MONASH University

FIT5147 – **Data Visualization Project**

Beneficiaries of the Health Scheme of the state Andhra Pradesh (NTR Vaidya Seva), India

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Table of Contents:

Introduction:

NTR Vaidya Seva (or Arogya Seva), which is the government scheme initiated by the Government of Andhra Pradesh, India. Under this scheme where lower-middle class and low-income citizens of Andhra Pradesh are getting benefited where they can obtain free medical support for many major diseases and ailments.

- Under this End-to-end cashless services for identified 1044 diseases under secondary and tertiary care through 400 Government and Corporate Network Hospitals.
- The beneficiaries The Scheme is intended to benefit 129.44 lakh families in all 13 districts of the state.

Motivation:

In daily life, we see lot of people in and around will be dying without proper medication for the diseases which treatment costs high.

Outline:

Government is sponsoring the people who are in need and help that to on the basis of financial status of the person and coming from the rural background and below poverty line people.

This Scheme helps lot of poor and unhealthy people can get world class treatment and can live longer and happy life.

Our Visualization helps us to have a brief overview of how the scheme is being used by the people and whether it is being reached to the poor and intended people.

And Visualizations helps us to know the district wise performance, which district is using the scheme more and its helps to improve the availability of funds.

Data and Data sets:

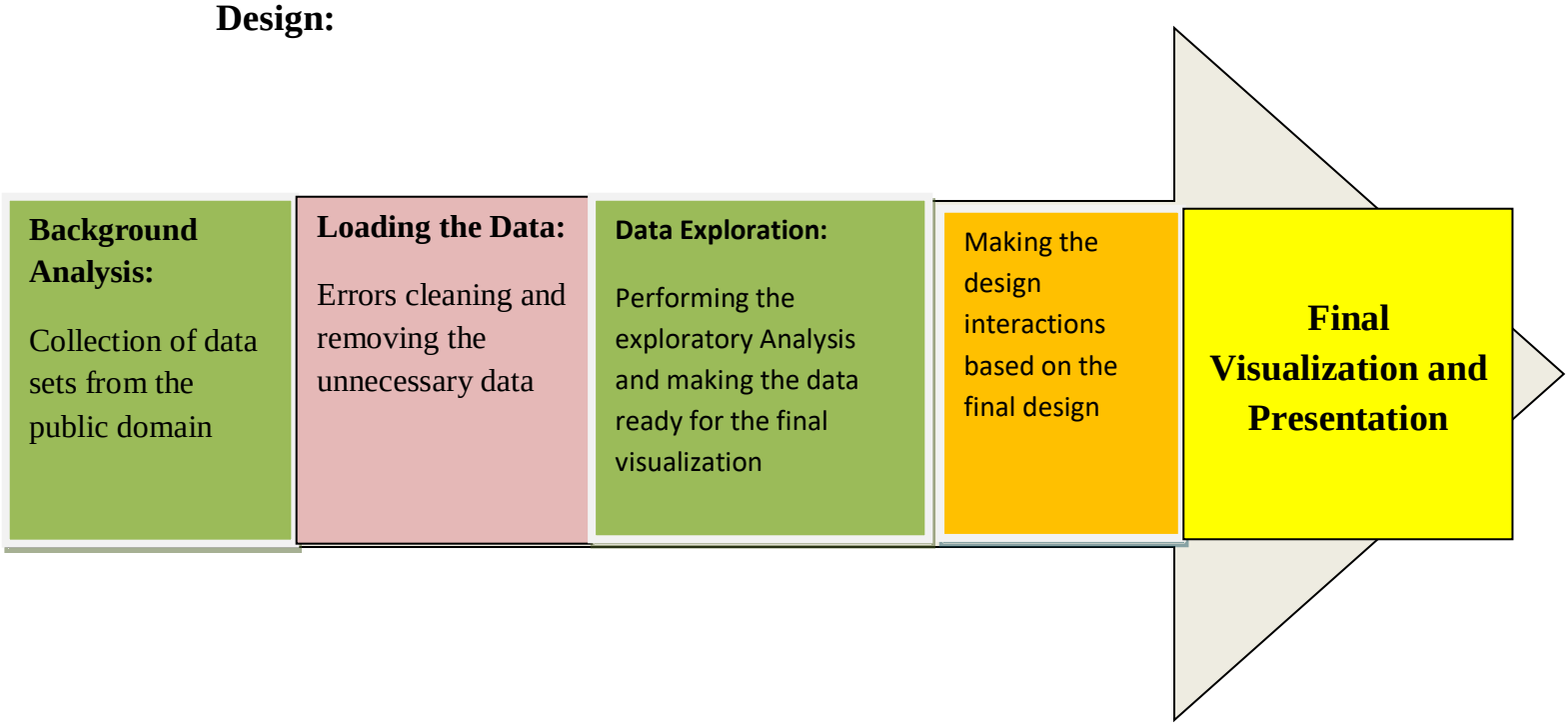
- We used couple of data sets for visualizing the project.
  1. NTR Arogya Seva Data frame
  2. Population Analysis
- Size of the data:

  We are visualizing the results based on 480000 records of the main data set And other 20 records of district wise information.
- Data used for visualization is using the information of which is in CSV format and after making appropriate changes to the data.

