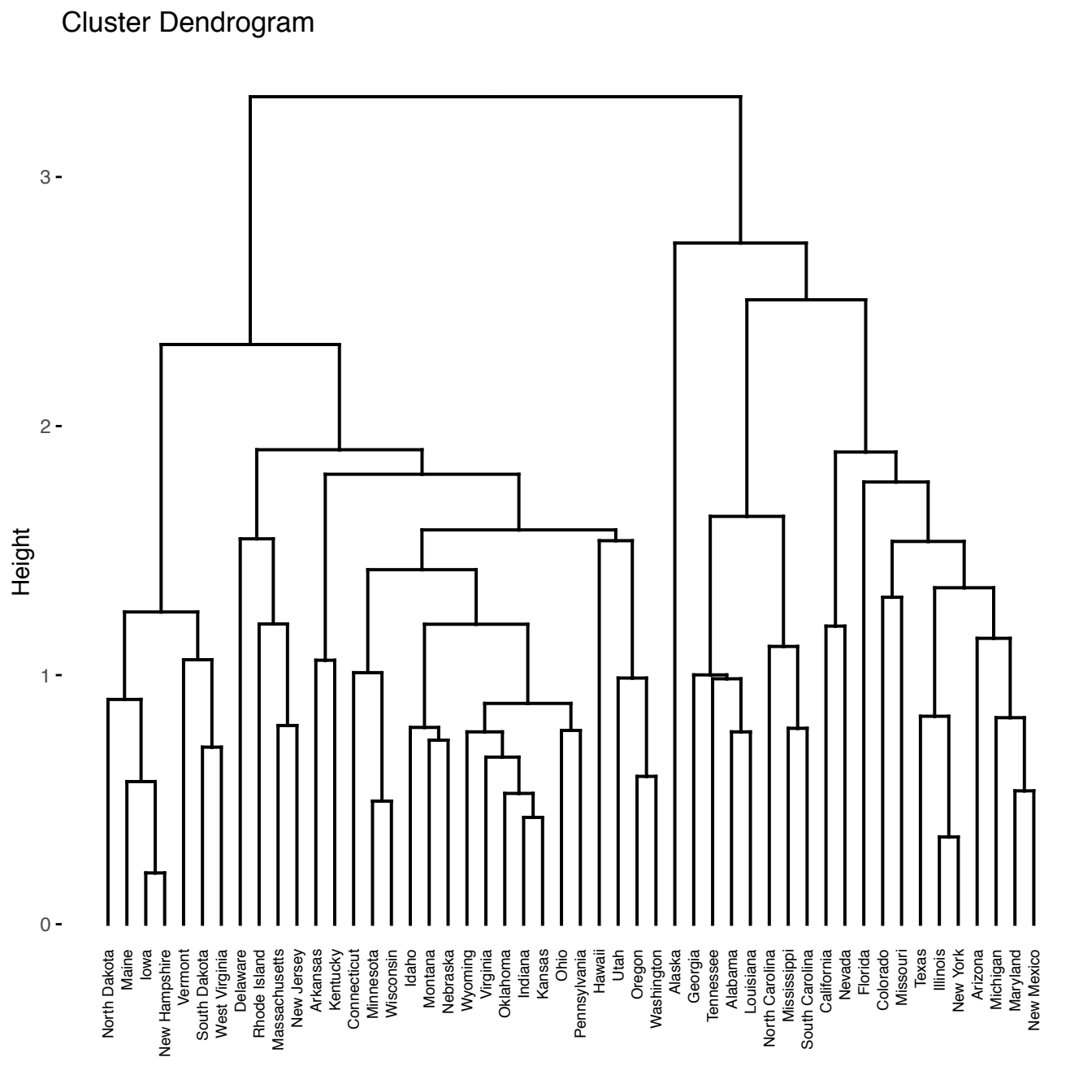
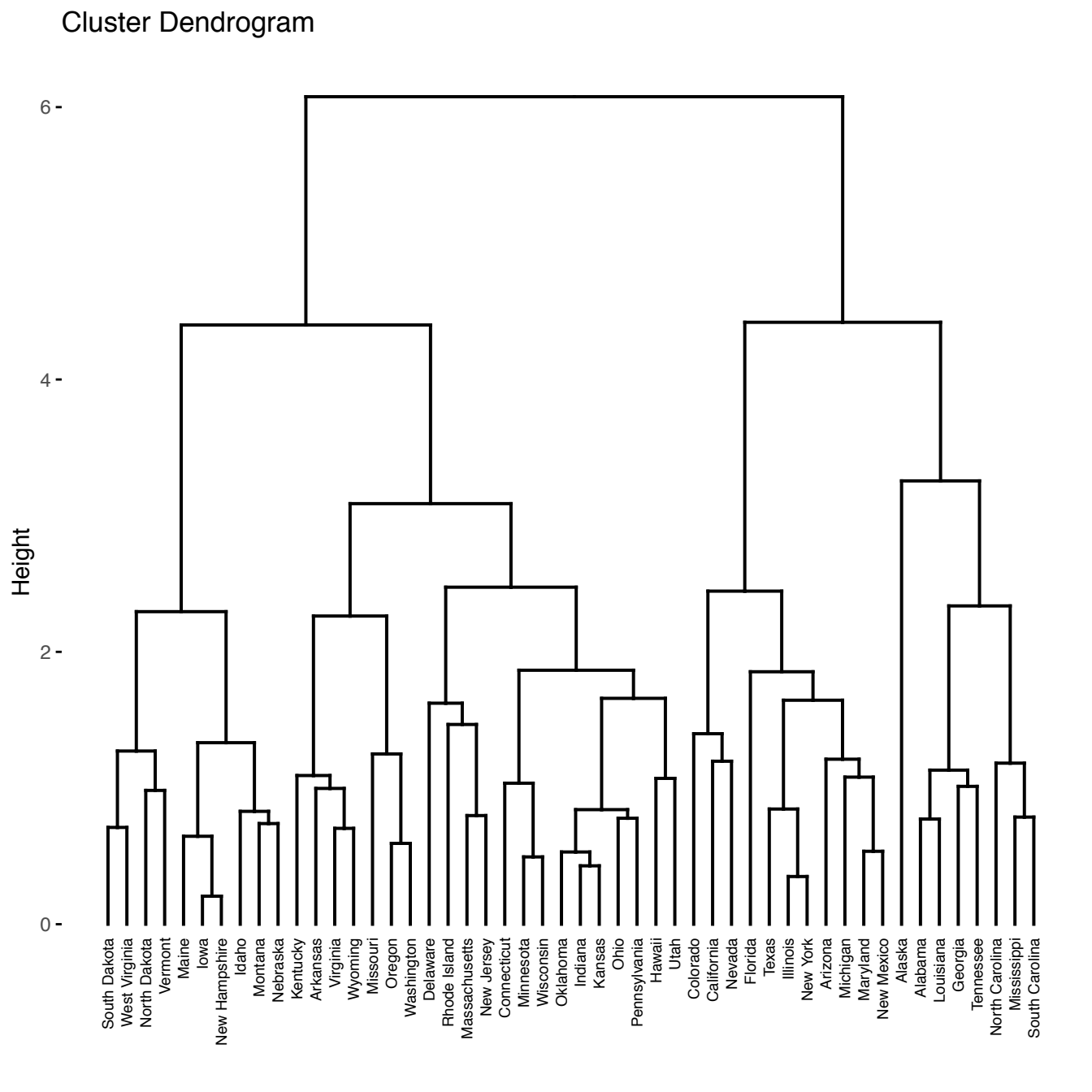
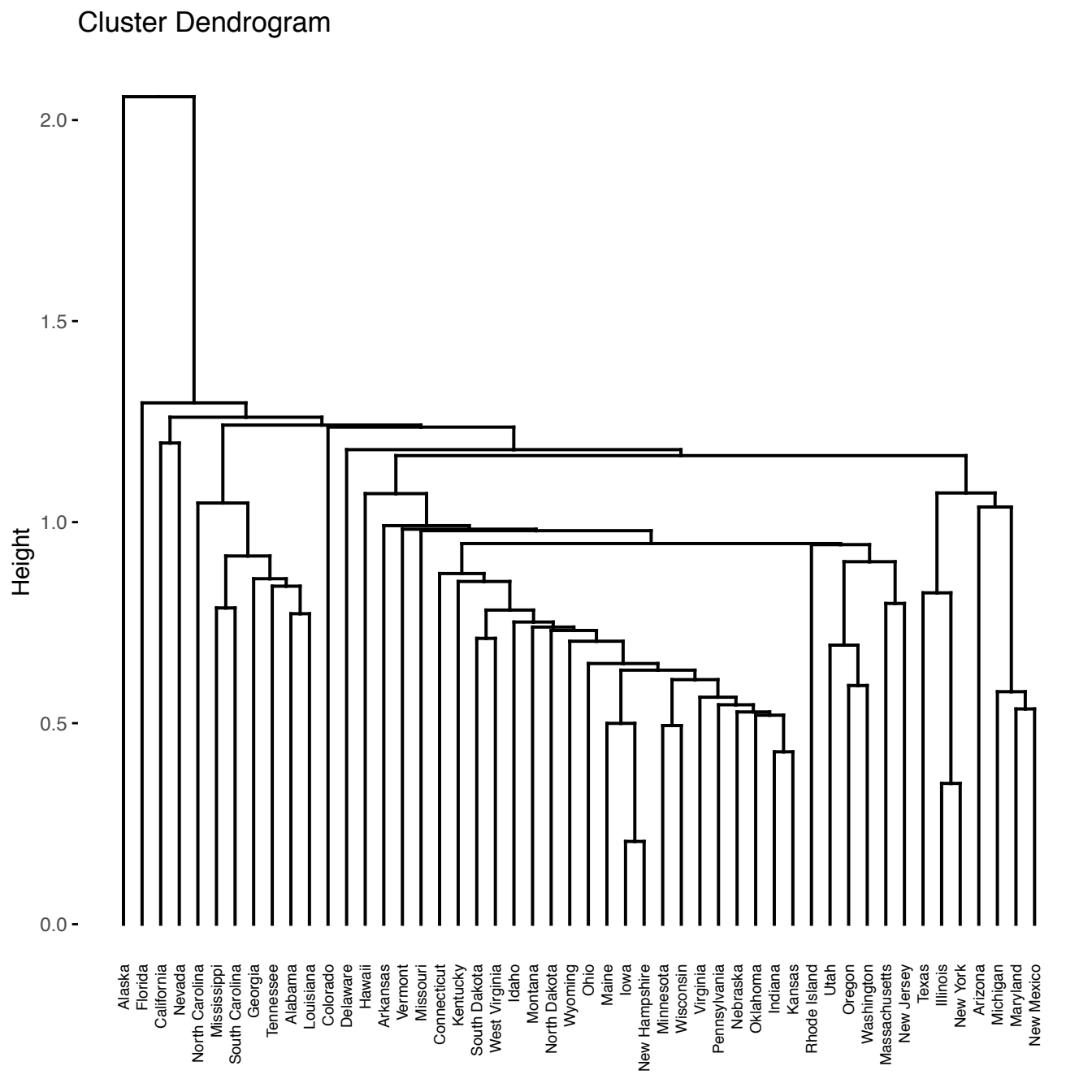
```
USarrest.R <- function(){
# Algomerative clustering algorithms for US Arrest Data
# Requires library  "factoextra"

#read data
data("USArrests")
# Load libraries
library("factoextra")

# standardize data
df <- scale(USArrests)
# compute matrix of distances
res.dist <- dist(df, method = "euclidean")

# compute cluster
#res.hc <- hclust(d = res.dist, method = "ward.D2")
#res.hc1 <- hclust(d = res.dist, method = "average")
#res.hc2 <- hclust(d = res.dist, method = "complete")
res.hc3 <- hclust(d = res.dist, method = "single")

# display dendogram
#plot.hc <- fviz_dend(res.hc, cex = 0.5)
#plot.hc <- fviz_dend(res.hc1, cex = 0.5)
#plot.hc <- fviz_dend(res.hc2, cex = 0.5)
plot.hc <- fviz_dend(res.hc3, cex = 0.5)

