Project Report Format

1. INTRODUCTION

1.1 Project Overview

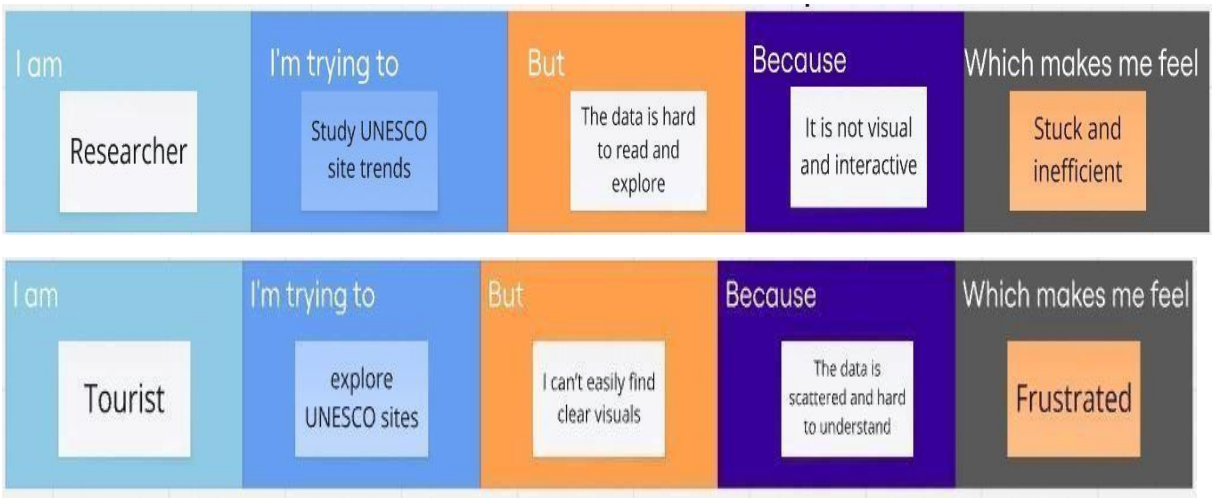
This project is a comprehensive data-driven exploration of the UNESCO World Heritage Sites using Tableau. It is designed to analyze, visualize, and interpret key patterns across global heritage sites. The analysis focuses on geographical distribution, regional trends, and the conservation status of heritage sites worldwide. The project integrates powerful visual tools to turn raw heritage data into interactive, insightful dashboards accessible to a wide audience including researchers, educators, and policymakers.

1.2 Purpose

- To provide a clear visual understanding of how UNESCO sites are distributed across different countries and regions**.**
- To identify and highlight endangered heritage sites, enabling prioritization for preservation.
- To uncover trends in heritage site inscriptions over time, especially across different global regions.
- To build an interactive Tableau dashboard that makes the UNESCO dataset more accessible, interpretable, and decision-ready for stakeholders.

