

Visualizing And Predicting Heart Diseases With An Interactive Dash Board

PROJECT REPORT

Submitted by

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1. INTRODUCTION

Heart diseases remain a significant global health concern, causing a high number of deaths each year. Detecting and preventing these diseases early is essential to reduce their impact. Our project, titled "Visualizing and Predicting Heart Diseases with an Interactive Dashboard," is an innovative effort to provide individuals and healthcare professionals with tools to make informed decisions.

In this project, we use advanced data analysis, machine learning, and interactive visualizations to create a comprehensive solution. Our interactive dashboard presents a user-friendly interface for exploring heart disease data. This tool helps users understand risk factors, trends, and potential connections.

Our primary goals with this project are to raise public awareness and provide healthcare professionals with a valuable resource for making more accurate diagnoses and personalized recommendations. Ultimately, we hope to contribute to reducing the incidence of heart disease and improving overall heart health.

1.1 PROJECT OVERVIEW

"Visualizing and Predicting Heart Diseases with an Interactive Dash Board" is all about creating a special visualizations, dashboard and story that uses data to help deal with the challenges of heart diseases. This dashboard is like a user-friendly tool, and it's meant to help both regular people and healthcare experts. The main goal is to find heart diseases early, understand them better, and prevent them effectively.

The heart disease visualizations, dashboard and story are the heart of our project. It's like a user-friendly tool that lets you look at information about heart diseases. You can see things like what might cause heart diseases, how they're changing over time, and if there are any connections between different factors. This tool makes it easier for people to make smart choices about their heart health.

Our project also aims to raise awareness about heart diseases and give healthcare experts a valuable tool. We want to reduce how often people get heart diseases and make everyone's heart health better. Our project is a big step toward catching and preventing heart diseases early.

1.2 PURPOSE

Our project aims to create a user-friendly tool, the heart disease visualization dashboard, to help both individuals and healthcare professionals detect, understand, and prevent heart diseases early. By providing accessible insights into heart disease risk factors and trends, we intend to empower people to make informed decisions about their heart health. Ultimately, our goal is to reduce the occurrence of heart diseases, raise public awareness, and provide healthcare experts with a valuable resource for early intervention and prevention, thereby improving overall heart health.

2. LITERATURE SURVEY

2.1 EXISTING PROBLEM

The current existing problem we're have is the high number of heart diseases, which continue to be a major global health concern. Many people are suffering from heart diseases, and early detection and prevention are very important to reduce their impact. Currently, there's a lack of user-friendly tools that make it easy for both individuals and healthcare professionals to access and understand heart disease data. This makes it challenging to identify risk factors and trends effectively. Our project seeks to solve this problem by creating an innovative visualizations, dashboard and a story which will grant the people with the insights they need to make informed decisions about their heart health, ultimately contributing to a reduction in heart disease cases.

2.2 REFERENCES

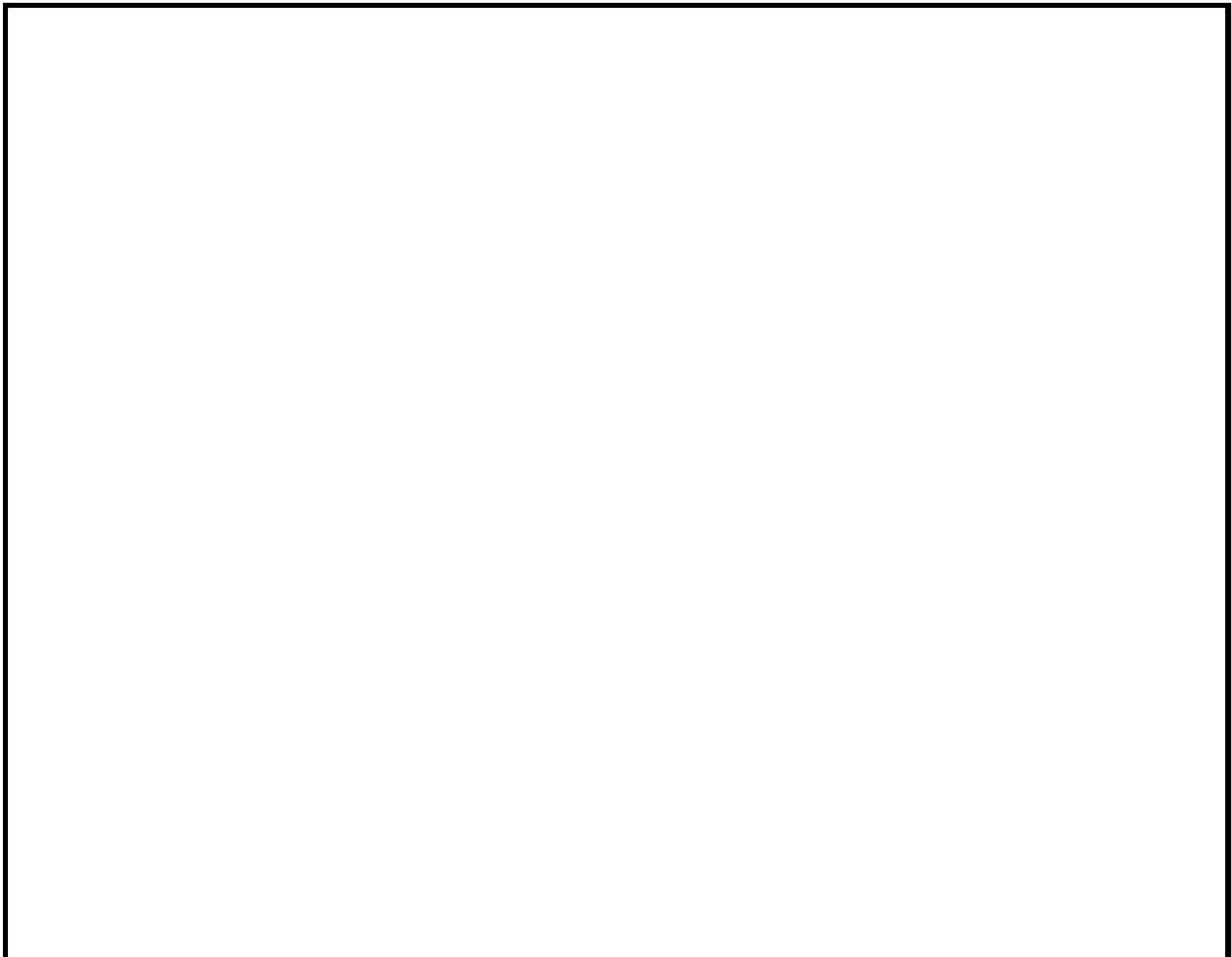
- <https://www.mdpi.com/1999-4893/16/2/88#:~:text=Many%20factors%2C%20such%20as%20diabetes,role%20in%20the%20medical%20field>
- <https://bmcmedinformdecismak.biomedcentral.com/articles/10.1186/s12911-021-01527-5>
- https://www.researchgate.net/publication/349140147_Heart_Disease_Prediction
- <https://www.hindawi.com/journals/cin/2021/8387680/>
- <https://iopscience.iop.org/article/10.1088/1757-899X/1022/1/012072/meta>

2.3 PROBLEM STATEMENT DEFINITION

Heart diseases are a leading cause of death globally, and early detection is crucial for effective prevention and treatment. The problem at hand is the lack of easily accessible and comprehensive tools for visualizing and predicting heart diseases. Existing methods and platforms often fall short in delivering user-friendly interfaces that allow individuals and healthcare practitioners to analyze and understand heart health data effectively. Many people remain unaware of their specific risk factors, impeding early intervention and preventive measures. This information gap limits timely decision-making in healthcare. To address this, the development of an interactive dashboard for visualizing and predicting heart diseases is essential, ensuring that data-driven insights are readily available, empowering individuals to manage their health, and aiding healthcare professionals in making informed decisions.

3. IDEATION & PROPOSED SOLUTION

3.1 EMPATHY MAP CANVAS



3.2 IDEATION AND BRAINSTROMING

Step 1: Team Gathering, Collaboration, and problem statement

Template



Brainstorm & idea prioritization

Use this template in your own brainstorming sessions so your team can unleash their imagination and start shaping concepts even if you're not sitting in the same room.

⌚ 10 minutes to prepare
⌚ 1 hour to collaborate
👤 2-8 people recommended

Before you collaborate

A little bit of preparation goes a long way with this session. Here's what you need to do to get going.

⌚ 10 minutes

A Team gathering
Determine who should participate in the session and send an invite. Share relevant information or pre-work ahead.

B Set the goal
Think about the problem you'll be focusing on solving in the brainstorming session.

C Learn how to use the facilitation tools
Use the Facilitation Superpowers to run a happy and productive session.

[Open article](#)

Define your problem statement

What problem are you trying to solve? Frame your problem as a How Might We statement. This will be the focus of your brainstorm.

⌚ 5 minutes

Problem statement
The primary objective of this part is to define the problem statement so that we help healthcare professionals prioritize and execute their ideas. This part also includes a brief discussion on how to prioritize ideas based on their health priorities.



Key rules of brainstorming

To run a smooth and productive session

- Stay in topic.
- Encourage wild ideas.
- Defer judgment.
- Listen to others.
- Go for volume.
- If possible, be visual.

Step 2: Brainstorm, Idea Listing, and Grouping Ideas

2

Brainstorm

Write down any ideas that come to mind that address your problem statement.

⌚ 10 minutes

TIP You can select a sticky note and hit the pencil [switch to sketch] icon to start drawing!

Manasa Reddy	Chaitra	Madhu Murali	Sriram Pavan
Creating a wearable device to monitor our health stats.	Developing mobile applications for healthcare providers to monitor patients' vital signs and provide real-time feedback.	Integrating AI-powered telemedicine platforms to enable secure patient monitoring.	Developing mobile applications for healthcare providers to monitor patients' vital signs and provide real-time feedback.
Promote healthy eating habits and choices.	Developing mobile applications for healthcare providers to monitor patients' vital signs and provide real-time feedback.	Using data analysis to predict patient outcomes and tailor treatment plans.	Developing mobile applications for healthcare providers to monitor patients' vital signs and provide real-time feedback.
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3

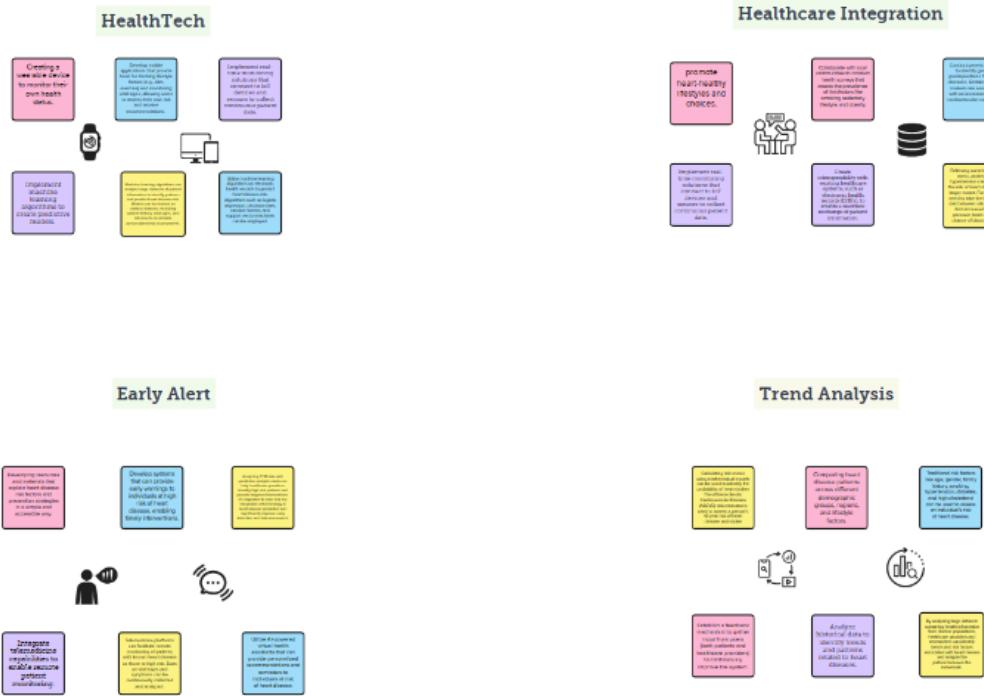
Group ideas

Take turns sharing your ideas while clustering similar or related notes as you go. Once all sticky notes have been grouped, give each cluster a sentence-like label. If a cluster is bigger than six sticky notes, try and see if you can break it up into smaller sub-groups.

⌚ 20 minutes

TIP

Add customizable tags to sticky notes to make it easier to find, browse, organize, and categorize important ideas as themes within your mural.



Step 3: IDEA PRIORITIZATION

4

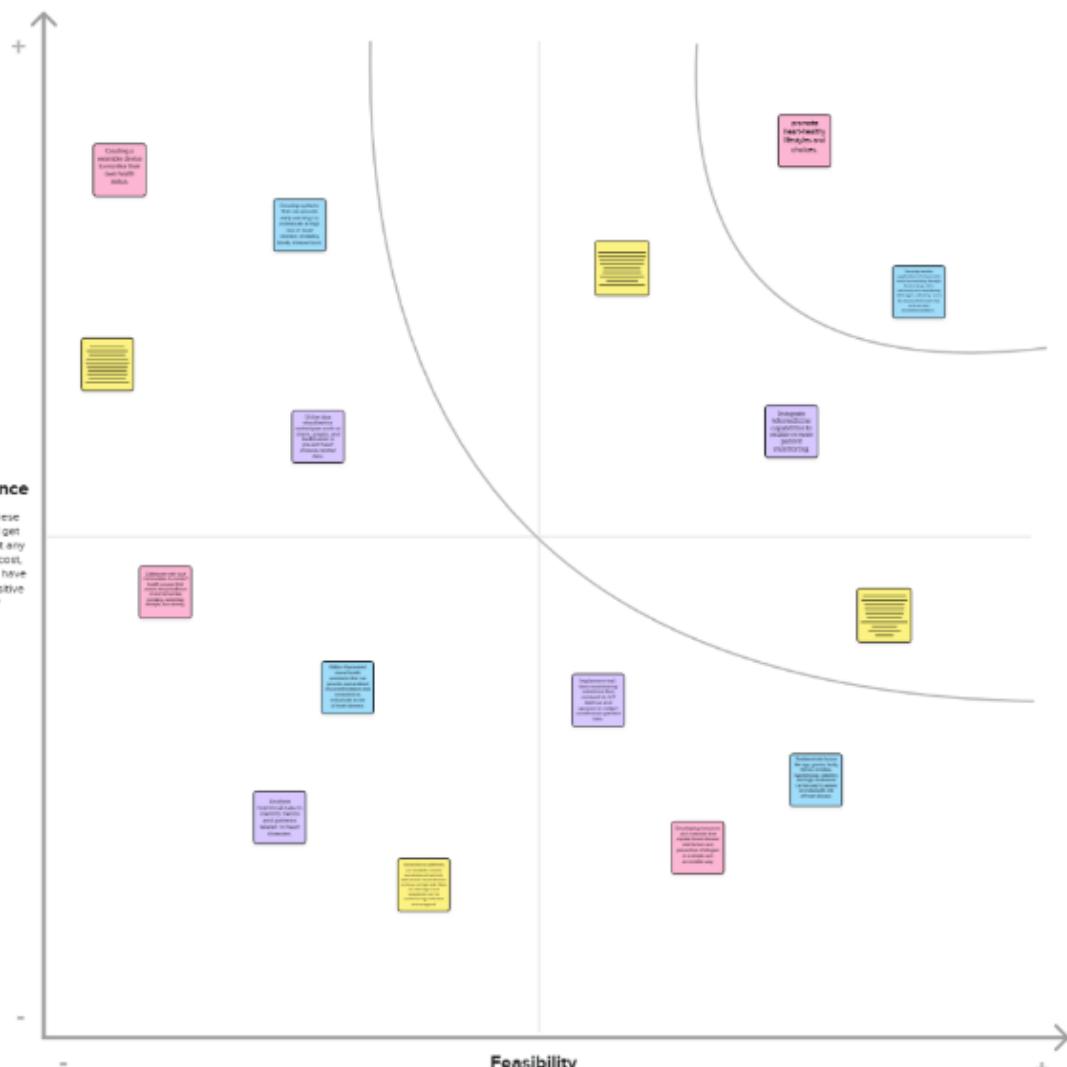
Prioritize

Your team should all be on the same page about what's important moving forward. Place your ideas on this grid to determine which ideas are important and which are feasible.

⌚ 20 minutes

TIP

Participants can use their cursors to point at where sticky notes should go on the grid. The facilitator can confirm the spot by using the laser pointer holding the **H** key on the keyboard.



4. REQUIREMENT ANALYSIS

4.1 FUNCTIONAL REQUIREMENT

FR-No	Functional Requirement(Epic)	Sub Requirements (Story/Sub-Task)
1	Data collection	Gathering relevant data from relevant sources which include patient records, medical history, test results etc. The data is well structured and in format of Excel, CSV or a database.
2	Data Visualization	Made the tableau to connect to our data source through MySQL Server to appropriate file of database. Now the data is made to go through the visualizations by combining fields, pie charts, histograms etc
3	Filtering Selection and	Applied Filters on the data by selecting the specific values to include or exclude and relative data filters as if we need only data of last 30 days. By customizing filters these will be applied to data worksheets and visualizations will update accordingly
4	Predictive Analytics	After filtering the dataset and having the visualizations we have used predictive models such as logistic regression, decision trees, random forests or neural networks for classifications
5	User Authentication	Configuring Tableau Server or tableau online to use the authentication method such as Active Directory, SAML by defining permissions and using features like row-level security, where you can filter the data based on user attributes to control what data each user can see

6	Export and Sharing	Configuring the export settings such as the range of data to export, layout and options relevant to the chosen format such as Excel or .CSV worksheet which helped us communicate effectively and draw better insights and served as form of documentation.
7	User Interaction	A dashboard is a graphical user interface (GUI) that displays information and data in an organized, easy-to-read format. Using URL actions to link to external resources for more information

4.2 NON- FUNCTIONAL REQUIREMENT

S-no	Non-Functional Requirement (Epic)	Sub Requirements (Story/Sub-Task)
1	User Interface Design	Selecting the appropriate data visualisations that best represents that best represent the heart disease data. Common options include bar charts, line scatter plots pie charts and histograms which are easy to interpret and draw better insights.
2	Data Security	Specifying how sensitive health data will be stored, transmitted, and protected from unauthorised access or branches by regular backup tableau configurations and data.

