Project Report

Empowering India: Analysing the Evolution of Union Budget Allocations for Sustainable Growth

Date	15 February 2026
Team ID	LTVIP2026TMIDS77691
Project Name	Empowering India: Analysing the Evolution of Union Budget Allocations for Sustainable Growth
Maximum Marks	

1. INTRODUCTION

1.1 Project Overview

The Healthcare Budget Analytics Dashboard project focuses on analyzing India's Union Budget allocations from FY 2021–2022 to FY 2023–2024 to understand healthcare funding priorities across ministries and schemes. The project applies data preprocessing techniques and Tableau visualizations to generate meaningful insights related to budget distribution, funding trends, revenue and capital expenditure, and strategic allocation patterns.

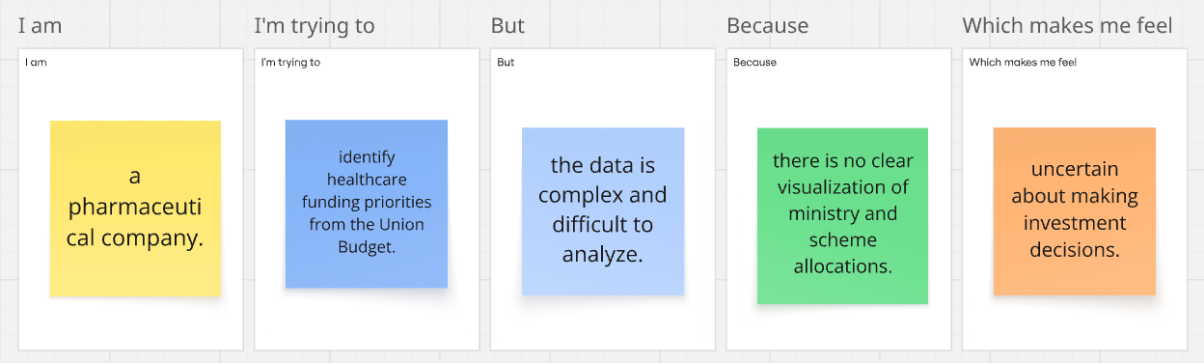
The analysis is presented through interactive dashboards and stories, which are integrated into a Flask-based web application for easy accessibility and user interaction.

1.2 Purpose

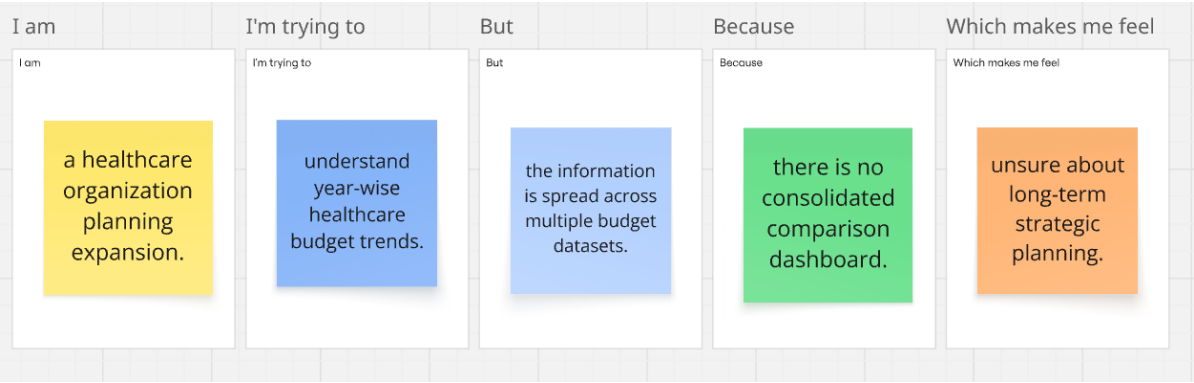
The purpose of this project is to analyze and visualize Union Budget healthcare allocations to support strategic decision-making for organizations, particularly pharmaceutical companies seeking to align their investments with government funding priorities.

The system enables users to explore ministry-wise and scheme-wise allocations, compare year-wise funding trends, and gain insights through interactive filters, dashboards, and structured data storytelling.

Problem Statement 1:



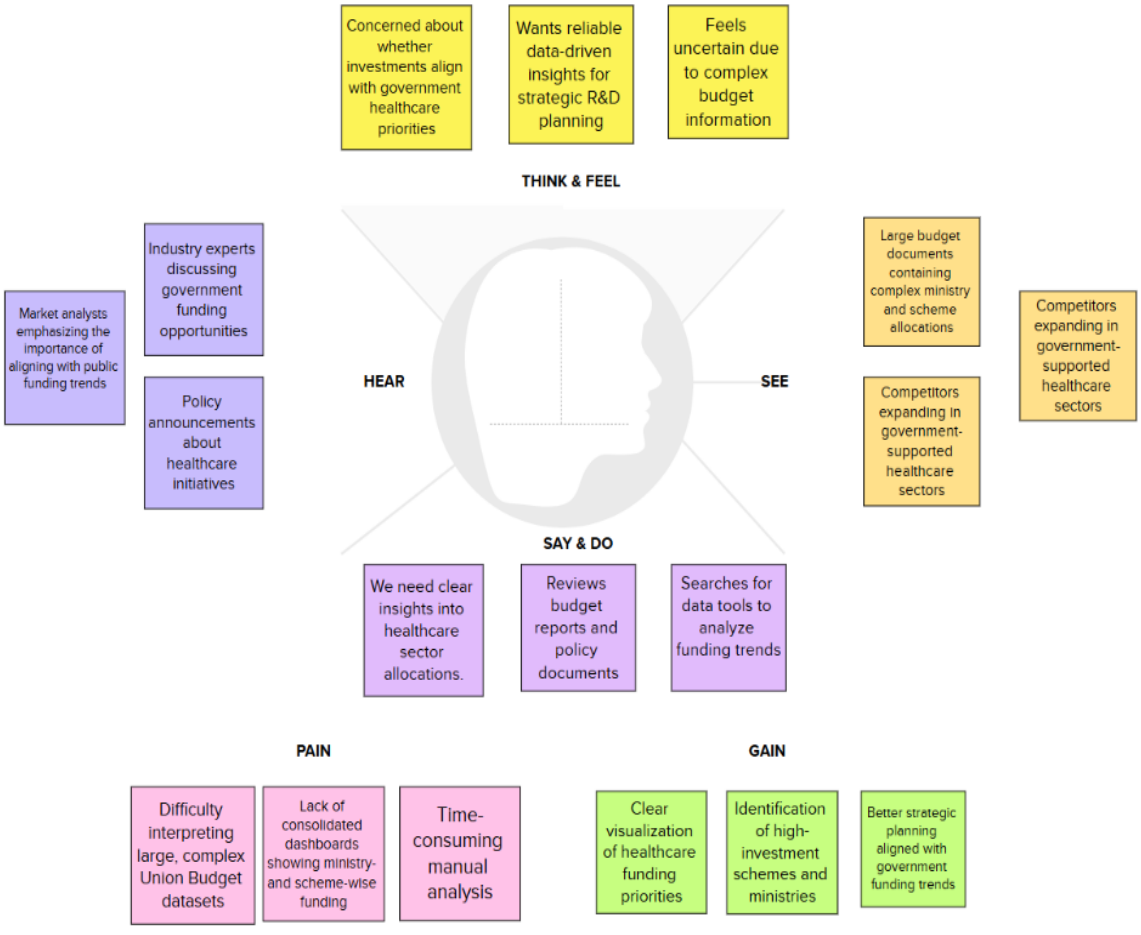
Problem Statement 2:



Problem Statement (PS)	**I am (Customer)**	**I'm trying to**	**But**	**Because**	**Which makes me feel**
PS-1	a pharmaceuti cal company planning to expand research and healthcare product developmen t.	understand government healthcare funding priorities and identify ministries and schemes receiving higher allocations.	the Union Budget data is large, complex, and spread across multiple ministries and schemes.	there is no structured analytical dashboard that clearly highlights sector-wise and ministry-wise funding trends.	uncertain about where to invest resources and how to align expansion strategies with government funding opportunities.
PS-2	a healthcare organization planning long-term investments	analyze how healthcare-related budget allocations	tracking year-to-year funding changes manually	there is no consolidated visualization that compares healthcare	challenged in making confident, data-driven strategic decisions for future growth

