

PUBLIC HEALTH AWARENESS

OBJECTIVE :

This problem statement serves as the foundation for developing a comprehensive public health awareness campaign to address the issue of childhood obesity in urban communities. It clearly outlines the problem, objectives, key components, and expected impact of the campaign.

The objective of this public health awareness campaign is to raise awareness about childhood obesity in urban communities, educate parents, caregivers, and children about its risks, and promote healthy lifestyle choices and access to resources that support a balanced diet and physical activity.

This campaign aims to empower individuals and communities to take proactive measures to combat childhood obesity, ultimately reducing its prevalence and mitigating its associated health and economic impacts.

Key Components:

1. Disseminate information about the causes and consequences of childhood obesity through various communication channels, including social media, community events, and healthcare facilities.
2. Engage and educate parents, caregivers, and schools about the importance of nutrition and physical activity.
3. Advocate for improved access to healthy foods and safe play spaces in urban areas.
4. Collaborate with local healthcare providers, schools, and community organizations to implement sustainable solutions.

5. Measure the campaign's success through quantitative metrics, such as reduced childhood obesity rates, and qualitative feedback from participants.

Timeline:

The campaign will be executed over a period of [insert duration], with ongoing efforts to sustain awareness and behavior change beyond the initial campaign timeline.

Budget:

The estimated budget for this public health awareness campaign is [insert budget amount], which includes costs related to marketing materials, events, partnerships, and data collection.

Expected Impact:

Through this campaign, we expect to reduce the incidence of childhood obesity in urban communities by [insert target reduction percentage] within [insert timeframe]. This reduction will lead to improved overall health, a decrease in healthcare costs, and a healthier future for children in these areas.

DESIGN PROCESS:

Designing a solution for public health awareness involves creating strategies, campaigns, and initiatives to inform and educate the public about various health issues. Here are steps to design an effective public health awareness solution:

1. Identify the Health Issue:

- Choose a specific health issue or topic that needs awareness and attention. This could be related to diseases, preventive measures, healthy lifestyle habits, or other relevant concerns.

2. Research and Data Collection:

- Gather data and information about the selected health issue. Understand the prevalence, risk factors, and impact on the community.

3. Define Your Target Audience:

- Determine the demographic, geographic, and psychographic characteristics of the people you want to reach with your awareness campaign. Consider age, gender, location, interests, and cultural factors.

4. Set Clear Objectives:

- Establish clear and measurable objectives for your campaign. What do you want to achieve? Examples include increasing vaccination rates, reducing smoking, or promoting healthy eating.

5. Develop a Message:

- Craft a compelling and clear message that resonates with your target audience. Ensure it is easy to understand and emphasizes the importance of the health issue.

6. Choose Communication Channels:

- Select appropriate communication channels to reach your target audience. This may include social media, websites, community events, printed materials, TV/radio, or partnerships with local organizations.

7. Create Engaging Content:

- Develop content that captures the audience's attention. This can include infographics, videos, articles, stories, testimonials, and interactive materials.

8. Form Partnerships:

- Collaborate with local organizations, healthcare providers, schools, and community leaders to amplify your message and gain their support.

9. Plan Campaign Activities:

- Outline a detailed plan for your campaign activities, including launch dates, distribution strategies, and events.

10. Evaluate and Measure:

- Define key performance indicators (KPIs) to assess the success of your campaign. These may include website traffic, social media engagement, attendance at events, or behavior change metrics.

11. Adapt and Improve:

- Continuously monitor your campaign's performance and make adjustments as needed. Learn from your successes and failures to refine your approach.

12. Budgeting and Funding:

- Estimate the budget required for your awareness campaign and identify potential funding sources, such as government grants, donations, or sponsorships.

13. Legal and Ethical Considerations:

- Ensure your campaign complies with relevant regulations and ethical guidelines, especially when handling sensitive health information.

14. Sustainability:

- Consider how to maintain long-term awareness and engagement, as many health issues require ongoing efforts.

15. Impact Assessment:

- Periodically assess the impact of your campaign on public awareness and, ideally, on the health issue itself.

16. Feedback and Engagement:

- Encourage feedback from your target audience, and actively engage with them to address questions, concerns, and suggestions.

Remember that public health awareness campaigns are most effective when they are evidence-based, culturally sensitive, and use a mix of media and communication channels to reach diverse populations. Additionally, collaboration with stakeholders and community involvement can significantly enhance the success of your efforts.

INNOVATIVE METHODS:

Innovative techniques and approaches in public health awareness campaigns can significantly enhance their effectiveness in reaching and engaging target audiences. Here are some innovative methods that have been used in such campaigns:

1. **Gamification:** Incorporating elements of gamification, such as health-related challenges, leaderboards, and rewards, can encourage people to adopt healthier behaviors. Apps and platforms that turn health goals into games have gained popularity, making the process more engaging.

