```
rm(list = ls())
library(factoextra)
```

```
## Loading required package: ggplot2
```

```
## Welcome! Want to learn more? See two factoextra-related books at https://goo.gl/ve3WBa
```

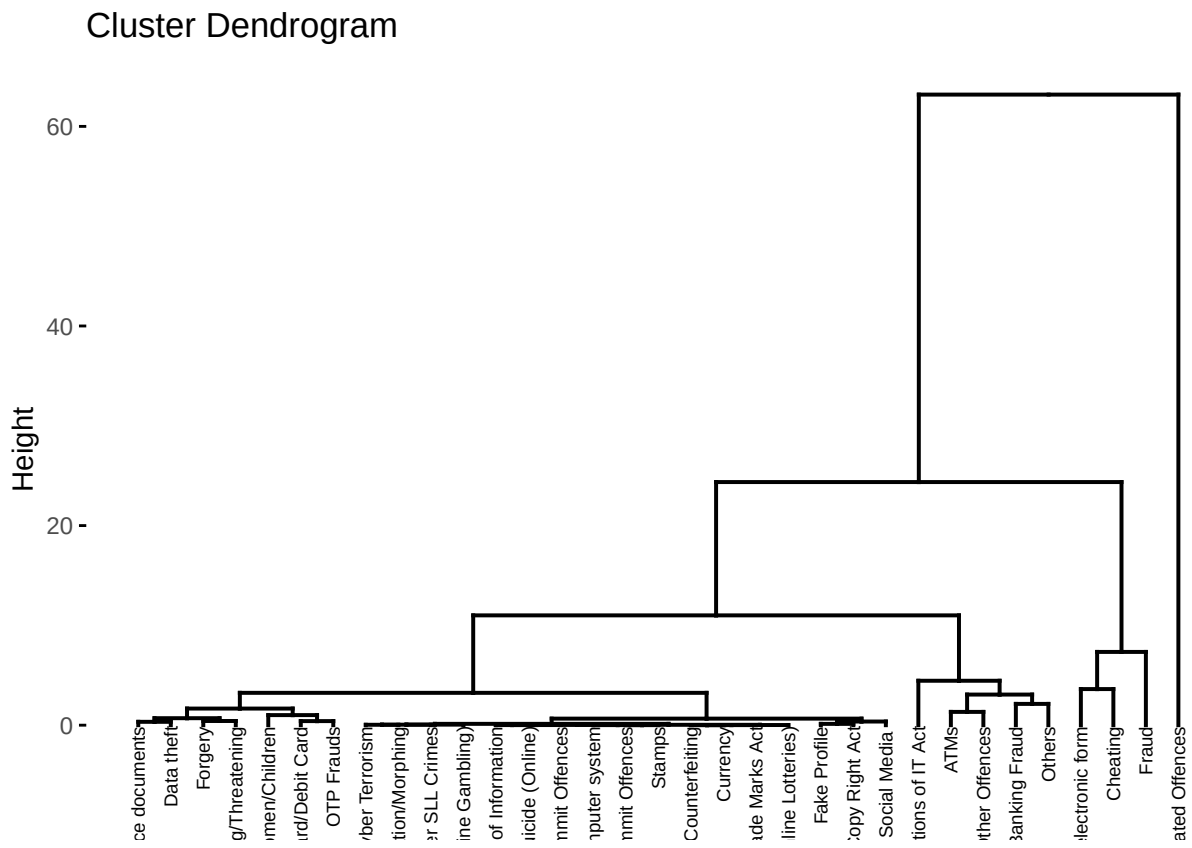
```
library(cluster)
data = read.csv("yearwisecluster.csv")
rownames(data) = data$Crime_Head
rownames(data)
```

```
##  [1] "Tampering computer source documents"
##  [2] "Computer Related Offences"
##  [3] "Cyber Terrorism"
##  [4] "Publication/transmission of obscene / sexually explicit act in electronic form"
##  [5] " Decryption of Information"
##  [6] "Un-authorized access/attempt to  access to protected computer system"
##  [7] "Abetment to Commit Offences"
##  [8] "Attempt to Commit Offences"
##  [9] "Other Sections of IT Act"
## [10] "Abetment of Suicide (Online)"
## [11] "Cyber Stalking/Bullying of Women/Children"
## [12] "Data theft"
## [13] "Fraud"
## [14] "Credit Card/Debit Card"
## [15] "ATMs"
## [16] "Online Banking Fraud"
## [17] "OTP Frauds"
## [18] "Others"
## [19] "Cheating"
## [20] "Forgery"
## [21] "Defamation/Morphing"
## [22] "Fake Profile"
## [23] "Counterfeiting"
## [24] "Currency"
## [25] "Stamps"
## [26] "Cyber Blackmailing/Threatening"
## [27] "Fake News on Social Media "
## [28] "Other Offences"
## [29] "Gambling Act (Online Gambling)"
## [30] "Lotteries Act (Online Lotteries)"
## [31] "Copy Right Act"
## [32] "Trade Marks Act"
## [33] "Other SLL Crimes"
```

```
data = data[-1]
# head(data)
data.scaled = scale(data)
# head(data.scaled)
```