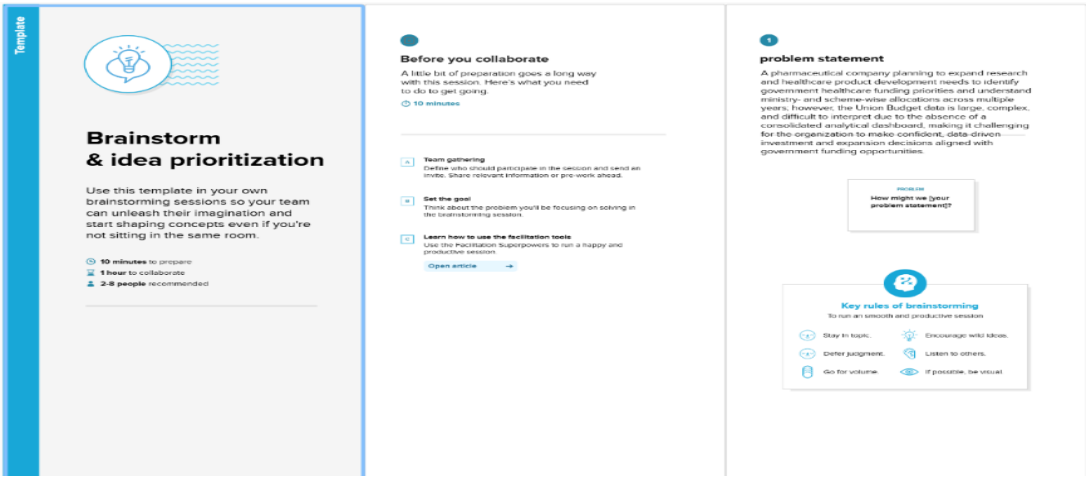
	and operational expansion.	have changed over multiple financial years.	across multiple budget datasets is difficult and time-consuming.	funding trends across years.	and investment planning.

Empathy Map Canvas:

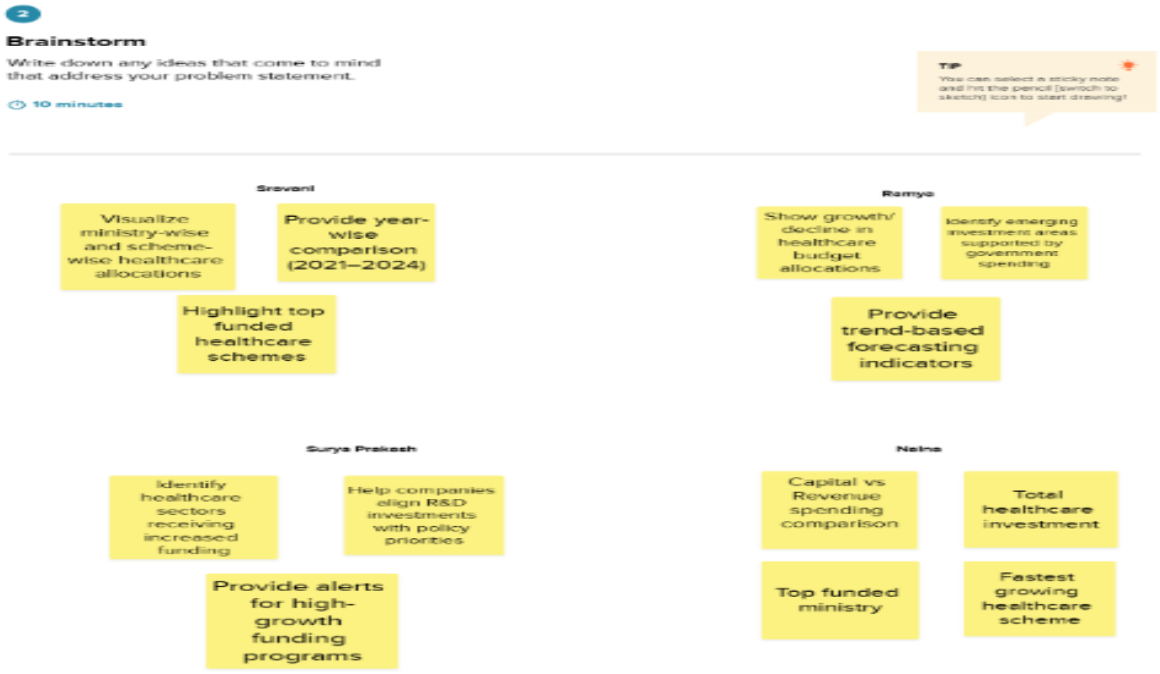


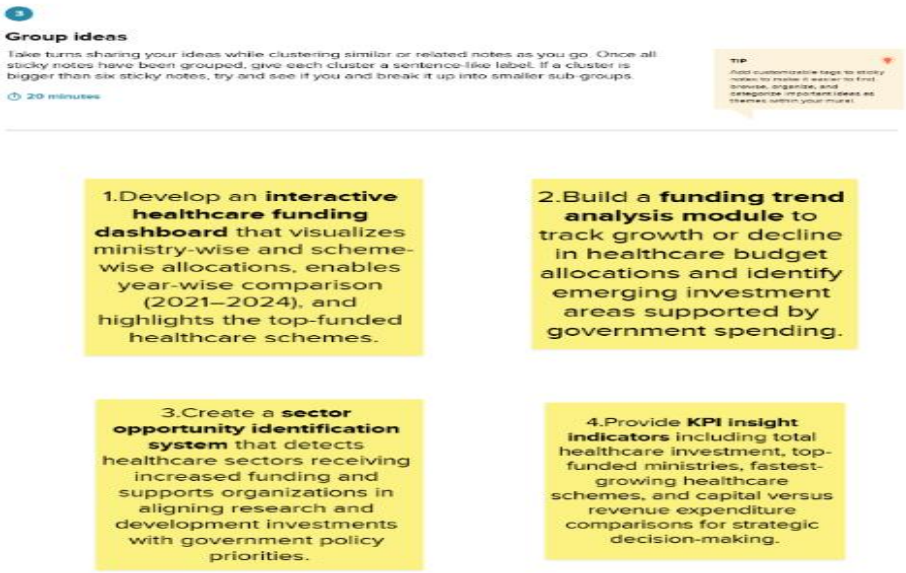
Brainstorm & Idea Prioritization:

