

DO YOU GET

PANIC NOW?

Burhan Rafid Ekatama

Student of Data Science Bootcamp 19

TABLE OF CONTENTS

01

PROBLEM OVERVIEW

02

DATA UNDERSTANDING

03

MODELLING AND RECOMMENDATION

04

QUESTION AND SOCIETY INSIGHT

Why people in China are panic buying canned yellow

'People Are Terrified': Panic Sweeps Kabul As Taliban Moves Toward Afghan Capital

in China has sparked panic buying of fever remedies such as...

Gempa
Panik

Fear and panic is gripping residents of the Afghan capital as Taliban militants march toward the city following a blistering offensive in which they have...

Gempa 15 Des 2022

K 4 Anxiety aftercare: What real people do next after a panic attack

Three Metro.co.uk readers have their say on their next steps after having anxiety, and what helps them manage their symptoms.

1 bulan lalu

Dekat Jadi Raja HP Dunia

ia menjadi salah satu pasar ekonomi terbesar di dunia miliar orang

Lahan Rumbia di Aceh Besar an

cana Daerah (BPBD) Aceh Besar, Ridwan Jamil : nelayan rumbia dan daun

People in north Tips jika tiba-tiba bertemu
quakes that kill panik. Halaman all.

21 Feb 2023 11 jam lalu

1j 'Why do something like that?': Deadly shooting near Gorge leaves people in fear and panic

By clicking "Accept All Cookies", you agree to the storing of cookies on your device to enhance site navigation, analyze site usage, and assist in our...

12 jam lalu

Kenali Apa Itu Anxiety dan Cara Mengata Kompas.com

Anxiety disorder adalah gangguan kesehatan mental yang membuatenderitanya merespons hal dan situasi tertentu dengan ketakutan berlebihan.

7 Apr 2023

nnments, reviving eerie memories...



Panic attacks are feelings of intense **fear and anxiety**. Panic attacks often occur when a person is worried about something in their life or has experienced **something very difficult and stressful** (www.unicef.org)



Anxiety is a feeling of **discomfort**, such as **worry or fear**, that can be mild or severe. For example, feeling worried and anxious when facing exams, when going to undergo medical tests or job interviews (www.nhs.uk)

PROBLEM OVERVIEW

The processed data consisted of 120,000 respondents

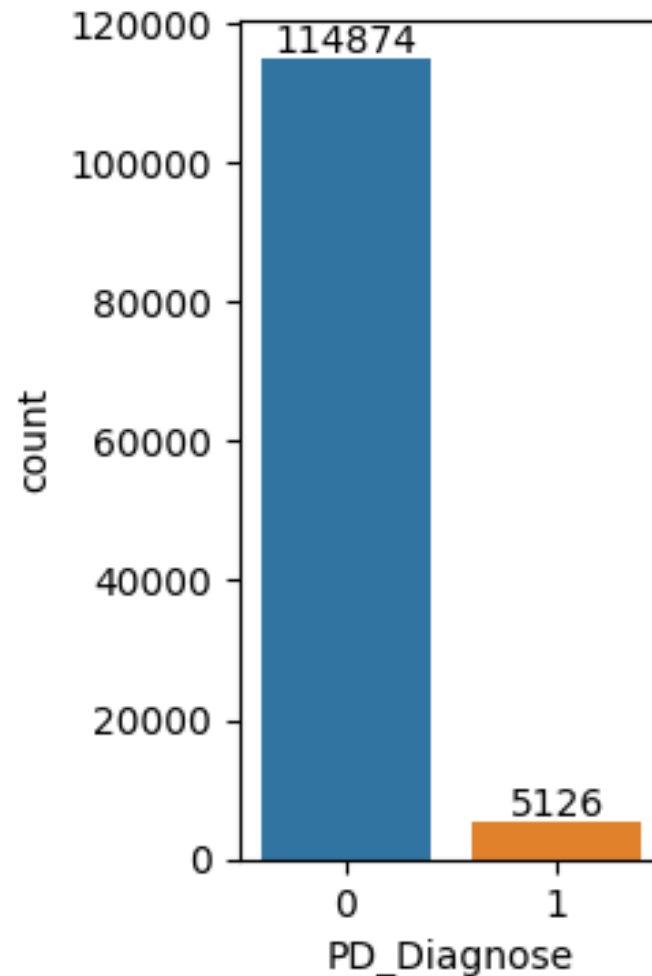
Goals:

