Clustering Using K-Medoids

```r
library(ClusterR)
```

```
## Loading required package: gtools
```

```r
library(clevr)
library(aricode)
library(ggplot2)
library(dplyr)
```

```
##
## Attaching package: 'dplyr'
```

```
## The following objects are masked from 'package:stats':
##
##     filter, lag
```

```
## The following objects are masked from 'package:base':
##
##     intersect, setdiff, setequal, union
```

```r
real<-rep(1:6,each=100)
```

Since the number of clusters is 6 with 100 observations of each

```r
distm<-c("euclidean","manhattan","chebyshev","canberra","braycurtis","pearson_correlation","mahalanobis"
for( i in distm)
{   set.seed(500)
  clusters <-Cluster_Medoids(synthetic_control,clusters=6,distance_metric = i,threads = 4,swap_phase = 
    ari<-ARI(as.factor(clusters$clusters),as.factor(real))
    vi<-variation_info(as.factor(clusters$clusters),as.factor(real))
    m<-t(as.matrix(c(round(ari,3),round(vi,3))))
    colnames(m)<-c("ARI","VI")

    cat("Partitioning around Medoids using",i,"distance","\n")
    #cat(prmatrix(m,rowlab = rep_len("", ncol(m))))
    print(m)
    cat("\n")
    df1<-mutate(synthetic_control,clusters$clusters)
    print(ggplot(df1,aes(x=clusters$clusters))+geom_bar()+labs(x="Predicted Cluster",title=str_to_title
)
  }
```
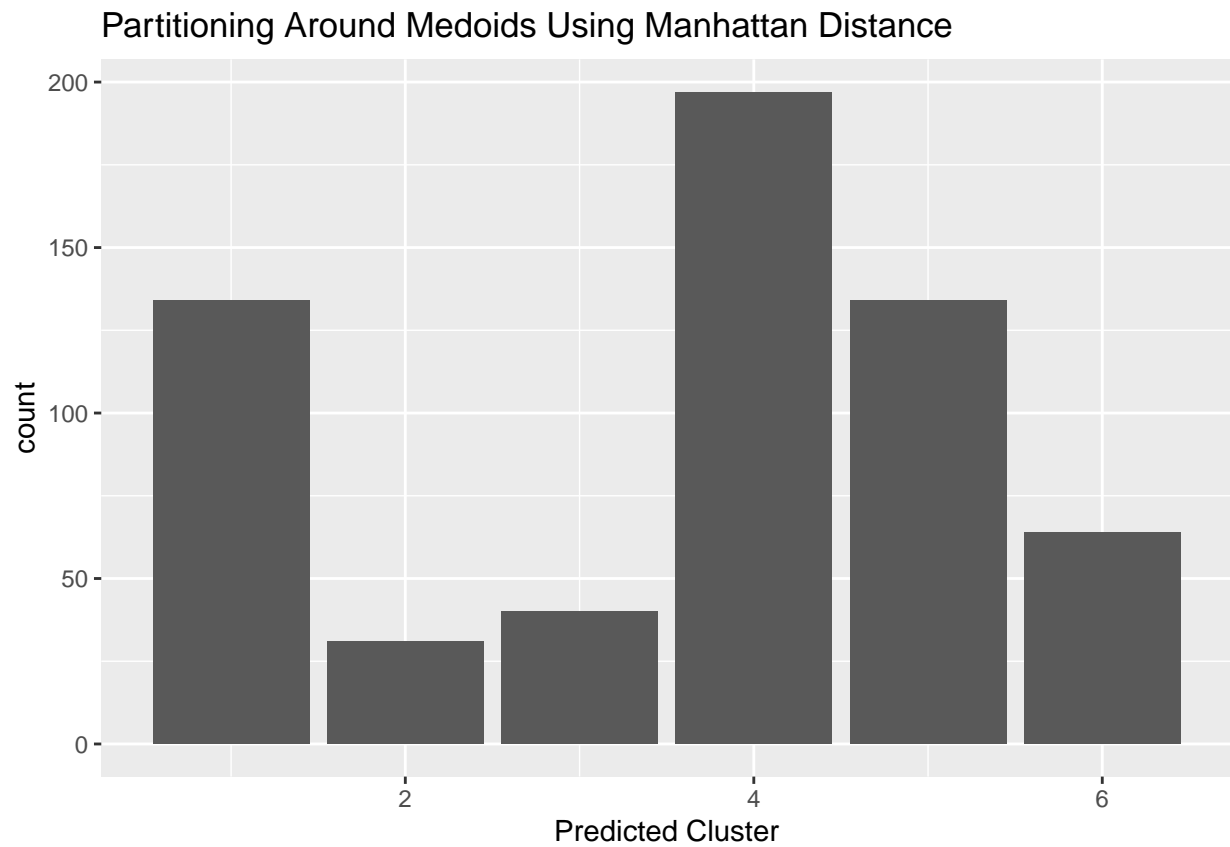
```
## Partitioning around Medoids using euclidean distance
##        ARI   VI
## [1,] 0.568 0.92
```