Step-1: Team Gathering, Collaboration and Select the Problem Statement

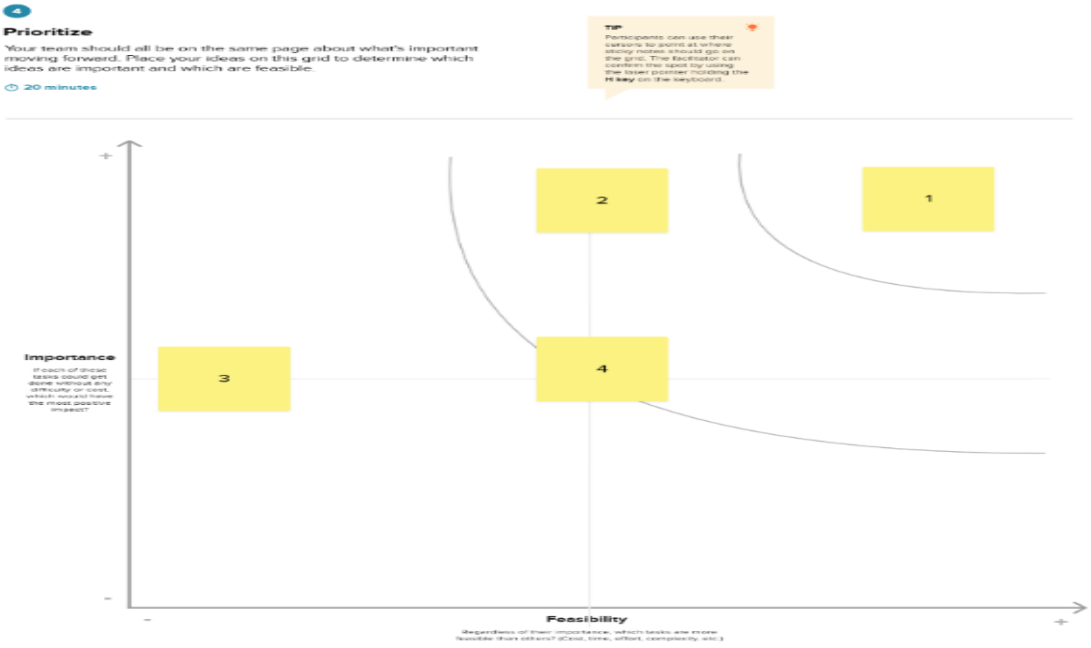


Step-2: Brainstorm, Idea Listing and Grouping





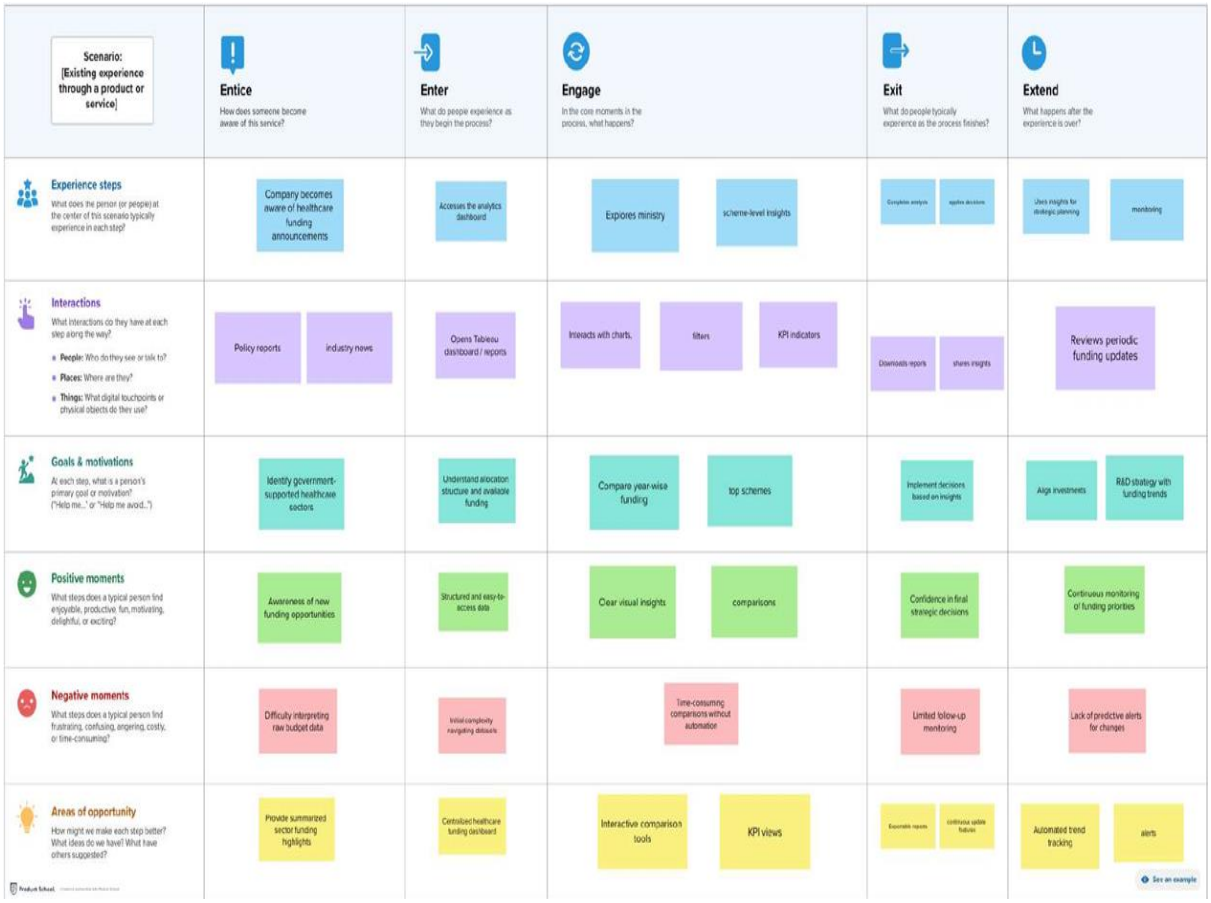
Step-3: Idea Prioritization



3. REQUIREMENT ANALYSIS

3.1 Customer Journey Map

The customer journey map outlines the experience of healthcare investors and business planners while analyzing Union Budget healthcare allocations. It identifies key pain points such as complex budget structures, difficulty in interpreting ministry-wise and scheme-wise funding data, and the absence of a centralized analytical view. The journey highlights challenges in decision-making, funding analysis, and identifying investment opportunities. This analysis helps define the exact needs of users and ensures that the dashboard is designed to provide clear, interactive insights that solve real-world strategic planning problems effectively



3.2 Solution Requirement

The solution requires an interactive analytics dashboard that integrates Union Budget data, including ministry-wise and scheme-wise healthcare allocations, revenue and capital expenditure, and year-wise budget estimates. It must provide clear visualizations and filtering options to enable easy analysis and comparison of funding trends. The system should support comparative insights across ministries, schemes, and financial years to assist strategic decision-making. Data accuracy, preprocessing, and proper structuring are essential for reliable analysis. The solution must be user-

friendly, interactive, and visually intuitive to help users quickly understand healthcare funding priorities.

Functional Requirements:

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	Data Integration and Preparation	-Import Union Budget dataset into the database (MySQL). -Clean and format dataset fields for analysis (rename columns, verify data types). -Validate data accuracy and remove missing or duplicate entries. -Prepare dataset for Tableau connection.
FR-2	Budget Allocation Analysis	-Analyze ministry-wise healthcare budget allocations. -Analyze scheme-wise healthcare funding distribution. -Compare budget allocations across financial years (2021–2024). -Identify top funded healthcare schemes and ministries.
FR-3	Visualization Dashboard Development	-Create category-wise and ministry-wise allocation charts. -Build scheme-level comparison visualizations. -Develop KPI cards showing total investment and top funding indicators. -Design an interactive Tableau dashboard integrating all visualizations.

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 provide an intuitive and user-friendly interface with clear visualizations, filters, and navigation so users can easily explore healthcare budget insights.
NFR-2	**Security**	Access to the database and dashboards should be protected using authentication and role-based permissions to ensure data confidentiality and integrity.
NFR-3	**Reliability**	The system should consistently produce accurate calculations, visualizations, and reports without data loss or processing errors.
NFR-4	**Performance**	Queries, dashboard loading, and visual updates should execute within acceptable response times to ensure smooth user interaction.
NFR-5	**Availability**	The analytics dashboard and database should be accessible whenever required, minimizing downtime during analysis or reporting.
NFR-6	**Scalability**	The system should support future expansion, allowing additional datasets, financial years, or sectoral information to be integrated without major redesign.

3.3 Data Flow Diagram

A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a system. A neat and clear DFD can depict the right amount of the system requirement graphically. It shows how data enters and leaves the system, what changes the information, and where data is stored.

