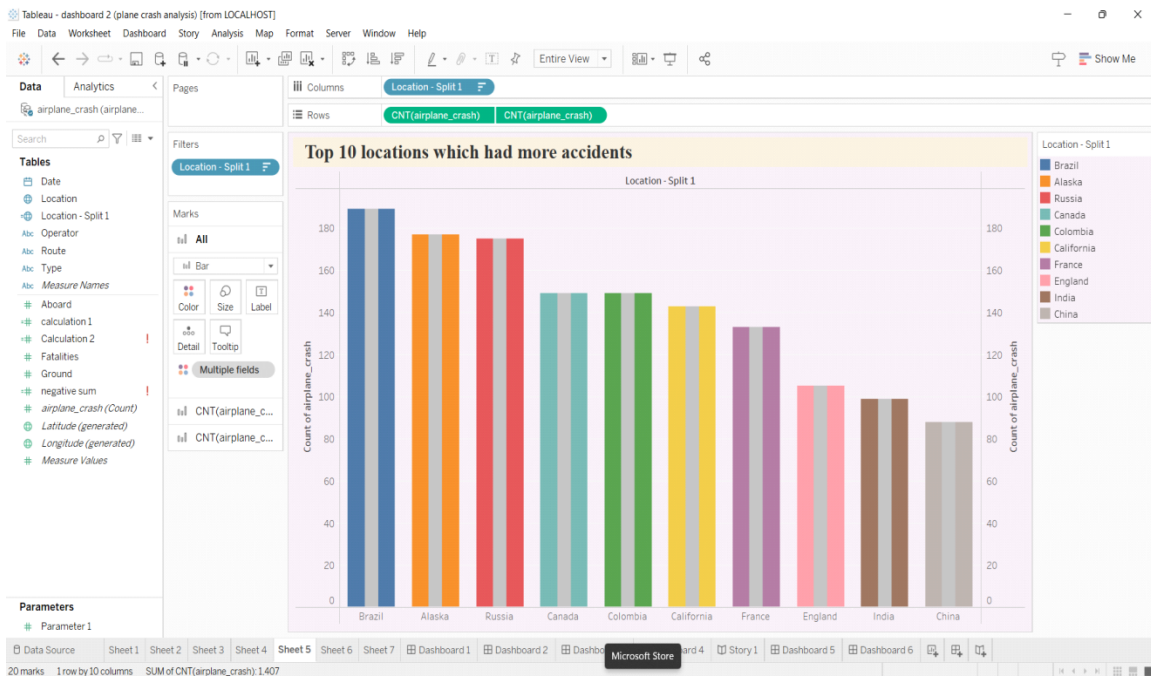
No of calculation field

Tableau - dashboard 2 (plane

File   Data   Worksheet   Das

Data   Analytics

airplane_crash (airplane

Search

Tables

📅 Date
🌐 Location
🌐 Location - Split 1
Abc Operator
Abc Route
Abc Type
Abc *Measure Names*

\# Aboard
\# calculation 1
\# Calculation 2
\# Fatalities
\# Ground
\# negative sum
\# *airplane_crash (Count)*
🌐 *Latitude (generated)*
🌐 *Longitude (generated)*
\# *Measure Values*