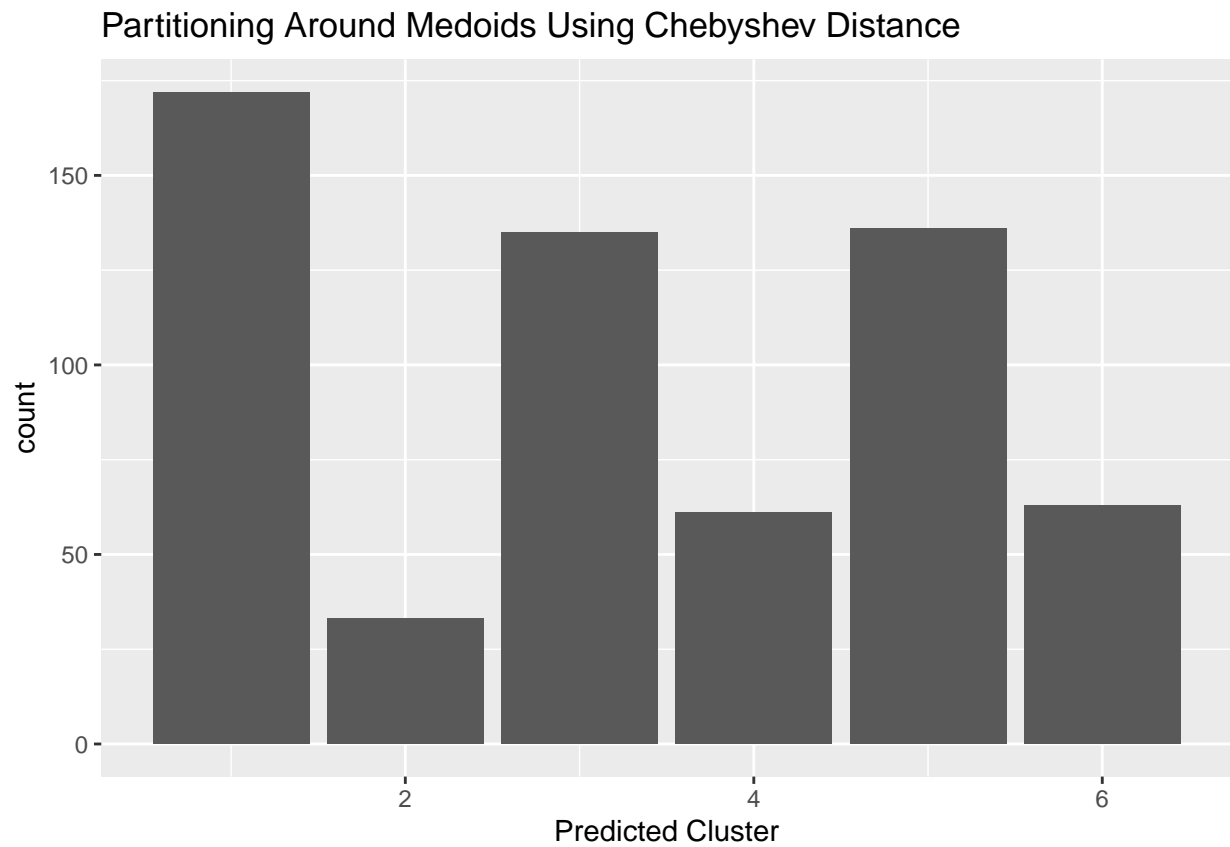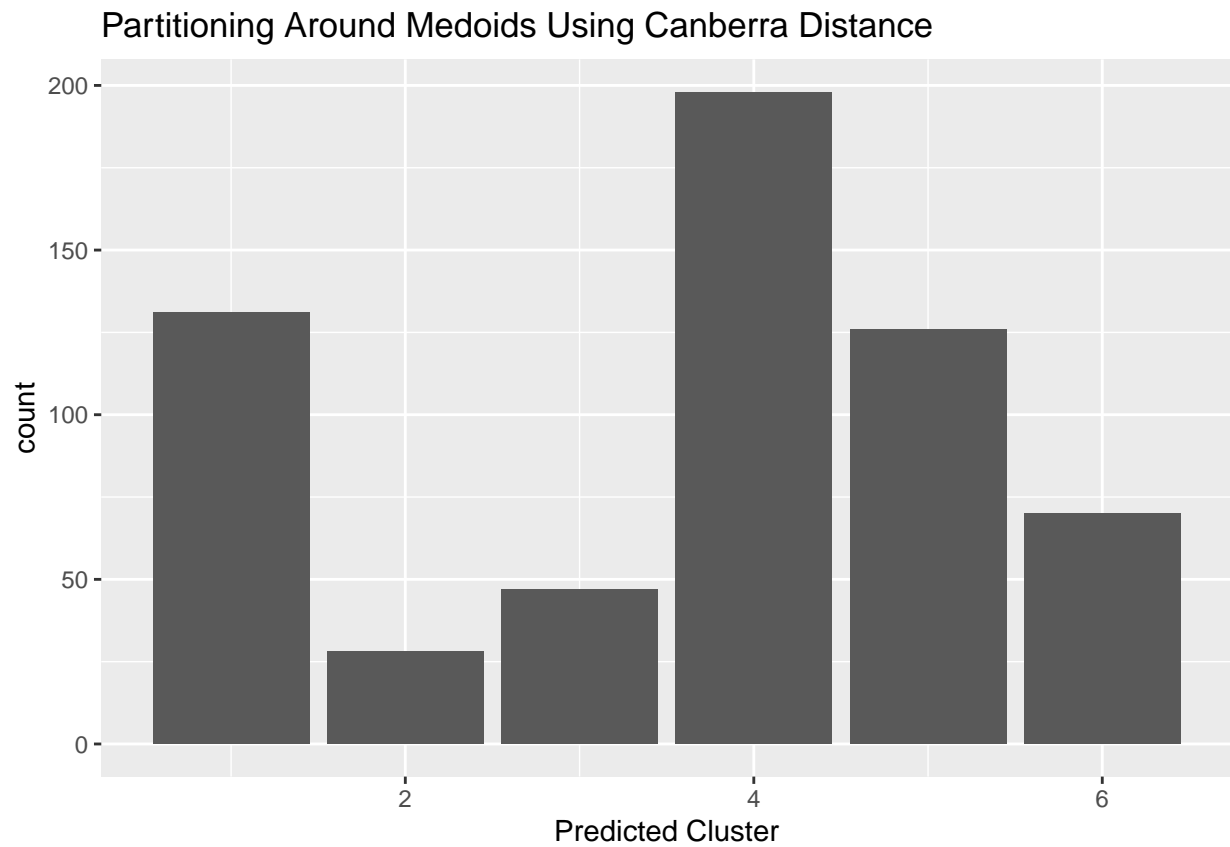
Partitioning Around Medoids Using Euclidean Distance
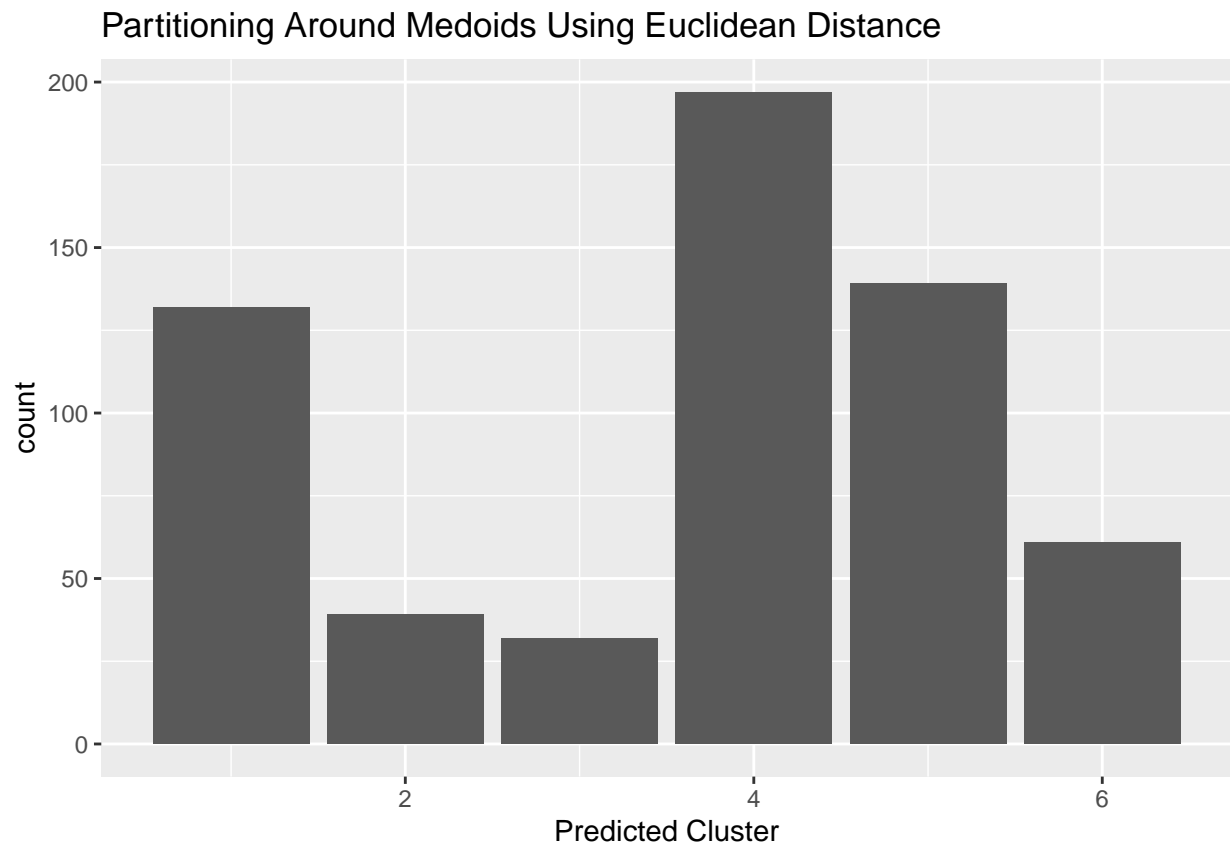

```
## Partitioning around Medoids using manhattan distance
##         ARI    VI
## [1,] 0.557 0.97
```

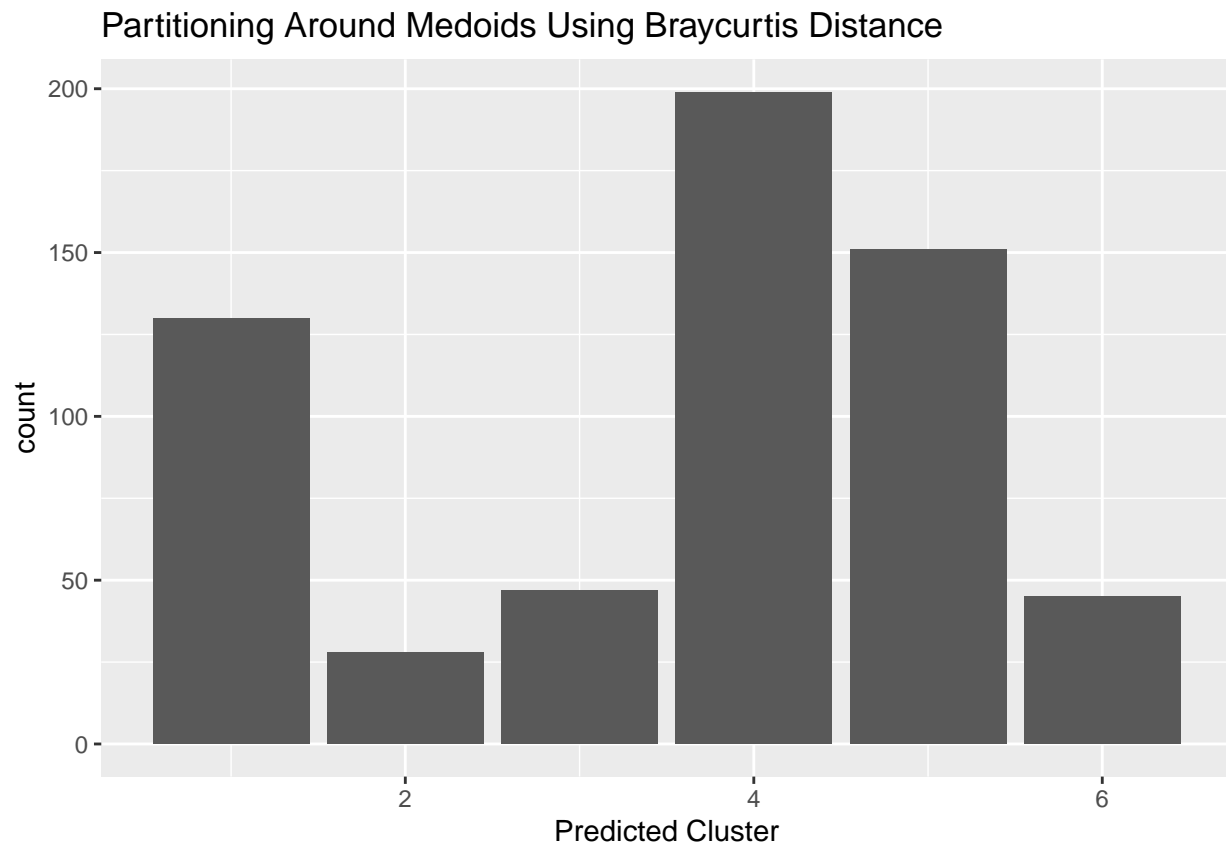## Partitioning Around Medoids Using Manhattan Distance


```
## Partitioning around Medoids using chebyshev distance
##        ARI    VI
## [1,] 0.524 1.077
```