Languages used:

R with shiny

Design:



Design Sheets:

Sheet1:

Presenting the ideas and Brain storming and ideas implementation,

- Presenting the map coordinates on the leaflet and displaying them on the map
- Bar charts used for the comparison of the age and gender wise analysis and amount usage comparison year wise
- Pie charts used for the count of top surgeries being performed in the district.

Sheet 2:

- We are visualizing the Age wise analysis and checking the district wise performance.
- Counting the no of people depending up on the age, so that we will get the counting the no of people in the particular age group.
- We are also filtering the data based on the caste and counting the no of people.
- Pie chart is used for knowing the surgery information of the particular district.
- Which gives no of people age wise in the district

Sheet3:

- By using the leaflet we are presenting the district wise information and also upon hovering we will get the data of the district total information.
- Helps us to know the total information of the district such as:
    1. Total Population
    2. Caste wise Population
    3. Total no of Male and Female Population
- On hover we will get the district name and on click will let us know the district total information.

Sheet 4:

- In this sheet, planed to have information of the District wise hospital information.
- District wise Hospital treating the diseases, checking the performance of the hospital and also the Government hospitals inward patients and the Private Hospitals Inward patients.
- Checking the mortality rate District wise and checking the success rate and also will be known which age group people are losing their life.
- Pie chart shows us the disease causing the death of the patient of the following age group in the particular District.

SHEET 5: (Final Design and implementation):

- Sheet which gives us the final briefing of what actually being implemented in the project.
- Visualization helps us to know the amount utilization based on the district and also year wise, so that it helps the Government to know the year wise analysis and helps to increase the Budget for the following year depending upon the rate of utilization.
- District wise and Year wise claim amount and year wise analysis.

Other thought added to the Project visualizations are adding the word cloud for the disease analysis year wise and district wise. This helps the Government to take care of regions from eradicating the spread of disease even more or else improving the surgery facility in the local hospitals.

Implementation:

Making the interactive visualizations for Heath scheme Data has been done in R shiny.

Implementations have been done in 3 files:

- UI.R
- Server.R
- Global.R

UI.R: User Interface has been created with the slider inputs and the drop downs to provide user a chance to select depends on what he wanted to choose.

Server.R: This file has major code which will select the and then slice the data based on the user interactions in the UI and process the data and render the output on the main panel of the UI.

Global.R: This file has all the data files uses the data as globally required for execution of the file .

Libraries:

Shiny: Shiny package used for the displaying the UI and Server on the console for the interactive visualization. Package provides the web application frame work to create the interactive web applications. This displays the R Objects and provides the reactive binding between inputs and outputs.

ggplot2: ggplot package used for creating the declaratively creating graphics by telling the ggplot2 how to map variables to aesthetics, which graphical primitives to use. Used in the project for plotting the bar graphs and pie charts

Leaflet: Leaflet is the java script library used for the displaying the map projections on the UI

Plotly: Plotly is the package used for displaying the graph outputs on to the UI and making the presentations more interactive.

