

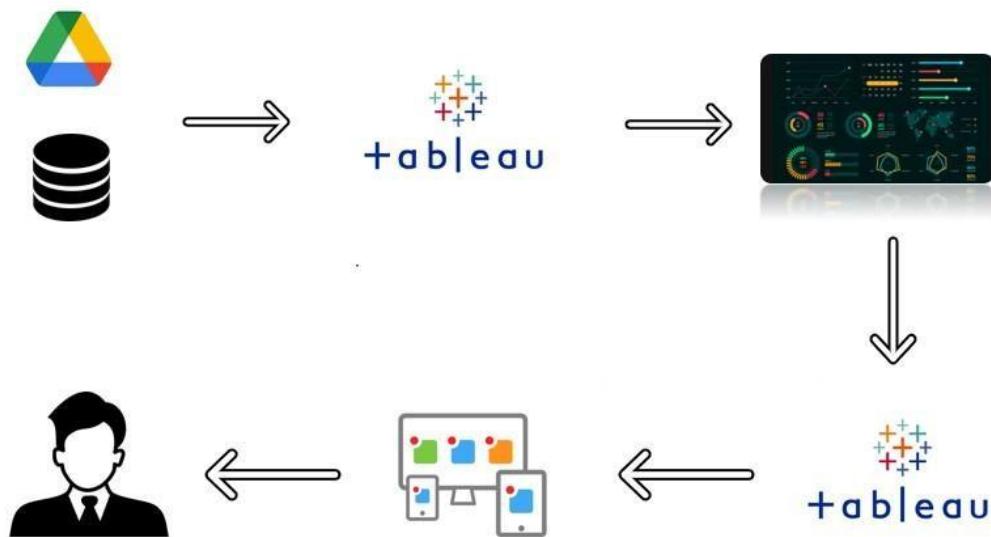
DEPRESSION A COMMON MENTAL DISORDER

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1) INTRODUCTION

Everyone experiences sadness and unhappiness at some point in their lives. Clinical Depression, however, is more intense and of longer duration than typical sadness or grief, which interferes with a person's ability to engage in daily activities. The symptoms of depression can include: loss of interest or pleasure in previously enjoyable activities, major changes in appetite (either significantly reduced or increased), sleep problems (sleeping too much or too little), fatigue, a feeling of worthlessness or hopelessness, problems with concentration and making decisions, and thoughts of suicide. This mental disorder is common and the percentage of people suffering from depression varies according to countries. In this project we are trying to analyze the depression data for different countries and 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.



1.1 PROJECT OVERVIEW:

- **Define Problem / Problem Understanding**
 - Specify the business problem
 - Business requirements
 - Literature Survey
 - Social or Business Impact.
- **Data Collection & Extraction from Database**
 - Collect the 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 ‘
 - No of Calculation Fields
 - No of Visualizations/ Graphs
- **Web Integration**
 - Dashboard and Story embed with UI With

1.2 PURPOSE

The purpose of addressing depression is to provide support and treatment to individuals who are affected by this condition. This typically involves a combination of approaches, including:

1. **Diagnosis:** Recognizing the signs and symptoms of depression and diagnosing the condition through mental health assessments and evaluations.
2. **Treatment:** Providing various forms of treatment, which may include psychotherapy (talk therapy), medication (antidepressants), lifestyle changes, and self-help strategies to alleviate symptoms.
3. **Support:** Offering emotional support and encouragement to individuals dealing with depression, often through therapy or support groups.
4. **Education:** Raising awareness about depression, its causes, risk factors, and available treatments to reduce stigma and encourage early intervention.
5. **Research:** Conducting research to better understand the underlying causes of depression and to improve treatment options.

The purpose of addressing depression is to help individuals suffering from this condition regain their mental and emotional well-being and improve their overall quality of life. It's essential to seek help from mental health professionals if you or someone you know is experiencing symptoms of depression, as it can be effectively managed and treated with the right support and interventions.

2) LITERATURE SURVEY

2.1 EXISTING PROBLEM:

1. **Stigma:** Despite efforts to reduce stigma surrounding mental health, it still exists and can prevent individuals from seeking help and support. This stigma can be a significant barrier to effective depression management and treatment.
2. **Access to care:** Many individuals, especially in underserved or rural areas, may have limited access to mental health services, including therapy and medication. This lack of access can result in untreated depression.
3. **Misdiagnosis:** Depression can sometimes be misdiagnosed or mistaken for other mental health conditions, leading to ineffective or inappropriate treatment.
4. **Treatment effectiveness:** Not all individuals with depression respond well to the available treatments. Finding the right treatment approach for each individual can be challenging.
5. **Co-occurring conditions:** Depression often co-occurs with other mental health issues, such as anxiety disorders or substance abuse, making treatment more complex.
6. **Limited awareness:** Many people with depression may not recognize their symptoms or may not know where to seek help. There is a need for increased awareness and education about depression and its symptoms.

7. **Resource allocation:** Adequate funding and resources for mental health services and research can be lacking in many regions, leading to gaps in the provision of care and research on depression.
8. **Cultural and linguistic diversity:** Tailoring mental health services to diverse populations with different cultural and linguistic backgrounds is essential to ensure that everyone has access to appropriate care.
9. **Long-term management:** Depression often requires ongoing management and support, and maintaining progress over time can be challenging for individuals.
10. **Preventative measures:** More efforts are needed to identify risk factors and implement preventive strategies to reduce the prevalence of depression in the first place.

These are just some of the challenges and problems associated with depression projects and mental health initiatives. Addressing these issues requires a multi-faceted approach involving policymakers, healthcare providers, researchers, and the broader community to promote mental health awareness, improve access to care, and enhance the effectiveness of depression treatments.

2.2 REFERENCE:

Ferster, C. B. (1973). A functional analysis of depression. *American Psychologist*, 28(10), 857–870.
<https://doi.org/10.1037/h0035605>

Kessler RC, Bromet EJ. The epidemiology of depression across cultures. *Annu Rev Public Health* 2013;34:119-138 [FREE Full text] [CrossRef] [Medline]

Titov N, Dear BF, Schwencke G, Andrews G, Johnston L, Craske MG, et al. Transdiagnostic internet treatment for anxiety and depression: a randomised controlled trial. *Behav Res Ther* 2011 Aug;49(8):441-452. [CrossRef] [Medline]

Rush AJ, Thase ME, Dube S. Research issues in the study of difficult-to-treat depression. *Biol Psychiatry* 2003;53:743–753

Bibring, E. (1953). The mechanism of depression. In P. Greenacre (Ed.), *Affective disorders; psychoanalytic contributions to their study* (pp. 13–48). International Universities Press.

2.3 PROBLEM STATEMENT DEFINITION:

In this project we are trying to analyze the depression data for different countries and extract some insights from the data using Business Intelligence tools. To Extract the Insights from the

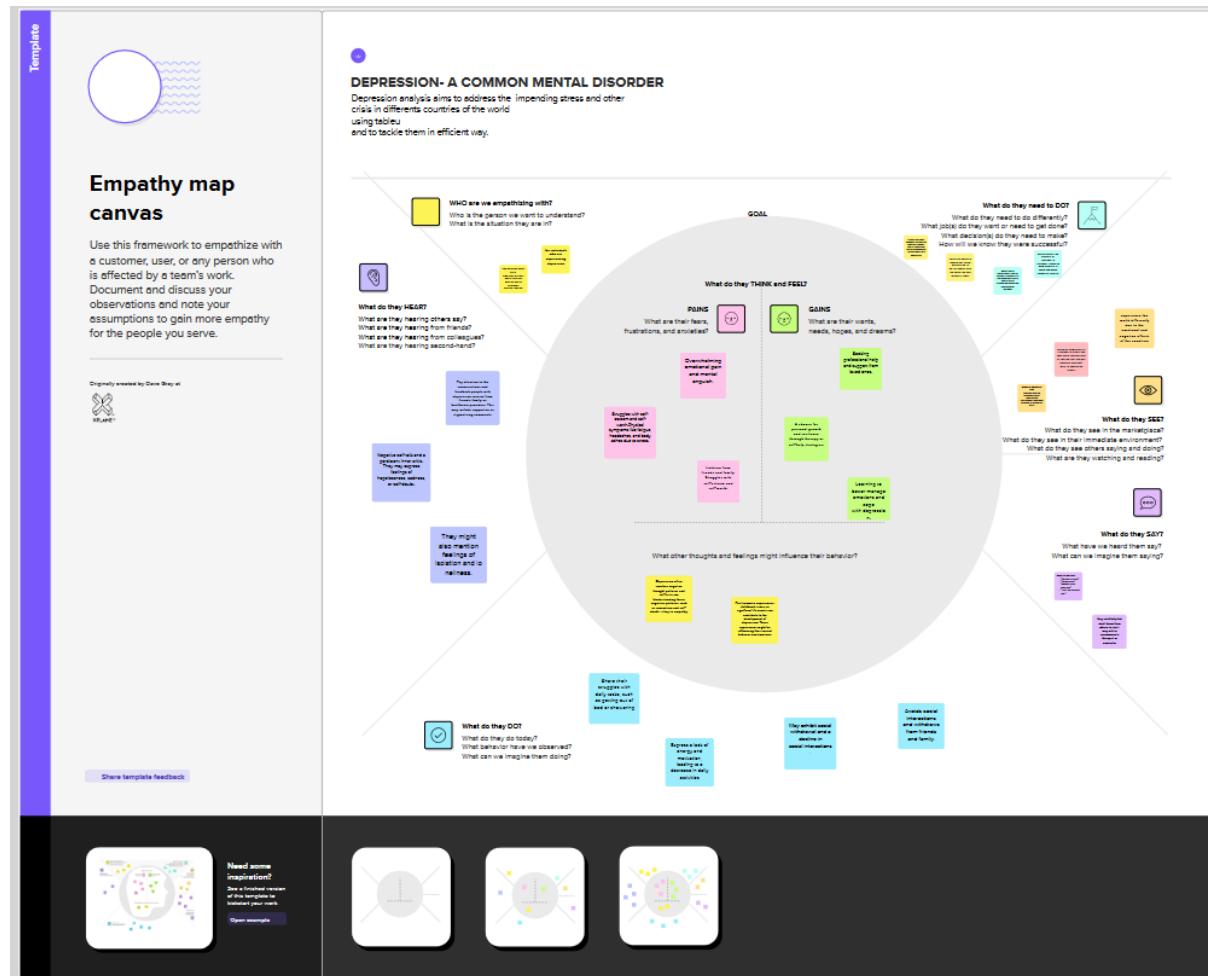
data and put the data in the form of visualizations, Dashboards and Story we employed Tableau tool.

BUSSINESS REQUIREMENTS:

This project is useful from the perspective of countries who have high number of people suffering with depression. There are many complementing reasons which support depression. The countries which have high percentage of people having depression can see the underlying reason for the depression in their country. The ultimate goal is to gain insights and improve performance through data visualization techniques

3) IDEATION AND PROPOSED SOLUTION:

3.1 EMPATHY MAP CANVAS



3.2 IDEATION AND BRAINSTROMING:

Brainstorming provides a free and open environment that encourages everyone within a team to participate in the creative thinking process that leads to problem solving. Prioritising volume over value, out-of-the-box ideas are welcome and built upon, and all participants are encouraged to collaborate, helping each other develop a rich amount of creative solutions. Mental health is an integral component of our overall well-being, and yet, it is often the most overlooked. Depression, a pervasive and common mental health disorder, affects millions of individuals worldwide, transcending age, gender, and socio-economic boundaries. Its profound impact on personal lives, relationships, and communities necessitates our unwavering attention and commitment to finding comprehensive solutions. This document is a testament to our collective responsibility to address and alleviate the burden of depression. Through the power of brainstorming, we aim to explore and propose innovative ideas, strategies, and interventions that can contribute to the prevention, treatment, and support for those affected by depression.

Step-1: Team Gathering, Collaboration and Select the Problem Statement:

In the process of brainstorming to address depression, it's essential to begin with a clear plan and a well-defined problem statement. The first step involves bringing together a diverse team of individuals who will collaborate to generate innovative ideas and solutions.



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

Team gathering Define who should participate in the session and send an invite. Share relevant information or prep work ahead.

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

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

How might we care
Depression which is a common mental disorder?



Key rules of brainstorming

To run a smooth and productive session

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

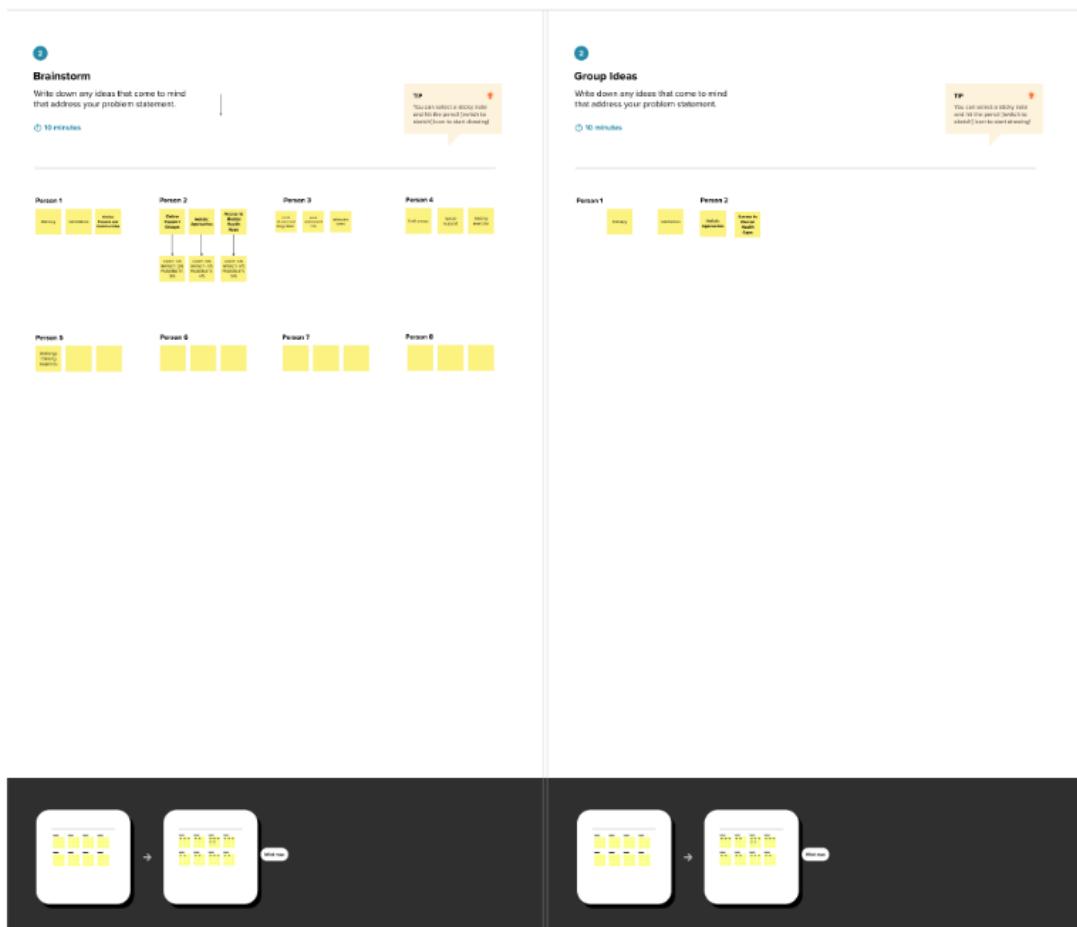


Need some inspiration?
See a finished version
of this template to
inspire your work.

[Open example](#)

Step-2: Brainstorm, Idea Listing and Grouping:

We brainstormed many strategies for dealing with depression in this stage as a team, and we then ranked the strategies based on impact, cost, and feasibility in order to choose the few best strategies for this specific problem statement



Step-3: Idea Prioritization

Finally, we pasted all of the ideas that were given the highest priority on the graph in order of significance and feasibility.