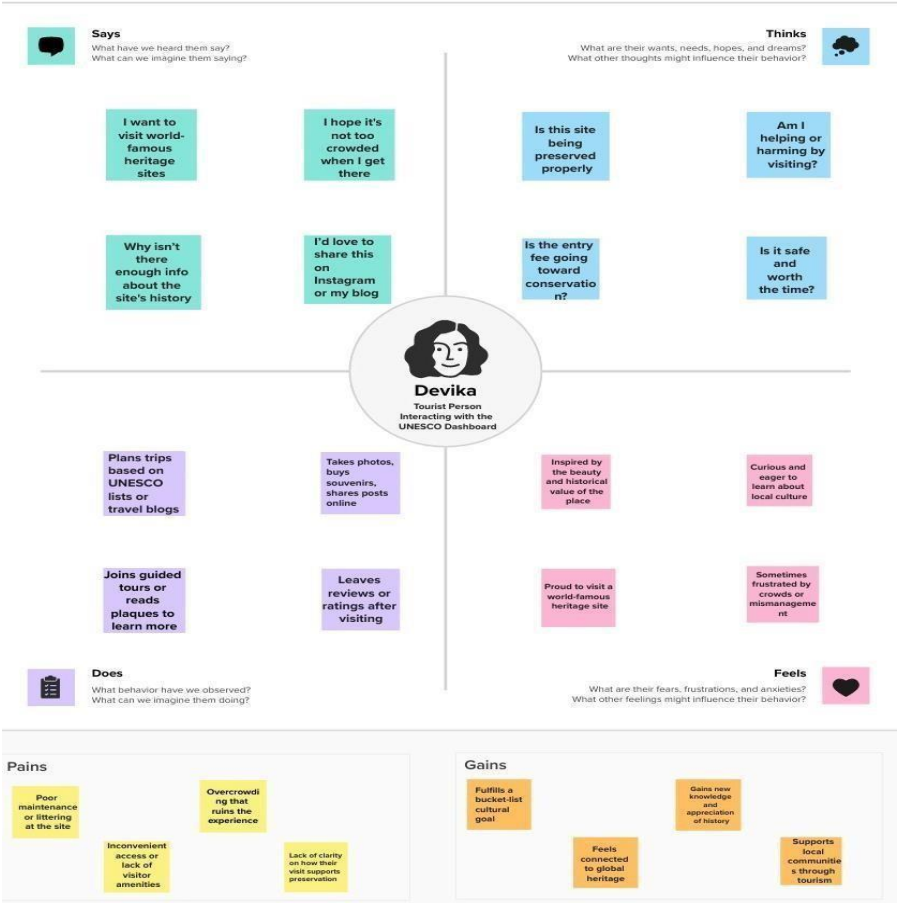
2. IDEATION PHASE

2.1 Problem Statement

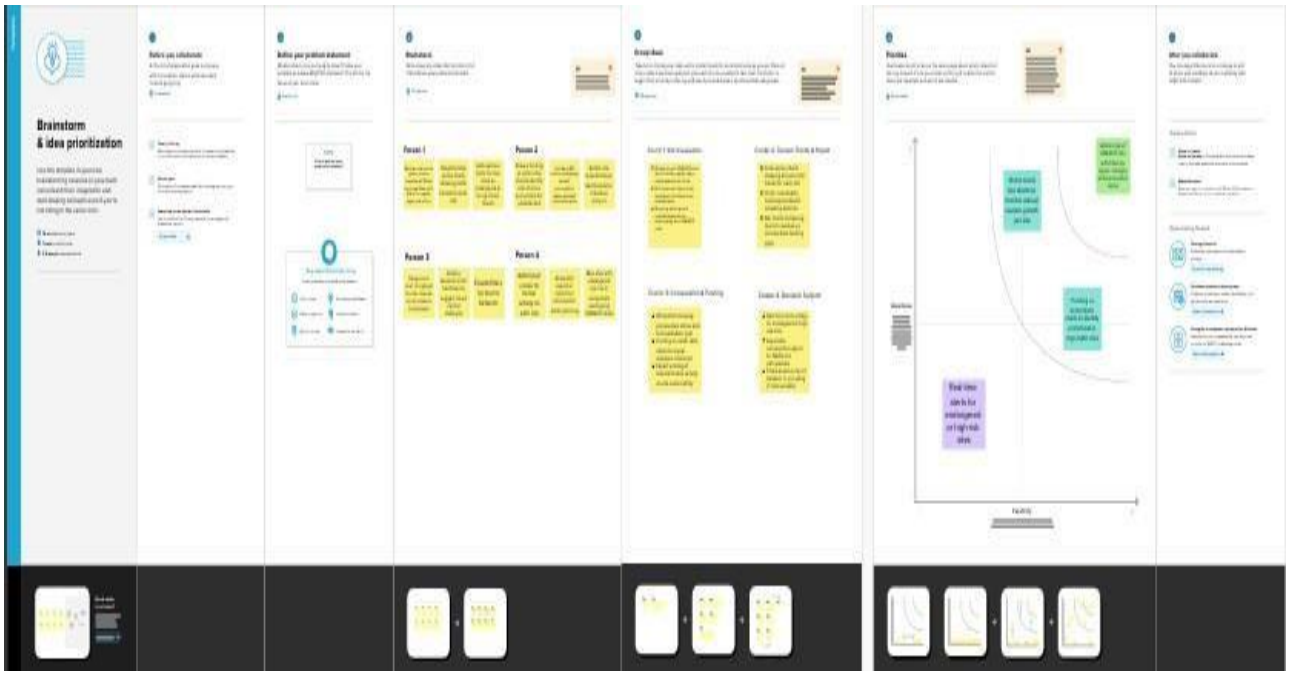


+Problem Statement (PS)	I am (Customer)	I'm trying to	But	Because	Which makes me feel
PS-1	Researcher	Study UNESCO site trends	The data is hard to read and explore	It is not visual and interactive	Stuck and inefficient
PS-2	Tourist	explore UNESCO sites	I can't easily find clear visuals	The data is scattered and hard to understand	Frustrated

2.2 Empathy Map Canvas



2.3 Brainstorming



3. REQUIREMENT ANALYSIS

3.1 Customer Journey map

3.2 Solution Requirement

Functional Requirements:

Following are the functional requirements of the proposed solution.

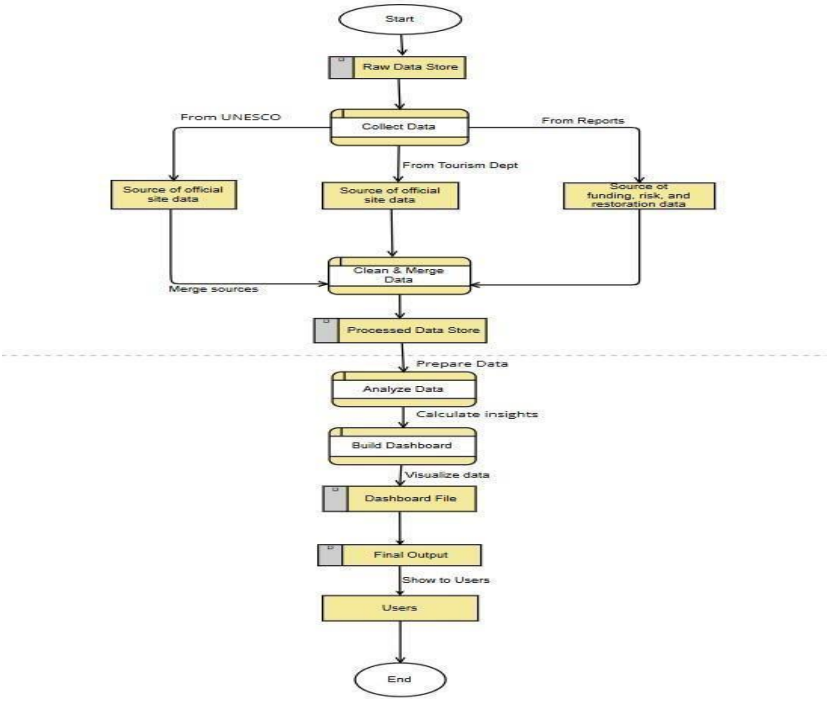
FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	Data Collection	Collect UNESCO site data from official sources. Collect tourism statistics. Collect preservation and funding data
FR-2	Data Preprocessing	Clean and format site location data. Merge datasets for unified analysis. Create calculated fields
FR-3	Data Visualization	Create a world map of site distribution. Create visitor trends and funding charts. Build tables/graphs showing site risk levels.
FR-4	Dashboard Development	Design a multi-panel interactive dashboard in Tableau. Add filters (Region, Site Type, Risk Level, Year). Replace KPIs with Treemaps/bar charts for summary insights.
FR-5	Storytelling with Dashboard	Arranging Visuals in logical story format. Include navigation or titles that guide the user through each insight step-by-step. Describing each dashboard detailedly in the description section.
FR-6	Insights & Export Options	Allow export to PDF or image for presentations. Provide summary insights based on filtered selections. Allows insights to be publicly accessible.

Non-functional Requirements:

Following are the non-functional requirements of the proposed solution.

FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	The dashboard should be easy to use and understand, even for people who are not technical. Buttons, filters, and charts should be simple and clear so users can quickly find the information they need.
NFR-2	**Security**	The data we use should come from trusted sources. If the dashboard is shared online or within an organization, it should have basic protection so that only the right people can access or edit it.
NFR-3	**Reliability**	The dashboard should always show the correct data. Even when users apply filters or change views, the charts and numbers should update properly without any errors.
NFR-4	**Performance**	The dashboard should work smoothly and load quickly. Even if the dataset is large or multiple filters are used, the visuals should not lag or slow down.
NFR-5	**Availability**	The dashboard should be ready to use whenever needed - for analysis, presentations, or decision-making. It should be accessible from any device with Tableau or online if published.
NFR-6	**Scalability**	In the future, if we add more data like new sites, years, or details, the dashboard should still work well. We shouldn't need to start from scratch to add new information.

