Report On Summer Internship

In

IBM (CSRBOX)

Student Name

Ayushi Dhimmar (220160107022)

Faculty Mentor

Viral Patel

Submitted To

Department Of Computer Engineering & Information Technology

Government Engineering College, Modasa

Year:2025

Government Engineering College, Modasa.

Government Engineering College, Modasa

Certificate,

This is to certify that Ms. Ayushi Dhimmar (220160107022) of BE semester 7, Computer department of this Institute has successfully completed the Summer Internship (3170001).

During 2nd July to 16th July 2025.

Signature Of Faculty Mentor

Viral Patel

Signature Of Head of Department

P. J. Patel

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Internship Completion certificate

Unique ID : CSRBOX2025DA0161

CSRBOX
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Certificate of Internship

Presented to

Dhimmar Ayushi Vimalkumar

for successfully completing 2 weeks of the **Summer GTU Internship Program**
Subject code : 3170001 with **CSRBOX** on **Data Analytics** hosted from

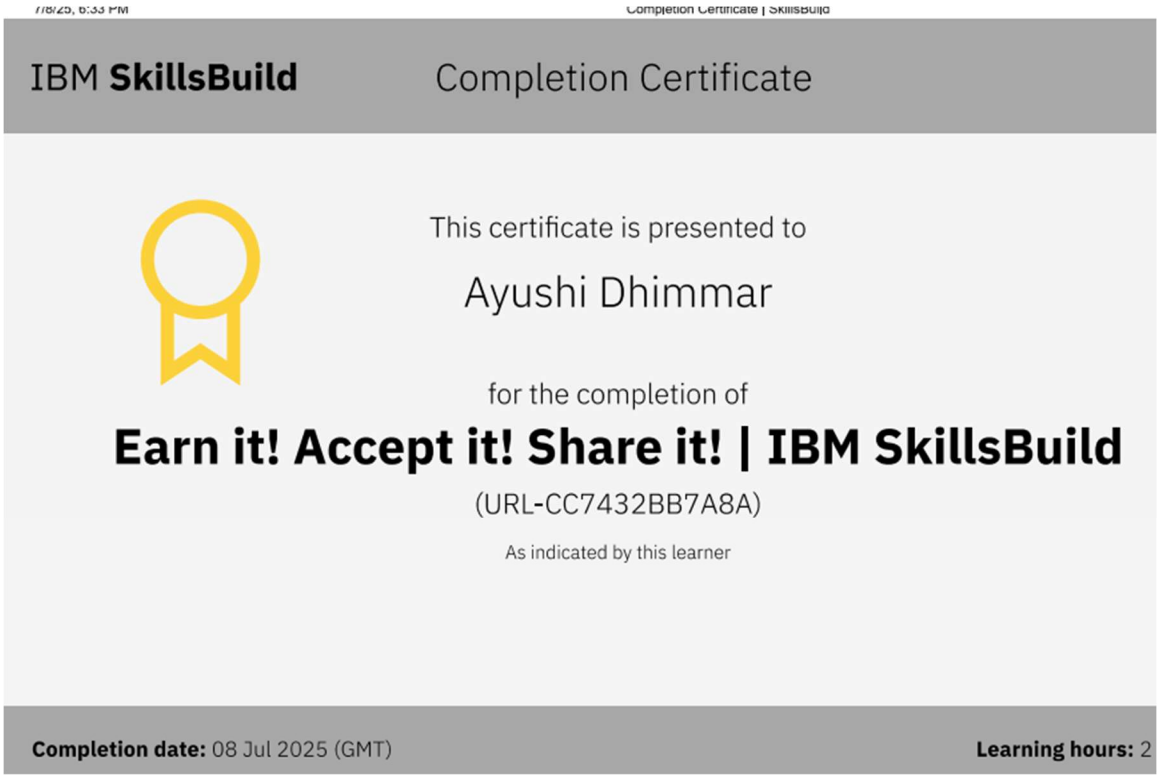
02nd July 2025 to 16th July 2025

We wish you a good luck for their future endeavors.