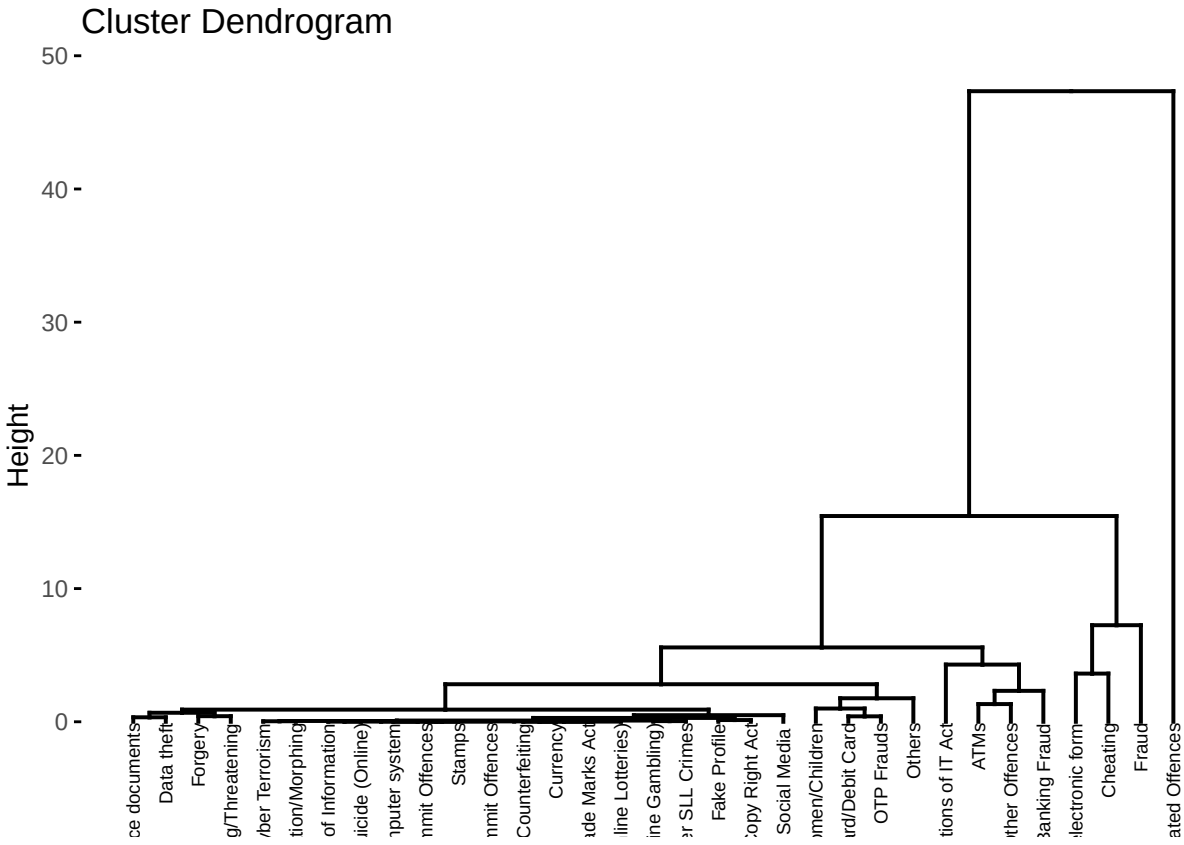
..... **Agglomerative Cluster Analysis**

```r
#agglomerative
res.agnes <- agnes(x = data, # data matrix
                   stand = TRUE, # Standardize the data
                   metric = "euclidean", # metric for distance matrix
                   method = "ward" # Linkage method
)

fviz_dend(res.agnes, cex = 0.5)
```



Divisive Clustering

```r
res.diana <- diana(x = data, # data matrix
                   stand = TRUE, # standardize the data
                   metric = "euclidean")

fviz_dend(res.diana, cex = 0.5)
```


Cluster Dendrogram
Height
50
40
30
20
10
0
Data theft
Forgery
Stamps
Currency
Fake Profile
Social Media
OTP Frauds
Others
ATMs
Cheating
Fraud