3	Documentation	Providing comprehensive documentation for the project including data sources, dashboards, and system architecture to facilitate future maintenance and development in the form of PDF or Word etc
4	Data Validation and Quality	Users will maintain the thorough documentation of data sources, transformations and validation process which is readily available to all the users who are working in this project
5	Data Integration	This describes how the tableau dashboards will interact with other systems, data sources or API's for the data retrieval through online or downloaded MySQL Servers and create visualizations in it

5. PROJECT DESIGN

5.1 PROPOSED SOLUTION

SL.N O.	Parameter	Description
1.	Problem Statement (Problem to be solved)	<p>Heart diseases are a leading cause of death globally, and early detection is crucial for effective prevention and treatment. The problem at hand is the lack of easily accessible and comprehensive tools for visualizing and predicting heart diseases. Existing methods and platforms often fall short in delivering user-friendly interfaces that allow individuals and healthcare practitioners to analyze and understand heart health data effectively. Many people remain unaware of their specific risk factors, impeding early intervention and preventive measures. This information gap limits timely decision-making in healthcare. To address this, the development of an interactive dashboard for visualizing and predicting heart diseases is essential, ensuring that data-driven insights are readily available, empowering individuals to manage their health, and aiding healthcare professionals in making informed decisions.</p>

2.	Idea / Solution description	<p>To create a comprehensive and user-friendly digital solution that leverages advanced data visualization techniques and predictive analytics to enable healthcare professionals and patients to access, interpret, and predict heart disease risks effectively. This solution should address the challenges of data complexity, real-time monitoring, data privacy, and user education while promoting accessibility, data quality assurance, and continuous improvement, ultimately improving patient outcomes in the management and prevention of heart diseases.</p>
3.	Novelty / Uniqueness	<p>1. Hybrid Revenue Streams: Our model combines multiple revenue streams, including freemium, advertising, affiliate marketing, consultation services, and certification/training. This diverse approach is relatively unique within the healthcare industry.</p> <p>2. Personalization: By offering personalized health predictions and consultation services, your model caters to individuals' specific health needs, which sets it apart from more one-size-fits-all approaches.</p> <p>3. Combining Health and Education: The inclusion of certification and training programs for healthcare</p>

		<p>professionals is innovative. It not only serves as an additional revenue stream but also addresses the need for ongoing education and skills development in the healthcare sector.</p> <p>4. Targeted Advertising: The use of targeted ads in the healthcare space can provide users with relevant content and potentially benefit advertisers by reaching a highly specific audience. This personalized advertising approach can be a novel concept in healthcare.</p> <p>5. Data-Driven: The model heavily relies on health data to provide personalized services. This data-driven approach is becoming increasingly common in healthcare but still represents a unique way to deliver value.</p>
4.	Social Impact / Customer Satisfaction	<p>1. Raising public awareness about the causes and risk factors of heart disease, as well as preventive measures. This can be achieved through public health campaigns, school programs, and community initiatives.</p> <p>2. With the help of data visualization techniques, we can implement and promote cardiac rehabilitation programs for individuals who have experienced heart-related issues. These programs can help patients recover and reduce the risk of further</p>

		<p>complications in the society.</p> <p>3. Providing the patients with education of accessibility can ensure universal access to healthcare, including affordable healthcare insurance. Timely diagnosis and treatment can significantly reduce the social impact of heart disease.</p>
5.	Business Model (Revenue Model)	<p>1. Freemium Model: The service provides a basic version for free to users. For advanced features, real-time updates, and personalized health predictions, a subscription fee is charged.</p> <p>2. Advertisement Partnerships: Health-related companies collaborate with the system to display targeted ads, generating revenue through sponsored content.</p> <p>3. Affiliate Marketing: The service partners with health and wellness companies to promote their products and services, earning commissions from sales made through referrals.</p> <p>4. Consultation Services: Users have the option to consult with medical experts for personalized advice on their health data, with a fee for these services.</p> <p>5. Certification and Training Programs: The system offers training programs for healthcare professionals to become proficient in its use, with fees for educational</p>

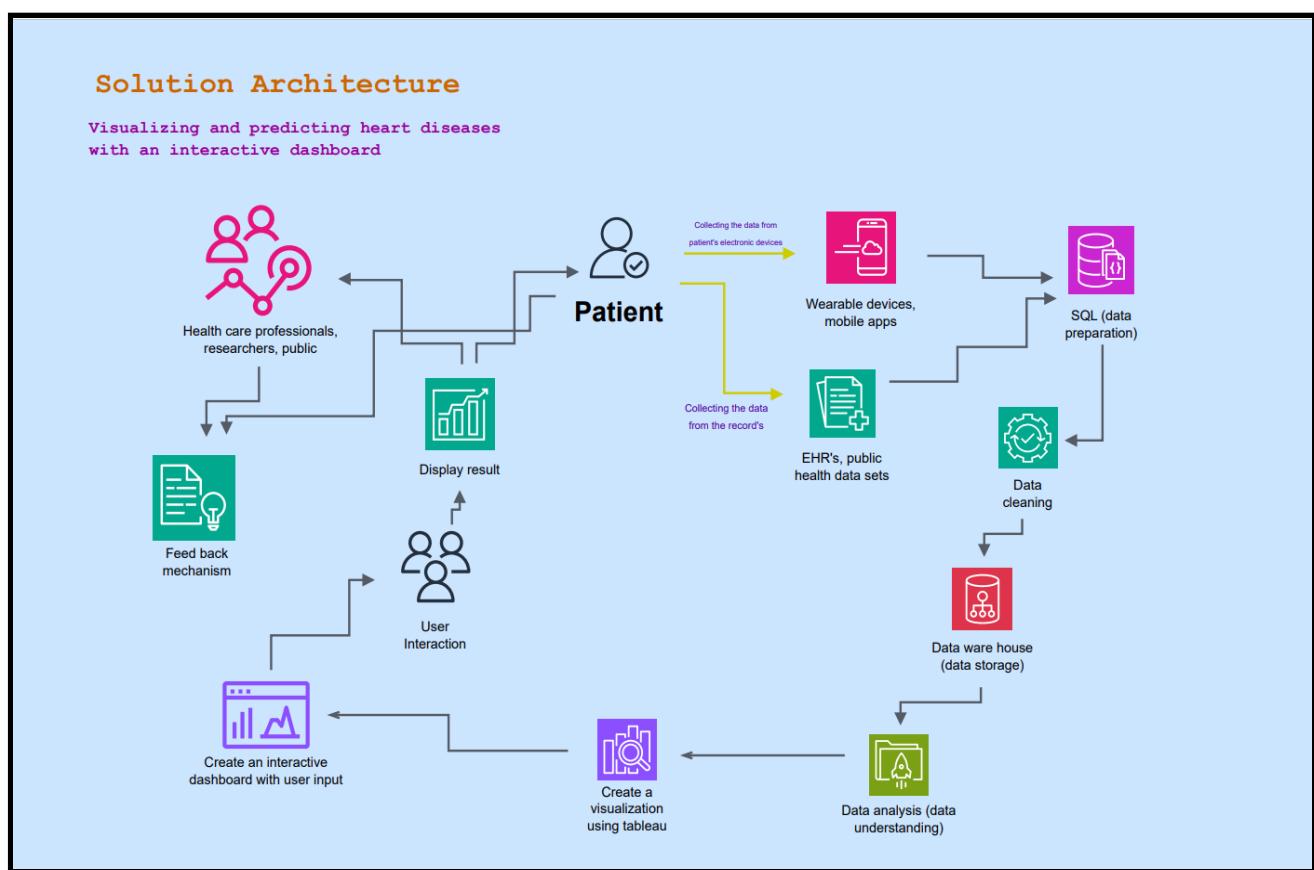
		services.
6.	Scalability of the Solution	<p>1. Freemium Model: This model can be highly scalable as it attracts a large user base with the free basic version.</p> <p>2. Advertisement Partnerships: Scalability depends on attracting more health-related advertisers and users to view ads. As long as there's demand for advertising space and user base is expanding, this model can scale effectively.</p> <p>3. Affiliate Marketing: Scalability is contingent on forming partnerships with more health and wellness companies and continually increasing the user base. The more users and partners, the greater the potential for commissions.</p> <p>4. Consultation Services: Scalability here can be limited by the availability of qualified medical experts. To scale, we would need to recruit and manage a larger pool of professionals and ensure efficient scheduling.</p> <p>5. Certification and Training Programs: This model can be highly scalable since it primarily involves online education.</p>

5.2 SOLUTION ARCHITECTURE

Solution architecture is a complex process – with many sub-processes – that bridges the gap between business problems and technology solutions.

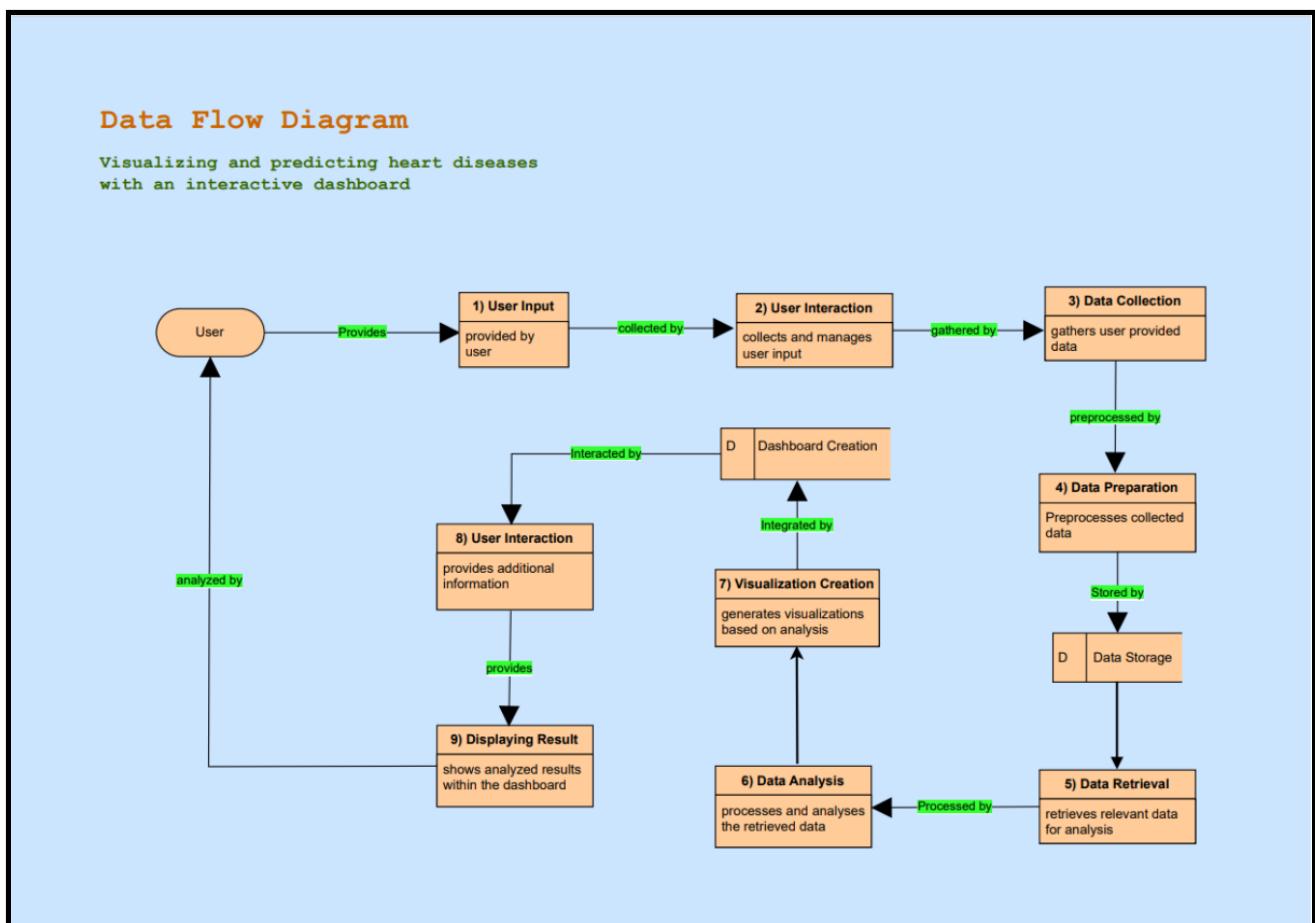
Its goals are to:

- Find the best tech solution to solve existing business problems.
- Describe the structure, characteristics, behaviour, and other aspects of the software to project stakeholders.
- Define features, development phases, and solution requirements.
- Provide specifications according to which the solution is defined, managed, and delivered



5.3 DATA FLOW DIAGRAMS AND USER STORIES

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.



USER STORIES

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Patient (Mobile user)	Mobile App Version	USN-1	As a patient, I want a user-friendly mobile app version of the dashboard, so I can monitor my health and receive alerts on the go.	The mobile app is available for both iOS and Android, provides login, a simplified mobile user interface, access to real-time alerts and	Medium	Future release

Data Scientist	Access to Anonymized Patient Data for Research	USN-2	As a data scientist, I need access to anonymized patient data for research purposes, so I can contribute to advancements in heart disease prediction and management.	Data scientists can access anonymized patient data securely, complying with privacy regulations and utilizing clear documentation.	Medium	Ongoing
Healthcare Provider (Cardiologist)	View Comprehensive Patient Data	USN-3	As a cardiologist, I need to access a comprehensive view of my patients' medical history, lab results, and EKG data in one place, so I can diagnose and treat heart diseases more effectively.	I can easily switch between patients within the dashboard without losing my current view.	High	Initial Release
Healthcare Provider (Nurse)	Real-Time Alerts for Patient Monitoring	USN-4	As a nurse, I want to receive real-time alerts when a patient's health metrics indicate a sudden change, so I can provide immediate care and intervention.	Nurses receive realtime alerts when patient health metrics deviate significantly, with alerts containing necessary patient information.	High	Initial Release

Healthcare Administrator	System Performance Monitoring	USN-5	<p>As a healthcare administrator, I want to monitor the dashboard's performance, usage, and compliance with data protection regulations, so I can ensure the system operates efficiently and securely.</p>	<p>Healthcare administrators can monitor system performance, usage, and data protection compliance through a dedicated admin interface.</p>	Medium	Initial Release
Patient	Secure Data Sharing	USN-6	<p>As a patient, I want to securely share my data with my healthcare provider through the dashboard, so they can monitor my health and provide guidance even if I'm not physically in their office.</p>	<p>Patients can securely share their health data with authorized healthcare providers, ensuring security, privacy, and patient control.</p>	High	Initial Release
Patient	Discussion Forums and Community	USN-7	<p>As a patient, I'd like to join discussion forums or communities within the dashboard where I can connect with others</p>	<p>Users can join and participate in discussion forums and communities on heart disease topics within the dashboard.</p>	Low	Future release

			managing heart diseases, share my experiences, and gather valuable support and advice.			
Hospital Administrator	Monitoring	USN-8	As a hospital administrator, I want to monitor the overall patient load and bed availability, so I can allocate resources effectively.	Hospital Administrator can see the room availabilities for patients.	Medium	Initial Release
Patient	Personal Health care appointments	USN-9	As a patient, I want to schedule appointments with my healthcare provider through the dashboard, making it convenient and easy to manage my healthcare.	Patient can get essential tips from my health care mentor.	Medium	Ongoing

6. PROJECT PLANNING & SCHEDULING

6.1 TECHNOLOGY STACK(ARCHITECTURE AND STACK)

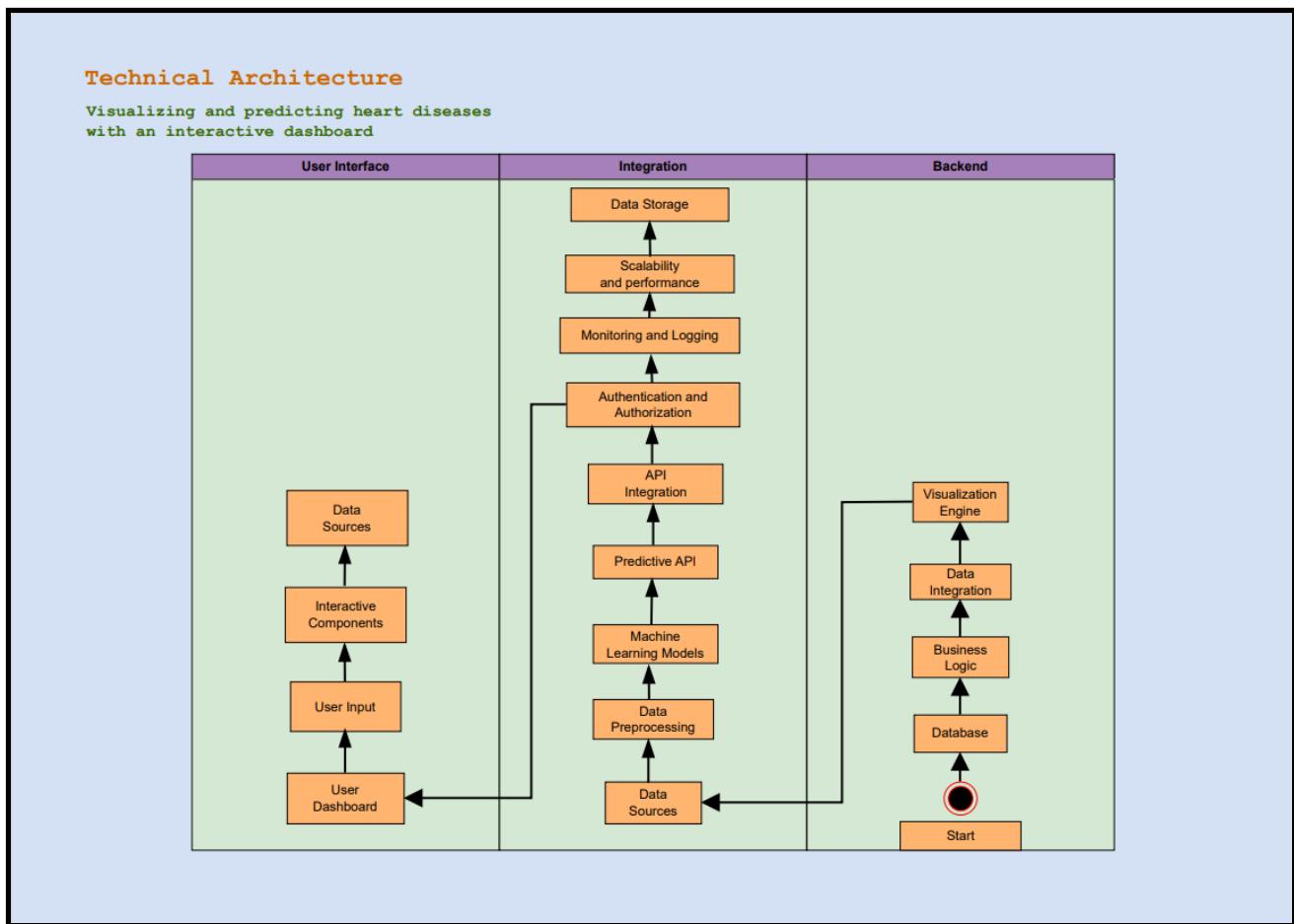


Table-1 : Components & Technologies:

S. No	Component	Description	Technology
1	User Interface	Web-based interactive dashboard for user interaction.	HTML, CSS, JavaScript, React.js
2	Chatbot	User interaction and support through a chatbot.	IBM Watson Assistant
3	User Interface	User friendly, allowing people to interact with technology easily and intuitively.	VUI (Voice User interface), Augmented reality (AR) and virtual reality (VR) interfaces, User experience (UX) Design tools.
4	File Storage	Storage for medical images and reports.	AWS S3 (Simple Storage Service)
5	Database	For data storage, data retrieval, data	MySQL, Microsoft SQL

		integrity, data security.	server, Oracle databases, SQLite, MongoDB, Cassandra
6	Machine Learning model	ML models can be used in Predictive Analytics, anomaly detection and in image and video analysis.	Regression Models (linear and polynomial regression) Clustering models like DBscan used to uncover patterns
7	Application Logic	Backend logic for data processing and prediction.	Python (Flask)
8	Speech-to-Text	Service for voice commands and narration.	IBM Watson Speech to Text Service
9	Cloud Database	Scalable cloud-based database solution.	AWS RDS (Relational Database Service)
10	External API-1	Integration with weather data for health insights.	IBM Weather API
11	External API-2	Identity verification for user security.	Aadhar API
12	Infrastructure	Deployment on either local or cloud servers.	Local Server Configuration: - OS: Linux - Web Server: Nginx Cloud Server Configuration: - Cloud Provider: AWS - Serverless: AWS Lambda

Table-2: Application Characteristics:

S. No	Characteristics	Description	Technology
1	User-Friendly	The app is easy to use and understand for everyone.	Responsive Web Design, Usability Testing
2	Real-Time Data	It shows the most up-to-date heart disease information.	WebSocket for Real-Time Updates
3	Predictive	It uses smart tools to predict heart disease risks.	Machine Learning Algorithms (e.g., Scikit-learn)
4	Interactive	Users can play around with the app and customize it as they like.	JavaScript Libraries (e.g., D3.js),

			Reactivity
5	Scalable	The app can grow and handle more users and data.	Cloud-Based Hosting (e.g., AWS, Azure), Horizontal Scaling
6	Secure	It keeps data safe and protects your privacy.	Data Encryption (TLS/SSL), Role-Based Access Control
7	Integrative	It connects to other apps to get more information.	API Integration (e.g., RESTful)
8	Robust	The app is strong and does not break easily.	Exception Handling, Redundancy
9	Performance	It's super-fast and responds quickly to your requests.	Caching, Database Indexing
10	Accessibility	It's built so that everyone, including people with disabilities, can use it easily.	WCAG (Web Content Accessibility Guidelines)

6.2 Project Planning

Product Backlog, Sprint Schedule, and Estimation

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Data integration and pre-processing	USN-1	As a project manager, I want to oversee the progress of data integration and ensure that the project stays on schedule and within budget.	3	High	Manasa
		USN-2	As a data engineer, I want to establish a data integration pipeline that can update data regularly	2	High	Chaithra
		USN-3	As a data scientist, I want to preprocess the integrated data,	4	Low	Sriram

			cleaning and organising it for analysis.			
		USN-4	As a data analyst, I want to gather and integrate relevant heart disease datasets to feed into the system.	4	Medium	Manasa
		USN-5	As a database administrator, I want to set up a reliable and efficient database system to store the heart disease data for easy retrieval and analysis.	4	High	Madhu
Sprint-2	User authentication and access control	USN-6	As a user, I want to register for the application by providing my email and password.	3	High	Manasa
		USN-7	As an administrator, I want to be able to manage user roles and permissions within the system.	3	High	Chaithra
		USN-8	As a developer, I want to implement multi - factor authentication (MFA) to enhance the security of user accounts.	3	Medium	Madhu
		USN-9	As a user, I want to receive email confirmations upon successful registration and important account actions, such as password changes.	4	Medium	Manasa
		USN-10	As a support agent, I want access to a user's	3	Low	Sriram

			account for troubleshooting purposes, with proper user consent and authentication checks.			
Sprint-3	Database setup	USN-11	As a user, I want to continue to provide data and feedback.	3	Low	Madhu
		USN-12	As an administrator, I want to review and approve data requests.	4	High	Manasa
		USN-13	As a developer, I want to design the database schema.	3	Medium	Chaithra
		USN-14	As a support agent, I want to assist with any data submission issues from users.	4	High	Sriram
Sprint-4	Real time updates and deployment	USN-15	As a user, I want to experience real -time data updates.	4	High	Chaithra
		USN-16	As an administrator, I want to oversee deployment.	3	Medium	Manasa
		USN-17	As a developer, I want to implement real -time data updates.	4	Medium	Sriram
		USN-18	As a support agent, I want to assist with real - time data related issues.	2	Low	Madhu
		USN-19	As a developer, I want to deploy the dashboard.	4	High	Chaithra
Sprint-5	Security compliance and validation	USN-20	As a developer, I want to conduct a security code review .	5	High	Chaithra
		USN-21	As a security analyst, I want to perform a	4	Medium	Sriram

			security scan of the application.			
		USN-22	As a compliance officer, I want to ensure that the software complies with GDPR regulations.	3	High	Manasa
		USN-23	As a developer, I want to implement two - factor authentication.	3	Medium	Chaithra
		USN-24	As a quality assurance engineer, I want to conduct penetration testing.	4	High	Madhu
Sprint-6	Personal healthcare appointments	USN-25	As a patient, I want to be able to schedule a healthcare appointment online.	3	Medium	Sriram
		USN-26	As a patient, I want to receive appointment reminders.	1	Low	Sriram
		USN-27	As a patient, I want to be able to reschedule or cancel my appointment online.	2	Low	Madhu
		USN-28	As a healthcare provider, I want to receive appointment requests through an online system.	2	Medium	Madhu
		USN-29	As a healthcare provider, I want to be able to confirm or reject appointment requests.	2	Medium	Chaithra
		USN-30	As a patient, I want to have access to my appointment history.	1	Low	Chaithra
		USN-31	As a healthcare	2	Medium	Manasa

			provider, I want to be able to securely store patient appointment data.			
		USN-32	As a patient, I want to be able to choose my preferred healthcare provider when scheduling appointments.	1	Low	Manasa

Project Tracker, Velocity & Burndown Chart:

Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Complet ed (as on Planned End Date)	Sprint Release Date (Actual)
Sprint-1	17	3 Days	27 Oct 2023	29 Oct 2023	17	29 Oct 2023
Sprint-2	16	4 Days	30 Oct 2023	02 Nov 2023	16	02 Nov 2023
Sprint-3	14	7 Days	02 Nov 2023	08 Nov 2023	14	08 Nov 2023
Sprint-4	17	4 Days	09 Nov 2023	12 Nov 2023	17	12 Nov 2023
Sprint-5	19	8 Days	12 Nov 2023	19 Nov 2023	19	19 Nov 2023
Sprint-6	14	6 Days	20 Nov 2023	25 Nov 2023	14	25 Nov 2023

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

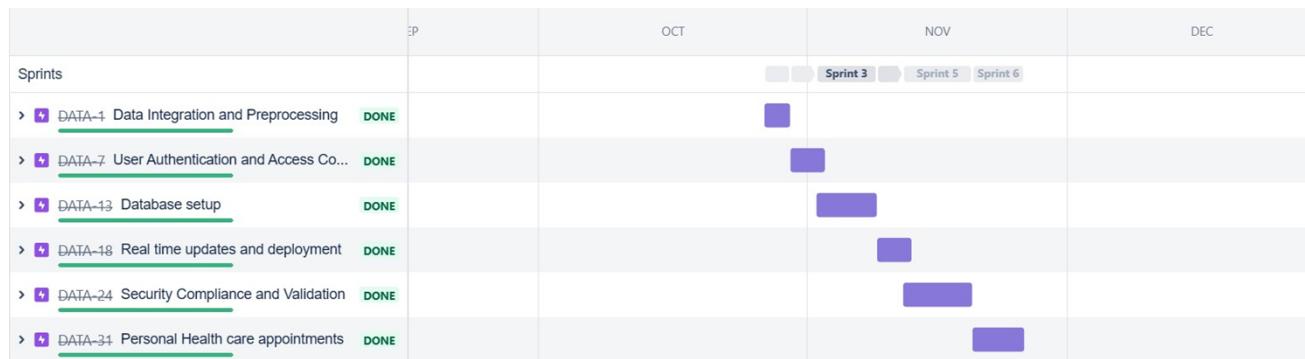
$$AV = \text{Sprint duration}/\text{Velocity}$$

$$AV = 16/4 = 4$$

Burndown Chart:

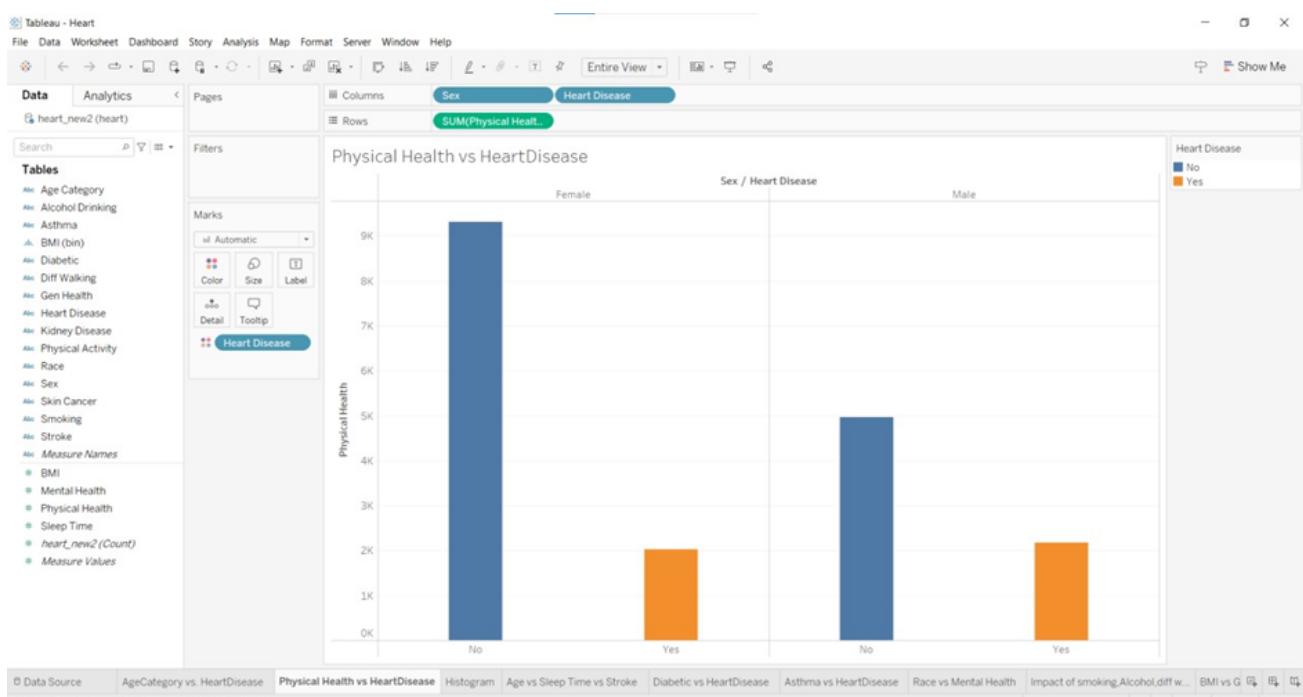
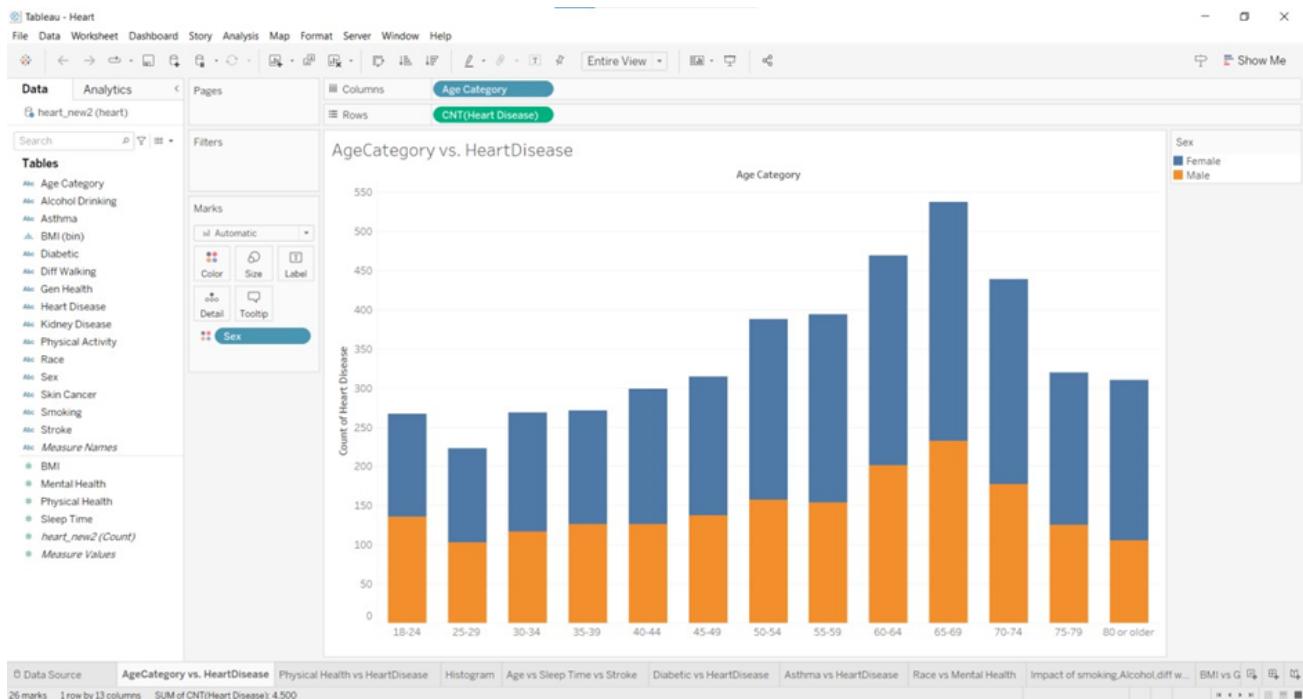
A burn down chart is a graphical representation of work left to do versus time. It is often used in agile software development methodologies such as Scrum. However, burn down charts can be applied to any project containing measurable progress over time.

