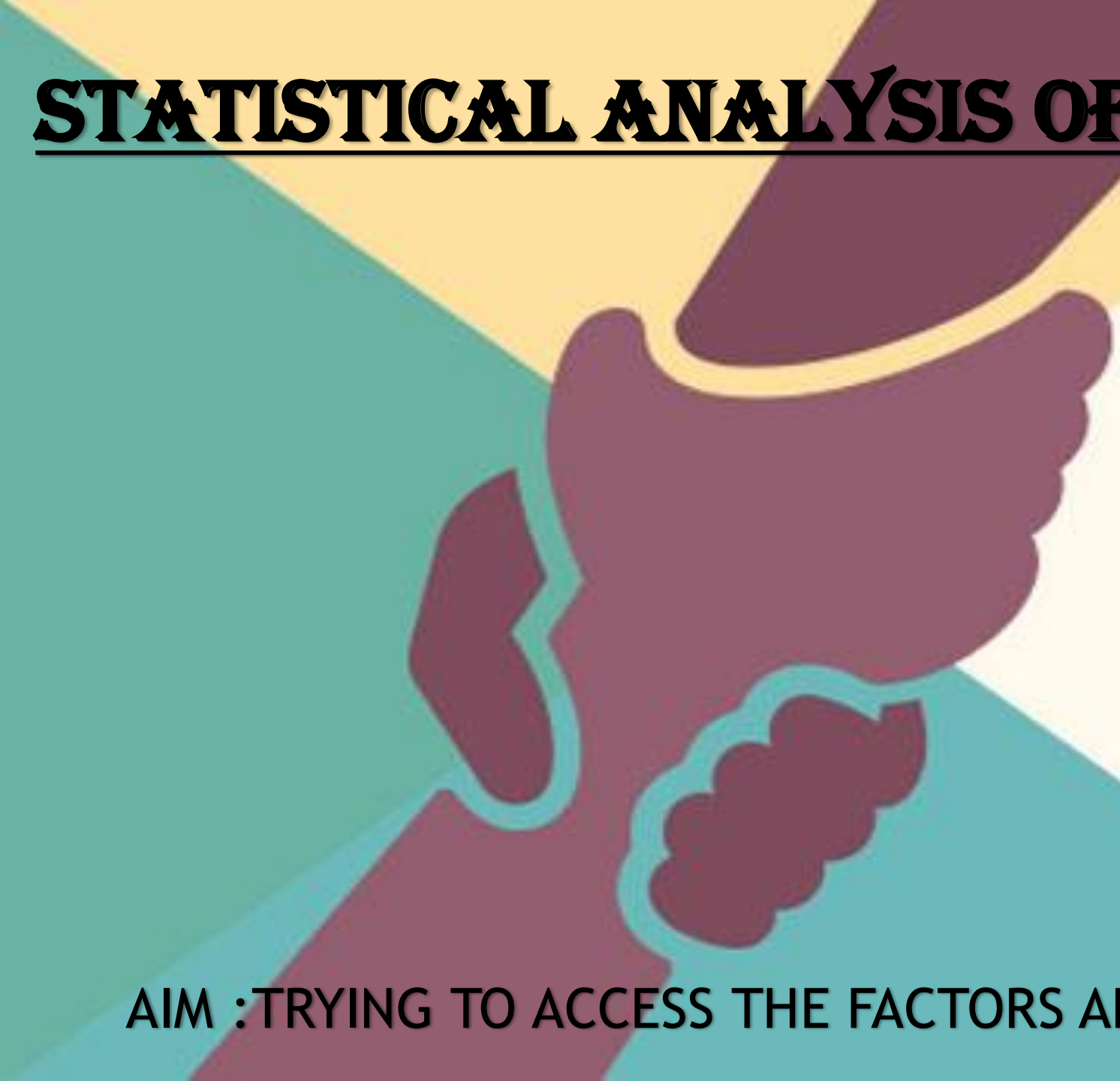
# STATISTICAL ANALYSIS OF MENTAL HEALTH



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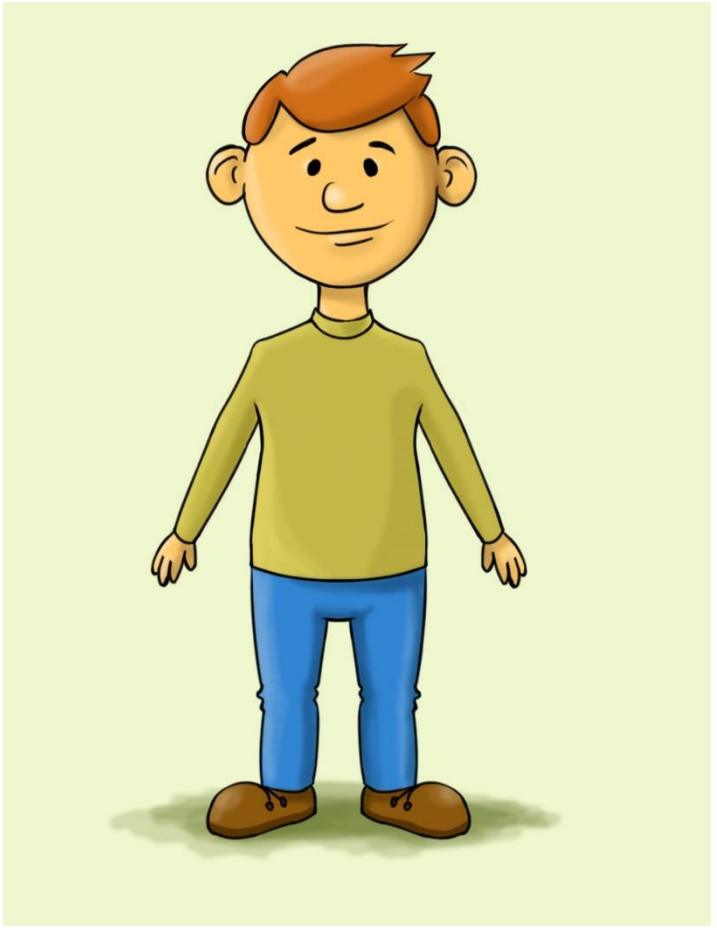
RUTUJA PATIL

AIM :TRYING TO ACCESS THE FACTORS AFFECTING MENTAL HEALTH.

# WHICH PERSON HAS MENTAL HEALTH ISSUES ACCORDING TO YOU?



## ❖ What is mental health?

Mental health includes our emotional, psychological and social well-being.

## ❖ Motivation to study ?

- It is a major aspect at every stage.
- Many people are not aware about it.
- This analysis aimed to Increase screening about the factors affecting mental health.