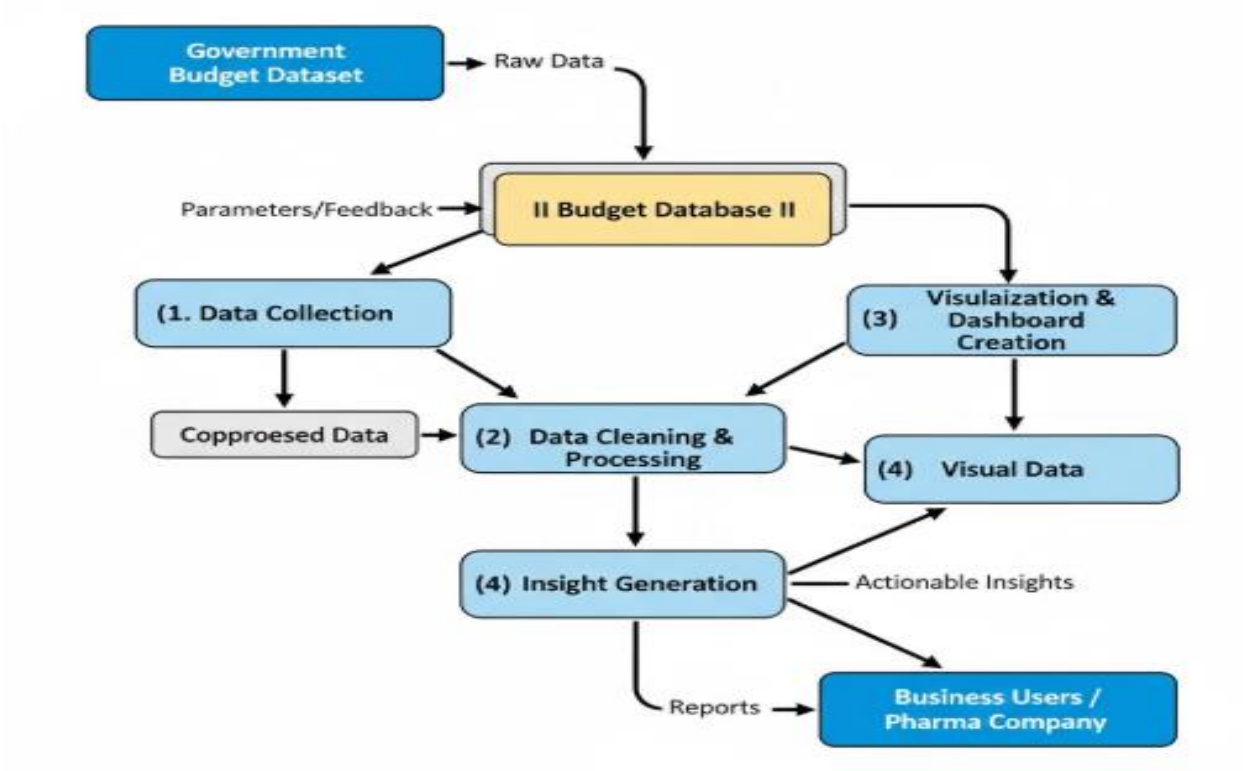


Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	Web UI (Dashboard embedded in browser)	HTML, CSS, JavaScript
2.	Application Logic-1	Data processing, filtering healthcare ministries, dashboard integration	Python(flask)
3.	Application Logic-2	Data preparation and transformation	Tableau Prep / Python scripts
4.	Application Logic-3	Dashboard visualization and reporting	Tableau Dashboard (Embedded)
5.	Database	Structured budget allocation dataset storage	MySQL
6.	Cloud Database	-	-
7.	File Storage	-	-
8.	External API-1	-	-
9.	External API-2	-	-

10.	Machine Learning Model	-	-
11.	Infrastructure (Server / Cloud)	Application deployed on local development environment	Flask development server, MySQL local instance.

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Web application framework and visualization integration used for analytics application	Web application framework and visualization integration used for analytics application
2.	Security Implementations	Python Flask, MySQL, Tableau Public / Tableau Desktop	Flask authentication, MySQL user access control
3.	Scalable Architecture	Application follows a modular multi-tier architecture separating data layer, application layer, and visualization layer allowing future scaling to cloud deployment	3-Tier Architecture (Database – Application – Presentation)
4.	Availability	Application can be deployed on local server or cloud infrastructure ensuring accessibility through web interface	Flask server deployment / Cloud hosting (future ready)
5.	Performance	Efficient SQL queries, dataset preprocessing, and optimized dashboard visualizations to ensure faster response time and smooth dashboard interaction	MySQL query optimization, Tableau optimized extracts

4. PROJECT DESIGN

4.1 Problem Solution Fit

The dashboard directly addresses the challenge of understanding complex healthcare budget allocations by providing a unified analytical view of ministry-wise and scheme-wise funding data. It combines multi-year Union Budget information with interactive visualizations, allowing users to compare funding distribution, analyze trends, and identify priority investment areas. Healthcare organizations and business

planners can easily explore funding patterns and align their strategies with government priorities. The solution effectively matches user pain points identified during requirement analysis and supports informed, data-driven decision-making.

4.2 Proposed Solution

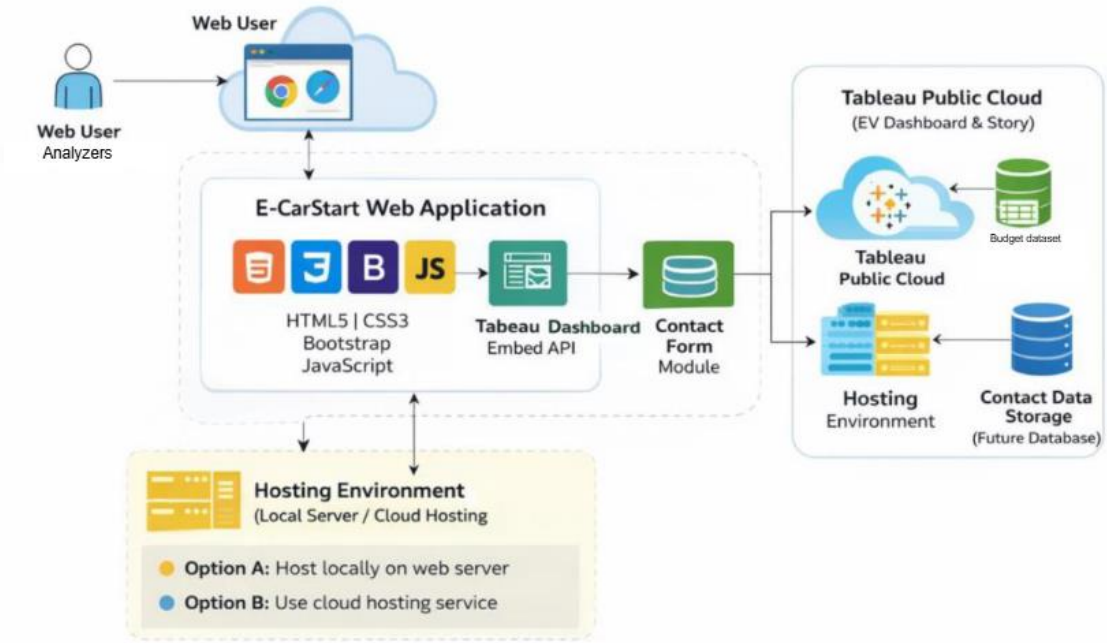
The proposed solution is a **Healthcare Budget Analytics Dashboard** consisting of multiple interactive visualizations. It includes ministry-wise funding analysis, scheme-wise budget comparison, year-wise trend charts, expenditure distribution analysis, and KPI summary indicators. Interactive filters allow users to explore data based on financial year, ministry, and schemes. The dashboard is designed for clarity,

simplicity, and ease of navigation. It transforms complex Union Budget data into meaningful and actionable insights to support strategic decision-making.

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Healthcare and pharmaceutical organizations find it difficult to analyze large Union Budget datasets and identify healthcare funding priorities due to the absence of consolidated analytical dashboards.
2.	Idea / Solution description	The solution is a web-based analytics platform that stores Union Budget data in MySQL, processes it using Python, and presents interactive Tableau dashboards through a Flask web application for easy healthcare funding analysis.
3.	Novelty / Uniqueness	The system provides a centralized, interactive platform combining budget analytics, visualization, and web deployment, reducing the need for manual budget interpretation.
4.	Social Impact / Customer Satisfaction	The platform helps organizations align investments with government healthcare priorities, supporting improved healthcare development and informed decision-making.
5.	Business Model (Revenue Model)	The solution can be offered as a subscription-based analytics service with additional revenue from customized reports and enterprise integrations.
6.	Scalability of the Solution	The architecture allows easy expansion to include additional datasets, sectors, and users without major system changes.

4.3 Solution Architecture

The solution architecture follows a structured data analytics pipeline. Raw Union Budget datasets are collected and preprocessed to ensure data quality and consistency. The cleaned data is stored in a database for structured access and efficient querying. Tableau connects to the database to create interactive dashboards and stories for visualization. These dashboards are integrated into a Flask-based web application, allowing users to interact with the analytics platform and generate meaningful insights related to healthcare funding trends and budget allocations.



5. PROJECT PLANNING & SCHEDULING

5.1 Project Planning

The project was planned in multiple stages including data collection, data preprocessing, database integration, visualization development, web integration, and testing. Each phase was executed systematically to ensure smooth workflow and accurate analysis. Timelines were defined for every stage to manage progress effectively. Dashboard and story design were refined iteratively based on insights and usability considerations. Proper planning helped ensure successful implementation and timely completion of the healthcare budget analytics solution.