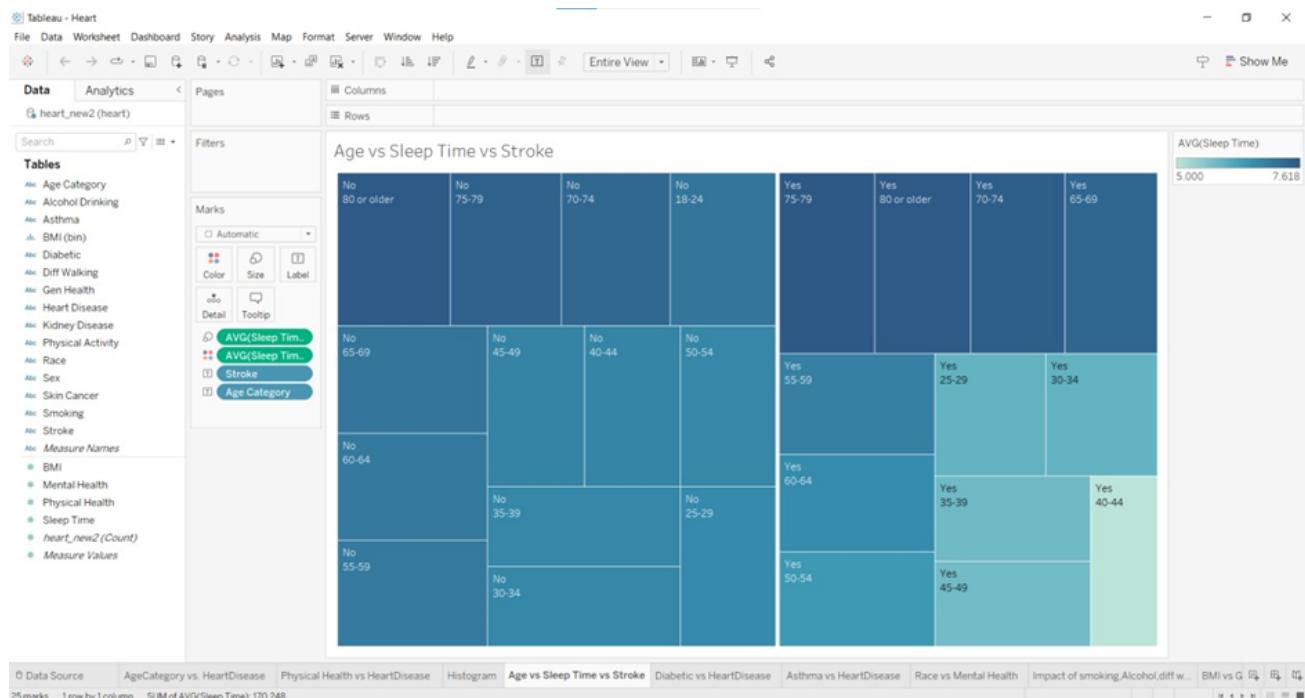
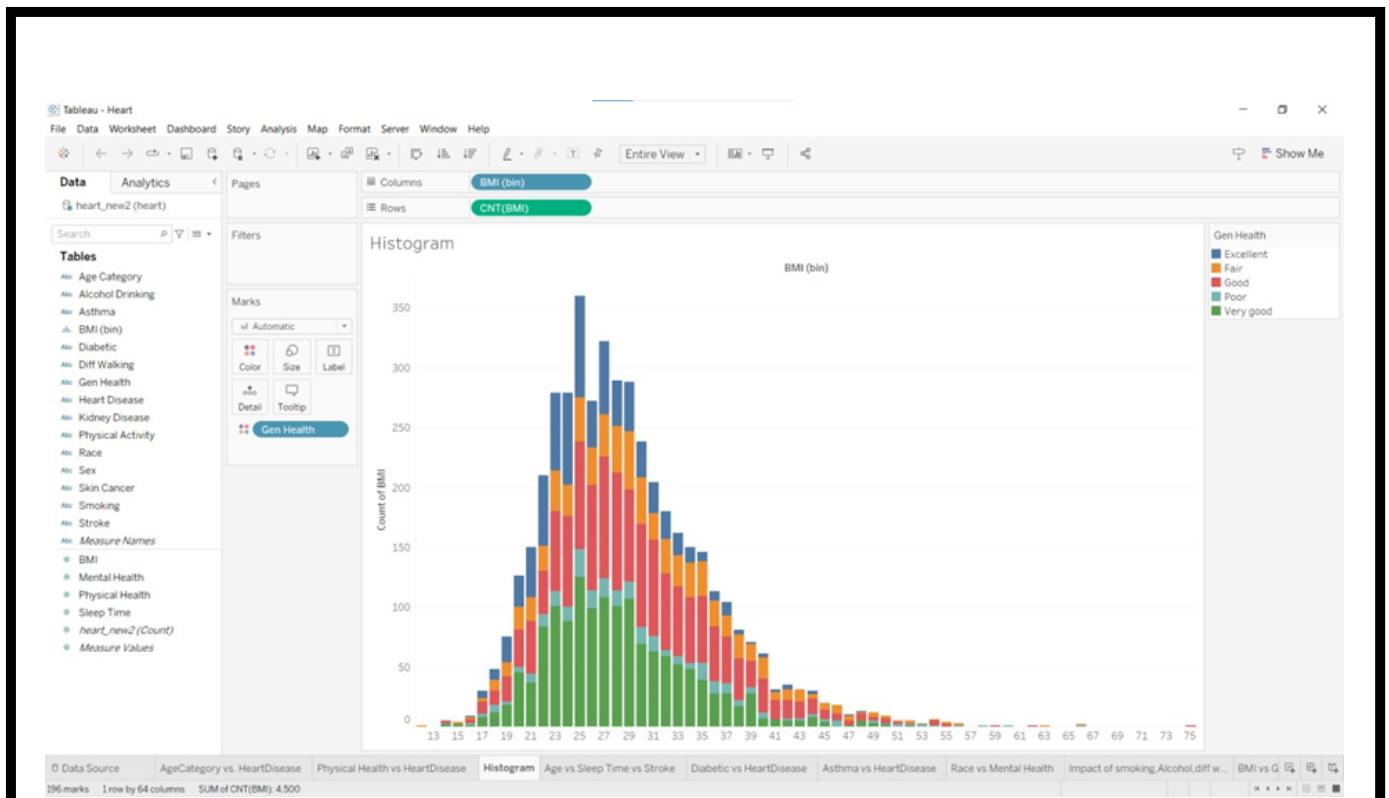
Time line:

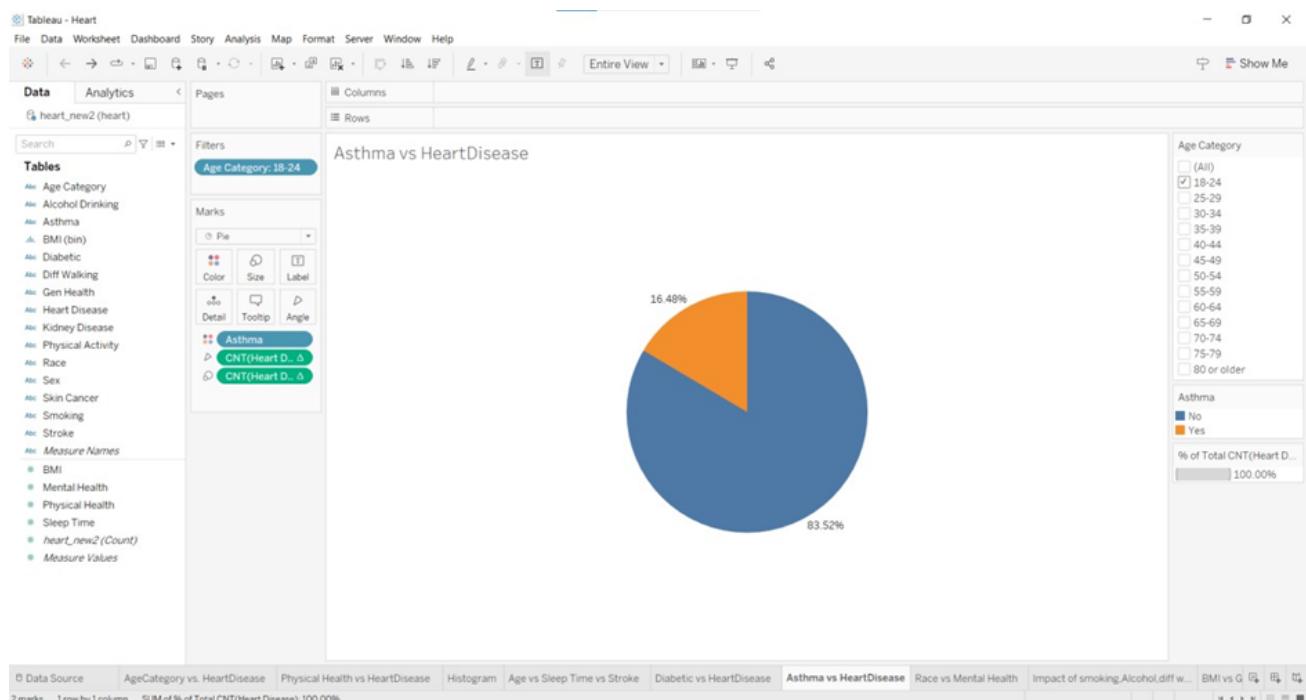
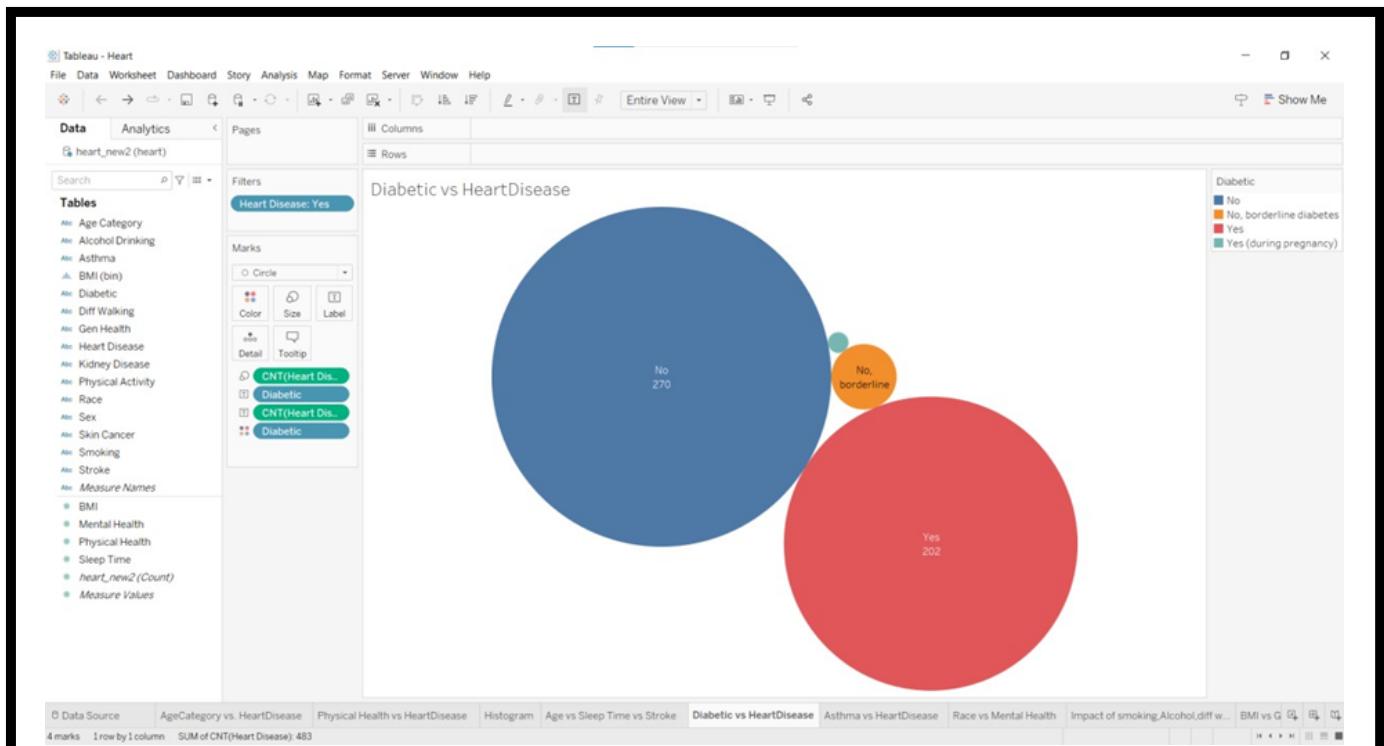


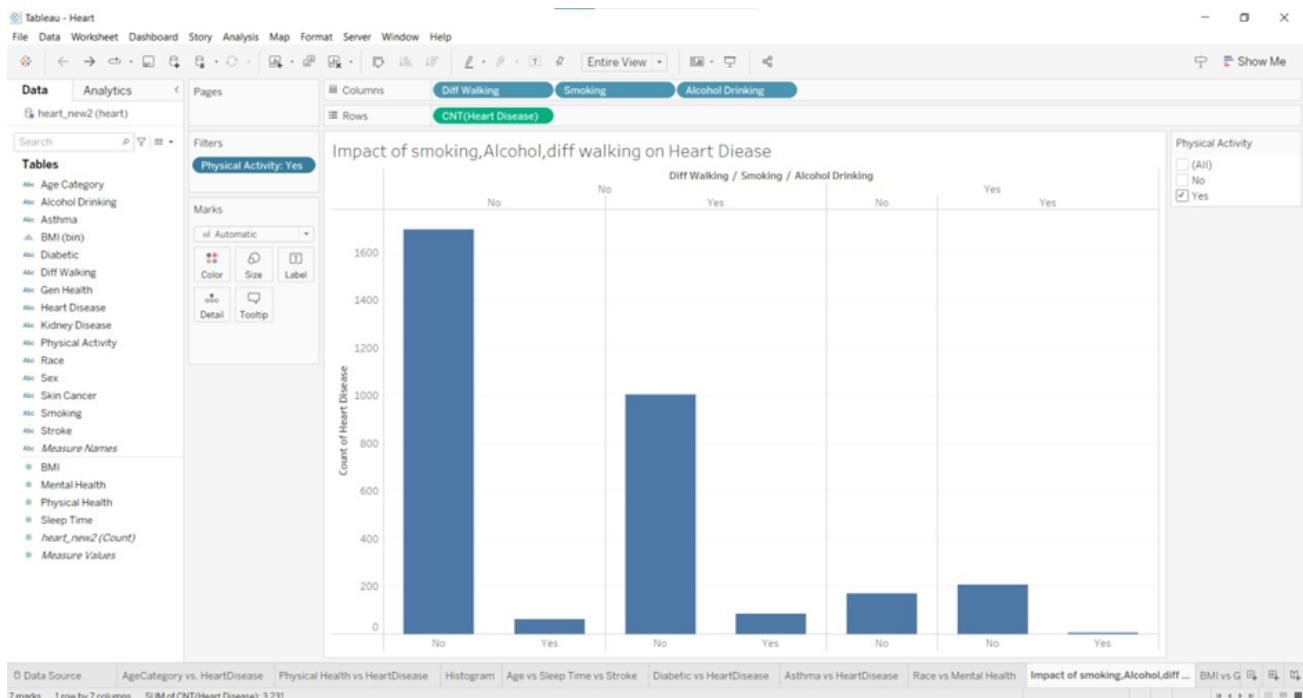
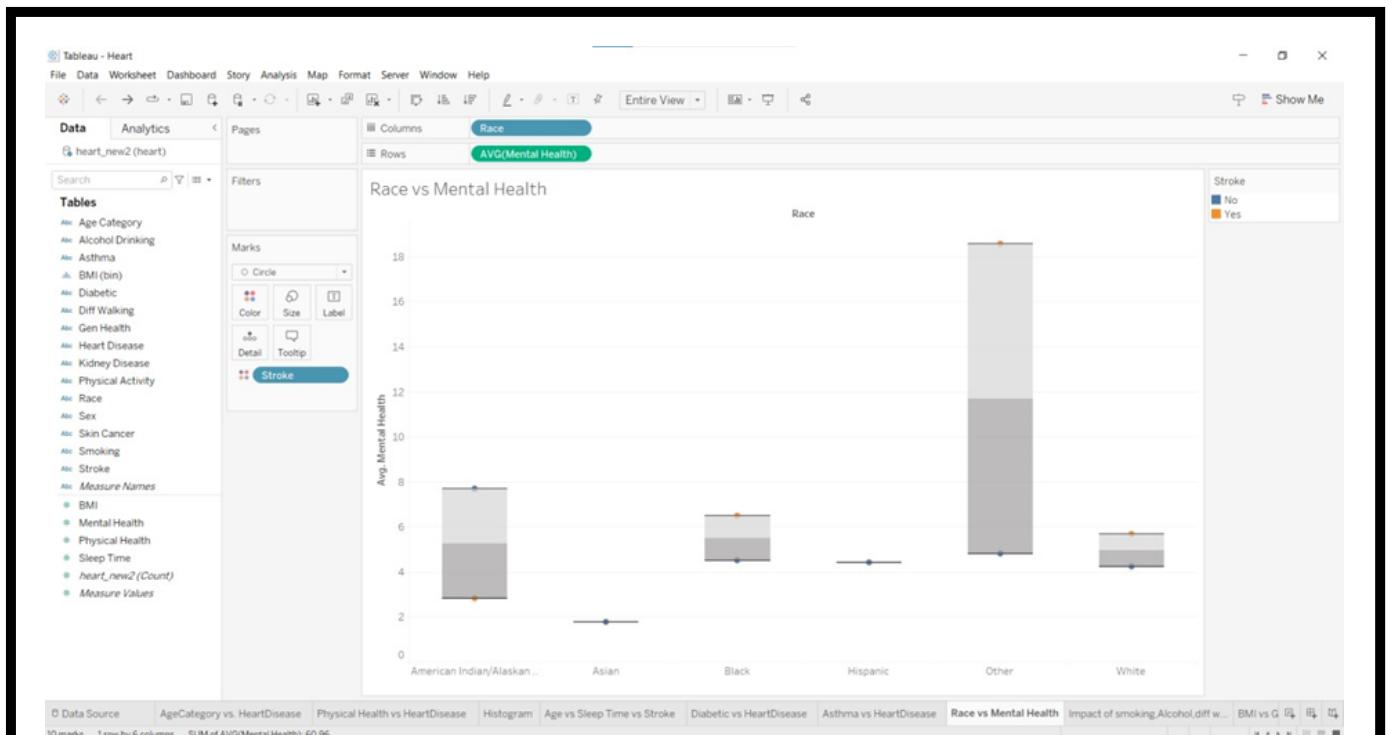
7. PROJECT DEVELOPMENT

