

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.

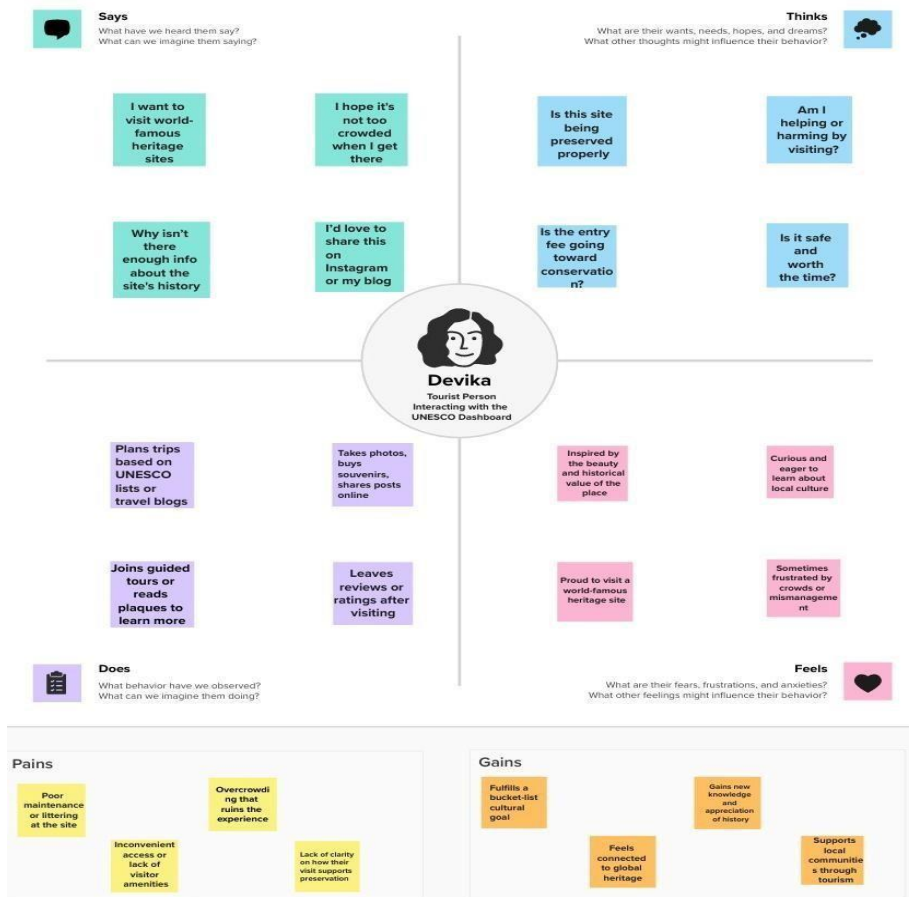
2.IDEATION PHASE

2.1 Problem Statement

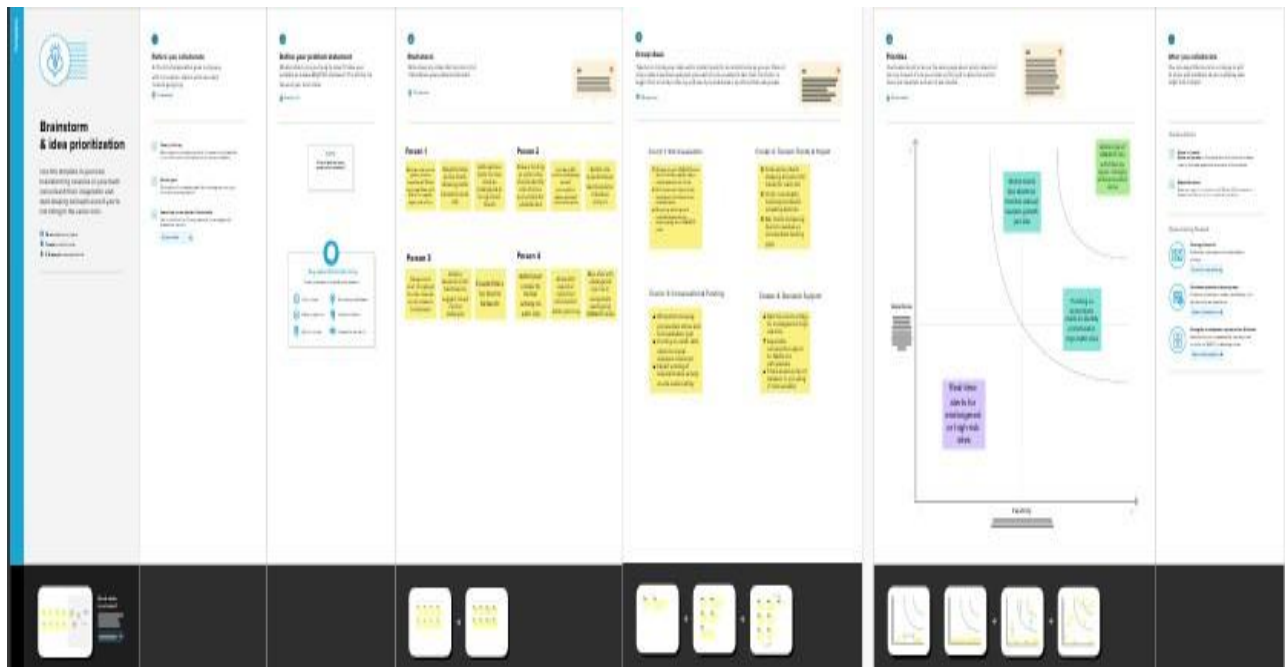


+Problem Statement (PS)	I am (Customer)	I'm trying to	But	Because	Which makes me feel
PS-1	Researcher	Study UNESCO site trends	The data is hard to read and explore	It is not visual and interactive	Stuck and inefficient
PS-2	Tourist	explore UNESCO sites	I can't easily find clear visuals	The data is scattered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