1. Predict the best model for patients who are suspected of having panic disorder or not
2. Providing insight to the wider community about panic disorder

PROBLEM OVERVIEW

Positive vs Negative Panic Disorder

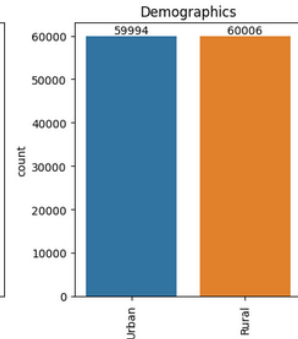
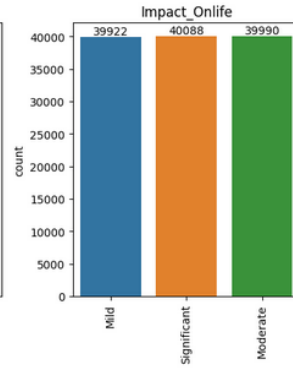
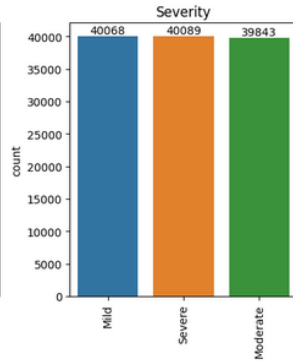
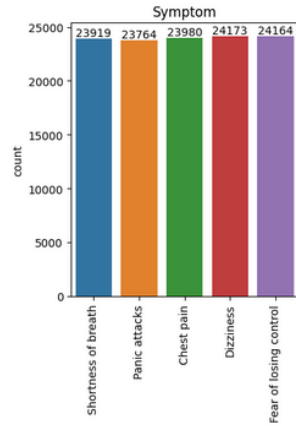
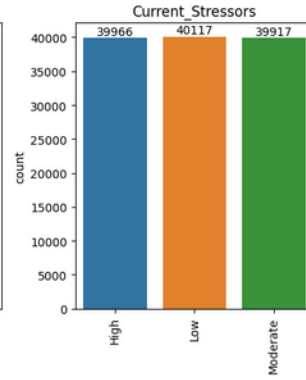
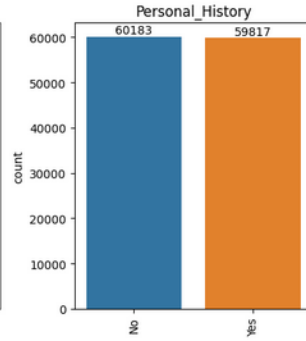
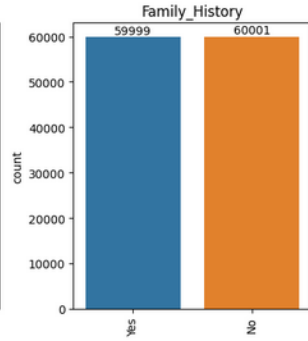
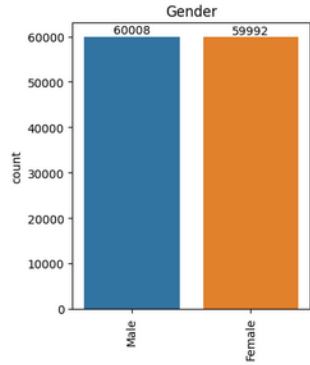
Out of 120,000 respondents, there were 5126 respondents (**4.27%**) who **positively** Panic Disorder