Partitioning Around Medoids Using Chebyshev Distance


```
## Partitioning around Medoids using canberra distance
##        ARI    VI
## [1,] 0.551 0.994
```

Partitioning Around Medoids Using Canberra Distance
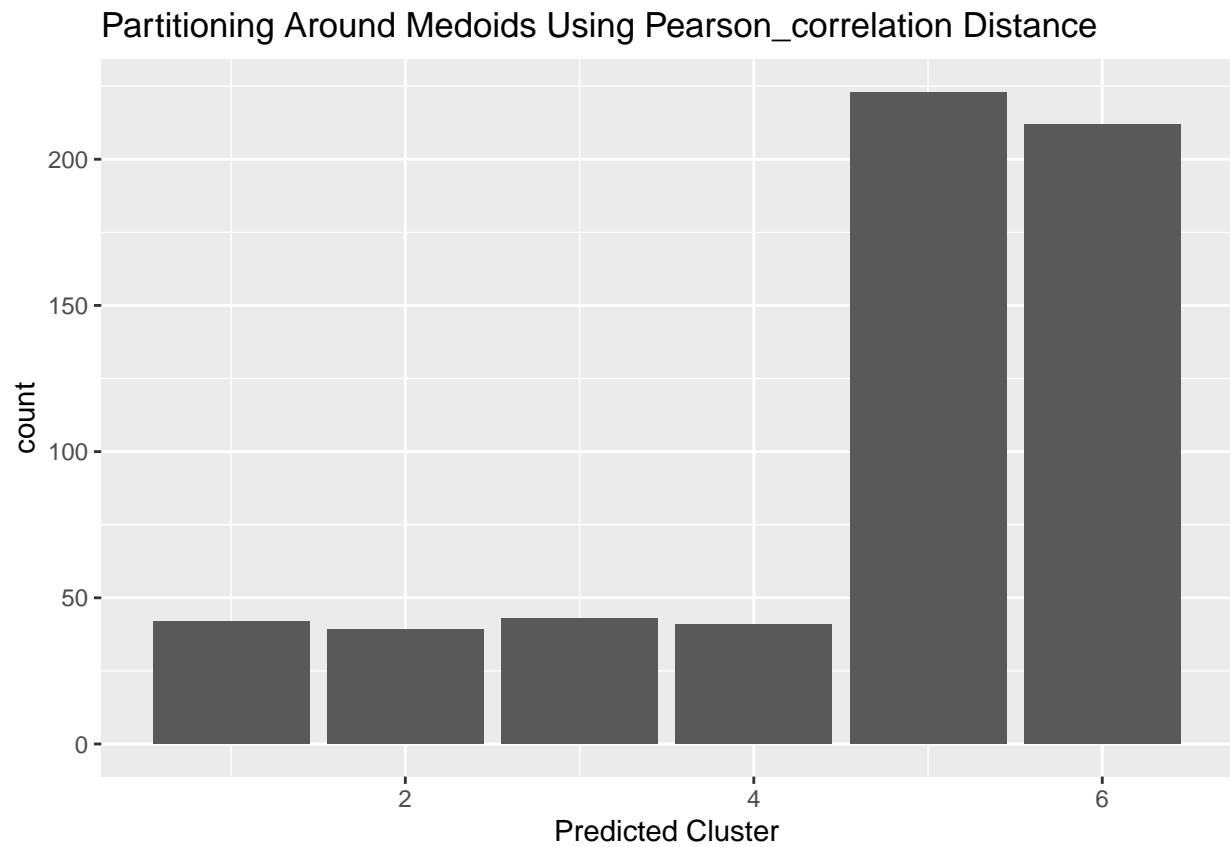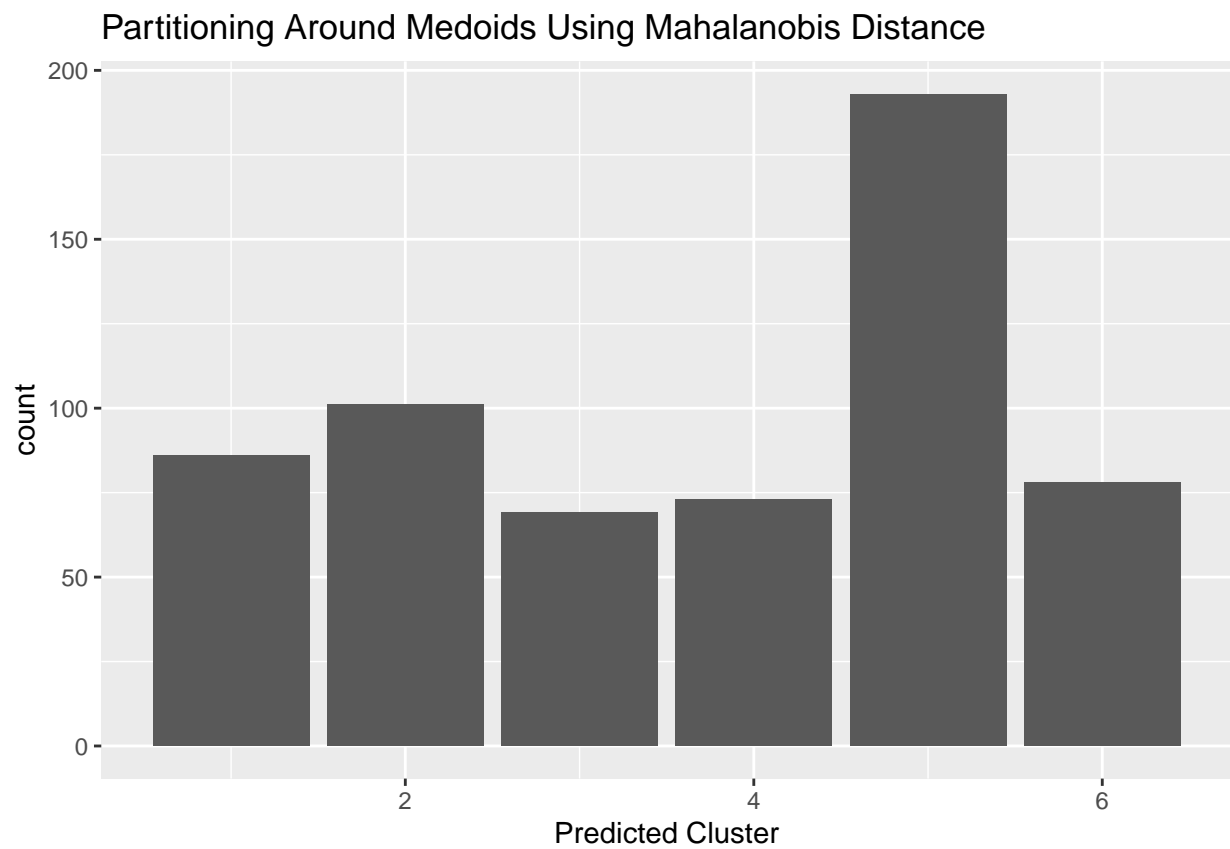


```
## Partitioning around Medoids using braycurtis distance
##         ARI    VI
## [1,] 0.573 0.885
```

Partitioning Around Medoids Using Braycurtis Distance


```
## Partitioning around Medoids using pearson_correlation distance
##        ARI    VI
## [1,] 0.426 1.366
```

Partitioning Around Medoids Using Pearson_correlation Distance


```
## Partitioning around Medoids using mahalanobis distance
##        ARI    VI
## [1,] 0.02 3.342
```

Partitioning Around Medoids Using Mahalanobis Distance


```
## Partitioning around Medoids using cosine distance
##        ARI    VI
## [1,] 0.558 0.925
```

Partitioning Around Medoids Using Cosine Distance