Manoviraj Singh
Vice President - CSR & Government Practice
CSRBOX Foundation

Shrilakshmi Nair
Manager - CSR Programs
CSRBOX Foundation

Certificate of self-learning course



1. Acknowledgement

I would like to express my sincere gratitude to **IBM** and **CSRBOX** for organizing this internship program. I am thankful to my trainer **Mr. Kartik Hooda** and the coordinator **Vaishali Ma'am** for their support and guidance. Your experiential advice and suggestions, both in technical and personal level, and the parental care that you extended to us were really helpful to us for our personal & professional development. We will uphold this forever in our journey. Your friendly manner that silently enforcing us towards the work life, impacted our life towards a professional thought to a great extent. We are extending our gratitude to you both. We are eternally grateful to you on this behalf. I would also like to thank GTU and my college for making this internship a part of the curriculum, which helped me learn practical skills in data analytics.

I also acknowledge the support from the department faculty at **Government Engineering College, Modasa.** for facilitating and encouraging our participation in this internship.

2. Declaration

I, Ayushi Dhimmar, hereby declare that the project/work submitted in this report is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person. This submission is in partial fulfillment of the summer internship as per GTU guidelines.

Place: Government Engineering College, Modasa

Date: 02 August 2025

Signature of the Student

Ayushi Dhimmar
Enrollment No: 220160107022

3. Abstract

The 15-day summer internship organized by IBM in collaboration with CSRBOX focused on building foundational skills in data analytics, particularly using Tableau for data visualization. As part of the internship, I worked on a project titled 'Healthcare Financial Performance Review', which aimed at analyzing financial metrics like revenue, expenses, and profit margins across healthcare institutions. The project aligned with UN Sustainable Development Goal 3 and demonstrated how data insights can support financially sustainable healthcare systems. This report presents the work done, tools used, and the learnings gained during the internship.

4. Introduction

This internship was conducted by IBM in collaboration with CSRBOX under the IBM SkillsBuild platform. It focused on hands-on learning in the field of data analytics with a primary emphasis on Tableau for data visualization. The internship aligned with UN Sustainable Development Goal 3 (Good Health and Well-being) through a project aimed at analyzing the financial performance of healthcare institutions.

The internship consisted of masterclasses, mentoring sessions, and a guided project, where we created an interactive Tableau dashboard. The project helped demonstrate how data-driven insights can contribute to building sustainable healthcare systems and support better financial decision-making in hospitals and healthcare centers.

5. Problem Statement/Definition

The healthcare sector frequently struggles with financial sustainability due to increasing operational costs, uneven revenue distribution, and inefficient resource allocation. These challenges impact both the quality and accessibility of healthcare services. To address these issues, data analytics can be applied to evaluate key financial indicators such as revenue, expense, and profit margin.

The objective is to use data analysis to uncover inefficiencies and trends across various healthcare facilities and departments. By understanding these financial patterns, administrators and policymakers can make more informed decisions regarding budgeting, resource allocation, and performance improvement, thereby improving the financial health of the sector and ensuring better service delivery.

6. Tools/Technologies

The primary tool used in this internship was Tableau Public, which allowed me to build a complete data dashboard to visualize healthcare financial metrics. In addition to Tableau, we used the IBM SkillsBuild platform for learning modules and the Credly platform for earning digital badges and certificates.

Technologies and platforms used include:

- Tableau Public
- IBM SkillsBuild
- Credly (for certification)
- Microsoft Excel (for data preview and validation)

Skills acquired:

- Data visualization principles
- Dashboard creation using Tableau
- Chart selection and interactivity
- Analytical thinking and data-driven storytelling

7. Timeline Chart

The internship followed a structured schedule, including orientation, masterclasses, a project guidance session, and mentoring. The breakdown of the timeline is as follows:

02-07-2025: Orientation Session

03-07-2025: Masterclass 1

05-07-2025: Masterclass 2

08-07-2025: Masterclass 3

10-07-2025: Project Guidance Session

11-07-2025: Masterclass 4

16-07-2025: Mentoring Session (Final Review)

In addition to these sessions, self-paced learning modules were completed via the IBM SkillsBuild platform.

