# HEART DISEASE ANALYSIS

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, endocardium, 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 this project we are trying to analyze the Heart disease related data and able to extract some insights from data using business intelligence tools. To extract the insights from the data and put data in the form of visualizations, Dashboards and story we employed Tableau tool.

Technical Architecture:
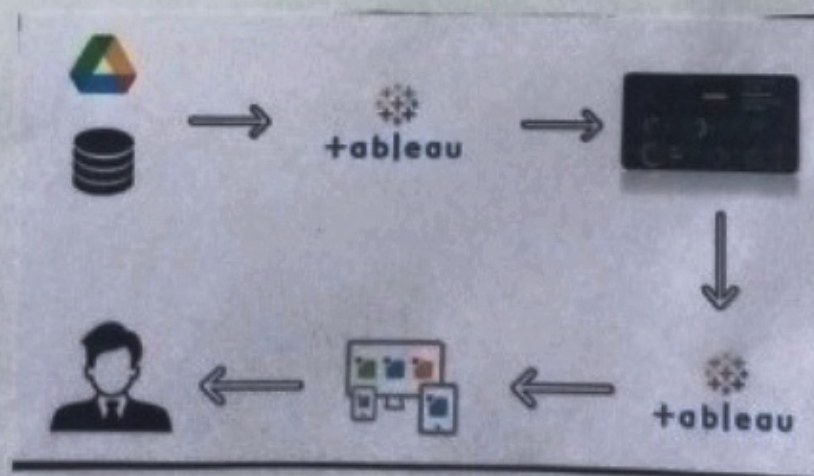
Project Flow

To accomplish this, we have to complete all the activities

- Define Problem
  → Specify business problem
  → Business requirements
  → Literature Survey
  → Social or business Impact
- Data Collection & Extraction from Database
  → Collect dataset
  → Storing Data in DB
  → Perform SQL operations
  → Connect DB with Tableau.
- Data Preparation
  → Prepare the Data for visualization
- Data Visualizations
  → No. of Unique visualizations
- Dashboard
  → Responsive and Design of dashboard
- Story
  → No. of Scenes of story
- Performance Testing
  → Amount of Data Rendered to DB
  → Utilization of Data filters
  → No. of Calculations
  → No. of visualizations / Graphs.
- Web Integration
  → Dashboard and story embed with UI with flask.
- Project Demonstration & Documentation.
  → Record explanation video for project end to end.

Milestone 1 : Define problem

Activity 1 : Specify business problem

Activity 2 : Business requirements.

The Health care industry produces a huge amount of data. This data is not always made use to the full extend and is often underutilized. Using this huge amount of data, a disease can be detected, predicted or even cured. The business requirements for analyzing the heart diseases in world include identifying patterns and comparing factors of heart disease, creating interactive dashboards and reports, identifying areas for improvement, making data driven decisions, comparing factors of heart disease. The ultimate goal is to gain insights and improve performance through data visualization technique.

Activity 3 : Literature Survey

A literature survey for the heart disease analysis would involve researching and reviewing previous studies, articles and reports on topic. This could include information on methods and techniques used for analyzing heart disease. A comprehensive literature survey should include peer-reviewed journals, scientific databases.

Activity 4 : Social or Business Impact

Analyzing heart disease has profound social impacts, ranging from individual-level health outcomes to community empowerment and public health initiatives.

Business Model / Impact:

Analyzing heart disease has substanial business impacts across various sectors, including various sectors, including healthcare, medical technology pharmaceuticals, digital health, insurance, research, workplace wellness, & consumer products. It creates market opportunities, drives innovation and influences policy and advocacy efforts in the fight against heart disease.

Milestone 2:

Data Collection & Extraction from Database

This is the process of gathering and measuring information on variables of interest, in an established systematic fashion that enables one to answer stated research questions, test hypotheses, evaluate outcomes and generate insights from data.

Activity 1

Downloading dataset

Please use the link and download the dataset

Activity 1.1:

Understand data

Data contains all meta information regarding columns described in csv files.