Parameters

\# Parameter 1

🛢 Data Source   Sheet

Web application
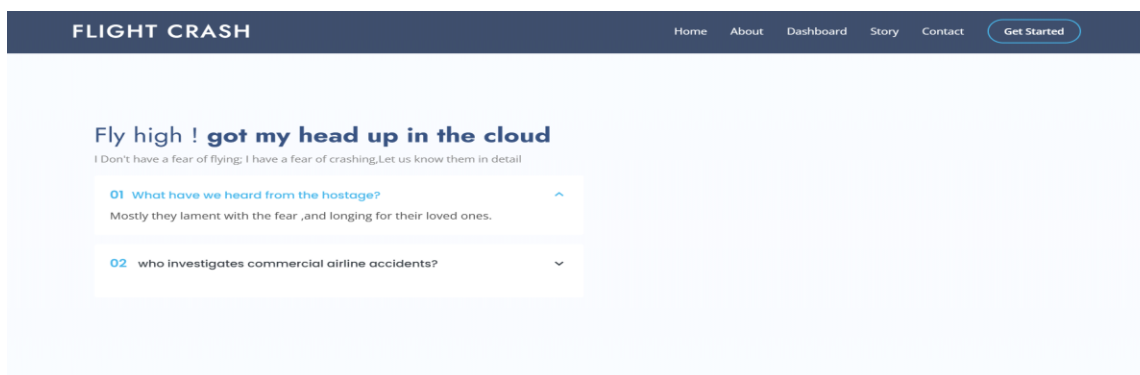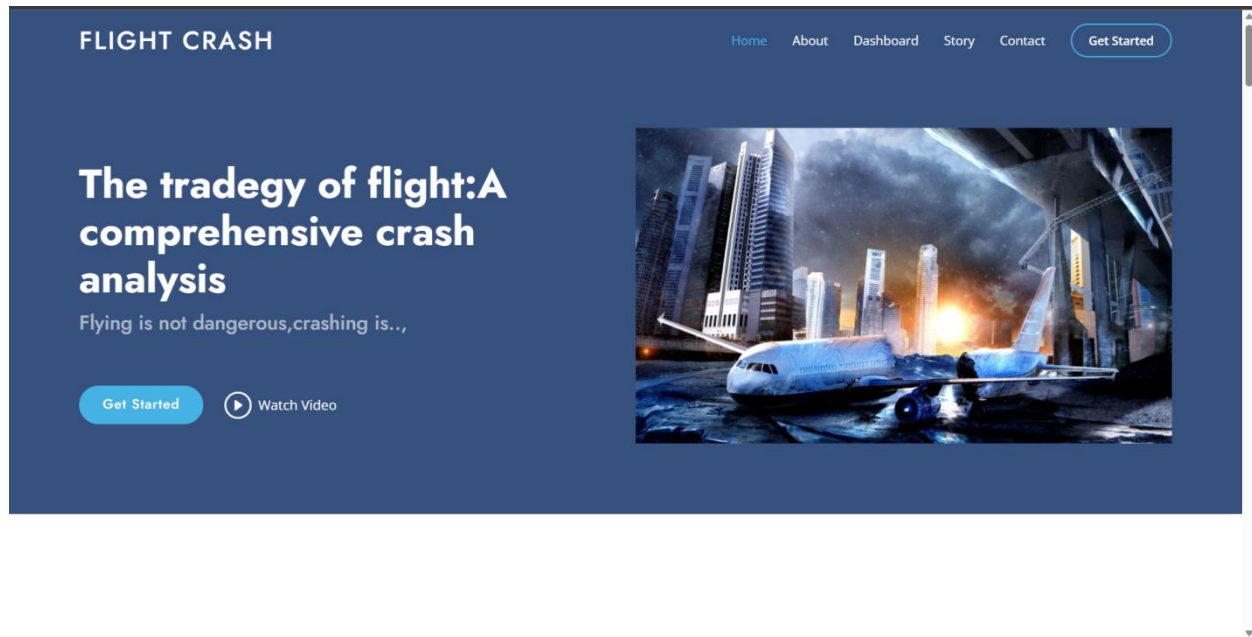
ABOUT US

An avitation accident is defined by the convention on international civil aviation annex 13 as an occurence 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 has disembarked,and in which

❥ a) A peson is fatally or seriously injured,

❥ b) The aircraft sustains significant damage or structural failure,or

❥ c) The aircraft goes missing or becomes completely inaccessible.

This dataset includes;1) All cargo,positioning,ferry and test flight fatal accidents. 2) All military transport accidents with 10 or more fatalities. 3) All commercial and military helicopter accidents with greater than 10 fatalities. 4) All civil and military airship accidents invovling fatalites. 5) Avitation accidents involving the death of famous people

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The reason for flight crash

The most believed reason for the flight crash is

PILOT ERROR	60%

MECHANICAL FAILURE	15%

WEATHER MISJUDGE	15%

SOBATAGES	10%

DASHBOARD

Call To Action

Determined the cause of error,and analyze a database of Past accidents in order to prevent an accident from happening.

Call To Action

STORY

Anecdote of plane crash analysis
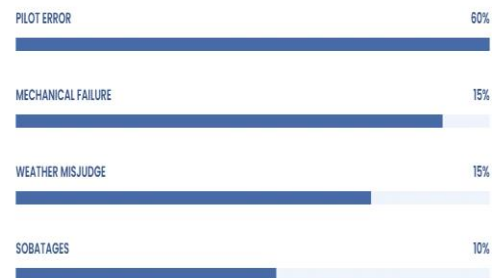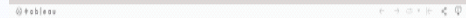
CONTACT

Location:
Arcot sri mahalakshmi women's college
Ami main road,villapakam -632521
Tamilnadu,India

Email:
asmwc.college@gmail.com

Call:
(04172)258590,258583

Your Name

Your Email

Subject

Message

Send Message

Subscribe

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Phone:(04172)258590,258583
Email: asmwc.college@gmail.com

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> Graphic Design

Our Social Networks

4. ADVANTAGES AND DISADVANTAGES

4.1 Advantages:

The solution which we provide for the pilot error:

- Can improve the skills and responsibilities of the pilot,

- Pilot can update their knowledge by themselves,

- While following ATC rule by the pilot ,can prevent collision ,organize and expedite the flow of air traffic and provide information,

- For doing the proper preflight inspection, leads to the prevention of major aircraft accidents .