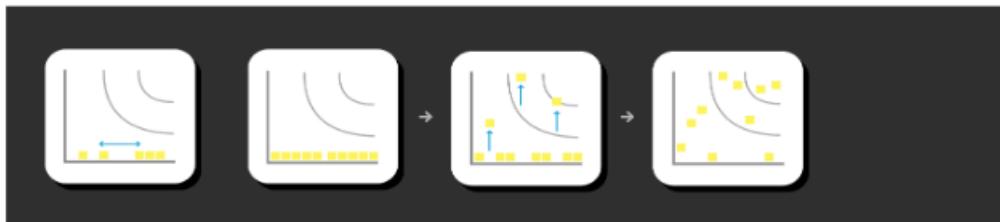
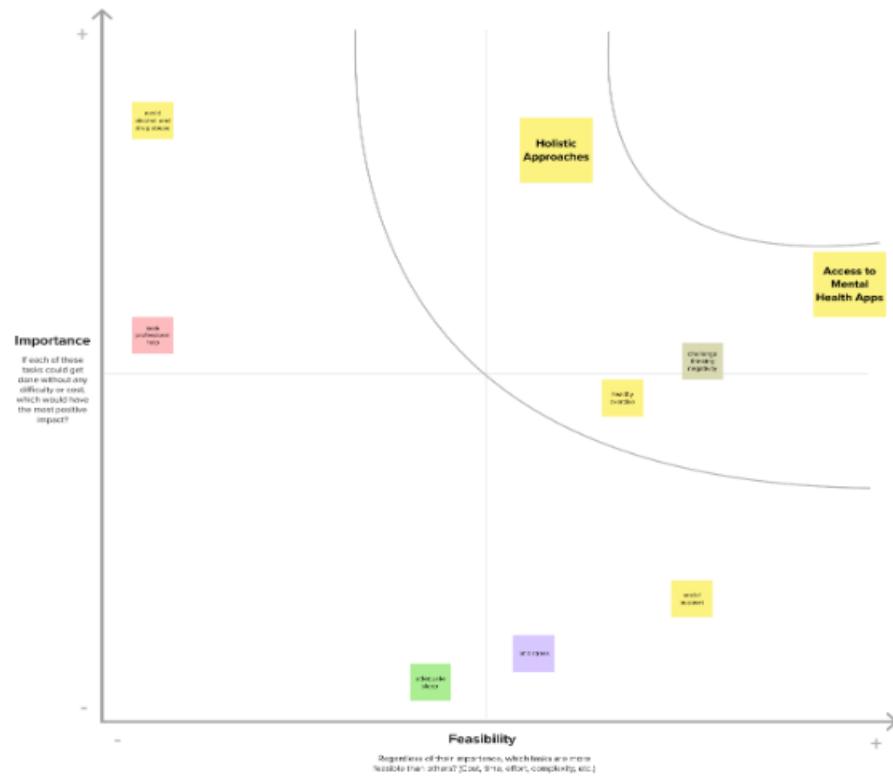
Prioritize

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 cursor to point anywhere on the screen when they go on the move. They can then confirm the move by using the arrow pointer holding the H key on the keyboard.



4) REQUIREMENT ANALYSIS

4.1 Functional Requirements:

- 1. User Registration and Profile Management:**
 - Users can create accounts with unique usernames and passwords.
 - Users can complete and update their profiles with personal information and preferences.
- 2. Assessment Tools:**
 - The project includes depression assessment tools (e.g., PHQ-9) for users to self-assess their symptoms.
 - The system calculates and displays assessment results.
- 3. Content and Resources:**
 - The project provides educational content on depression, its symptoms, causes, and available treatments.
 - It offers resources like articles, videos, and links to reputable sources.
- 4. Peer Support:**
 - Users can connect with others for peer support through chat, forums, or support groups.
- 5. Professional Help:**
 - Users can find and contact mental health professionals.
 - Implement a secure messaging system for communication with professionals.
- 6. Reminders and Journaling:**
 - Users can set medication reminders and journal their thoughts and feelings.
- 7. Crisis Support:**
 - Include a crisis hotline or chat option for users in urgent need of support.
 - Implement mechanisms for identifying and responding to users in crisis.
- 8. Goal Tracking:**
 - Users can set and track personal goals related to their mental health and well-being.
- 9. Privacy and Data Security:**
 - Ensure secure storage of user data and compliance with data privacy regulations (e.g., GDPR, HIPAA).
- 10. Notifications and Alerts:**
 - Send users reminders, motivational messages, and alerts based on their preferences and goals.
- 11. Feedback and Reporting:**
 - Implement a system for users to provide feedback and report inappropriate or harmful content.
 - Establish mechanisms for monitoring and responding to user feedback and reports.
- 12. Mobile Accessibility:**
 - Develop mobile apps for iOS and Android platforms for easy access.
- 13. Language Support:**
 - Offer the project in multiple languages to reach a broader audience.

14. Data Analytics:

- Collect data on user interactions and behavior to improve the project's effectiveness.
- Use analytics to understand user needs and make data-driven improvements.

15. Evaluation and Research:

- Plan for regular evaluations and research to measure the project's impact on users' mental health and well-being.

4.2 Non-Functional Requirements:

1. Usability:

- The project should have an intuitive and user-friendly interface.
- Response times for user interactions should be fast to enhance the user experience.

2. Performance:

- The system should be capable of handling a potentially large number of users concurrently.
- Response times for critical functions (e.g., crisis support) should be within acceptable limits.

3. Security:

- Data should be securely encrypted and protected against unauthorized access.
- Measures to prevent data breaches and ensure user confidentiality are essential.

4. Scalability:

- The project should be designed to accommodate a growing user base and increased data volume.

5. Accessibility:

- Ensure the project is accessible to users with disabilities, adhering to accessibility guidelines and standards.

6. Compliance:

- The project should comply with relevant laws and regulations, such as data protection and healthcare regulations.

7. Reliability:

- The system should be reliable, with minimal downtime and robust backup and recovery mechanisms.

8. Interoperability:

- The project should be able to integrate with other healthcare and mental health systems, if necessary.

9. Maintainability:

- The project should be designed for easy maintenance and updates to ensure long-term viability.

10. Ethical Considerations:

- Ensure the project's design and functionality adhere to ethical guidelines and principles, including user consent and privacy.

5) PROJECT DESIGN

5.1 DATAFLOW DIAGRAM AND USER STORIES

Data Flow Diagrams:

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.

1. Depression Project System

- o This is the main process or system under consideration.

Level 1 DFD:

- The Level 1 DFD breaks down the main system into smaller, more manageable subprocesses.

1.1 User Registration and Login

- This process involves user registration and login to access the system.

1.2 Assessment and Screening

- This process includes the assessment and screening of users for depression.

- Inputs: User information, self-assessment responses

- Outputs: Assessment results

1.3 Counseling and Therapy

- This process provides counseling and therapy services to users.

- Inputs: User assessment results, session requests

- Outputs: Session reports

1.4 Medication Management

- This process manages medication prescriptions and refills.

- Inputs: Prescription requests, user information

- Outputs: Medication prescriptions

1.5 User Profile Management

- This process allows users to update their profiles and preferences.

- Inputs: User profile data

- Outputs: Updated user profiles

1.6 Data Reporting and Analysis

- This process analyzes data to track the project's effectiveness and identify trends.

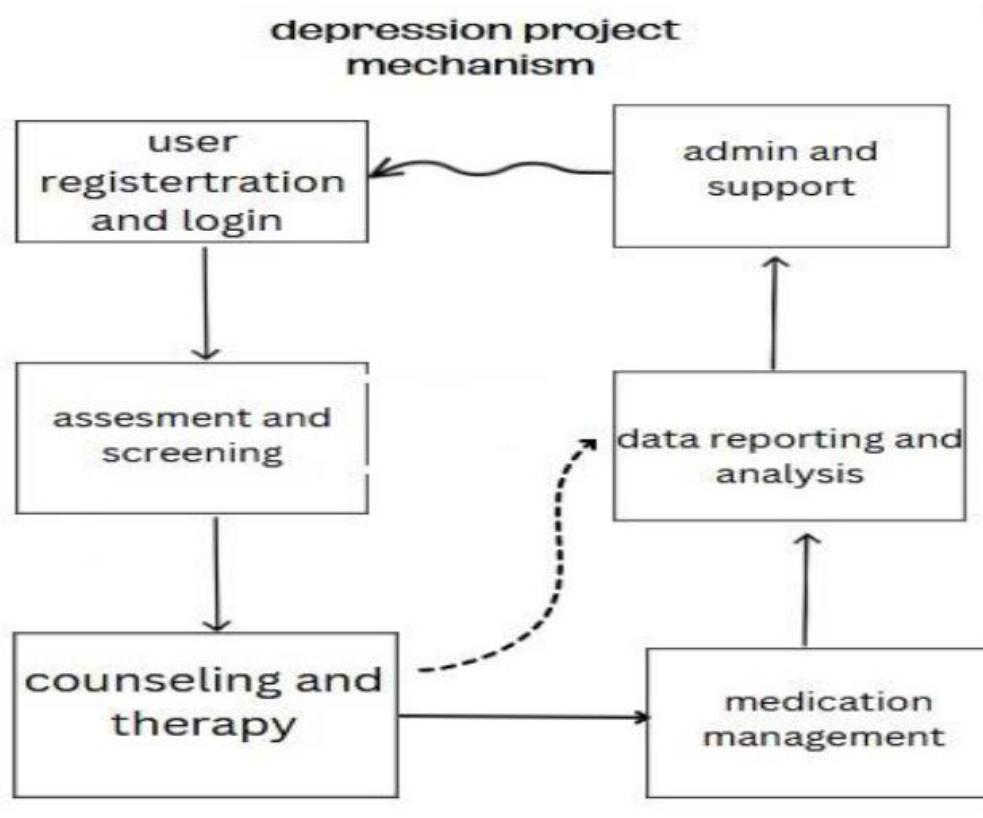
- Inputs: User data, assessment results

- Outputs: Reports and insights

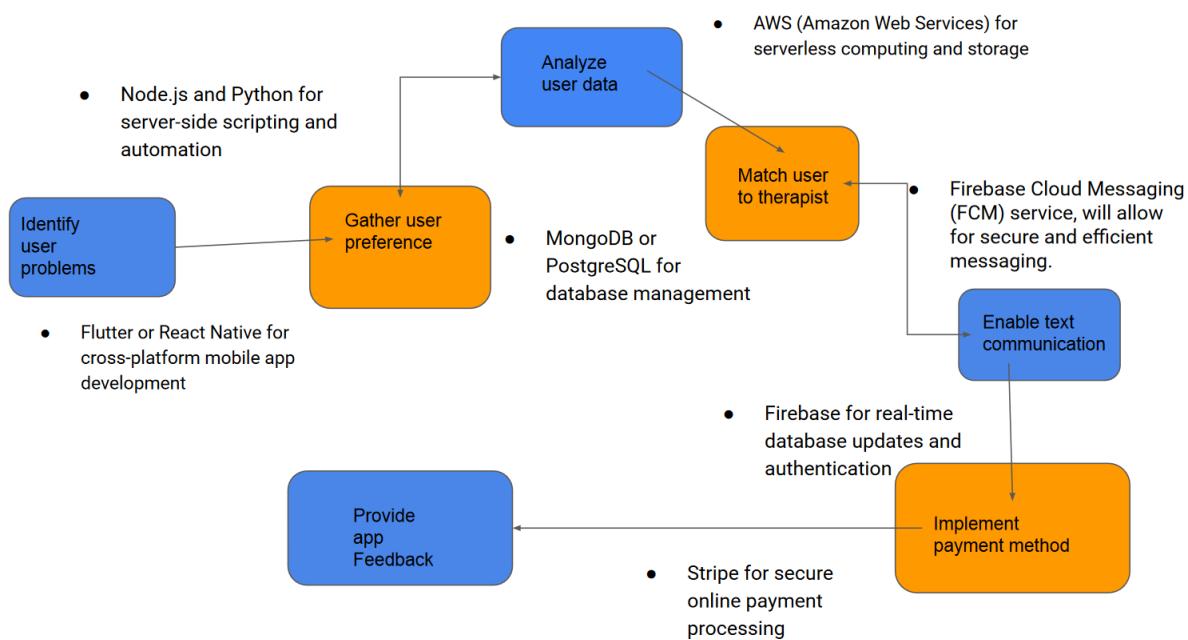
1.7 Admin and Support

- This process handles administrative tasks and user support.

- Inputs: User inquiries, admin requests
- Outputs: Resolutions and responses



5.2 SOLUTION ARCHITECTURE



6) PROJECT PLANNING AND SCHEDULING

6.1 TECHNICAL ARCHITECTURE :

Reference: <https://online.visual-paradigm.com/diagrams/templates/use-case-diagram/-online-therapy-platform-use-case-diagram/>

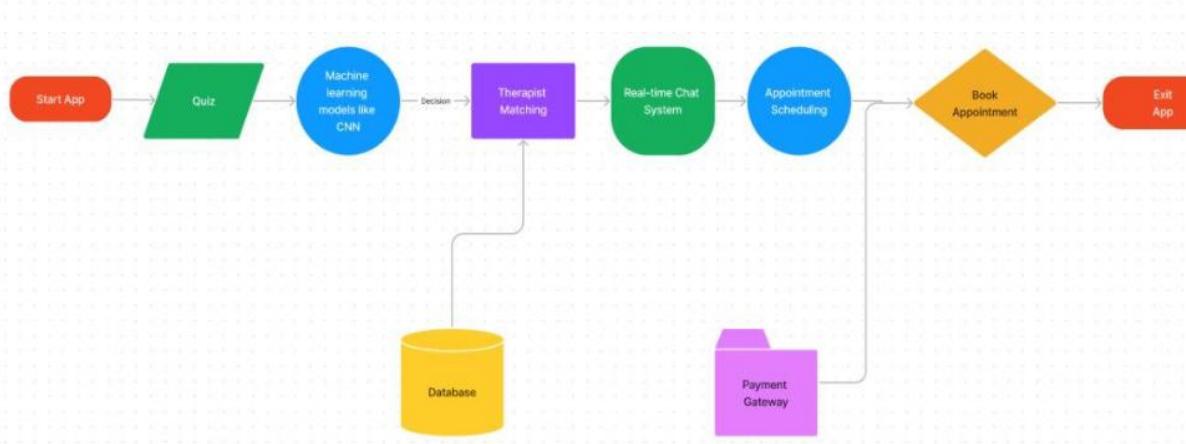


Table-1 : Components & Technologies:

S.No	Components	Descriptions	Technology
1.	User Interface	User interacts with application through Mobile app	Flutter,Android studio
2.	Application Logic-1	Logic for a process in the application	Dart
3.	Application Logic-2	Logic for a process in the application	Machine learning, MySQL, Tableau
4.	Database	Data Type, Configurations etc	MySQL, Kaggle
5.	File Storage	File storage requirements	Android studio, Google Colab or Local Filesystem

6.	External API-1	Purpose of External API used in the application	Chatbot system
7.	Machine Learning Model	Purpose of Machine Learning Model	CNN, Image classification system etc.
8.	Infrastructure (Server / Cloud)	Application Deployment on Local System	Local system

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Numpy, Pandas, Matplotlib, SQL, Dart	Google colab, , MySQL, Flutter, Android studio
2.	Scalable Architecture	Dart	Flutter
3.	Availability	Available on local storage system	Flutter or local storage system
4.	Performance	Accuracy of model and precision of CNN model	Machine learning

Table-2 : Application Characteristics::

References:

<https://medium.com/the-internal-startup/how-to-draw-useful-technical-architecture-diagrams-2d20c9fda90d>
<https://c4model.com/>

6.2 SPRINT PLANNING AND ESTIMATION:

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	1	High	1
Sprint-1		USN-2	as a user, I want to be able to login securely using credentials	2	High	1
Sprint-1		USN-3	as a user, I want the option to reset my password if <u>I forgot</u> it	3	Low	1
Sprint-1		USN-4	as a user I want to be able to create new account with my email and password	2	Medium	1

Sprint-1	Login	USN-5	I want to see the personalized content after logging in	1	High	1
	Dashboard					
Sprint 2	product listing and search	USN 1	as a user I want to filter products by category and price range	2	high	1
Sprint 2		USN 2	as a user i want to view <u>the</u> a list of products that are available in the store	2	medium	1
Sprint 3	Completions of visualizations	USN 1	As a user I want to know about the visualizations	2	high	1
Sprint 3		USN 2	As a user I want to know about the dashboard	3	high	1
Sprint 3		USN 3	As a user I want a report of story	2	medium	1
Sprint 4	Web integration	USN 1	Tableau public account creation	3	medium	1
Sprint 4		USN 2	As a user I want to know about the tableau files being uploaded in webpage	3	high	1
Sprint 4		USN 3	As a user I want to know about the template and connection	3	high	1

6.3 SPRINT DELIVERY SCHEDULE:

Project Tracker, Velocity & Burndown Chart:

Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date (Actual)
Sprint-1	20	1 Day	22 Oct 2023	23 Oct 2023	9	22 Oct 2023
Sprint-2	20	1 Day	23 Oct 2023	24 oct 2023	4	24 oct 2023
Sprint-3	20	2 Days	24 oct 2023	25 oct 2023	7	25 oct 2023
Sprint-4	20	1 Day	26 oct 2022	27 oct 2023	9	27 oct 2023

Velocity:

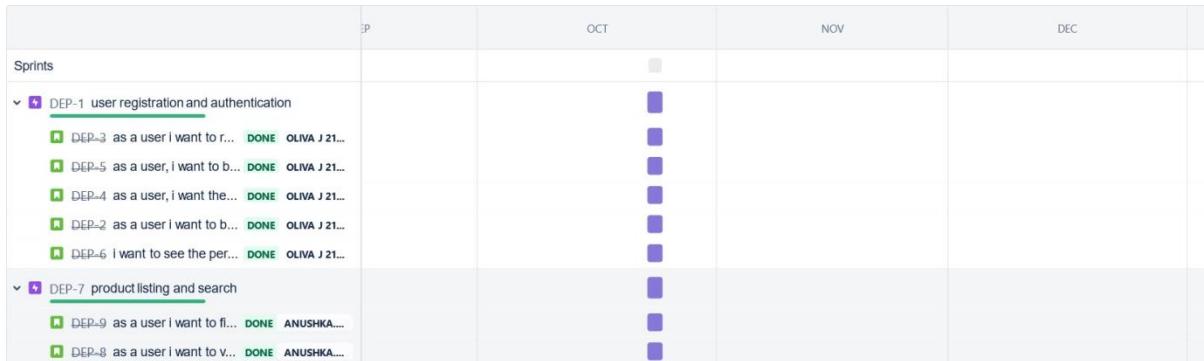
Imagine we have a 10-day sprint duration, and the velocity of the team is 20 (points per sprint). Let's calculate the team's average velocity (AV) per iteration unit (story points per day)

$$AV = \frac{sprint\ duration}{velocity} = \frac{20}{10} = 2$$

In our case average velocity will be $29/4 = 7.25$

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.