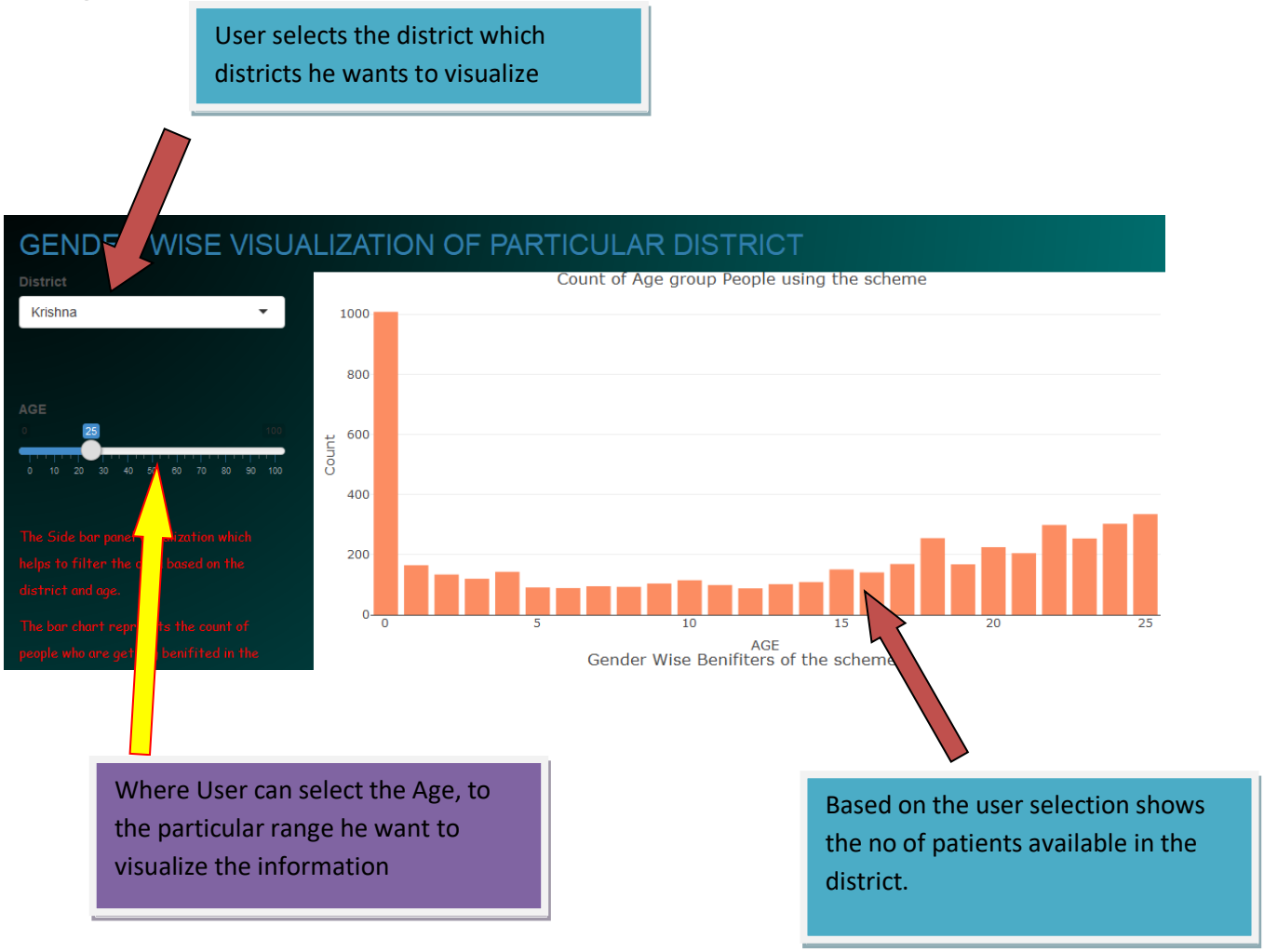
Shiny themes: Package used for the changing the theme of the web page and making the web page look even more attractive and more appealing

Shiny Widgets: This package used for the making the web page look even more effective and for changing the widgets and background and making effective color.

dplyr: This package is used for the data manipulating, in the project when using the data for the plotting, where the data need to be converted to the Integer format and some to the String format.

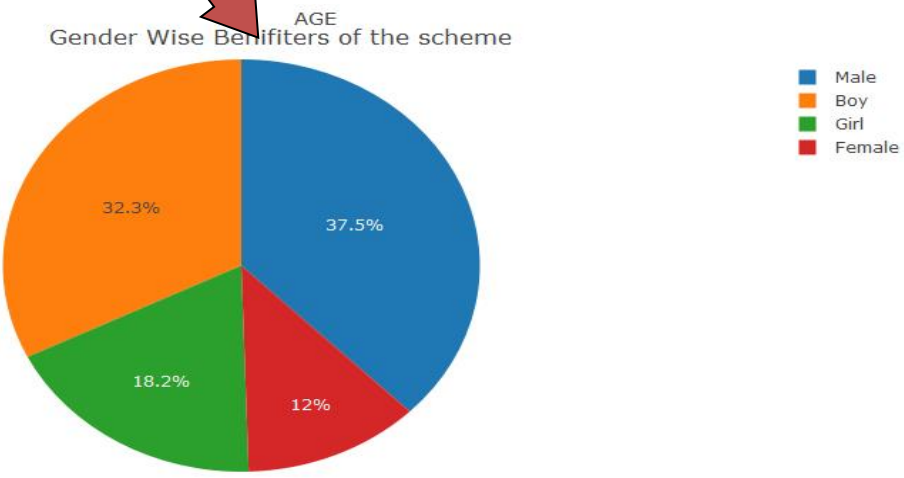
Word cloud: This package is used for projecting the group of words, and helps in representing them in order and brighter that the user can understand which has highest importance. And being the one frequently repeated.

