CBSC185FinalProject

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Import the class data

```
summary(class_data_subset)
```

```
##   StartDate              ID                 Q33                Q9_1
##  Length:276         Length:276         Length:276         Length:276
##  Class :character   Class :character   Class :character   Class :character
##  Mode  :character   Mode  :character   Mode  :character   Mode  :character
```

```
glimpse(class_data_subset)
```

```
## Rows: 276
## Columns: 4
## $ StartDate <chr> "9/26/2024 13:52", "9/26/2024 13:52", "9/26/2024 14:03", "9/~
## $ ID        <chr> "100", "100", "100", "10", "17", "5", "11", "16", "4", "8", ~
## $ Q33       <chr> "", "5", "5", "", "6", "2", "13", "14", "7", "6", "13", "6",~
## $ Q9_1      <chr> "", "", "", "", "7", "7", "11", "8", "7.5", "8", "7", "6", "~
```

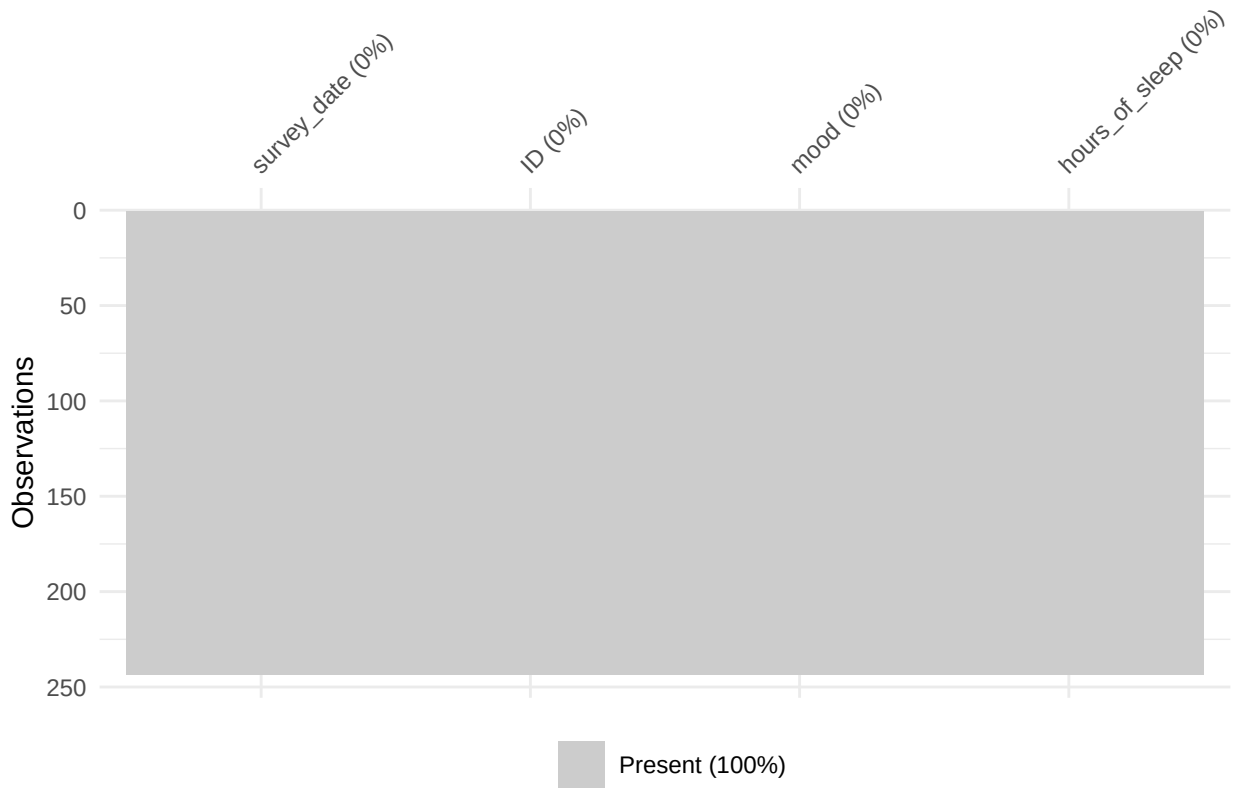
Create a subset of the subdata with Id, Survey date mood, and hors of sleep

```
glimpse(class_data_subset)
```