Issues for attention

BETA

There are no issues for attention right now. Once you have stuck, blocked or flagged issues, this is where you'll find them. [Learn more](#)

Sprint progress

?

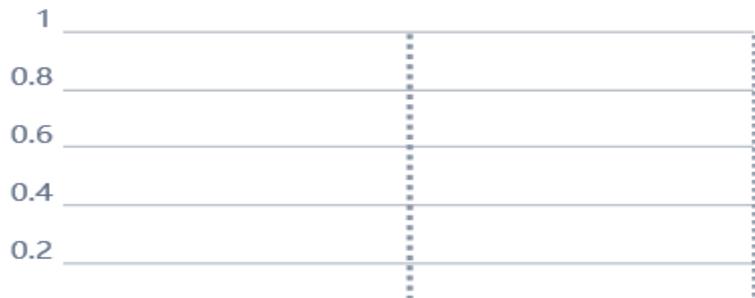
100% done

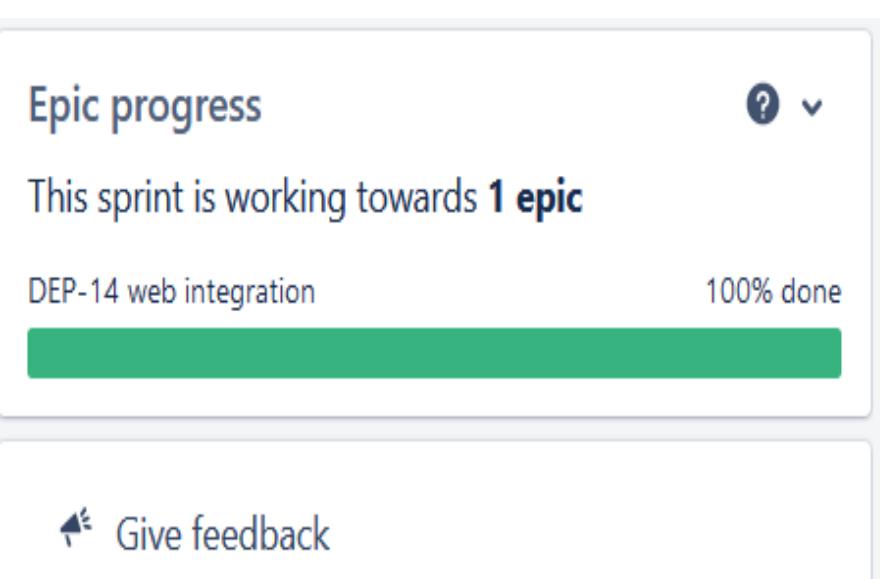
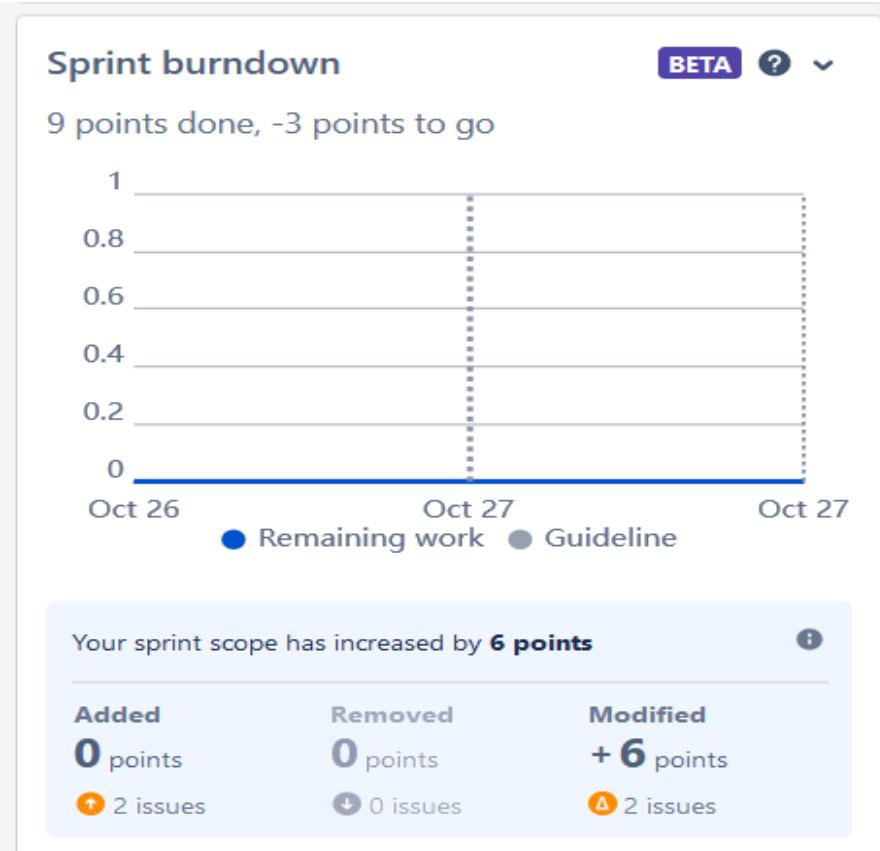
Done In progress Not started
100% 0% 0%

Sprint burndown

BETA ?

9 points done, -3 points to go





	SEP	OCT	NOV	DEC	
Sprints		■ ■ ■			
▼ DEP-1 user registration and authentication		■			
■ DEP-3 as a user i want to r... DONE OLIVA J 21...		■			
■ DEP-5 as a user, i want to b... DONE OLIVA J 21...		■			
■ DEP-4 as a user, i want the... DONE OLIVA J 21...		■			
■ DEP-2 as a user i want to b... DONE OLIVA J 21...		■			
■ DEP-6 i want to see the per... DONE OLIVA J 21...		■			
▼ DEP-7 product listing and search		■			
■ DEP-9 as a user i want to fi... DONE ANUSHKA...		■			
■ DEP-8 as a user i want to v... DONE ANUSHKA...		■			
▼ DEP-10 completion of visualisations		■			
■ DEP-11 as a user i want to... DONE ANUSHKA...		■			
■ DEP-13 as a user i want a r... DONE ANUSHKA...		■			
■ DEP-12 as a user i want to... DONE OLIVA J 21...		■			
▼ DEP-14 web integration		■			
■ DEP-15 tableau public acc... DONE ANUSHKA...		■			
■ DEP-17 as a user i want to... DONE ANUSHKA...		■			
■ DEP-16 as a user i want to... DONE ANUSHKA...		■			

7) CODING AND SOLUTION :

7.1 Performance Testing of the given data:-

```
import pandas as pd
import numpy as np
from sklearn.metrics import mean_squared_error, r2_score
from sklearn.model_selection import train_test_split
from sklearn.linear_model import LinearRegression
import matplotlib.pyplot as plt
```

```
dataset = pd.read_csv('/content/Mental health Depression disorder
Data.csv')
```

```
condition = 'Depression (%)'
X = dataset[['Year']].values
y = dataset[condition].values

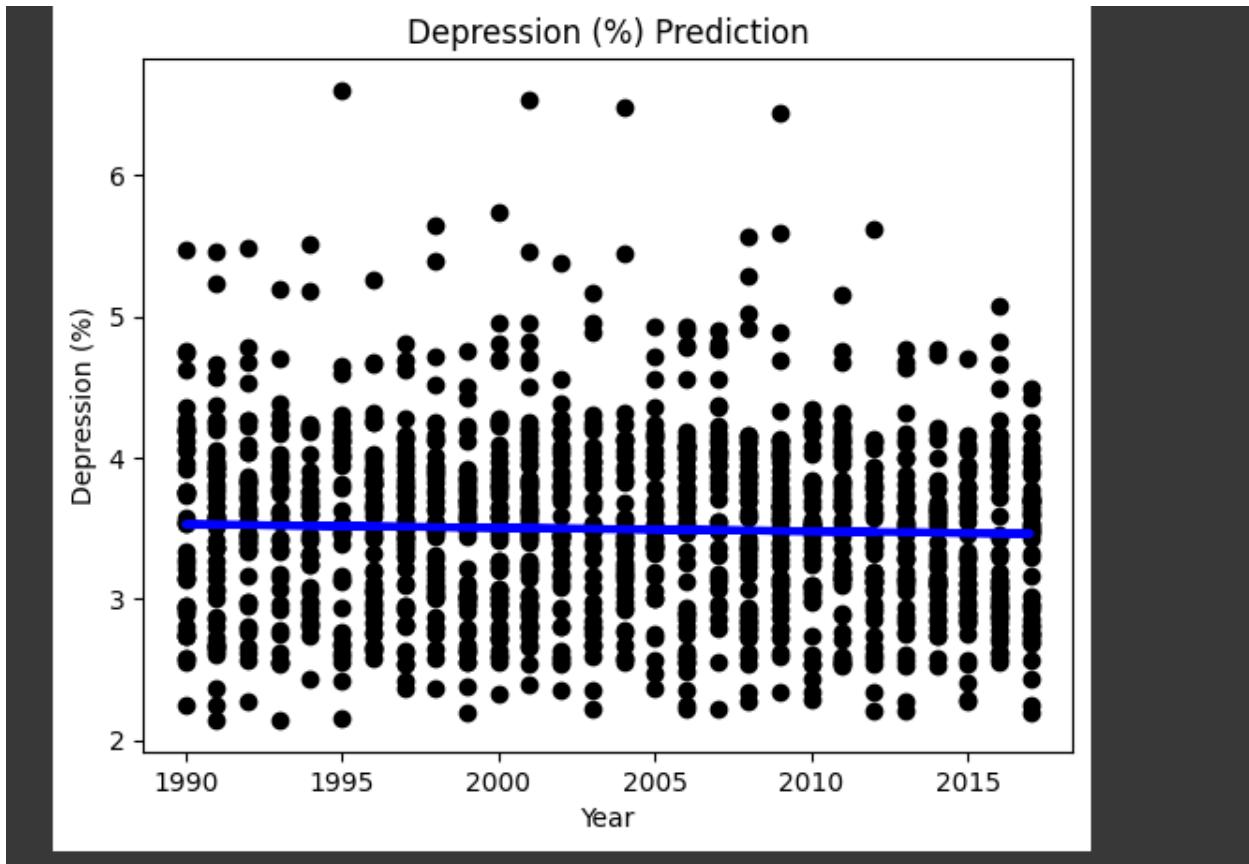
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2,
random_state=42)
```

```
model = LinearRegression()
model.fit(X_train, y_train)
y_pred = model.predict(X_test)
```

```
mse = mean_squared_error(y_test, y_pred)
r2 = r2_score(y_test, y_pred)
print(f'Mean Squared Error: {mse}')
print(f'R-squared: {r2}')
```

```
Mean Squared Error: 0.4306970558091386
R-squared: 0.0016681613605893375
```

```
plt.scatter(X_test, y_test, color='black')
plt.plot(X_test, y_pred, color='blue', linewidth=3)
plt.xlabel('Year')
plt.ylabel(f'{condition}')
plt.title(f'{condition} Prediction')
plt.show()
```



```
condition = 'Eating disorders (%)'
X = dataset[['Year']].values
y = dataset[condition].values

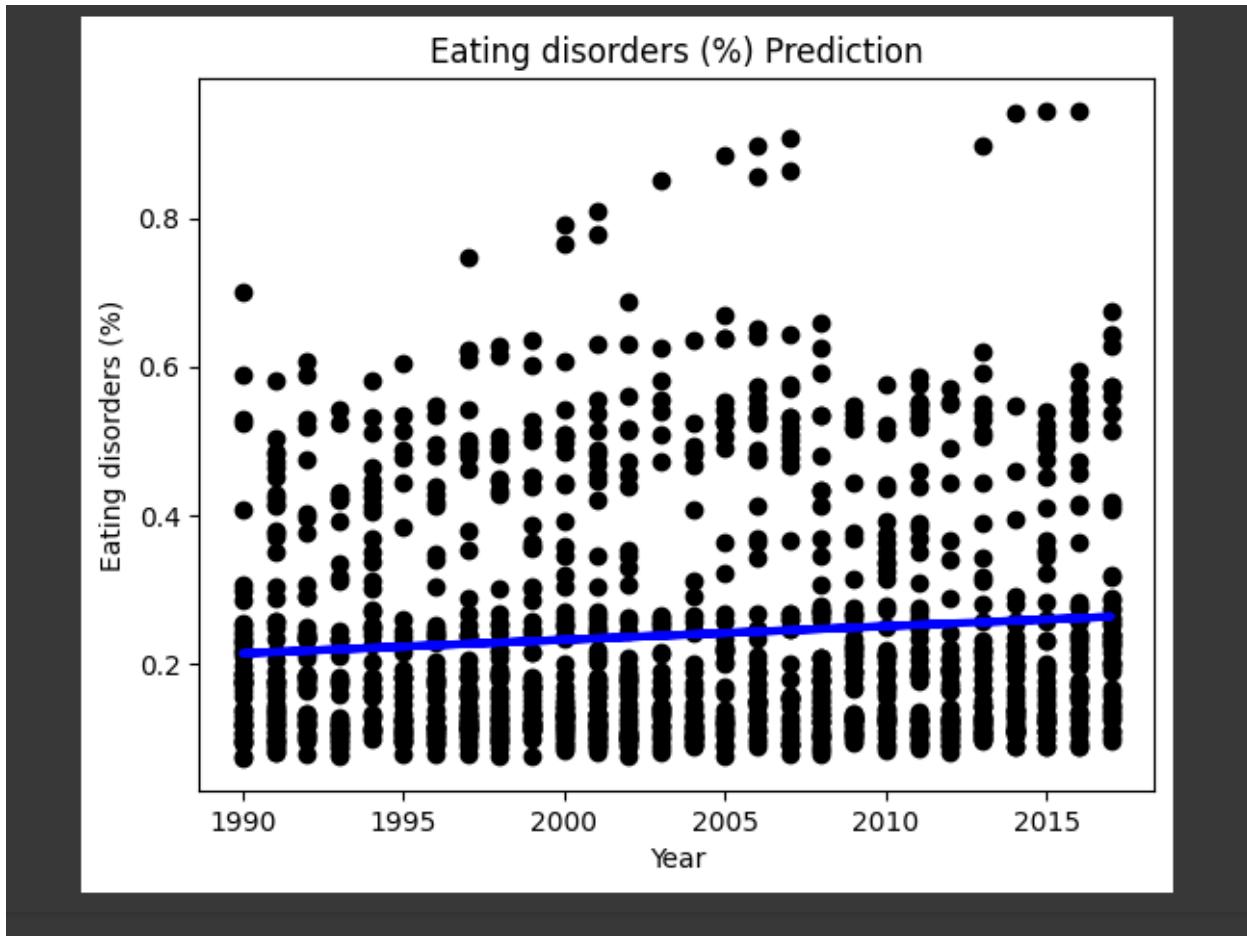
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2,
random_state=42)
```

```
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model.fit(X_train, y_train)
y_pred = model.predict(X_test)
```

```
mse = mean_squared_error(y_test, y_pred)
r2 = r2_score(y_test, y_pred)
print(f'Mean Squared Error: {mse}')
print(f'R-squared: {r2}')
```

Mean Squared Error: 0.02645681725460534
R-squared: 0.001665843301023373

```
plt.scatter(X_test, y_test, color='black')
plt.plot(X_test, y_pred, color='blue', linewidth=3)
plt.xlabel('Year')
plt.ylabel(f'{condition}')
plt.title(f'{condition} Prediction')
plt.show()
```



7.2 Accuracy:-

```
# Import necessary libraries
import pandas as pd
from sklearn.metrics import r2_score
from sklearn.linear_model import LinearRegression
from sklearn.model_selection import train_test_split

# Load the dataset from a CSV file
data = pd.read_csv('/content/Mental health Depression disorder Data.csv')

# Define the list of conditions
conditions = ['Depression (%)', 'Eating disorders (%)', 'Alcohol use
disorders (%)',
              'Drug use disorders (%)', 'Anxiety disorders (%)', 'Bipolar
disorder (%)',
              'Schizophrenia (%)']

overall_accuracy = 0 # Initialize overall accuracy
```

```

# Iterate through conditions and countries
for condition in conditions:
    for country in data['Entity'].unique():
        # Filter data for the current condition and country
        subset = data[(data['Entity'] == country) &
(data[condition].notna())]

        if len(subset) < 2:
            continue

        # Split the data into features (years) and the target (condition
values)
        X = subset['Year'].values.reshape(-1, 1)
        y = subset[condition].values

        # Split data into training and testing sets
        X_train, X_test, y_train, y_test = train_test_split(X, y,
test_size=0.2, random_state=42)

        # Create and train a linear regression model
        model = LinearRegression()
        model.fit(X_train, y_train)

        # Make predictions on the test set
        y_pred = model.predict(X_test)

        # Calculate R-squared accuracy
        accuracy = r2_score(y_test, y_pred)
        overall_accuracy += accuracy

# Calculate the average accuracy
average_accuracy = overall_accuracy / (len(conditions) *
len(data['Entity'].unique()))

print(f"Overall R-squared Accuracy: {average_accuracy}")

