

# *MIND LENS*

## *MENTAL HEALTH STATUS*

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*Prediction* 



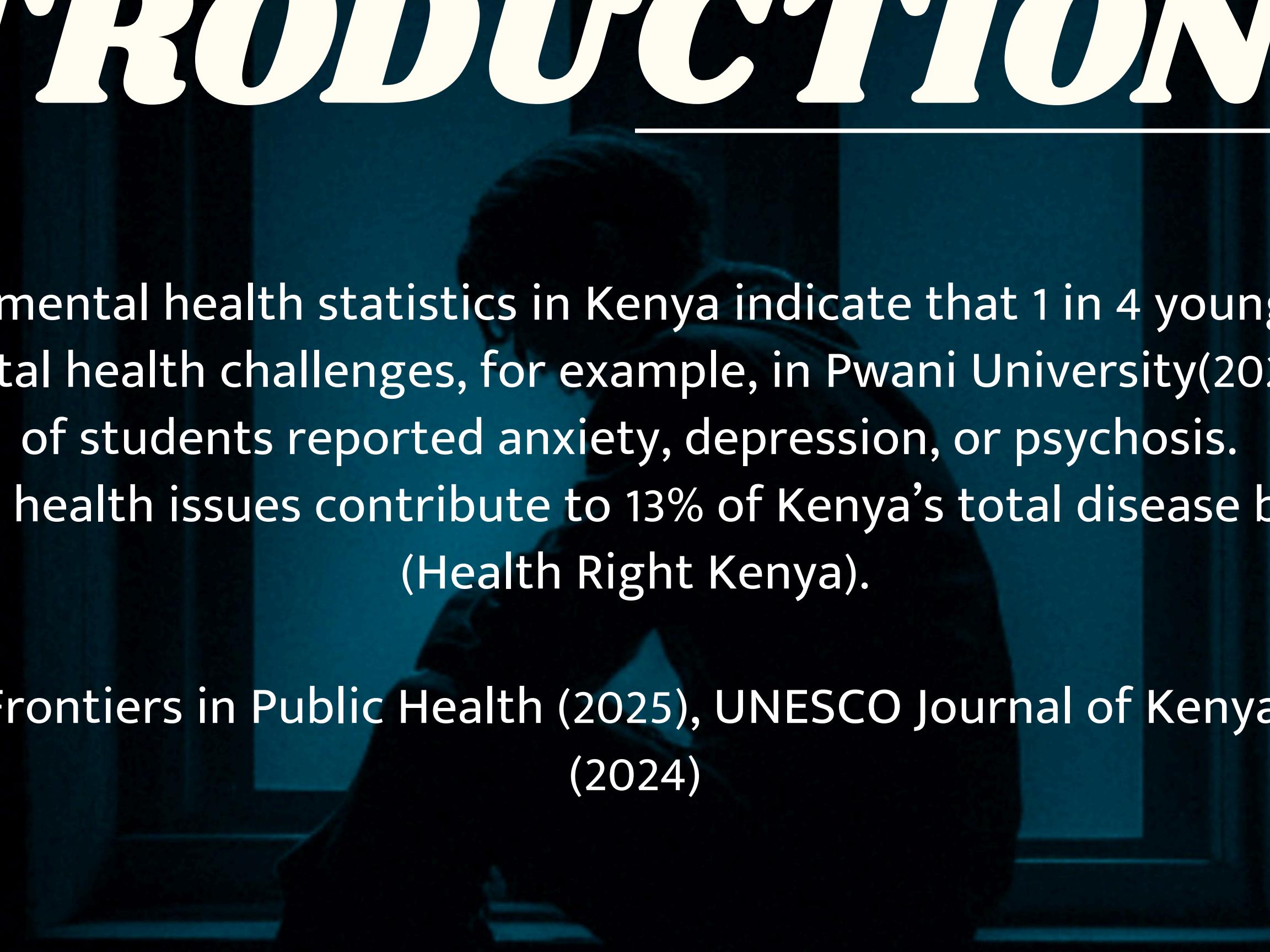
# **THE TEAM**

*Presented by:*

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# ***INTRODUCTION***

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In 2025, mental health statistics in Kenya indicate that 1 in 4 young people face mental health challenges, for example, in Pwani University(2025): 30.9% of students reported anxiety, depression, or psychosis.