Masterclass 1 — Introduction to Tableau and Installation (03 July 2025)

The first masterclass served as the foundational step in my internship journey, introducing Tableau as a powerful data visualization tool widely used in the analytics industry. The session began with an overview of Tableau's significance in transforming raw data into interactive, insightful dashboards that support decision-making processes across various domains.

Key Learning Objectives:

- Understand Tableau's role in data analytics.
- Learn how to install and set up Tableau Desktop on a local machine.
- Navigate the Tableau interface and familiarize with key components such as sheets, dashboards, and stories.

Session Activities:

- The trainer guided us through the installation process of Tableau Desktop, ensuring compatibility with our operating systems and troubleshooting any technical issues. This hands-on approach ensured that all participants were ready to engage with the software in subsequent sessions.
- Post-installation, the session focused on the Tableau workspace layout — exploring the menu bar, toolbar, data pane, and shelves (columns, rows, filters). We learned about the concept of 'worksheets' where data visualization is created and how these can be combined into dashboards and stories for comprehensive analysis.

Technical Insights:

- Tableau's drag-and-drop interface simplifies complex visualization tasks.
- Real-time data connection enables interactive exploration.
- Understanding Tableau's Live and Extract connection modes was introduced as a foundation for advanced data management.

Challenges and Solutions:

- Some participants encountered installation issues due to system restrictions. Troubleshooting involved verifying system requirements, using administrator privileges, and restarting systems to resolve conflicts.

Masterclass 2 — Connecting Data and Creating Basic Visualizations (05 July 2025)

The second masterclass focused on practical skills for connecting data sources to Tableau and creating fundamental visualizations. This session was critical in transitioning from tool setup to actual data exploration.

Key Learning Objectives:

- Connect Tableau to multiple data sources including Excel and CSV files.
- Create basic visualizations such as bar charts, line charts, and geographical maps.
- Understand Tableau's data pane and how to manipulate fields.

Session Activities:

- The trainer demonstrated the steps to import datasets, emphasizing data integrity and formatting requirements. We practiced connecting to sample files and refreshing data sources.
- We explored different chart types, focusing on their appropriate use cases. For example, bar charts for categorical comparisons, line charts for trends over time, and maps for geographic data representation. Practical exercises included building each type of visualization and customizing labels, colors, and filters.

Technical Insights:

- Tableau automatically detects data types but requires manual adjustments for accuracy.
- Dimensions vs. Measures distinction is fundamental for effective visualization.
- Calculated fields enable creating new metrics beyond raw data.

Challenges and Solutions

Handling datasets with inconsistent formatting required preprocessing outside Tableau. The importance of clean and well-structured data was reinforced. Some participants struggled with map visualizations due to missing geographic data fields; the trainer provided guidance on data enrichment.

Masterclass 3 — Dashboard Planning Using PowerPoint (08 July 2025)

The third masterclass emphasized the importance of planning and structuring dashboards before technical implementation, fostering a user-centric approach.

Key Learning Objectives:

- Learn dashboard design principles focused on clarity and usability.
- Use PowerPoint to create detailed outlines and storyboards of dashboard layouts.
- Identify key performance indicators (KPIs) and select appropriate visualization types.

Session Activities:

- The trainer introduced best practices for dashboard design, including minimalism, logical flow, and interactivity. We discussed how to tailor dashboards for specific audiences, considering their information needs.
- Using PowerPoint, we created storyboards illustrating dashboard sections, charts, filters, and navigation paths. This planning phase facilitated peer review and iteration before investing time in Tableau.

Technical Insights:

- Storyboarding helps identify data requirements and visualization scope.
- Visual hierarchy guides user attention to critical insights.
- Prototyping dashboards in PowerPoint saves development time and enhances communication.

Challenges and Solutions:

- Condensing complex data into clear visuals was challenging. We learned to prioritize KPIs and avoid clutter. Peer feedback highlighted areas needing simplification or better flow, which were incorporated before moving to Tableau.