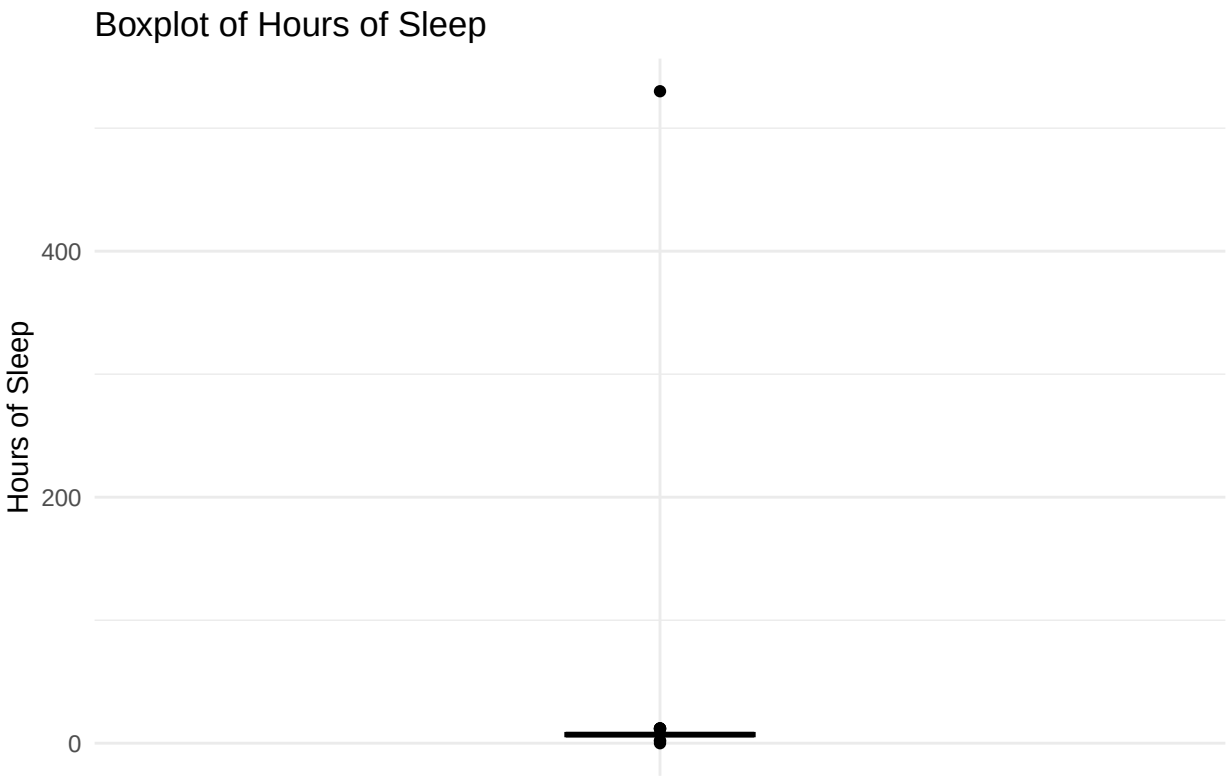
```
## Rows: 273
## Columns: 4
## $ survey_date    <date> 2024-09-26, 2024-09-26, 2024-09-26, 2024-09-26, 2024-0~
## $ ID             <chr> "10", "17", "5", "11", "16", "4", "8", "6", "13", "7", ~
## $ mood           <chr> "", "6", "2", "13", "14", "7", "6", "13", "6", "6", "5"~
## $ hours_of_sleep <chr> "", "7", "7", "11", "8", "7.5", "8", "7", "6", "7", "3"~
```