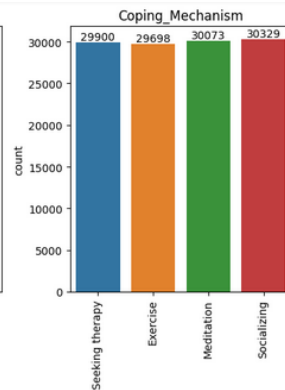
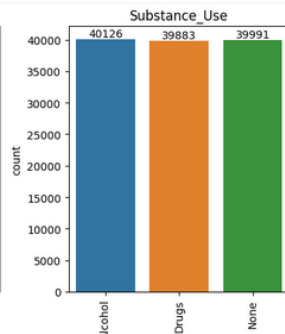
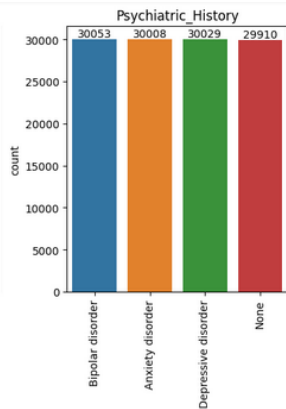
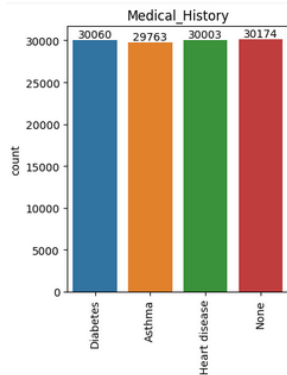
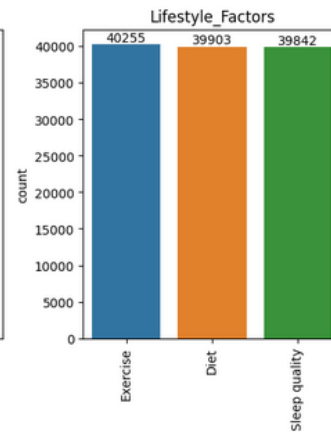
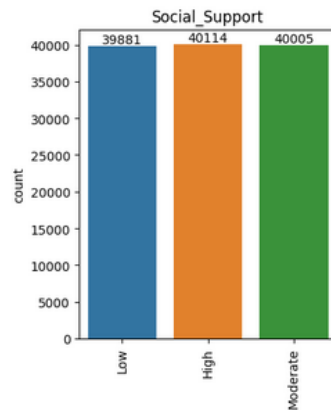
```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 120000 entries, 0 to 119999
Data columns (total 17 columns):
#   Column                Non-Null Count  Dtype
---  -
0   ID                    120000 non-null  int64
1   Age                  120000 non-null  int64
2   Gender               120000 non-null  object
3   Family_History       120000 non-null  object
4   Personal_History     120000 non-null  object
5   Current_Stressors    120000 non-null  object
6   Symptom              120000 non-null  object
7   Severity             120000 non-null  object
8   Impact_Onlife        120000 non-null  object
9   Demographics         120000 non-null  object
10  Medical_History      120000 non-null  object
11  Psychiatric_History  120000 non-null  object
12  Substance_Use        120000 non-null  object
13  Coping_Mechanism     120000 non-null  object
14  Social_Support       120000 non-null  object
15  Lifestyle_Factors    120000 non-null  object
16  PD_Diagnose          120000 non-null  int64
```

DATA UNDERSTANDING

DATA INSIGHT



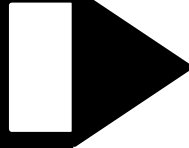
DATA INSIGHT



MODELLING AND RECOMENDATION

Data Engineering

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 120000 entries, 0 to 119999
Data columns (total 17 columns):
#   Column                Non-Null Count  Dtype
---  -
0   ID                    120000 non-null int64
1   Age                  120000 non-null int64
2   Gender               120000 non-null object
3   Family_History       120000 non-null object
4   Personal_History     120000 non-null object
5   Current_Stressors    120000 non-null object
6   Symptom              120000 non-null object
7   Severity            120000 non-null object
8   Impact_Onlife       120000 non-null object
9   Demographics         120000 non-null object
10  Medical_History      120000 non-null object
11  Psychiatric_History  120000 non-null object
12  Substance_Use        120000 non-null object
13  Coping_Mechanism     120000 non-null object
14  Social_Support       120000 non-null object
15  Lifestyle_Factors    120000 non-null object
16  PD_Diagnose          120000 non-null int64
```