3.3 Data Flow Diagram



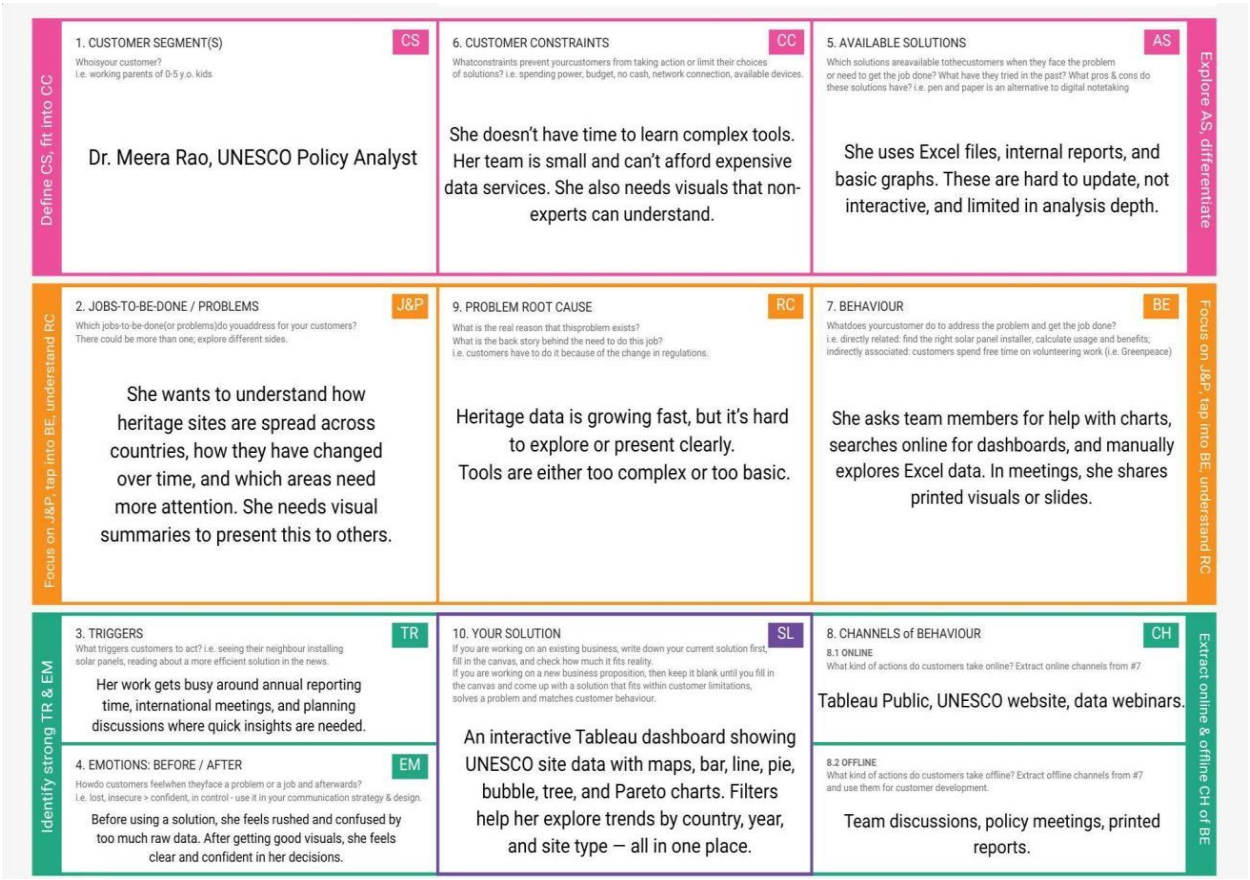
3.4 Technology Stack

S.no	Component	Description	Technology
1.	User Interface	How user interacts with application e.g. Web UI, Mobile App, Chatbot etc.	Interface of Tableau
2.	Application Logic-1	Logic for a process in the application	tableau public
3.	Application Logic-2	Logic for a process in the application	tableau public
4.	Application Logic-3	Logic for a process in the application	tableau public
5.	Database	Data Type, Configurations etc.	My SQL
6.	Cloud Database	Database Service on Cloud	-

7.	File Storage	File storage requirements	-
8.	External API-1	Purpose of External API used in the application	-
9.	External API-2	Purpose of External API used in the application	-
10.	Machine Learning Model	Purpose of Machine Learning Model	-
11.	Infrastructure (Server / Cloud)	Application Deployment on Local System / Cloud Local Server Configuration: Cloud Server Configuration	-

4. PROJECT DESIGN

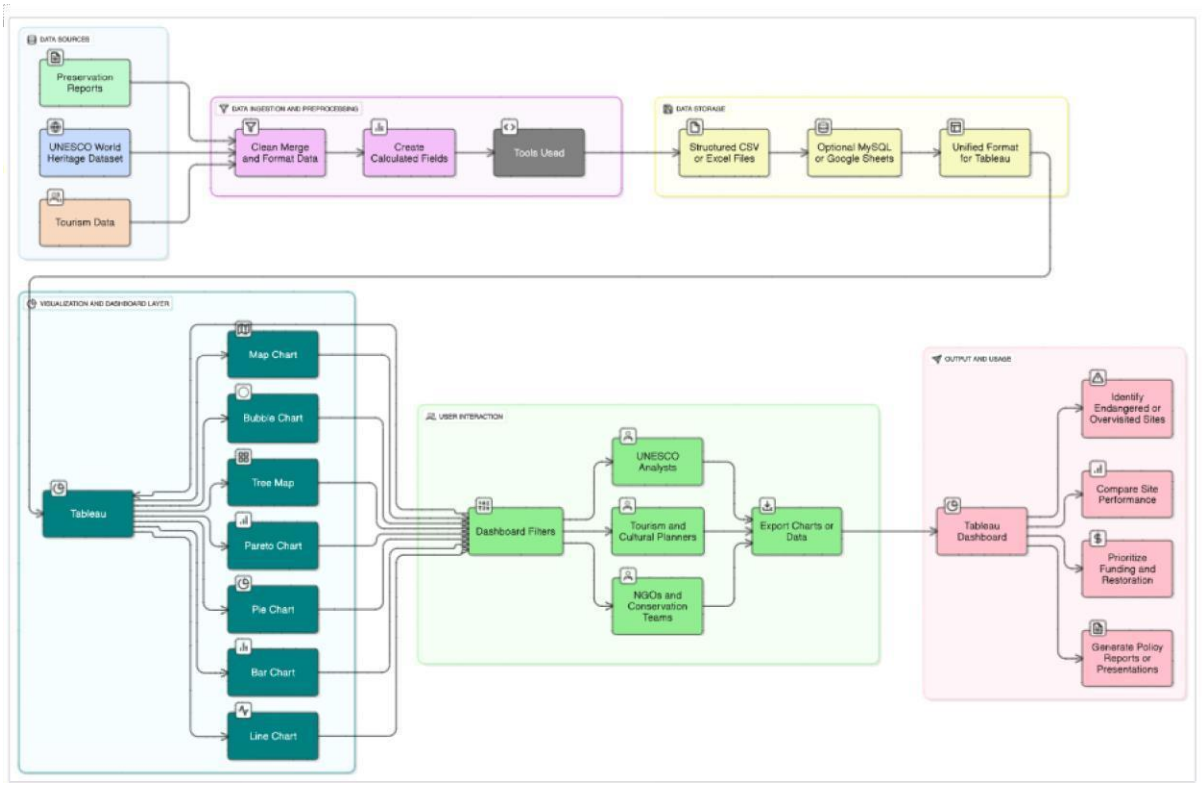
4.1 Problem Solution Fit



4.2 Proposed Solution

S.no.	Parameter	Description
1.	Problem Statement (Problem to be solved)	"Heritage Treasures: An In-Depth Analysis of UNESCO World Heritage Sites in Tableau" is a project designed to tackle real challenges faced by UNESCO sites — including over-tourism, underfunding, and the lack of an easy-touse system for understanding these issues through data. Many decision-makers struggle to access meaningful insights quickly. This project aims to solve that using an interactive dashboard that makes the data simple, visual, and actionable.
2.	Idea / Solution description	The core idea is to design an interactive dashboard in Tableau that brings together data from UNESCO, tourism reports, and preservation sources. The dashboard will display details like site location, visitor numbers, risk levels, and funding gaps using a variety of charts. Users can filter by country, region, site type, and year to explore trends and make better-informed decisions about heritage conservation and sustainable tourism.
3.	Novelty / Uniqueness	What makes this solution unique is the use of diverse and meaningful chart types: a map chart to show geographic distribution, bubble chart for multi-variable comparison, bar and Pareto charts to identify top risks or contributors, tree map for site grouping, pie chart for site type distribution, and line chart to track visitor trends over time. Unlike static reports, this dashboard is dynamic, user friendly, and customizable.
4.	Social Impact / Customer Satisfaction	This project helps UNESCO, planners, NGOs, and even the general public understand which sites need the most attention. It improves transparency, awareness, and engagement with global heritage data, helping organizations make more targeted and effective preservation efforts. The dashboard is also accessible and easy to use, leading to higher user satisfaction.
5.	Business Model (Revenue Model)	The dashboard can be shared freely for educational and public awareness purposes, while offering a premium version for government bodies and institutions. Paid features can include downloadable reports, advanced filters, and historical data comparisons, supporting sustainability through a freemium or subscription-based model.
6.	Scalability of the Solution	The solution is built to scale easily. New data (more sites, years, or metrics), user types, and even languages can be added without needing a complete redesign. Future enhancements like AI-based risk prediction or multilingual dashboards can further expand its usefulness.