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Data Collection	USN-1	Search and collect suitable dataset for analysis	3	High	Surya Prakash
Sprint-1	Data Loading	USN-2	Load dataset into Tableau	1	High	Surya Prakash
Sprint-1	Data Preprocessing	USN-3	Handle data types and create required fields	2	High	Surya Prakash
Sprint-1	Data Cleaning	USN-4	Remove unwanted columns and prepare clean dataset	2	High	Surya Prakash
Sprint-2	Visualization Development	USN-5	Create required visualizations in Tableau	4	High	Surya Prakash
Sprint-2	Dashboard Development	USN-6	Design and build interactive dashboard	5	High	Surya Prakash
Sprint-3	Web Integration	USN-7	Integrate dashboard with Flask web interface	3	Medium	Surya Prakash
Sprint-3	Reporting	USN-8	Prepare documentation and project report	3	High	Surya Prakash

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-3	Deployment	USN-9	Publish project and share final application link	2	Medium	Surya Prakash

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	01 Feb 2026	05 Feb 2026	8	05 Feb 2026
Sprint-2	9	5 Days	06 Feb 2026	10 Feb 2026	9	10 Feb 2026
Sprint-3	8	5 Days	11 Feb 2026	15 Feb 2026	8	15 Feb 2026

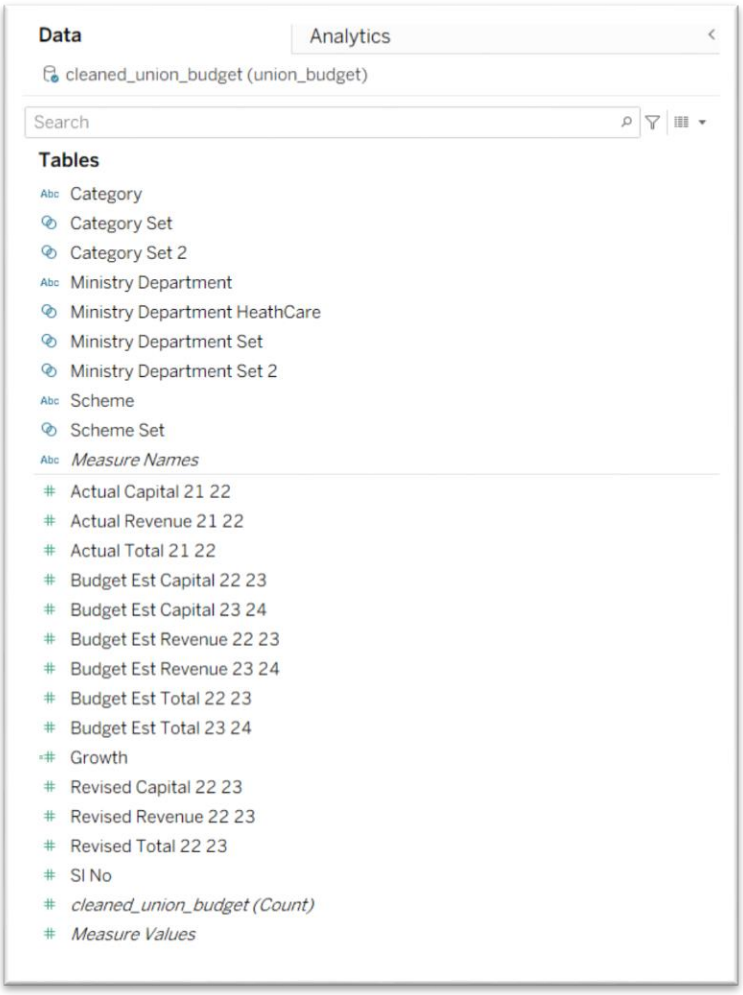
Velocity:
Imagine we have a 10-day sprint duration, and the velocity of the team is 20 (points per sprint). Let's calculate the team's average velocity (AV) per iteration unit (story points per day)

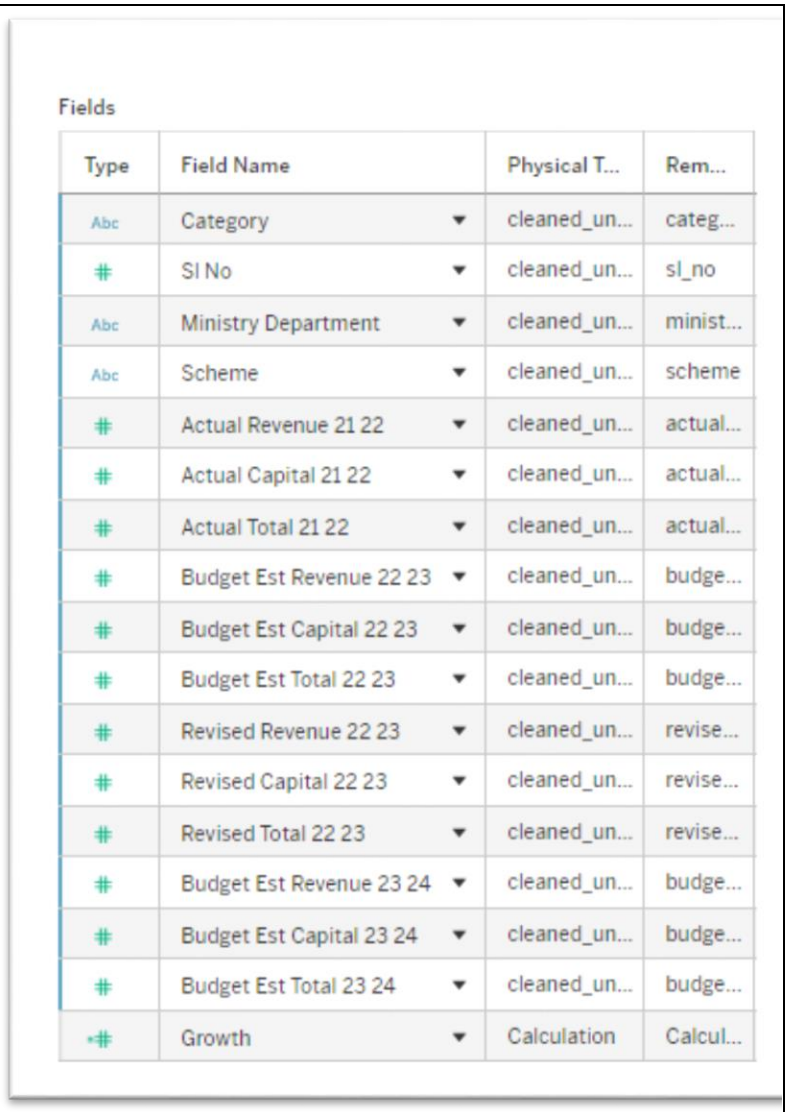
AV = Sprint Duration/velocity = 25/5 = 5 story points per days