Vizualize missing data

Vizualize missing data after removing missing data

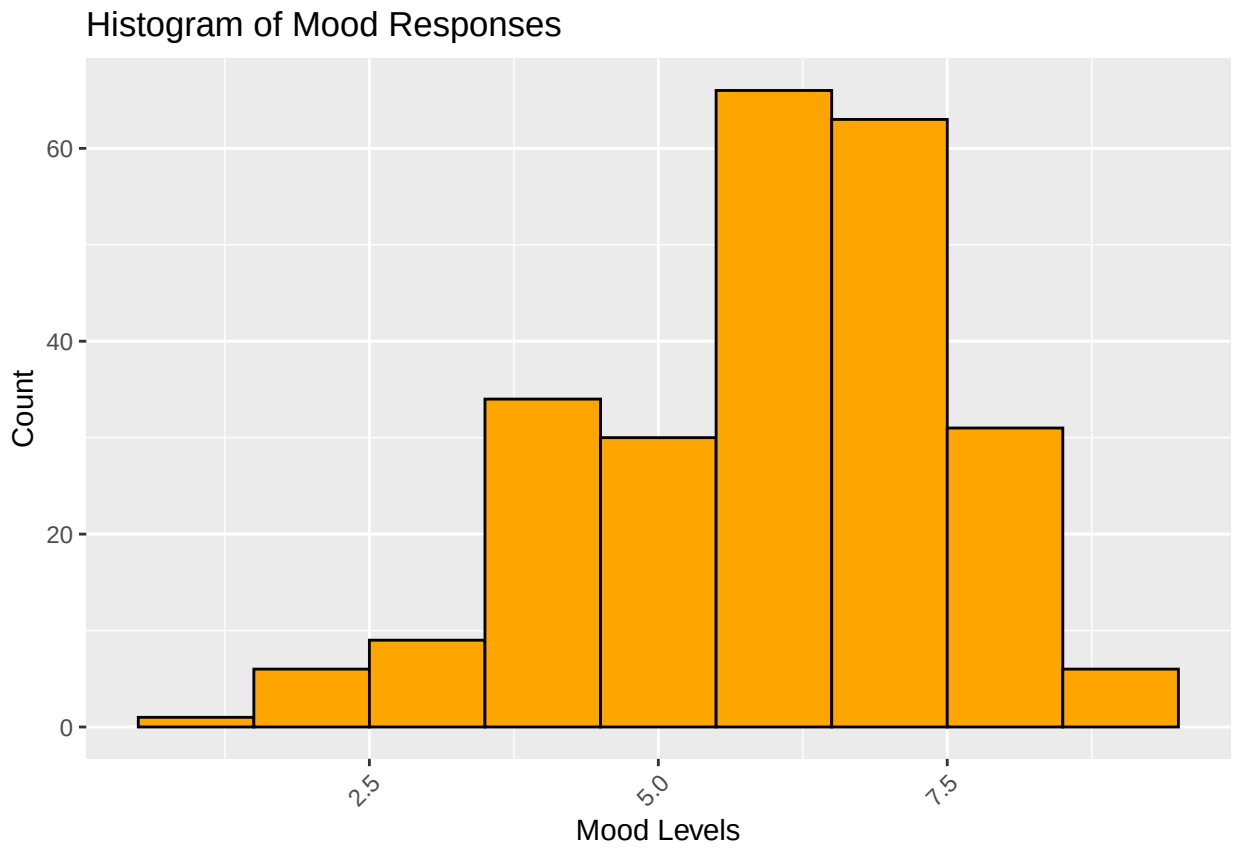