2. **Augmented Reality (AR) and Virtual Reality (VR):** AR and VR technologies have been used to create immersive and interactive experiences. For example, AR apps can provide information about nutrition when users scan food items, and VR can be used to simulate the consequences of unhealthy behaviors.
3. **Crowdsourced Data Collection:** Leveraging the power of crowdsourcing, public health campaigns can collect real-time data on health-related issues. For example, apps and platforms allow users to report environmental hazards or disease outbreaks in their communities, which can inform response efforts.
4. **Personalized Health Insights:** Advanced data analytics and machine learning algorithms can provide individuals with personalized health insights based on their data. These insights can help people understand their health risks and make informed decisions.
5. **Influencer Marketing:** Collaborating with social media influencers, especially those who are health-conscious or have expertise in a relevant field, can reach a broader and more engaged audience. Influencers can create content that resonates with their followers and promotes healthy behaviors.
6. **Health Chatbots and AI Assistants:** AI-powered chatbots and virtual assistants can provide 24/7 health information, answer questions, and offer guidance. They can be integrated into websites, apps, or social media platforms to provide instant support.
7. **Interactive Workshops and Webinars:** Hosting online or in-person workshops and webinars allows for interactive discussions and knowledge-sharing. These events can cover a range of topics, from mental health strategies to cooking demonstrations for healthier meals.
8. **Wearable Technology Integration:** Integration with wearable devices like fitness trackers and smartwatches allows for the collection of real-time health data. This data can be used to provide individuals with feedback and motivation to maintain or improve their health.

9. **Mobile Health (mHealth) Apps:** Mobile apps have revolutionized public health awareness by providing tools for self-monitoring, telemedicine, medication reminders, and health education. Some apps use AI to provide personalized health recommendations.
10. **Blockchain for Health Data Security:** Utilizing blockchain technology to secure health data and ensure data privacy. Blockchain can be used to maintain a transparent and immutable record of health-related information while giving individuals control over their data.
11. **Social Impact Campaigns:** Incorporating social and environmental justice aspects into public health campaigns can make them more inclusive and address underlying determinants of health disparities.
12. **Art and Storytelling:** Creative and artistic approaches, including visual arts, storytelling, and multimedia campaigns, can convey health messages in an emotionally resonant and memorable way.
13. **Geo-Targeted Messaging:** Using geolocation data to send relevant health messages and alerts to individuals based on their current location, such as promoting nearby healthy food options or exercise opportunities.
14. **AI-Enhanced Chatbots for Mental Health:** Developing chatbots and virtual assistants that use natural language processing to provide mental health support, including crisis intervention and emotional well-being guidance.
15. **Interactive Exhibits and Installations:** Creating interactive exhibits in public spaces, museums, and healthcare facilities that educate visitors about public health issues through interactive displays and experiences.

These innovative techniques and approaches can be used individually or in combination to create engaging, impactful, and memorable public health awareness campaigns. The choice of methods should align with the campaign's objectives, target audience, and available resources. Additionally, staying up-to-date with

emerging technologies and trends in public health can lead to new and more effective strategies.

DATA ANALYSIS:

For Data Analysis first we need to import necessary libraries

```
+ CODE + TEXT
```

```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
from sklearn.model_selection import train_test_split
from sklearn.preprocessing import StandardScaler
```

After importing the necessary files we need to load our dataset

```
In [1]: import pandas as pd
import numpy as np
import ast
from scipy.spatial.distance import cosine, euclidean, hamming
from sklearn.preprocessing import normalize
from keras.preprocessing import image
import matplotlib.pyplot as plt
import matplotlib.gridspec as gridspec
from time import time
from keras.preprocessing import image
import plotly.express as px
from plotly.subplots import make_subplots

from sklearn.model_selection import train_test_split
from sklearn.neighbors import NearestNeighbors

Using TensorFlow backend.
```

```
In [2]: recipe = pd.read_csv('/kaggle/input/foodrecsysv1/raw-data_recipe.csv')
recipe = recipe.drop(columns=['image_url', 'cooking_directions', 'reviews'])
recipe.head()
```

```
Out[2]:
```

	recipe_id	recipe_name	aver_rate	review_nums	ingredients	nutritions
0	222388	Homemade Bacon	5.000000	3	pork belly*smoked paprika*kosher salt*ground b...	{u'niacin': (u'hasCompleteData': False, u'name...
1	240488	Pork Loin, Apples, and Sauerkraut	4.764706	29	sauerkraut drained*Granny Smith apples sliced*...	{u'niacin': (u'hasCompleteData': False, u'name...
2	218939	Foolproof Rosemary Chicken Wings	4.571429	12	chicken wings*sprigs rosemary*head garlic*oliv...	{u'niacin': (u'hasCompleteData': True, u'name'...
3	27914	Chicken Pasta Delish	4.825000	169	eggplant head mushroom*ground beef*peas*	{u'niacin': (u'hasCompleteData': True, u'ame...