6. FUNCTIONAL AND PERFORMANCE TESTING

6.1 Performance Testing

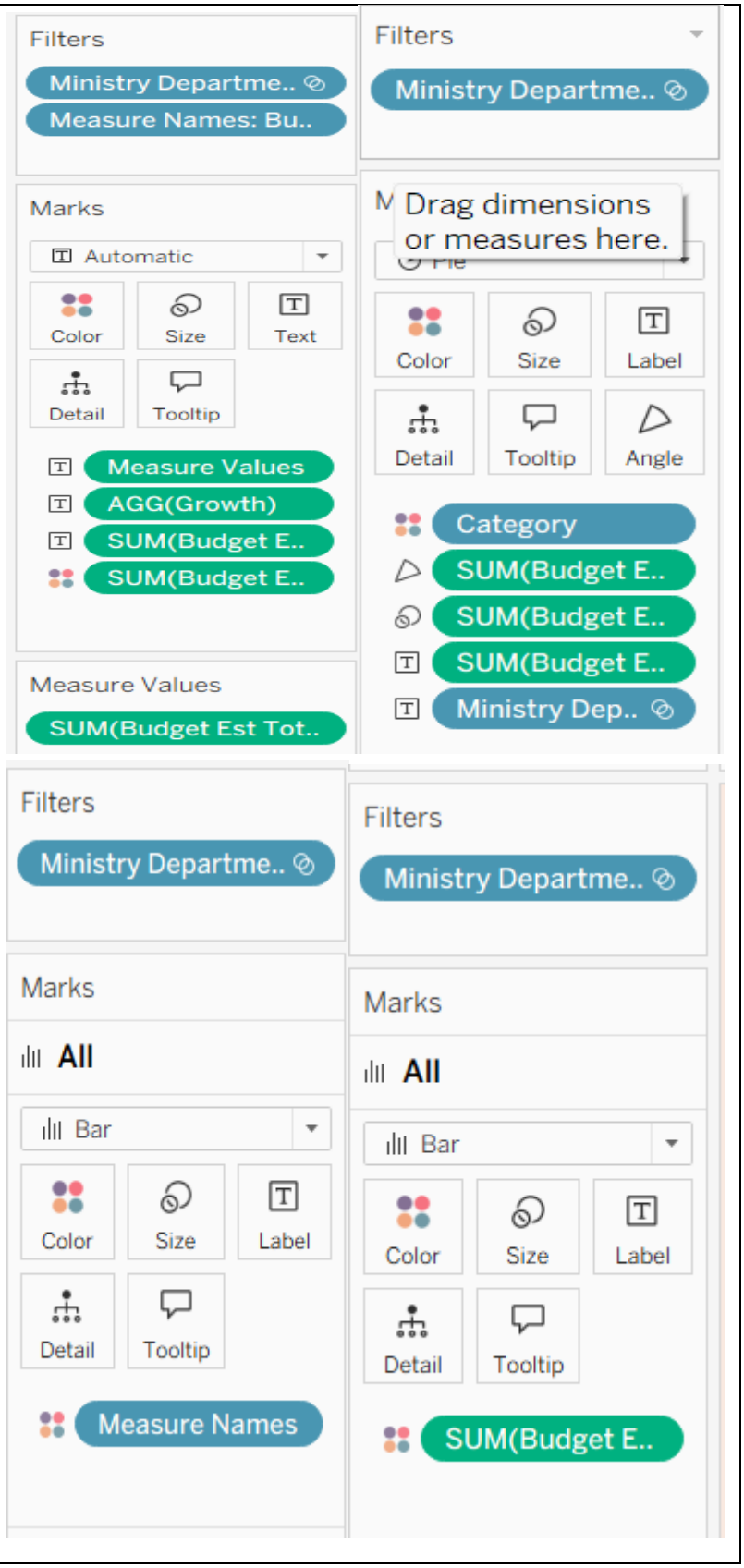
The dashboard was tested for responsiveness and accuracy. Filters and interactive features were validated. Dataconsistency between database and visualizations was checked. Performance was monitored for loading time and smooth interaction. The system performs efficiently for the given dataset size.

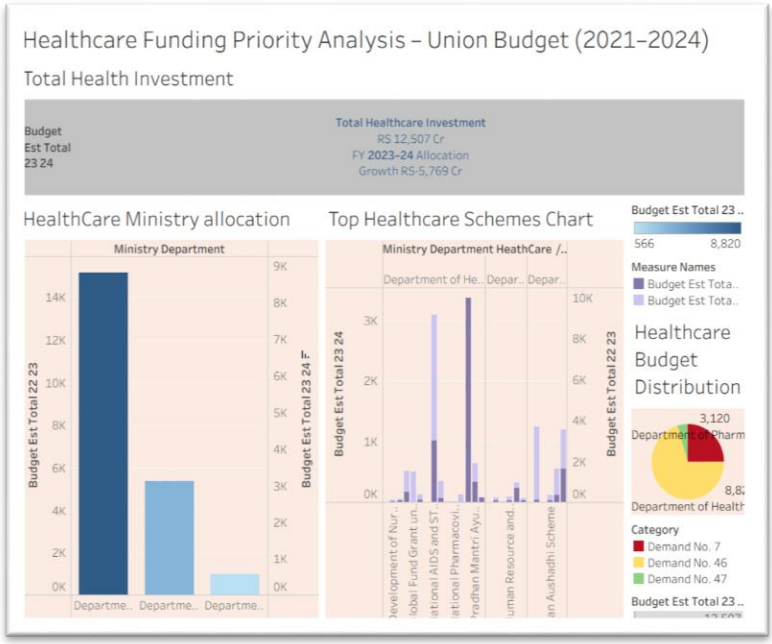
S.No.	Parameter	Screenshot / Values
1.	Data Rendered	

2.	Data Preprocessing	

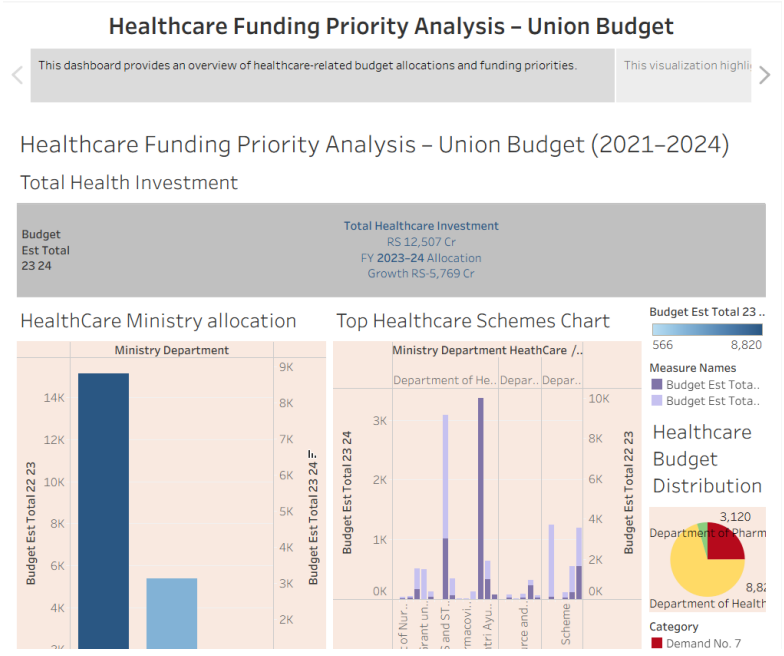
Fields

Type	Field Name	Physical T...	Rem...
Abc	Category	cleaned_un...	categ...
#	Sl No	cleaned_un...	sl_no
Abc	Ministry Department	cleaned_un...	minist...
Abc	Scheme	cleaned_un...	scheme
#	Actual Revenue 21 22	cleaned_un...	actual...
#	Actual Capital 21 22	cleaned_un...	actual...
#	Actual Total 21 22	cleaned_un...	actual...
#	Budget Est Revenue 22 23	cleaned_un...	budge...
#	Budget Est Capital 22 23	cleaned_un...	budge...
#	Budget Est Total 22 23	cleaned_un...	budge...
#	Revised Revenue 22 23	cleaned_un...	revise...
#	Revised Capital 22 23	cleaned_un...	revise...
#	Revised Total 22 23	cleaned_un...	revise...
#	Budget Est Revenue 23 24	cleaned_un...	budge...
#	Budget Est Capital 23 24	cleaned_un...	budge...
#	Budget Est Total 23 24	cleaned_un...	budge...
#	Growth	Calculation	Calcul...