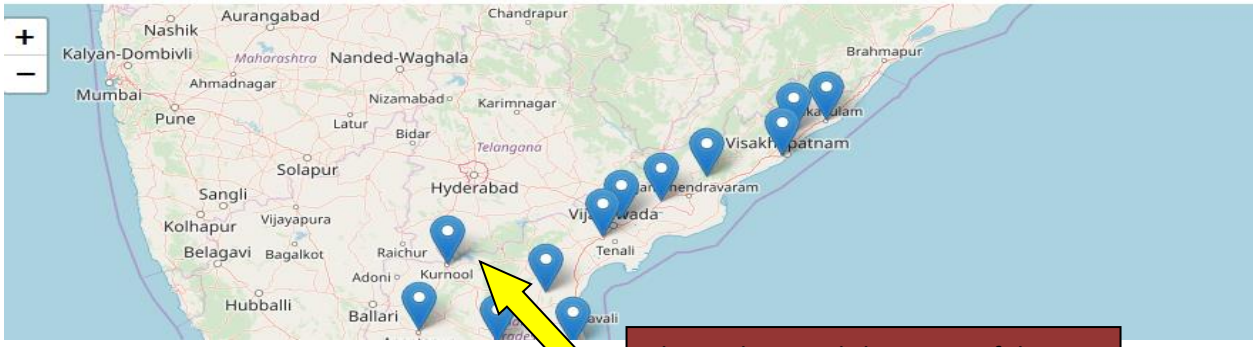
User guide:



- Where user can select the district and also select the range of the age,
- Which displays the user visualizations
- Bar graphs present count of number of people present in the district and depending upon the age of the people.
- Leaflet presenting the District wise position locations and on the howler and click, will produce the complete details of the district.
- Pie Charts represent the Gender wise analysis based on the age group and district wise.
- This helps us to have a clear idea, age groups usage of the scheme.

Pie chart shows the information of Gender wise information based on the condition of District and age



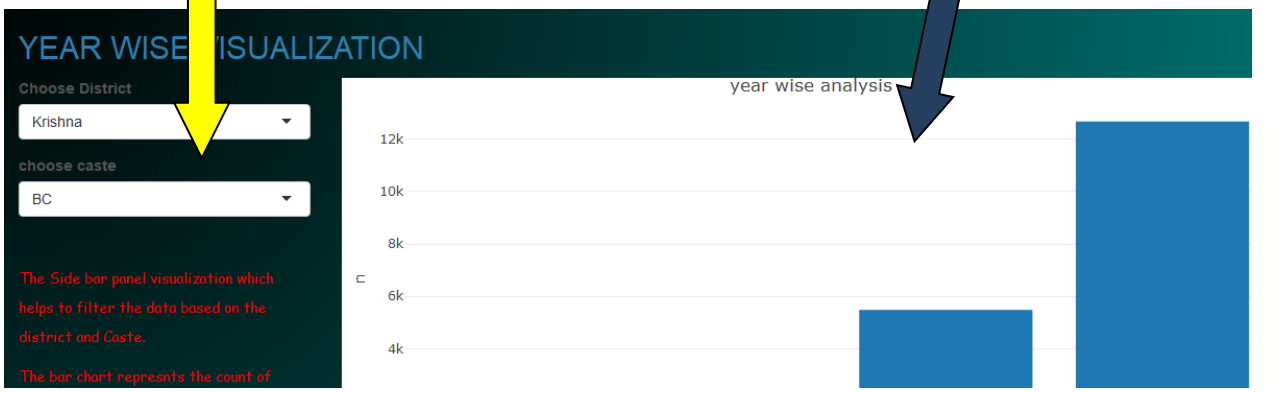


Shows the visuals locations of the map based on the latitude and longitude positions.

- Graphs presenting the information based on the condition of the caste and District.
- Where it helps us know the amount being utilized by the district in year wise.
- Government can analyse and increase the budget for the uocming year.
- Word cloud which helps knowing the most frequent surgery, where people are getting effected and needs curing.

Where user the select the caste and shows the caste wise information of the particular district

Visualization shows the year wise analysis.



Shows the word cloud of surgeries being performed year wise.