DATA PREPROCESSING:

```
In [5]: recipe.aver_rate = recipe.aver_rate.astype(float)
recipe.dtypes
```

```
Out[5]:
recipe_id      int64
recipe_name    object
aver_rate      float64
review_nums    int64
ingredients    object
nutritions     object
dtype: object
```

```
In [6]: recipe.tail()
```

```
Out[6]:
```

	recipe_id	recipe_name	aver_rate	review_nums	ingredients	nutritions
49693	222886	Grateful Dead Cocktail	3.50	4	fluid ounce tequila*fluid ounce vodka*fluid ou...	{u'niacin': {u'hasCompleteData': False, u'nam...
49694	25650	Cheese Filling For Pastries	4.33	3	raisins*brandy*cream cheese*white sugar*all-pu...	{u'niacin': {u'hasCompleteData': True, u'nam...
49695	23544	Peach Smoothie	3.62	21	sliced peaches drained*scoops vanilla ice crea...	{u'niacin': {u'hasCompleteData': False, u'nam...
49696	170710	Double Dare Peaches	4.71	19	butter*habanero peppers*fresh peaches*brown su...	{u'niacin': {u'hasCompleteData': True, u'nam...
49697	79774	All-Purpose Marinara Sauce	4.50	2	olive oil*bulb garlic*tomatoes chopped*diced t...	{u'niacin': {u'hasCompleteData': False, u'nam...

```
In [7]: rows, columns = recipe.shape

print("No of Rows:: ", rows)
print("No of Columns:: ", columns)
```

```
In [10]: recipe.nutritions[0]
```

```
Out[10]:
"{u'niacin': {u'hasCompleteData': False, u'name': u'Niacin Equivalents', u'amount': 9.319291, u'percentDailyValue': u'72', u'displayValue': u'9', u'unit': u'mg'}, u'sugars': {u'hasCompleteData': True, u'name': u'Sugars', u'amount': 0.09355932, u'percentDailyValue': u'0', u'displayValue': u'0.1', u'unit': u'g'}, u'sodium': {u'hasCompleteData': True, u'name': u'Sodium', u'amount': 2017.13, u'percentDailyValue': u'81', u'displayValue': u'2017', u'unit': u'mg'}, u'carbohydrates': {u'hasCompleteData': True, u'name': u'Carbohydrates', u'amount': 1.797819, u'percentDailyValue': u'< 1', u'displayValue': u'1.8', u'unit': u'g'}, u'vitaminB6': {u'hasCompleteData': False, u'name': u'Vitamin B6', u'amount': 0.2329798, u'percentDailyValue': u'15', u'displayValue': u'< 1', u'unit': u'mg'}, u'calories': {u'hasCompleteData': True, u'name': u'Calories', u'amount': 308.1481, u'percentDailyValue': u'15', u'displayValue': u'308', u'unit': u'kcal'}, u'thiamin': {u'hasCompleteData': False, u'name': u'Thiamin', u'amount': 0.3947737, u'percentDailyValue': u'39', u'displayValue': u'< 1', u'unit': u'mg'}, u'fat': {u'hasCompleteData': True, u'name': u'Fat', u'amount': 23.58587, u'percentDailyValue': u'36', u'displayValue': u'23.6', u'unit': u'g'}, u'folate': {u'hasCompleteData': False, u'name': u'Folate', u'amount': 2.109131, u'percentDailyValue': u'1', u'displayValue': u'2', u'unit': u'mcg'}, u'caloriesFromFat': {u'hasCompleteData': True, u'name': u'Calories from Fat', u'amount': 