**Rising mental health problems need urgent action!!!**

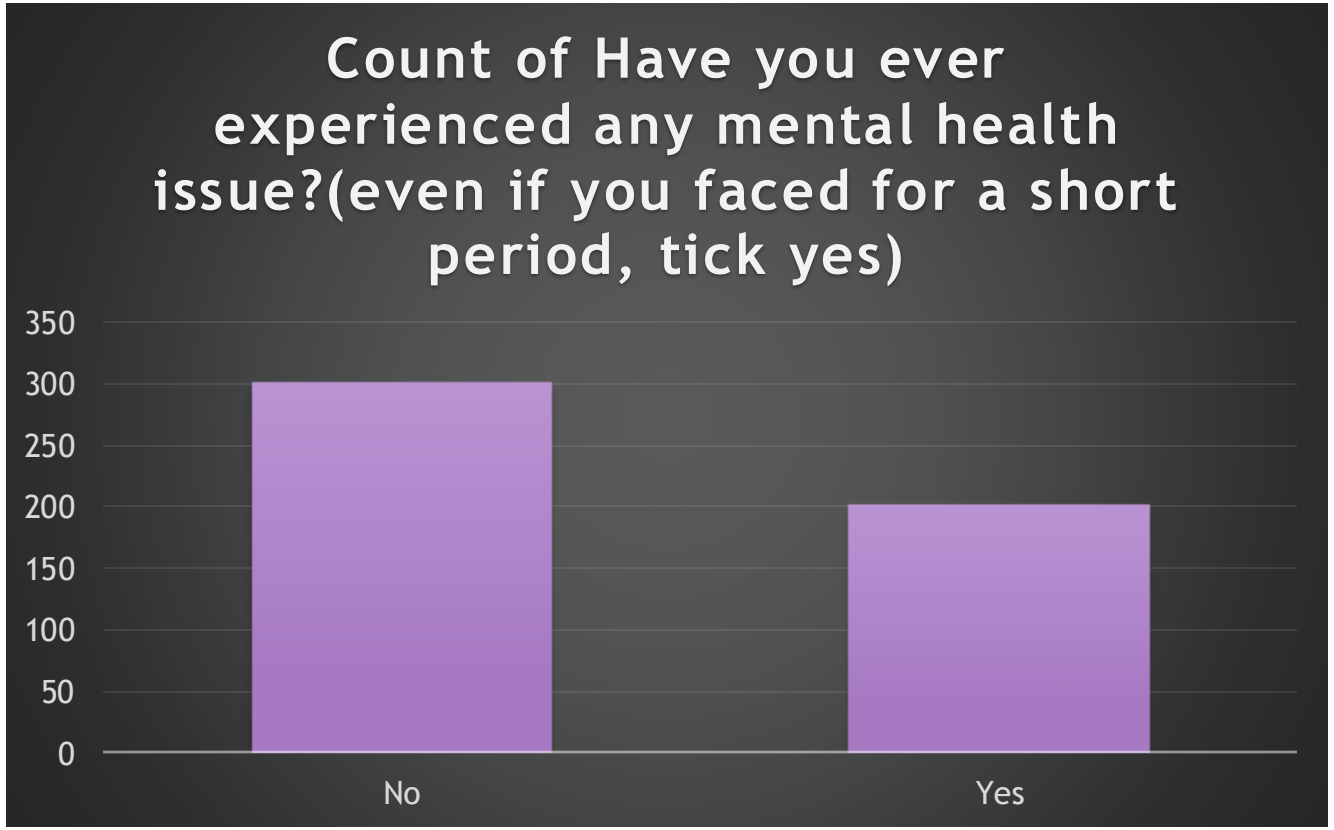
# OBJECTIVES

- EFFECT OF SOCIAL DEMOGRAPHIC FACTORS ON YOUR MENTAL HEALTH
- TO STUDY THE MAJOR FACTOR(causes) AFFECTING MENTAL HEALTH
- TO STUDY THE EFFECTS OF FACTORS AFFECTING MENTAL HEALTH
- TO STUDY THE PROTECTIVE MEASURES FOR MENTAL HEALTH

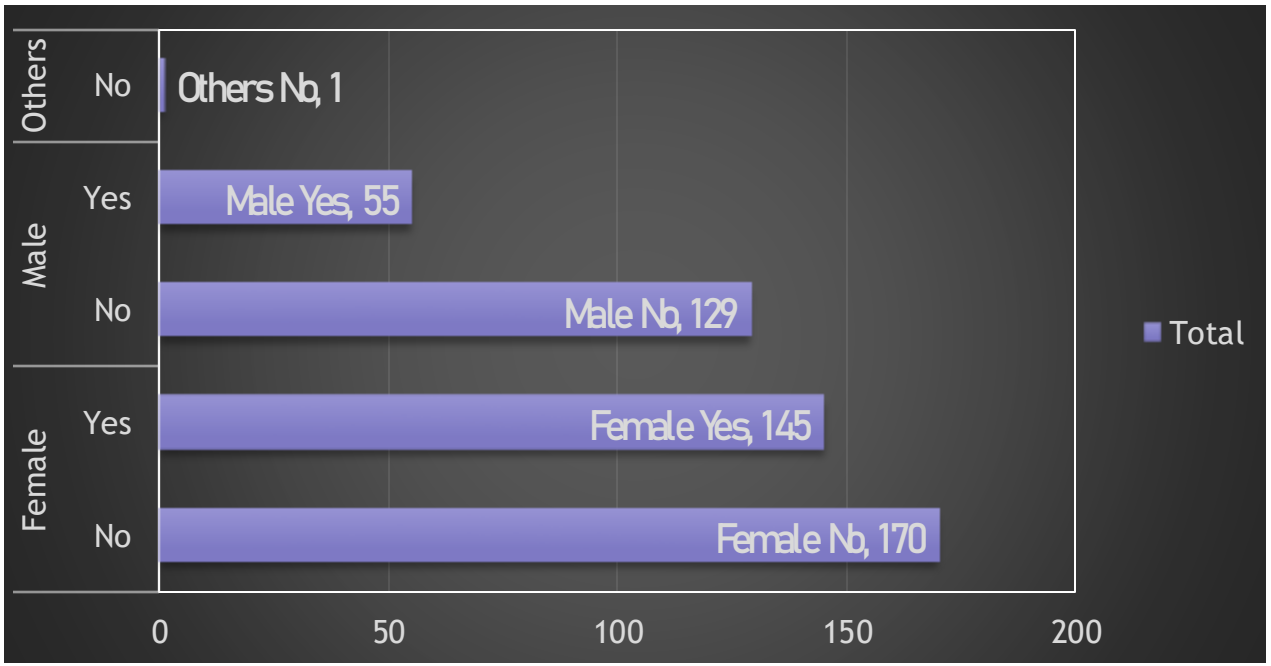
# SOCIAL DEMOGRAPHIC FACTORS:

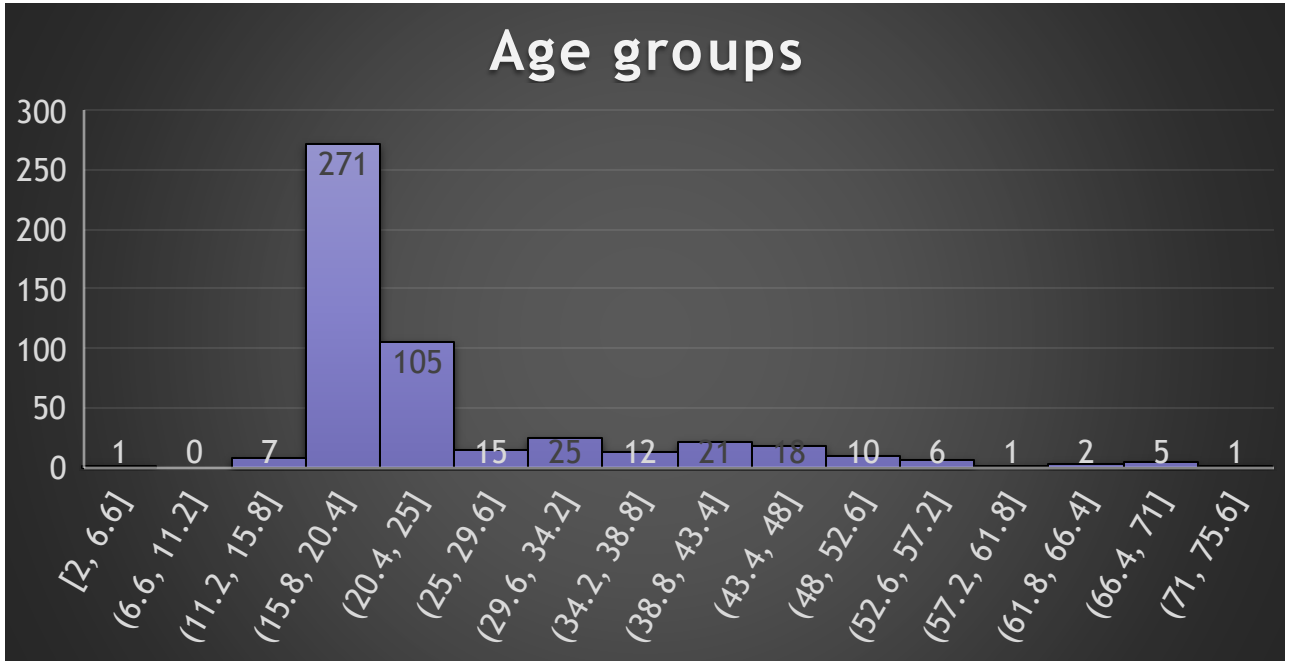
- GENDER
- AGE
- ACADEMIC STREAM
- EDUCATIONAL QUALIFICATION
- MARITAL STATUS
- LOCALITY
- OCCUPATION
- ANNUAL INCOME

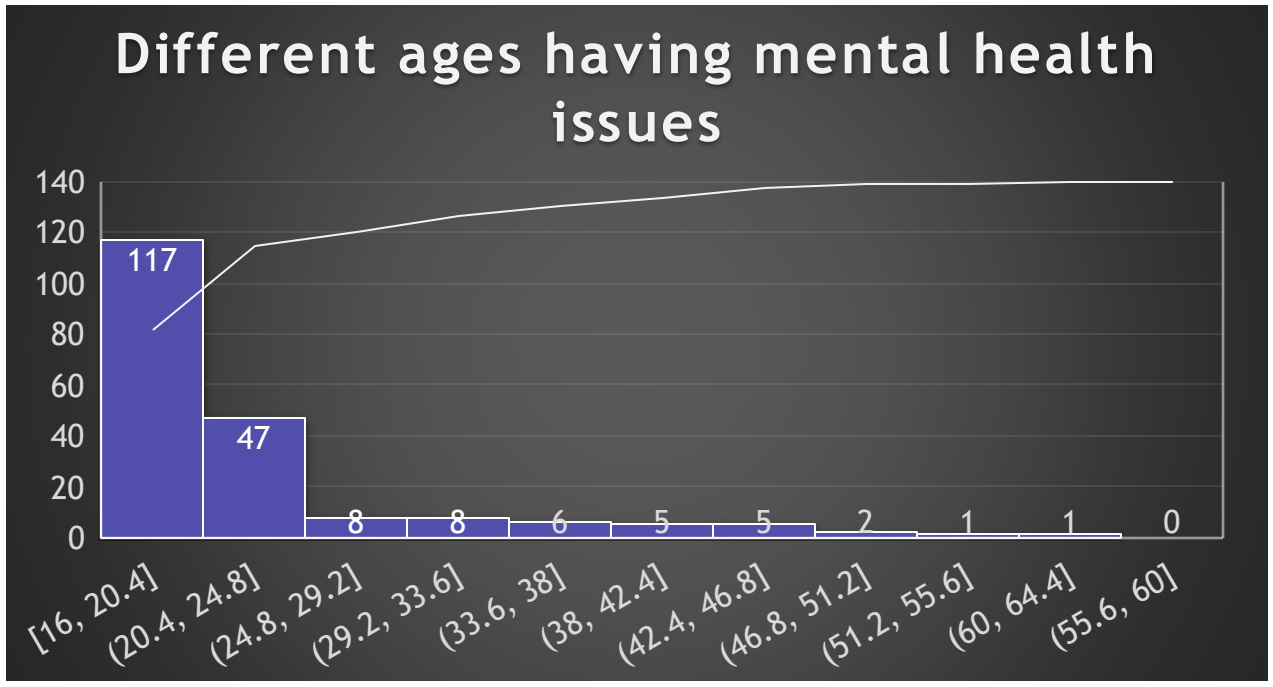
## People having mental health issues and people not having mental health issues?

