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1  ##### Fuzzy C-Means Clustering #####
2  library(MASS)
3  data("Cars93")
4  str(Cars93)
5  ###欠測値処理
6  anyNA(Cars93[,c(5,7,12:14,17:19,25)])#指定範囲の項目にNAがあるか
7
8  ###Fuzzy C-means###
9  install.packages("e1071")
10 library(e1071)
11 library(cluster)
12 fcmc <- cmeans(x = Cars93[,c(5,7,12:14,17:19,25)],
13               centers = 3 ,                #Number of clusters
14               iter.max = 100 ,
15               verbose = F , #If TRUE, make some output during learning.
16               m = 2,                #あいまいさの程度:m=2
17               dist="euclidean",
18               method="cmeans",#cmeans:the c-means fuzzy clustering method
19               rate.par = NULL) #
20 names(fcmc)
21 fcmc$size          #CL size
22 fcmc$cluster       #hard clustering
23 round((fcmc$membership),2) #Soft clustering
24
25 fcmcl <- cmeans(x = Cars93[,c(5,7,12:14,17:19,25)], centers = 3 ,
26               iter.max = 100 ,
27               verbose = F , #If TRUE, make some output during learning.
28               m = 5,                #あいまいさの程度:m=5
29               dist="euclidean",
30               method="cmeans",#cmeans:the c-means fuzzy clustering method
31               rate.par = NULL)
32 fcmcl
33 #
34 fcmc$centers
35 fcmcl$centers
36 fcmc$membership
37 fcmcl$membership
38 fcmc$size
39 fcmcl$size
40 clusplot(Cars93[,c(5,7,12:14,17:19,25)], fcmc$cluster,
41          color = T, shade = F, labels = 2, lines = 0)
42 clusplot(Cars93[,c(5,7,12:14,17:19,25)], fcmcl$cluster,
43          color = T, shade = F, labels = 2, lines = 0)
44
45 ###信頼性の尺度#####
46 #信頼性の尺度:gath.geva,xie.beni,fukuyama.sugeno,partition.coefficient,
47 #partition.entropy,proportion.exponent,separation.index,all
48 fclustIndex(fcmc , Cars93[,c(5,7,12:14,17:19,25)] ,
49            index = "xie.beni")#信頼性の尺度
50 fclustIndex(fcmcl , Cars93[,c(5,7,12:14,17:19,25)] ,
51            index = "xie.beni")#信頼性の尺度
52
53

```