Deaths-on-England.R

user

2022-05-18

Deaths\_on\_Eng\_Data <- read.csv("lahbtables2022week18.csv", header= TRUE)   
  
  
names(Deaths\_on\_Eng\_Data)

## [1] "Area.code" "Geography.type" "Area.name" "Cause.of.death"   
## [5] "Week.number" "Place.of.death" "Number.of.deaths"

head(Deaths\_on\_Eng\_Data)

## Area.code Geography.type Area.name Cause.of.death Week.number  
## 1 E06000001 Local Authority Hartlepool All causes 1  
## 2 E06000001 Local Authority Hartlepool All causes 1  
## 3 E06000001 Local Authority Hartlepool All causes 1  
## 4 E06000001 Local Authority Hartlepool All causes 1  
## 5 E06000001 Local Authority Hartlepool All causes 1  
## 6 E06000001 Local Authority Hartlepool All causes 1  
## Place.of.death Number.of.deaths  
## 1 Care home 9  
## 2 Elsewhere 0  
## 3 Home 7  
## 4 Hospice 1  
## 5 Hospital 6  
## 6 Other communal establishment 0

tail(Deaths\_on\_Eng\_Data)

## Area.code Geography.type Area.name  
## 73003 W11000031 Health Board Swansea Bay University Health Board  
## 73004 W11000031 Health Board Swansea Bay University Health Board  
## 73005 W11000031 Health Board Swansea Bay University Health Board  
## 73006 W11000031 Health Board Swansea Bay University Health Board  
## 73007 W11000031 Health Board Swansea Bay University Health Board  
## 73008 W11000031 Health Board Swansea Bay University Health Board  
## Cause.of.death Week.number Place.of.death Number.of.deaths  
## 73003 COVID 19 18 Care home 0  
## 73004 COVID 19 18 Elsewhere 0  
## 73005 COVID 19 18 Home 1  
## 73006 COVID 19 18 Hospice 0  
## 73007 COVID 19 18 Hospital 3  
## 73008 COVID 19 18 Other communal establishment 0

summary(Deaths\_on\_Eng\_Data)

## Area.code Geography.type Area.name Cause.of.death   
## Length:73008 Length:73008 Length:73008 Length:73008   
## Class :character Class :character Class :character Class :character   
## Mode :character Mode :character Mode :character Mode :character   
##   
##   
##   
## Week.number Place.of.death Number.of.deaths   
## Min. : 1.0 Length:73008 Min. : 0.000   
## 1st Qu.: 5.0 Class :character 1st Qu.: 0.000   
## Median : 9.5 Mode :character Median : 0.000   
## Mean : 9.5 Mean : 3.221   
## 3rd Qu.:14.0 3rd Qu.: 3.000   
## Max. :18.0 Max. :137.000

str(Deaths\_on\_Eng\_Data)

## 'data.frame': 73008 obs. of 7 variables:  
## $ Area.code : chr "E06000001" "E06000001" "E06000001" "E06000001" ...  
## $ Geography.type : chr "Local Authority" "Local Authority" "Local Authority" "Local Authority" ...  
## $ Area.name : chr "Hartlepool" "Hartlepool" "Hartlepool" "Hartlepool" ...  
## $ Cause.of.death : chr "All causes" "All causes" "All causes" "All causes" ...  
## $ Week.number : int 1 1 1 1 1 1 1 1 1 1 ...  
## $ Place.of.death : chr "Care home" "Elsewhere" "Home" "Hospice" ...  
## $ Number.of.deaths: int 9 0 7 1 6 0 0 0 1 0 ...

nrow(Deaths\_on\_Eng\_Data)

## [1] 73008

ncol(Deaths\_on\_Eng\_Data)

## [1] 7

dim(Deaths\_on\_Eng\_Data)

## [1] 73008 7

Deaths\_on\_Eng\_Data\_A = Deaths\_on\_Eng\_Data[,c(3,6,7)]  
names(Deaths\_on\_Eng\_Data\_A)

## [1] "Area.name" "Place.of.death" "Number.of.deaths"

library(reshape2) # activate "reshape2" package

## Warning: package 'reshape2' was built under R version 4.1.3

Deaths\_on\_Eng\_Data\_pivot <- dcast(Deaths\_on\_Eng\_Data\_A, Area.name ~ Place.of.death, sum, value.var ="Number.of.deaths")  
  
head(Deaths\_on\_Eng\_Data\_pivot)

## Area.name Care home Elsewhere Home Hospice  
## 1 Adur 76 5 67 15  
## 2 Allerdale 129 6 139 4  
## 3 Amber Valley 91 9 137 15  
## 4 Aneurin Bevan University Health Board 338 70 734 57  
## 5 Arun 243 19 195 50  
## 6 Ashfield 112 9 146 25  
## Hospital Other communal establishment  
## 1 128 0  
## 2 242 0  
## 3 245 1  
## 4 1372 6  
## 5 317 0  
## 6 268 0

View(Deaths\_on\_Eng\_Data\_pivot)  
  
rownames(Deaths\_on\_Eng\_Data\_pivot)=Deaths\_on\_Eng\_Data\_pivot[,1]  
Deaths\_on\_Eng\_Data\_pivot[,1] <- NULL   
head(Deaths\_on\_Eng\_Data\_pivot)