#ggsave("dendogram-ward2.pdf",device = "pdf")
#ggsave("dendogram-average-linkage.pdf",device = "pdf")
#ggsave("dendogram-complete-linkage.pdf",device = "pdf")
ggsave("dendogram-single-linkage.pdf",device = "pdf")
}
```


Cluster Dendrogram
Height
0
1
2
3
North Dakota
Maine
Iowa
New Hampshire
Vermont
South Dakota
West Virginia
Delaware
Rhode Island
Massachusetts
New Jersey
Arkansas
Kentucky
Connecticut
Minnesota
Wisconsin
Idaho
Montana
Nebraska
Wyoming
Virginia
Oklahoma
Indiana
Kansas
Ohio
Pennsylvania
Hawaii
Utah
Oregon
Washington
Alaska
Georgia
Tennessee
Alabama
Louisiana
North Carolina
Mississippi
South Carolina
California
Nevada
Florida
Colorado
Missouri
Texas
Illinois
New York
Arizona
Michigan
Maryland
New Mexico


Cluster Dendrogram
Height
6
4
2
0
South Dakota
West Virginia
North Dakota
Vermont
Maine
Iowa
New Hampshire
Idaho
Montana
Nebraska
Kentucky
Arkansas
Virginia
Wyoming
Missouri
Oregon
Washington
Delaware
Rhode Island
Massachusetts
New Jersey
Connecticut
Minnesota
Wisconsin
Oklahoma
Indiana
Kansas
Ohio
Pennsylvania
Hawaii
Utah
Colorado
California
Nevada
Florida
Texas
Illinois
New York
Arizona
Michigan
Maryland
New Mexico
Alaska
Alabama
Louisiana
Georgia
Tennessee
North Carolina
Mississippi
South Carolina


Cluster Dendrogram
Height
2.0
1.5
1.0
0.5
0.0
Alaska
Florida
California
Nevada
North Carolina
Mississippi
South Carolina
Georgia
Tennessee
Alabama
Louisiana
Colorado
Delaware
Hawaii
Arkansas
Vermont
Missouri
Connecticut
Kentucky
South Dakota
West Virginia
Idaho
Montana
North Dakota
Wyoming
Ohio
Maine
Iowa
New Hampshire
Minnesota
Wisconsin
Virginia
Pennsylvania
Nebraska
Oklahoma
Indiana
Kansas
Rhode Island
Utah
Oregon
Washington
Massachusetts
New Jersey
Texas
Illinois
New York
Arizona
Michigan
Maryland
New Mexico