2.2 Empathy Map Canvas



2.3 Brainstorming



3. REQUIREMENT ANALYSIS

3.1 Customer Journey map

Scenario: (Existing experience through a product or service)	Entice How does customer become aware of this service?	Enter What do people experience as they begin the process?	Engage In the core moments in the process, what happens?	Exit What do people typically experience as the process concludes?	Extend What happens after the experience is over?
Experience steps What does the process for people at the end of the customer journey typically experience in each step?	Hearts about heritage ideas through friends	Sees a post about heritage ideas on Instagram	Sees a post about heritage ideas on Instagram	Sees a post about heritage ideas on Instagram	Sees a post about heritage ideas on Instagram
Interactions What interactions do they have at each step along the way? • People: Who do they see or talk to? • Places: Where are they? • Things: What digital touchpoints or physical objects do they use?	Sees UNESCO video in Instagram story or YouTube input screen	Sees post about heritage ideas on Instagram	Sees post about heritage ideas on Instagram	Sees post about heritage ideas on Instagram	Sees post about heritage ideas on Instagram
Goals & motivations At each step, what is a person's primary goal or motivation? (Things they "want" or "need" or "avoid.")	Wants to discover new interesting heritage ideas	Wants to discover new interesting heritage ideas	Wants to discover new interesting heritage ideas	Wants to discover new interesting heritage ideas	Wants to discover new interesting heritage ideas
Positive moments What does start a typical person's first "a-ha" moment, production, fun, or feeling delightful or satisfying?	Sees post about heritage ideas on Instagram	Sees post about heritage ideas on Instagram	Sees post about heritage ideas on Instagram	Sees post about heritage ideas on Instagram	Sees post about heritage ideas on Instagram
Negative moments What does start a typical person's first "a-ha" moment, production, fun, or feeling delightful or satisfying?	Sees post about heritage ideas on Instagram	Sees post about heritage ideas on Instagram	Sees post about heritage ideas on Instagram	Sees post about heritage ideas on Instagram	Sees post about heritage ideas on Instagram
Areas of opportunity How might we make each step better? What does it feel like? What have others suggested?	Sees post about heritage ideas on Instagram	Sees post about heritage ideas on Instagram	Sees post about heritage ideas on Instagram	Sees post about heritage ideas on Instagram	Sees post about heritage ideas on Instagram

3.2 Solution Requirement

Functional Requirements:

Following are the functional requirements of the proposed solution.

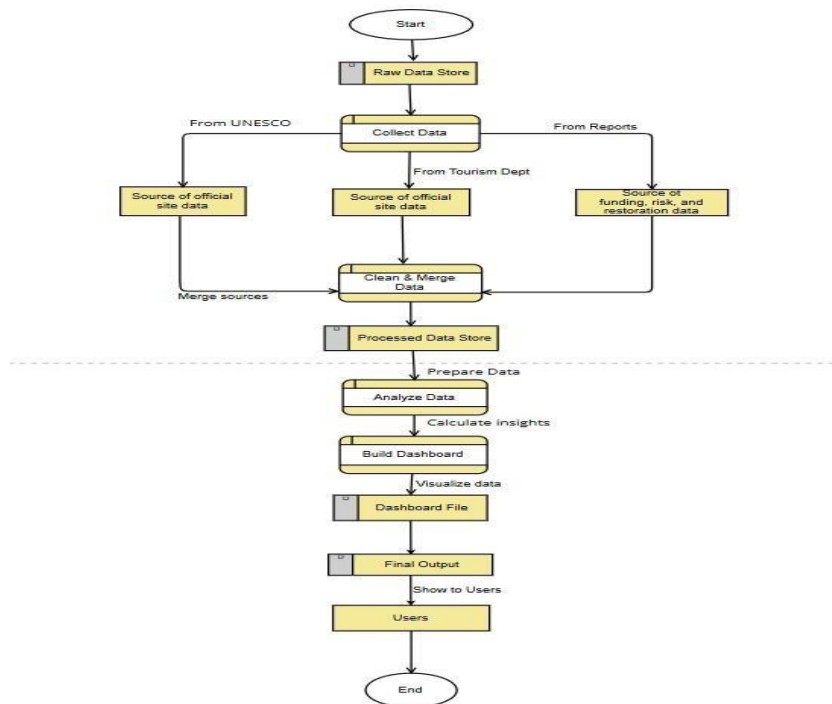
FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	Data Collection	Collect UNESCO site data from official sources. Collect tourism statistics. Collect preservation and funding data
FR-2	Data Preprocessing	Clean and format site location data. Merge datasets for unified analysis. 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