Conclusion:

After visualizing the data for the health scheme, I can conclude that,

- Mostly Men are among people who are actively using the scheme.
- Among the districts we can see that West Godavari is the District, where many people are using the scheme rather compared to other districts.
- When we are checking the hospitals, we can clearly see that they are lot more Private Hospitals rather than the Government Hospitals, which are active in the scheme.
- This clearly states that there were no proper resources for all kind of treatments.
- Corporate or Private Hospitals are earning by using this scheme.
- We can clearly there is equal amount of people they are accessing the scheme, when compared to the densities of the population.
- Interesting Facts we got under this analysis is death rate when the people are using this scheme.
- We found there is lot more success rate in both Government and Private hospitals when dealing with the health of the people under this scheme.
- On major analysis is we have seen that the new born infants are the once where the death rate is more.
- According to the community wise, Backward Class is the people who are actively using this scheme.
- This clearly a sign that where the scheme is being used properly, since the scheme is designed for backward people and lower class people with less income.
- That shows the conclusive analysis in different areas precisely.

    - Where I can conclude by saying that, visualizing the data considered has answered all the questions, and in fact also able to find out some interesting things, while exploring the data.

After analyzing the data where I can clearly say that, which help the user and Government in understanding actually how much Government is spending on this Scheme.

Actually tired of getting Budget information, actually to know how much Government is allocating every year and how much is being used properly and reaching the Back Ward class people as per the scheme. The data hasn't been disclosed by the Government.

References to the Data Sets:

Major Data Set NTR Vaidya Seva in the state of Andhra Pradesh

Data Set 1 : http://www.ntrvaidyaseva.ap.gov.in/web/guest/explore_data

We will get data sets year wise data , where I have collected the data year wise and then merged into single data set for exploring the data.

Another Data Set in order to get the District wise population according to 2011 census

Data Set 2 : https://www.census2011.co.in/census/state/andhra+pradesh.html

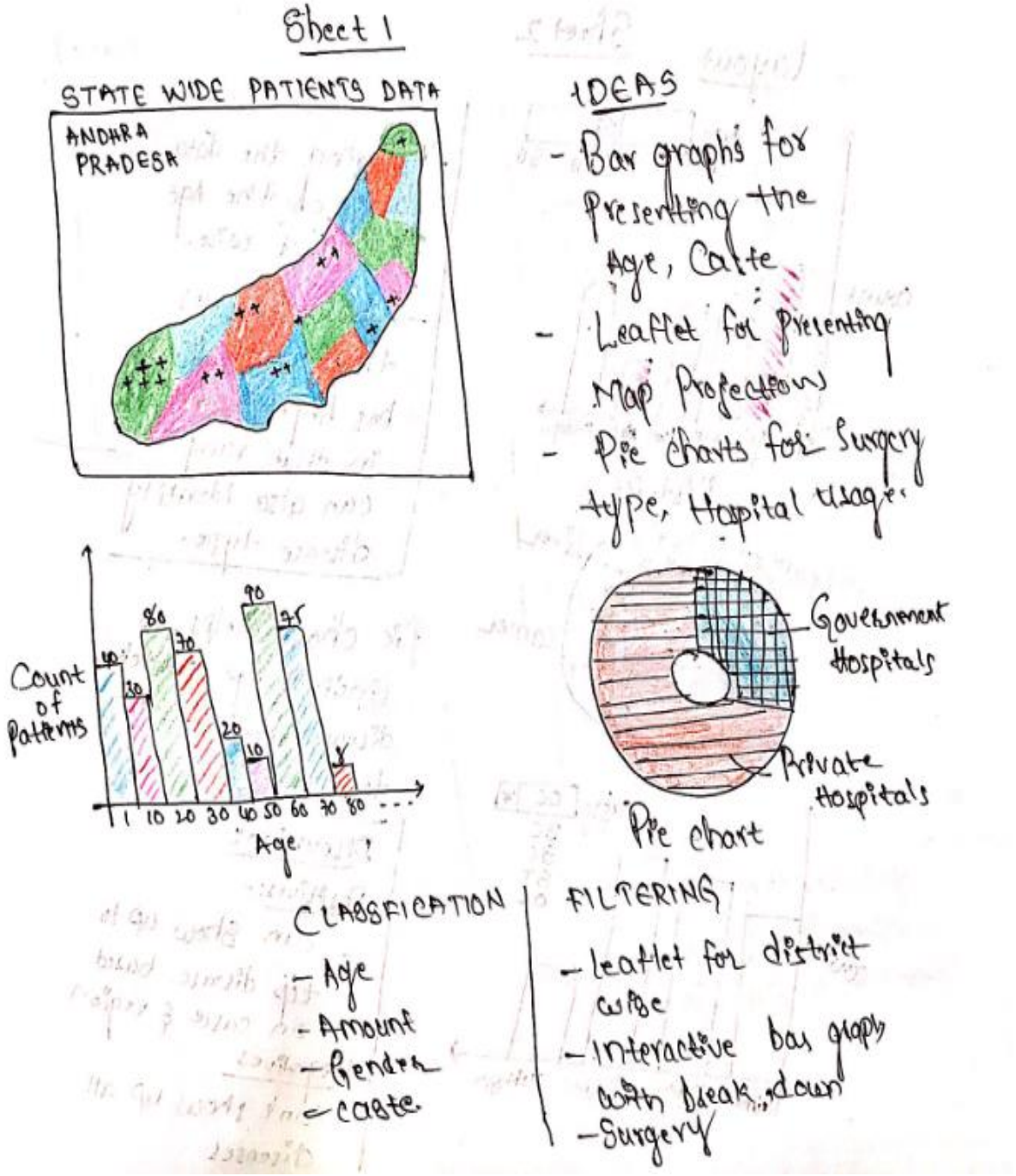
Another caste based information gathered from