Masterclass 4 — Dashboard Development in Tableau (11 July 2025)

The final masterclass focused on technical dashboard assembly in Tableau, translating the PowerPoint storyboard into an interactive data product.

Key Learning Objectives:

- Build multi-sheet dashboards combining different chart types.
- Add filters, actions, and parameters to enable dynamic user interaction.
- Optimize dashboards for performance and usability.

Session Activities:

- We practiced dragging and dropping worksheets onto the dashboard canvas, arranging them for logical flow and visual balance. The trainer demonstrated how to add filters to allow users to slice data dynamically.
- Actions such as highlighting and URL actions were introduced to enhance interactivity. We explored dashboard formatting options to maintain consistency in fonts, colors, and layout.

Technical Insights:

- Dashboard actions improve storytelling by linking visual elements.
- Performance optimization involves minimizing complex calculations and limiting data extracts.
- Responsive design considerations were discussed for varying screen sizes.

Challenges and Solutions:

- Balancing dashboard complexity and usability was a recurring challenge. Excessive filters or visuals degraded performance and user experience. Iterative testing and pruning were necessary to deliver a clean, efficient dashboard.

Project Guidance Session (10 July 2025)

The Project Guidance Session was a pivotal point in the internship where we presented our initial work progress and received expert feedback to refine our approach. This session focused on addressing challenges faced so far and aligning our projects with real-world expectations.

Key Objectives:

- Review project development status.
- Identify bottlenecks and technical difficulties.
- Gain actionable feedback from trainers for improvement.
- Clarify doubts related to Tableau functionalities and data analytics concepts.

Session Activities:

- Participants shared their dashboard drafts and explained the rationale behind visualization choices. Trainers evaluated the clarity, accuracy, and effectiveness of data presentations. Common issues such as data inconsistencies, filter implementation problems, and dashboard responsiveness were discussed.
- The session also included a Q&A segment where trainers provided tips on best practices for data preprocessing, visualization selection, and storytelling. Emphasis was placed on iterative development and user feedback incorporation.

Technical Insights:

- Importance of validating data and results before visualization.
- Using Tableau's calculation fields to address specific analytical needs.
- Leveraging Tableau's built-in performance recorder to optimize dashboard speed.

Challenges and Solutions:

Some dashboards were overly complex, leading to clutter and confusion. Trainers recommended simplifying visuals and focusing on key insights. Participants learned to balance depth of analysis with dashboard usability.

Mentoring Session (Data Analytics) (16 July 2025)

The final mentoring session provided comprehensive support on both technical and career development aspects. It was an opportunity to consolidate learning and seek advice for future growth.

Key Objectives:

- Receive personalized feedback on internship performance.
- Discuss career pathways in data analytics and related fields.
- Understand industry trends and required skill sets.
- Plan next steps for continued skill development.

Session Activities:

- Mentors reviewed individual progress, highlighting strengths and areas needing improvement. The session covered advanced topics like data storytelling, automation in analytics, and emerging tools complementing Tableau.
- Career guidance focused on building a portfolio, pursuing certifications, and networking strategies. Practical tips on resume writing and interview preparation for analytics roles were shared.

Technical Insights:

- Integration of Tableau with other tools such as Python and SQL for advanced analytics.
- The growing importance of cloud-based analytics platforms.
- Emphasis on domain knowledge to contextualize data insights.

Challenges and Solutions:

- Balancing technical expertise with business understanding was emphasized as a critical challenge for aspiring data analysts. Mentors advised actively engaging with real datasets and cross-functional teams to build this competence.

8. Module Development

During the internship, a project titled 'Healthcare Financial Performance Review: Analyzing Key Metrics for Sustainable Growth' was undertaken. The objective was to use a real-world healthcare dataset to analyze financial performance across hospitals and healthcare organizations, focusing on revenue, expense, and profit margin.

From five available datasets—Agriculture, Education, Finance, Healthcare, and Tourism—I selected the Healthcare dataset. The dataset contained financial and operational data across various regions and facility types, which helped examine financial trends and efficiencies.