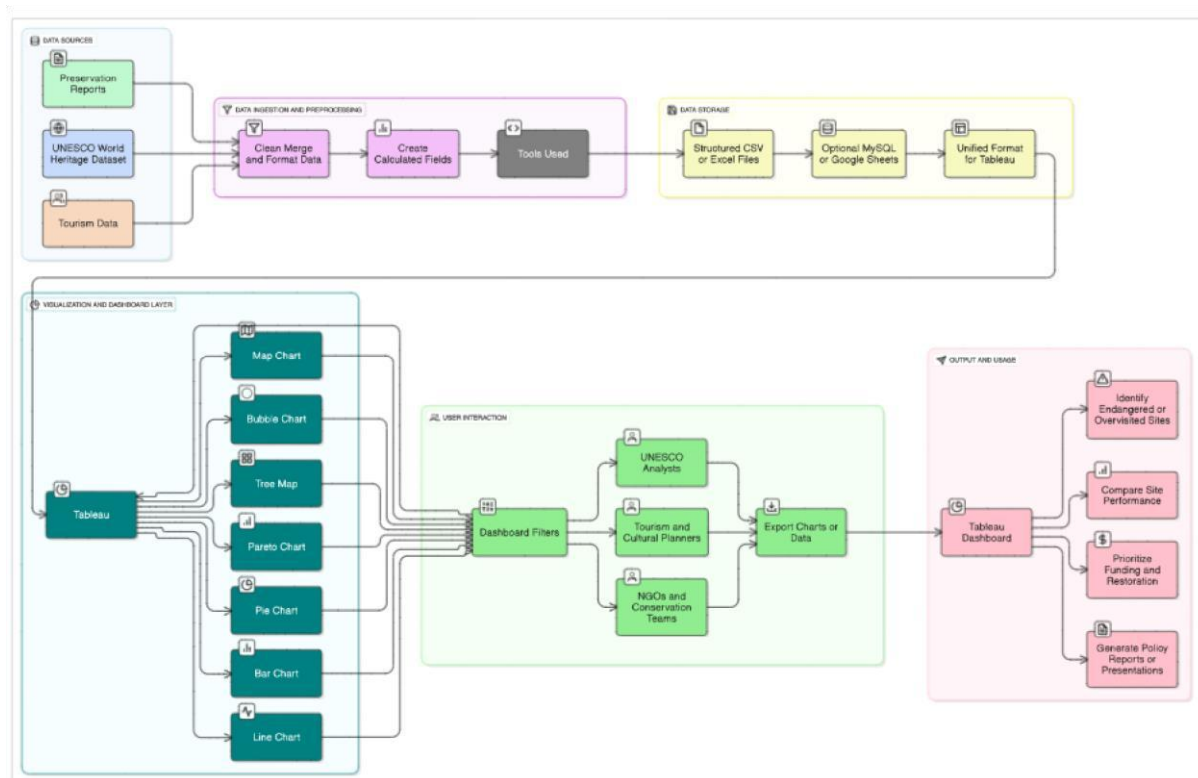
4.1 Problem Solution Fit

Define CS, fit into CC	1. CUSTOMER SEGMENT(S) CS Who is your customer? i.e. working parents of 0-5 y.o. kids Dr. Meera Rao, UNESCO Policy Analyst	6. CUSTOMER CONSTRAINTS CC What constraints prevent your customers from taking action or limit their choices of solutions? i.e. spending power, budget, no cash, network connection, available devices. She doesn't have time to learn complex tools. Her team is small and can't afford expensive data services. She also needs visuals that non-experts can understand.	5. AVAILABLE SOLUTIONS AS Which solutions are available to the customers when they face the problem or need to get the job done? What have they tried in the past? What pros & cons do these solutions have? i.e. pen and paper is an alternative to digital notetaking She uses Excel files, internal reports, and basic graphs. These are hard to update, not interactive, and limited in analysis depth.	Explore AS, differentiate
	2. JOBS-TO-BE-DONE / PROBLEMS J&P Which jobs-to-be-done (or problems) do you address for your customers? There could be more than one; explore different sides. She wants to understand how heritage sites are spread across countries, how they have changed over time, and which areas need more attention. She needs visual summaries to present this to others.	9. PROBLEM ROOT CAUSE RC What is the real reason that this problem exists? What is the back story behind the need to do this job? i.e. customers have to do it because of the change in regulations. Heritage data is growing fast, but it's hard to explore or present clearly. Tools are either too complex or too basic.	7. BEHAVIOUR BE What does your customer do to address the problem and get the job done? i.e. directly related: find the right solar panel installer, calculate usage and benefits; indirectly associated: customers spend free time on volunteering work (i.e. Greenpeace) She asks team members for help with charts, searches online for dashboards, and manually explores Excel data. In meetings, she shares printed visuals or slides.	
Identify strong TR & EM	3. TRIGGERS TR What triggers customers to act? i.e. seeing their neighbour installing solar panels, reading about a more efficient solution in the news. Her work gets busy around annual reporting time, international meetings, and planning discussions where quick insights are needed.	10. YOUR SOLUTION SL If you are working on an existing business, write down your current solution first, fill in the canvas, and check how much it fits reality. If you are working on a new business proposition, then keep it blank until you fill in the canvas and come up with a solution that fits within customer limitations, solves a problem and matches customer behaviour. An interactive Tableau dashboard showing UNESCO site data with maps, bar, line, pie, bubble, tree, and Pareto charts. Filters help her explore trends by country, year, and site type – all in one place.	8. CHANNELS OF BEHAVIOUR CH 8.1 ONLINE What kind of actions do customers take online? Extract online channels from #7 Tableau Public, UNESCO website, data webinars. 8.2 OFFLINE What kind of actions do customers take offline? Extract offline channels from #7 and use them for customer development. Team discussions, policy meetings, printed reports.	Extract online & offline CH of BE
	4. EMOTIONS: BEFORE / AFTER EM How do customers feel when they face a problem or a job and afterwards? i.e. lost, insecure > confident, in control - use it in your communication strategy & design. Before using a solution, she feels rushed and confused by too much raw data. After getting good visuals, she feels clear and confident in her decisions.			

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-to-use 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	24 June 2025	8	24 June 2025
Sprint-2	16	5 days	25 June 2025	24 June 2025	16	2 June 2025

6.FUNCTIONAL AND PERFORMANCE TESTING**6.1 Performance Testing****Model Performance Testing:**