Column Description of Dataset:

1. HeartDisease - target trait

2. BMI : A value that allows you to asses degree of correspondence between degree of correspondence between a person's mass and his height, and

indirectly judge whether mass is insufficient, normal or excessive.

3. Smoking: It is a major risk of factor for cardiovascular disease. When smoke from a cigarette is inhaled, the reaction of cardiovascular system immediately follows: neither one minute, the heart rate begins to rise increasingly by 30% neither ten minutes of smoking.

4 Alcohol Drinking –
alcohol causes not only temporary disturbance in the functioning of heart, but also permanent theart pain after permanent one. Heart pain after alcohol is not the only health problem associated with alcohol consumption.

5. Stroke – Ischemic stroke occurs 4 times more often than hemorrhagic. One of the leading causes of this suffering is heart disease, which impairs its functioning, as a result of which the blood flow in the arteries is disturbed and blood supply to the brain is reduced.

6. Physical Health: how many days in a month did you feel poor physical health.

7 Mental Health: how many days in month did you feel poor physical health.

8. Diff Walking – difficulty climbing stairs.

9. Sex – gender of a person.

10. Age Category – age category of subjects

11. Race – Race is a complex social construct that

categorizes people into distinct groups based on certain physical and genetic characteristics.

12. Diabetic - person suffering from diabetics

13. PhysicalActivity - adults who reported doing physical activity who reported doing past 30 days other than their regular job.

14. GenHealth - Wellbeing

15. Sleeptime - no. of hours of sleep

16. Asthma - Asthama is chronic respiratory condition due to breathing issue.

17. KidneyDisease - Disease related to kidney

18. Skin Cancer - People suffering from skin cancer.

Activity 2: Storing Data in DB & perform SQL Operations

Activity 3: Connect DB with Tableau

Milestone 3: Data Preparation

Activity 1: Prepare Data for Visualization

Preparing data for visualization involves or cleaning data to remove irrelevant missing data, transforming the data into a format that can be easily visualized, exploring data to identify patterns and trends, filtering data, preparing data for visualization software, & ensuring data is accurate and complete. Since the data is already cleaned we can move to visualization.

Milestone 4 : Data Visualization

Data visualization is process of creating graphical represents of data to help people understand explore the information. The goal of data to help people understand & explore the information. The goal of data visualization is to make complex data sets more accessible intuitive, & easier to interpret. By using visual elements such as charts, graphs, maps, quickly patterns, trends & outliners.

Activity 1 : No. of Unique Visualization

The no. of unique visualizations that can be created with a given dataset. Some common types of visualizations that can be used to analyze the performance and efficiency of bank include bar charts, line charts, graphs, maps, scatter plots, pie charts, etc.

Activity 1.1 : Gender vs Heart Disease

Activity 1.2 : Age vs Heart

Activity 1.3 : Diabetes vs Stroke

Activity 1.4 : Impact of Smoking & Alcohol on Heart Disease

Activity 1.5 : Other heart disease vs stroke

Activity 1.6 : Race Wise Heart Disease

Activity 1.7 : General health vs heart Disease

Activity 1.8 : Physical activity vs heart Disease

Activity 1.9 : Age & BMI

Milestone 5 : Dashboard

A dashboard is a graphical user interface that displays information and data in an organised, easy to read format. Dashboards are often used to provide real time monitoring and analysis of data and are typically designed for specific purpose. They can be used to track key performance indicators (KPIS), monitors performance metrics, and display data in form of charts, graphs & tables.