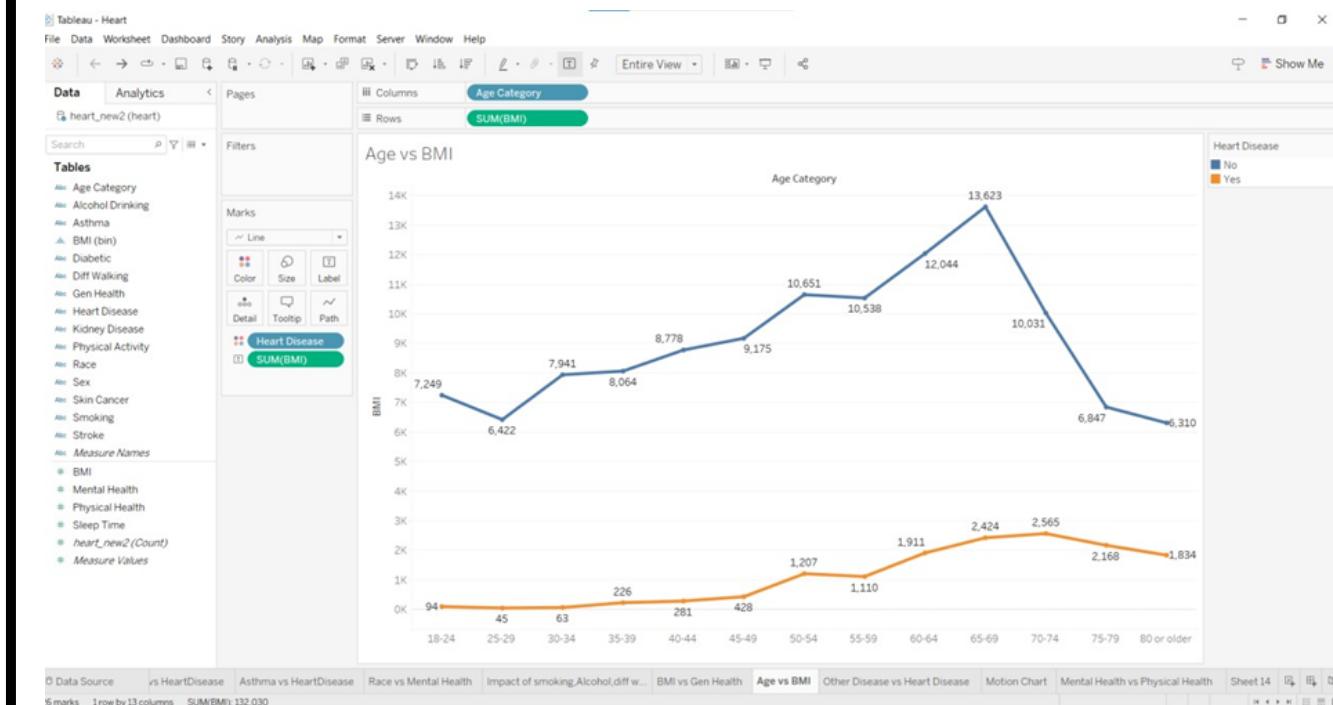
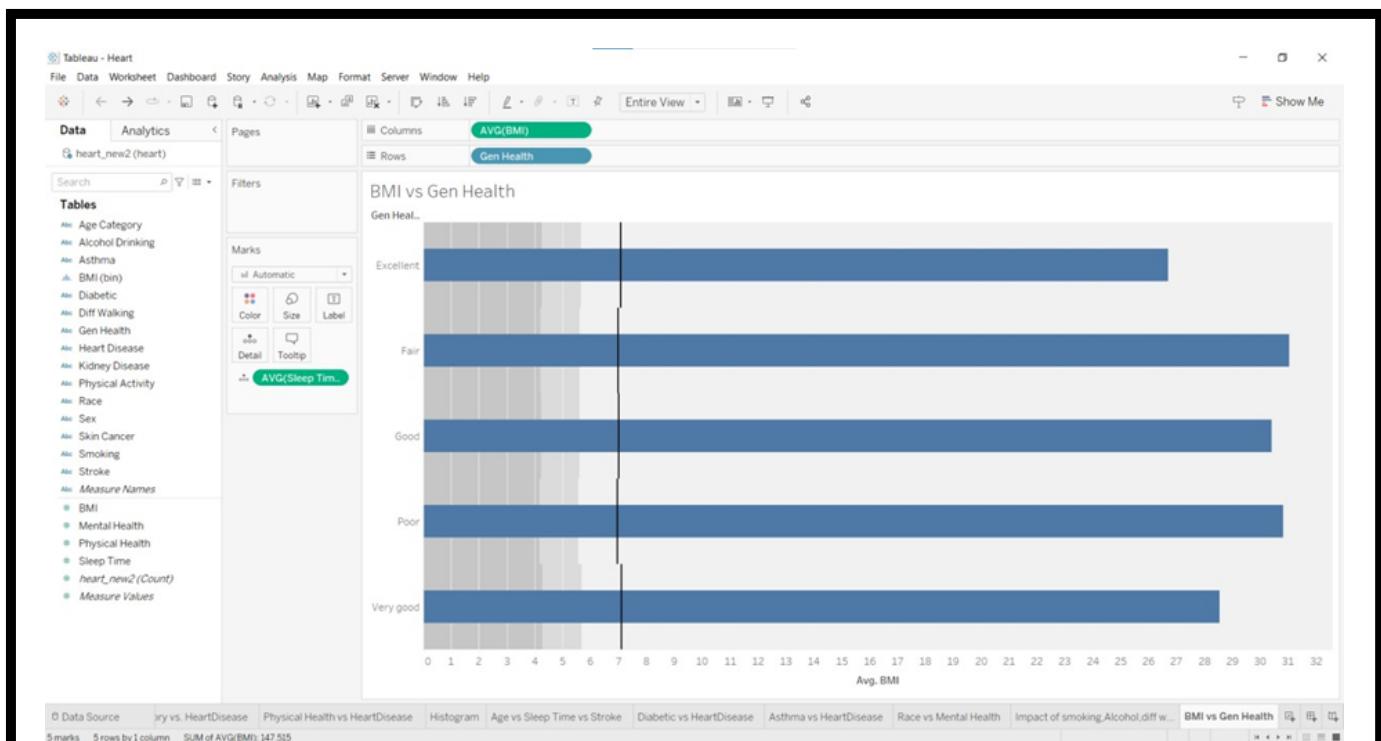
7.1 Visualizations

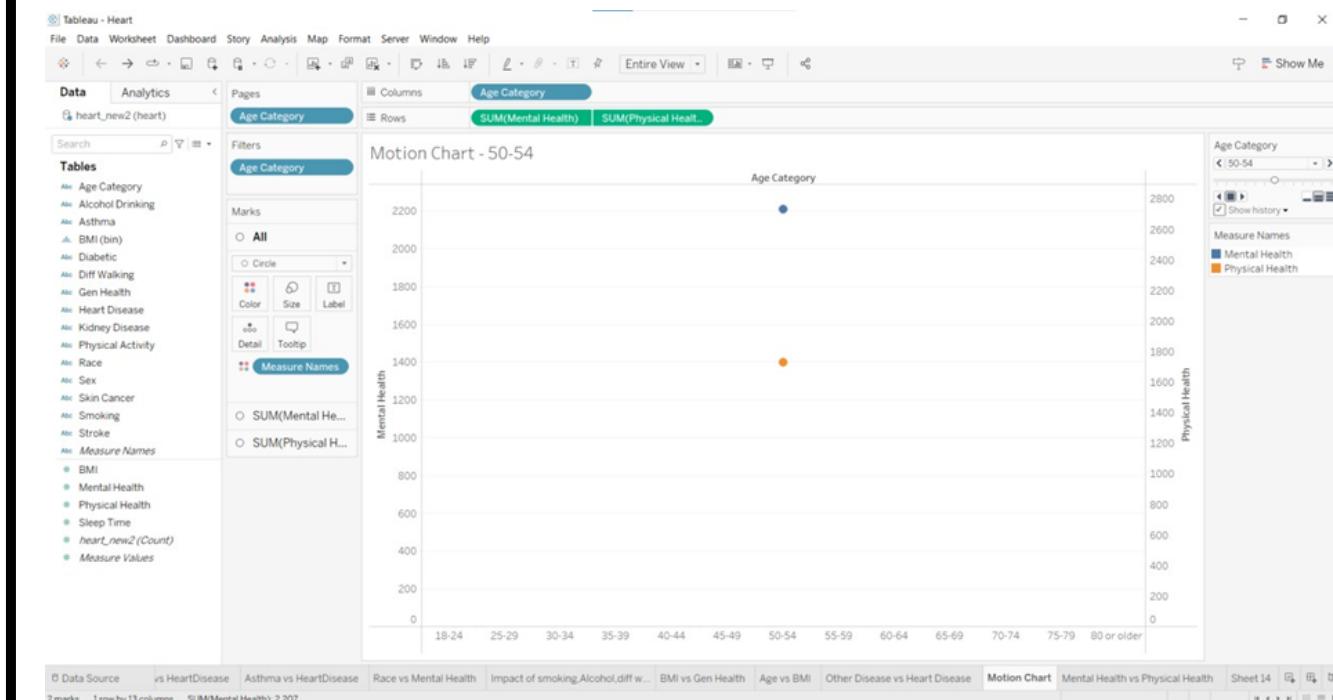
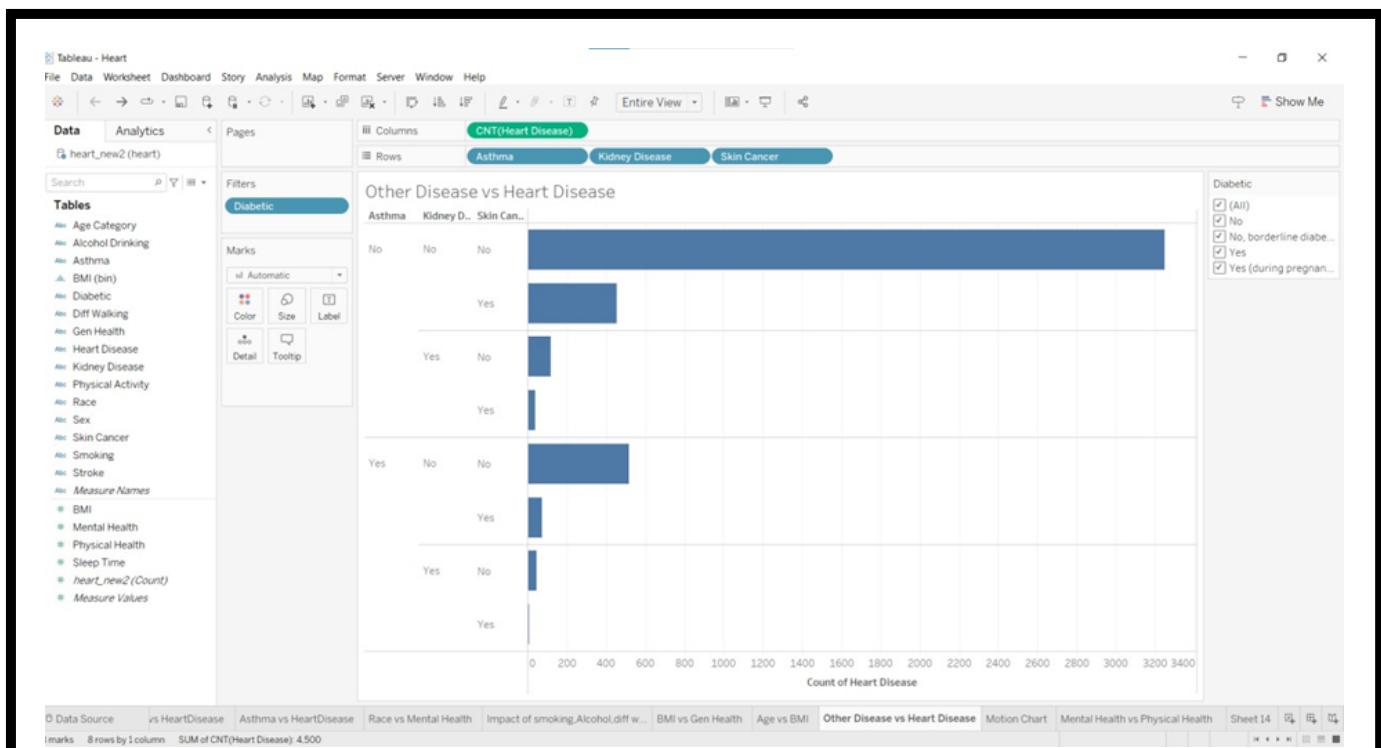


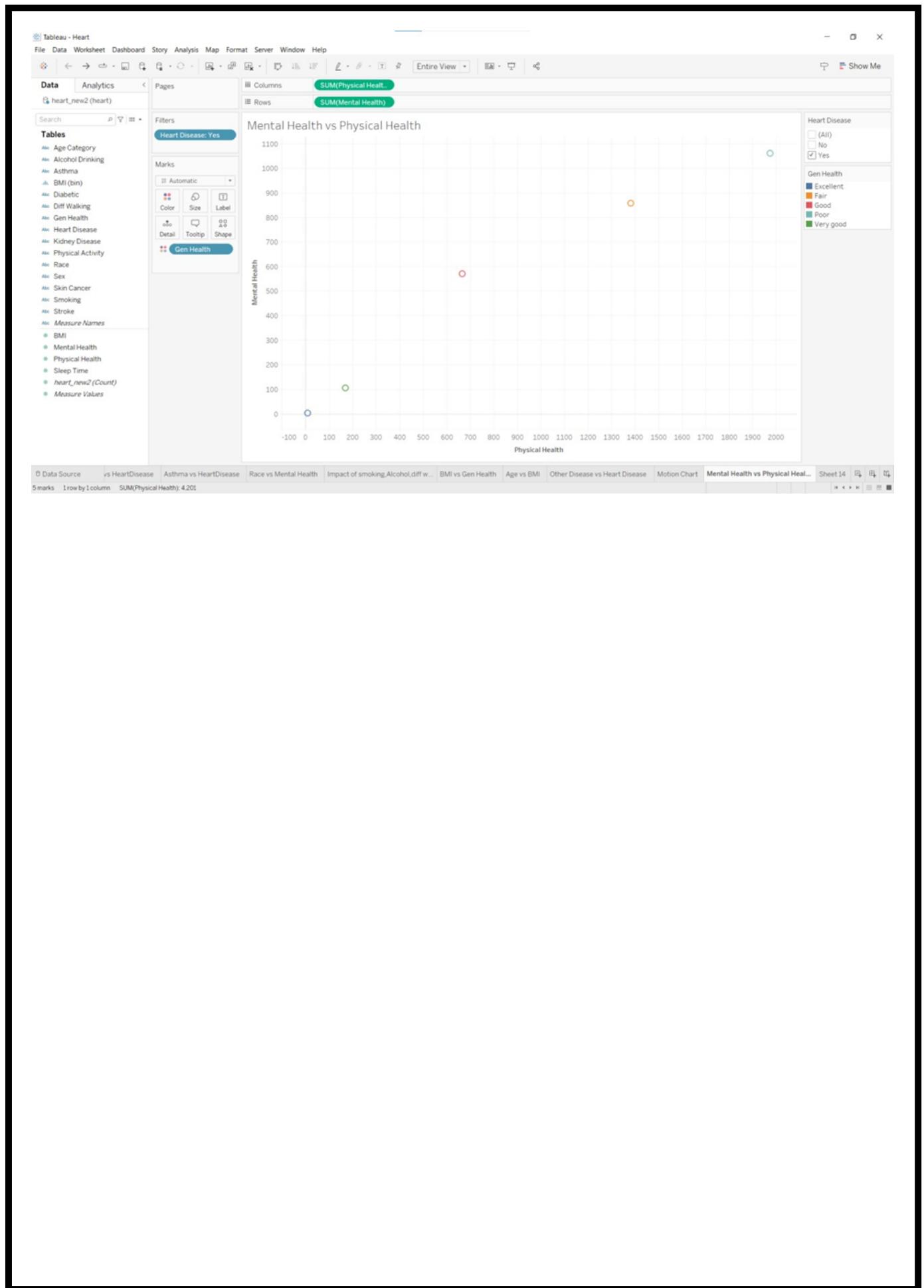




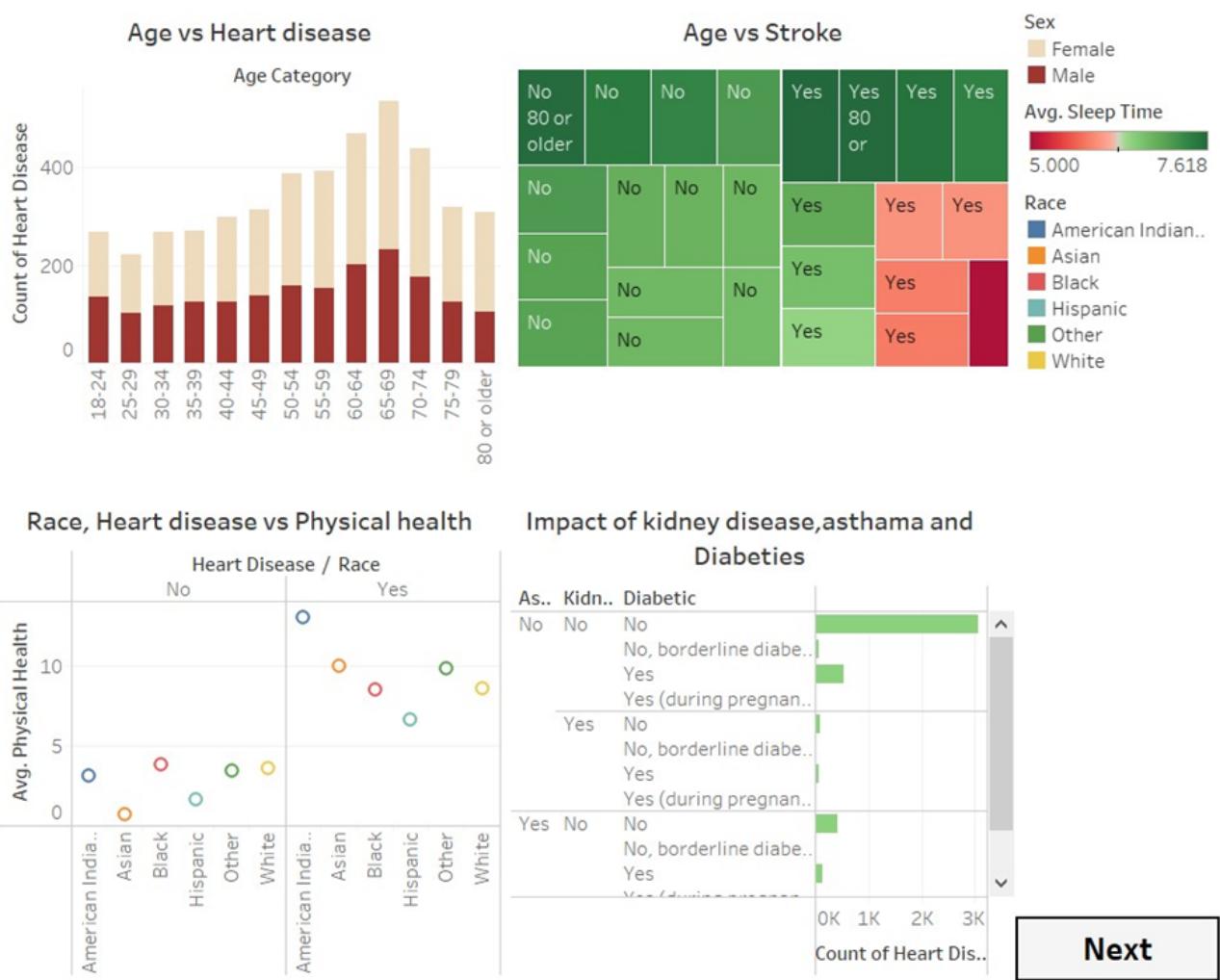


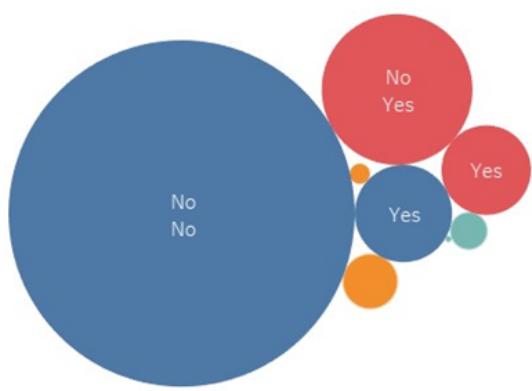
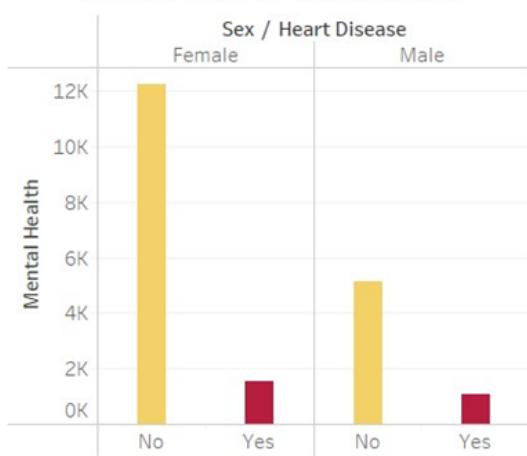






7.2 Dashboard

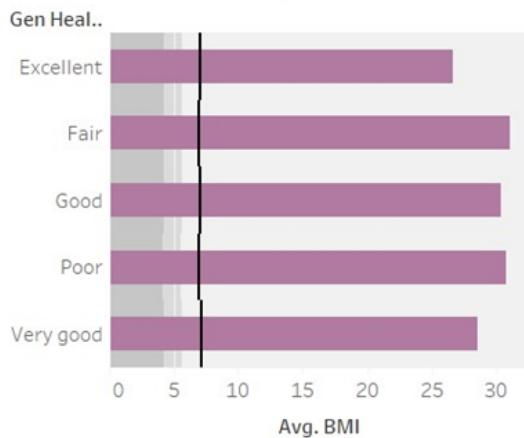
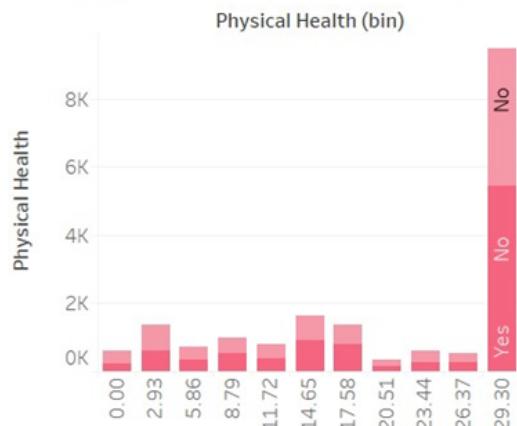


Diabetic vs Heart disease**Heart disease vs Mental Health**

Diabetic
 No
 No, borderline d..
 Yes
 Yes (during preg..)