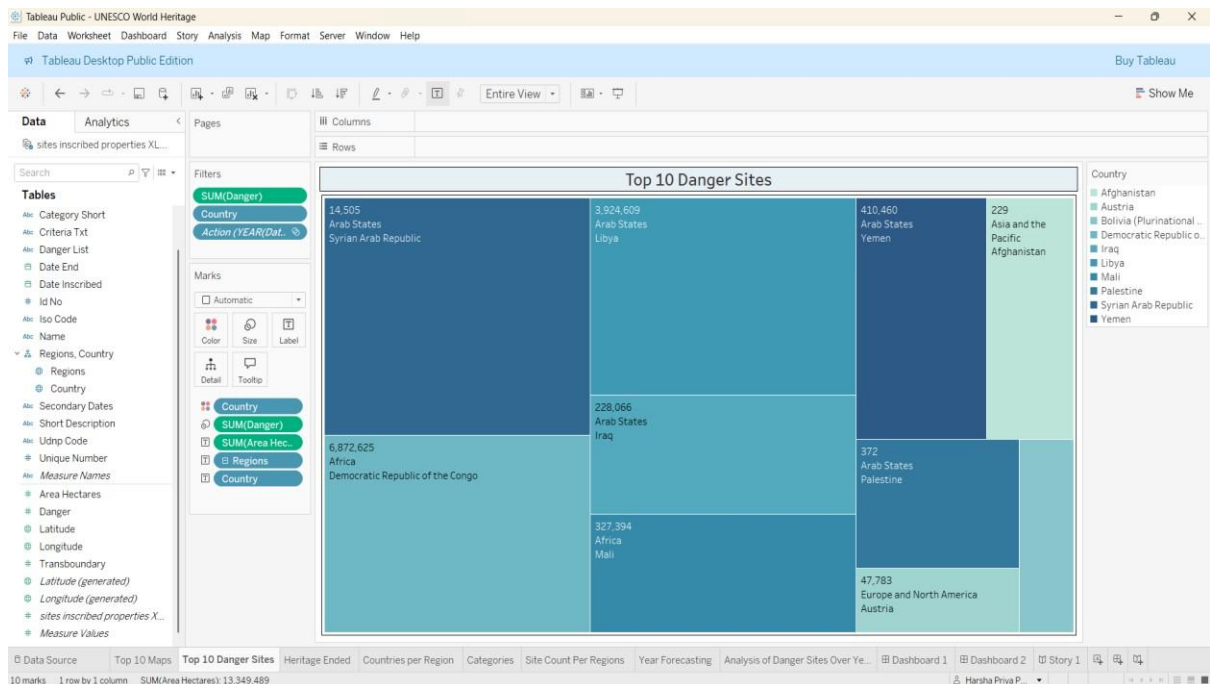
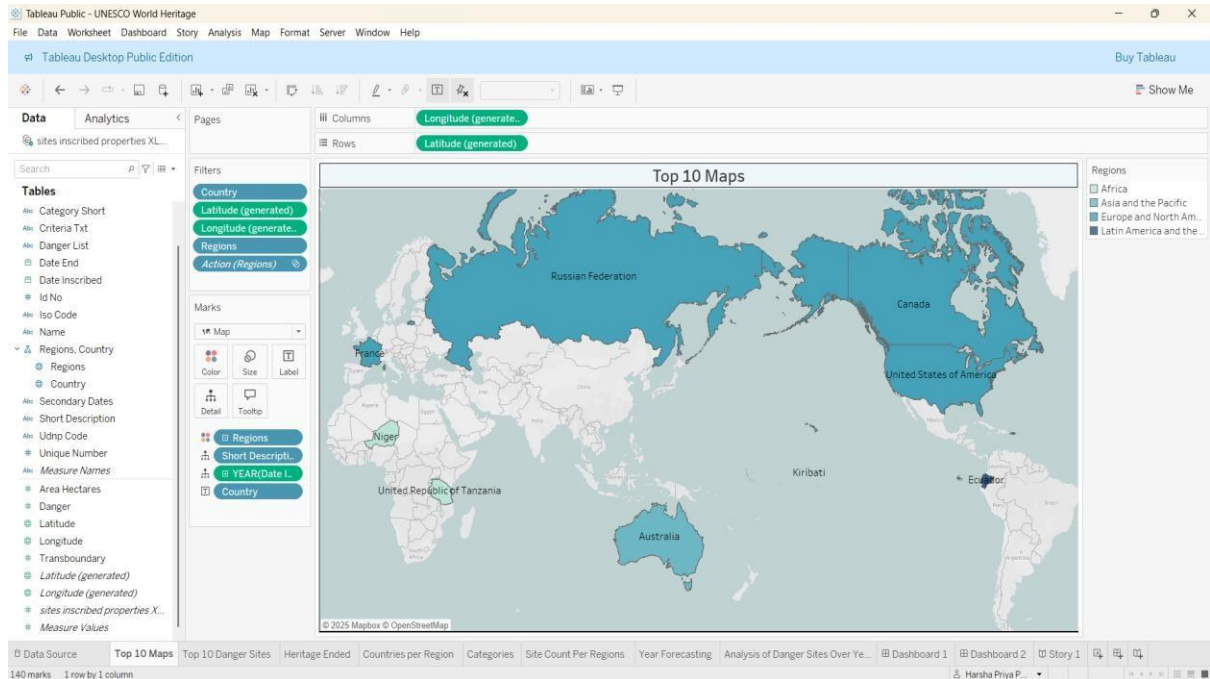
Project team shall fill the following information in model performance testing template.