3.	Utilization of Filters	

4.	Calculation fields Used	
5.	Dashboard design	No of Visualizations / Graphs – 4 

6	Story Design	No of Visualizations / Graphs -4

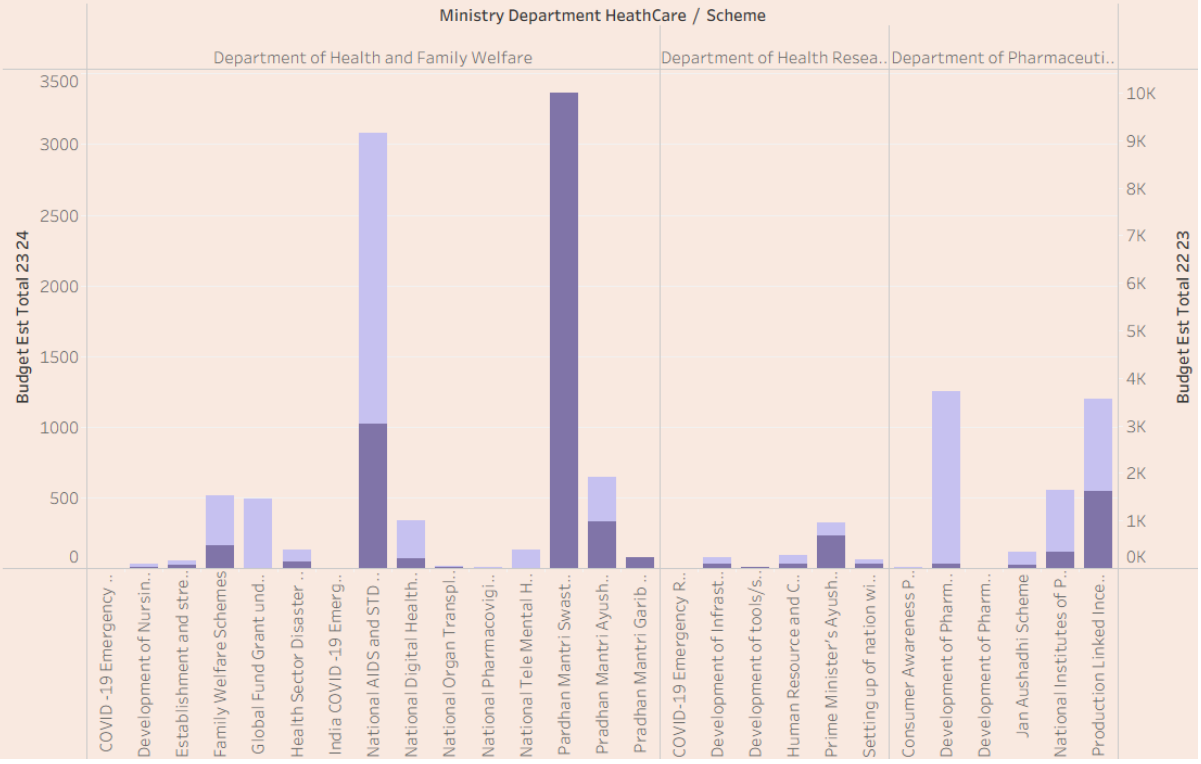


7. RESULTS

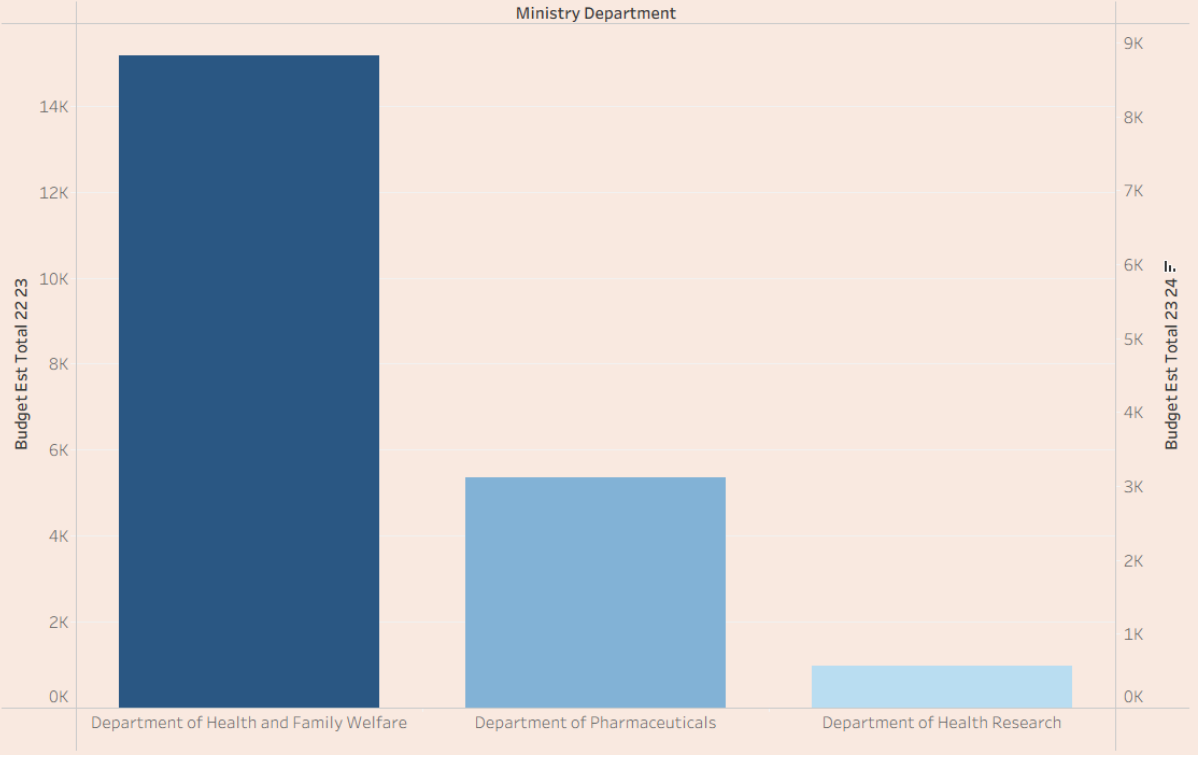
7.1 Output Screenshots

The final dashboard displays healthcare budget analysis including ministry-wise funding distribution, scheme-wise allocations, year-wise funding trends, and expenditure comparisons. KPI summary cards highlight key metrics such as total healthcare investment and top funded ministries. Interactive filters allow users to dynamically explore data across different years and categories. The visualizations provide clear, meaningful, and actionable insights, demonstrating successful implementation of the project objectives and effective transformation of Union Budget data into an analytics-driven solution.

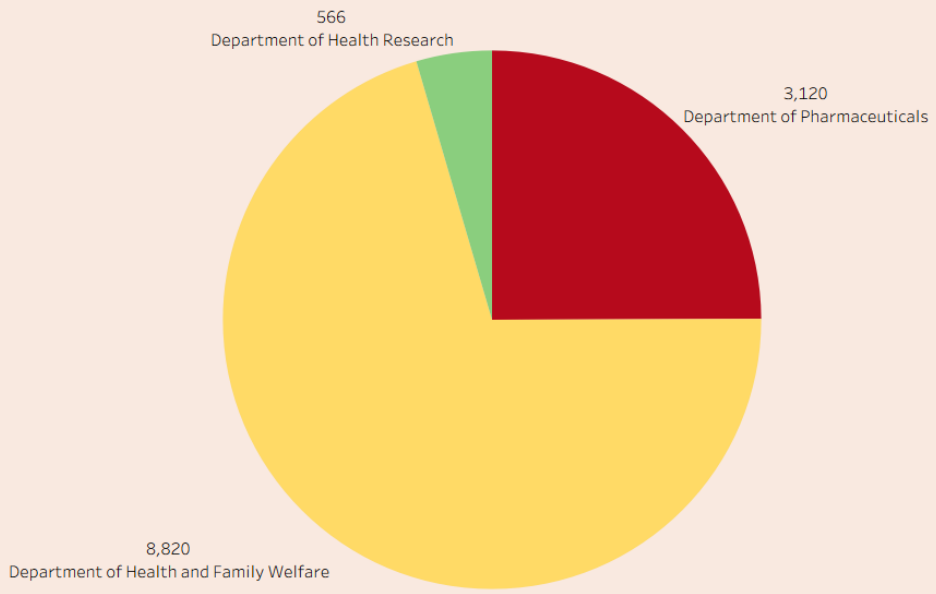
Top Healthcare Schemes Chart



HealthCare Ministry allocation



Healthcare Budget Distribution



Total Health Investment

Budget
Est Total
23 24

Total Healthcare Investment
RS 12,507 Cr
FY **2023-24** Allocation
Growth RS-5,769 Cr

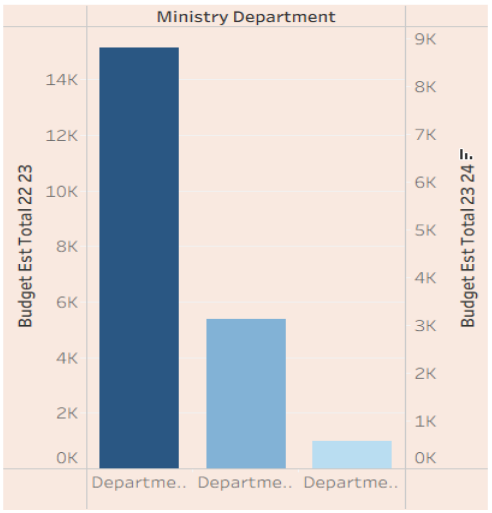
Healthcare Funding Priority Analysis – Union Budget (2021–2024)