4.3 Solution Architecture



5. PROJECT PLANNING & SCHEDULING

5.1 Project Planning

Product Backlog, Sprint Schedule, and Estimation (4 Marks)

Use the below template to create product backlog and sprint schedule

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Data Collection	UDA-1	As a user, I can collect data from multiple heritage data sources	2	High	HarshaPriya, Hemesh
Sprint-1	Data Collection	UDA-2	As a user, I can load the data into structured format	1	High	Harsha Priya
Sprint-1	Data Preprocessing	UDA-3	As a user, I can handle missing values to clean the data	3	High	Hemesh
Sprint-1	Data Preprocessing	UDA-4	As a user, I can encode categorical variables for visualization	2	Medium	HarshaPriya
Sprint-2	Model Building	UDA-5	As a user, I can build a model for generating visual insight	5	High	Harsha Priya, Hemesh
Sprint-2	Model Building	UDA-6	As a user, I can test and validate the model for correctness	3	High	Hemesh
Sprint-2	Deployment	UDA-7	As a user, I can design HTML dashboard pages	3	Medium	HarshaPriya
Sprint-2	Deployment	UDA-8	As a user, I can deploy the dashboard using Flask / Tableau	5	High	HarshaPriya, Hemesh

Project Tracker, Velocity & Burndown Chart: (4 Marks)

Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date (Actual)
Sprint-1	8	5 days	20 June 2025	23 June 2025	8	24 June 2025
Sprint-2	16	5 days	25 June 2025	28 June 2025	16	29 June 2025

6. FUNCTIONAL AND PERFORMANCE TESTING

6.1 Performance Testing

Model Performance Testing:

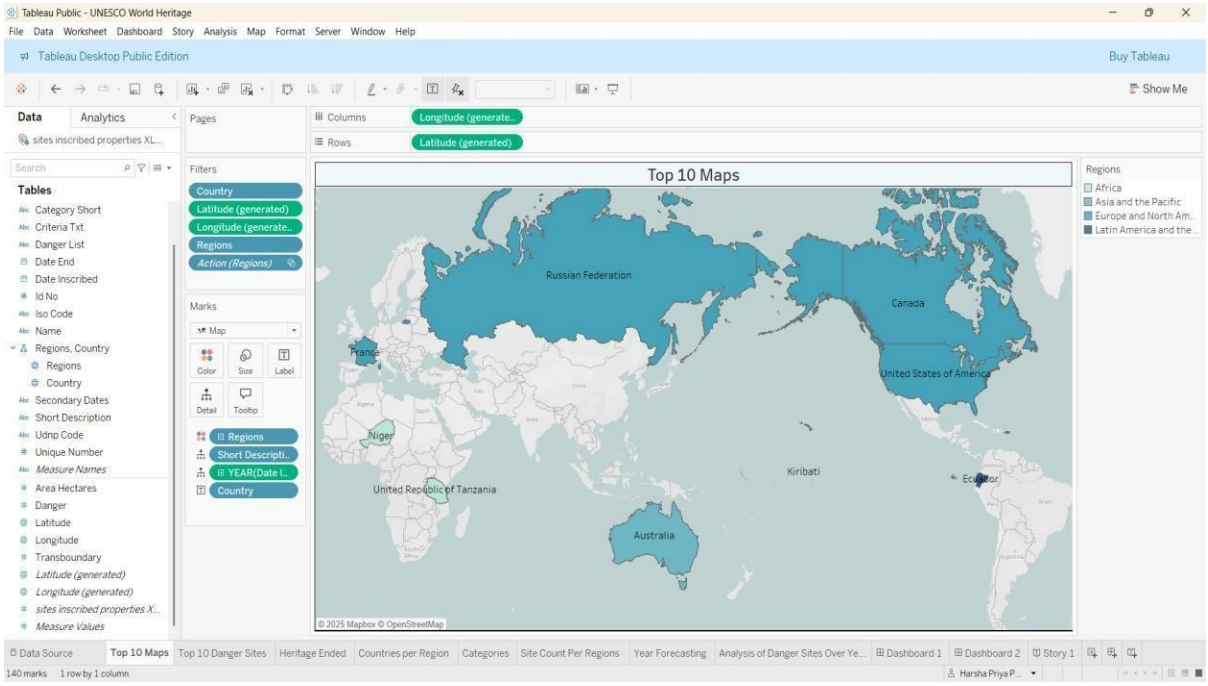
Project team shall fill the following information in model performance testing template.

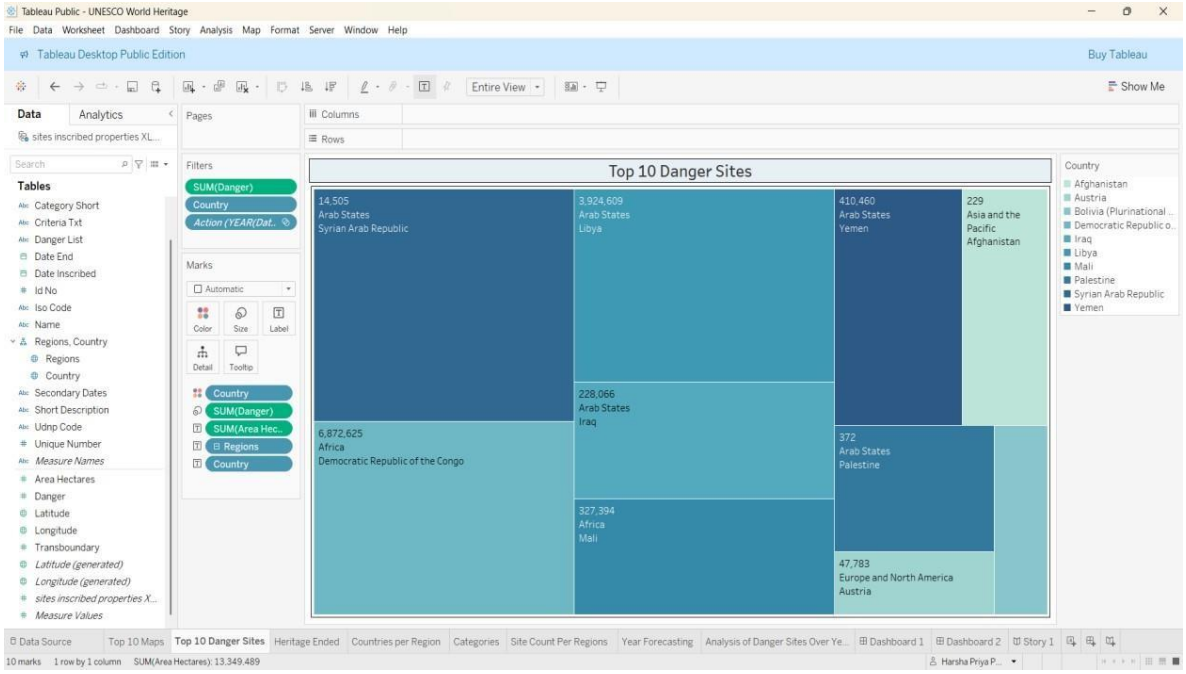
S.no	Parameter	Screenshot / Values
1.	Data Rendered	UNESCO dataset with 1121 rows, 22 attributes
2.	Data Preprocessing	Handled missing values, encoded category columns, changed the data types of attributes as required, renamed the attributes and made hierarchies based on locations (Regions, country) and hided unnecessary columns.
3.	Utilization of Filters	Region, Country, Category, Danger Status, Date Inscribed.
4.	Calculation fields Used	Heritage Ended, Action (year (Inscribed year)), Action (Regions), Forecast Indicator, Calculation 1.
5.	Dashboard design	No of Visualizations / Graphs – 8 (Bar, Pie, Maps, Line with Forecast indicator, Bubble, Dual Axis, Tree Map)
6	Story Design	No of Visualizations / Graphs – 8 (All dashboards reused in storytelling format)