Heart Disease
 No
 Yes

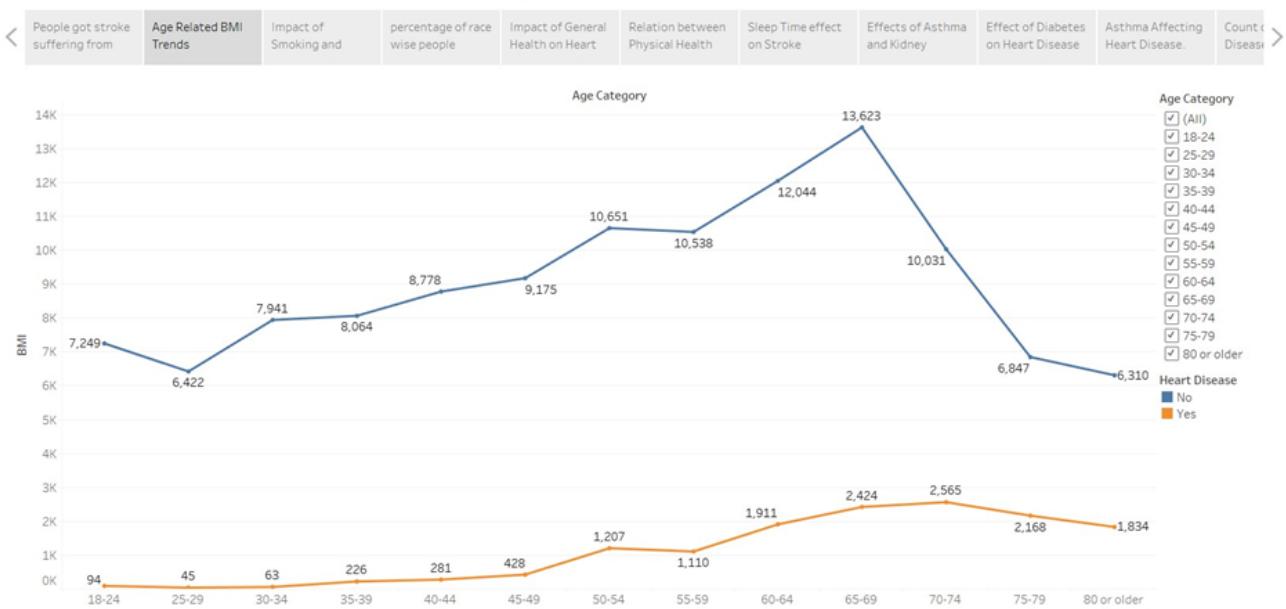
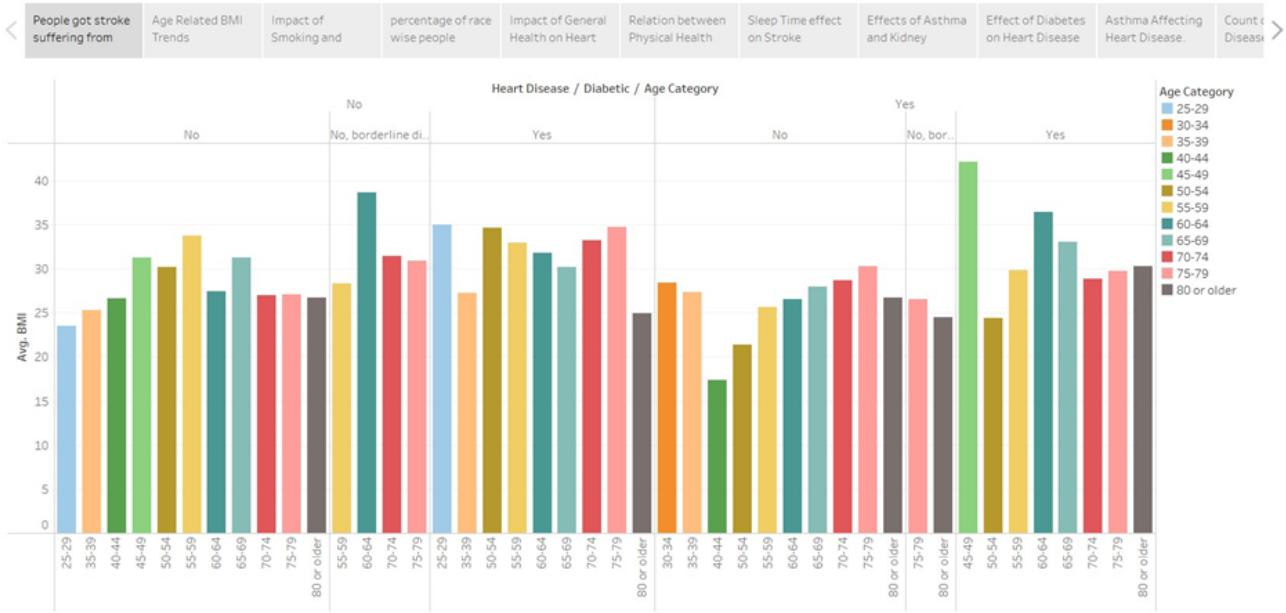
Smoking
 No
 Yes

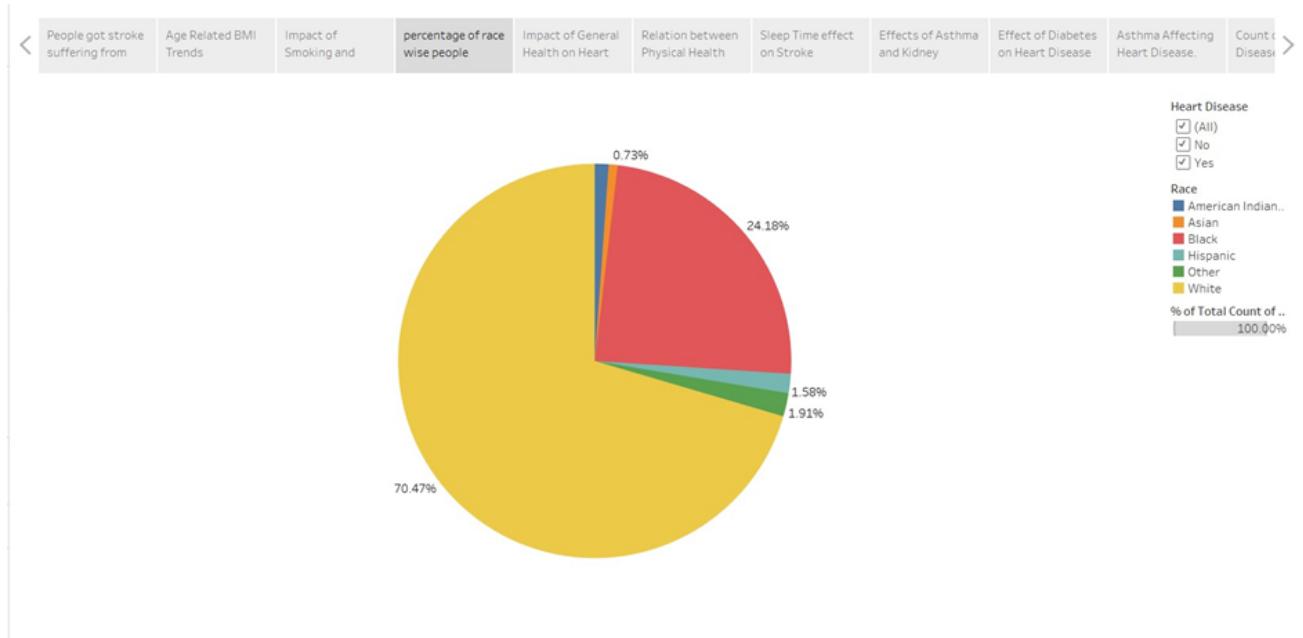
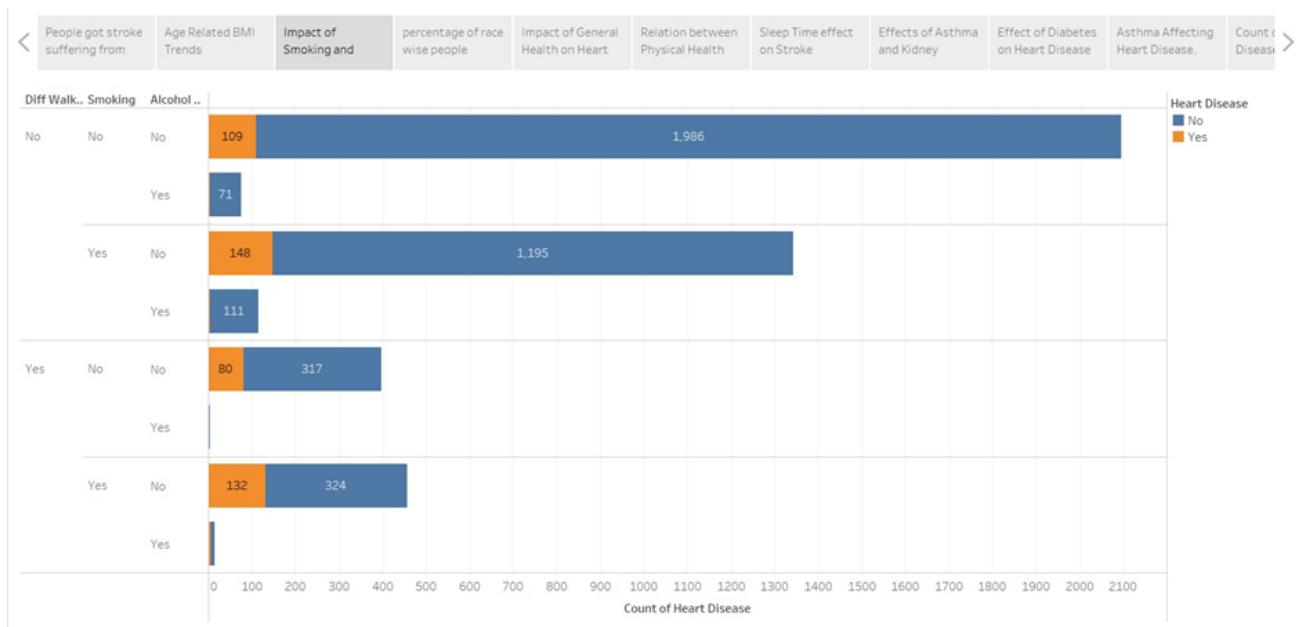
BMI vs General health**Smoking,Heart disease vs Physical health**

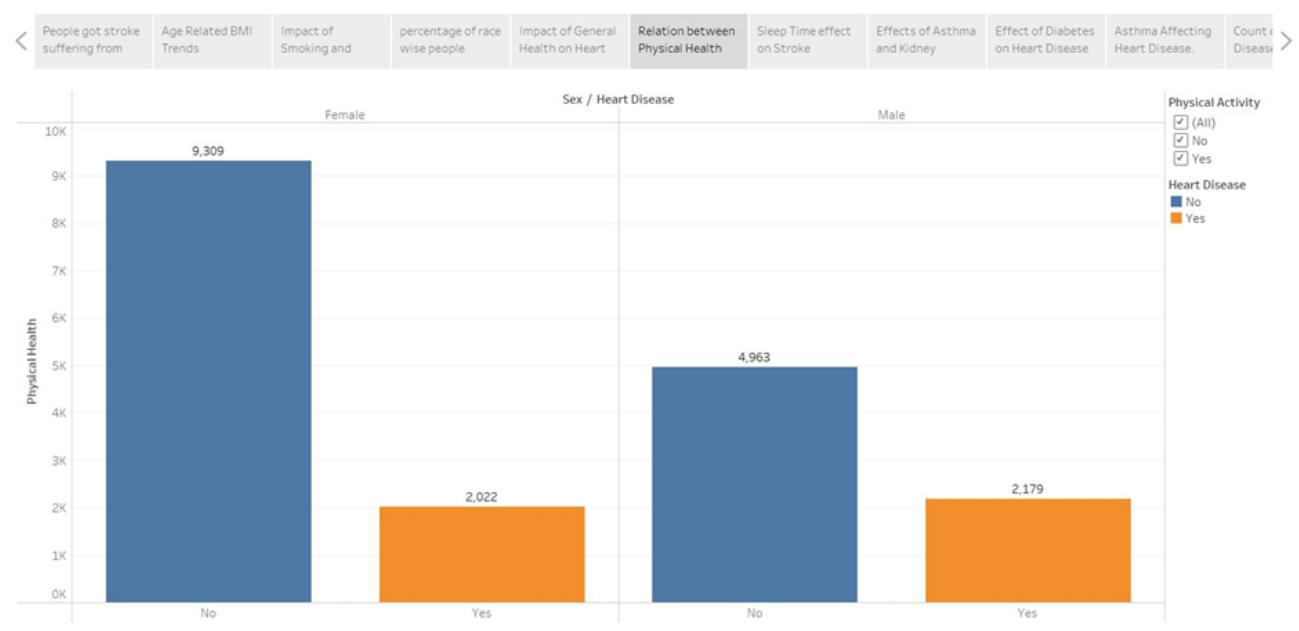
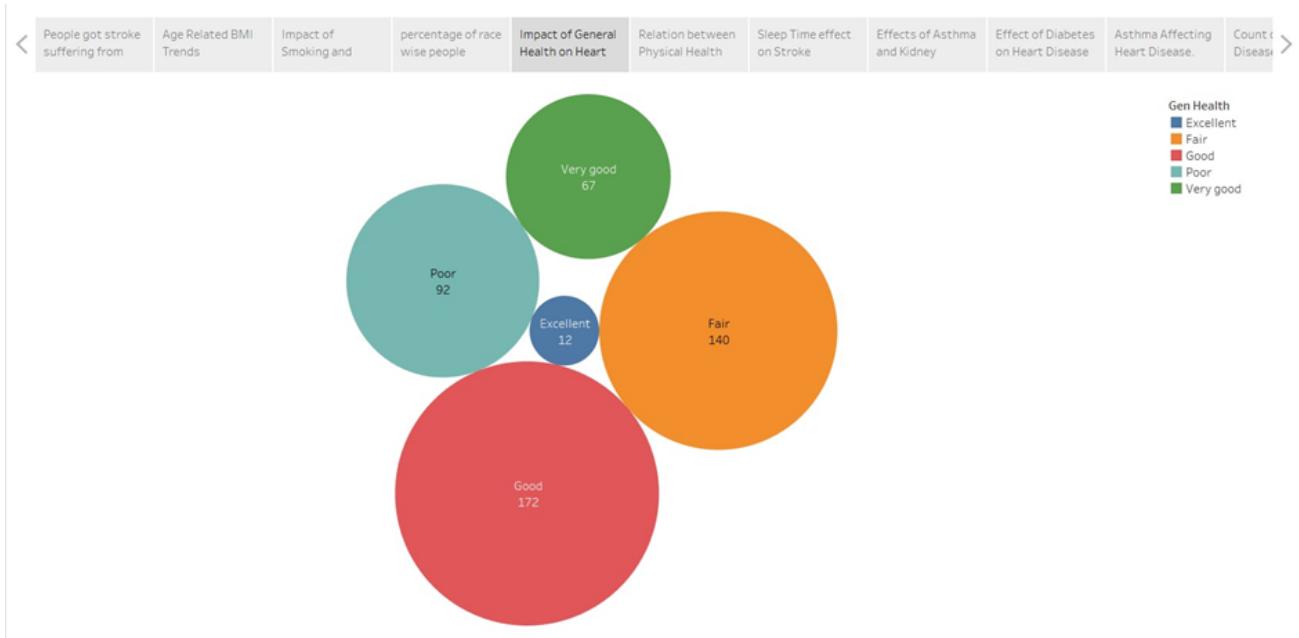
Previous