212.2728, u'percentDailyValue': u'-', u'displayValue': u'212', u'unit': u'kcal'}, u'calcium': {u'hasCompleteData': False, u'name': u'Calcium', u'amount': 11.18365, u'percentDailyValue': u'1', u'displayValue': u'11', u'unit': u'mg'}, u'fiber': {u'hasCompleteData': True, u'name': u'Dietary Fiber', u'amount': 0.5318869, u'percentDailyValue': u'2', u'displayValue': u'0.5', u'unit': u'g'}, u'magnesium': {u'hasCompleteData': False, u'name': u'Magnesium', u'amount': 21.65558, u'percentDailyValue': u'8', u'displayValue': u'22', u'unit': u'mg'}, u'iron': {u'hasCompleteData': False, u'name': u'Iron', u'amount': 1.240848, u'percentDailyValue': u'12', u'displayValue': u'1', u'unit': u'mg'}, u'cholesterol': {u'hasCompleteData': True, u'name': u'Cholesterol', u'amount': 61.7375, u'percentDailyValue': u'21', u'displayValue': u'62', u'unit': u'mg'}, u'protein': {u'hasCompleteData': True, u'name': u'Protein', u'amount': 21.00254, u'percentDailyValue': u'42', u'displayValue': u'21', u'unit': u'g'}, u'vitaminA': {u'hasCompleteData': False, u'name': u'Vitamin A - IU', u'amount': 474.2073, u'percentDailyValue': u'9', u'displayValue': u'474', u'unit': u'IU'}, u'potassium': {u'hasCompleteData': False, u'name': u'Potassium', u'amount': 347.2267, u'percentDailyValue': u'10', u'displayValue': u'347', u'unit': u'mg'}, u'saturatedFat': {u'hasCompleteData': True, u'name': u'Saturated Fat', u'amount': 7.736815, u'percentDailyValue': u'39', u'displayValue': u'7.7', u'unit': u'g'}, u'vitaminC': {u'hasCompleteData': False, u'name': u'Vitamin C', u'amount': 0.7761272, u'percentDailyValue': u'1', u'displayValue': u'< 1', u'unit': u'mg'}}"
```

```
In [14]:
calories_list = []
fat_list = []
carbohydrates_list = []
protein_list = []
cholesterol_list = []
sodium_list = []
fiber_list = []

for x in range(len(list_of_dict)):
    calories_list.append(list_of_dict[x]['calories']['percentDailyValue'])
    fat_list.append(list_of_dict[x]['fat']['percentDailyValue'])
    carbohydrates_list.append(list_of_dict[x]['carbohydrates']['percentDailyValue'])
    protein_list.append(list_of_dict[x]['protein']['percentDailyValue'])
    cholesterol_list.append(list_of_dict[x]['cholesterol']['percentDailyValue'])
    sodium_list.append(list_of_dict[x]['sodium']['percentDailyValue'])
    fiber_list.append(list_of_dict[x]['fiber']['percentDailyValue'])
y_true = np.array([0, 0, 1, 1])
y_score = np.array([0.1, 0.4, 0.35, 0.8])
```

```
In [15]:
data = {'calories': calories_list, 'fat': fat_list, 'carbohydrates': carbohydrates_list,
        'protein': protein_list, 'cholesterol': cholesterol_list, 'sodium': sodium_list,
        'fiber': fiber_list}

df = pd.DataFrame(data)
df.index = recipe['recipe_id']
df.head()
```

```
Out[15]:
```