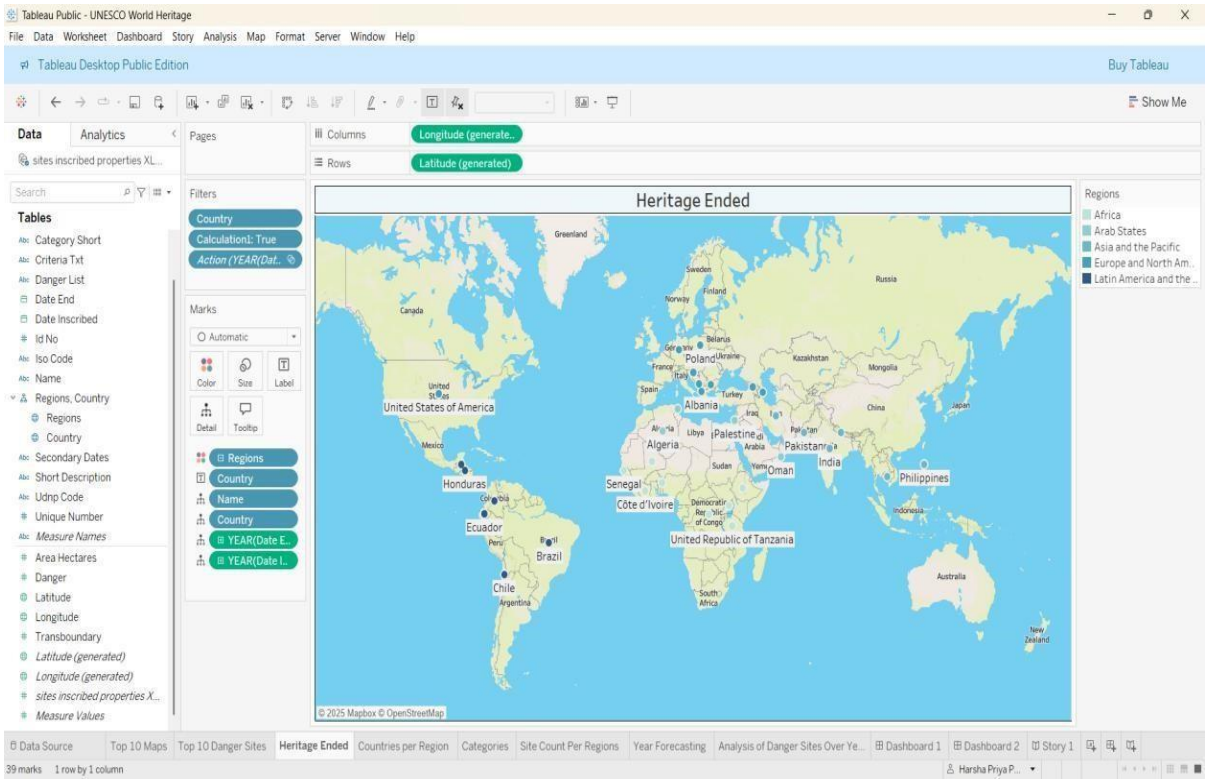
7. RESULTS

7.1 Output Screenshots

Insights:



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Mongolia
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Spain
Albania
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Pakistan
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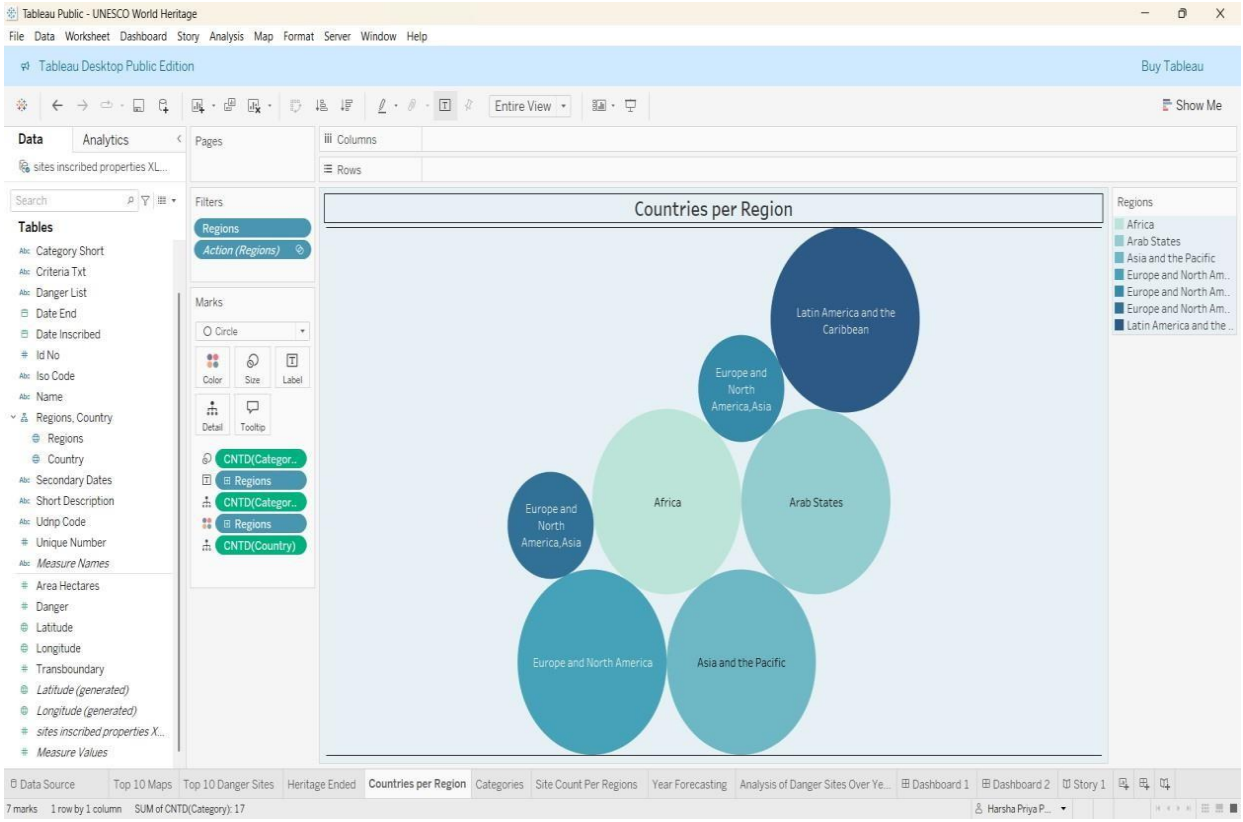
Sudan
Oman
Senegal
Côte d'Ivoire
United Republic of Tanzania
Philippines
Indonesia
Australia
New Zealand
South Africa
© 2025 Mapbox © OpenStreetMap
Data Source
Top 10 Maps
Top 10 Danger Sites
Heritage Ended
Countries per Region
Categories
Site Count Per Regions
Year Forecasting
Analysis of Danger Sites Over Ye...
Dashboard 1
Dashboard 2
Story 1
39 marks
1 row by 1 column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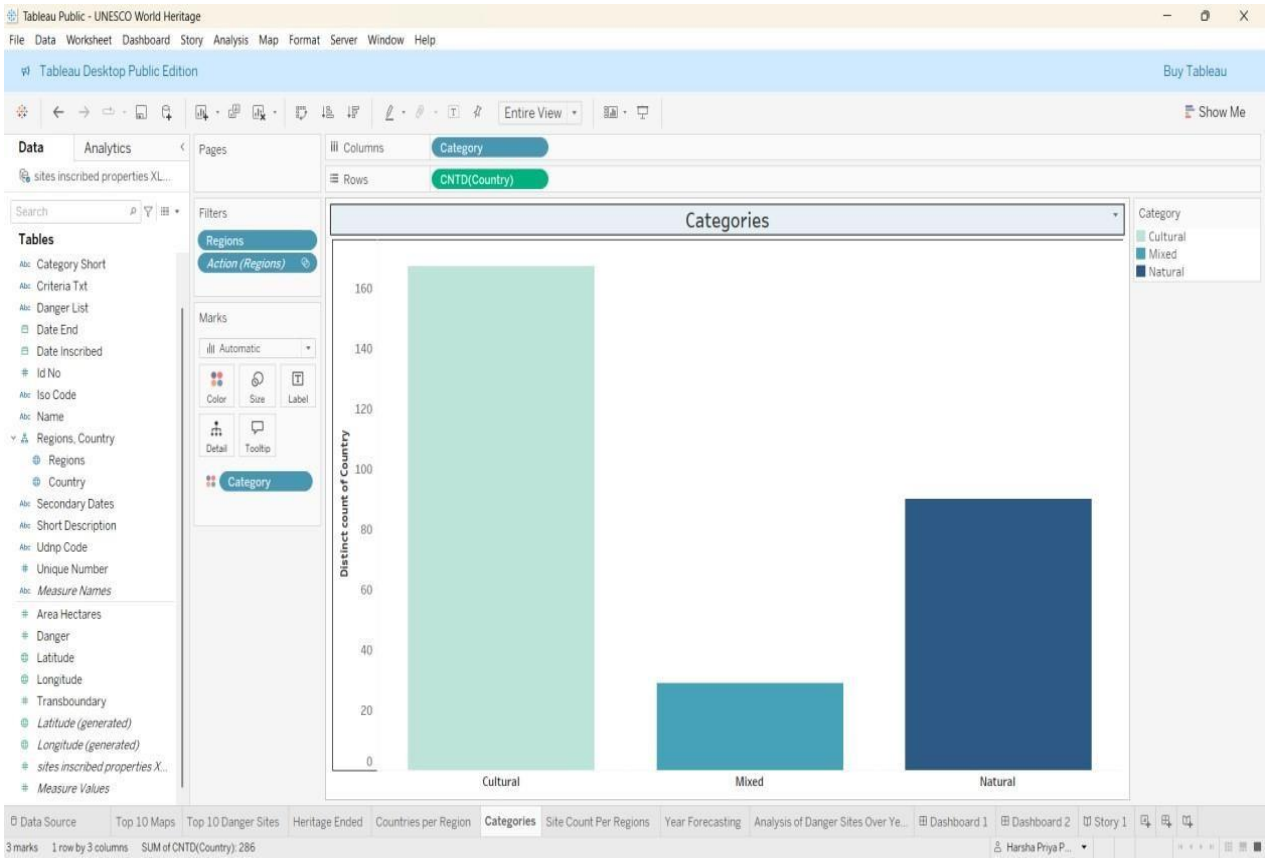
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Story 1