My hypothesis was that healthcare institutions with balanced revenue-to-expense ratios and optimized profit margins are more likely to deliver sustainable services.

Objectives of the project:
- Analyze revenue, expenses, and profit margins
- Identify performance trends by region/facility
- Highlight cost inefficiencies
- Suggest planning improvements

The dashboard was developed using Tableau Public. Key visualizations included:
- KPI overview: Revenue, Expense, Profit Margin
- Line Chart: Profit Margin Over Time
- Donut Chart: Patient Distribution by Treatment Type
- Bar Chart: Revenue vs Expense by Region
- Bubble Chart: Cost Efficiency by Department

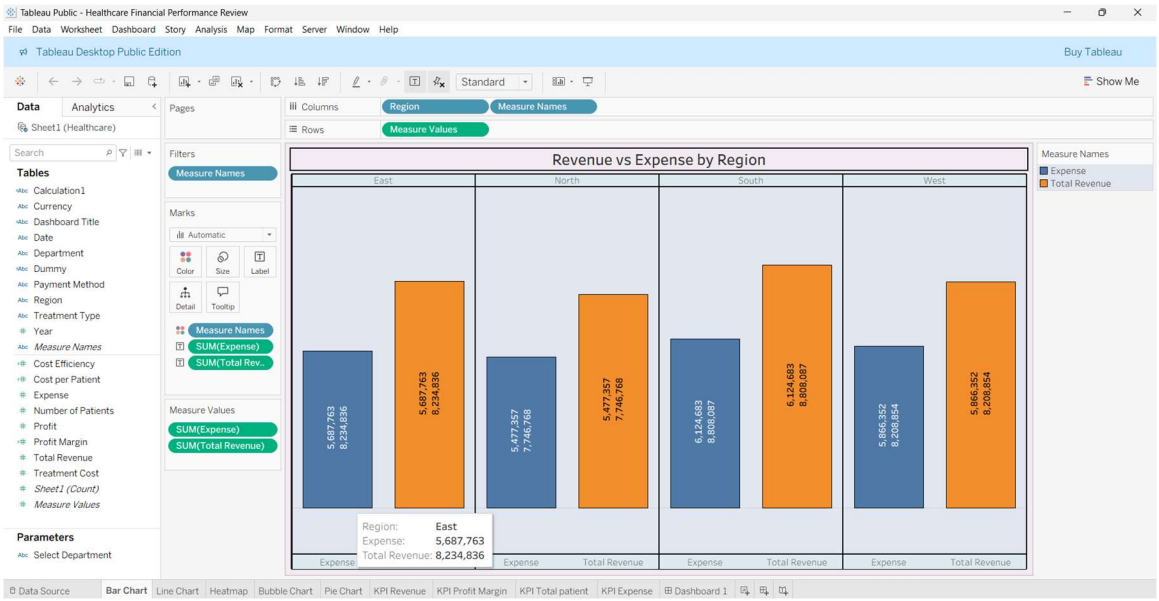
Interactivity was added using filters for Department, Region, Treatment Type, and Year. This allowed dynamic exploration of trends. Data preparation was minimal since the dataset was mostly clean, but column formatting and field configuration were done in Tableau.

The final dashboard was published on Tableau Public and shared via a link.