Boxplot hours of sleep



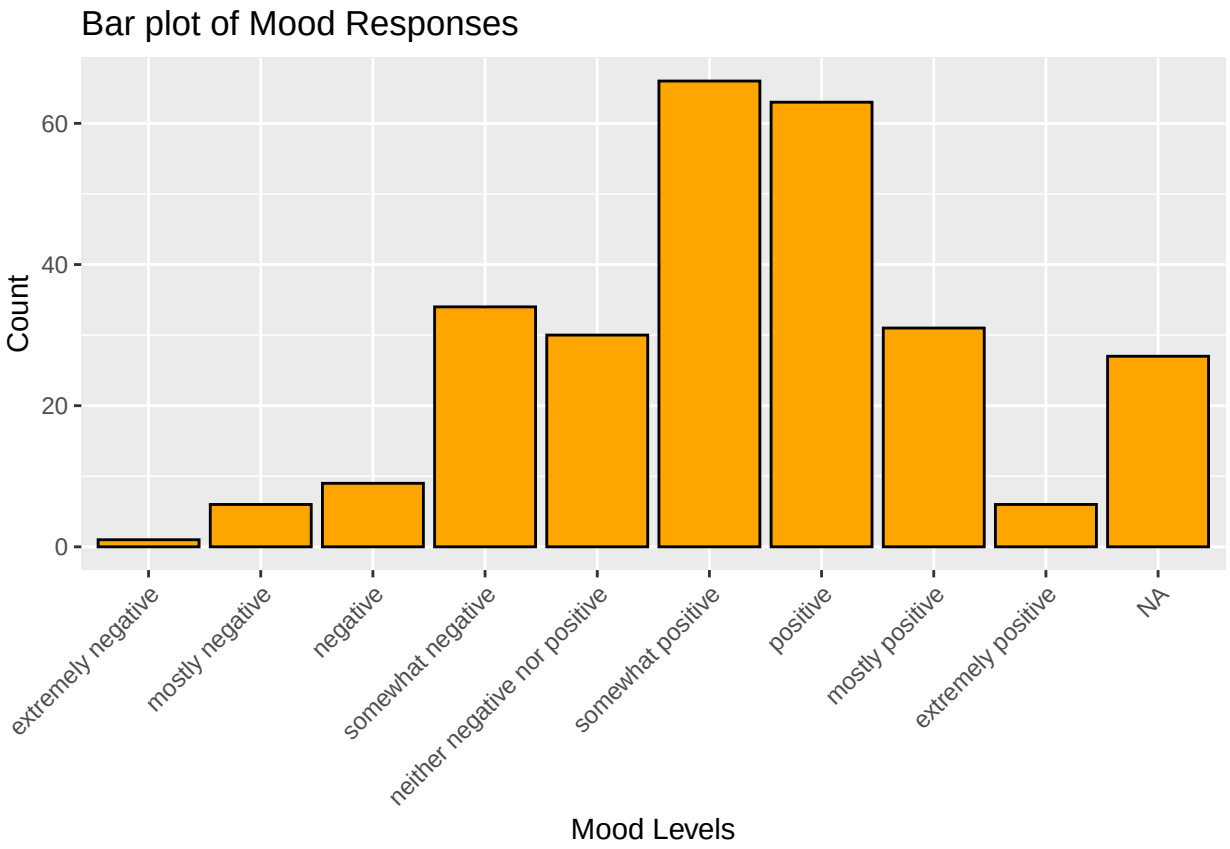
Boxplot hours of sleep after harcoding the oulier 530