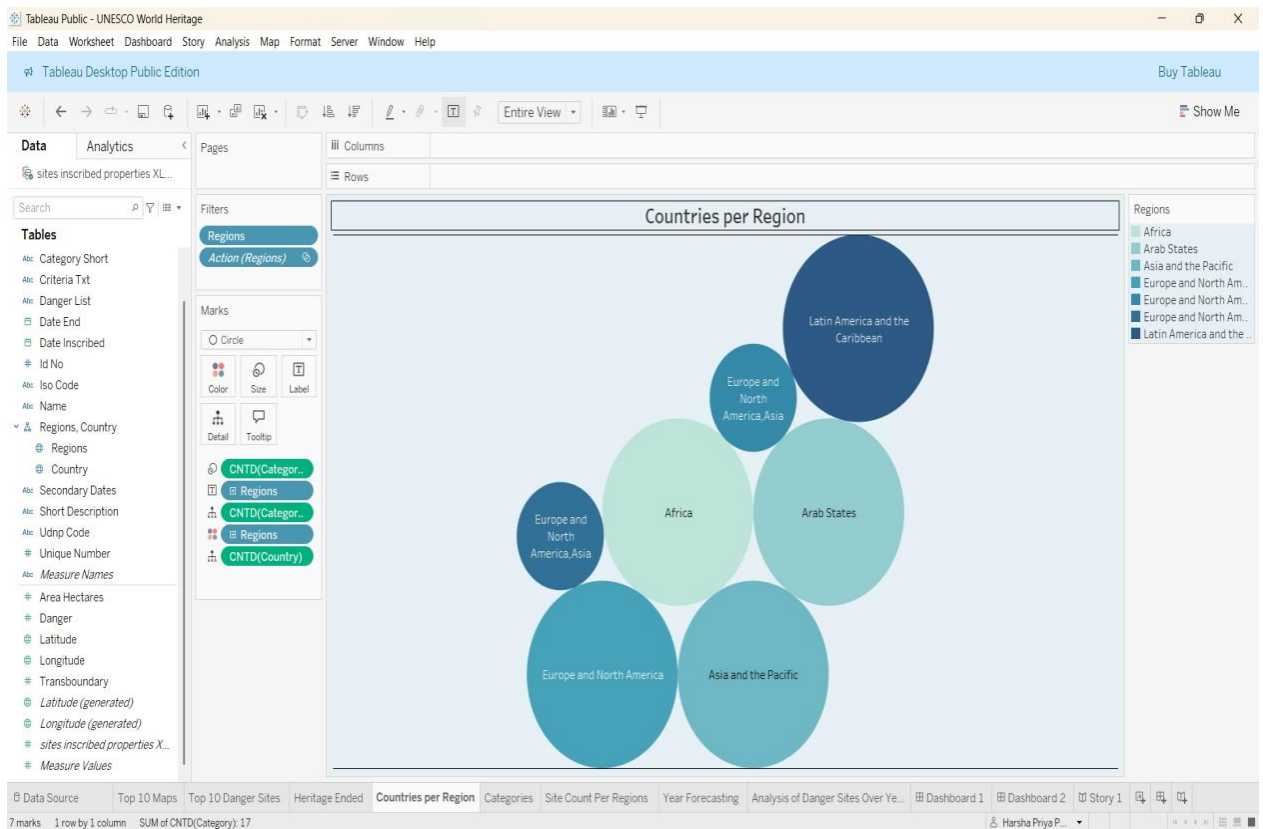
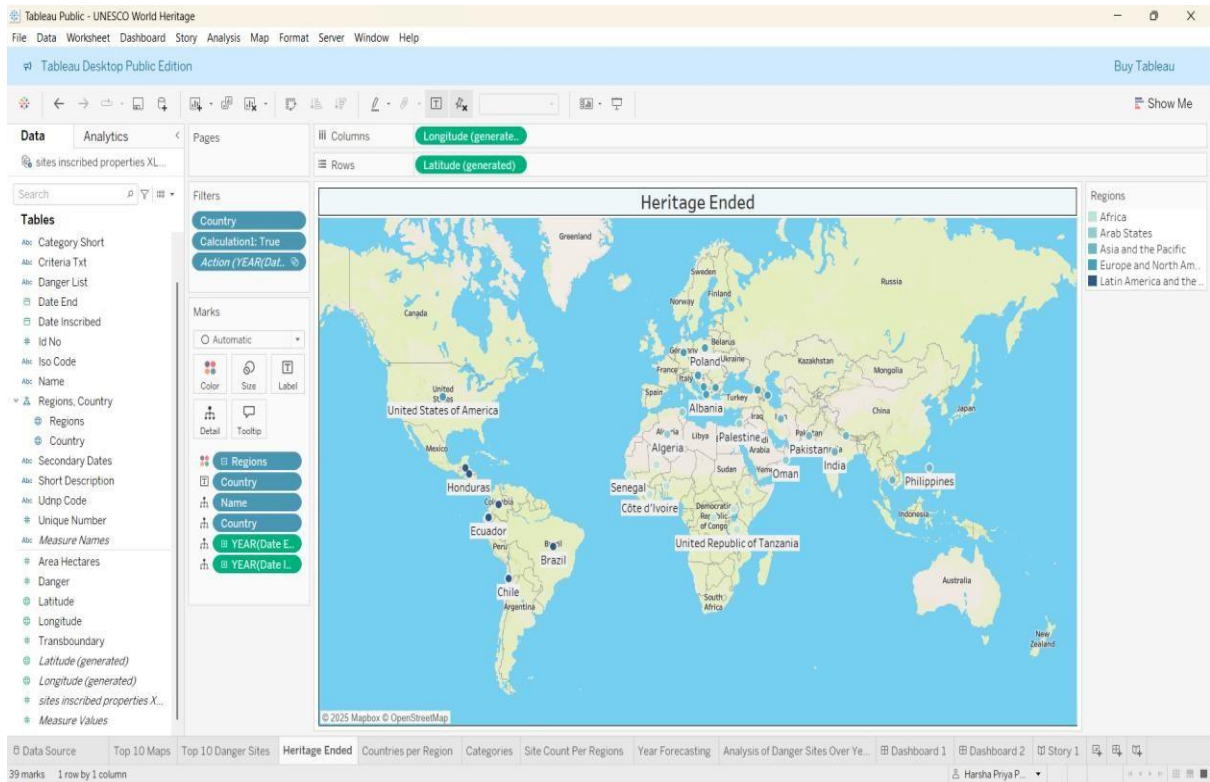
S.no	Parameter	Screenshot / Values
1.	Data Rendered	UNESCO dataset with 1121 rows, 22 attributes
2.	Data Preprocessing	Handled missing values, encoded category columns, changed the data types of attributes as required, renamed the attributes and made hierarchies based on locations (Regions, country) 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)

