



# Classifying Mental Health Disorders from Reddit Posts

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# Goals & Data Collection

- Predict four categories of Mental Health illnesses by what a Reddit user has posted.
- Classes: Depression, Anxiety, Bipolar, Suicide.
- Looking primarily at accuracy score & model's ability to correctly predict SuicideWatch (arguably the most important).





# Text Cleaning & Additional Features

I am currently just bored, of everything.

TEXT CLEANING

[current, just, bored,  
everything]

SENTIMENT ANALYSIS

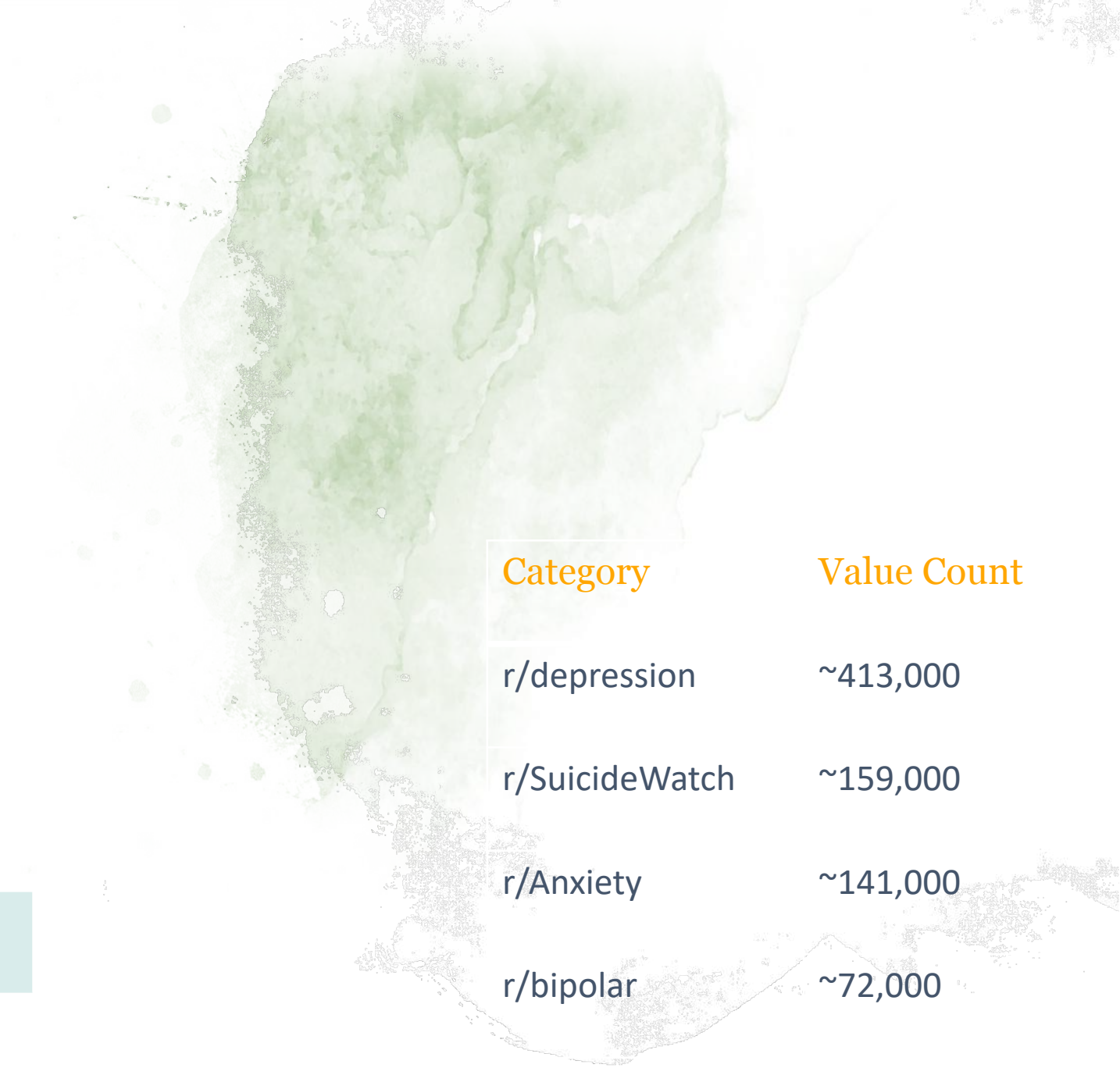
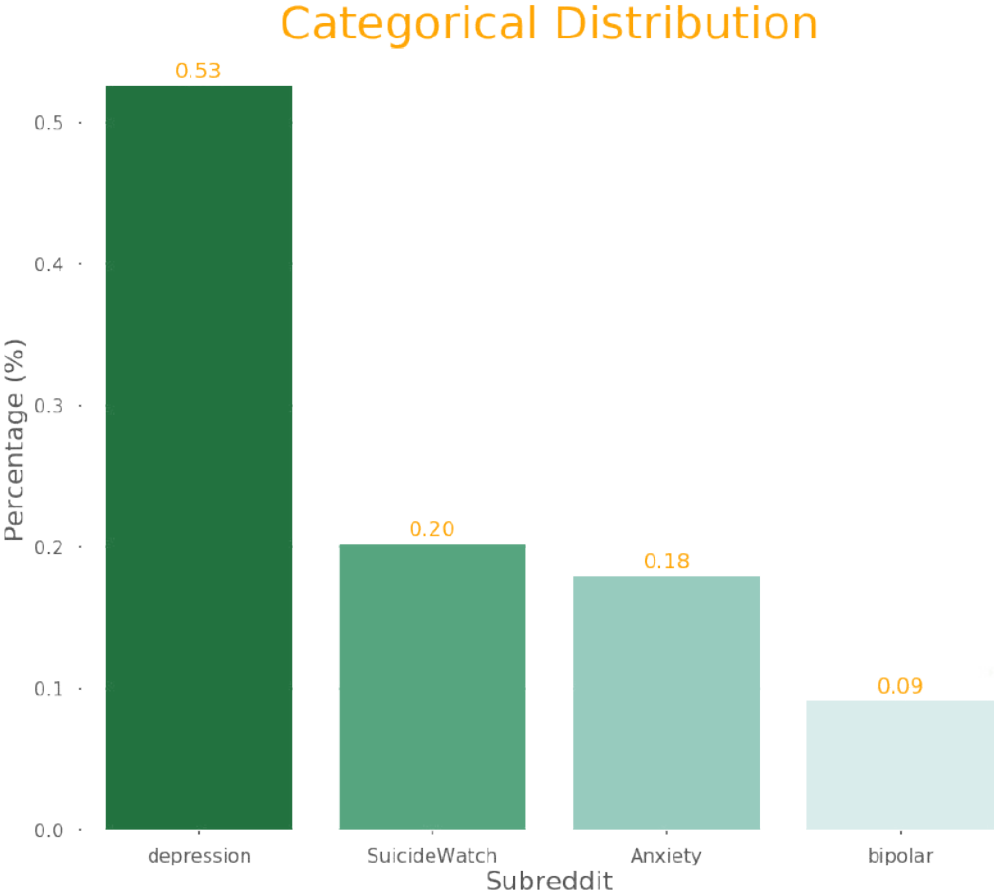
[current (0),  
just (0),  
bored (-0.4),  
everything(-0.15)]