Mental health issues contribute to 13% of Kenya's total disease burden.  
(Health Right Kenya).

Sources: Frontiers in Public Health (2025), UNESCO Journal of Kenya, The Star (2024)

# **PROBLEM STATEMENT**

**WHAT**

Mental health is a state of well-being that allows individuals to cope with life's stresses, realize their abilities, work productively, and contribute to their community. From WHO

**WHY**

Early detection of mental health issues is important because it can lead to a better prognosis, prevent conditions from worsening, and improve long-term outcomes.



# OBJECTIVES



- 1 Develop a machine learning model that can accurately classify mental health conditionals based on textual statements
- 2 Create a translate feature to allow English -Swahili for interpretability and diversity in the model
- 3 Compare different classification models to determine which performs best
- 4 Scrapping data from an online platform like twitter to show the efficiency of our best traditional model

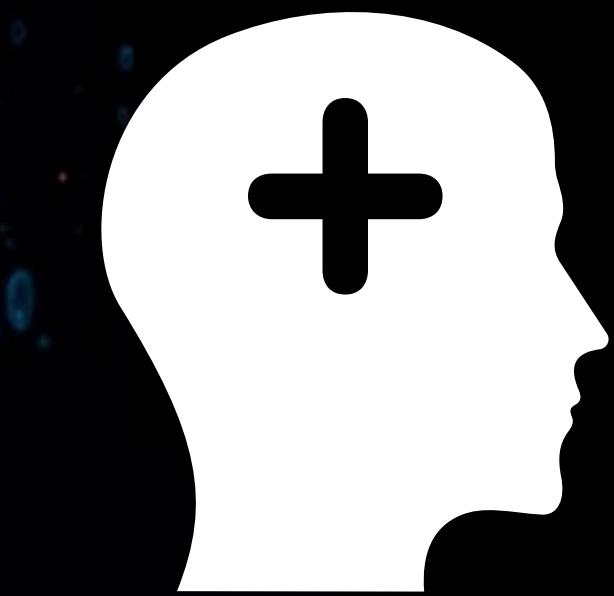
# METHODOLOGY



TEXT  
INPUT



NLP  
ENGINE



MENTAL HEALTH  
STATUS

Core concept

Our tool analyzes words and linguistic patterns in user statements to identify potential indicators of mental health conditions.