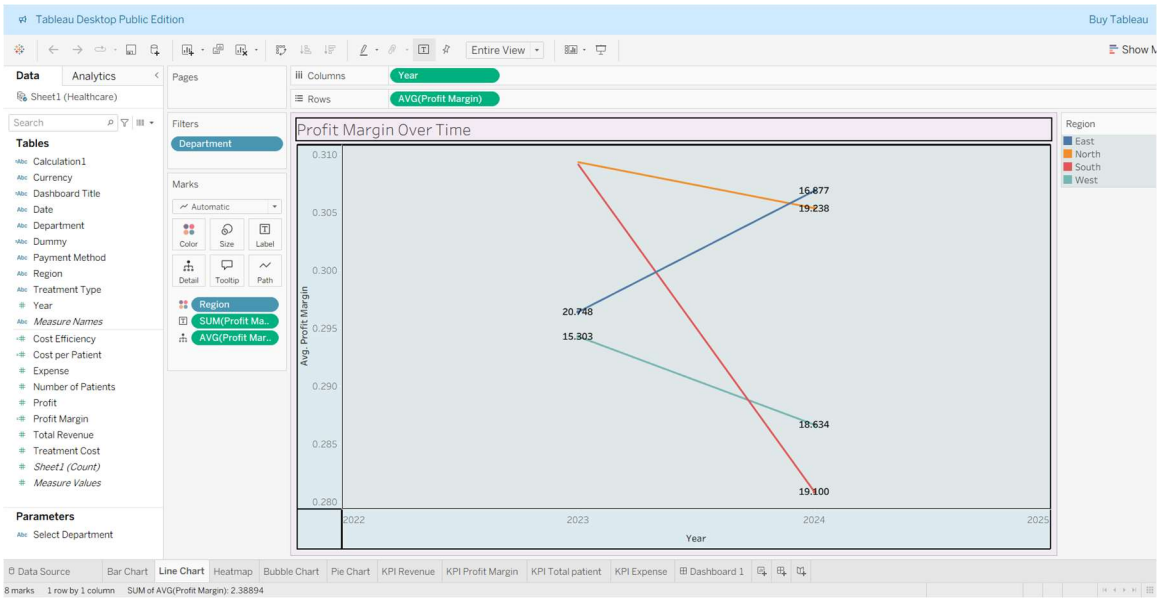
6. Project Images

Below are placeholder slots where screenshots of the Tableau dashboard:

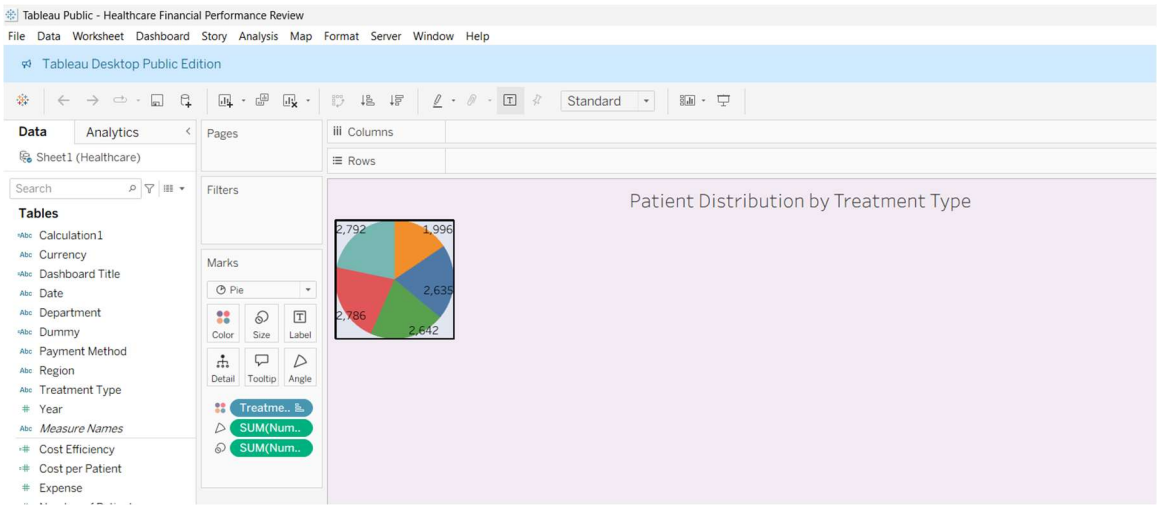
[KPI Overview]



[Revenue vs Expense by Region]