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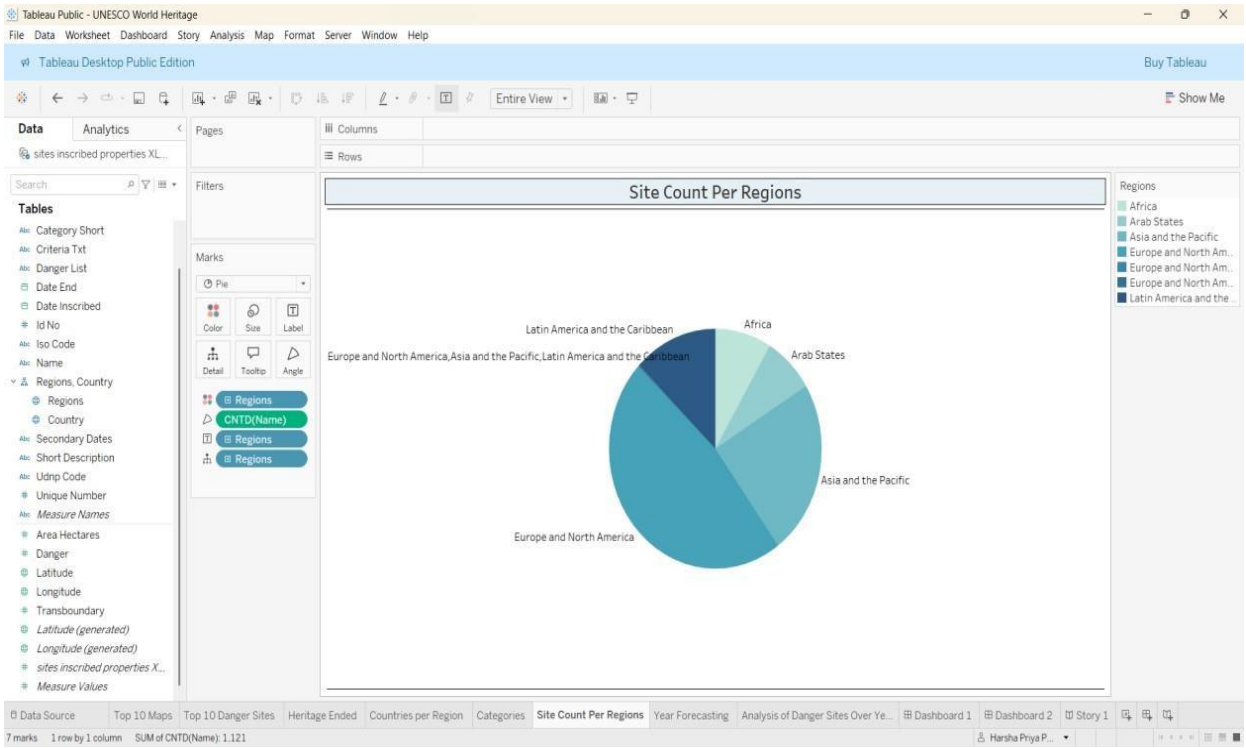
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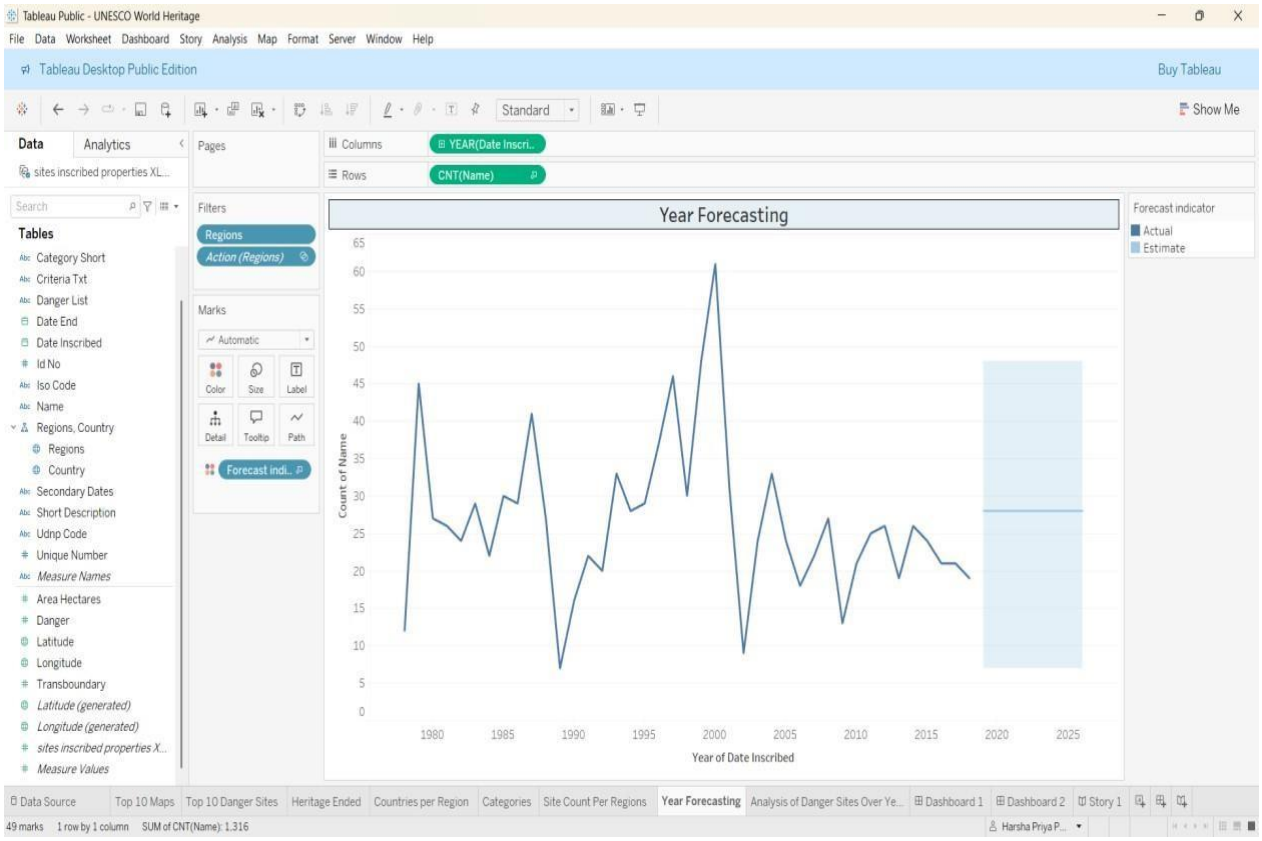
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Heritage Ended
Countries per Region
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Story 1
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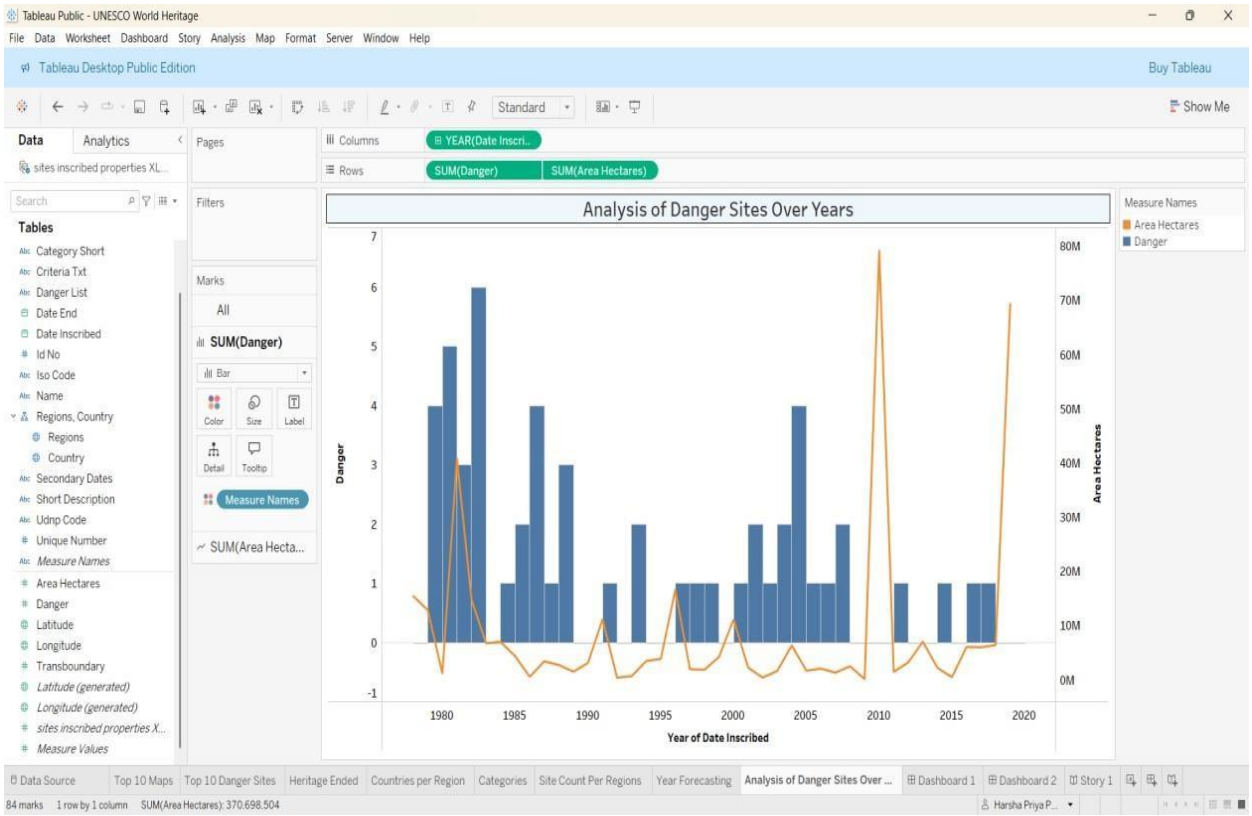
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Top 10 Danger Sites
Heritage Ended
Countries per Region
Categories
Site Count Per Regions
Year Forecasting
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Dashboard 2
Story 1
84 marks
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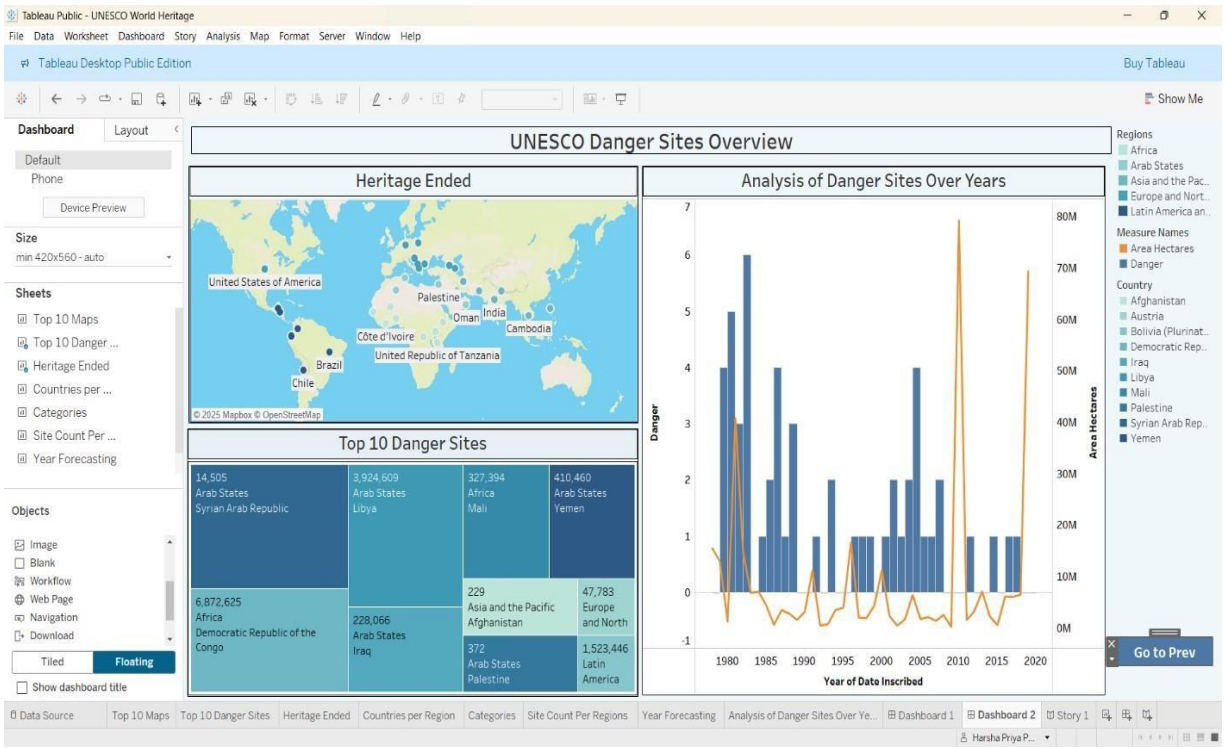
SUM(Area Hectares): 370,698,504