PART OF SPEECH

[current (0, RB),  
just (0, RB),  
bored (-0.4, VBN),  
everything(-0.15, NN)]

WORD COUNT

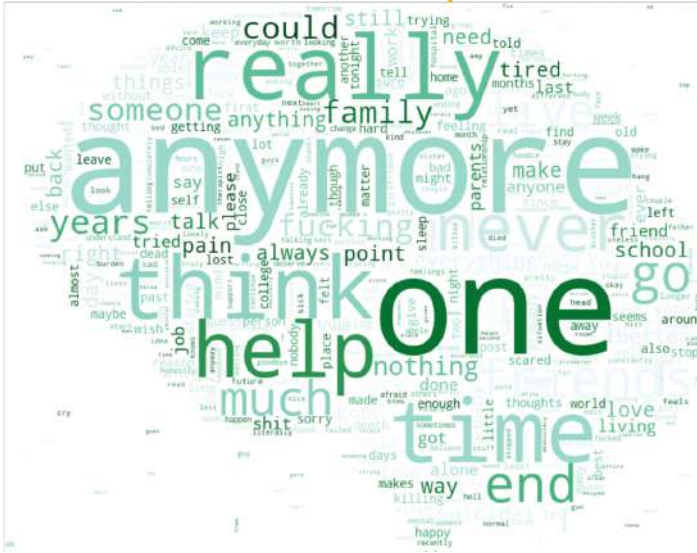
# Final Class Distributions



Category	Value Count
r/depression	~413,000
r/SuicideWatch	~159,000
r/Anxiety	~141,000
r/bipolar	~72,000