The solution which we provide for the mechanical failure:

- The rate of use of latest machines has increased,

- May leads to the invention of new engines,

- The efficiency of the transport may increased,

- The technical skill of workers has improved,

- Leads to the innovation and adaptation of the new techniques.

The solution which we provide for the weather misjudge:

- May lead to the proper understanding of weather condition,

- Forecasting technology continues to help the pilot to navigate the route,

- Reducing the risk of delays and cancellations.

The solution which we provide for the sabatoges:

- People feel safe to travel

- The   level of surveillance may leads to the opportunity to get a job for
  a various field,

- Reduce the amount of casualties and damages,

General advantages of the flight crash analysis:

- Determine the exact reason for the flight crash,

- Leads to the proper understanding of the field,

- Explore a new path for the transportation,

- Serve as a basic information for various air transportation facility,

4.2 Disadvantages

- High cost maintenance

- Lead to sudden increase air traffic

- Lack of interest due to multiple timing checking

- High man power require with technical knowledge

- The employees may get anxiety and stress

- More time consumption

- Fuel inefficiency

- Inadequate SOPs

- Powerplant deterioration,

- Aerodynamic inefficiency

- Unstable and rushed approaches

- Adherence of the field procedure

5.APPLICATIONS

The flight crash analysis is a basic information which is used for a various applications such as:

➢ The aircraft accident investigation bureau (AAIB) is a division of the ministry of civil aviation, government of India, which investigates aircraft accidents and incidents in India.

AIRCRAFT ACCIDENT INVESTIGATION BUREAU
INDIA

➢ The national transportation safety board

6.CONCLUSION

The first step of our project is defined problem statement and making solution for that problem. Using the solution we made a ideation template which consist of a empathy map and brainstorming template. As the second step of our project we collected data from the source (kaggle). And then we converted the data into database by using Microsoft SQL .As the third step our project is data preparation for the visualization by using tableau , by using tableau we made some graphical representation for the data, according to that we made dashboard and story(story and dashboard is a way of presenting data and analysis in a narrative format , intending to make the information more engaging and easier to understand).for the next step we publish dashboard and story into tableau public. As the next step our project is testing the performance of rendered data and analysing the number of table content. As the next step of our project we made web integration using bootstrap template and the coding process was done by using visual studio code app .Project demonstration and documentation is our next step.

The result found in this project will benefit the ongoing investigation into this important topic. Understanding what factors cause airplane crashes helps aviation industries makes continuous improvement in flight safety, and help raise customer confidence with the use of statistical evidence.

The main objective of this project is to raise awareness of flight safety and better understanding its problem and progress, and understanding will lead to industry changes that saves lives.

7 FUTURE SCOPE

- ➢ The data is pooled to support arguments for improvement(by manufactures, ATC, regulators and airports,

- ➢ Still the data formats are standardised and well documented so the project can analyse after a long years also,

- ➢ Since I have represented the project in a graphical method so it can be analysed in a short period of a time,

- ➢ Using this project we can clearly understand the major cause of the crash so we can easily rectify the problem which could not happened for the next time

- ➢ We also find out the problem defining and gave the solution for the flight crash so it makes the complete overview of the crash.