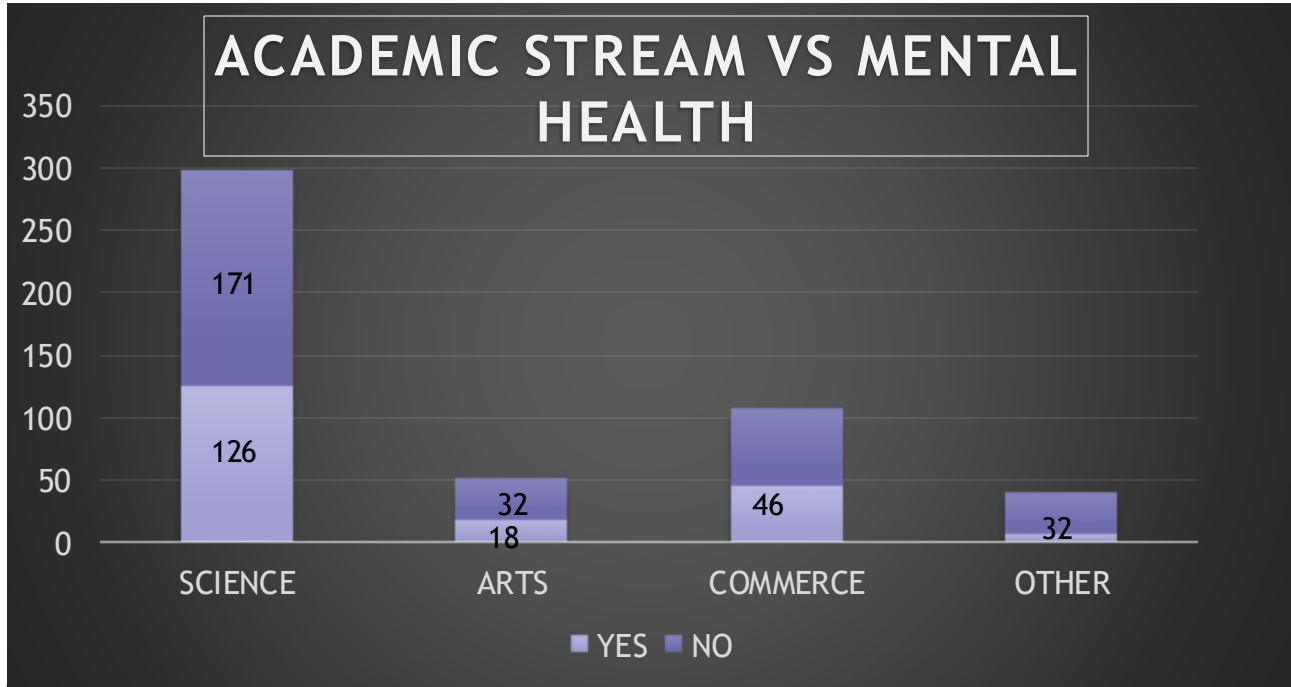


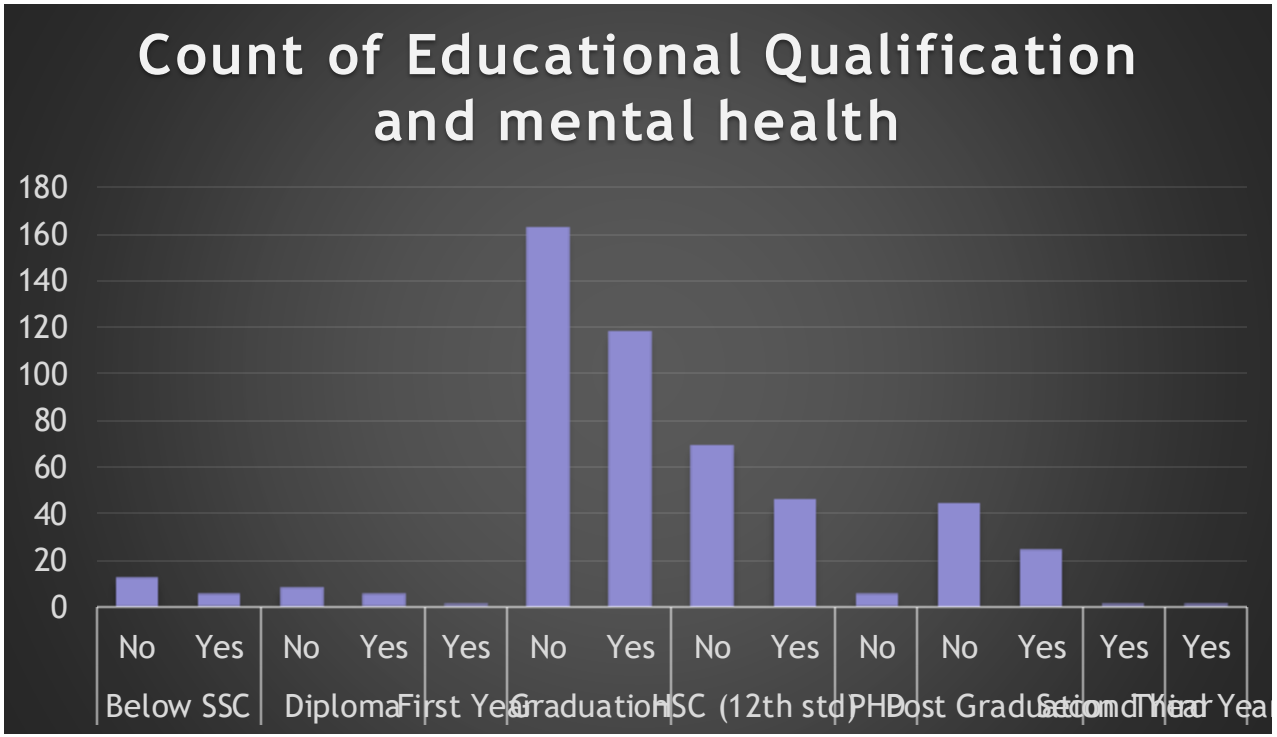
# DEMOGRAPHIC FACTORS AND MENTAL HEALTH

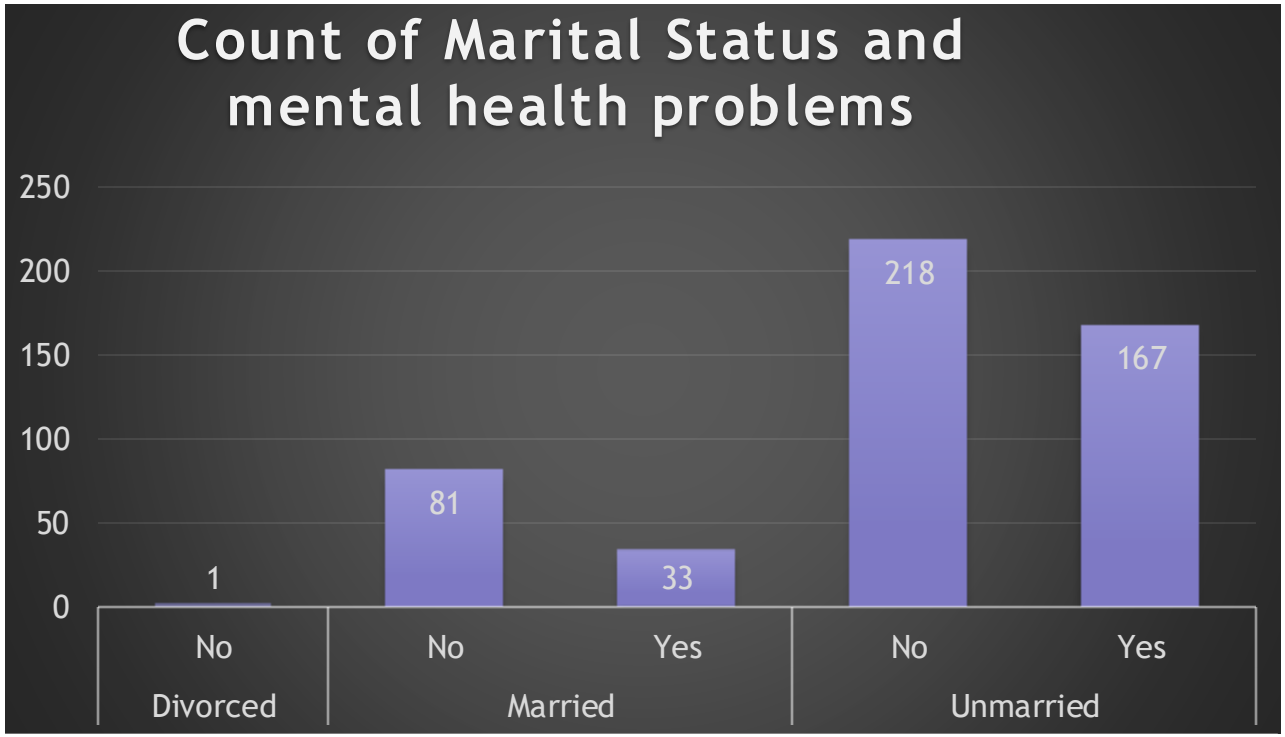


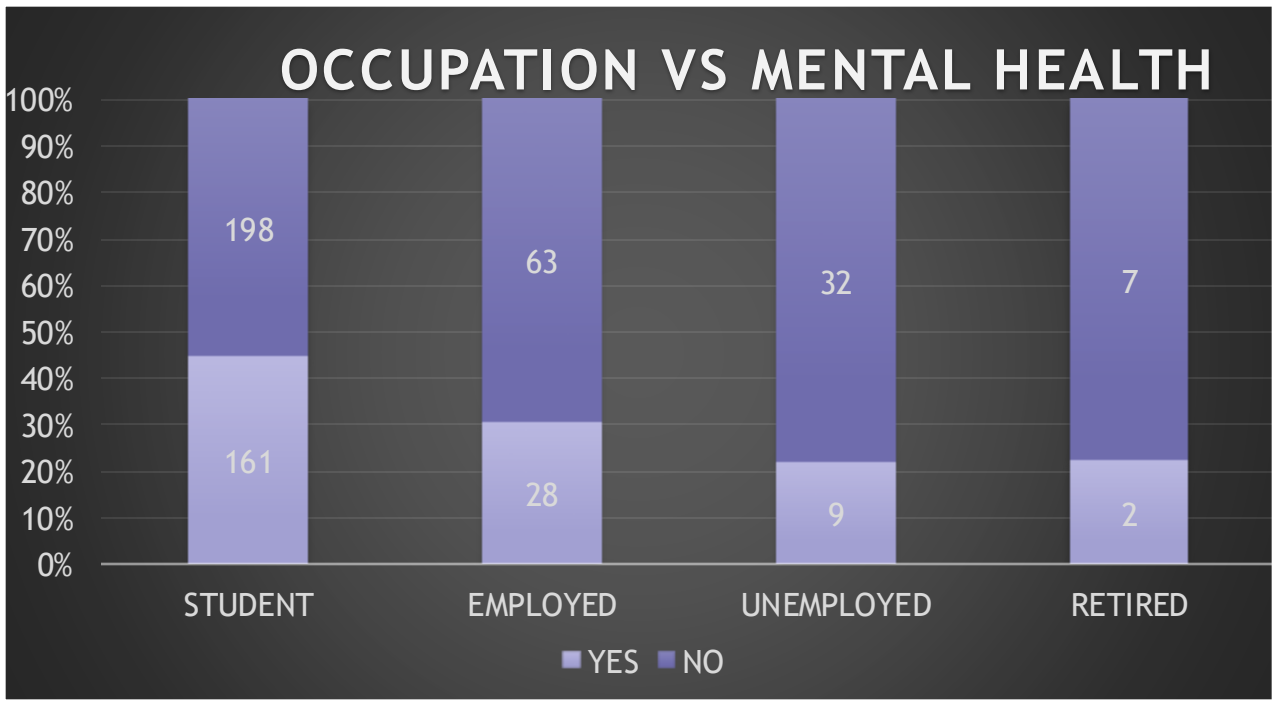



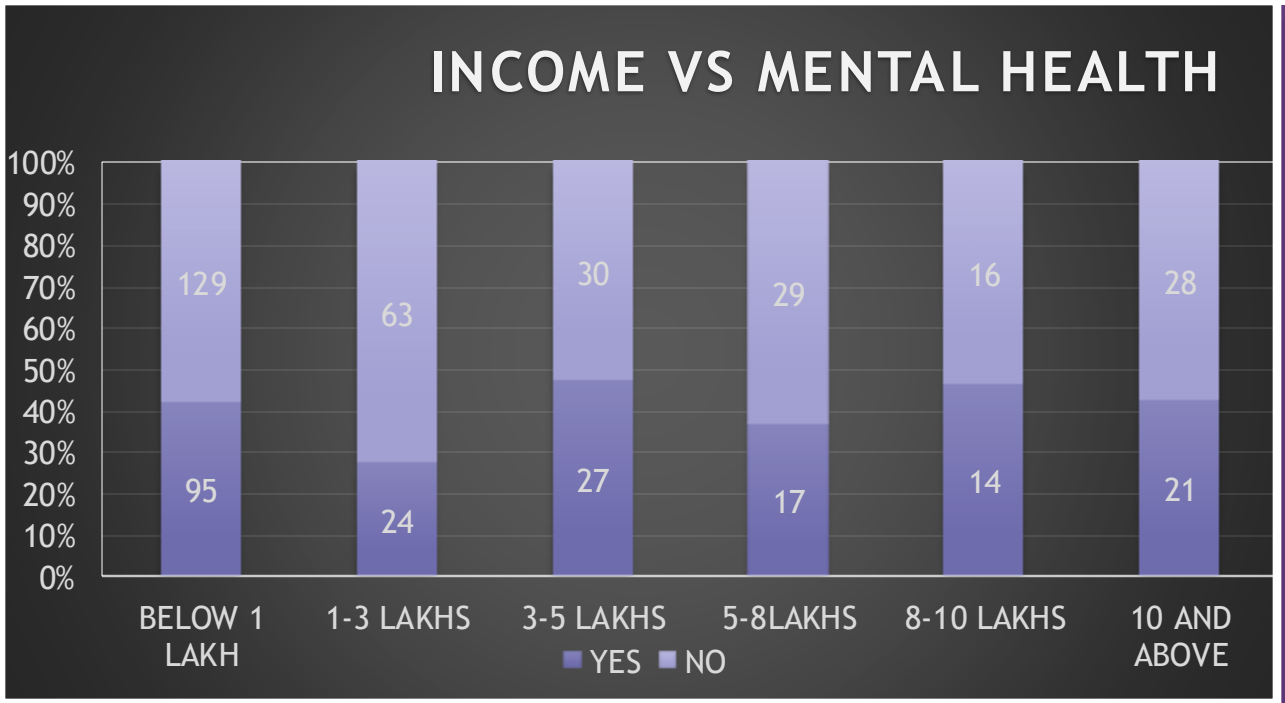




Count of Educational Qualification and mental health
180
160
140
120
100
80
60
40
20
0
No
Yes
Below SSC
Diploma
First Year
Graduation
HSC (12th std)
PHD
Post Graduation
Second Year
Third Year


Count of Marital Status and mental health problems
250
200
150
100
50
0
1
81
33
218
167
No
Yes
Divorced
Married
Unmarried