# **DATA UNDERSTANDING**

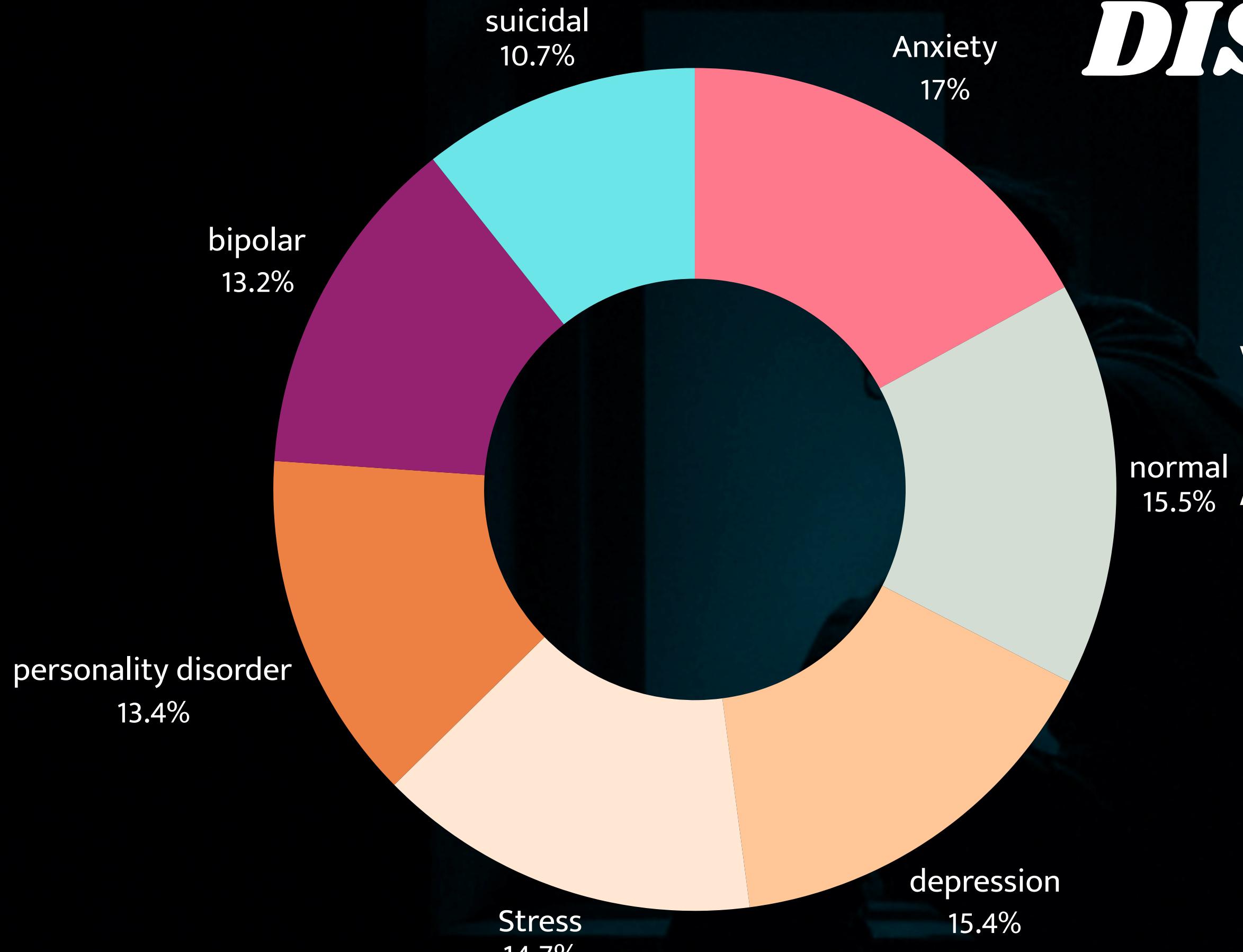
## ***Before cleaning***

- The dataset is from hugging face(mental health classifications)
- Has a total of 103,448k rows
- Has 2 columns ('Text' and 'status')