```



Overall R-squared Accuracy: 0.6231249718870456

```

average_accuracy = overall_accuracy / (len(conditions) *
len(data['Entity'].unique()))

```

```
accuracy = r2_score(y_test, y_pred)
print(f"R-squared Accuracy: {accuracy}\n")
```

```
☰ R-squared Accuracy: 0.6879725723868086
```

```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt

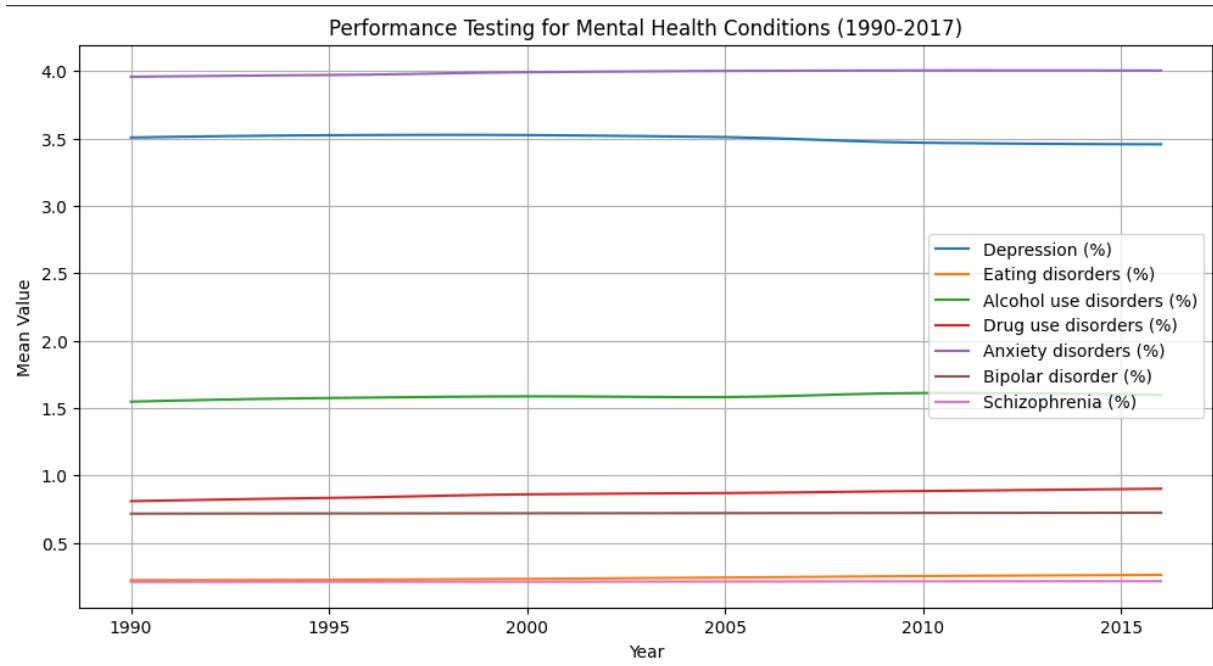
data = pd.read_csv('/content/Mental health Depression disorder Data.csv')

# Assuming the dataset columns are named 'Country', 'Year', and mental
# health conditions
selected_conditions = ['Depression (%)', 'Eating disorders (%)', 'Alcohol
use disorders (%)', 'Drug use disorders (%)', 'Anxiety disorders (%)',
'Bipolar disorder (%)', 'Schizophrenia (%)']

# Filter data for the selected years (1990 to 2017)
selected_years = list(range(1990, 2017))
filtered_data = data[data['Year'].isin(selected_years)]

# Plot the performance metrics for each mental health condition
plt.figure(figsize=(12, 6))
for condition in selected_conditions:
    condition_data = filtered_data.groupby(['Year'])[condition].mean()
    plt.plot(condition_data.index, condition_data, label=condition)

plt.title('Performance Testing for Mental Health Conditions (1990-2017)')
plt.xlabel('Year')
plt.ylabel('Mean Value')
plt.legend()
plt.grid(True)
plt.show()
```

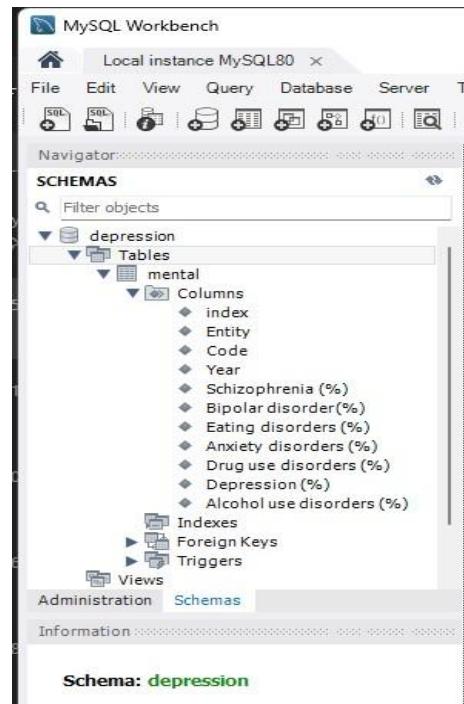


8) PERFORMANCE TESTING:

8.1 PERFORMANCE METRICS

Activity 1: Amount of Data Rendered to DB

The amount of data that is rendered to a database depends on the size of the dataset and the capacity of the database to store and retrieve data.



Activity 2: No of Calculation Fields

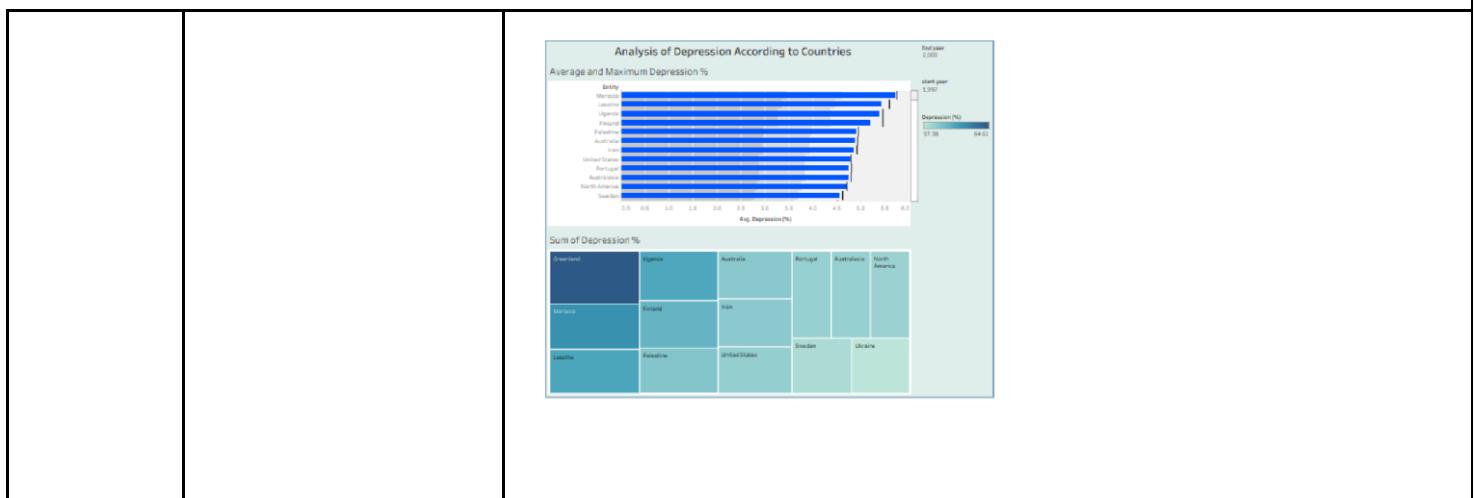
Tables

Abc Code
Abc Entity
Year
=T|F Year_Filter
Abc Measure Names
Alcohol use disorders (%)
Anxiety disorders (%)
Bipolar disorder (%)
Depression (%)
Drug use disorders (%)
Eating disorders (%)
Index
Schizophrenia (%)
mental (Count)
Measure Values

Activity 3: No of Visualizations/ Graphs

1. Average Alcohol Disorder %
2. Average Drug use Disorder %
3. Average Eating Disorder %
4. Average Anxiety Disorder %
5. Average Bipolar Disorder %
6. Average Schizophrenia Disorder %
7. Average and maximum Depression %
8. Sum of Depression %

S.No.	Parameter	Screenshot / Values																																												
1.	Dashboard design	<p>No of Visualizations for dashboard: 3</p> <p>Lifestyle habits complementing Depression</p> <p>Average Alcohol Use Disorder %</p> <table border="1"> <thead> <tr> <th>Country</th> <th>Avg. Alcohol use disorders (%)</th> </tr> </thead> <tbody> <tr><td>Eastern Europe</td><td>4.8</td></tr> <tr><td>Ukraine</td><td>4.7</td></tr> <tr><td>Lithuania</td><td>4.6</td></tr> <tr><td>Latvia</td><td>4.5</td></tr> <tr><td>Central Europe, Eastern E.</td><td>4.4</td></tr> <tr><td>Hungary</td><td>4.3</td></tr> <tr><td>Azerbaijan</td><td>4.2</td></tr> </tbody> </table> <p>Avg. Year: 2.009 Start year: 1.997</p> <p>Avg. Drug use disorders: 2.005 Avg. Alcohol use disorders: 2.793 Avg. Eating disorders: 0.8425</p> <p>Average Drug Use Disorder %</p> <p>Average Eating Disorder %</p> <p>Mental Disorders Complementing Depression</p> <p>Average Anxiety Disorder %</p> <table border="1"> <thead> <tr> <th>Country</th> <th>Avg. Anxiety disorders (%)</th> </tr> </thead> <tbody> <tr><td>Ireland</td><td>100</td></tr> <tr><td>New Zealand</td><td>98</td></tr> <tr><td>Norway</td><td>97</td></tr> <tr><td>Iran</td><td>96</td></tr> <tr><td>Australia</td><td>95</td></tr> <tr><td>Belgium</td><td>94</td></tr> <tr><td>Northern Ireland</td><td>93</td></tr> <tr><td>United Kingdom</td><td>92</td></tr> <tr><td>Austria</td><td>91</td></tr> <tr><td>Spain</td><td>90</td></tr> <tr><td>Portugal</td><td>89</td></tr> <tr><td>Yemen</td><td>88</td></tr> <tr><td>Azerbaijan</td><td>87</td></tr> </tbody> </table> <p>Avg. Year: 2.009 Start year: 1.997</p> <p>Avg. Anxiety disorder (%): 1.0000 Avg. Bipolar disorder (%): 1.3800 Avg. Schizophrenia disorder (%): 0.2602</p> <p>Average Bipolar Disorder %</p> <p>Average Schizophrenia Disorder %</p>	Country	Avg. Alcohol use disorders (%)	Eastern Europe	4.8	Ukraine	4.7	Lithuania	4.6	Latvia	4.5	Central Europe, Eastern E.	4.4	Hungary	4.3	Azerbaijan	4.2	Country	Avg. Anxiety disorders (%)	Ireland	100	New Zealand	98	Norway	97	Iran	96	Australia	95	Belgium	94	Northern Ireland	93	United Kingdom	92	Austria	91	Spain	90	Portugal	89	Yemen	88	Azerbaijan	87
Country	Avg. Alcohol use disorders (%)																																													
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Ukraine	4.7																																													
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United Kingdom	92																																													
Austria	91																																													
Spain	90																																													
Portugal	89																																													
Yemen	88																																													
Azerbaijan	87																																													



2.

Data Responsiveness

Overall R-squared Accuracy: 0.6231249718870456

R-squared Accuracy: 0.6879725723868086

```
+ Code + Text
# Create and train a linear regression model
model = LinearRegression()
model.fit(X_train, y_train)

# Make predictions on the test set
y_pred = model.predict(X_test)

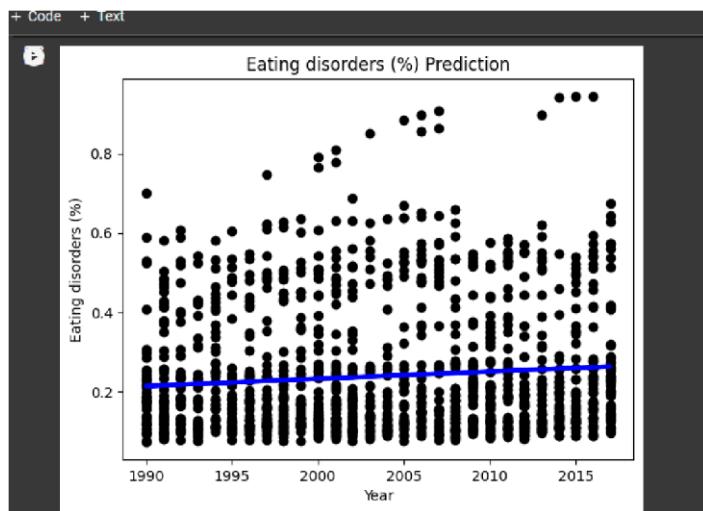
# Calculate R-squared accuracy
accuracy = r2_score(y_test, y_pred)
overall_accuracy += accuracy

# Calculate the average accuracy
average_accuracy = overall_accuracy / (len(conditions) * len(data['Entity'].unique()))

print(f"Overall R-squared Accuracy: {average_accuracy}")

average_accuracy = overall_accuracy / (len(conditions) * len(data['Entity'].unique()))
accuracy = r2_score(y_test, y_pred)
print(f"R-squared Accuracy: {accuracy}\n")

R-squared Accuracy: 0.6879725723868086
```



