Menatl Helath Cases in Karnataka Case Study

Importing Data Set

```
library(readr)

# Source : data.gov.in

DS1 <- read_csv("DataSet/District_Wise_Mental_Health_Patients_2018-19.csv")
```

```
## Rows: 30 Columns: 9
## -- Column specification --------------------------------------------------------
## Delimiter: ","
## chr (1): DISTRICT
## dbl (8): SL No, SEVERE_MENTAL_DISORDER_(SMD), COMMON_MENTAL _DISORDER(CMD), ...
##
## i Use `spec()` to retrieve the full column specification for this data.
## i Specify the column types or set `show_col_types = FALSE` to quiet this message.
```

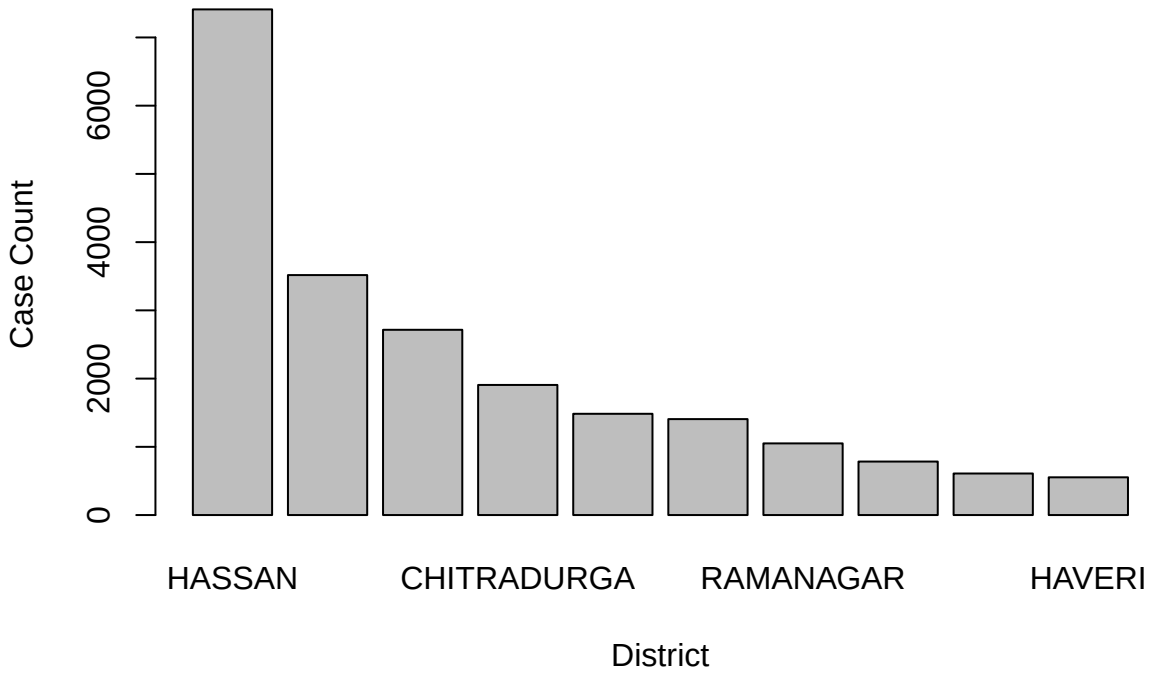
```
head(DS1)
```

```
## # A tibble: 6 x 9
##   `SL No` DISTRICT        SEVERE_~1 COMMO~2 ALCOH~3 CASES~4 SUICI~5 Others Total
##     <dbl> <chr>               <dbl>   <dbl>   <dbl>   <dbl>   <dbl>  <dbl> <dbl>
## 1       1 BAGALKOTE            2833    2937     238      41      31   8393 14473
## 2       2 BANGALORE RURAL      3053    8975    1437     602     188   9499 23754
## 3       3 BANGALORE URBAN      7601   25663    4747     687     609  14648 53955
## 4       4 BELGAUM             10901   15740    3663     782     784  28139 60009
## 5       5 BELLARY             11153   10998    5585      26    3517  16576 47855
## 6       6 BIDAR               13400   31487   17556    2533       3  25839 90818
## # ... with abbreviated variable names 1: `SEVERE_MENTAL_DISORDER_(SMD)`,
## #   2: `COMMON_MENTAL _DISORDER(CMD)`, 3: `ALCOHOL_&_SUBSTANCE_ABUSE`,
## #   4: CASES_REFERRED_TO_HIGHER_CENTRES, 5: SUICIDE_ATTEMPT_CASES
```