Histogram of mood



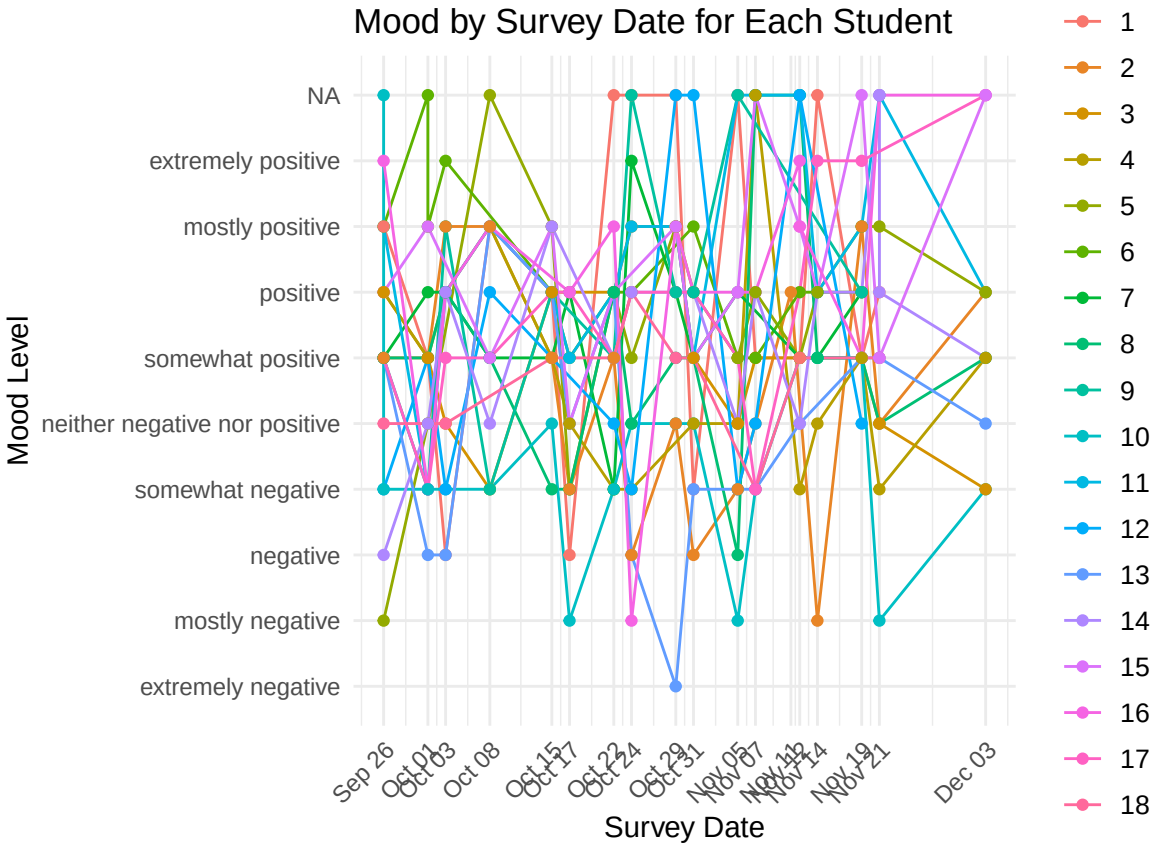
Bar plot of mood

To allow the reader to understand what the mood values are, I will create a bar plot with the values of the mood levels o the x-axis. This can be seen on the graph below:

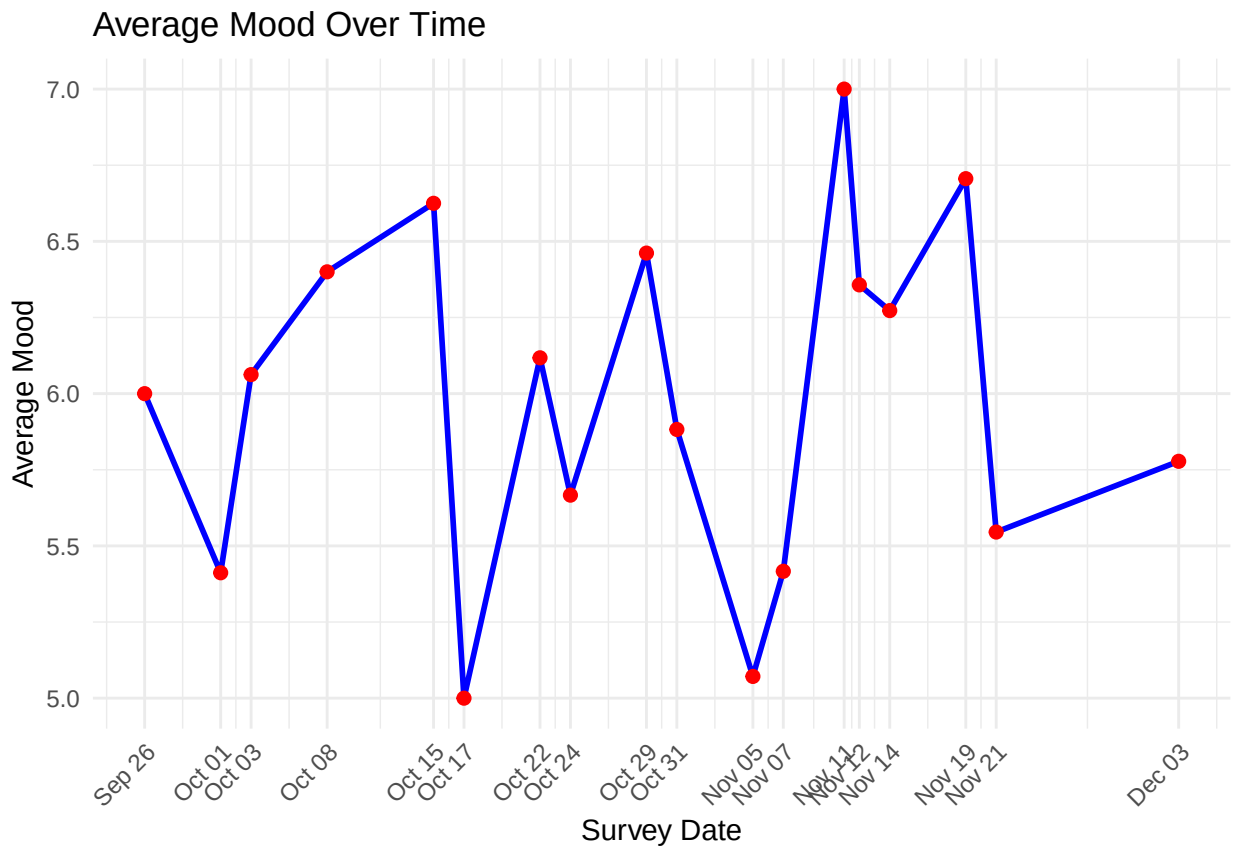


Mood by Survey Date for Each Student

This will give an insight of the trend of the mood for all students


Mood by Survey Date for Each Student
Mood Level
NA
extremely positive
mostly positive
positive
somewhat positive
neither negative nor positive
somewhat negative
negative
mostly negative
extremely negative
Sep 26
Oct 01
Oct 03
Oct 08
Oct 15
Oct 17
Oct 22
Oct 24
Oct 29
Oct 31
Nov 05
Nov 07
Nov 12
Nov 14
Nov 19
Nov 21
Dec 03
Survey Date
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18

Overall average mood overtime



Regression model

```
## Linear mixed model fit by maximum likelihood  ['lmerMod']
## Formula: mood ~ hours_of_sleep + survey_date + (1 | ID)
##    Data: class_data_subset
##
##      AIC      BIC   logLik deviance df.resid
##    885.0    902.5   -437.5    875.0      238
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -3.03318 -0.48463  0.08805  0.60110  2.13365
##
## Random effects:
##  Groups   Name        Variance Std.Dev.
##  ID       (Intercept) 0.5598   0.7482
##  Residual             1.9062   1.3807
## Number of obs: 243, groups:  ID, 18
##
## Fixed effects:
##                  Estimate Std. Error t value
## (Intercept)    -61.526821  95.614159  -0.643
```

```
## hours_of_sleep   0.133239   0.060425   2.205
## survey_date      0.003325   0.004776   0.696
##
## Correlation of Fixed Effects:
##             (Intr) hrs_f_
## hours_f_slp  0.030
## survey_date -1.000 -0.034

## MODEL INFO:
## Observations: 243
## Dependent Variable: mood
## Type: Mixed effects linear regression
##
## MODEL FIT:
## AIC = 885.04, BIC = 902.50
## Pseudo-R² (fixed effects) = 0.02
## Pseudo-R² (total) = 0.24
##
## FIXED EFFECTS:
## ----------------------------------------------------------------
##                          Est.    S.E.   t val.     d.f.      p
## ------------------- -------- ------- -------- -------- ------
## (Intercept)           -61.53   95.61    -0.64   227.39   0.52
## hours_of_sleep          0.13    0.06     2.21   240.30   0.03
## survey_date             0.00    0.00     0.70   227.41   0.49
## ----------------------------------------------------------------
##
## p values calculated using Satterthwaite d.f.
##
## RANDOM EFFECTS:
## -------------------------------------
##   Group      Parameter    Std. Dev.
## ---------- ------------- -----------
##     ID      (Intercept)     0.75
##  Residual                    1.38
## -------------------------------------
##
## Grouping variables:
## -------------------------
##  Group   # groups   ICC
## ------- ---------- ------
##   ID        18      0.23
## -------------------------
```

Regression line of mood vs hours of sleep