Mean Squared Error: 0.02645681725460534

R-squared: 0.001665843301023373

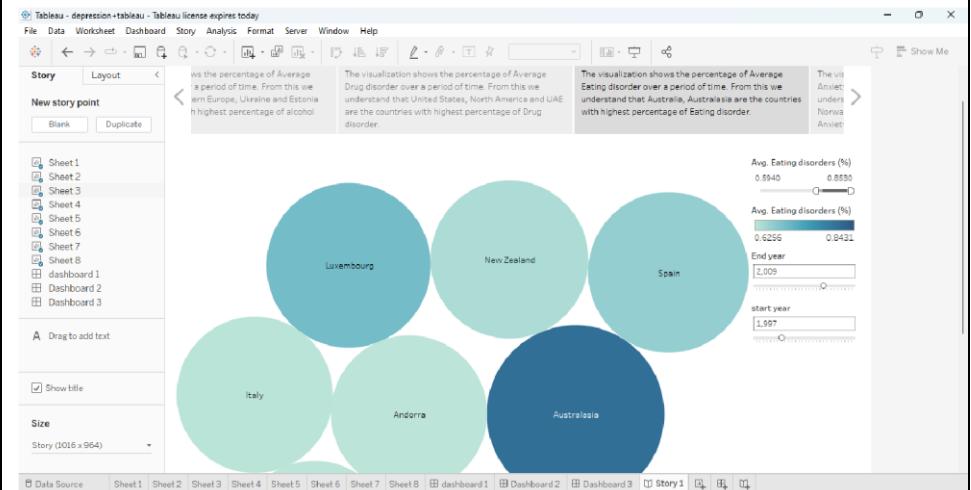
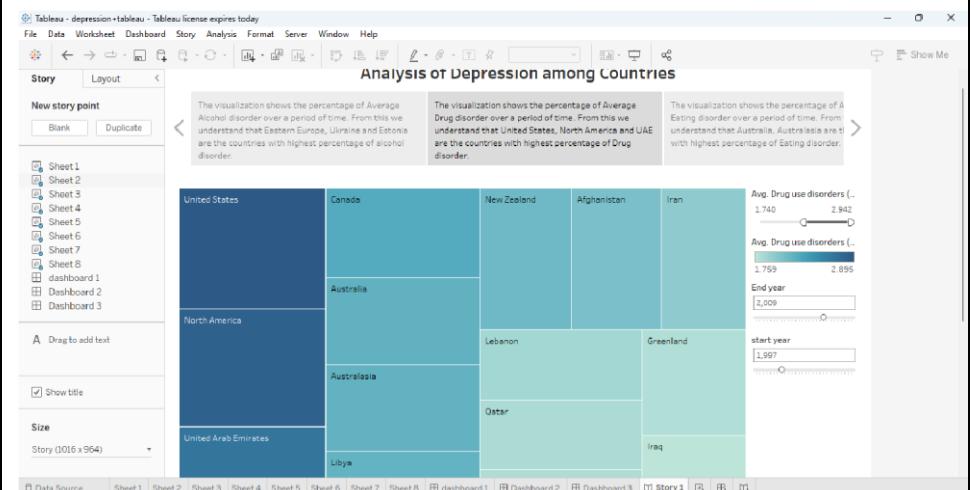
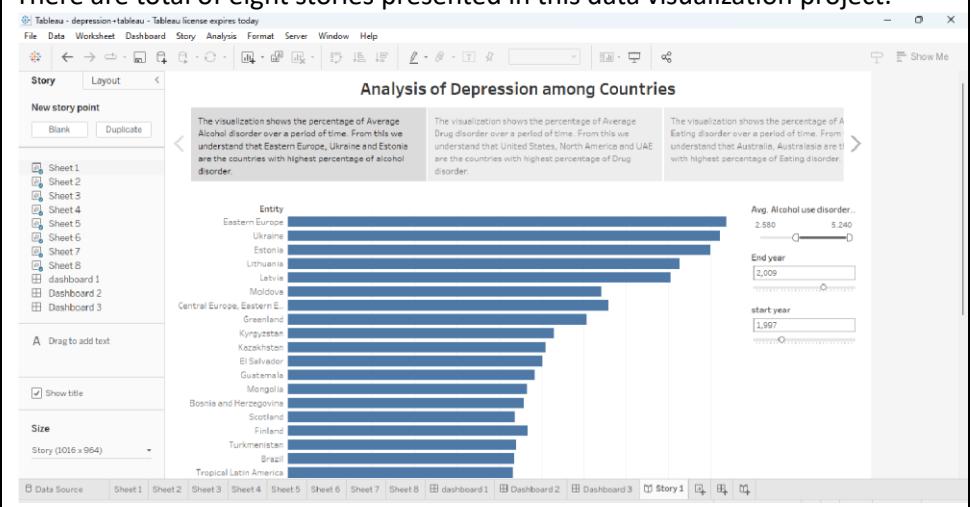
		<p>Depression (%) Prediction</p> <p>Mean Squared Error: 0.4306970558091386 R-squared: 0.0016681613605893375</p>
3.	Amount Data to Rendered (DB2 Metrics)	
4.	Utilization of Data Filters	<p>The data filters are utilized to find the relationship between the depression data and the various kinds of disorders given for different countries between years 1990 to 2017 to get a better understanding of in which country the rate of depression is high and due to what reason.</p> <p>Average Drug Use Disorder %</p> <p>Filters</p> <ul style="list-style-type: none"> year_filter:True AVG(Drug use disorder) <p>Marks</p> <ul style="list-style-type: none"> Automatic Color Size Label Detail Tooltip AVG(Drug use disorder) AVG(Drug use disorder) Entity <p>Rows</p> <p>United States</p> <p>Canada</p> <p>New Zealand</p> <p>Australia</p> <p>Afghanistan</p> <p>Iran</p> <p>North America</p> <p>Lebanon</p> <p>Greenland</p> <p>Australasia</p> <p>Catar</p> <p>United Arab Emirates</p> <p>Iraq</p> <p>Libya</p> <p>Scotland</p> <p>End year: 2.009</p> <p>start year: 1.997</p> <p>AVG(Drug use disorder): 1.759 - 2.895</p> <p>AVG(Drug use disorder): 1.740 - 2.942</p>

5.

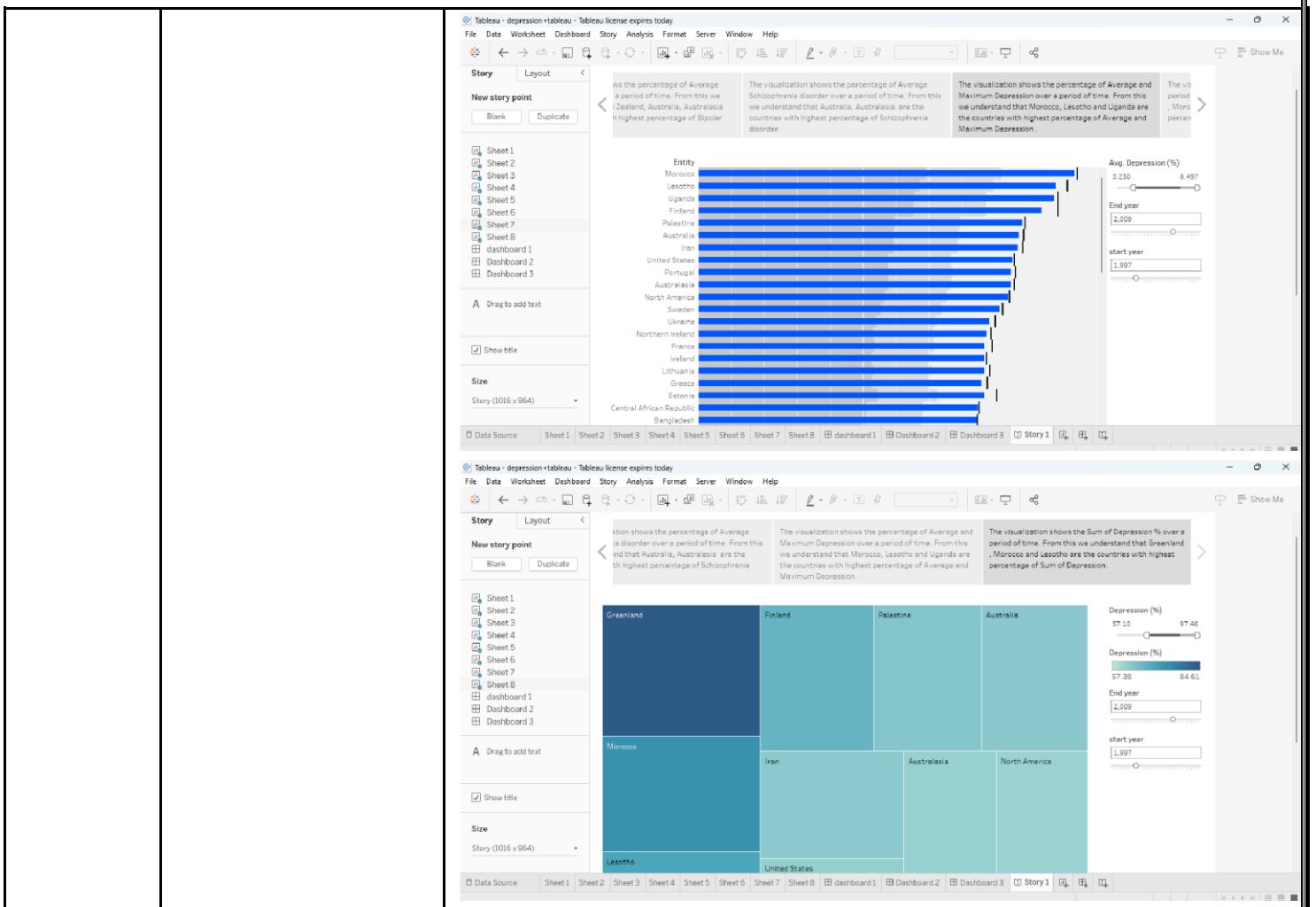
Effective User Story

No of Scene Added - 8

In the user story a description is provided for all the visualizations of what percentage of a particular disorder is mostly affecting what country.
There are total of eight stories presented in this data visualization project.







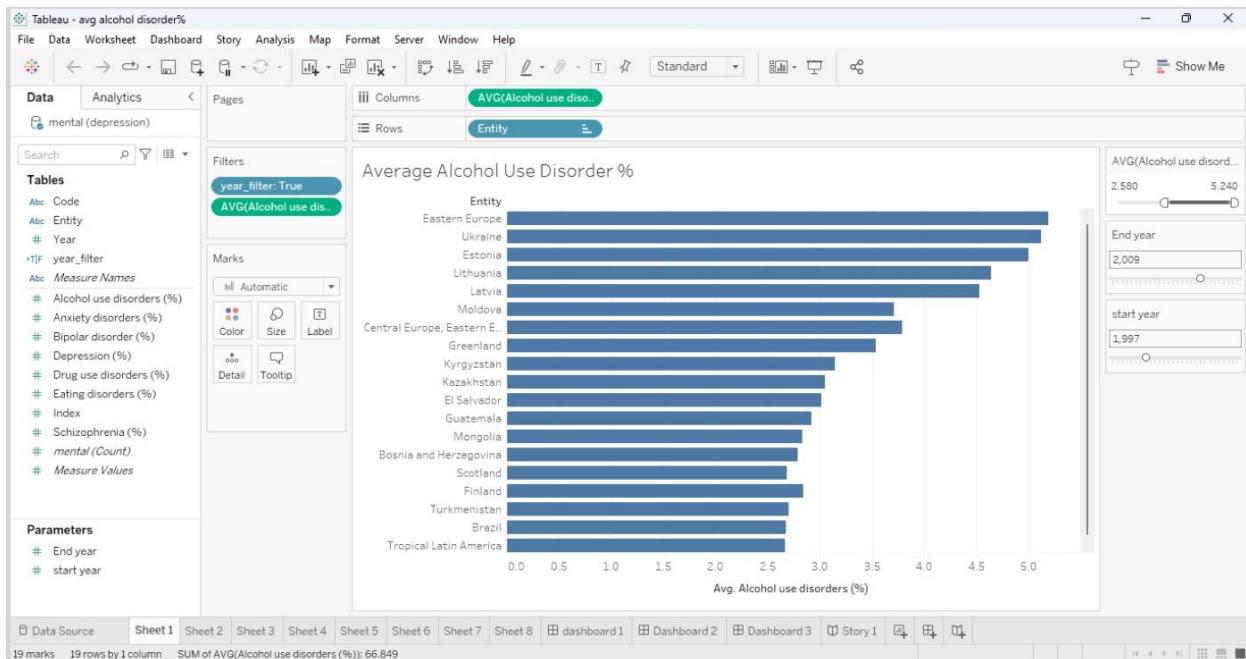
6.	Descriptive Reports	<p>No of Visualizations 8 Dashboard-3</p> <p>The goal of this data visualization project is to examine and present information from 1990 to 2017 about depression and other mental health conditions in various nations. The goal is to learn more about the frequency of these conditions and how they might eventually affect depression. Preprocessing of the data, result interpretation, and visualization are all part of the project.</p> <p>Heatmap: The relationship between various mental health conditions and the prevalence of depression in various nations and years is displayed using a heatmap. Finding patterns and relationships is aided by this.</p> <p>Bubble Packed Chart: It is a useful tool for visualizing the relative contributions of each disorder to depression as a whole. The size of the bubbles is determined by the percentage data.</p> <p>Bar Chart: To facilitate the comparison of the prevalence of various disorders, bar charts are used to show the average percentages of each disorder in various nations.</p>
----	---------------------	--

9) RESULTS

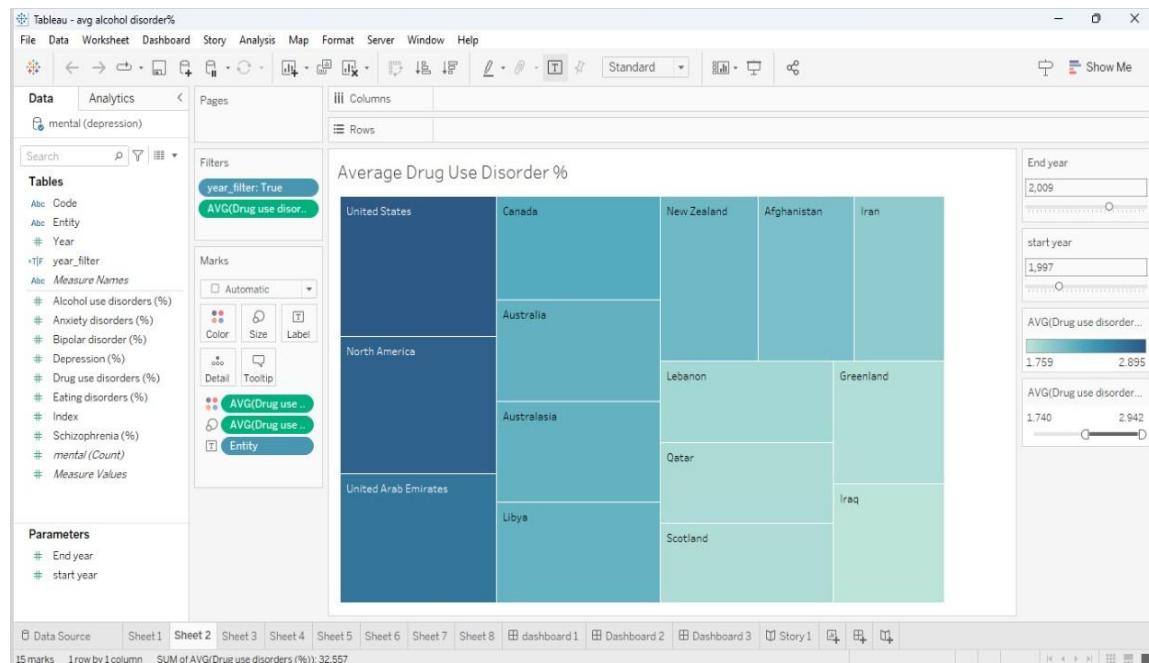
9.1 OUTPUT SCREENSHOT

VISUALIZATIONS:

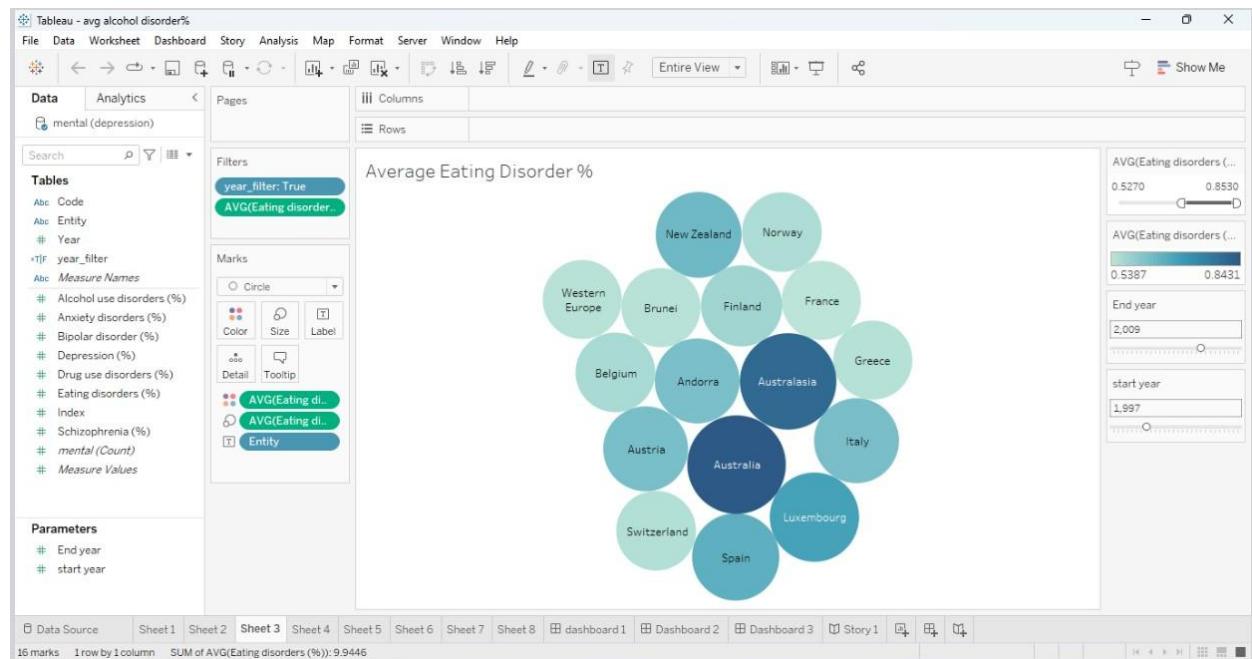
Activity 1.1 : Average Alcohol Use Disorder %



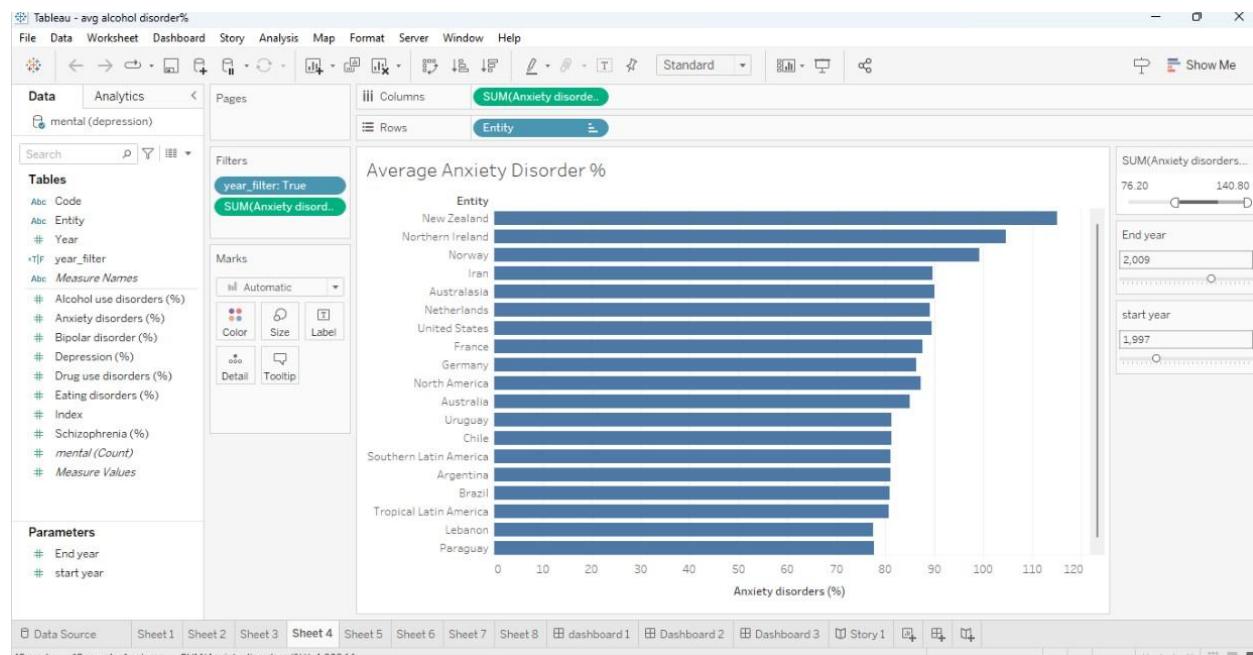
Activity 1.2: Average Drug Use Disorder %