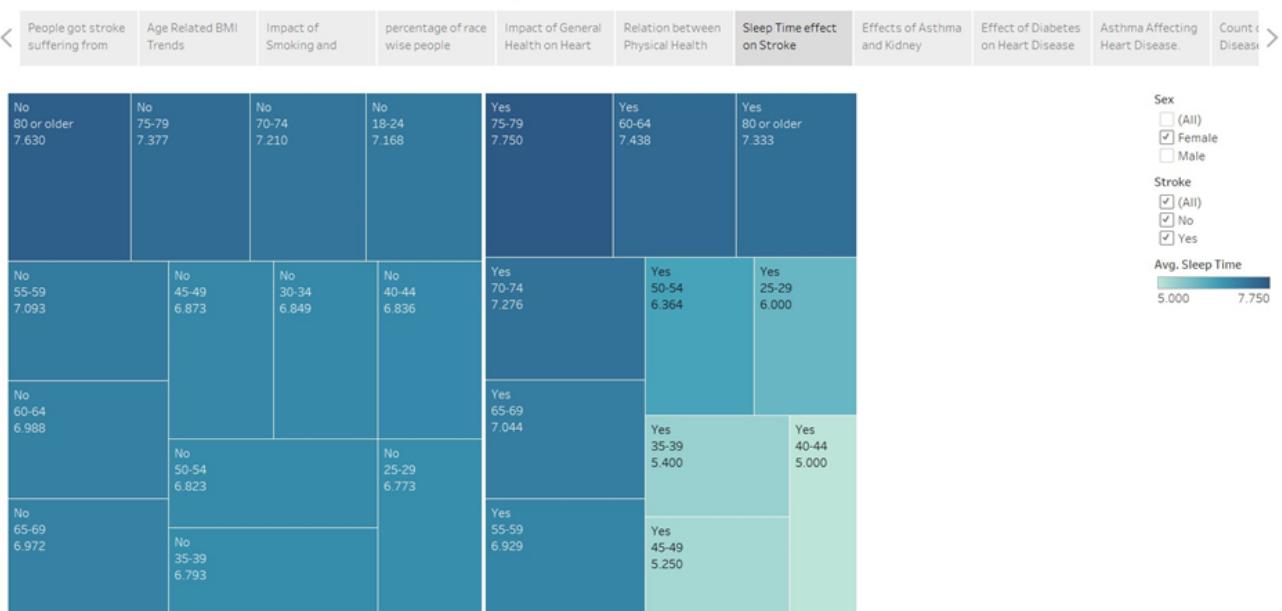
7.3 Story

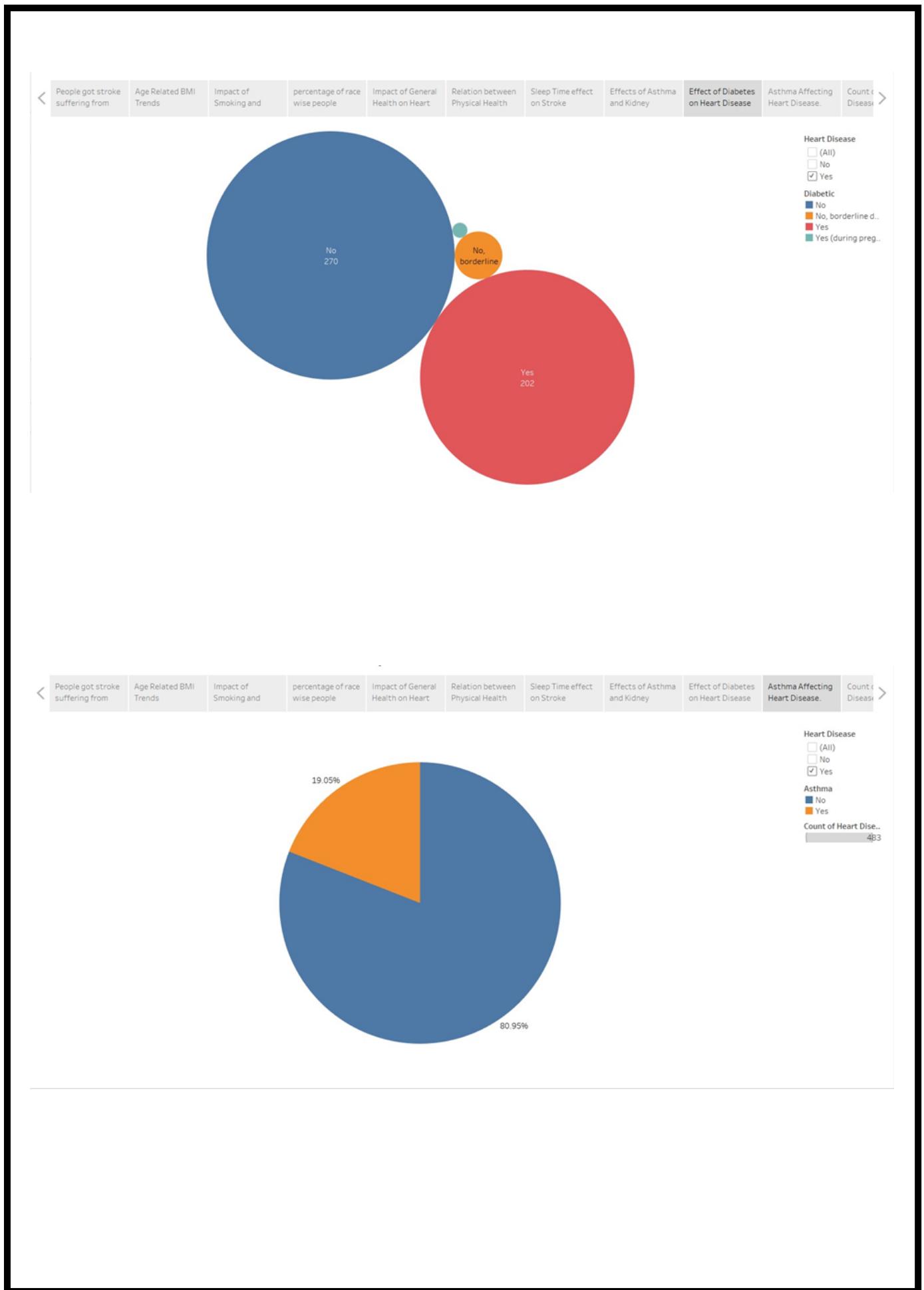
Heart Diseases Visualisation & Prediction Story

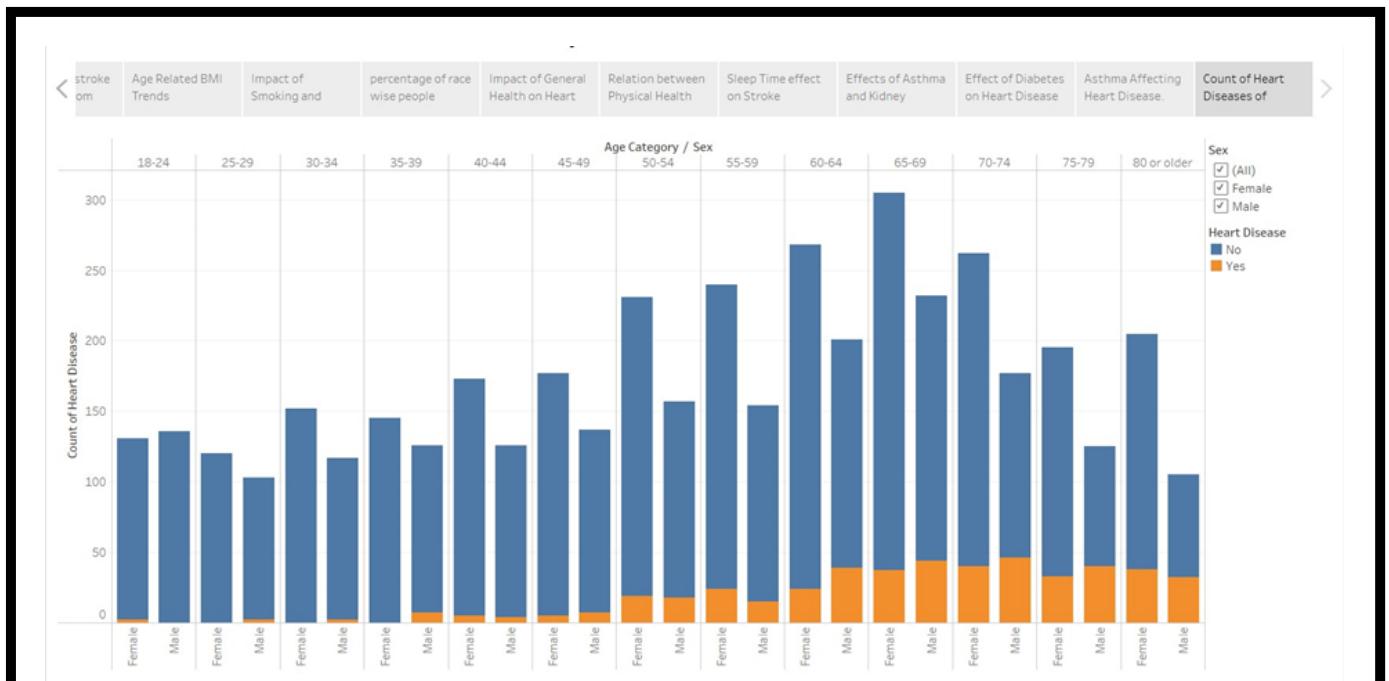












8. PERFORMANCE TESTING

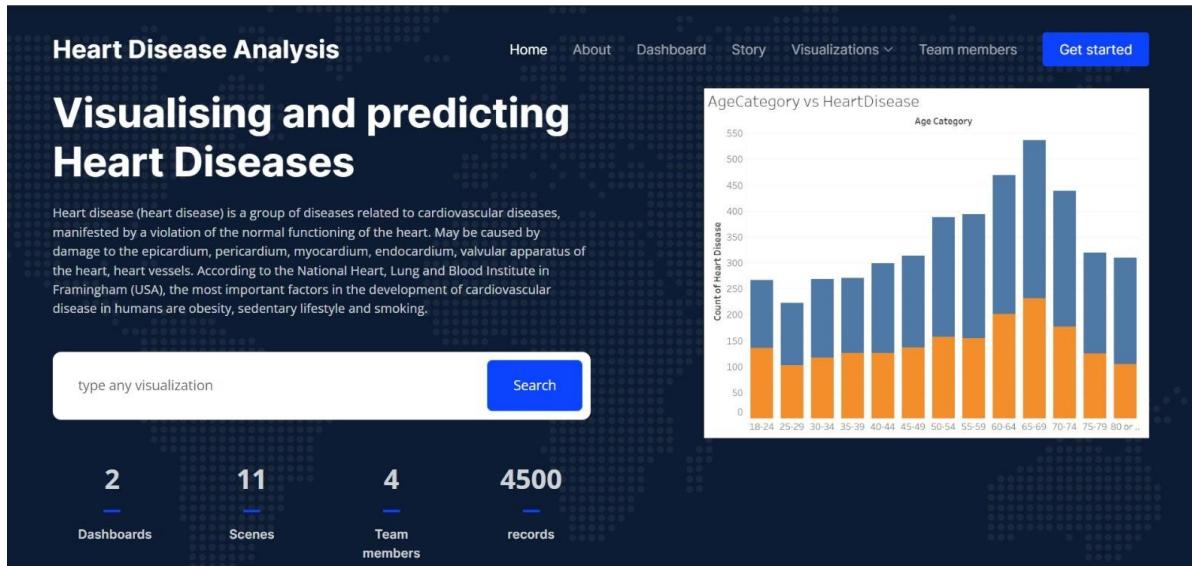
8.1 Performance Metrics

S.No.	Description	Screenshots/Values
1	Dashboard design	No of Visualizations / Graphs - 13
2	Data Responsiveness	Our data integration is efficient, supporting real-time updates from diverse sources. Data quality checks maintain accuracy. Retrieval and visualization are speedy, and machine learning models update promptly. Strong security and API documentation are in place.
3	Amount Data to Rendered (DB2 Metrics)	
4	Utilization of Data Filters	Yes, we have used the Filters option for 5 visualizations.
5	Effective User Story	No of Scenes Added - 11
6	Descriptive Dashboard	No of dashboards- 2

9. RESULTS

9.1 Output Screenshots

Embed Dashboard and Story with Flask:



OUR DASHBOARDS

Heart Disease Analysis

Home About Dashboard Story Visualizations Team members Get started

OUR DASHBOARDS

The dashboard features several charts:

- Age vs Heart Disease**: A bar chart showing the count of heart disease cases across different age categories (13-24, 25-29, 30-34, 35-39, 40-49, 50-59, 60-69, 70-79, 80+ older) for both males and females.
- Age vs Stroke**: A treemap chart showing the distribution of stroke cases by age group (13-24, 25-29, 30-34, 35-39, 40-49, 50-59, 60-69, 70-79, 80+ older) and gender (Male, Female).
- Race, heart disease vs Physical health**: A scatter plot showing Age (Years) on the Y-axis (0 to 80+) and Race on the X-axis (American Indian/Alaskan Native, Asian, Black, Hispanic, Other, White). It includes a legend for Heart Disease (No, Yes).
- Impact of Kidney disease, asthma and Diabetes**: A stacked bar chart showing the count of heart disease cases across different categories of Ast., Kidne., DIABEIS. (Yes, No).

Bottom navigation: Next, + tableau, Home, About, Dashboard, Story, Visualizations, Team members, Get started.

Heart Disease Analysis

Home About Dashboard Story Visualizations Team members Get started

Heart diseases analysis story

Heart Diseases Visualisation & Prediction Story

The dashboard includes a narrative section:

A data story is a way of presenting data and analysis in a narrative format, intending to make the information more engaging and easier to understand. A data story typically includes a clear introduction that sets the stage and explains the context for the data, a body that presents the data and analysis logically and systematically, and a conclusion that summarizes the key findings and highlights their implications. Data stories can be told using a variety of mediums, such as reports, presentations, interactive visualizations, and videos.

Visualizations shown include:

- People got stroke suffering from Diabetes and Heart**: A bar chart showing the count of people with stroke, diabetes, and heart disease.
- Age Related BMI Trends**: A bar chart showing average BMI by age category (25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65-69, 70-74, 75-79, 80 or older).
- alcohol and difficulty in walking on Heart Disease**: A bar chart showing alcohol consumption and difficulty in walking by heart disease status (No, Yes).
- percentage of race wise people getting heart disease**: A bar chart showing the percentage of people with heart disease by race (White, Black, Hispanic, Other, Asian, American Indian/Alaskan Native).
- Impact of General Health on Heart Disease**: A bar chart showing the impact of general health on heart disease by age category.
- Heart Disease / Diabetic / Age Category**: A grouped bar chart showing heart disease, diabetes, and age categories.

Bottom navigation: + tableau, Home, About, Dashboard, Story, Visualizations, Team members, Get started.

The screenshot shows a web application titled "Heart Disease Analysis" running on a local server at 127.0.0.1:8000. The main navigation bar includes links for Home, About, Dashboard, Story, Visualizations, Team members, and Get started. Below the navigation is a section titled "TEAM OUR TEAM" which lists four team members: Manasa, Chaitra, Madhu Murali, and Sriram Pavan. Each team member has a dropdown arrow next to their name. At the bottom of the page is a dark footer section containing the project title, a brief description about analyzing heart disease data using Tableau, social media icons for Twitter, Facebook, Instagram, and LinkedIn, and a copyright notice.

10. ADVANTAGES & DISADVANTAGES

Adavantages

1. The interactive dashboard facilitates early detection of potential heart diseases, allowing for timely intervention and preventive measures.
2. Healthcare providers and patients can make informed decisions based on real-time visualizations and predictive analytics, leading to more effective and personalized care plans.
3. Patients have access to their own health data, empowering them to actively participate in their healthcare management and make lifestyle changes for better heart health.
4. Real-time monitoring and alerts enable healthcare providers to efficiently track patients' health metrics and respond promptly to any critical changes.
5. Discussion forums and communities foster collaboration among healthcare professionals and patients, encouraging knowledge sharing and support.
6. Data scientists can leverage the anonymized patient data for research, contributing to data-driven insights and advancements in heart disease prediction and management.
7. The project aims to enhance patient outcomes by providing targeted interventions and personalized recommendations based on predictive analytics.
8. The interactive dashboard, especially in a mobile app version, offers a user-friendly interface that enhances accessibility and usability for both healthcare

professionals and patients.

9. The project can be designed with scalability in mind, ensuring it can accommodate increasing data volumes, user demands, and evolving healthcare needs.

Disadvantages

1. Dealing with sensitive patient data raises concerns about data security and privacy. Stricter measures must be in place to ensure compliance with healthcare regulations.
2. Developing a predictive analytics system and interactive dashboard can be complex, requiring expertise in data science, software development, and healthcare domain knowledge.
3. Integrating data from various sources, such as electronic health records and wearables, can be challenging, leading to potential data inconsistencies and interoperability issues.
4. The accuracy of predictions is highly dependent on the quality and accuracy of the input data. Inaccurate or incomplete data can lead to unreliable predictions.
5. Healthcare professionals and patients may face challenges in adopting and adapting to new technologies. Training and education initiatives may be required to ensure effective use.
6. Adhering to healthcare regulations, such as HIPAA, adds complexity to the project. Ensuring compliance and data protection may require additional resources and efforts.
7. Rapid development and deployment may lead to the accumulation of technical debt, impacting the long-term maintainability and scalability of the system.
8. The use of predictive analytics in healthcare raises ethical considerations, including issues related to consent, transparency, and the responsible use of patient data.
9. Developing and maintaining a sophisticated healthcare solution can incur significant costs. Budget constraints may limit the implementation of certain features or updates.

11. CONCLUSION

The project "Visualizing and Predicting Heart Diseases with an Interactive Dashboard" holds significant promise in transforming healthcare by leveraging data visualization and predictive analytics. The combination of real-time monitoring, personalized recommendations, and collaboration features positions the interactive dashboard as a valuable tool for both healthcare providers and patients. Early detection, informed decision-making, and improved patient outcomes are key benefits that can positively impact the management of heart diseases. The user-friendly interface and scalability of the proposed solution contribute to its accessibility and adaptability in diverse healthcare settings. The integration of data from various sources enhances the comprehensiveness of patient information, providing a holistic view for better-informed decisions.