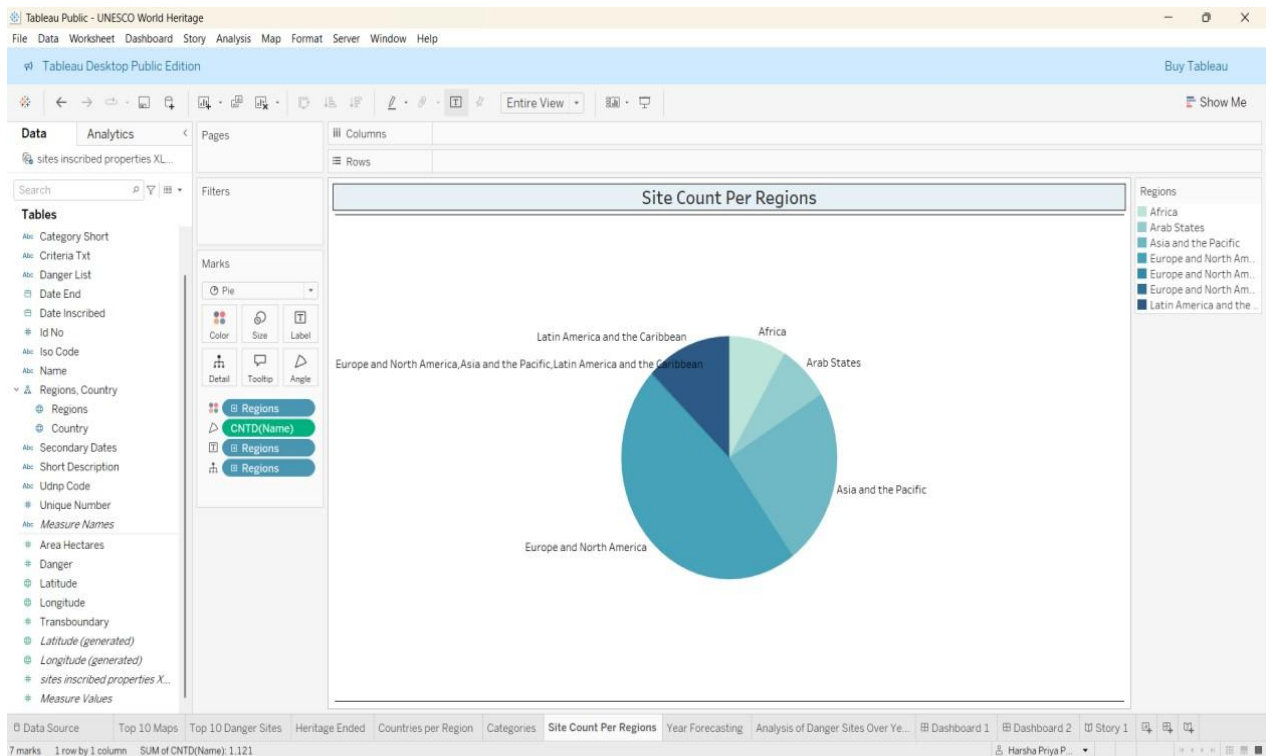
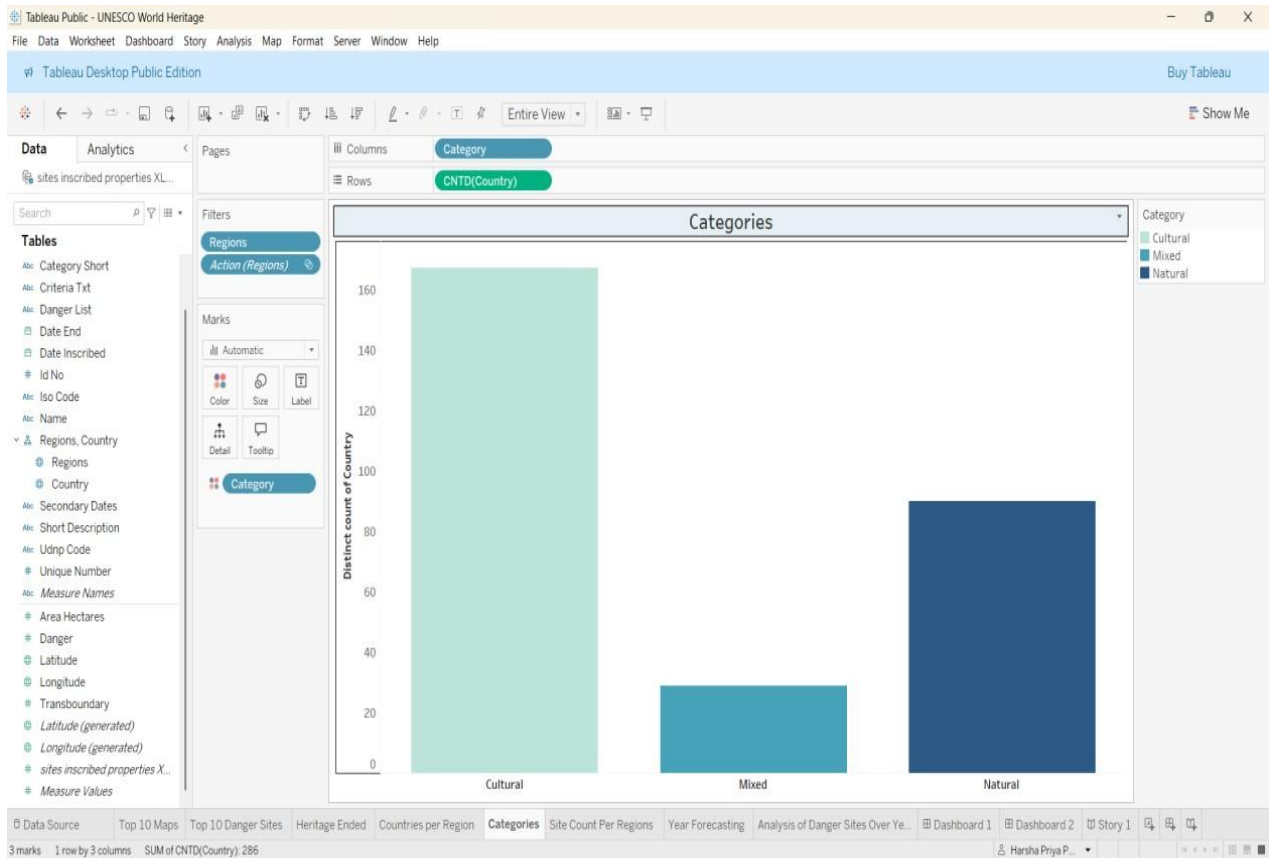
7. RESULTS