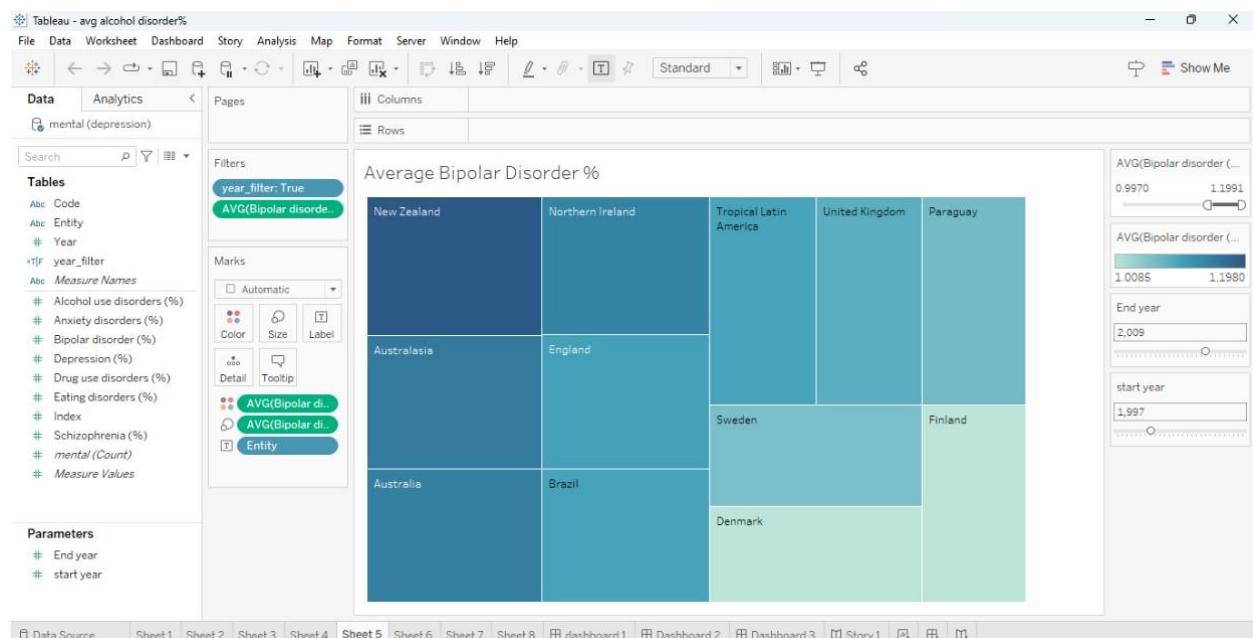
Activity 1.3: Average Eating Disorder %



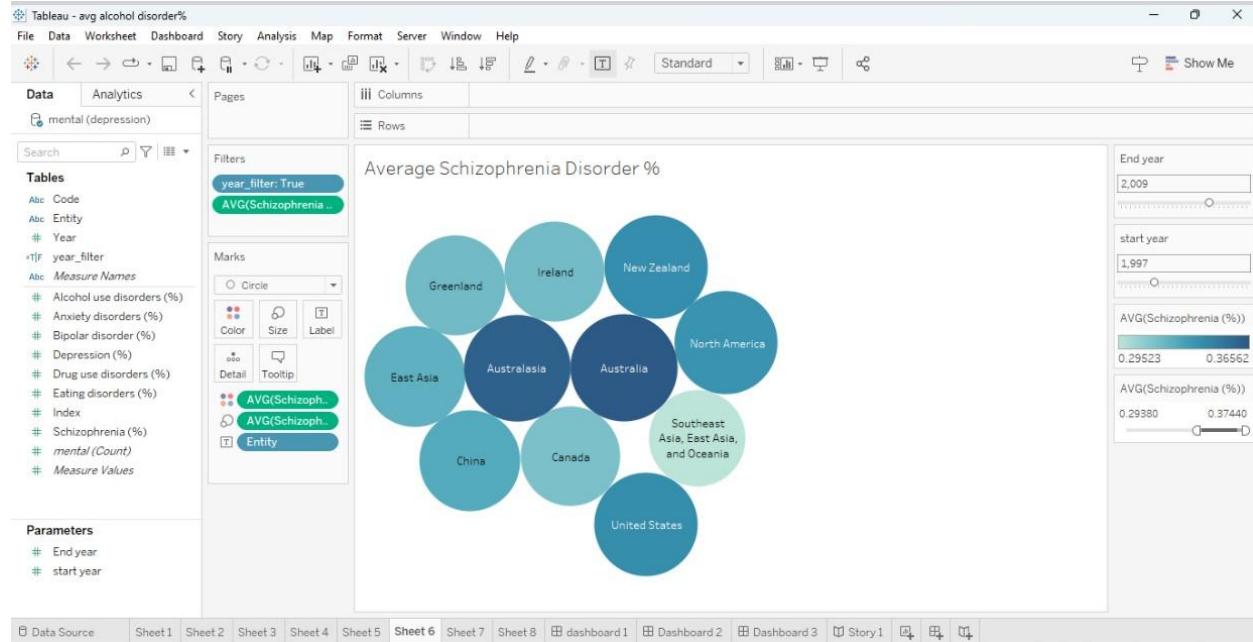
Activity 1.4: Average Anxiety Disorder %



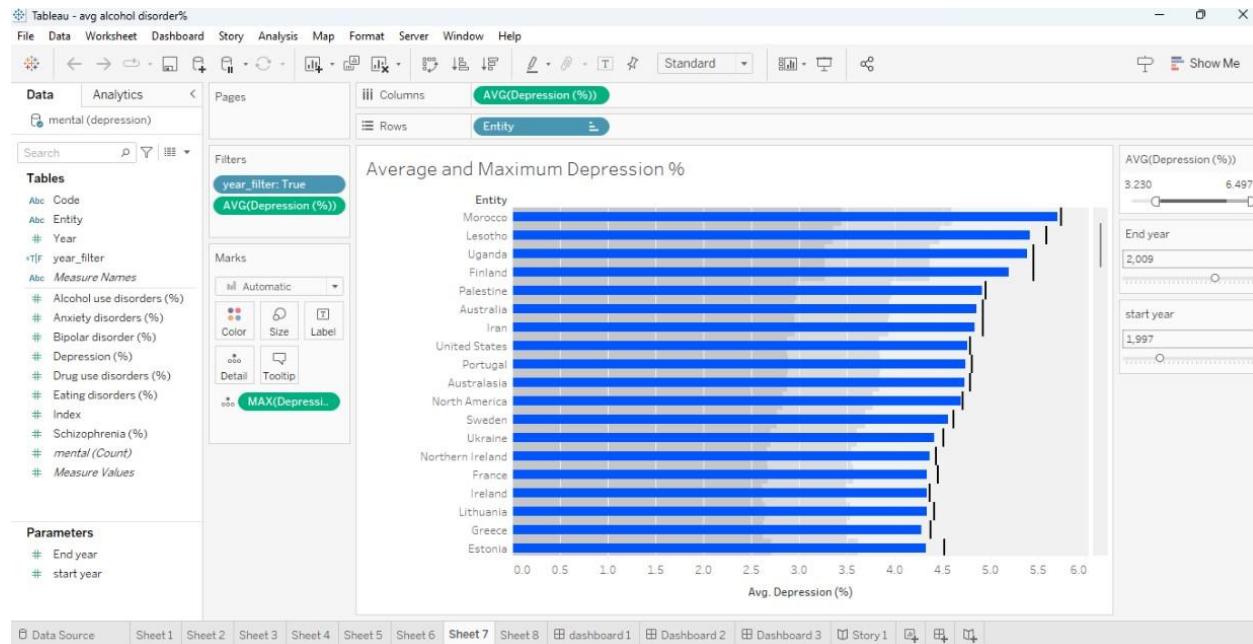
Activity 1.5: Average Bipolar Disorder %



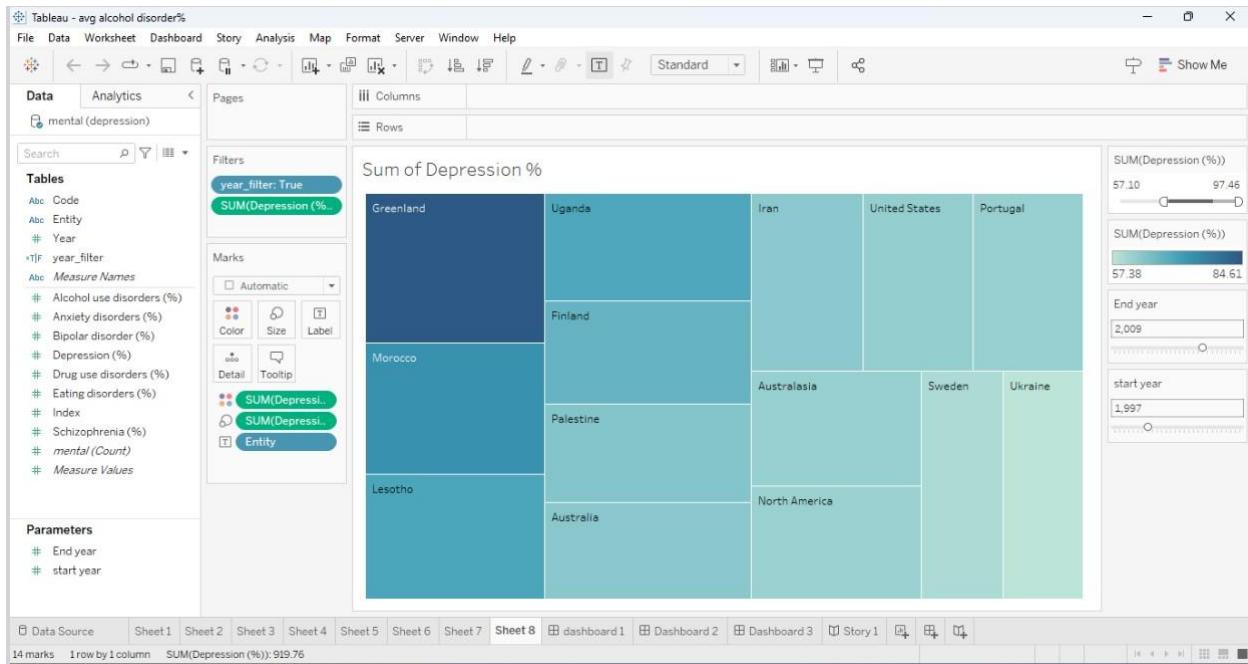
Activity 1.6: Average Schizophrenia Disorder %



Activity 1.7: Average and Maximum Depression %

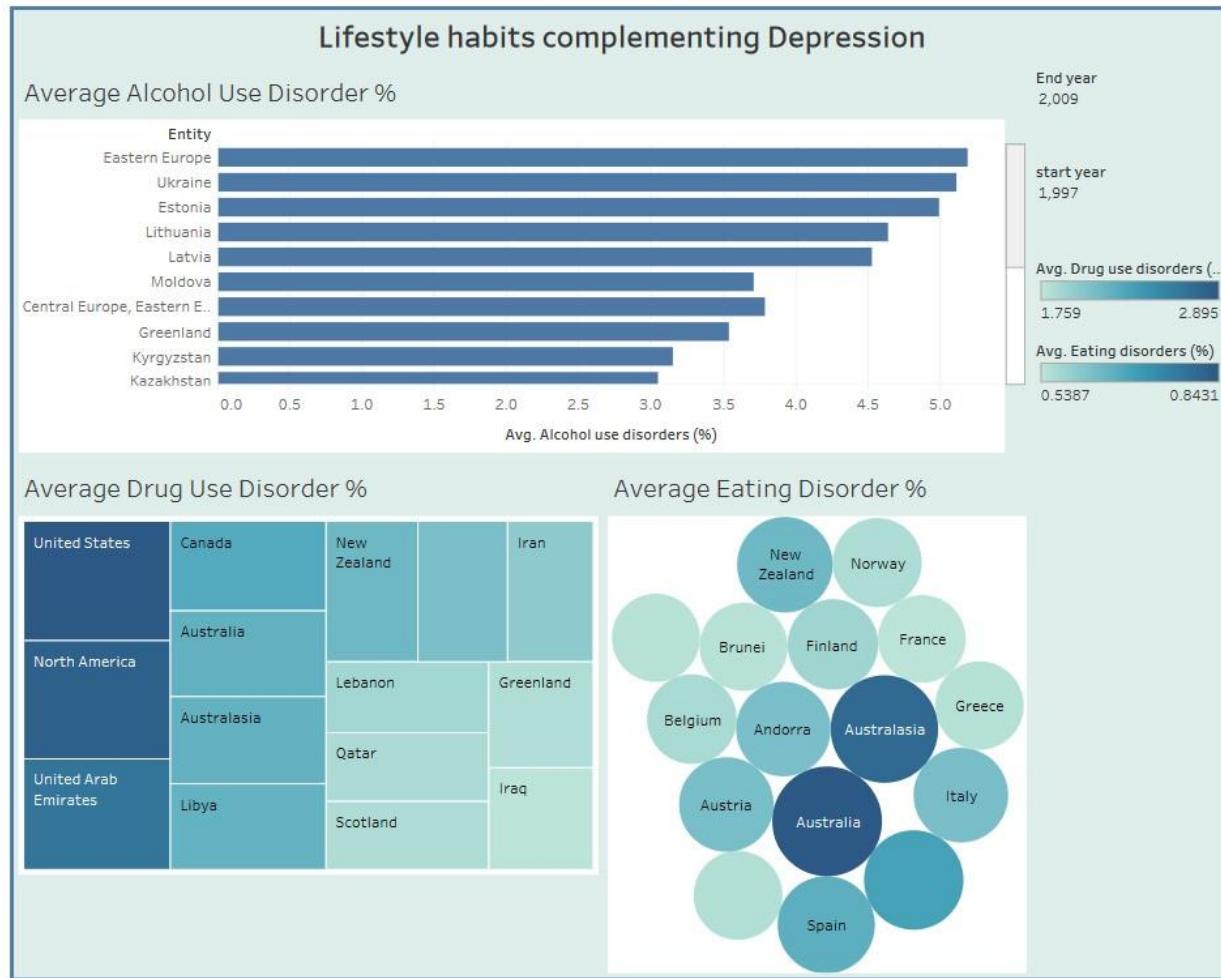


Activity 1.8: Sum of Depression %

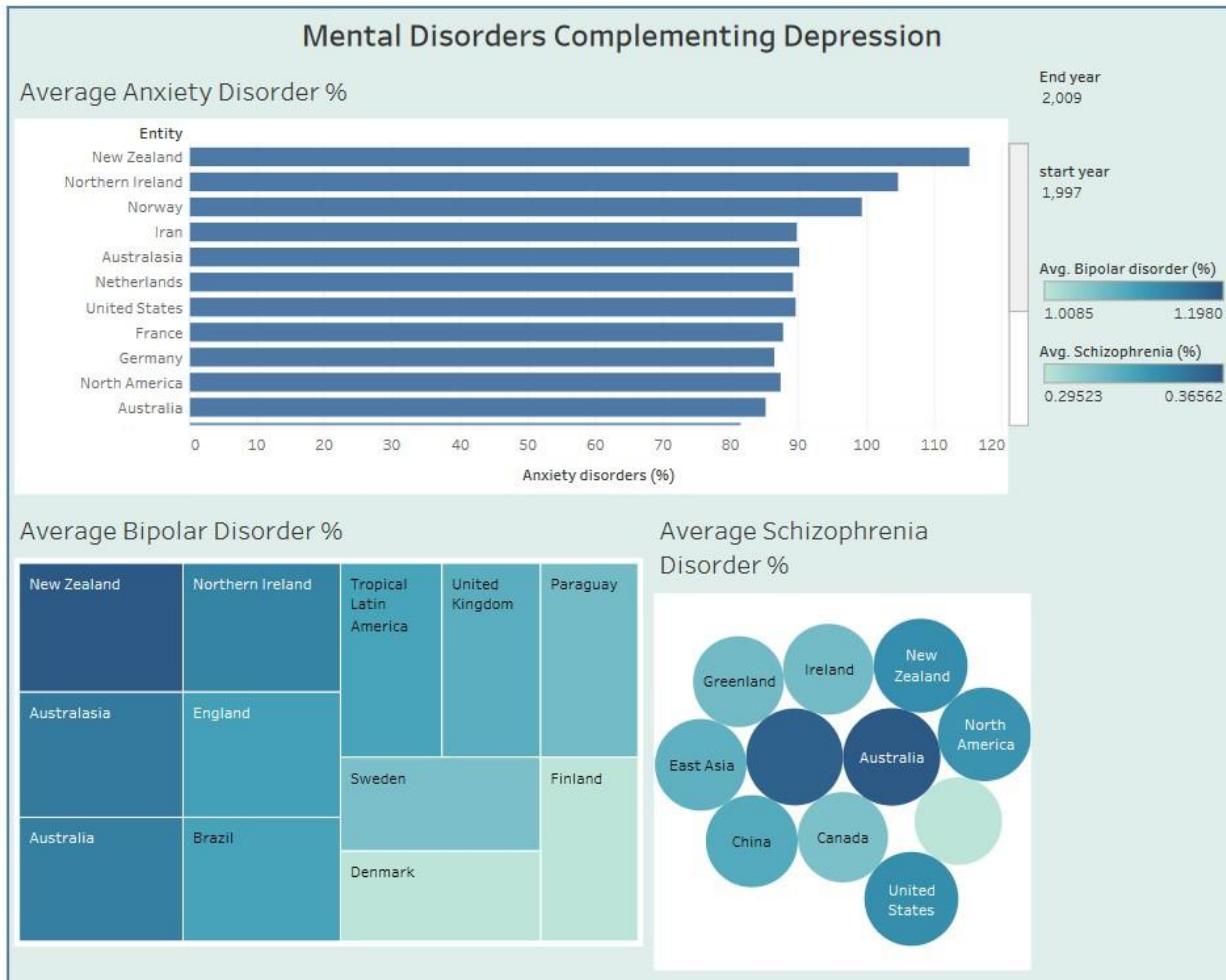


DASHBOARD:

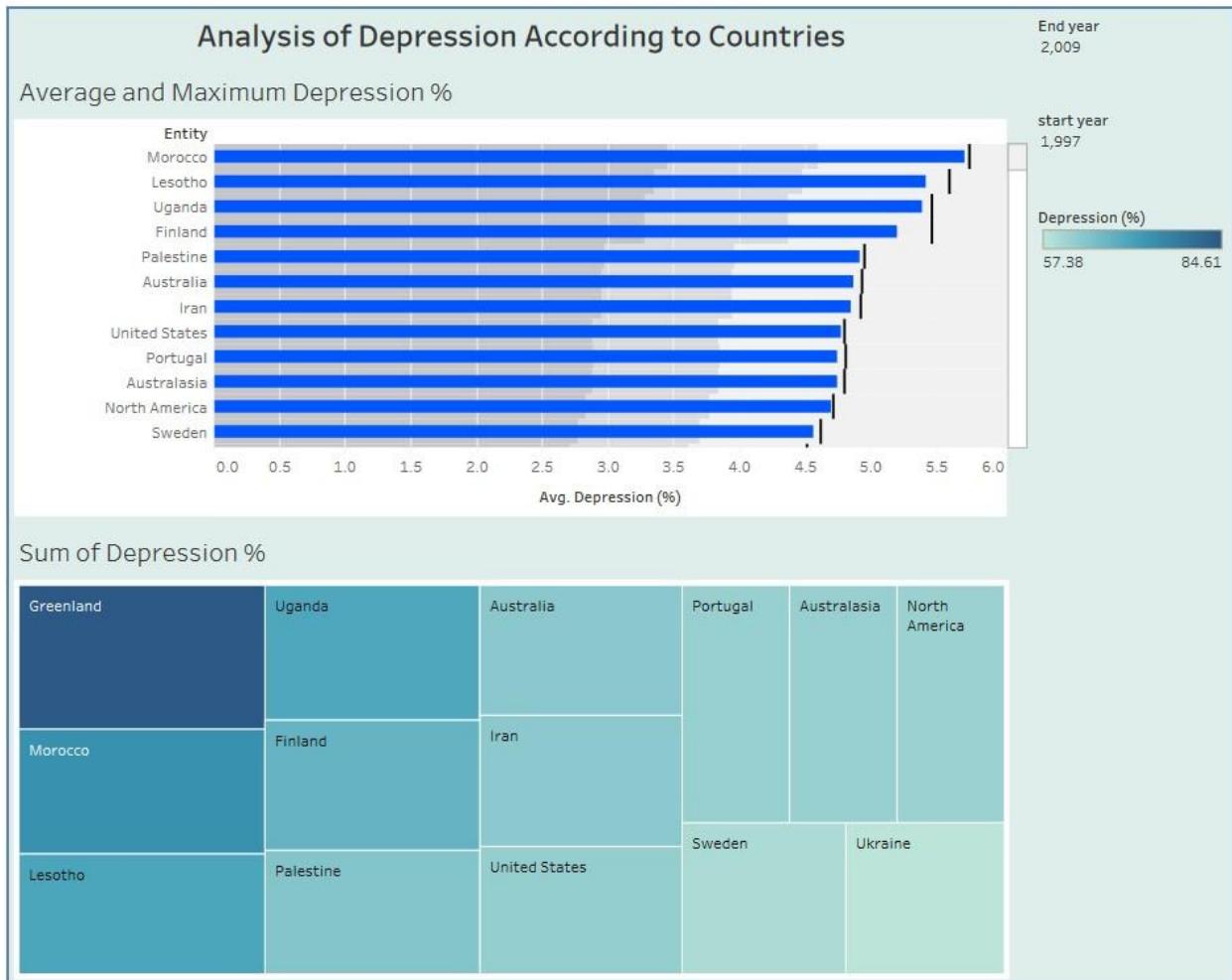
Lifestyle habits complementing depression



- Mental disorder complementing depression



- Analysis of depression according to Countries

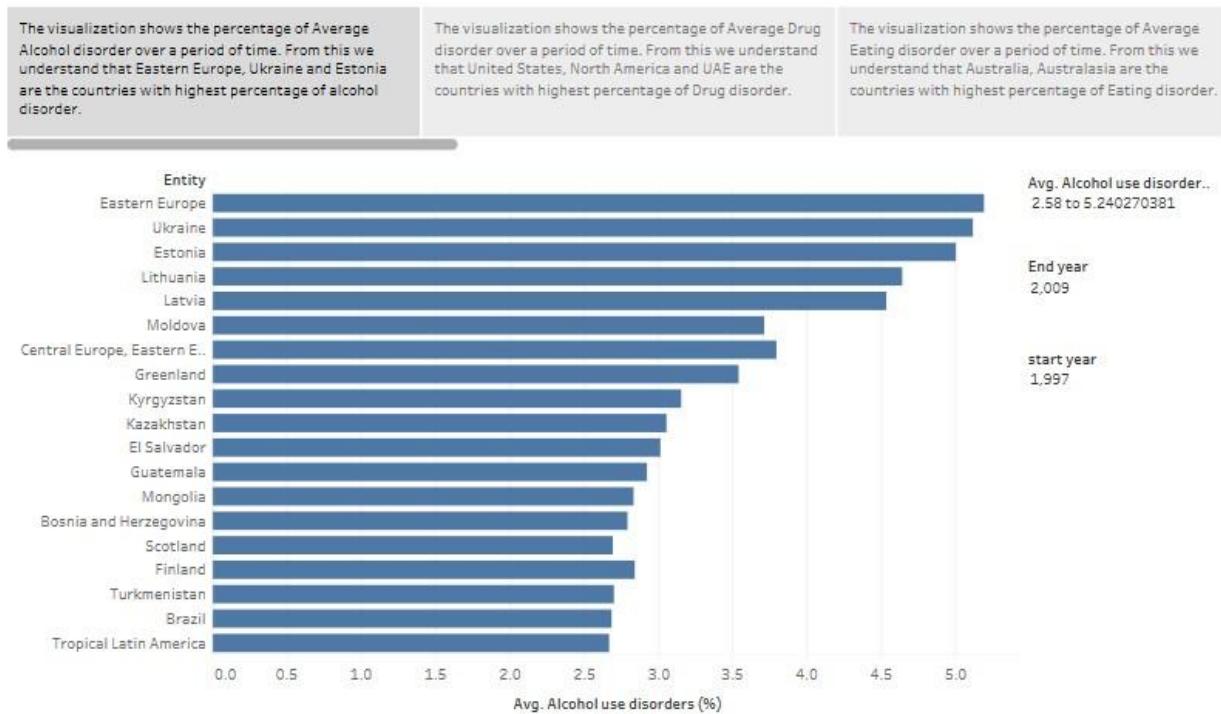


STORY:

Activity 1- No of Scenes of Story

The number of scenes in a storyboard for a data visualization analysis of the performance of banks will depend on the complexity of the analysis and the specific insights that are trying to be conveyed. A storyboard is a visual representation of the data analysis process and it breaks down the analysis into a series of steps or scenes.

Analysis of Depression among Countries

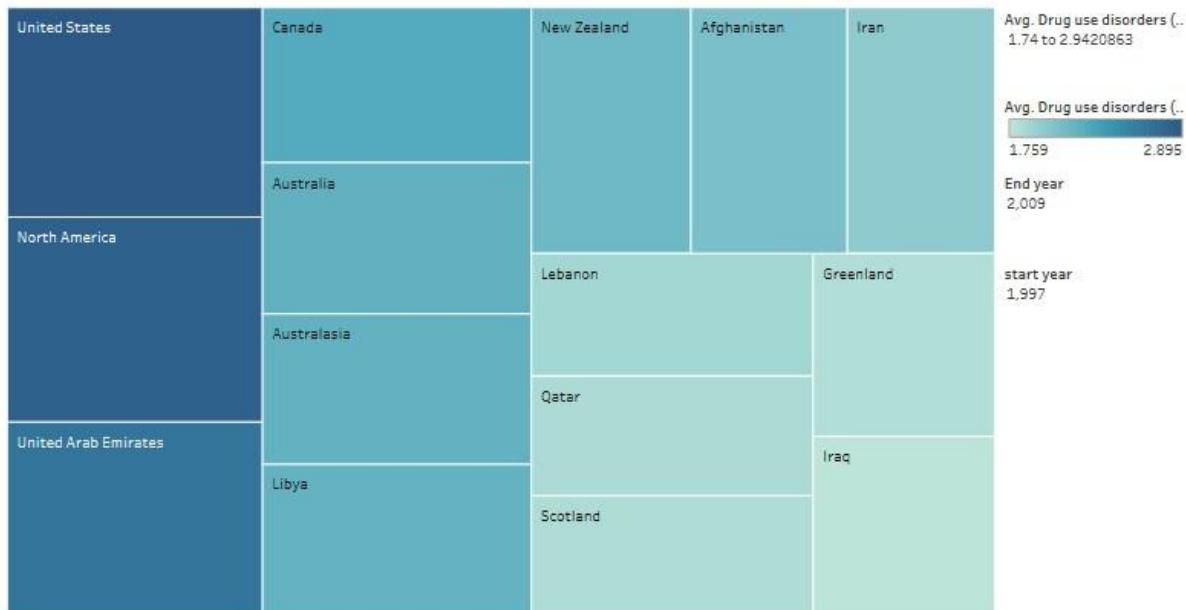


Analysis of Depression among Countries

The visualization shows the percentage of Average Alcohol disorder over a period of time. From this we understand that Eastern Europe, Ukraine and Estonia are the countries with highest percentage of alcohol disorder.

The visualization shows the percentage of Average Drug disorder over a period of time. From this we understand that United States, North America and UAE are the countries with highest percentage of Drug disorder.

The visualization shows the percentage of Average Eating disorder over a period of time. From this we understand that Australia, Australasia are the countries with highest percentage of Eating disorder.

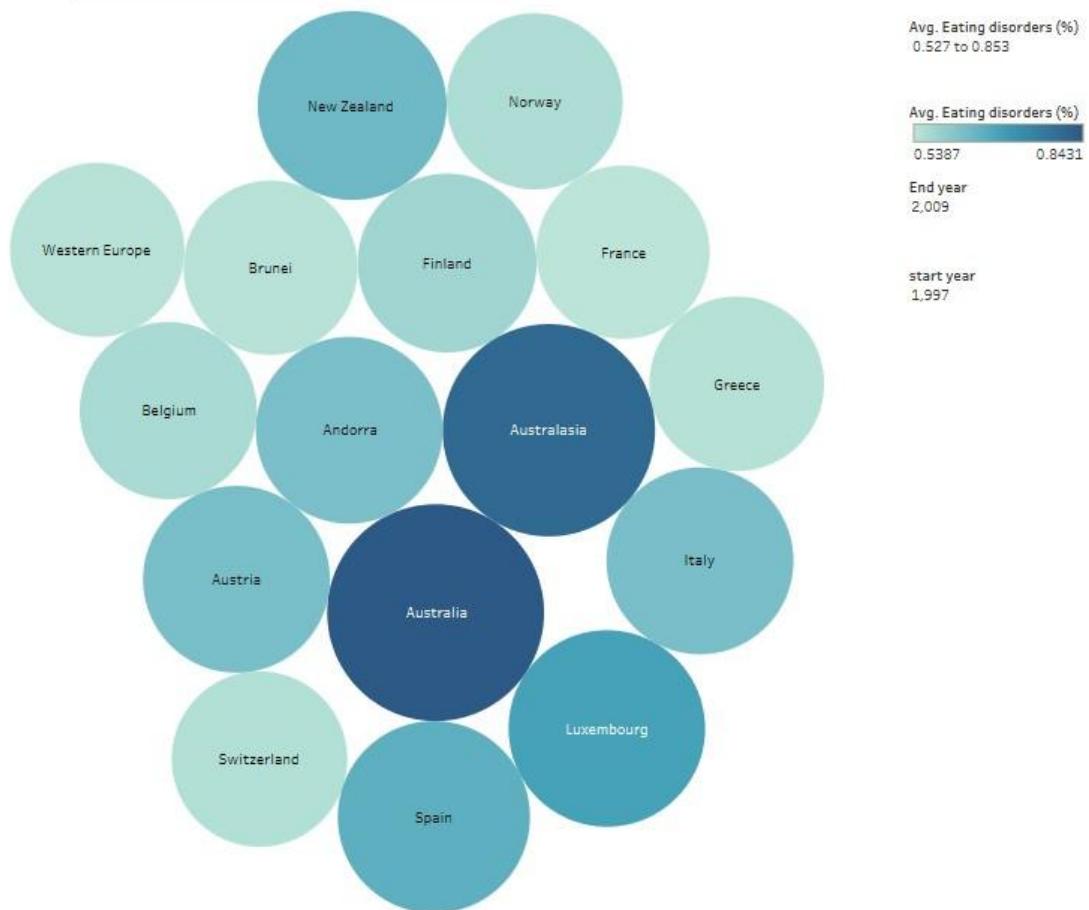


Analysis of Depression among Countries

The visualization shows the percentage of Average Drug disorder over a period of time. From this we understand that United States, North America and UAE are the countries with highest percentage of Drug disorder.

The visualization shows the percentage of Average Eating disorder over a period of time. From this we understand that Australia, Australasia are the countries with highest percentage of Eating disorder.

The visualization shows the percentage of Average Anxiety disorder over a period of time. From this we understand that New Zealand, Northern Ireland, Norway are the countries with highest percentage of Anxiety disorder.

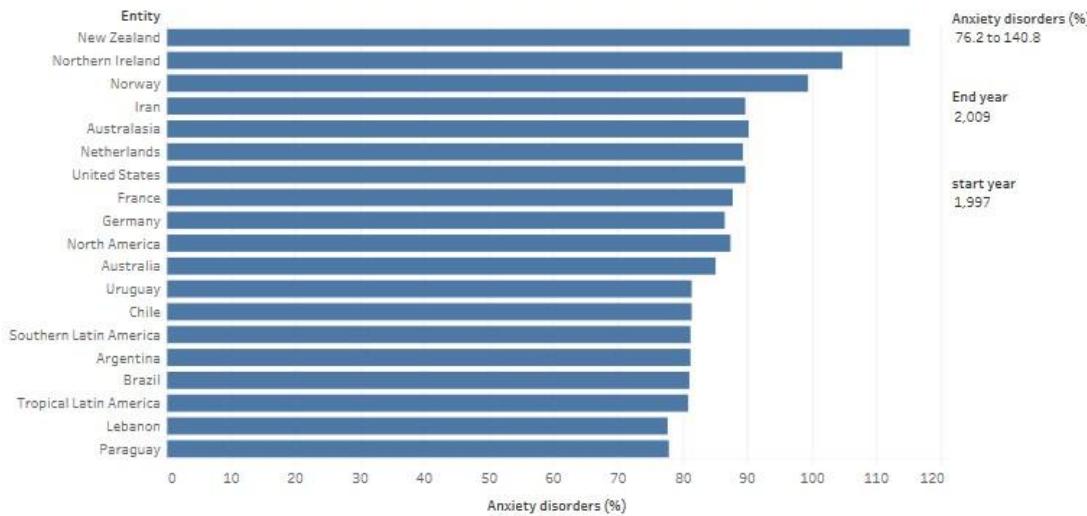


Analysis of Depression among Countries

The visualization shows the percentage of Average Eating disorder over a period of time. From this we understand that Australia, Australasia are the countries with highest percentage of Eating disorder.