```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 120000 entries, 0 to 119999
Data columns (total 34 columns):
#   Column                Non-Null Count  Dtype
---  -
0   ID                    120000 non-null int64
1   Age                  120000 non-null int64
2   PD_Diagnose          120000 non-null int64
3   Gender_Female        120000 non-null uint8
4   Gender_Male          120000 non-null uint8
5   Symptom_Chest pain   120000 non-null uint8
6   Symptom_Dizziness    120000 non-null uint8
7   Symptom_Fear of losing control 120000 non-null uint8
8   Symptom_Panic attacks 120000 non-null uint8
9   Symptom_Shortness of breath 120000 non-null uint8
10  Demographics_Rural    120000 non-null uint8
11  Demographics_Urban    120000 non-null uint8
12  Medical_History_Asthma 120000 non-null uint8
13  Medical_History_Diabetes 120000 non-null uint8
14  Medical_History_Heart disease 120000 non-null uint8
15  Medical_History_None  120000 non-null uint8
16  Psychiatric_History_Anxiety disorder 120000 non-null uint8
17  Psychiatric_History_Bipolar disorder 120000 non-null uint8
18  Psychiatric_History_Depressive disorder 120000 non-null uint8
19  Psychiatric_History_None 120000 non-null uint8
20  Coping_Mechanism_Exercise 120000 non-null uint8
21  Coping_Mechanism_Meditation 120000 non-null uint8
22  Coping_Mechanism_Seeking therapy 120000 non-null uint8
23  Coping_Mechanism_Socializing 120000 non-null uint8
24  Lifestyle_Factors_Diet 120000 non-null uint8
25  Lifestyle_Factors_Exercise 120000 non-null uint8
26  Lifestyle_Factors_Sleep quality 120000 non-null uint8
27  Family_History_AMap   120000 non-null int64
28  Personal_History_AMap 120000 non-null int64
29  Current_Stressors_AMap 120000 non-null int64
30  Severity_AMap        120000 non-null int64
31  Impact_Onlife_AMap   120000 non-null int64
32  Substance_Use_AMap    120000 non-null int64
33  Social_Support_AMap   120000 non-null int64
```

MODELLING AND RECOMENDATION

Data Engineering

1. One Hot Encoding ('Gender', 'Symptom', 'Demographics', 'Medical_History', 'Psychiatric_History', 'Coping_Mechanism', 'Lifestyle_Factors')
2. Label Encoding ('Family_History', 'Personal_History', 'Current_Stressors', 'Severity', 'Impact_Onlife', 'Substance_Use', 'Social_Support')

MODELLING AND RECOMENDATION

Baseline Modelling

Baseline Modelling Performance

	Model	Recall	AUC	F1 Score	Accuracy
0	Logistic_Regression	0.479284	0.734999	0.570628	0.968083
1	Random_Forest	0.987759	0.993879	0.993842	0.999458
2	Decision_Tree	0.999058	0.999398	0.996712	0.999708
3	Extra_Trees	0.948211	0.974062	0.972477	0.997625
4	Gradient_Boosting	1.000000	0.999956	0.999059	0.999917

Accuracy Level for Baseline Models tend to be high (> 0.95 or above 95%). But because the data used is **Imbalance Data**, it is necessary to do **Undersampling**

MODELLING AND RECOMMENDATION

Undersampling Modelling