## Word Clouds (cvec & tvec )



## Depression Word Importance



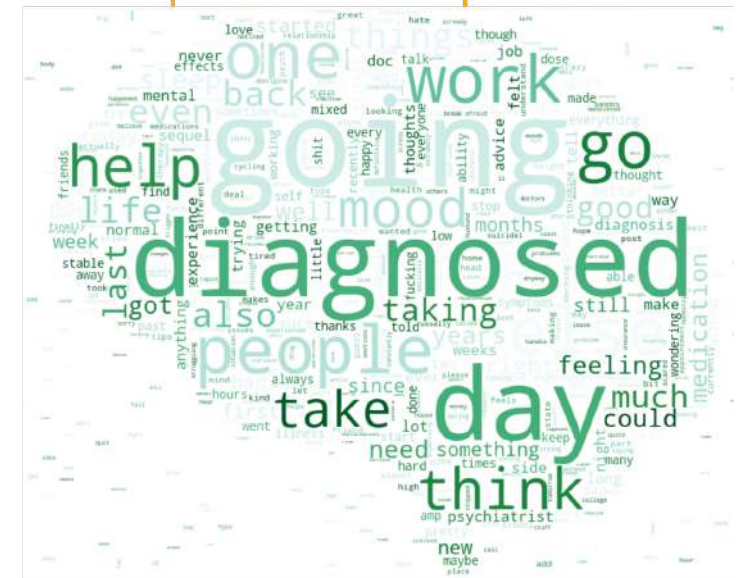
## Word Count for all Subreddits



## Anxiety Word Importance



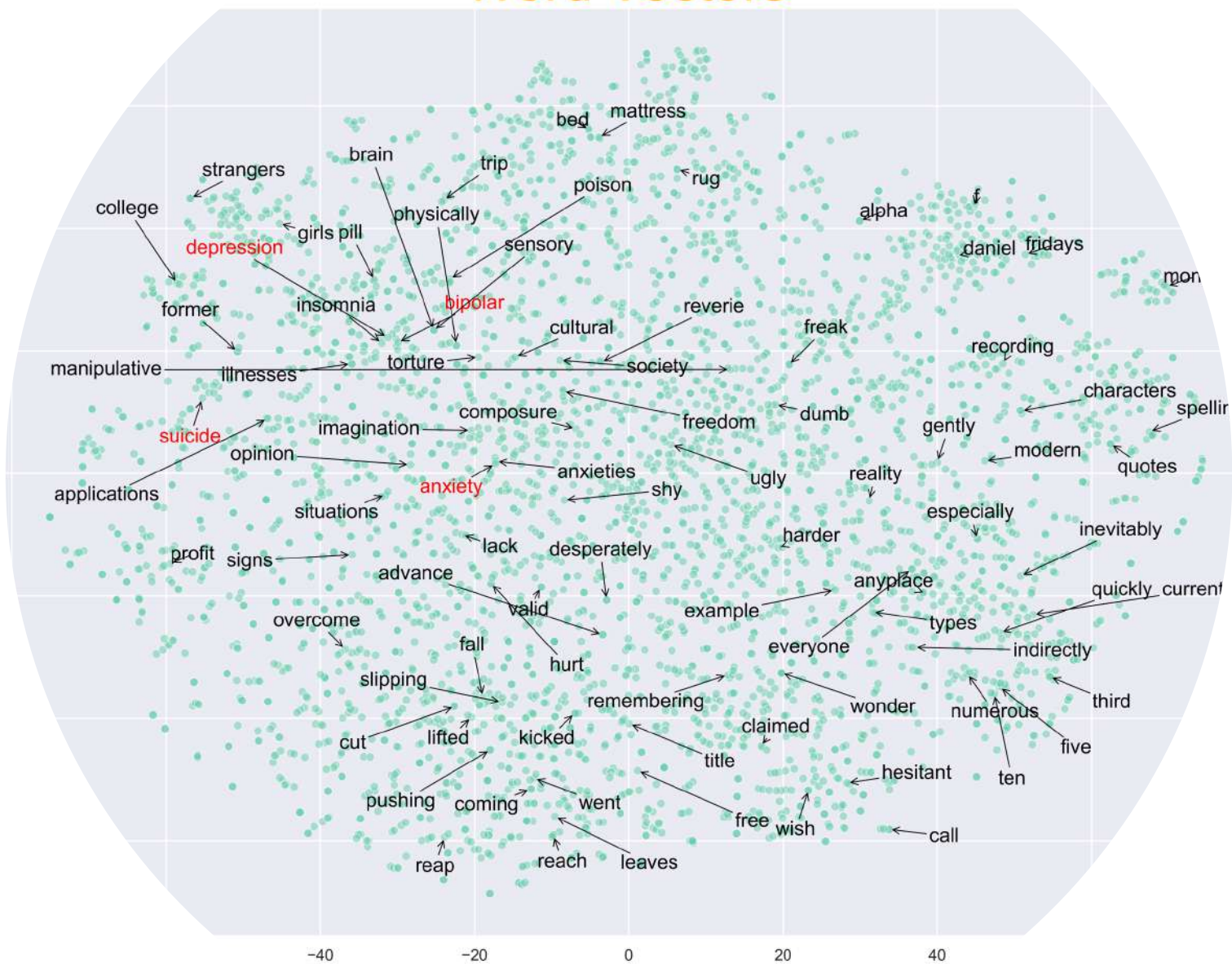