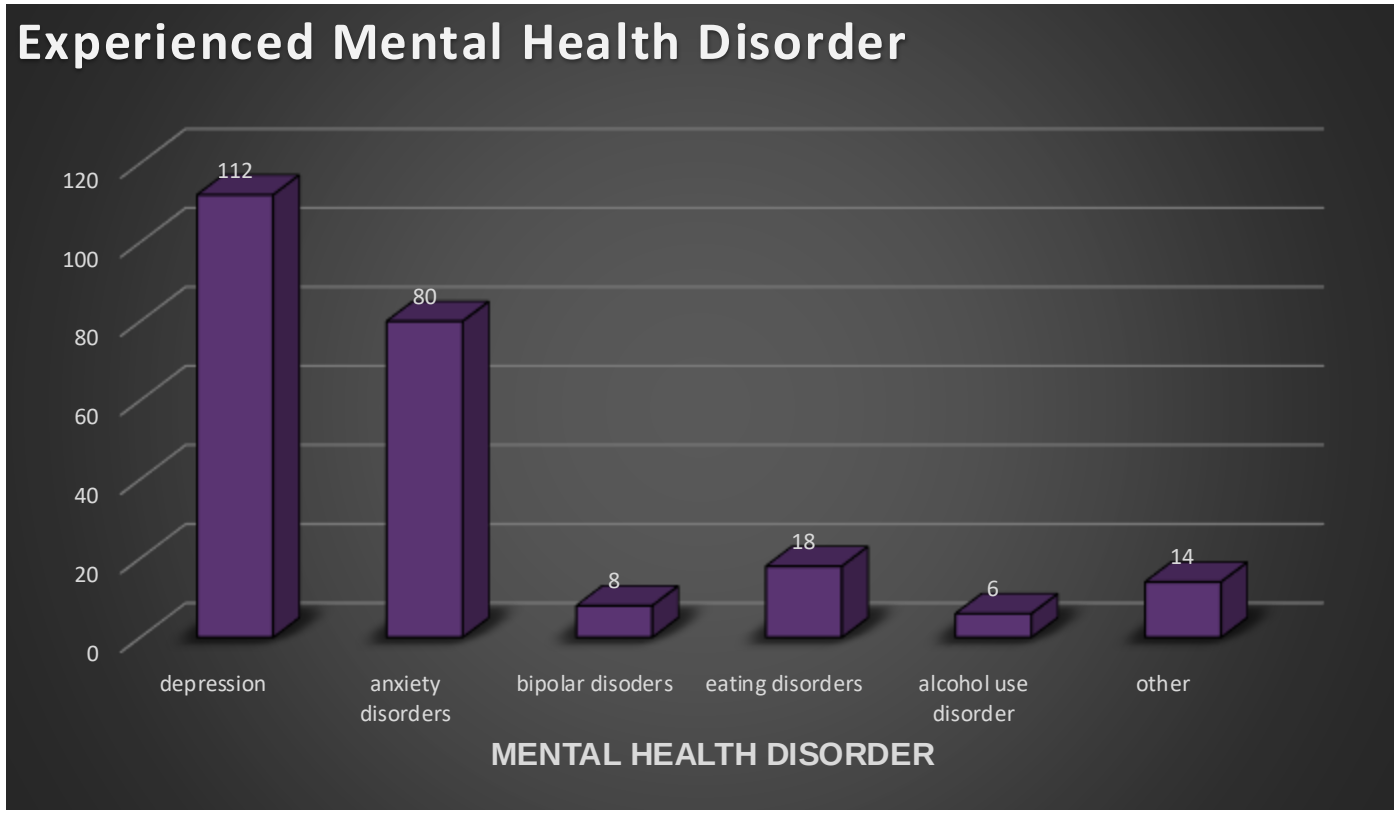

OCCUPATION VS MENTAL HEALTH
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
198
161
63
28
32
9
7
2
STUDENT
EMPLOYED
UNEMPLOYED
RETIRED
YES
NO


INCOME VS MENTAL HEALTH
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
129
95
63
24
30
27
29
17
16
14
28
21
BELOW 1 LAKH
1-3 LAKHS
3-5 LAKHS
5-8LAKHS
8-10 LAKHS
10 AND ABOVE
YES
NO

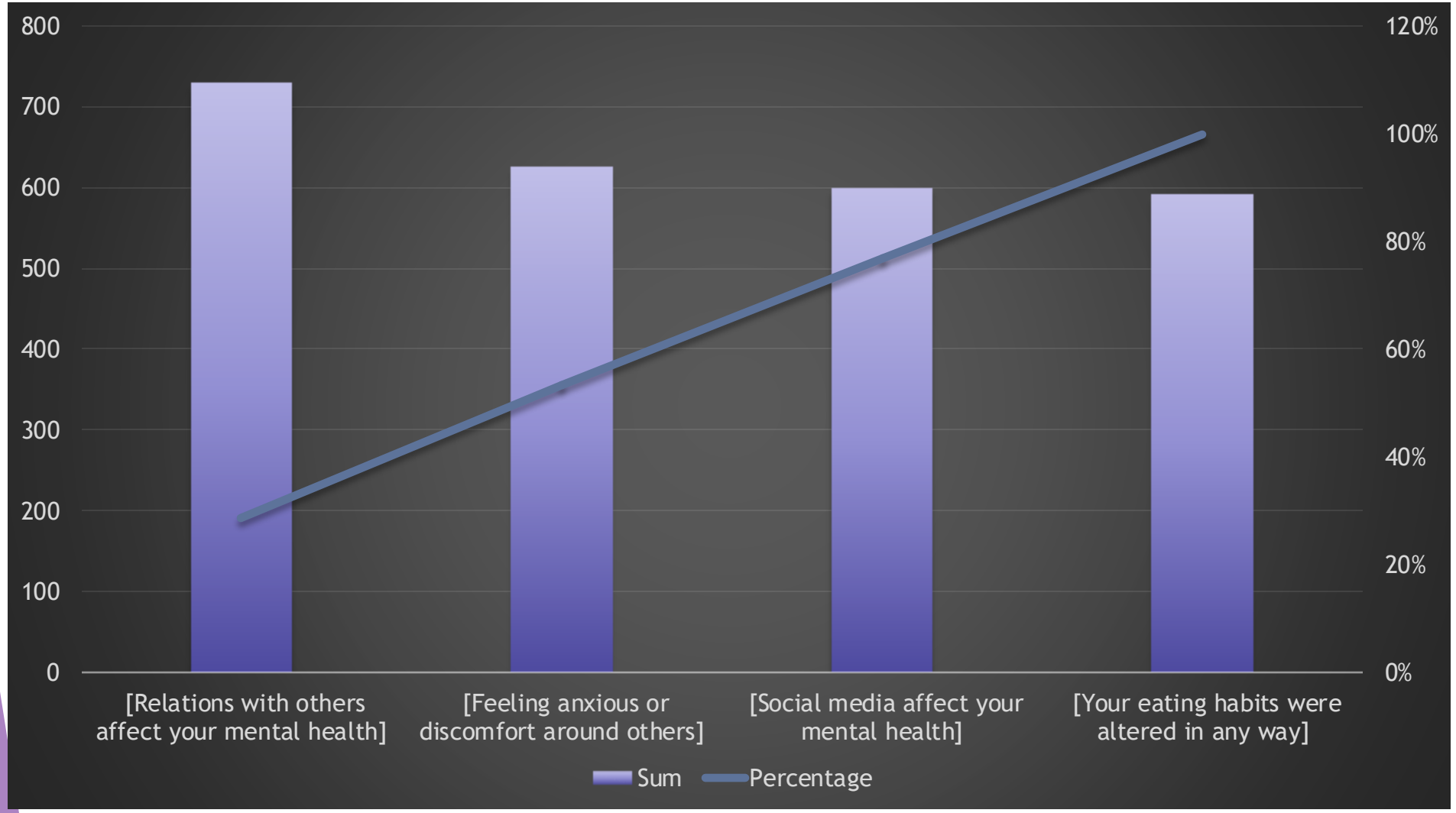
# FACTORS AFFECTING MENTAL HEALTH USING WORD CLOUD TABLEAU:

| Factors affecting mental health | In your life, which element has affected your mental health? |
|---|---|
| Career decisions | 1 |
| Emotional | 169 |
| Major life event | 45 |
| Mental stress | 1 |
| Physical | 35 |
| Social | 65 |
| Substance use (any kind of addiction) | 9 |