1. Top 10 District having a Suicide cases due to Mental Health Issues .

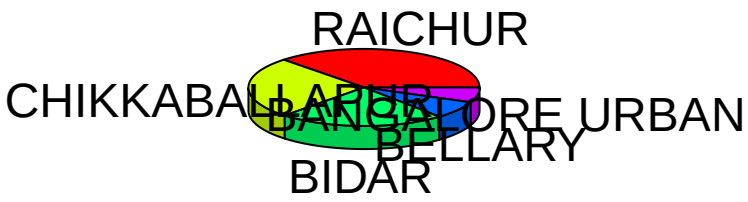
```
library(ggplot2)

Sus <-data.frame("District"= DS1$DISTRICT,"Sucide_cases"=DS1$SUICIDE_ATTEMPT_CASES)


Sus_sort <- Sus[order(-Sus$Sucide_cases),]
```

```r
top10 <- head(Sus_sort,10)

barplot(top10$Sucide_cases,names.arg = top10$District,xlab = "District",ylab = "Case Count")
```



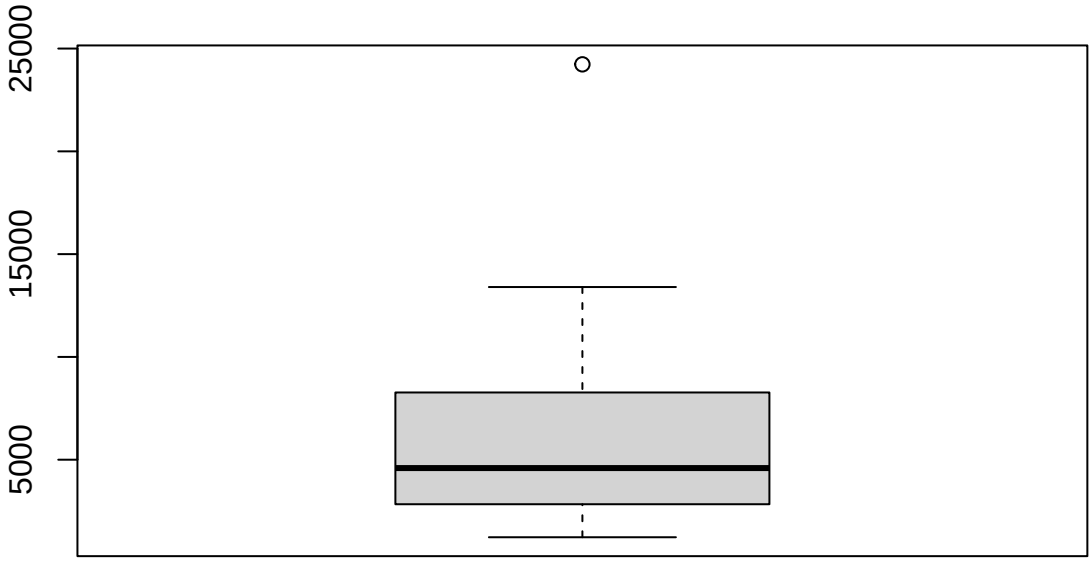
2. Top 5 Districts having that possess high Mental Health Issues Cases due to Alcohol Consumption

```r
library(plotrix)

Alc <- data.frame("District" = DS1$DISTRICT,"No_of_cases"=DS1$`ALCOHOL_&_SUBSTANCE_ABUSE`)

Alc_sort <- Alc[order(-Alc$No_of_cases),]

t10_alc <- head(Alc_sort,5)
par(cex = 2)
pie3D(t10_alc$No_of_cases,labels = t10_alc$District)
```