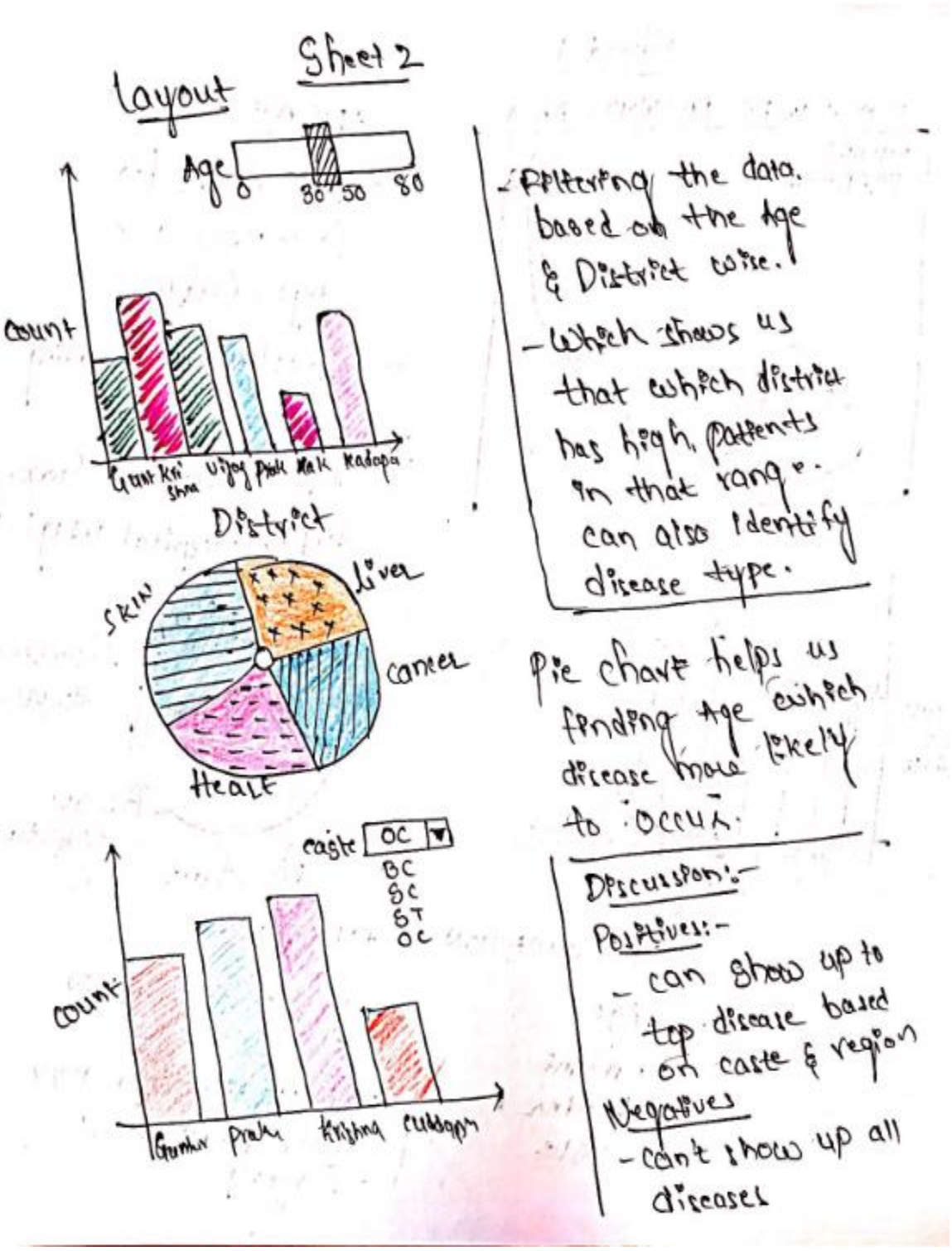
Data Set 3: https://en.wikipedia.org/wiki/Caste_system_in_India