Total Health Investment

Budget Est Total 23 24

Total Healthcare Investment
RS 12,507 Cr
FY **2023–24** Allocation
Growth RS-5,769 Cr

HealthCare Ministry allocation



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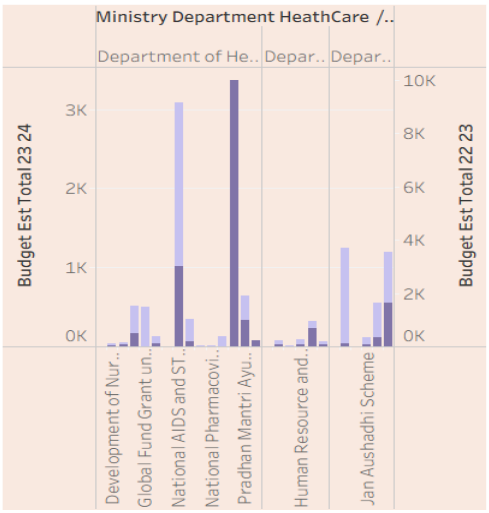
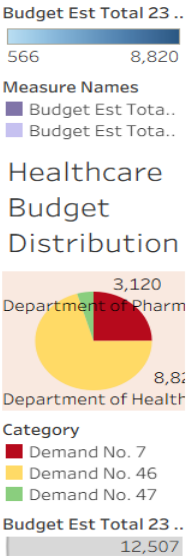




Healthcare Funding Priority Analysis – Union Budget

This dashboard provides an overview of healthcare-related budget allocations and funding priorities.

This visualization highli

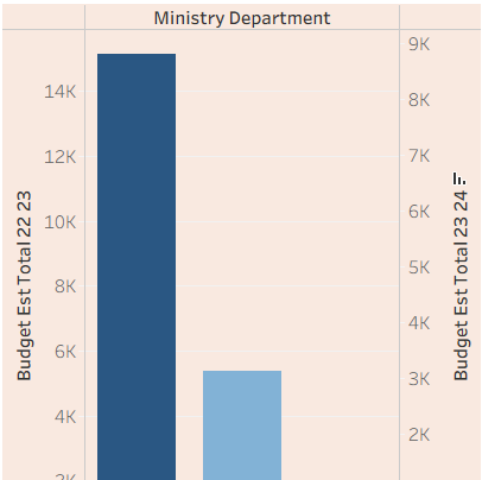
Healthcare Funding Priority Analysis – Union Budget (2021–2024)

Total Health Investment

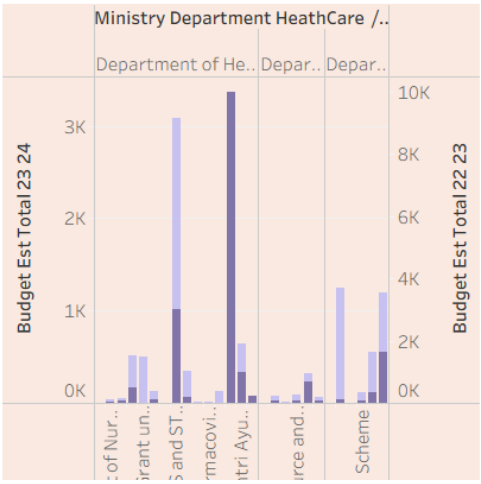
Budget Est Total 23 24

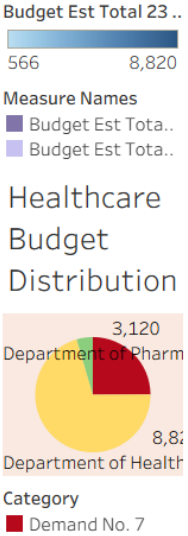
Total Healthcare Investment
RS 12,507 Cr
FY **2023–24** Allocation
Growth RS-5,769 Cr

HealthCare Ministry allocation



Top Healthcare Schemes Chart



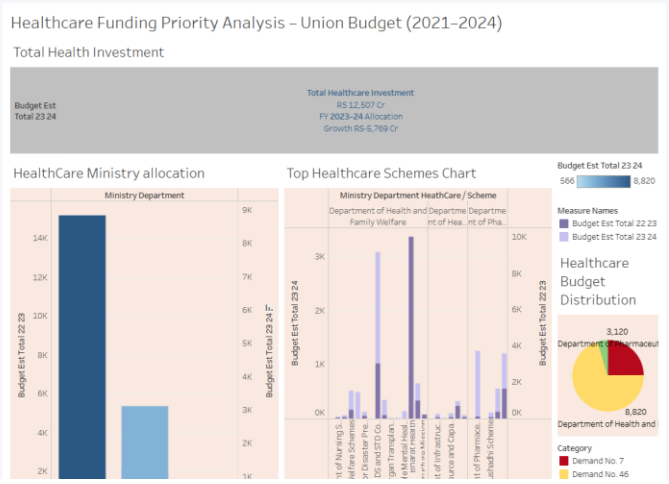


Dashboard Story

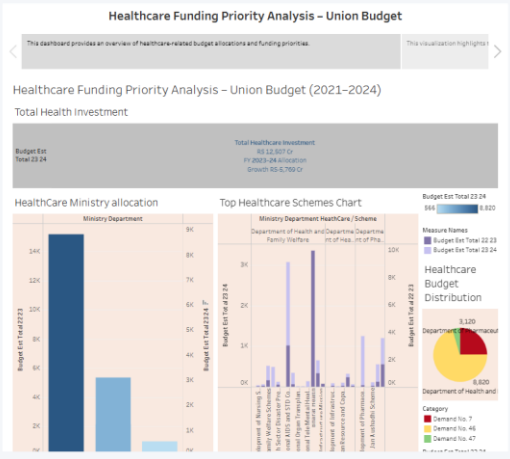
Healthcare Budget Analytics Dashboard

Union Budget 2021–2024 | Data Analytics using Tableau & Flask

Healthcare Budget Dashboard



Healthcare Budget Story



© 2026 Healthcare Budget Analytics | Developed using Tableau + Flask

8. ADVANTAGES & DISADVANTAGES

The Healthcare Budget Analytics Dashboard provides a centralized and structured view of Union Budget healthcare allocations, simplifying complex financial data through clear and interactive visualizations. The use of filters and dashboards improves usability and allows users to explore data dynamically, supporting informed and data-driven decision-making for healthcare organizations and business planners. The project also enables easy comparison of ministry-wise and scheme-wise funding trends across multiple years. However, the system depends on the accuracy and completeness of the available dataset, does not include real-time budget updates, and is limited to the scope of the provided data. Additionally, performance may be affected if very large datasets are integrated without further optimization.

9. CONCLUSION

The Healthcare Budget Analytics Dashboard successfully converts complex Union Budget data into meaningful and actionable insights through interactive visualizations and storytelling. The project effectively demonstrates data preprocessing, database integration, Tableau dashboard development, and web integration using Flask. By providing clear visual analysis of healthcare funding trends and allocations, the system helps users understand government spending priorities and supports strategic decision-making. Overall, the project meets its intended objectives and provides an efficient data analytics solution.

10. FUTURE SCOPE

The project can be extended by integrating real-time Union Budget updates and enhancing the system with predictive analytics to forecast future healthcare funding trends. Integration with government APIs can improve data accuracy and automation, while adding geographic visualizations can provide deeper regional insights into healthcare investments. Furthermore, the solution can be scaled and deployed as a fully web-based analytics platform to support broader accessibility and advanced decision-making capabilities.

11. APPENDIX

Dataset Link:
https://drive.google.com/drive/folders/1piAz0Tv2kzPZ9t0dm0CRDJNuBIHOicBE?usp=sharing

Github Documentation Link:

https://github.com/SuryaPrakashBolloju/union-budget-data-analytics

Github Project Link:

https://github.com/SuryaPrakashBolloju/Healthcare-Budget-Analytics-

Project Demo Link:

https://drive.google.com/file/d/1OxPGTFaH5xbclBOVjBkNV1fTQ2gqyXaL/view?usp=sharing