Dashboard 1:

Dashboard 2:



Story: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Categories
Site Count Per ...
Year Forecasting
Analysis of Danger...
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Dashboard 2
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UNESCO Site Overview
Danger Sites Analysis
UNESCO World Heritage Sites Overview
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100
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Mixed
Natural
Site Count Per Regions
Europe and North America
Asia and the Pacific
Top 10 Maps
Russian Federation
Canada
France
United States of A
Niger
United Republic of Tanzania
Kiribati
Australia
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Forecast Indicator
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Year Forecasting
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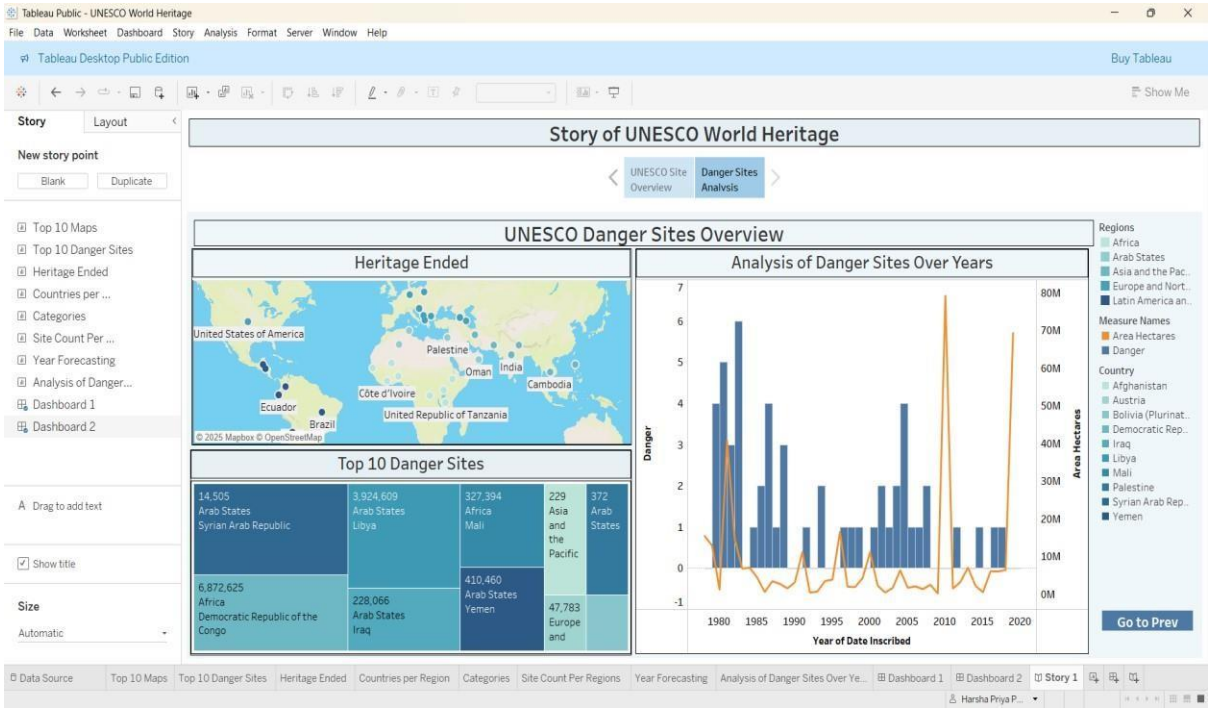
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India
Cambodia
Côte d'Ivoire
Ecuador
Brazil
United Republic of Tanzania
© 2025 Mapbox © OpenStreetMap
Analysis of Danger Sites Over Years
Danger
Area Hectares
7
6
5
4
3
2
1
0
-1
80M
70M
60M
50M
40M
30M
20M
10M
0M
1980 1985 1990 1995 2000 2005 2010 2015 2020
Year of Date Inscribed
Regions
Africa
Arab States
Asia and the Pac..
Europe and Nort..
Latin America an..
Measure Names
Area Hectares
Danger
Country
Afghanistan
Austria
Bolivia (Plurinat..
Democratic Rep..
Iraq
Libya
Mali
Palestine
Syrian Arab Rep..
Yemen
Top 10 Danger Sites
14,505
Arab States
Syrian Arab Republic
3,924,609
Arab States
Libya
327,394
Africa
Mali
229
Asia and the Pacific
372
Arab States
6,872,625
Africa
Democratic Republic of the Congo
228,066
Arab States
Iraq
410,460
Arab States
Yemen
47,783
Europe and
Go to Prev
Data Source
Top 10 Maps
Top 10 Danger Sites
Heritage Ended
Countries per Region
Categories
Site Count Per Regions
Year Forecasting
Analysis of Danger Sites Over Ye...
Dashboard 1
Dashboard 2
Story 1

8. ADVANTAGES & DISADVANTAGES

Advantages

- Data Insights
  Shows clear, interactive views of site distribution, risk, and trends.
- User-Friendly
  Easy-to-use dashboards for all types of users.
- Powerful Filters
  Filter by region, country, status, and year for detailed views.
- Scalable Design
  Can be updated with new data or extended to more features.
- Cloud-Ready
  Works on Tableau Public, Server, and can be embedded online.

Disadvantages

- Outdated Data
  Uses 2019 dataset; lacks real-time updates.
- Limited ML
  Predictive analysis isn't native to Tableau.
- Filter Lag
  Large filters (e.g., countries) may slow performance.
- Software Dependent
  Requires Tableau to build or edit dashboards.
- Basic Maps
  Advanced GIS mapping needs external tools like QGIS.

9. CONCLUSION

This project provides a clear and interactive analysis of UNESCO World Heritage Sites using Tableau. It helps users explore global site distribution, endangered status, and inscription trends with ease. The dashboard is intuitive and informative, making it useful for researchers, educators, and policymakers. Overall, it offers valuable insights while laying a strong foundation for future enhancements.

10. FUTURE SCOPE

In the future, this project can be expanded by integrating live data feeds from the UNESCO API to keep the dashboard up to date with the latest site information. Advanced analytics and machine learning models can be incorporated to predict potential risk zones and identify patterns in heritage site endangerment. Additional data layers, such as climate impact, tourism trends, or conservation funding, can enrich the analysis further. The dashboard can also be optimized for mobile platforms and made multilingual to increase accessibility for global users.

11. APPENDIX

Dataset Link :- **https://www.kaggle.com/datasets/ujwalkandi/unesco- world-heritage-sites/data?select=whc-sites-2019.csv**

GitHub :- https://github.com/khajanayabrasoolshaik750-hash/Heritage-Treasures-An-In-Depth-Analysis-of-UNESCO-World-Heritage-Sites-in-Tableau

Project Demo Link :-
https://drive.google.com/file/d/1kvbXy4WUelXNHdRqfHnqGa8xuENh638F/view?usp=sharing