The visualization shows the percentage of Average Anxiety disorder over a period of time. From this we understand that New Zealand, Northern Ireland, Norway are the countries with highest percentage of Anxiety disorder.

The visualization shows the percentage of Average Bipolar disorder over a period of time. From this we understand that New Zealand, Australia, Australasia are the countries with highest percentage of Bipolar disorder.

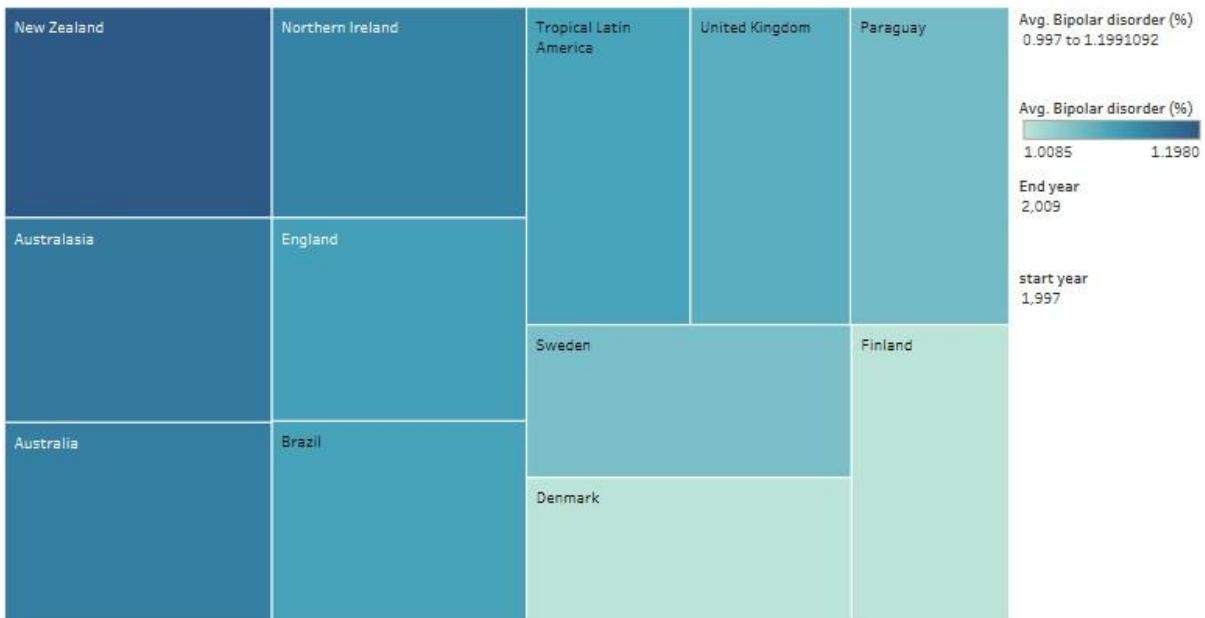


Analysis of Depression among Countries

The visualization shows the percentage of Average Anxiety disorder over a period of time. From this we understand that New Zealand, Northern Ireland, Norway are the countries with highest percentage of Anxiety disorder.

The visualization shows the percentage of Average Bipolar disorder over a period of time. From this we understand that New Zealand, Australia, Australasia are the countries with highest percentage of Bipolar disorder.

The visualization shows the percentage of Average Schizophrenia disorder over a period of time. From this we understand that Australia, Australasia are the countries with highest percentage of Schizophrenia disorder.



Analysis of Depression among Countries

The visualization shows the percentage of Average Bipolar disorder over a period of time. From this we understand that New Zealand, Australia, Australasia are the countries with highest percentage of Bipolar disorder.

The visualization shows the percentage of Average Schizophrenia disorder over a period of time. From this we understand that Australia, Australasia are the countries with highest percentage of Schizophrenia disorder.

The visualization shows the percentage of Average and Maximum Depression over a period of time. From this we understand that Morocco, Lesotho and Uganda are the countries with highest percentage of Average and Maximum Depression.

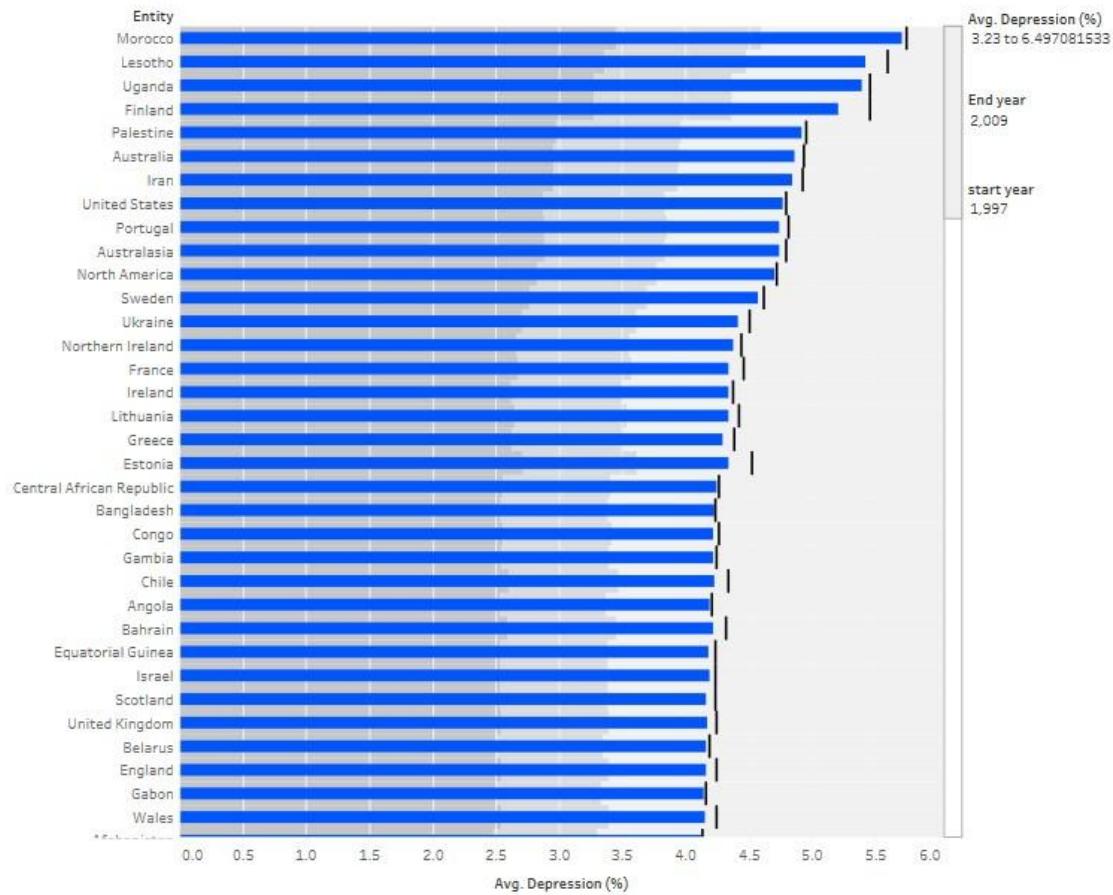


Analysis of Depression among Countries

The visualization shows the percentage of Average Schizophrenia disorder over a period of time. From this we understand that Australia, Australasia are the countries with highest percentage of Schizophrenia disorder.

The visualization shows the percentage of Average and Maximum Depression over a period of time. From this we understand that Morocco, Lesotho and Uganda are the countries with highest percentage of Average and Maximum Depression .

The visualization shows the Sum of Depression % over a period of time. From this we understand that Greenland , Morocco and Lesotho are the countries with highest percentage of Sum of Depression.

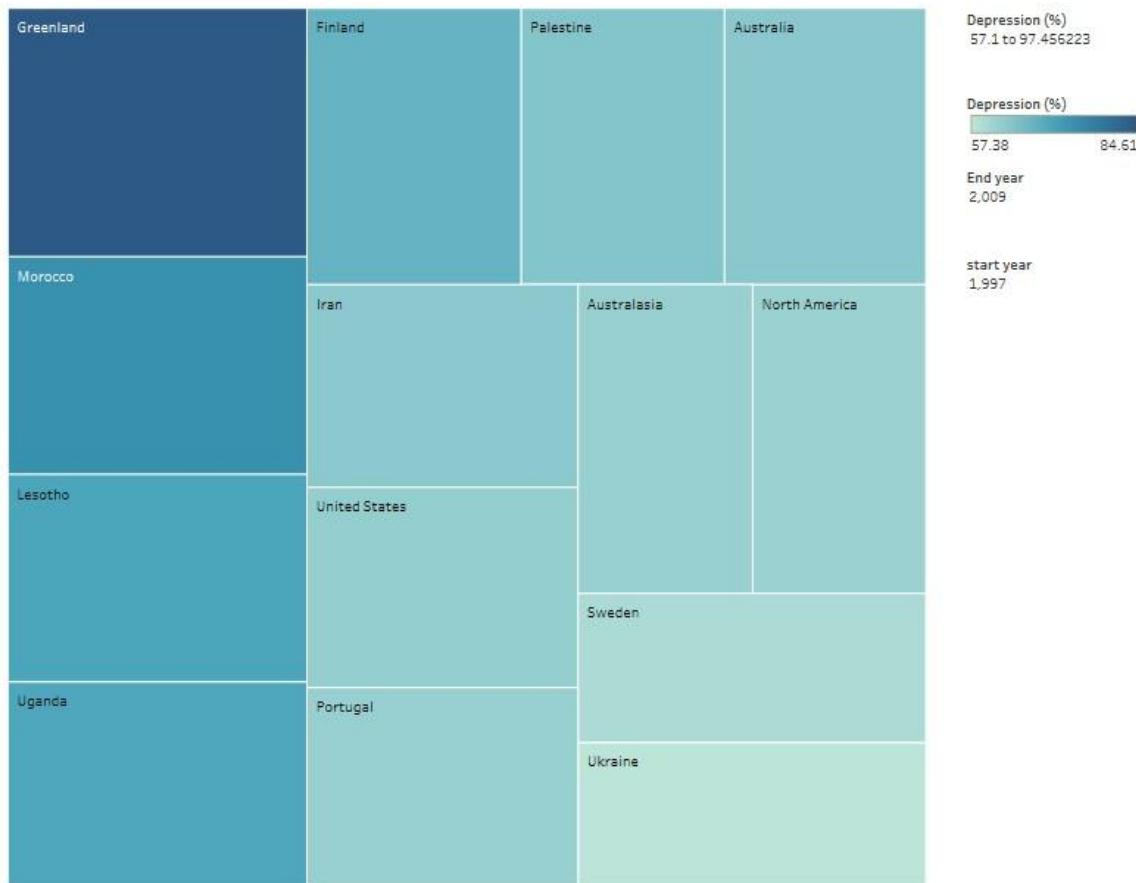


Analysis of Depression among Countries

The visualization shows the percentage of Average Schizophrenia disorder over a period of time. From this we understand that Australia, Australasia are the countries with highest percentage of Schizophrenia disorder.

The visualization shows the percentage of Average and Maximum Depression over a period of time. From this we understand that Morocco, Lesotho and Uganda are the countries with highest percentage of Average and Maximum Depression .

The visualization shows the Sum of Depression % over a period of time. From this we understand that Greenland ,Morocco and Lesotho are the countries with highest percentage of Sum of Depression.



10) ADVANTAGES AND DISADVANTAGES:

Advantages:

1. **Improved Mental Health Awareness:** Depression projects can raise awareness about mental health issues, reduce stigma, and encourage open conversations about depression.
2. **Access to Resources:** These projects often provide valuable resources, information, and support for individuals dealing with depression and their caregivers.
3. **Early Detection and Intervention:** Depression projects may incorporate tools and assessments that help identify depression early, allowing for timely intervention and treatment.
4. **Support Networks:** They can help individuals connect with others who are experiencing similar challenges, fostering a sense of community and reducing isolation.
5. **Research and Data:** Such projects can generate data and insights that contribute to the understanding of depression, its causes, and effective treatment strategies.
6. **Prevention and Education:** They can educate people about risk factors and preventive measures to reduce the incidence of depression.
7. **Improved Treatment:** Projects can contribute to the development of more effective treatment options for depression.
8. **Policy Impact:** Findings and recommendations from depression projects can influence policy changes related to mental health care.
9. **Mental Health Advocacy:** Projects often lead to increased advocacy for better mental health services and resources.
10. **Reduced Economic Burden:** By addressing depression, these projects may help reduce the economic burden associated with mental health issues, such as lost productivity and healthcare costs.

Disadvantages:

1. **Resource Intensive:** Depression projects can be financially and resource-intensive to develop, implement, and sustain.
2. **Ethical and Privacy Concerns:** Handling sensitive mental health data and providing support services require strict adherence to ethical guidelines and privacy regulations, which can be challenging.
3. **Risk of Misinformation:** Without proper oversight, depression projects may unintentionally spread inaccurate information or harmful advice.
4. **Stigma and Discrimination:** Despite efforts to reduce stigma, participating in a depression project might still carry a social stigma that discourages some individuals from seeking help.
5. **Limited Reach:** Not all individuals with depression may have access to or be aware of these projects, limiting their impact.
6. **Overdiagnosis or Misdiagnosis:** The use of assessment tools can lead to overdiagnosis or misdiagnosis of depression if not administered or interpreted correctly.
7. **Ineffectiveness:** Some projects may not be effective in improving the mental health of participants, leading to disappointment and potential distrust in mental health initiatives.

8. **Burnout:** Project organizers, volunteers, and professionals involved in these initiatives may experience burnout due to the emotional toll of dealing with mental health issues.
9. **Legal and Liability Issues:** Managing a depression project involves legal and liability risks, especially when offering support or interventions.
10. **Sustainability:** Maintaining the project's impact over the long term can be challenging, particularly if funding or interest wanes.

11) CONCLUSION:

In conclusion, depression projects can play a crucial role in addressing the mental health challenges faced by individuals and society. However, they require careful planning, ethical considerations, and ongoing support to ensure they have a positive and sustainable impact while minimizing potential drawbacks.

Depression projects serve as important endeavors aimed at addressing the significant mental health challenges posed by depression. These projects can make a positive impact on individuals, families, communities, and society as a whole. However, it's essential to approach such projects with care and consideration, taking into account the advantages and disadvantages associated with them.

12) Future Scope :-

The future scope of an app focused on therapy and online consultation, which uses a quiz to match users with suitable therapists, is promising and can lead to several positive outcomes and developments. In a comprehensive report, you can highlight the following potential future scopes and areas for development:

1. Enhanced Personalization:
 - Implement more advanced algorithms and AI to fine-tune therapist-user matching, considering individual preferences and specific therapy needs.
2. Wider Therapist Network:
 - Expand the network of therapists to include specialists in various fields of therapy, such as clinical psychologists, counselors, life coaches, and more.
3. Tele-health Integration:
 - Integrate video and audio conferencing capabilities to enable real-time therapy sessions, making the app a complete telehealth platform.
4. Mental Health Monitoring:
 - Develop tools for continuous user progress tracking and mental health monitoring to help therapists provide better care.
5. Community and Support Groups:
 - Create a community feature where users can connect with others facing similar challenges, fostering a sense of support and belonging

13) Appendix

1. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3146226/>

Grover S, Dutt A, Avasthi A. An overview of Indian research in depression. Indian J Psychiatry. 2010 Jan;52(Suppl 1):S178-88. doi: 10.4103/0019-5545.69231. PMID: 21836676; PMCID: PMC3146226.

2. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3016699/>

Bansal V, Goyal S, Srivastava K. Study of prevalence of depression in adolescent students of a public school. Ind Psychiatry J. 2009 Jan;18(1):43-6. doi: 10.4103/0972-6748.57859. PMID: 21234162; PMCID: PMC3016699.

3. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8832272/>

Serrano-Ripoll MJ, Zamanillo-Campos R, Fiol-DeRoque MA, Castro A, Ricci-Cabello I. Impact of Smartphone App-Based Psychological Interventions for Reducing Depressive Symptoms in People With Depression: Systematic Literature Review and Meta-analysis of Randomized Controlled Trials. JMIR Mhealth Uhealth. 2022 Jan 27;10(1):e29621. doi: 10.2196/29621. PMID: 35084346; PMCID: PMC8832272.

GitHub link:-

<https://github.com/smartinternz02/SI-GuidedProject-587641-1697028964>

Source code:-

<https://colab.research.google.com/drive/1FCLIEOg3CXHYqNXxs4JfoHmweh7iVDH6?usp=sharing>

https://colab.research.google.com/drive/1bmhysQfzX3IBWeh_f1PIGGK7NebZaNMI?usp=sharing