# MENTAL HEALTH DISORDERS EXPERIENCED MOSTLY BY PEOPLE!

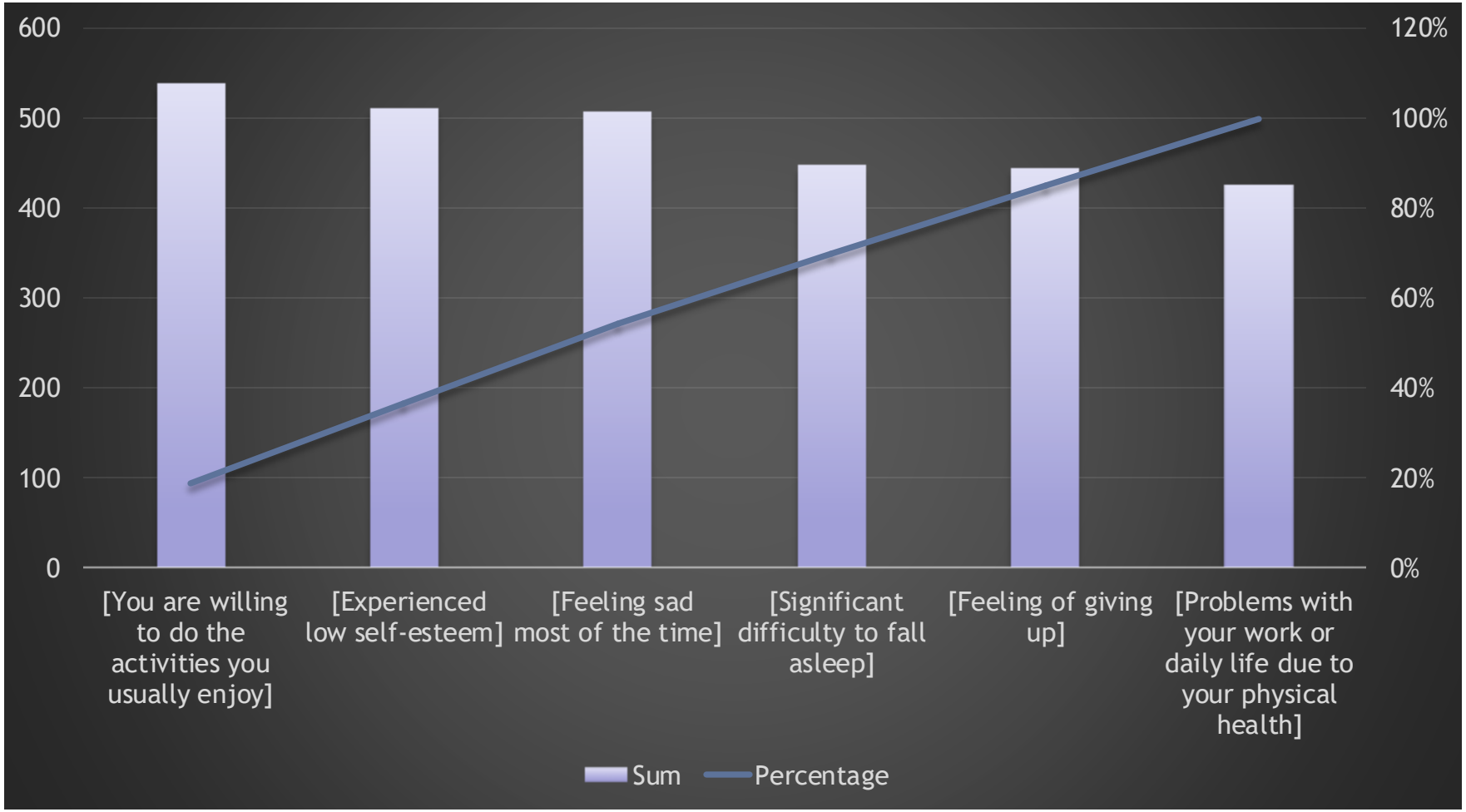


# PARETO FOR MORE SERIOUS FACTORS (CAUSES) AFFECTING MENTAL HEALTH




INTERPRETATION The percentage line meets the first three factors at 80% which means first three factors are more serious for causing mental health.

# PARETO FOR MORE POWERFUL EFFECT OF MENTAL HEALTH




**INTERPRETATION: The percentage line meets the first four effects at 70% which means first four effects are more serious effects of mental health issues.**

# PROPORTION TEST FOR CONSUMPTION OF ALCOHOL:

**HYPOTHESIS :**

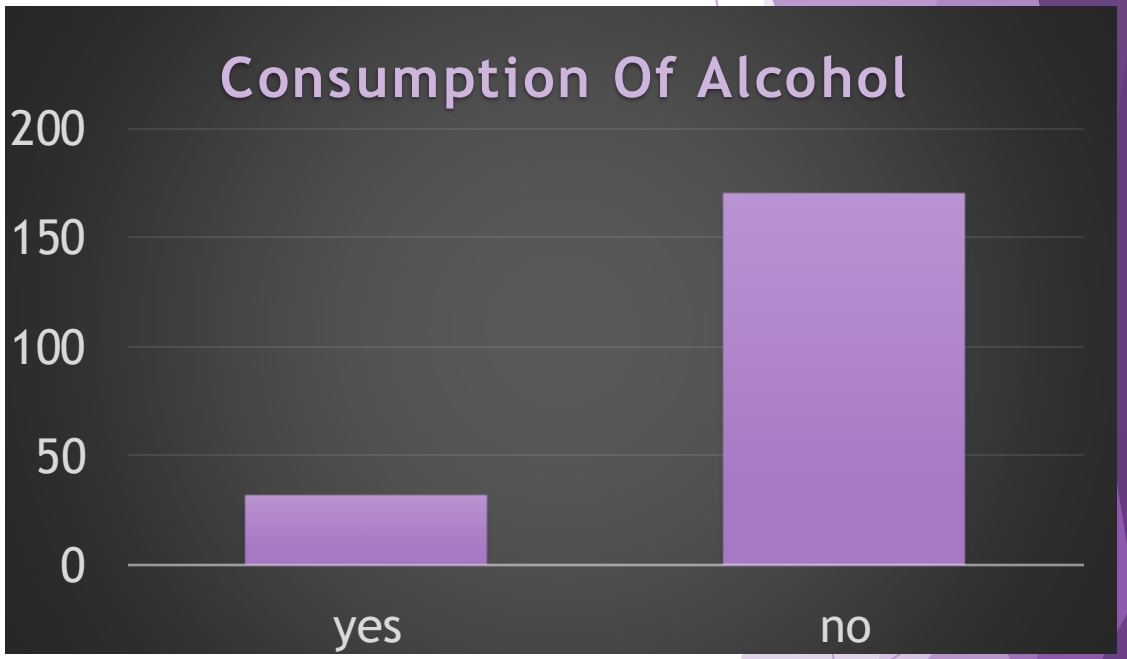
$H_0$ : proportion of people consuming alcohol is same as proportion of people not consuming alcohol

$H_1$ : proportion of people consuming alcohol is less than proportion of people not consuming alcohol

**TEST STATISTICS:**

```
prop.test(31,200,conf.level=0.95,alternative="less")


        1-sample proportions test with continuity correction
data:  31 out of 200, null probability 0.5
X-squared = 93.845, df = 1, p-value < 2.2e-16
alternative hypothesis: true p is less than 0.5
95 percent confidence interval:
 0.0000000 0.2044032
sample estimates: p = 0.155
```




**DECISION CRITERION:**

Reject $H_0$ if p value < 0.05 since p value **2.2e-16 < 0.05**.Therefore, we **reject $H_0$** at 5 % l.o.s

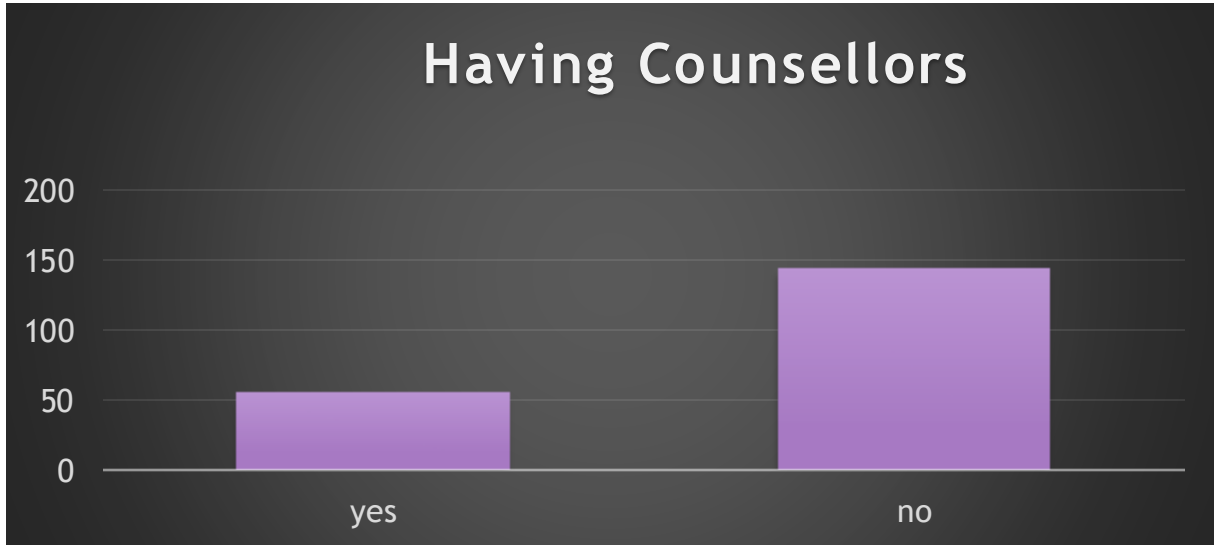
**Therefore, we conclude that the proportion of consuming alcohol is less than proportion of people not consuming alcohol also we can conclude the above results graphically.**

# PROPORTION TEST FOR COUNSELLORS

**HYPOTHESIS :**

$H_0$ : proportion of people having counsellors in their area is same as proportion of people not having counsellors.

$H_1$ : proportion of people having counsellors in their is less than proportion of people not having counsellors.




**TEST STATISTICS :**

```
prop.test(69,200,conf.level=0.95,alternative="less")


        1-sample proportions test with continuity correction
data:  69 out of 200, null probability 0.5
X-squared = 18.605, df = 1, p-value = 8.04e-06
alternative hypothesis: true p is less than 0.5
95 percent confidence interval:
 0.0000000 0.4045857
sample estimates=0.345
```

**Decision Criterion :**

Reject $H_0$ if p value < 0.05, Since p value **8.04e-06** < 0.05

therefore, we **reject $H_0$** at 5 % l.o.s

**Therefore, we conclude that the proportion of people having counsellors in their area is less than proportion of people not having counsellors in their area also we can conclude the above results graphically**.