However, challenges such as data security, regulatory compliance, and the need for ongoing technical support and updates should be addressed to ensure the success and ethical implementation of the project.

12. FUTURE SCOPE

We can make the dashboard even better in the future. We can use smarter technology, connect with wearable devices, and include genetic info. Also, we can add features like video check-ups, global data sharing, and better security. The goal is to keep improving and helping more people with heart health.

13. APPENDIX

Source code :

(a) Flask File:

```
from flask import Flask, render_template, request

heart = Flask(__name__)

@heart.route('/')
def helloworld():

    return render_template("index.html")
```

```
if __name__ == '__main__':
    heart.run(debug = False, port = 8000)
```

(b)Index.html:

```
<!DOCTYPE html>
<html lang="en">

<head>
    <meta charset="utf-8">
    <meta content="width=device-width, initial-scale=1.0" name="viewport">

    <title>Visualising and predicting heart diseases with an interactive
dashboard - Index</title>
    <meta content="" name="description">
    <meta content="" name="keywords">

    <!-- Favicons -->
    <link href="static/assets/img/favicon.png" rel="icon">
    <link href="static/assets/img/apple-touch-icon.png" rel="apple-touch-icon">

    <!-- Google Fonts -->
    <link rel="preconnect" href="https://fonts.googleapis.com">
    <link rel="preconnect" href="https://fonts.gstatic.com" crossorigin>
    <link
        href="https://fonts.googleapis.com/css2?family=Open+Sans:ital,wght@0,300;0,40
0;0,500;0,600;0,700;1,300;1,400;1,600;1,700&family=Poppins:ital,wght@0,300;0,
400;0,500;0,600;0,700;1,300;1,400;1,500;1,600;1,700&family=Inter:ital,wght@0,
300;0,400;0,500;0,600;0,700;1,300;1,400;1,500;1,600;1,700&display=swap"
        rel="stylesheet">

    <!-- Vendor CSS Files -->
    <link href="static/assets/vendor/bootstrap/css/bootstrap.min.css"
        rel="stylesheet">
    <link href="static/assets/vendor/bootstrap-icons/bootstrap-icons.css"
        rel="stylesheet">
    <link href="static/assets/vendor/fontawesome-free/css/all.min.css"
        rel="stylesheet">
```

```

<link href="static/assets/vendor/glightbox/css/glightbox.min.css"
rel="stylesheet">
<link href="static/assets/vendor/swiper/swiper-bundle.min.css"
rel="stylesheet">
<link href="static/assets/vendor/aos-aos.css" rel="stylesheet">


<link href="static/assets/css/main.css" rel="stylesheet">

<!-- ======
* Template Name: Logis
* Updated: Sep 18 2023 with Bootstrap v5.3.2
* Template URL: https://bootstrapmade.com/logis-bootstrap-logistics-
website-template/
* Author: BootstrapMade.com
* License: https://bootstrapmade.com/license/
===== -->
</head>

<body>

<!-- ===== Header ===== -->
<header id="header" class="header d-flex align-items-center fixed-top">
  <div class="container-fluid container-xl d-flex align-items-center justify-
content-between">

    <a href="index.html" class="logo d-flex align-items-center">
      <!-- Uncomment the line below if you also wish to use an image logo --
    >
      <!-- 
      <h1>Heart Disease Analysis</h1>
    </a>

    <i class="mobile-nav-toggle mobile-nav-show bi bi-list"></i>
    <i class="mobile-nav-toggle mobile-nav-hide d-none bi bi-x"></i>
    <nav id="navbar" class="navbar">
      <ul>
        <li><a href="index.html" class="active">Home</a></li>

```

```

<li><a href="about.html">About</a></li>
<li><a href="dashboard.html">Dashboard</a></li>
<li><a href="pricing.html">Story</a></li>
<li class="dropdown"><a href="#"><span>Visualizations</span> <i
class="bi bi-chevron-down dropdown-indicator"></i></a>
<ul>
    <li><a href="#">Visualization 1</a></li>
    <li class="dropdown"><a href="#"><span>Type wise vizzes</span>
<li class="dropdown"><a href="#"><span>Tree map</span></a></li>
    <li><a href="#">pie chart</a></li>
    <li><a href="#">donut chart</a></li>
    <li><a href="#">bullet chart</a></li>
    <li><a href="#">bar chart</a></li>
</ul>
</li>
<li><a href="#">Visualization 2</a></li>
<li><a href="#">Visualization 3</a></li>
<li><a href="#">Visualization 4</a></li>
</ul>
</li>
<li><a href="contact.html">Team members</a></li>
<li><a class="get-a-quote" href="get-a-quote.html">Get
started</a></li>
</ul>
</nav><!-- .navbar -->

</div>
</header><!-- End Header -->
<!-- End Header -->

<!-- ===== Hero Section ===== -->
<section id="hero" class="hero d-flex align-items-center">
<div class="container">
    <div class="row gy-4 d-flex justify-content-between">
        <div class="col-lg-6 order-2 order-lg-1 d-flex flex-column justify-
content-center">

```

```
<h2 data-aos="fade-up">Visualising and predicting Heart  
Diseases</h2>  


Heart disease (heart disease) is a group of diseases related to cardiovascular diseases, manifested by a violation of the normal functioning of the heart. May be caused by damage to the epicardium, pericardium, myocardium, endocardium, valvular apparatus of the heart, heart vessels.



According to the National Heart, Lung and Blood Institute in Framingham (USA), the most important factors in the development of cardiovascular disease in humans are obesity, sedentary lifestyle and smoking.</p>


```

```
<form action="#" class="form-search d-flex align-items-stretch mb-3" data-aos="fade-up" data-aos-delay="200">  
    <input type="text" class="form-control" placeholder="type any visualization">  
    <button type="submit" class="btn btn-primary">Search</button>  
</form>  
  
<div class="row gy-4" data-aos="fade-up" data-aos-delay="400">  
  
    <div class="col-lg-3 col-6">  
        <div class="stats-item text-center w-100 h-100">  
            <span data-purecounter-start="0" data-purecounter-end="02" data-purecounter-duration="1" class="purecounter"></span>  
            <p>Dashboards</p>  
        </div>  
    </div><!-- End Stats Item -->  
  
    <div class="col-lg-3 col-6">  
        <div class="stats-item text-center w-100 h-100">  
            <span data-purecounter-start="0" data-purecounter-end="11" data-purecounter-duration="1" class="purecounter"></span>  
            <p>Scenes</p>  
        </div>
```

```
</div><!-- End Stats Item -->

<div class="col-lg-3 col-6">
    <div class="stats-item text-center w-100 h-100">
        <span data-purecounter-start="0" data-purecounter-end="04"
data-purecounter-duration="1" class="purecounter"></span>
        <p>Team members</p>
    </div>
</div><!-- End Stats Item -->

<div class="col-lg-3 col-6">
    <div class="stats-item text-center w-100 h-100">
        <span data-purecounter-start="0" data-purecounter-end="4500"
data-purecounter-duration="1" class="purecounter"></span>
        <p>records</p>
    </div>
</div><!-- End Stats Item -->

</div>
</div>

<div class="col-lg-5 order-1 order-lg-2 hero-img" data-aos="zoom-out">
    
    </div>

    </div>
</div>
</div>

</div>
</section><!-- End Hero Section -->

<main id="main">
    <!-- ===== About Us Section ===== -->
    <section id="about" class="about pt-0">
        <div class="container" data-aos="fade-up">
```

```
<div class="row gy-4">
    <div class="col-lg-6 position-relative align-self-start order-lg-last order-first">
        

    </div>
    <div class="col-lg-6 content order-last order-lg-first">
        <h3>About Us</h3>
        <p>
            By promoting awareness, prevention, equitable healthcare access, and research advancements, heart disease analysis plays a crucial role in improving the well-being of individuals and society as a whole.
        </p>
        <ul>
            <li data-aos="fade-up" data-aos-delay="100">
                <i class="bi bi-diagram-3"></i>
                <div>
                    <h5>Social Impact</h5>
                    <p>Analyzing heart disease has profound social impacts, ranging from individual-level health outcomes to community empowerment and public health initiatives.</p>
                </div>
            </li>
            <li data-aos="fade-up" data-aos-delay="200">
                <i class="bi bi-fullscreen-exit"></i>
                <div>
                    <h5>Business Impact</h5>
                    <p>It creates market opportunities, drives innovation, and influences policy and advocacy efforts in the fight against heart disease.</p>
                </div>
            </li>
        </ul>
    </div>
</div>
```

```

    </section><!-- End About Us Section -->

    <!-- ===== Services Section ===== -->
    <section id="service" class="services pt-0">
        <div class="container" data-aos="fade-up">

            <div class="section-header">
                <span>Our Dashboards</span>
                <h2>Dashboard</h2>

                <div class='tableauPlaceholder' id='viz1699287393698' style='position: relative'><noscript><a href='#'><img alt='Dashboard 1' src='https://public.tableau.com/static/images/Heartdashboard_16992814910020/Dashboard1/l_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='Heartdashboard_16992814910020/Dashboard1' /><param name='tabs' value='no' /><param name='toolbar' value='yes' /><param name='static_image' value='https://public.tableau.com/static/images/Heartdashboard_16992814910020/Dashboard1/l.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' /><param name='filter' value='publish=yes' /></object></div> <script type='text/javascript'>
        var divElement = document.getElementById('viz1699287393698');
        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='1477px';
        }
        var scriptElement = document.createElement('script');

```

```
scriptElement.src = 'https://public.tableau.com/javascripts/api/viz_v1.js';
vizElement.parentNode.insertBefore(scriptElement, vizElement);
</script>

<h3>Heart Disease Analysis</h3>
<p class="fst-italic">
    Our Dashboard for predicting Heart Diseases
</p>
<p>
    A dashboard is a graphical user interface (GUI) that displays
information and data in an
organized, easy-to-read format. Dashboards are often used to provide real-
time monitoring
and analysis of data and are typically designed for a specific purpose or use
case.
Dashboards can be used in a variety of settings, such as business, finance,
manufacturing,
healthcare, and many other industries. They can be used to track key
performance indicators
(KPIs), monitor performance metrics, and display data in the form of charts,
graphs, and
tables.
</p>
</div>
</div><!-- End Card Item -->

</div>

</div>
</section><!-- End Services Section -->

<!-- ===== Call To Action Section ===== -->
<section id="call-to-action" class="call-to-action">
    <div class="container" data-aos="zoom-out">
        <div class="row justify-content-center">
```

```

<div class="col-lg-8 text-center">
    <h3>Heart diseases analysis story</h3>
    <div class='tableauPlaceholder' id='viz1699288397766'
style='position: relative'><noscript><a href='#'><img alt='Heart Diseases
Visualisation & Prediction Story '
src='https://public.tableau.com/static/images/HeartStory/HeartDiseasesVisualisationPredictionStory/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' /> <param
name='embed_code_version' value='3' /> <param name='site_root' value=''
/><param name='name'
value='HeartStory/HeartDiseasesVisualisationPredictionStory' /><param
name='tabs' value='no' /><param name='toolbar' value='yes' /><param
name='static_image'
value='https://public.tableau.com/static/images/HeartStory/HeartDiseasesVisualisationPredictionStory/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' /><param name='filter'
value='publish=yes' /></object></div> <script
type='text/javascript'> var divElement =
document.getElementById('viz1699288397766'); 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>

<p> A data story is a way of presenting data and analysis in a
narrative format, intending to make
the information more engaging and easier to understand. A data
story typically includes a
clear introduction that sets the stage and explains the context
for the data, a body that
presents the data and analysis logically and systematically,
```

and a conclusion that summarizes
the key findings and highlights their implications. Data stories
can be told using a variety of
mediums, such as reports, presentations, interactive
visualizations, and videos.</p>

```
</div>
</div>

</div>
</section><!-- End Call To Action Section --&gt;

<!-- ===== Frequently Asked Questions Section ===== --&gt;
&lt;section id="faq" class="faq"&gt;
  &lt;div class="container" data-aos="fade-up"&gt;

    &lt;div class="section-header"&gt;
      &lt;span&gt;Team Members&lt;/span&gt;
      &lt;h2&gt;Our Team&lt;/h2&gt;

    &lt;/div&gt;

    &lt;div class="row justify-content-center" data-aos="fade-up" data-aos-delay="200"&gt;
      &lt;div class="col-lg-10"&gt;

        &lt;div class="accordion accordion-flush" id="faqlist"&gt;

          &lt;div class="accordion-item"&gt;
            &lt;h3 class="accordion-header"&gt;
              &lt;button class="accordion-button collapsed" type="button"
data-bs-toggle="collapse" data-bs-target="#faq-content-2"&gt;
                YK. Manasa REDDY
              &lt;/button&gt;
            &lt;/h3&gt;
          &lt;/div&gt;

        &lt;/div&gt;
      &lt;/div&gt;
    &lt;/div&gt;
  &lt;/div&gt;
&lt;/section&gt;</pre>
```

```
<div id="faq-content-2" class="accordion-collapse collapse"
data-bs-parent="#faqlist">
    <div class="accordion-body">
        Registration Number: 21BML0102
    </div>
</div><!-- # Faq item-->

<div class="accordion-item">
    <h3 class="accordion-header">
        <button class="accordion-button collapsed" type="button"
data-bs-toggle="collapse" data-bs-target="#faq-content-3">
            K. Meenakshi Chaithra
        </button>
    </h3>
    <div id="faq-content-3" class="accordion-collapse collapse"
data-bs-parent="#faqlist">
        <div class="accordion-body">
            Registration Number: 21BML0006
        </div>
    </div>
</div><!-- # Faq item-->

<div class="accordion-item">
    <h3 class="accordion-header">
        <button class="accordion-button collapsed" type="button"
data-bs-toggle="collapse" data-bs-target="#faq-content-4">
            A. Madhu Murali
        </button>
    </h3>
    <div id="faq-content-4" class="accordion-collapse collapse"
data-bs-parent="#faqlist">
        <div class="accordion-body">
            Registration Number: 21BEC7138
        </div>
    </div>
</div>
```

```
        </div>
    </div><!-- # Faq item-->

    <div class="accordion-item">
        <h3 class="accordion-header">
            <button class="accordion-button collapsed" type="button"
data-bs-toggle="collapse" data-bs-target="#faq-content-5">
                G. Sriram Pavan
            </button>
        </h3>
        <div id="faq-content-5" class="accordion-collapse collapse"
data-bs-parent="#faqlist">
            <div class="accordion-body">
                Registration Number: 21BCE9007
            </div>
        </div>
    </div><!-- # Faq item-->

</div>

</div>
</div>

</div>
</section><!-- End Frequently Asked Questions Section -->

</main><!-- End #main -->

<!-- ====== Footer ====== -->
<footer id="footer" class="footer">

    <div class="container">
        <div class="row gy-4">
            <div class="col-lg-5 col-md-12 footer-info">
                <a href="index.html" class="logo d-flex align-items-center">
                    <span>Heart disease analysis</span>
                </a>
            </div>
        </div>
    </div>
</footer>
```

<p>In this project we are trying to analyze the Heart disease related data and be able to extract some

insights from the data using Business Intelligence tools. To Extract the Insights from the data and put the

data in the form of visualizations, Dashboards and Story we employed Tableau tool.**</p>**

```
<div class="social-links d-flex mt-4">
  <a href="#" class="twitter"><i class="bi bi-twitter"></i></a>
  <a href="#" class="facebook"><i class="bi bi-facebook"></i></a>
  <a href="#" class="instagram"><i class="bi bi-instagram"></i></a>
  <a href="#" class="linkedin"><i class="bi bi-linkedin"></i></a>
</div>
</div>

<div class="col-lg-2 col-6 footer-links">
  <h4>Useful Links</h4>
  <ul>
    <li><a href="#">Home</a></li>
    <li><a href="#">About our team</a></li>
    <li><a href="#">Dashboard</a></li>
    <li><a href="#">Story</a></li>
    <li><a href="#">Visualizations</a></li>
  </ul>
</div>

<div class="col-lg-2 col-6 footer-links">
  <h4>Team Members</h4>
  <ul>
    <li><a href="#">Manasa</a></li>
    <li><a href="#">Chaithra</a></li>
    <li><a href="#">Madhu Murali</a></li>
    <li><a href="#">Sriram Pavan</a></li>
  </ul>
</div>

<div class="col-lg-3 col-md-12 footer-contact text-center text-md-start">
```

```
<h4>Contact Us</h4>
<p>
    VIT University, INDIA<br>
    <br><br>

</p>

</div>

</div>

</div>
</div>

<div class="container mt-4">
    <div class="copyright">
        &copy; Copyright <strong><span>Heart Analysis</span></strong>. All
        Rights Reserved
    </div>
    <div class="credits">
        <!-- All the links in the footer should remain intact. -->
        <!-- You can delete the links only if you purchased the pro version.
        -->
        <!-- Licensing information: https://bootstrapmade.com/license/ -->
        <!-- Purchase the pro version with working PHP/AJAX contact form:
        https://bootstrapmade.com/logis-bootstrap-logistics-website-template/ -->
        Designed by <a href="https://bootstrapmade.com/">team 591217</a>
    </div>
</div>

</footer><!-- End Footer -->
<!-- End Footer -->

<a href="#" class="scroll-top d-flex align-items-center justify-content-
center"><i class="bi bi-arrow-up-short"></i></a>

<div id="preloader"></div>

<!-- Vendor JS Files -->
<script
```

```

src="static/assets/vendor/bootstrap/js/bootstrap.bundle.min.js"></script>
<script
src="static/assets/vendor/purecounter/purecounter_vanilla.js"></script>
<script src="static/assets/vendor/glightbox/js/glightbox.min.js"></script>
<script src="static/assets/vendor/swiper/swiper-bundle.min.js"></script>
<script src="static/assets/vendor/aos/aos.js"></script>
<script src="static/assets/vendor/php-email-form/validate.js"></script>


<script src="static/assets/js/main.js"></script>

</body>

</html>

```

GitHub Link :

<https://github.com/smartinternz02/SI-GuidedProject-587698-1697465074>

Project Demo Link:

https://drive.google.com/drive/folders/1cFJ8lbm1uUZJckzul50Z3kIZeyBZm9_2?usp=sharing