## ***After cleaning***

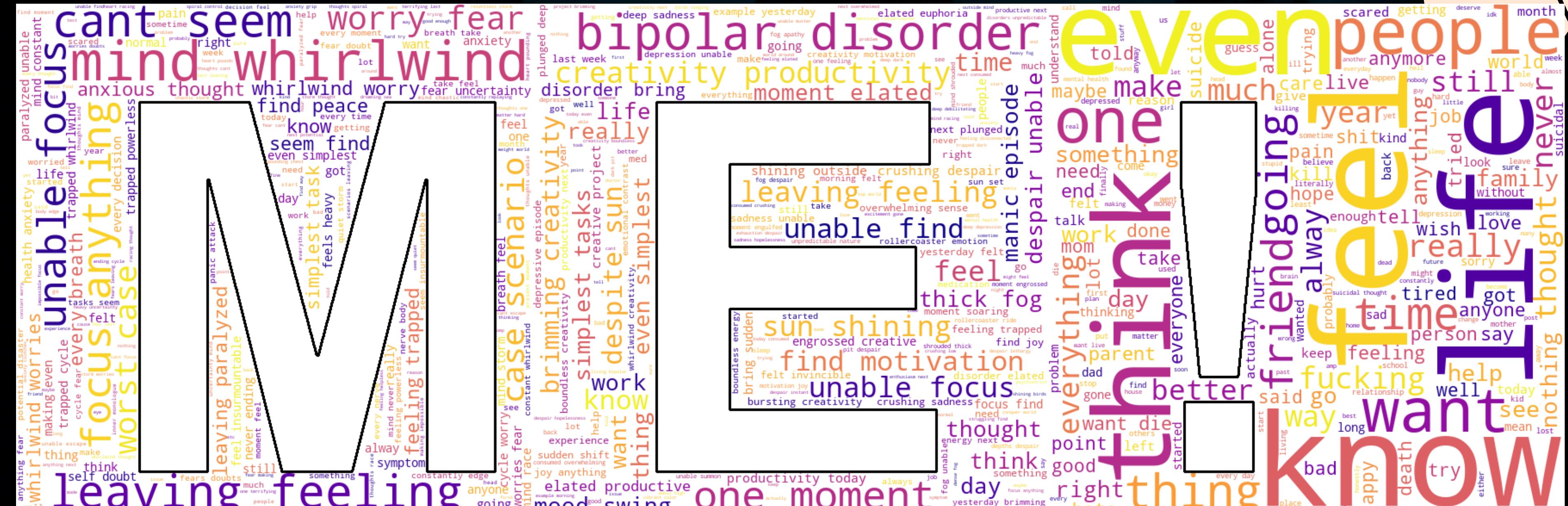
- Reduced to 99,840 rows
- Has 3 columns ('english\_text', 'swahili\_text' and 'mental\_health\_label')
- Status(Anxiety, personality disorder, normal, bipolar, depression, Suicidal and Stress)