## Care home Elsewhere Home Hospice Hospital  
## Adur 76 5 67 15 128  
## Allerdale 129 6 139 4 242  
## Amber Valley 91 9 137 15 245  
## Aneurin Bevan University Health Board 338 70 734 57 1372  
## Arun 243 19 195 50 317  
## Ashfield 112 9 146 25 268  
## Other communal establishment  
## Adur 0  
## Allerdale 0  
## Amber Valley 1  
## Aneurin Bevan University Health Board 6  
## Arun 0  
## Ashfield 0

normalise <- function(df)   
{   
 return(((df- min(df)) /(max(df)-min(df))\*(1-0))+0)   
}   
  
Area.name=rownames(Deaths\_on\_Eng\_Data\_pivot)  
Deaths\_on\_Eng\_Data\_pivot\_n=as.data.frame(lapply(Deaths\_on\_Eng\_Data\_pivot,normalise))   
rownames(Deaths\_on\_Eng\_Data\_pivot\_n)=Area.name  
  
  
library(factoextra) # activate "factoextra" package

## Warning: package 'factoextra' was built under R version 4.1.3

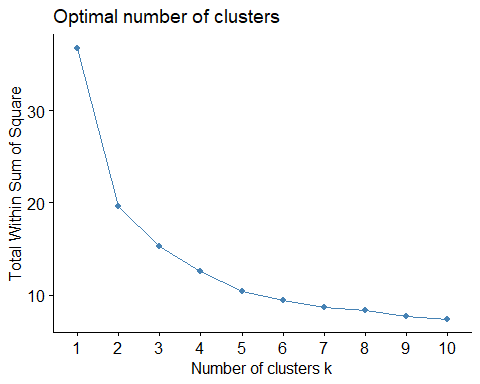
## Loading required package: ggplot2

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

tendency <- get\_clust\_tendency(Deaths\_on\_Eng\_Data\_pivot\_n, 30, graph = TRUE)   
tendency$hopkins\_stat

## [1] 0.8831725

fviz\_nbclust(Deaths\_on\_Eng\_Data\_pivot\_n, kmeans, method = "wss")



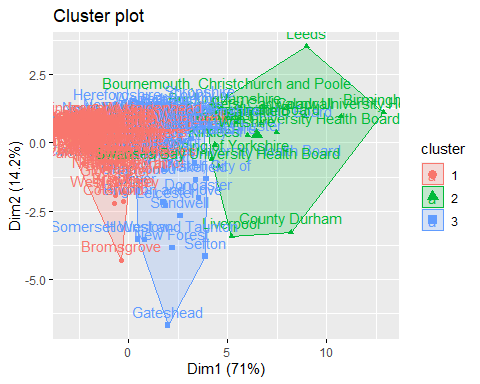
set.seed(130)   
km.fit <- kmeans(Deaths\_on\_Eng\_Data\_pivot\_n, 3, nstart = 30)  
km.fit$cluster

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## Allerdale   
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## Amber Valley   
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km.fit$size

## [1] 245 18 75

fviz\_cluster(km.fit,Deaths\_on\_Eng\_Data\_pivot\_n)



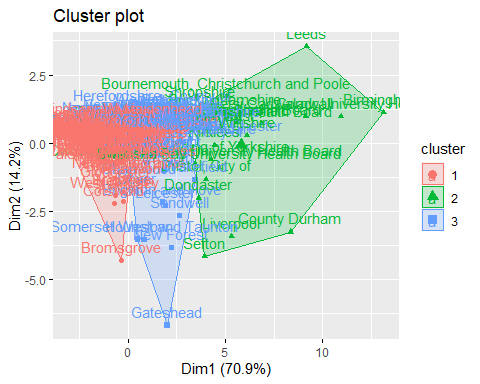
Deaths\_on\_Eng\_Data\_pivot\_n2 = subset(Deaths\_on\_Eng\_Data\_pivot\_n, rownames(Deaths\_on\_Eng\_Data\_pivot\_n)!="Aneurin Bevan University Health Board")   
  
set.seed(130)   
km.fit2 <- kmeans(Deaths\_on\_Eng\_Data\_pivot\_n2, 3, nstart = 30)   
km.fit2$cluster

## Adur   
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km.fit2$size

## [1] 222 23 92

fviz\_cluster(km.fit2,Deaths\_on\_Eng\_Data\_pivot\_n2)



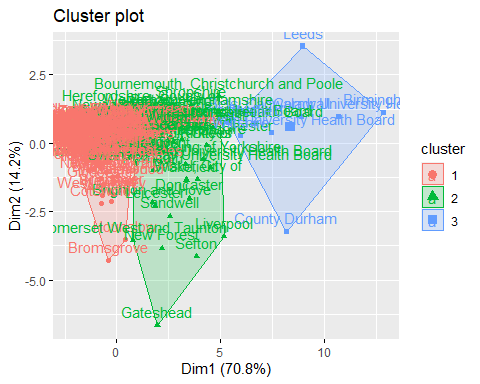
Deaths\_on\_Eng\_Data\_pivot\_n3=subset(Deaths\_on\_Eng\_Data\_pivot\_n, !(rownames(Deaths\_on\_Eng\_Data\_pivot\_n) %in% c("City of London",  
 "Isles of Scilly",   
 "Eden",   
 "Rutland")))  
set.seed(130)   
km.fit3 <- kmeans(Deaths\_on\_Eng\_Data\_pivot\_n3, 3, nstart = 30)   
km.fit3$cluster

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fviz\_cluster(km.fit3,Deaths\_on\_Eng\_Data\_pivot\_n3)



fviz\_cluster(km.fit3,Deaths\_on\_Eng\_Data\_pivot\_n3,ellipse.type = "norm")