## Bipolar Word Importance



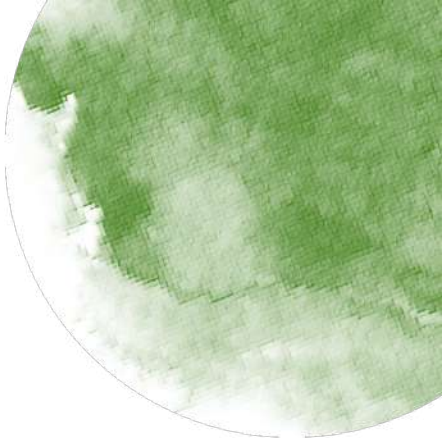


# Word2Vec

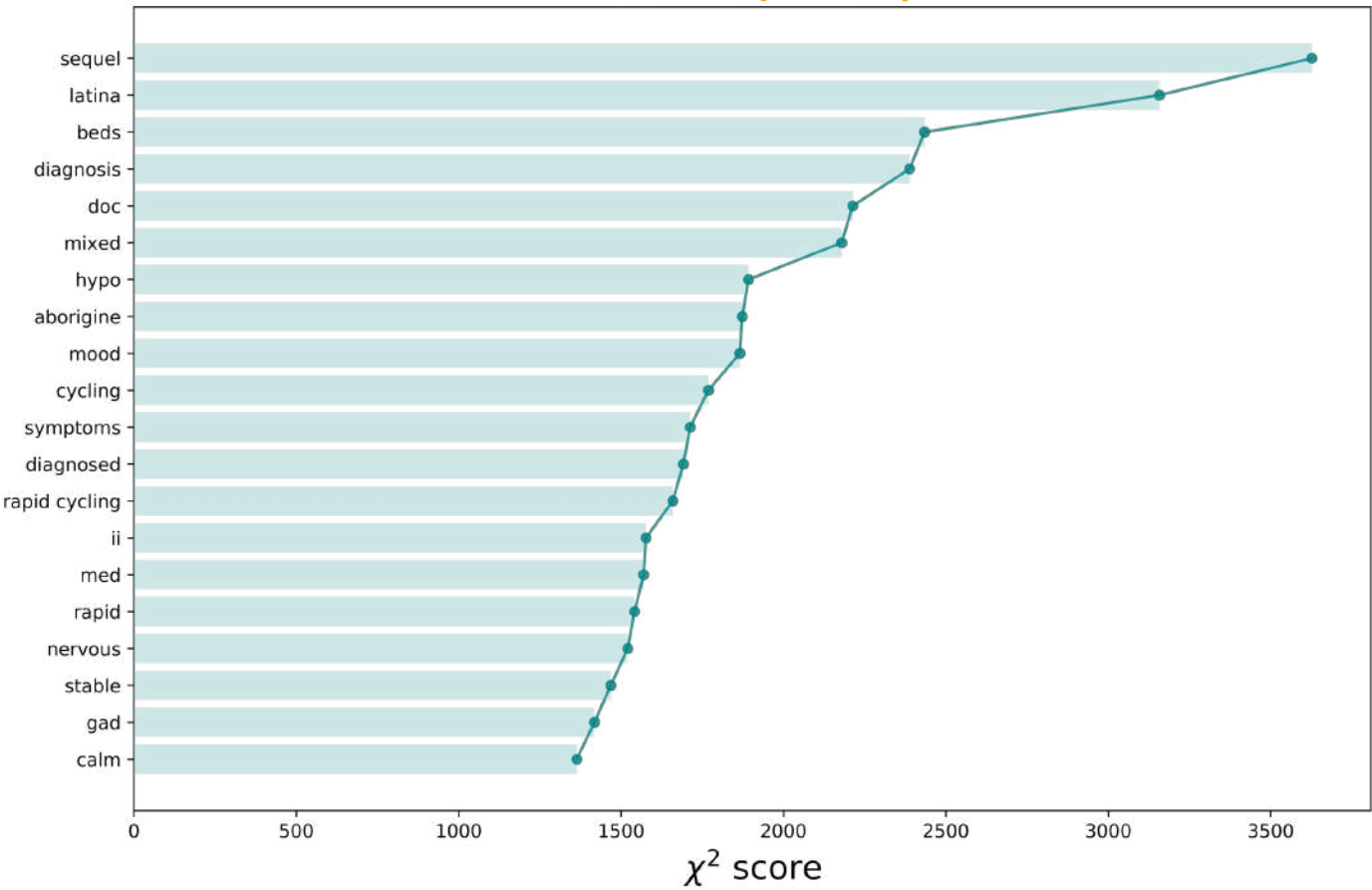
## Word Vectors



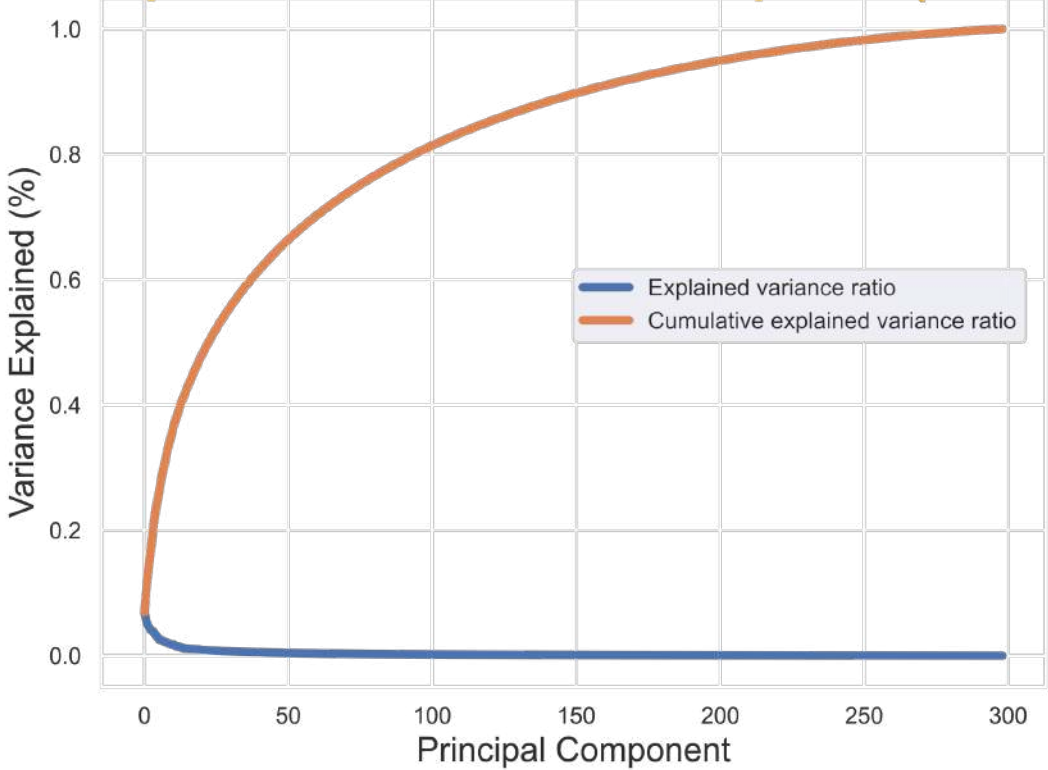
# Principle Component Analysis



Chi2(tfidf)