Activity 1 Responsive and Design of Dashboard
Once you have created views on different sheets in tableau, you can pull them into dashboard.
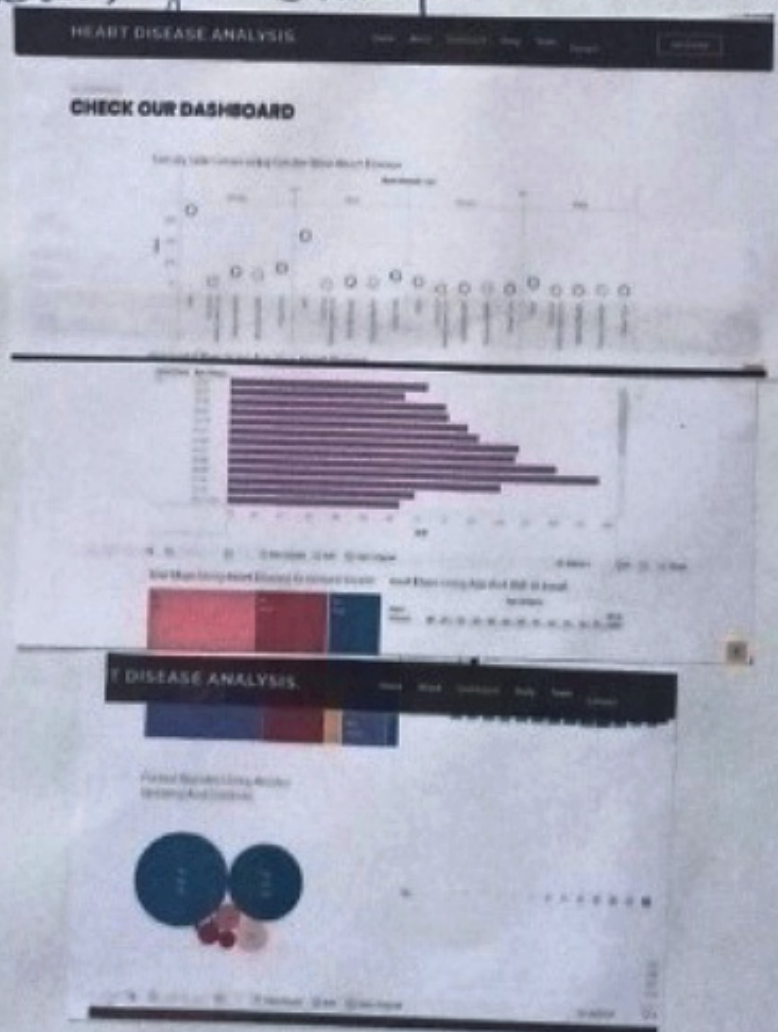
Milestone 6: Story

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 explain context for the data, a body that presents the data analysis logically and systematically, and a conclusion that summarizes key findings and highlights their implications.

Activity 1 - No. of Scenes of Story.

The no. of scenes in storyboard for a data visualization analysis of heart disease will depend on complexity of analysis and the specific insights that are trying to be conveyed.
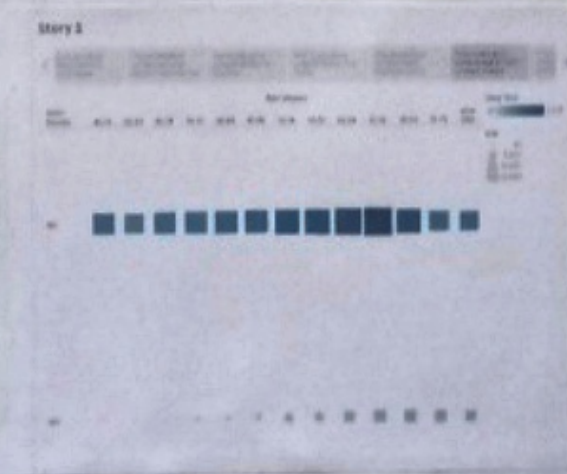
Milestone 7: Performance Testing