Using Undersampling because the data obtained is sufficient and no data synthesis is needed.

Undersampling Modelling Performance					
	Model	Recall	AUC	F1 Score	Accuracy
0	Logistic_Regression_US	0.975518	0.939651	0.481301	0.906958
1	Random_Forest_US	1.000000	0.992044	0.853355	0.984792
2	Decision_Tree_US	0.999058	0.997873	0.964984	0.996792
3	Extra_Trees_US	1.000000	0.990038	0.822937	0.980958
4	Gradient_Boosting_US	1.000000	0.998561	0.969863	0.997250

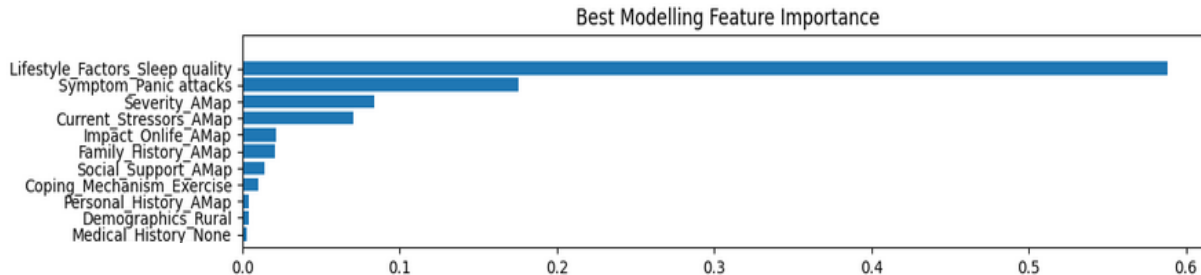
Based on the table beside, it can be concluded that the best model is the **Gradient Boosting Classifier**.

1. The highest **Accuracy** value (0.997)
2. The highest **f1 score** (0.969863)
3. High **Recall** Rate (1,000)

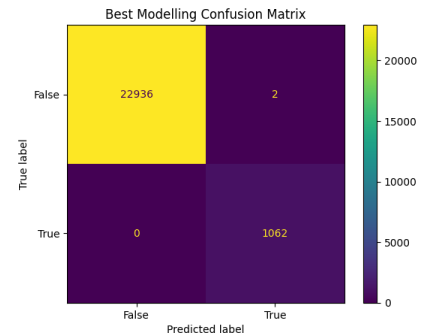
MODELLING AND RECOMMENDATION

Undersampling Modelling Performance					
	Model	Recall	AUC	F1 Score	Accuracy
4	Gradient_Boosting_US	1.000000	0.998561	0.969863	0.997250

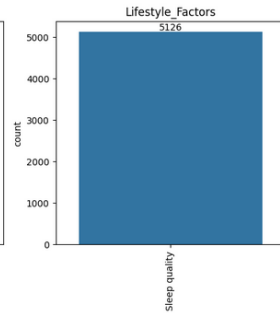
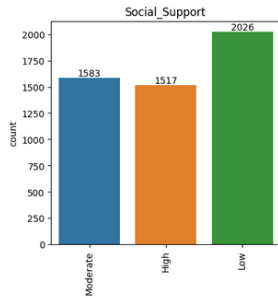
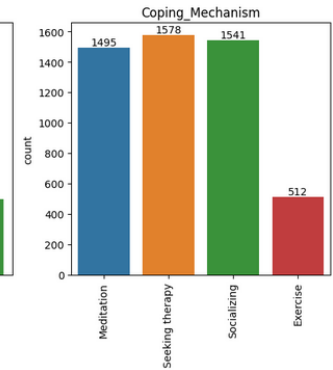
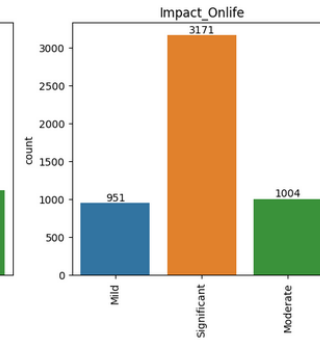
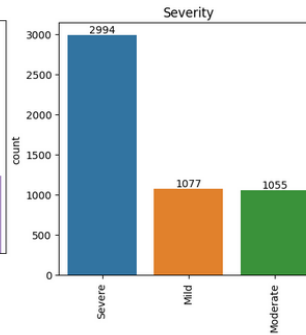
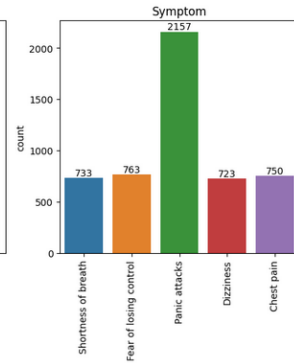
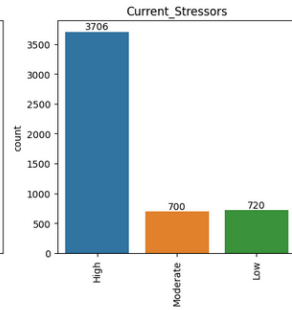
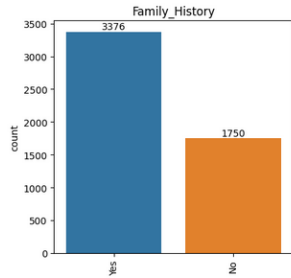
The recall value is 1,000, meaning that out of 100 people who are predicted not to have panic disorder, all of them do not experience this disorder



Based on the most influential variables in panic disorder are Lifestyle, Symptom, Severity, Current Stressor, Impact On Life of the respondent's life, Family History, Social Support, and Coping Mechanisms



QUESTION 1



Based on all positive Panic Disorder patients, the highest factor of the most influential variables is:

- **Yes** from the Family History (65.86%)
- **High** from Current Stressors (72.3%)
- **Panic Attacks** from Symptom (42.08%)
- **Severe** from Severity (58.41%)
- **Significant** from the Impact On Life (61.86%)
- **Seeking Therapy** from the Coping Mechanism (30.78%)
- **Low** from the Social Support (39.52%)
- **Sleep Quality** from Lifestyle Factors (100%)

QUESTION 2

Compare by Gender with Highest Value Each Factors		
Gender	Female	Male
mod_Family_History	Yes	Yes
mod_Personal_History	Yes	Yes
mod_Current_Stressors	Moderate	Moderate
mod_Symptom	Shortness of breath	Shortness of breath
mod_Severity	Severe	Severe
mod_Impact_Onlife	Significant	Significant
mod_Demographics	Urban	Urban
mod_Medical_History	None	None
mod_Psychiatric_History	None	None
mod_Substance_Use	None	None
mod_Coping_Mechanism	Socializing	Socializing
mod_Social_Support	Moderate	Moderate
mod_Lifestyle_Factors	Sleep quality	Sleep quality

Try to **compare between men and women** who experience panic disorder

It turns out that both men and women who experience panic disorder overall have the **same background**

QUESTION 3