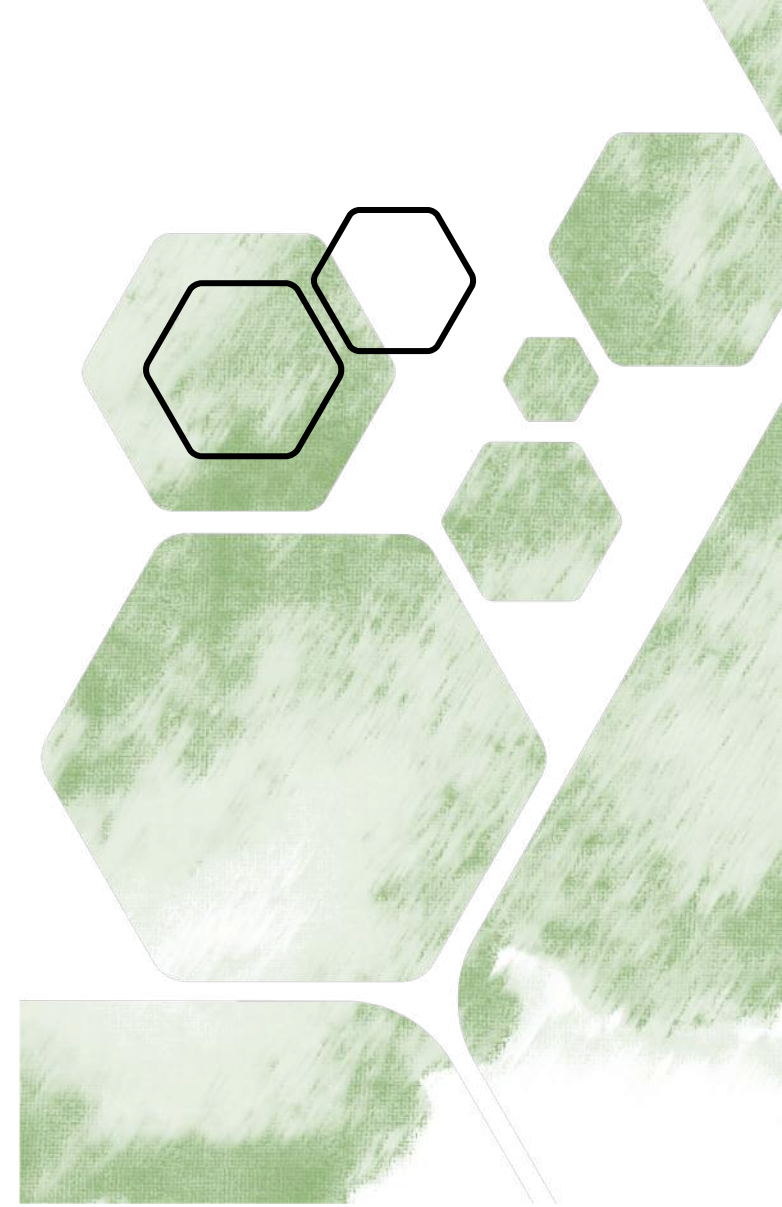
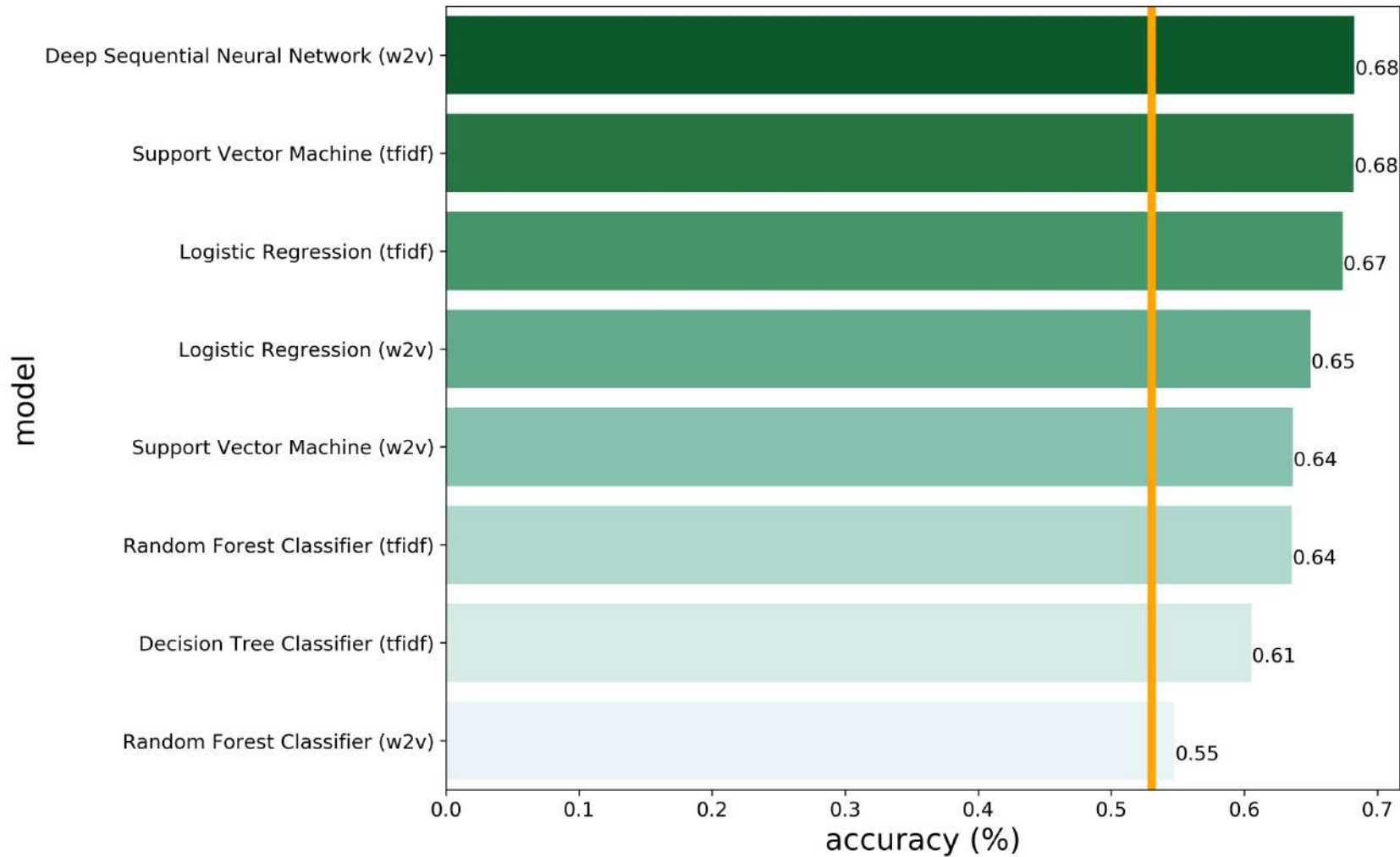