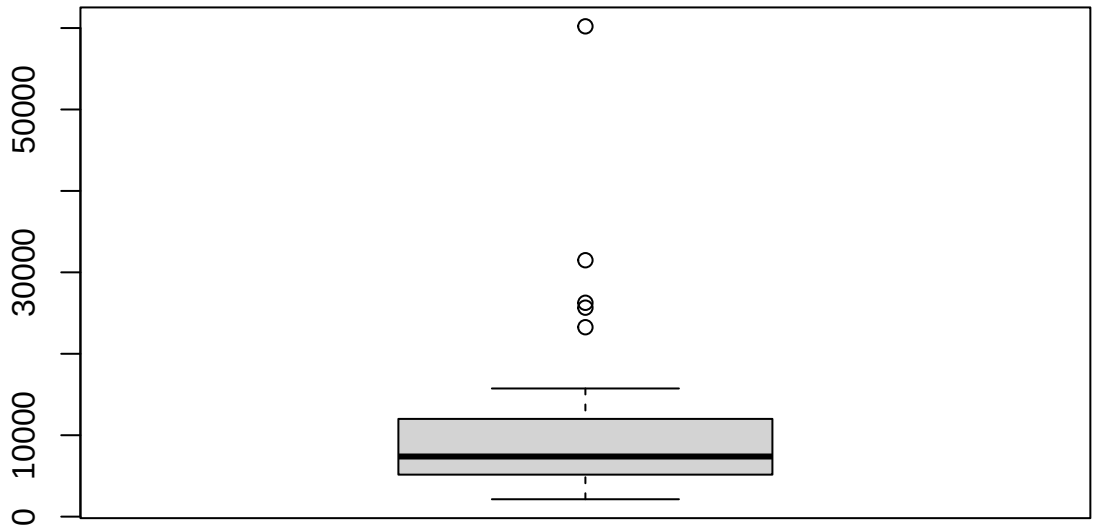


3. Construction of Boxplot to understand distribution of Common and Severe Mental Health Disorder.

```
SMD <- DS1$`SEVERE_MENTAL_DISORDER_(SMD)`
CMD <- DS1 $`COMMON_MENTAL _DISORDER(CMD)`

boxplot(SMD)
```




```
boxplot(CMD)
```



The first plot shows how **symmetrical** the **Common Mental Health Disorder** cases are distributed with Different cities
The second plot shows how **symmetrical** the **Severe Mental Health Disorder** cases are distributed with Different cities .

4. Performing linear regression factors affecting Severe Mental Disorder.

```
model<- lm(DS1$`SEVERE_MENTAL_DISORDER_(SMD)`~DS1$`ALCOHOL_&_SUBSTANCE_ABUSE`)
summary(model)
```

```
##
## Call:
## lm(formula = DS1$`SEVERE_MENTAL_DISORDER_(SMD)` ~ DS1$`ALCOHOL_&_SUBSTANCE_ABUSE`)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -6617.1 -1679.0  -418.6  2003.7  4802.1
##
## Coefficients:
##                                 Estimate Std. Error t value Pr(>|t|)
## (Intercept)                    3.893e+03  5.635e+02   6.910 1.64e-07 ***
## DS1$`ALCOHOL_&_SUBSTANCE_ABUSE` 6.021e-01  7.682e-02   7.838 1.55e-08 ***
## ---
```

```
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 2658 on 28 degrees of freedom
## Multiple R-squared:  0.6869, Adjusted R-squared:  0.6757
## F-statistic: 61.43 on 1 and 28 DF,  p-value: 1.545e-08
```

The model Concludes that the effect of Alcohol and Substance abuse effect is statistically significant.

The R-squared value of 0.6869 indicates that 68.69% of the variance in the dependent variable can be explained by the independent variable.

5.Performing Two tailed test to show the mean difference between Common Mental Health Disorder and Severe Mental Health Disorder.

```
res <- t.test(SMD,CMD)
res
```

```
##
##  Welch Two Sample t-test
##
## data:  SMD and CMD
## t = -2.2013, df = 37.587, p-value = 0.03393
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  -9929.2950  -413.8384
## sample estimates:
## mean of x mean of y
##  6138.867 11310.433
```

```
summary(res)
```

```
##             Length Class  Mode
## statistic   1      -none- numeric
## parameter   1      -none- numeric
## p.value     1      -none- numeric
## conf.int    2      -none- numeric
## estimate    2      -none- numeric
## null.value  1      -none- numeric
## stderr      1      -none- numeric
## alternative 1      -none- character
## method      1      -none- character
## data.name   1      -none- character
```

The above test helps us to understand that there is a significant difference between Common mental Disorder and Severe Mental Health Disorder cases.

The **p-value (0.03393)** is the probability of observing a t-statistic as extreme or more extreme than the one observed, assuming that the null hypothesis is true