```
Age
(0, 20]      340
(20, 30]    1032
(30, 40]    1050
(40, 50]    1123
(50, 70]    1581
Name: PD_Diagnose, dtype: int64
```

Try to separate them from positive panic disorder respondents, **divided by age**

- There was a **significant increase** in patients between the ages of 0-20 and the ages of 20-30 (692 patients)
- It turns out that the **older a respondent** is, the **more susceptible** he is to panic disorder

SOCIETY INSIGHT

Panic attack is a sudden onset of **intense fear and triggers** a severe **physical reaction** when perceived danger. When a panic attack occurs, it can result in **losing control**, or even having a **heart attack**.

If a person experiences **repeated and unexpected** panic attacks, and spends a **long time in constant fear**, that person may have a condition called panic disorder.

SOCIETY INSIGHT

- For some people, panic disorder can lead to **agoraphobia** (phobia of crowded environments).
- There is no sure way to prevent Panic Attacks or Panic Disorder. However, some things to relieve can be done by:
 1. Get treatment as soon as possible to help stop it getting worse or becoming more frequent.
 2. Consult an expert for treatment to prevent recurrence or worsening of symptoms.
 3. Get regular physical and social activity, which can play a role in reducing the symptoms of panic attacks.

SOCIETY INSIGHT

- Based on the best model chosen, it is hoped that it can **more quickly detect** a person or patient who is suspected of having Panic Disorder. Because the faster the first treatment of a patient can increase the percentage of recovery from that patient.
- From the several main factors that cause Panic Disorder that have been mentioned previously, it can be a **reference for public** to pay more attention to other people around them who are felt to have positive signs to be able to help **immediately**.

REFERENCES

- <https://www.unicef.org/indonesia/id/kesehatan-mental/artikel/serangan-panik>
- <https://www.nhs.uk/mental-health/conditions/generalised-anxiety-disorder/overview/>
- <https://www.mayoclinic.org/diseases-conditions/panic-attacks/symptoms-causes/syc-20376021>



Thankyou.

Reach me out anytime:



LINK PROJECT