# MENTAL HEALTH STATUS DISTRIBUTION



Out of the total records in the dataset, anxiety is the most frequent mental health condition with 17,620 entries.

# COMMON WORDS *used* IN STATUSES

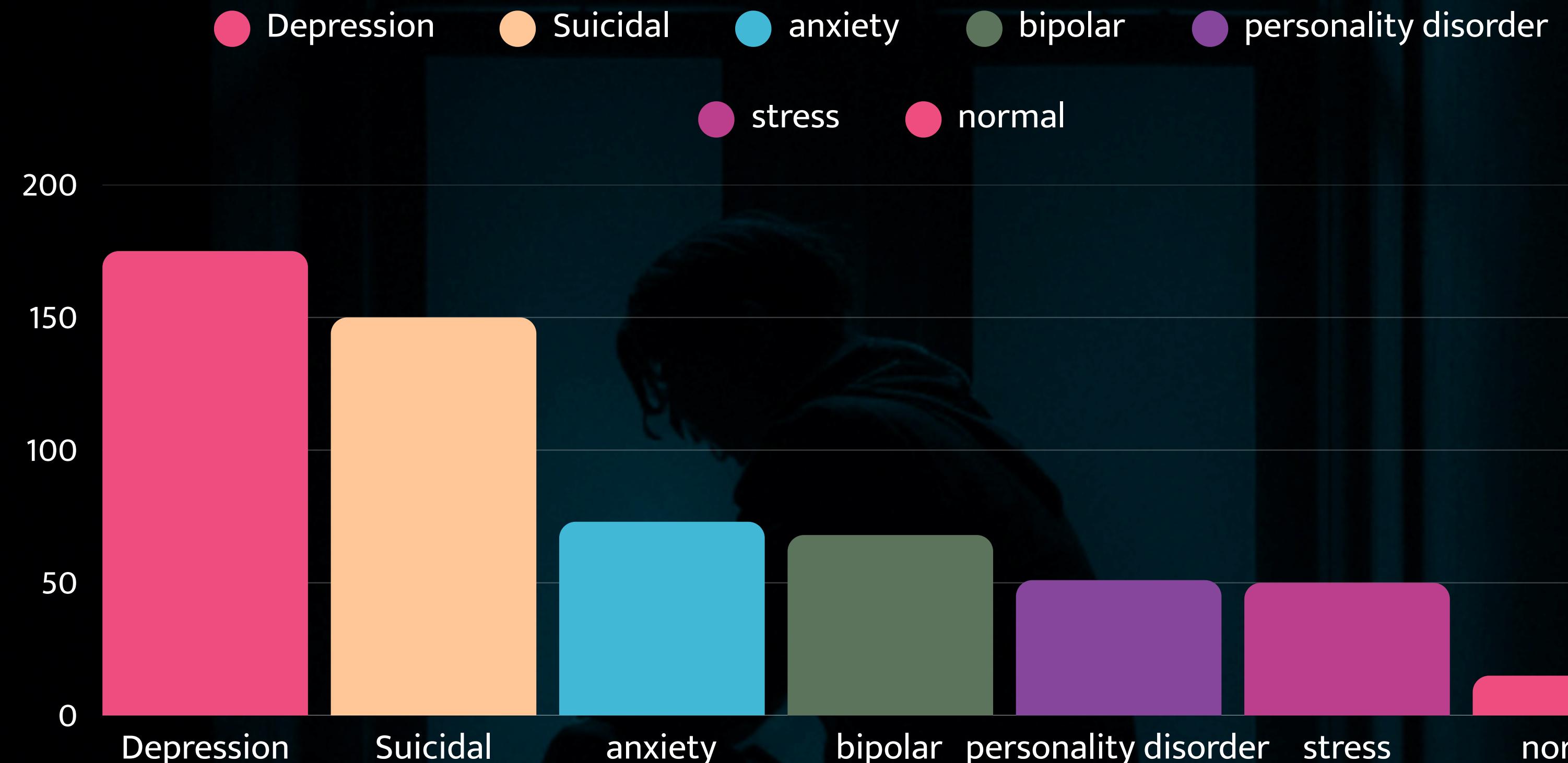


# a) Anxiety

## b) Bipolar

# c) Suicidal

# AVG TEXT LENGTH BY STATUS



From the visualization above, people with depression seem to use a lot of words to express themselves

# MODELING

- In this section we made use of traditional classifier models , such as Naive Bayes, Logistic Regression, Linear SVC ,Random Forest and a Deeplearning model(RoBERTa)
- Each Classifier had a baseline model, which was hyperparameter tuned to give the best results using a pipeline to iterate over all the models
- The RoBERTa model went through three complete training epochs , in order to improve the model perfomance

# MODEL EVALUATION

MODELS	VALIDATION ACCURACY	VALIDATION PRECISION	TEST ACCURACY	VALIDATION F1	VALIDATION RECALL
LINEARSVC	87.3%	86.9%	86.3%	86.7%	86.7%
LOGISTIC REGRESSION	86.6%	86.6%	86.0%	86.2%	86.1%
NAIVE BAYES	78.3%	84.9%	77.7%	78.7%	76.9%
RANDOM FOREST	76.2%	82.4%	76.1%	72.8%	73.6%

The linear SVC has a high TPR among all the models, most of the classes had a low FNR and FPR but the Depression class had an alarming FNR and FPR

# DEEP LEARNING



Epoch	TRAINING LOSS	VALIDATION LOSS	ACCURACY
1	0.333700	0.357436	0.872796
2	0.333700	0.378415	0.881210
3	0.268800	0.412097	0.885951

# CONCLUSION

Roberta model demonstrated high accuracy and effectiveness in understanding language and detecting patterns in mental health data, outperforming traditional machine learning models.

Anxiety , normal ,depression and stress were the most common mental health condition.

Most of our models were misclassifying depression texts evident with high FPR and FNR

# RECOMMENDATION

1

Future researchers should fine tune our model to further increase the accuracy and performance in order to reduce misclassification

2

Refresh the training data set periodically with new real world text to capture evolving language patterns, slang and mental health expressions not present

3

We identified anxiety, normal, depression and stress as the most common mental health conditions, so we should have readily available resources, and medications to help individuals with anxiety, depression, and stress.