9. APPENDIX

9.1 Source code (HTML)
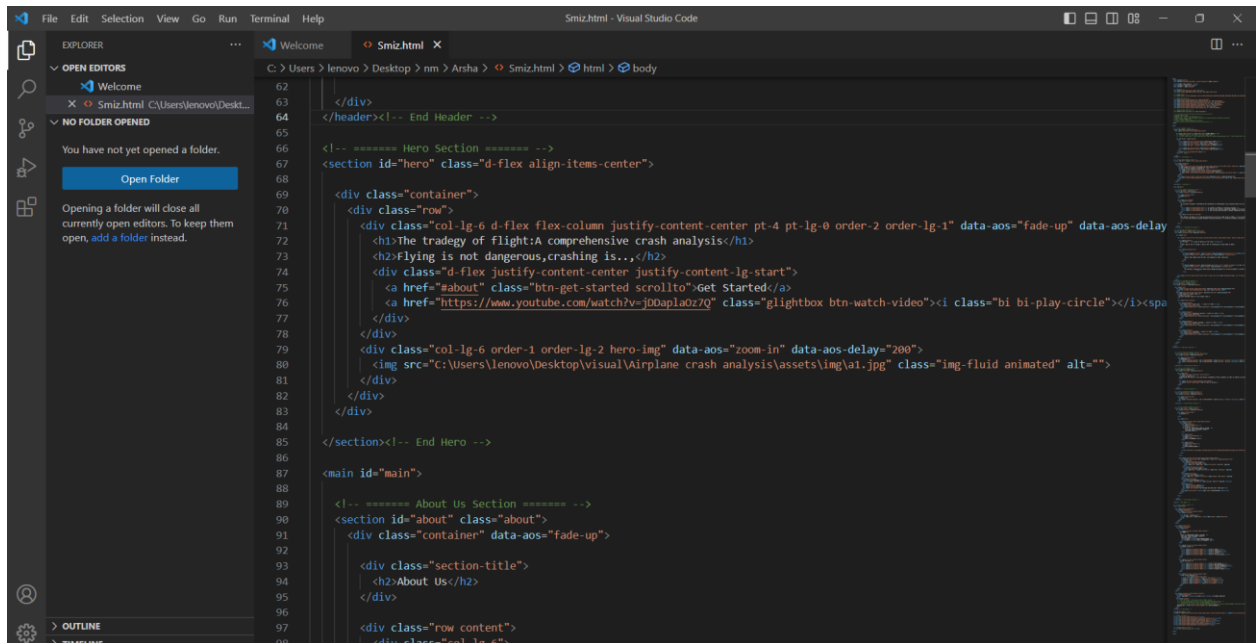
9.2 Tableau

Dashboard 1 embedded:

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style='position: relative'><noscript><a href='#'><img alt='
Airplane crash analysis '
src='https://public.tableau.com/static/images/da/dashboard1planecrashanalysis/Dashboard5/1_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='dashboard1planecrashanalysis/Dashboard5' /><param name='tabs' value='no' /><param name='toolbar' value='yes' /><param name='static_image' value='https://public.tableau.com/static/images/da/dashboard1planecrashanalysis/Dashboard5/1.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' /></object></div> <script type='text/javascript'> var divElement = document.getElementById('viz1681831528433'); var vizElement = divElement.getElementsByTagName('object')[0]; if (divElement.offsetWidth > 800) { vizElement.style.width='100%';vizElement.style.height=(divElement.offsetWidth*0.75)+'px';} else if (divElement.offsetWidth > 500) { vizElement.style.width='100%';vizElement.style.height=(divElement.offsetWidth*0.75)+'px';} else { vizElement.style.width='100%';vizElement.style.height='1327px';} var scriptElement = document.createElement('script'); scriptElement.src = 'https://public.tableau.com/javascripts/api/viz_v1.js';

vizElement.parentNode.insertBefore(scriptElement,   vizElement);

</script>

Dashboard 1 link:

Dashboard 2 embedded：

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Airplane crash analysis   '
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da/dashboard2planecrashanalysis/Dashboard6/1_rss.pn
g' style='border: none' /></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='dashboard2planecrashanalysis/Dashboard6' /><param
name='tabs' value='no' /><param name='toolbar' value='yes' /><param
name='static_image'
value='https://public.tableau.com/static/images&#
47;da/dashboard2planecrashanalysis/Dashboard6/1.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' /></object></div>   <script
type='text/javascript'>   var divElement =

```
document.getElementById('viz1681832108987');                var
vizElement = divElement.getElementsByTagName('object')[0];
if ( divElement.offsetWidth > 800 ) {
vizElement.style.width='100%';vizElement.style.height=(divElement.off
setWidth*0.75)+'px';} else if ( divElement.offsetWidth > 500 ) {
vizElement.style.width='100%';vizElement.style.height=(divElement.off
setWidth*0.75)+'px';} else {
vizElement.style.width='100%';vizElement.style.height='1027px';}
var scriptElement = document.createElement('script');
scriptElement.src = 'https://public.tableau.com/javascripts/api/viz_v1.js';
vizElement.parentNode.insertBefore(scriptElement, vizElement);
</script>
```

Dashboard 2 link:

https://public.tableau.com/views/dashboard2planecrashanalysis/Dashboard6?:language=en-US&:display_count=n&:origin=viz_share_link

Story embedded:

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analysis '
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style='border: none' /></a></noscript><object class='tableauViz'
style='display:none;'><param name='host_url'
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name='embed_code_version' value='3' /> <param name='site_root'
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value='Storyofplanecrashanalysis/Story1' /><param name='tabs'
```

value='no' /><param name='toolbar' value='yes' /><param name='static_image' value='https://public.tableau.com/static/images/St/Storyofplanecrashanalysis/Story1/1.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' /></object></div>   <script type='text/javascript'>   var divElement = document.getElementById('viz1681832487611');   var vizElement = divElement.getElementsByTagName('object')[0];   vizElement.style.width='100%';vizElement.style.height=(divElement.offsetWidth*0.75)+'px';   var scriptElement = document.createElement('script');   scriptElement.src = 'https://public.tableau.com/javascripts/api/viz_v1.js';   vizElement.parentNode.insertBefore(scriptElement, vizElement);

</script>

Story link:

https://public.tableau.com/views/Storyofplanecrashanalysis/Story1?:language=en-US&:display_count=n&:origin=viz_share_link