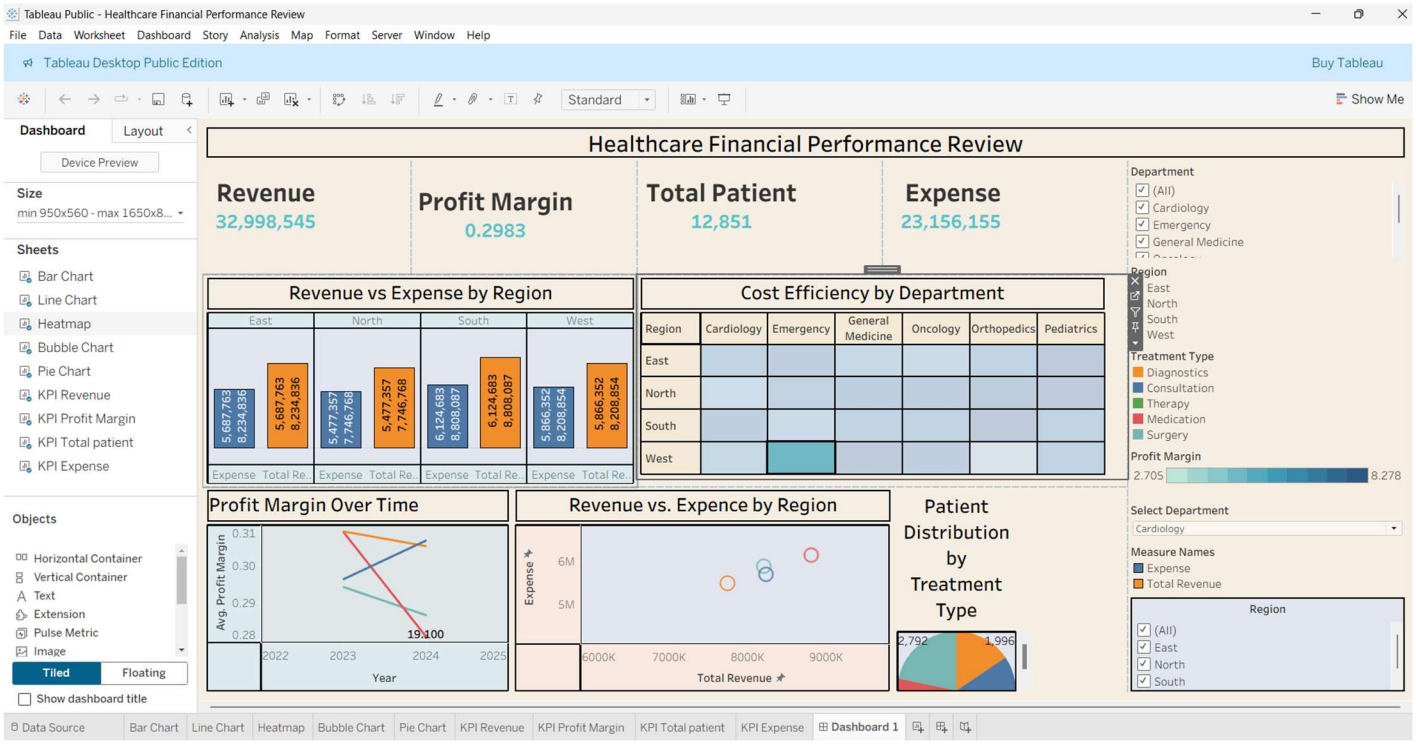


[Profit Margin Trend]



[Piet Chart – Patient Distribution]

Dashboard



[Overall Dashboard View]

7. Conclusion

This internship provided practical exposure to data analytics using Tableau and allowed me to work on a real-world problem aligned with UN SDG 3. By analyzing healthcare data, I developed a functional and insightful dashboard capable of assisting financial decision-making in healthcare institutions.

The project strengthened my technical understanding of Tableau, data visualization, and financial analytics. It also improved my ability to communicate insights and design dashboards that are user-friendly and actionable.

9. References

IBM SkillsBuild Platform: https://skillsbuild.org

CSRBOX Organization: https://csrbox.org

Tableau Public: https://public.tableau.com

UN Sustainable Development Goals: https://sdgs.un.org/goals

Credly Certification Platform: https://www.credly.com/

Internship Dashboard Link:

https://public.tableau.com/shared/ZWN594KX7?:display_count=n&:origin=viz_share_link