4

Expand multi-lingual capability beyond English and Swahili to increase inclusivity and improve applicability across additional African contexts

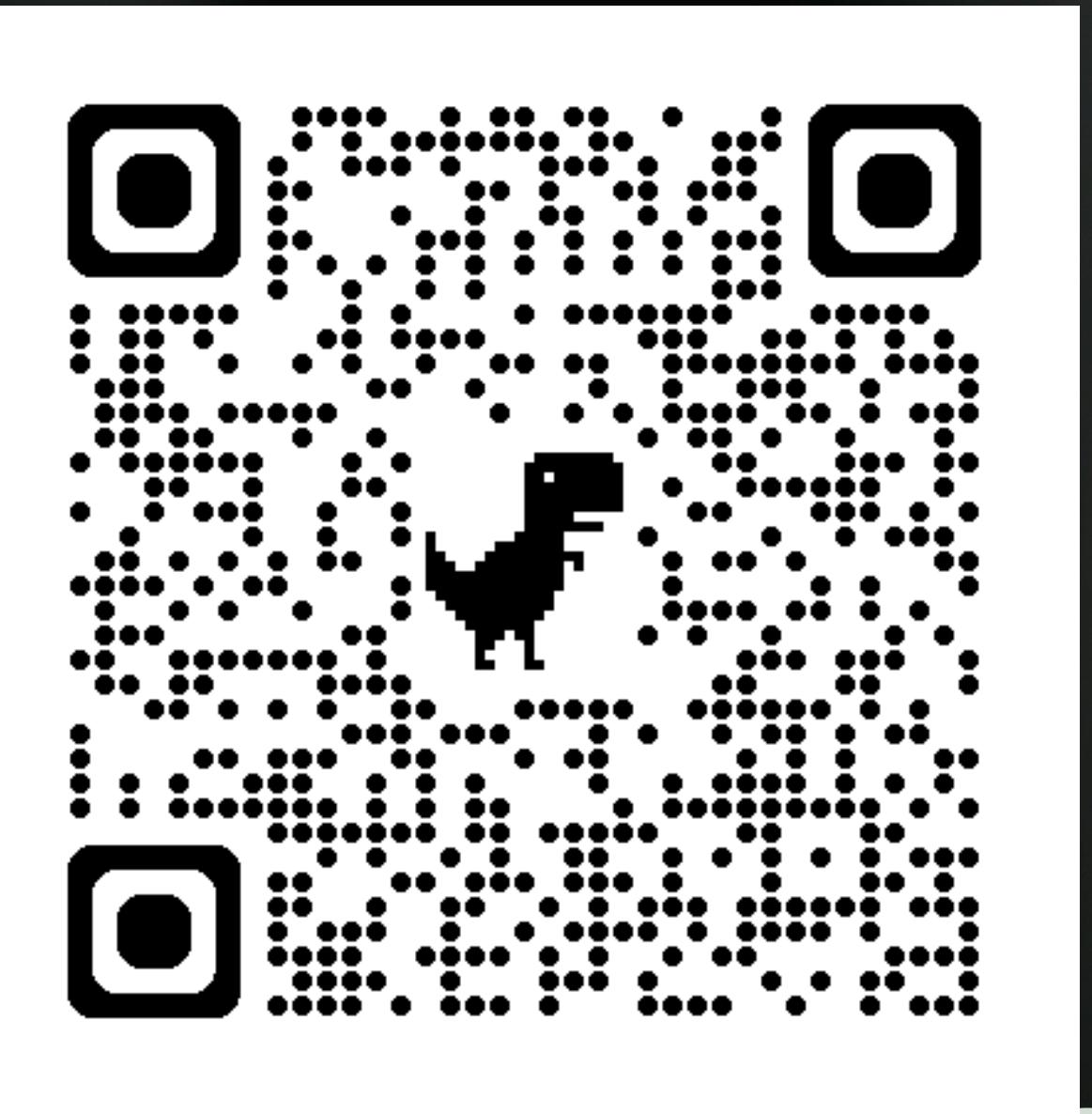
# **YOUR PRIVATE FIRST STEP: ACCESSIBLE AND INTUITIVE SELF-CHECK**

## ***SIMPLE INTERFACE***

We offer a straightforward, intuitive interface where users can input their thoughts and receive immediate, preliminary feedback on their mental state.

## ***Low-Barrier Access***

It offers a safe and accessible first step for those hesitant to seek help, but it's not a replacement for professional care—users should always consult a qualified mental health provider.



# THANK YOU

*Questions & Discussion*

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We welcome your insights, questions, and feedback on how this technology can best serve your practice and advance mental health care accessibility.

***Seeking help is a sign of strength, not weakness.***