Activity 1: Amount of Data rendered of DB

- The amount of data that is rendered to a database depends on the size of dataset and the capacity of dataset to store and retrieve data.
- Open the Mysql workbench, go to dataset then click to expand tables, select table and click on (i) button to get info such as column count, table rows etc.
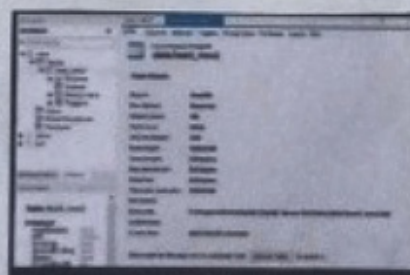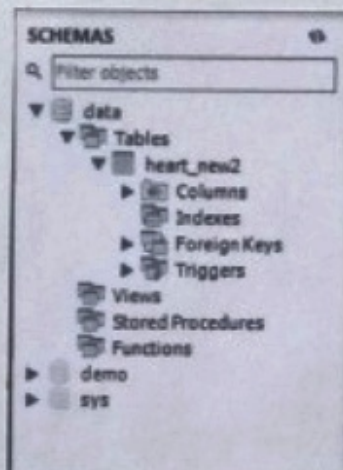
Activity 2 : Utilization of Data filters.
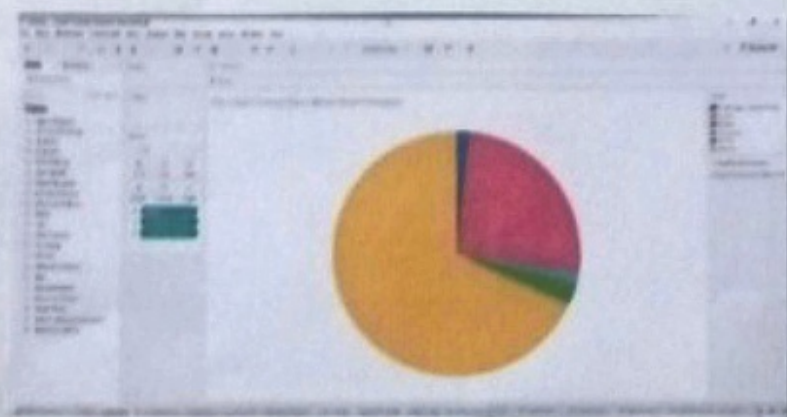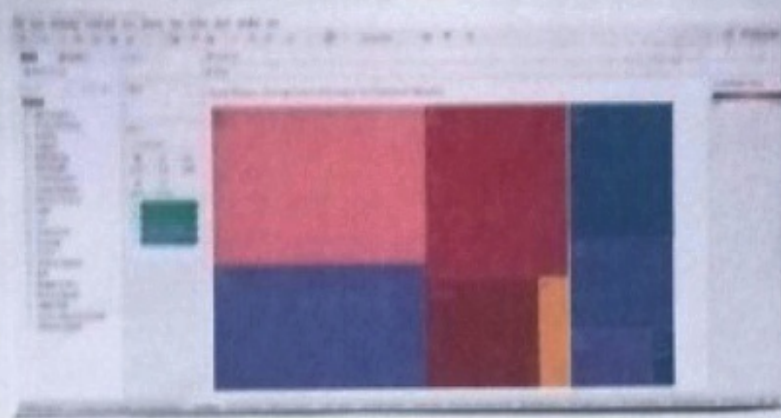
Activity 3 : No. of Calculation fields

In this analysis we have not created any new column using calculation field as data found in dataset was clean and sufficient analysis

Activity 4 : No. of Graphs

1. Gender wise heart disease
2. Age wise heart disease
3. People suffering from diabetic and stroke
4. Impact of smoking and alcohol drinking
5. Other Diseases vs stroke
6. Race wise heart disease

Milestone &

Web Integration

publishing helps us to track and monitor key performance metrics and to communicate results and progress, help a publisher stay informed, make better decisions, and communicate their performance to others

Publishing dashboard and reports to tableau public.

step 1 : Go to Dashboard / story, click on share button on top ribbon

step 2: Once you click on connect it will ask you for tableau public username and password.