Explained variance plot (w2v)



# Modelling

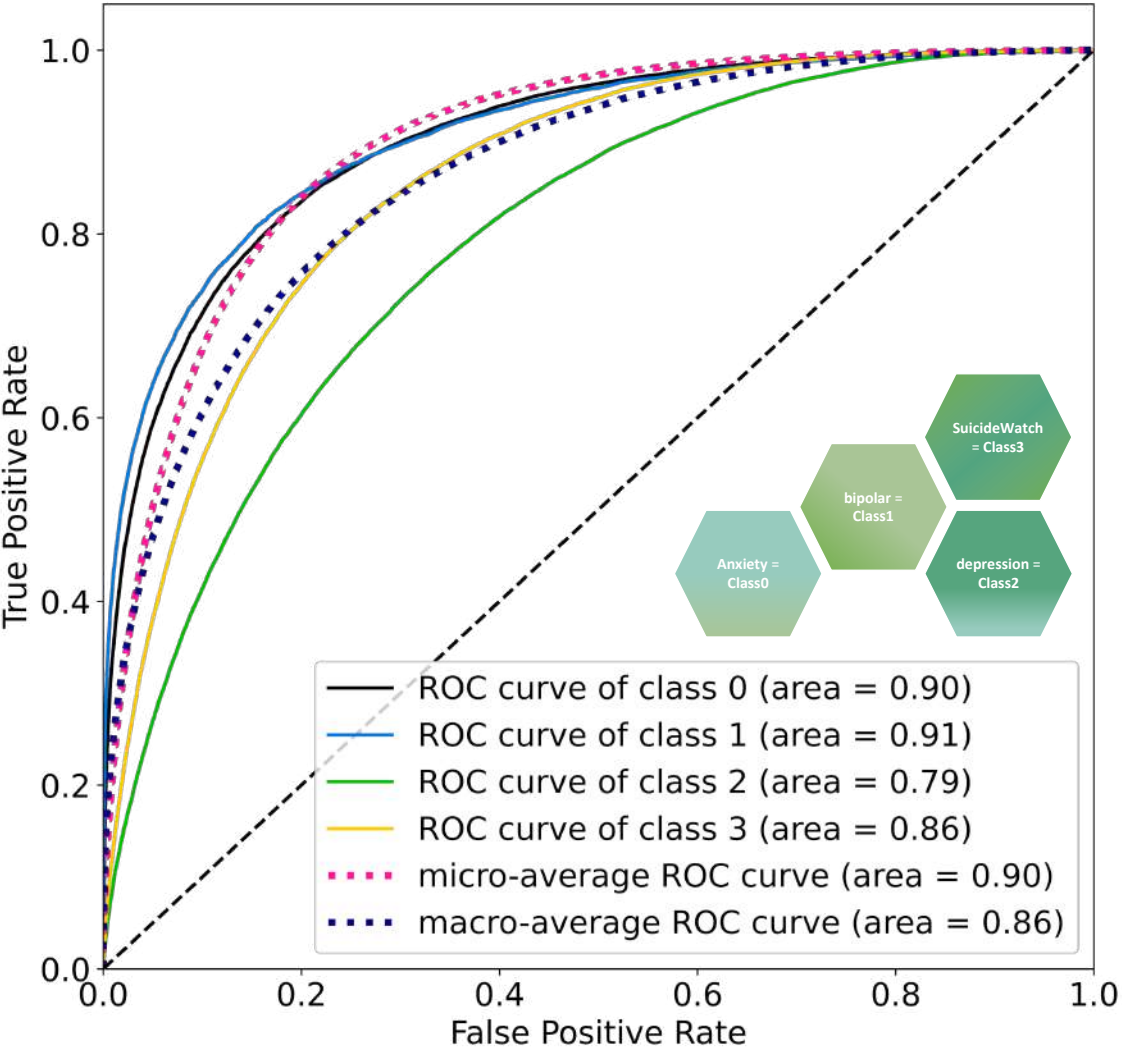
## Model Evaluation





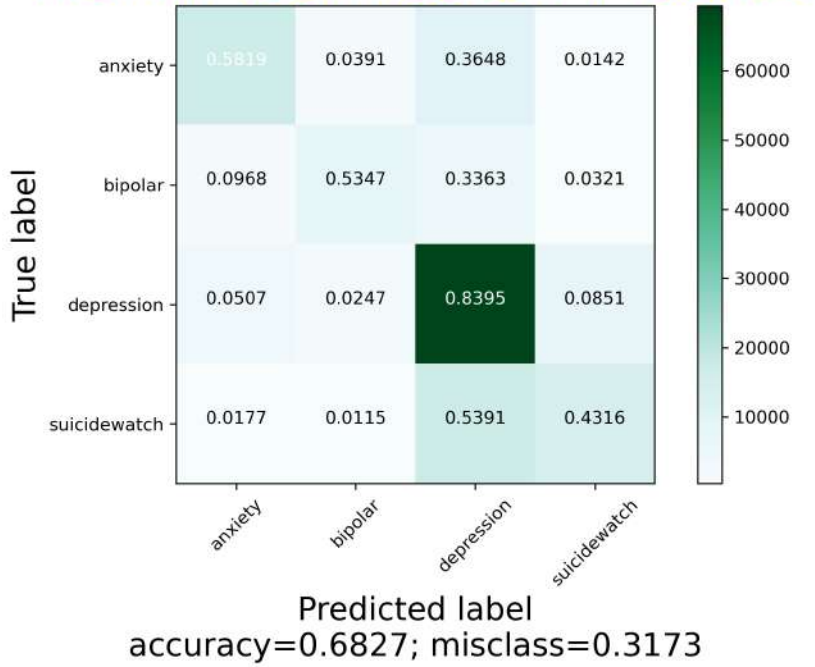
# Deep Sequential NN (w2v)

## ROC Curves NN



	precision	recall	f1-score	support
Anxiety	0.73	0.58	0.65	28216
bipolar	0.69	0.53	0.60	14375
depression	0.68	0.84	0.75	82697
SuicideWatch	0.63	0.43	0.51	31840
accuracy			0.68	157128
macro avg	0.68	0.60	0.63	157128
weighted avg	0.68	0.68	0.67	157128

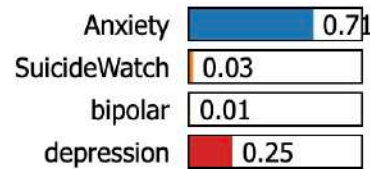
## Norm Confusion Matrix



# Anxiety Post

i think everybody secretly hates me my anxiety is so bad to the point where whenever i see people