	calories	fat	carbohydrates	protein	cholesterol	sodium	fiber
recipe_id							
222388	15	36	< 1	42	21	81	2

```
In [16]:
df.isnull().sum()
```

```
Out[16]:
calories      963
fat            963
carbohydrates 963
protein        963
cholesterol    963
sodium         963
fiber          963
dtype: int64
```

```
In [17]:
print(df.shape)
df = df.dropna()
df.shape
```

```
(49698, 7)
```

```
Out[17]:
(48735, 7)
```

```
In [18]:
def text_cleaning(cols):
    if cols == '< 1':
        return 1
    else:
        return cols
```

```
print(df.shape)
df = df.dropna()
df.shape
```

```
(49698, 7)
```

```
Out[17]:
(48735, 7)
```

```
In [18]:
def text_cleaning(cols):
    if cols == '< 1':
        return 1
    else:
        return cols
```

```
In [19]:
for col in df.columns:
    df[col] = df[col].apply(text_cleaning)
```

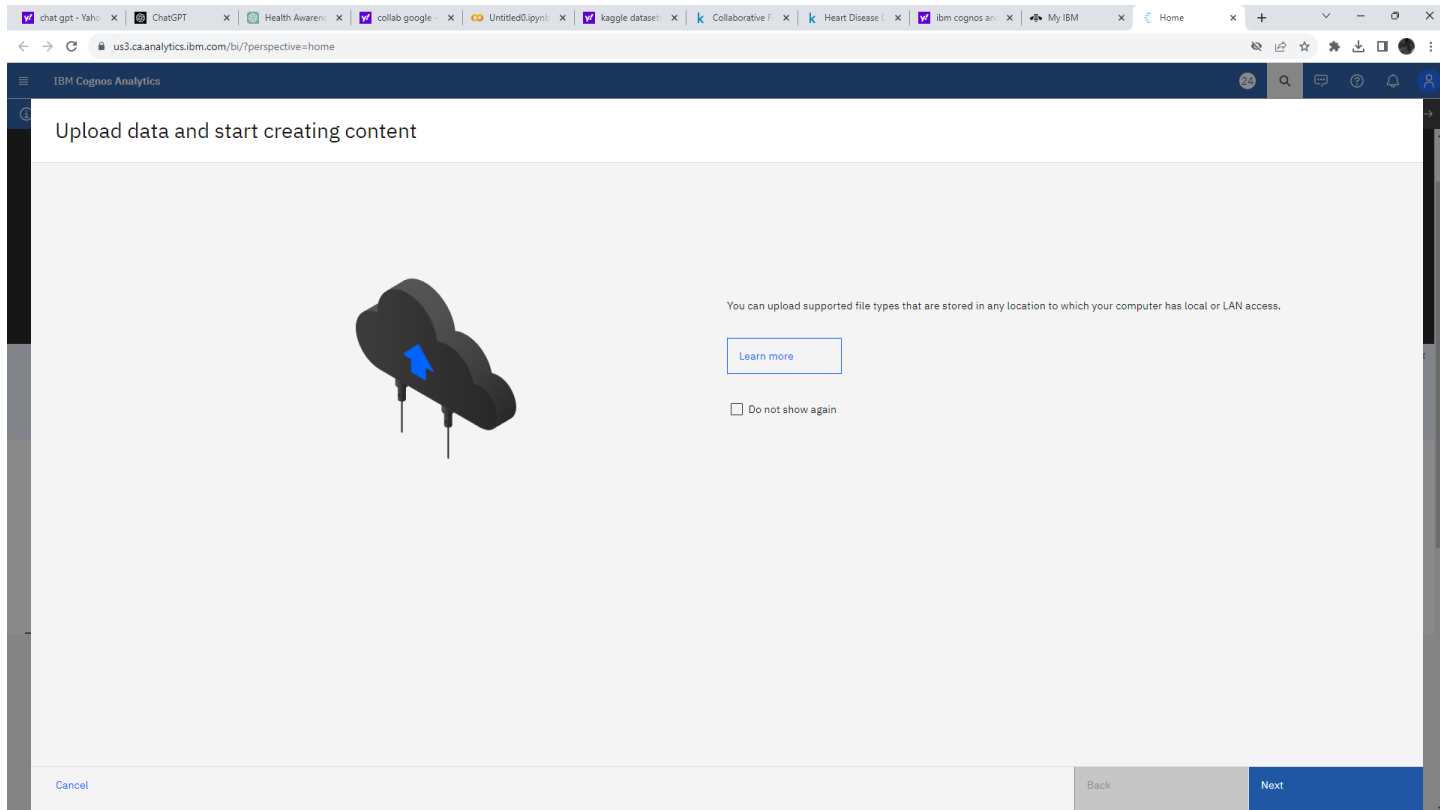
```
In [20]:
df.head()
```

```
Out[20]:
```

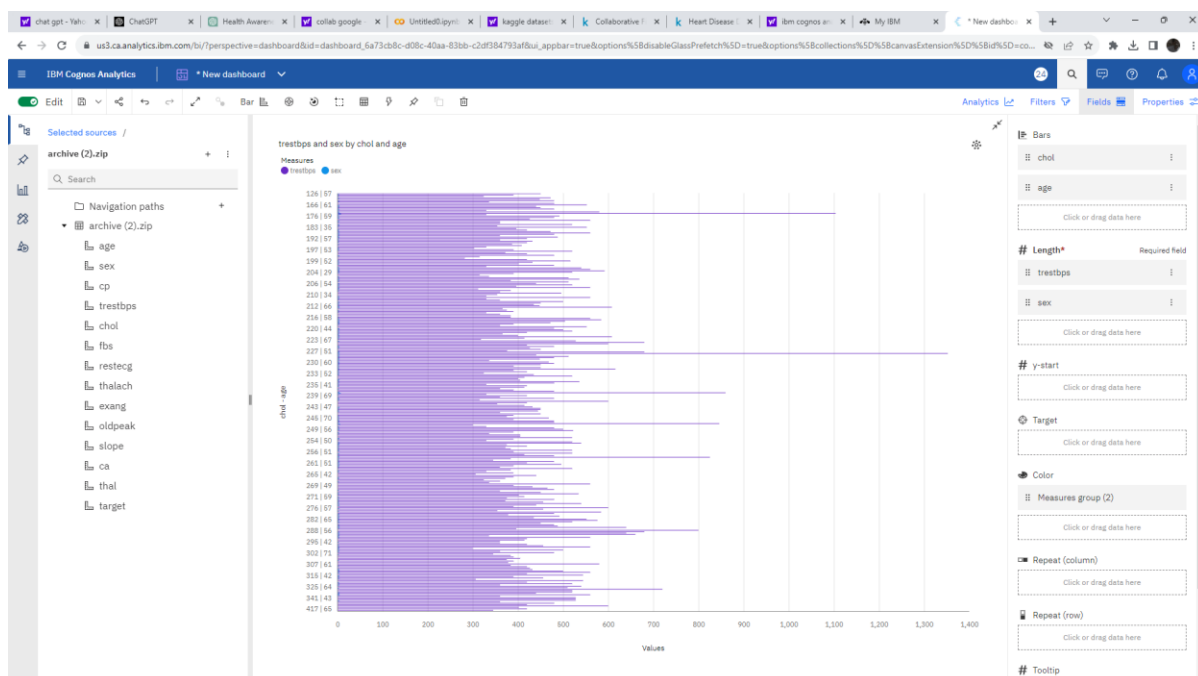
	calories	fat	carbohydrates	protein	cholesterol	sodium	fiber
recipe_id							
222388	15	36	1	42	21	81	2
240488	19	18	10	73	33	104	41
218939	17	36	2	48	24	31	4
87211	32	45	20	65	20	43	18
245714	8	12	5	14	7	8	3