References:

- Wikipedia for caste system in India and in state of Andhra Pradesh
- Stack Overflow
- Data.gov.in
- India 2011 census data
- Ap.gov.in for official data set of different years

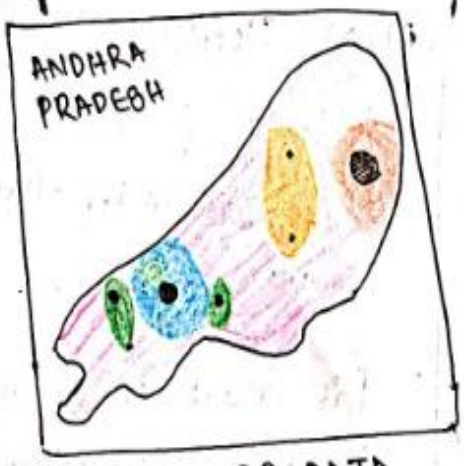
Appendix:


Sheet 1
STATE WIDE PATIENTS DATA
ANDHRA PRADESH
IDEAS
- Bar graphs for presenting the Age, Caste
- Leaflet for presenting Map Projections
- Pie charts for Surgery type, Hospital usage.
Count of Patients
40
30
80
70
20
90
10
75
1 10 20 30 40 50 60 70 80 ...
Age
Government hospitals
Private hospitals
Pie chart
CLASSIFICATION
- Age
- Amount
- Gender
- caste.
FILTERING
- Leaflet for district wise
- Interactive bar graph with break down
- Surgery


Sheet 2
layout
Age
0
30
50
80
count
District
SKIN
Liver
cancer
Healt
caste
OC
BC
SC
ST
OC
count
- Filtering the data based on the age & District wise.
- which shows us that which district has high patients in that rang. can also identify disease type.
pie chart helps us finding age which disease more likely to occurs.
Discussion:-
Positives:-
- can show up to top disease based on caste & region
Negatives
- can't show up all diseases

Sheet 3

Layout



STATE WIDE DATA

- Users can hover on the District to know the information
- Radius is dependent up on the No of People.
- Helps to know the hospital info, patients count, caste count.