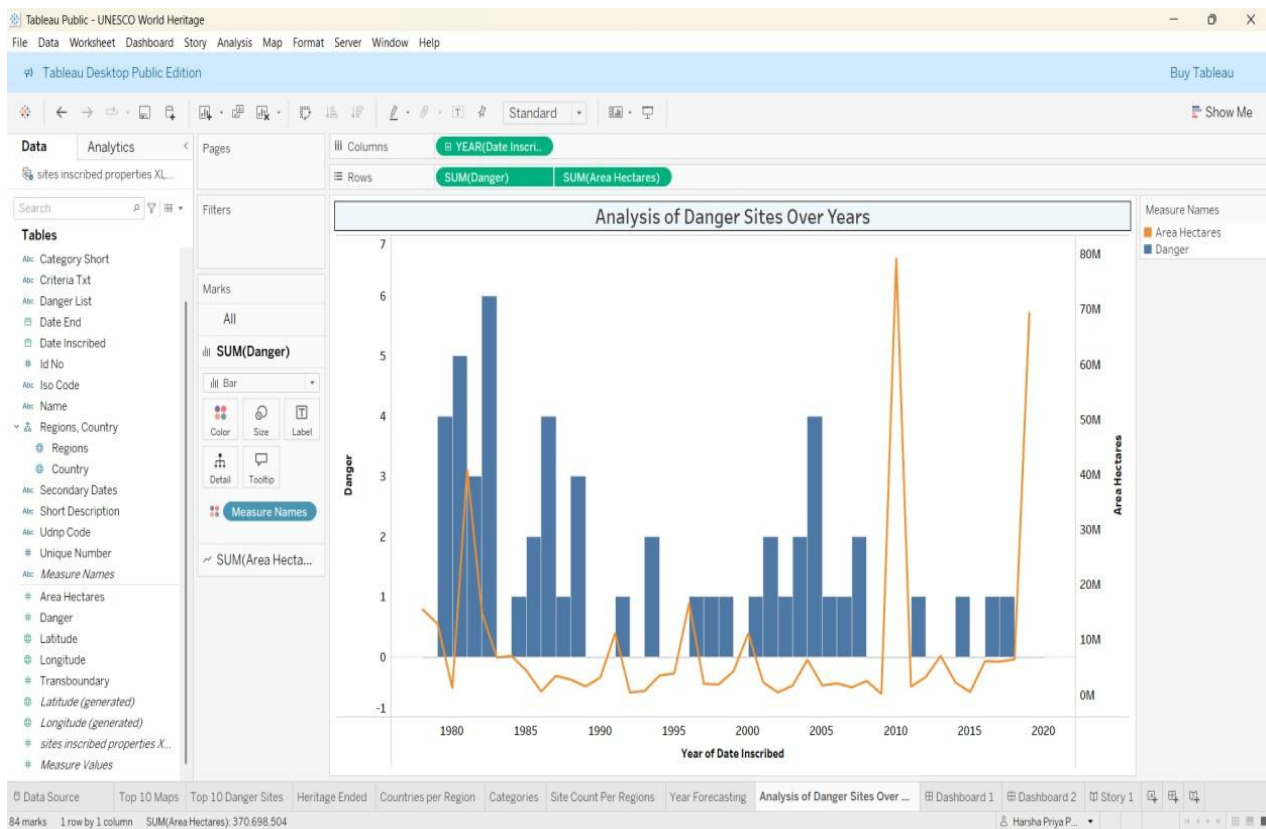
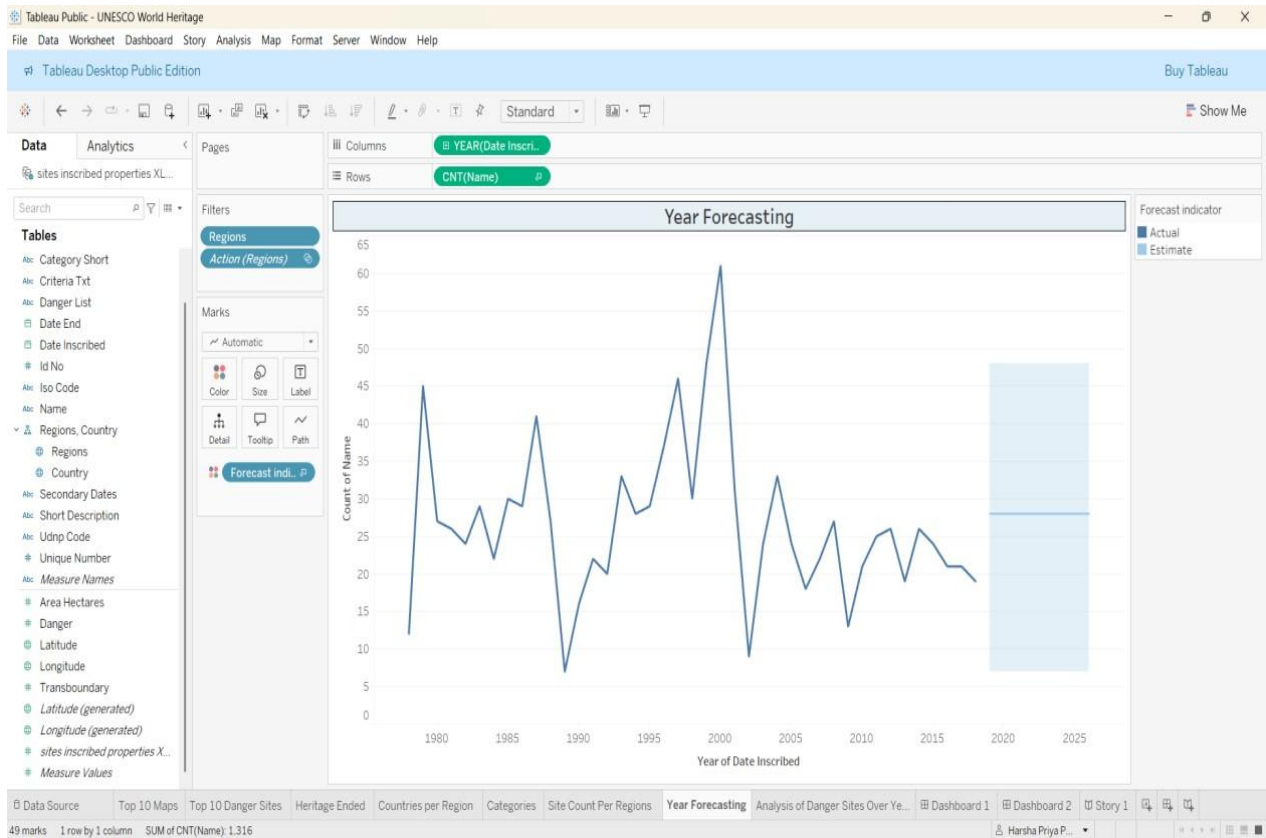
7.1 Output Screenshots

Insights:





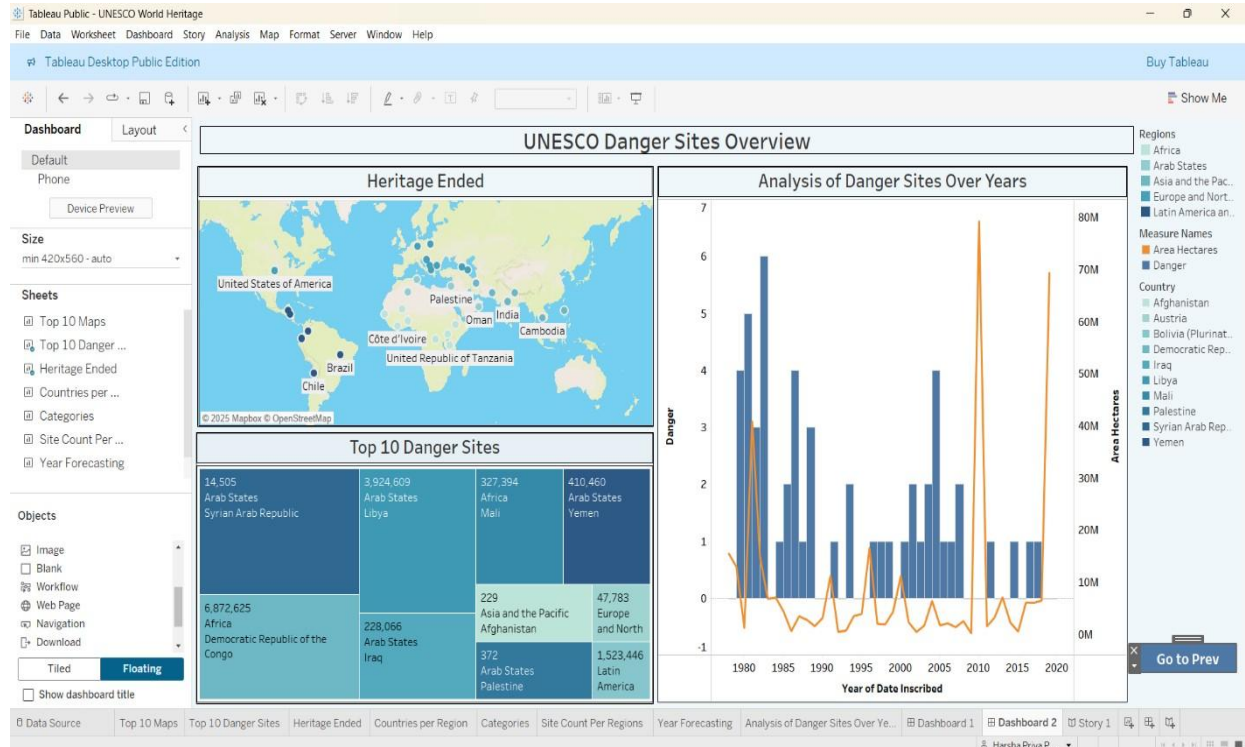




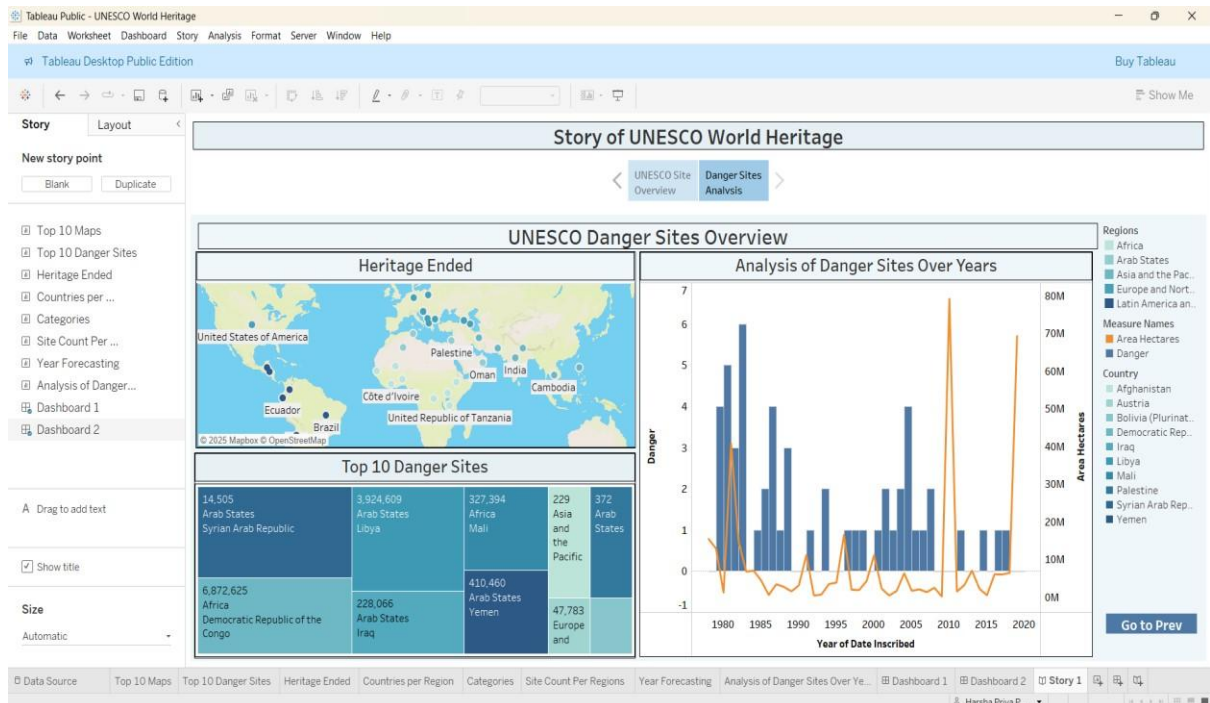
Dashboard 1:



Dashboard 2:



Story:



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 Link :** <https://github.com/Harshapriya04/Heritage-Treasures>
- **Project Demo Link :** <https://drive.google.com/file/d/1kvbXy4WUelXNHdRqfHnqGa8xuENh638F/view?usp=sharing>