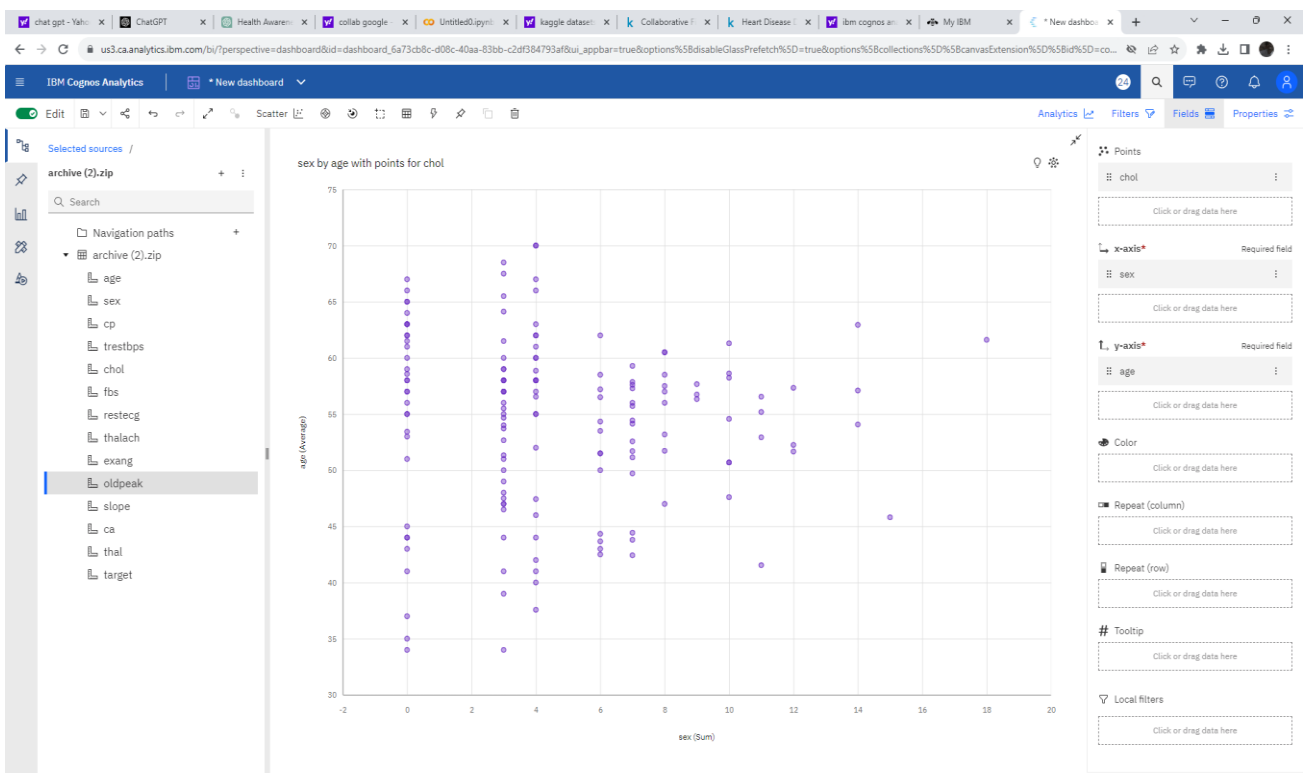
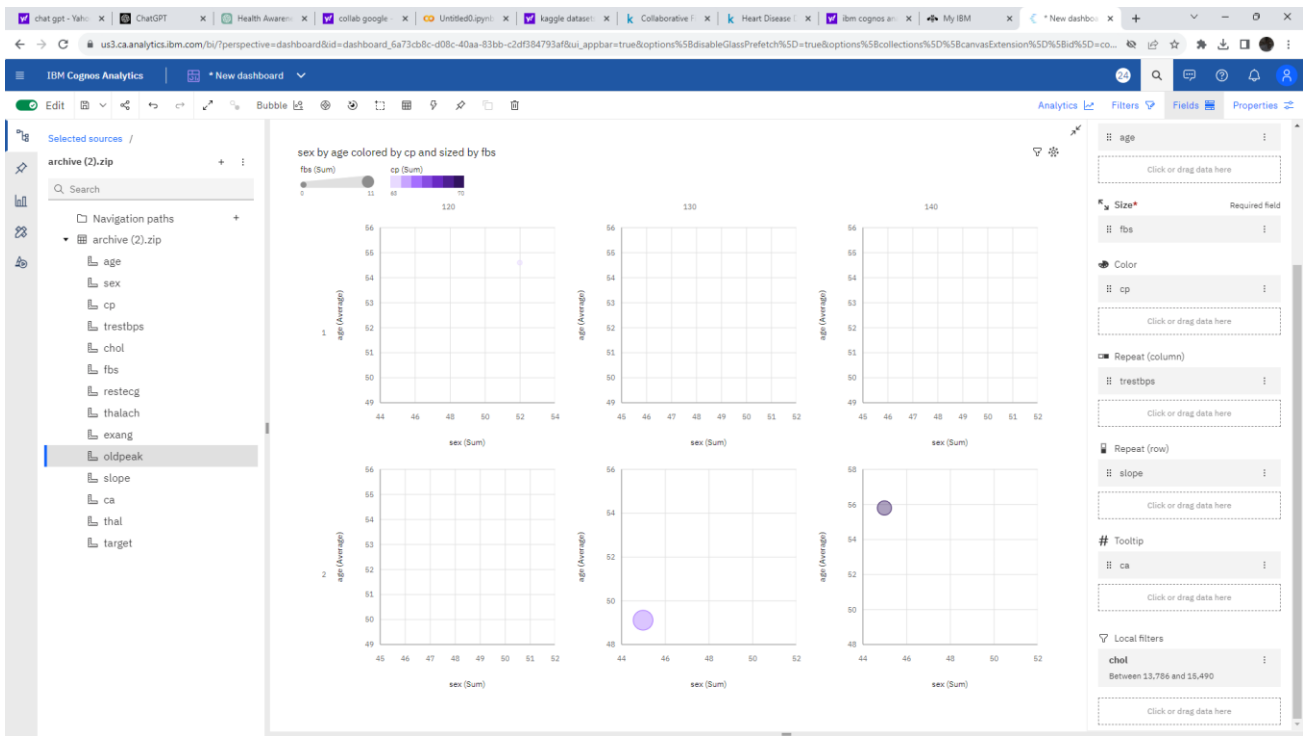
VISUALIZATION USING IBM COGNOS:

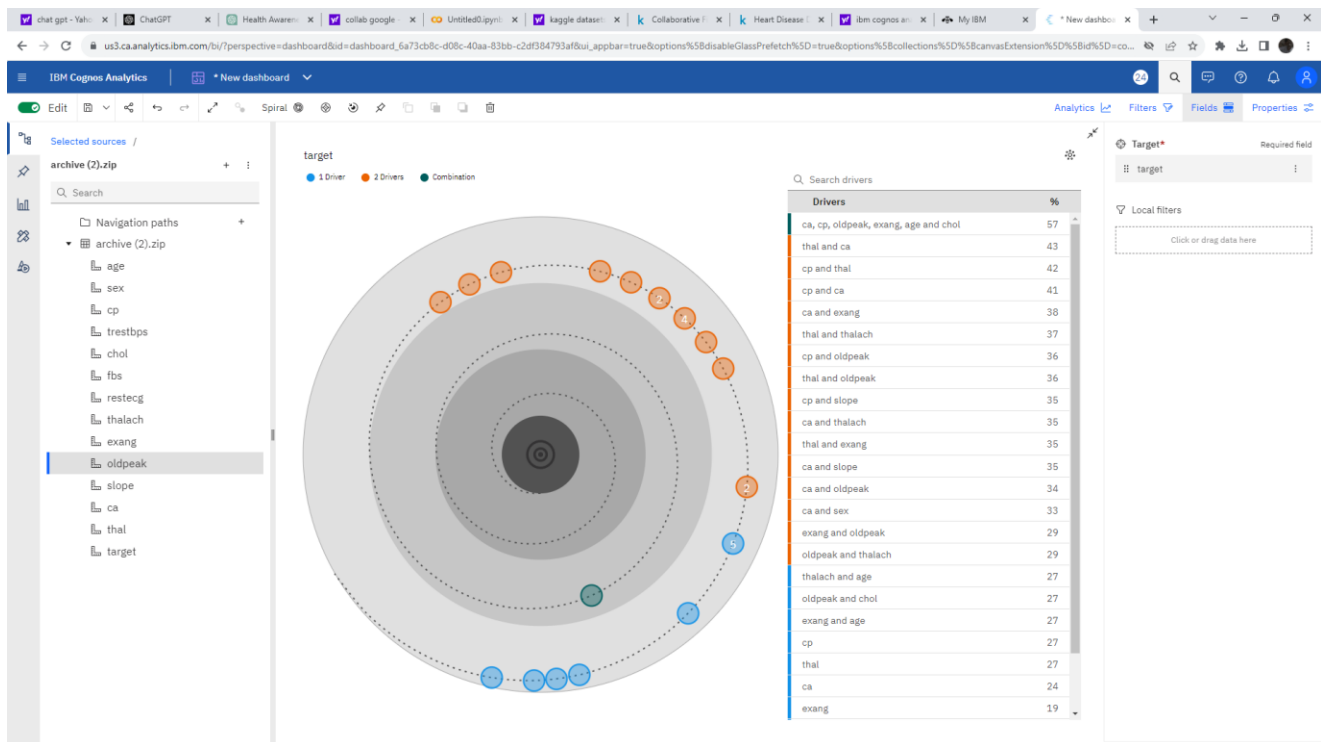
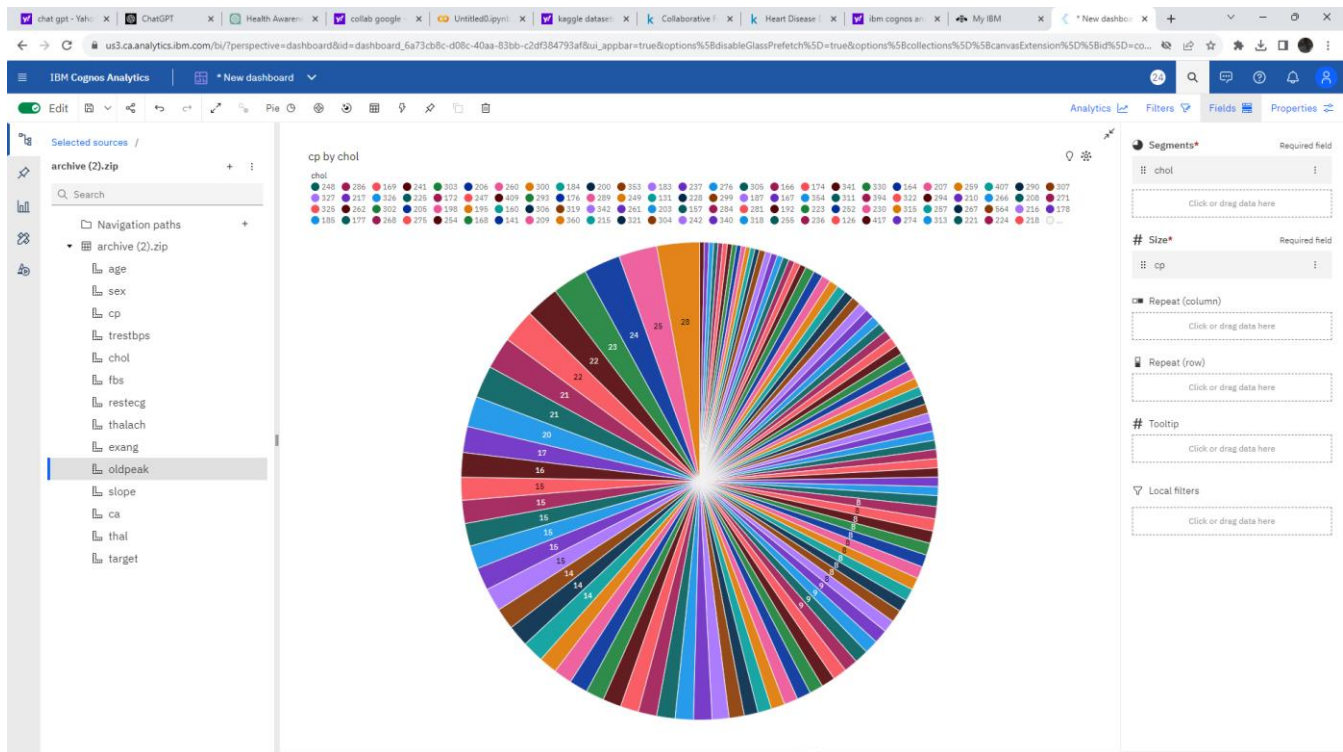
For using IBM cognos first we need to create an IBM account After creating an account login IBM cognos with that account.after login we need to upload our dataset on IBM cloud.



Visualizations :







CONCLUSION:

From this we can conclude the following dataset and cognos is help us to understand the basics of Public Health Awareness.