whispering or gossiping i always assume it is about me and feel like they hate me or they are judging me i think it comes from my bad high school experience where i had that happen to me and i was always seeing girls whispering and staring at me whilst they were making fun of me i just do not know how it turn it off and stop being so paranoid that everyone secretly hates me it makes me feel crazy

Prediction probabilities

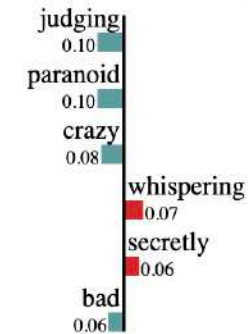
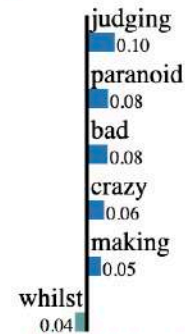


NOT Anxiety

Anxiety

NOT depression

depression

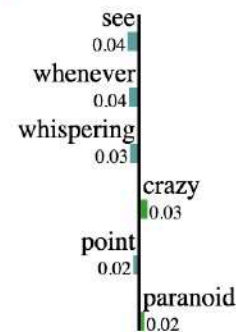
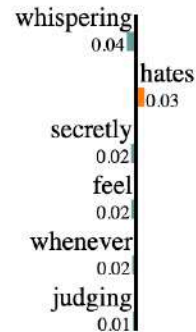