Once you login your tableau public using credentials, the particular visualization will be published into tableau public

7. General health vs heart disease
8. Physical activity vs heart disease
9. Age and BMI vs heart disease
10. People got stroke suffering from Diabetes and heart disease

Activity 1: Embed Dashboard & Story with Flask
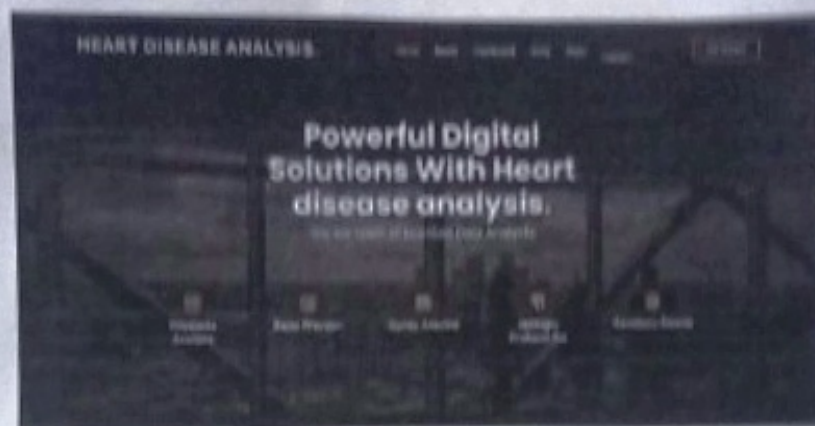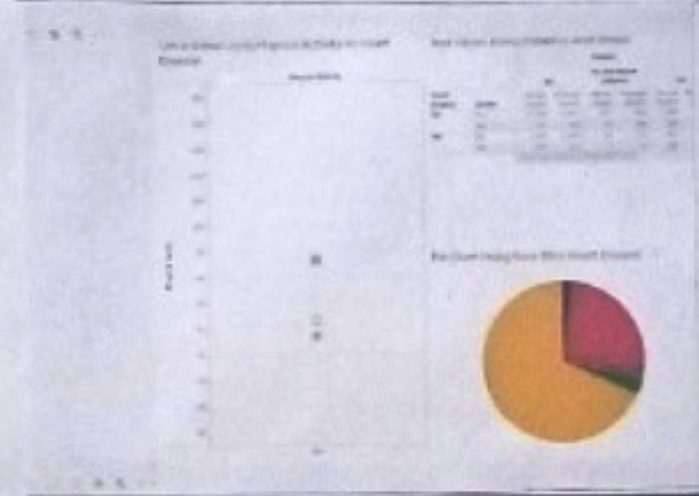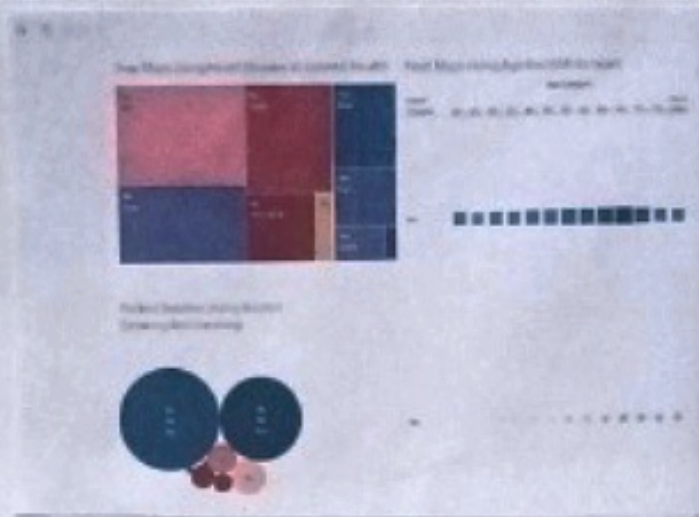
HEART DISEASE ANALYSIS

CONTACT US

Location:

Email:

Call:

Milestone 7: Project Demonstration & Documentation

Activity 1 : Record explanation Video for the projects end to end solution

Activity 2: Project Documentation step by step project development procedure.