## PROPORTION TEST FOR MAJOR LIFE EVENTS

**HYPOTHESIS :**

$H_0$ : Proportion of people who have experienced major life event is same as proportion of people who have not experienced major life event

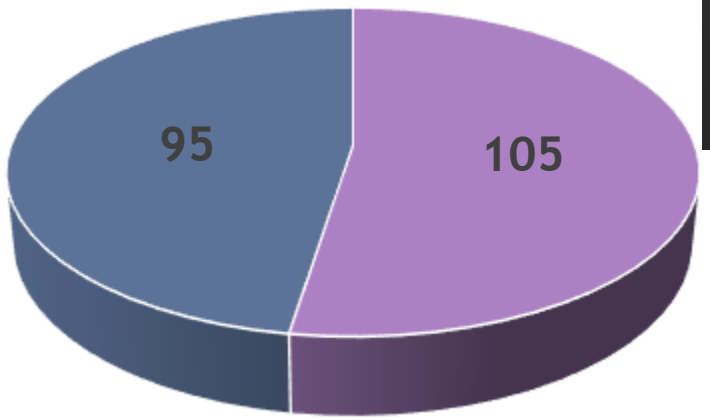
$H_1$ : Proportion of people who have experienced major life event is greater t
not experienced major life event

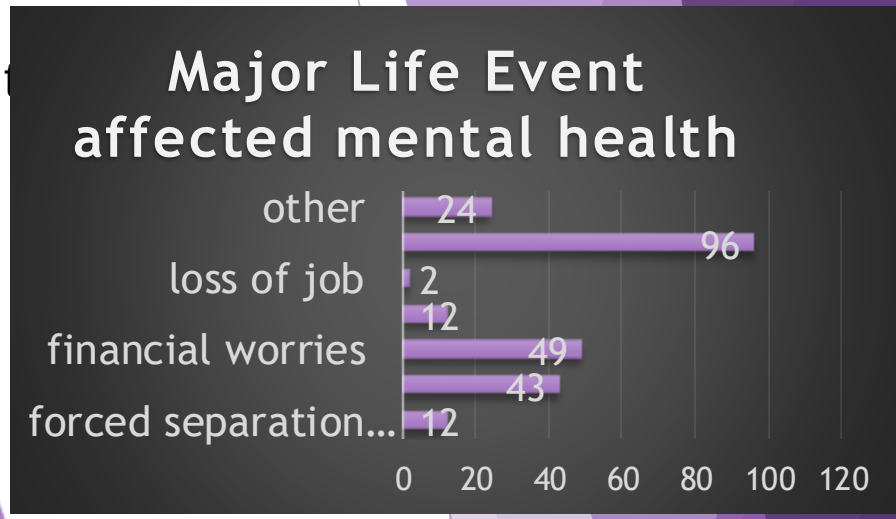
**Test statistics**:

```
prop.test(105,200,conf.level=0.95,alternative="greater")
```

```
        1-sample proportions test with continuity correction

data:  105 out of 200, null probability 0.5
X-squared = 0.405, df = 1, p-value = 0.2623
alternative hypothesis: true p is greater than 0.5
95 percent confidence interval:
 0.4644925 1.0000000
sample estimates:p=0.525
```




Reject $H_0$ if p value < 0.05, since p value **0.2623** >0.05

therefore, we **do not reject** $H_0$ at 5 % l.o.s

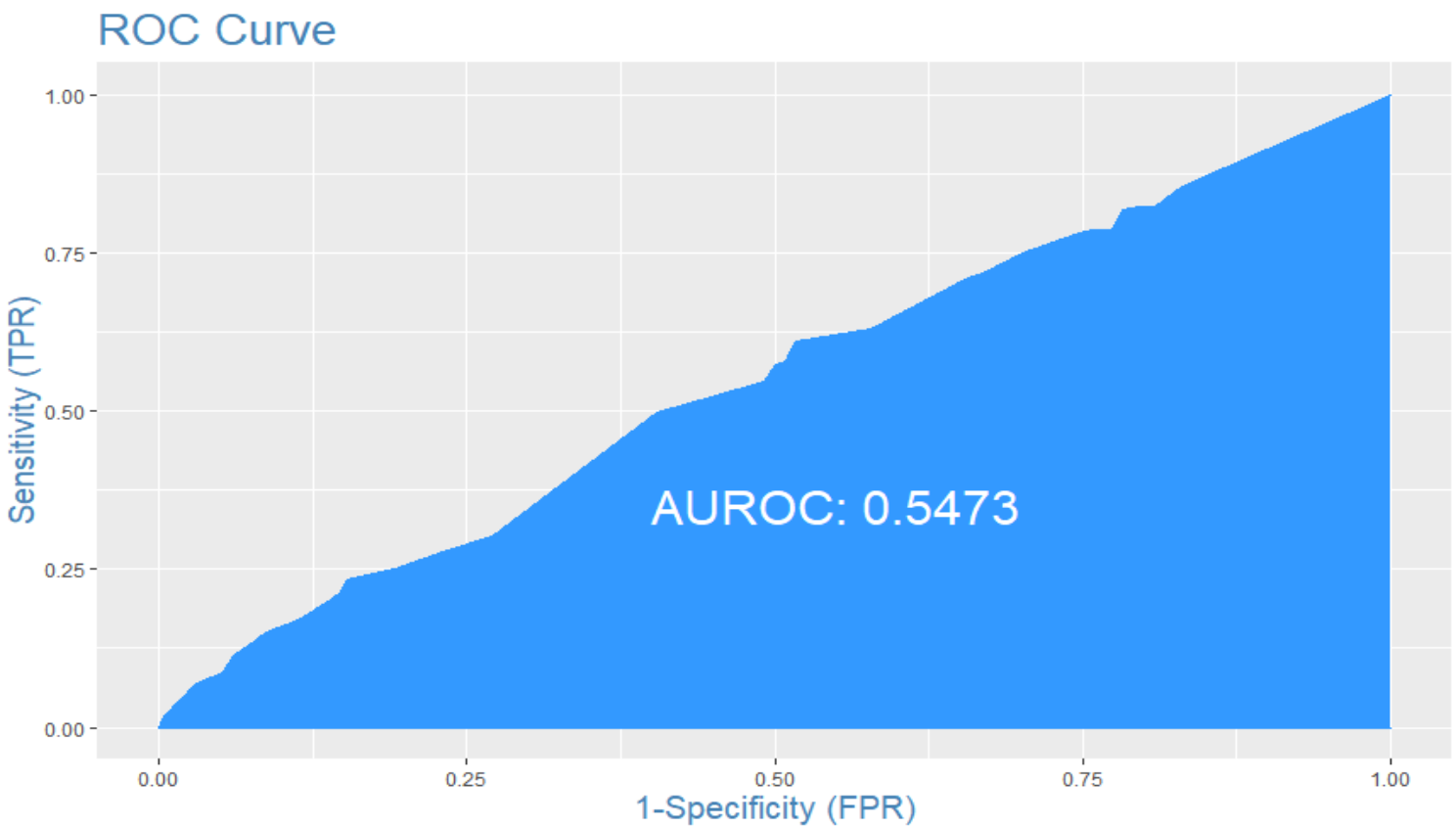
Therefore, we conclude that the proportion of of people who have experienced major life event if same as proportion of people who have not experienced major life event

# LOGISTIC REGRESSION MODEL:

```
Coefficients:
                          Estimate Std. Error z value Pr(>|z|)
(Intercept)                 3.8448     4.6537   0.826   0.4087
Age                        -0.1840     0.1337  -1.377   0.1686
GenderMale                 -0.9515     0.5280  -1.802   0.0715 .
Marital.StatusUnmarried    -3.5038     2.0273  -1.728   0.0839 .
OccupationRetired          -8.5768  6522.6405  -0.001   0.9990
OccupationStudent           3.1338     1.5947   1.965   0.0494 *
OccupationUnemployed      -15.5437  1847.5754  -0.008   0.9933
Income10 and above          3.3749     1.3754   2.454   0.0141 *
Income3-5 lakhs             0.8749     0.8737   1.001   0.3167
Income5-8 lakhs             0.2466     0.9442   0.261   0.7940
Income8-10 lakhs            0.3039     1.0965   0.277   0.7817
IncomeBelow 1 lakh          0.1217     0.6562   0.186   0.8528
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
```