NOT SuicideWatch

SuicideWatch

NOT bipolar

bipolar



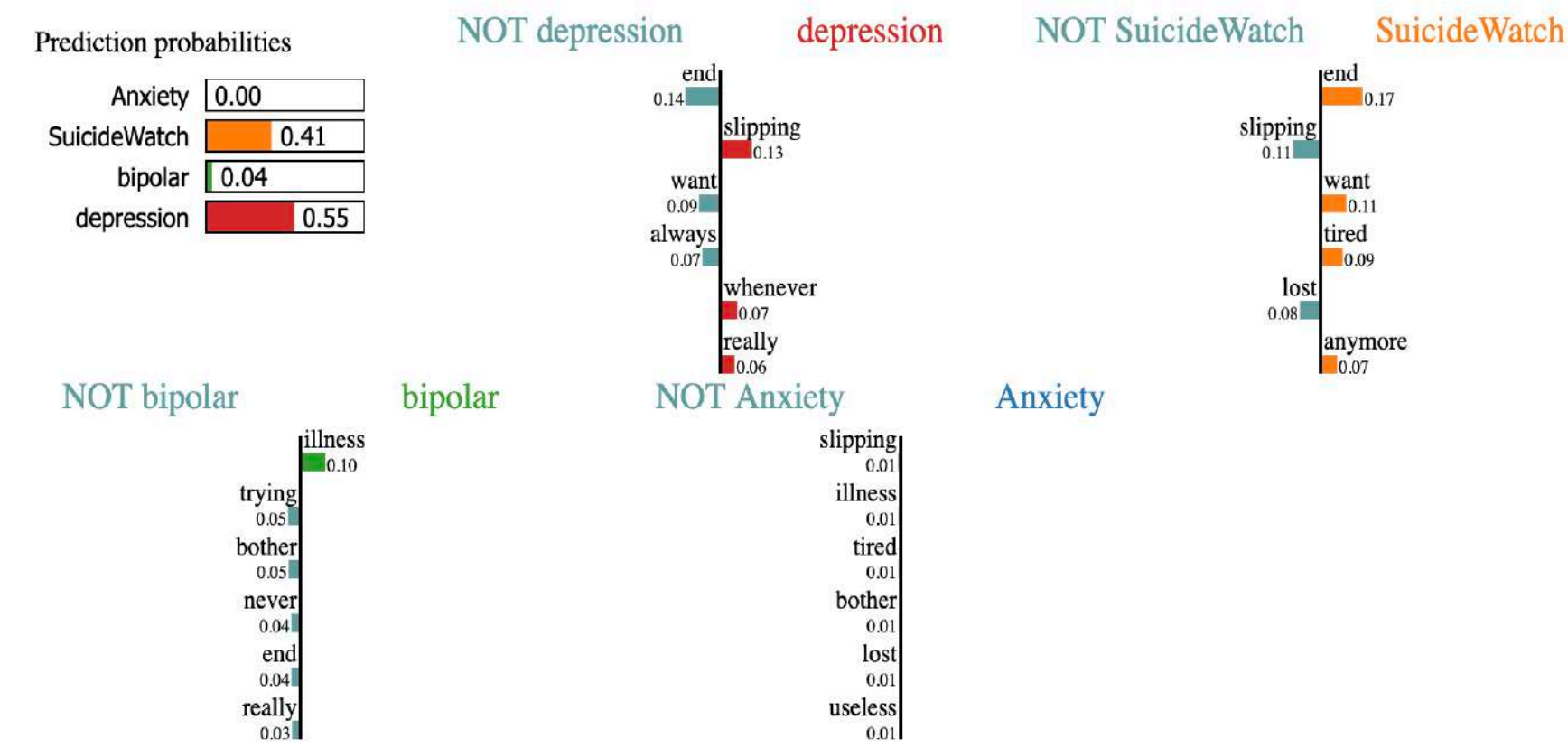
## Text with highlighted words

i think everybody secretly hates me my anxiety is so **bad** to the point where whenever i see people whispering or gossiping i always assume it is about me and feel like they hate me or they are **judging** me i think it comes from my **bad** high school experience where i had that happen to me and i was always seeing girls whispering and staring at me whilst they were **making** fun of me i just do not know how it turn it off and stop being so **paranoid** that everyone secretly hates me it makes me feel **crazy**



# Depression Post

why now why does it always come back why is it that i start slipping back into depression whenever i try to better my life so many lost opportunities and friendships to this damn illness i do not even know why i bother trying to better myself anymore i will just pick myself up enough to fall harder and lose more of my will to keep going i really am useless i will never be worth anyone time i am tired of trying i just want this to end



## Text with highlighted words

why now why does it **always** come back why is it that i start **slipping** back into depression **whenever** i try to better my life so many lost opportunities and friendships to this damn illness i do not even know why i bother trying to better myself anymore i will just pick myself up enough to fall harder and lose more of my will to keep going i **really** am useless i will never be worth anyone time i am tired of trying i just **want** this to **end**



# Future Plans

- Oversampling.
- Only use posts with longer word counts.
- Apply NLP to sentence structure rather than just words (Doc2Vec)
- Clustering.
- Predict likelihood of author to post on SuicideWatch given their language.



A rectangular piece of paper with a green and white marbled pattern, featuring a light blue rectangular sticker with the text "THE END." in orange.

**THE END.**