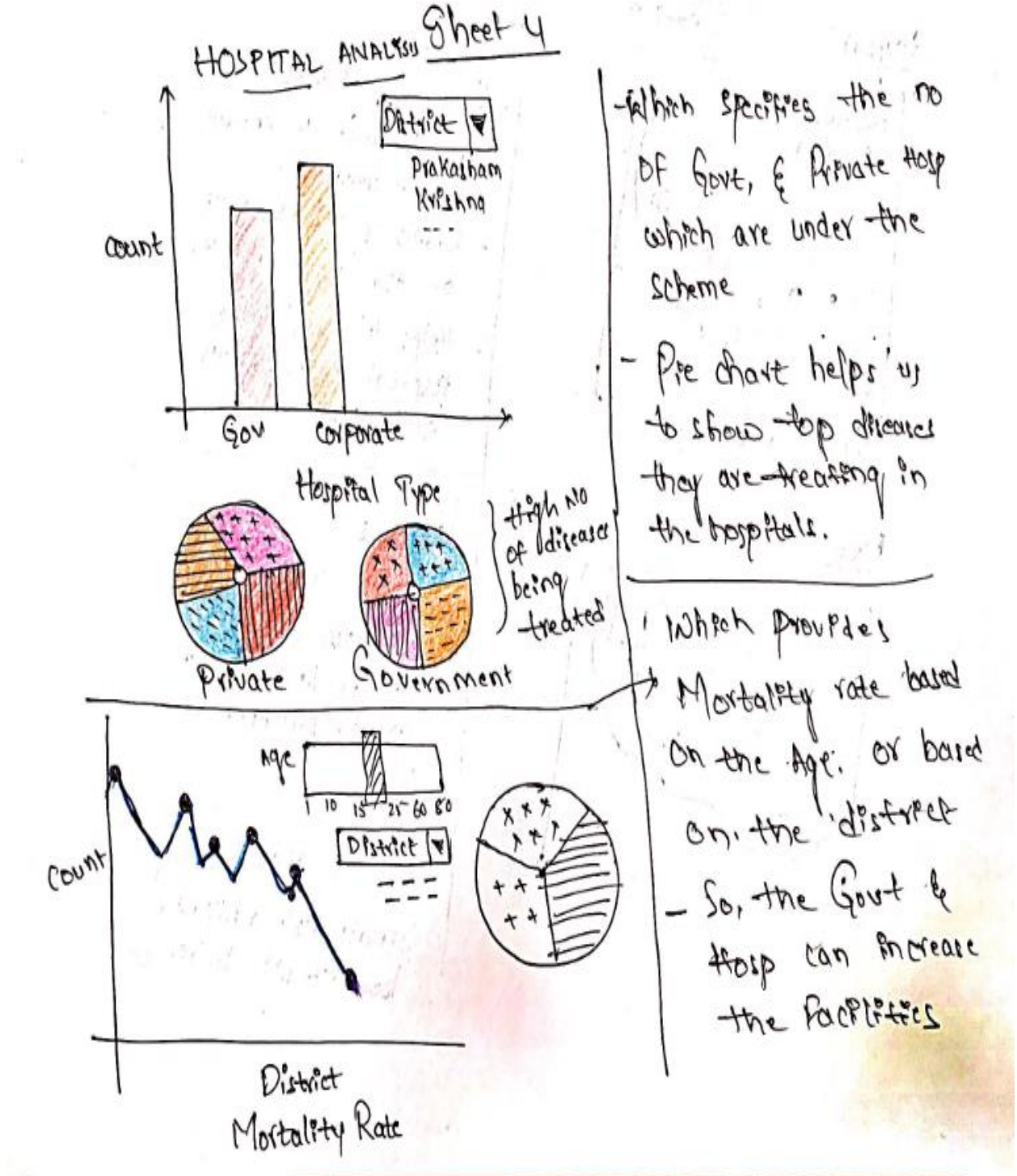
Focus

Positives

- Highly interactive
- Most data can be can be known and can be presented in view

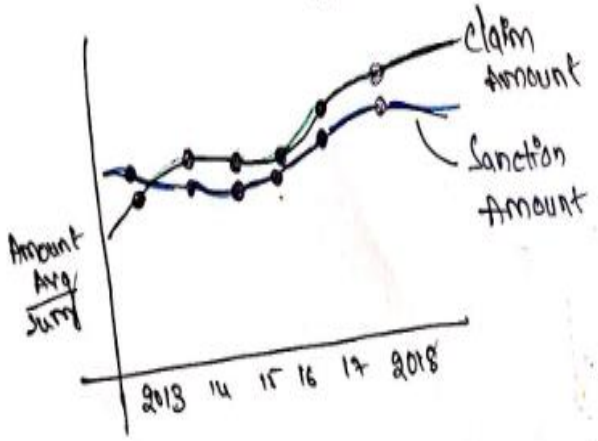
Negatives:-

- Up on integrating small no's might be difficult to view.


HOSPITAL ANALYSIS Sheet 4
District
Prakasham
Krishna
...
Count
Gov
corporate
Hospital Type
Private
Government
high no of disease being treated
Age
1 10 15 25 60 80
District
Count
District
Mortality Rate
- Which specifies the no of Govt, & Private hosp which are under the scheme
- Pie chart helps us to show top diseases they are treating in the hospitals.
- Which provides Mortality rate based on the Age. or based on the district
- So, the Govt & hosp can increase the facilities

SHEET-5

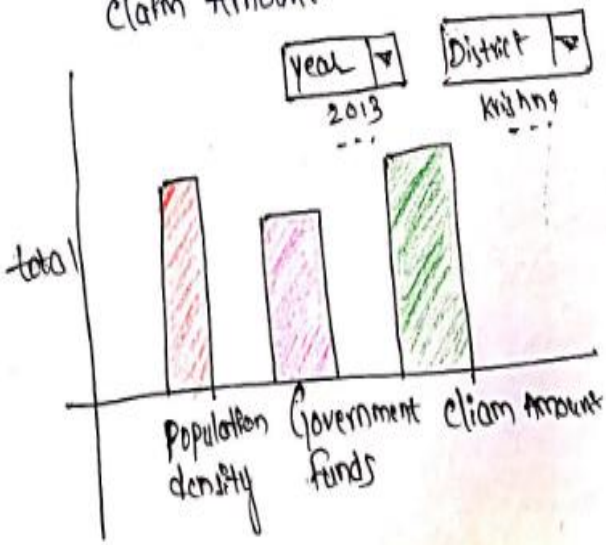
SANCTION AMOUNT YEAR WISE



This shows us that Amount claimed by the patients through hospital.

- Sanction Amount is lesser than the claim Amount

Government Fund Allocation Year Wise District Population density, district claim Amount.



- Based on the interactive visualizations Govt can able to make decisions how much they need to raise the budget based on the demand.