## INTERPRETATION

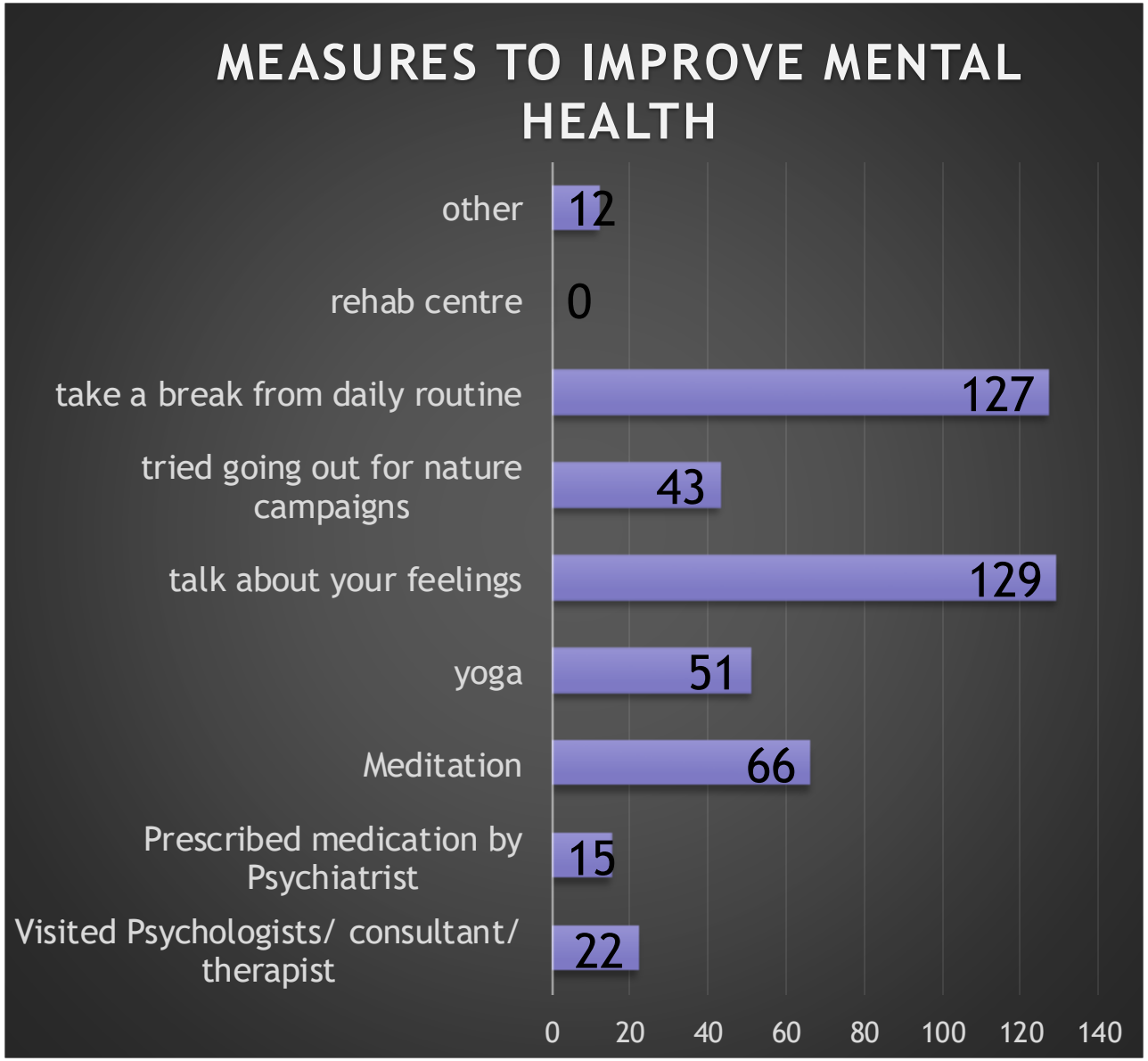
The demographic factors gender, marital status, occupation, Income has significant impact on mental health issues.

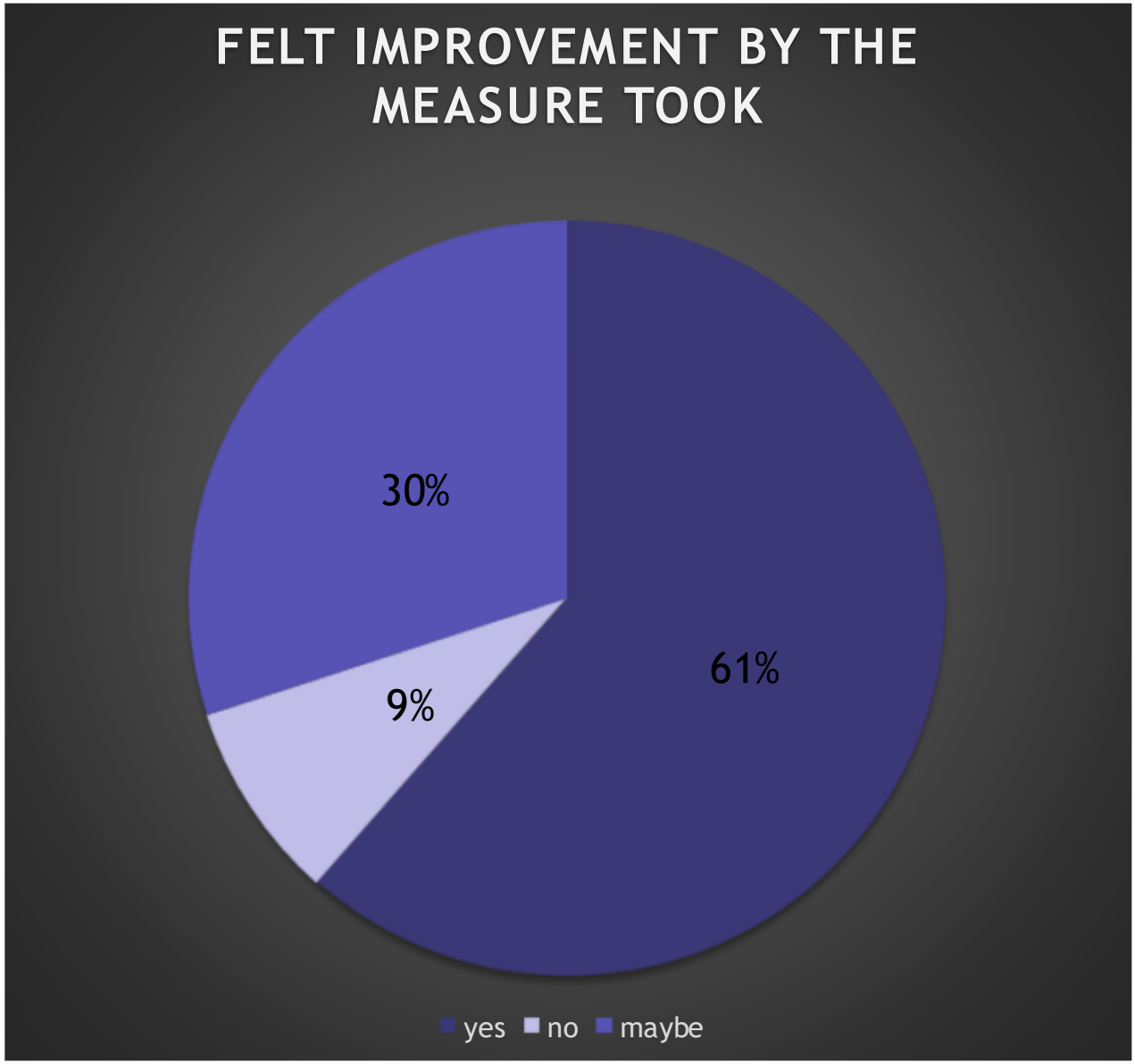



```
>cm=confusion_matrix(model,test)
> cm
          Predicted 0 Predicted 1 Total
Actual 0           59           11    70
Actual 1           10           31    41
Total              69           42   111

> (59+31)/111
[1] 0.8108108
```

# WHAT MEASURE SHOULD ONE CONSIDER FOR TREATING MENTAL HEALTH?



# SOME COMMON OPINONS OF PEOPLE ABOUT MENTAL HEALTH

- Crucial part which is ignored.
- Talk more about it more openly.
- Help those who are suffering
- Should be given equal importance as that of physical health.
- Make awareness about it.
- Checking on yourself is an absolute must.
- Be in check of what you are feeling.
- Prioritize yourself.
- Therapy and other treatments should be made known therapy and other treatments should be made known.
- It is important to talk about your feelings as well listen to others when they share their feelings.
- Should take a break from work
- There must be at least one counsellor in every college.

!!!!!NORMALISE MENTAL HEALTH!!!!!!

# CONCLUSION

AFTER CODUCTING SURVEY WE FOUND THAT THE TOTAL RESPONSES WERE 500 OUT OF WHICH 315 ARE FEMALES AND 184 ARE MALES AND 1 IS OTHER WHEREAS THE PEOPLE SUFFERING FROM MENTAL HEALTH ARE 200.

IN THIS SURVEY, EMOTIONAL FACTOR IS OBSERVED TO BE MAJORLY AFFECTING FACTOR AND DEPRESSION IS MOST COMMONLY DISORDER EXPERIENCED BY THE PEOPLE.

AFTER CONDUCTING THE SURVEY FURTHER ANALYSIS IS DONE USING PROPORTION TEST, PARETO GRAPH AND LOGISTIC REGRESSION MODEL.

FROM THE SURVEY IT IS OBSERVED THAT THE MOST IMPORTANT MEASURES TOOK BY THE PEOPLE ARE TALKING ABOUT YOUR FEELINGS, TAKING BREAK FROM DAILY ROUTINE AND MANY MORE.

FOR THIS MENTAL HEALTH THE MOST CRUCIAL MEASURE IS TO HAVE COUNSELLOR IN YOUR AREA BUT MAJORITY OF PEOPLE FAIL TO FIND COUNSELLOR.

# METHODOLOGY

| | |
|---|---|
| Tool for survey | : **Questionnaire using Google form** |
| Method of sampling | : **Convenience Sampling/ Availability Sampling** |
| Sample Size | : **500 responses** |
| Software used | : **MS Excel, R Studio and Microsoft cloud** |

# THANK YOU ☺