

Actividad-5.R

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# TC1002S.201 - Equipo 3
# Actividad Evaluable 5: Análisis de datos
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# Cargamos librerías -----
library(corrplot)

## corrplot 0.92 loaded

library(factoextra)

## Loading required package: ggplot2
## Welcome! Want to learn more? See two factoextra-related books at https://goo.gl/ve3WBa

library(ggplot2)

# Cargamos el dataset "mtcars" -----
data(mtcars)

# Análisis de K-means -----

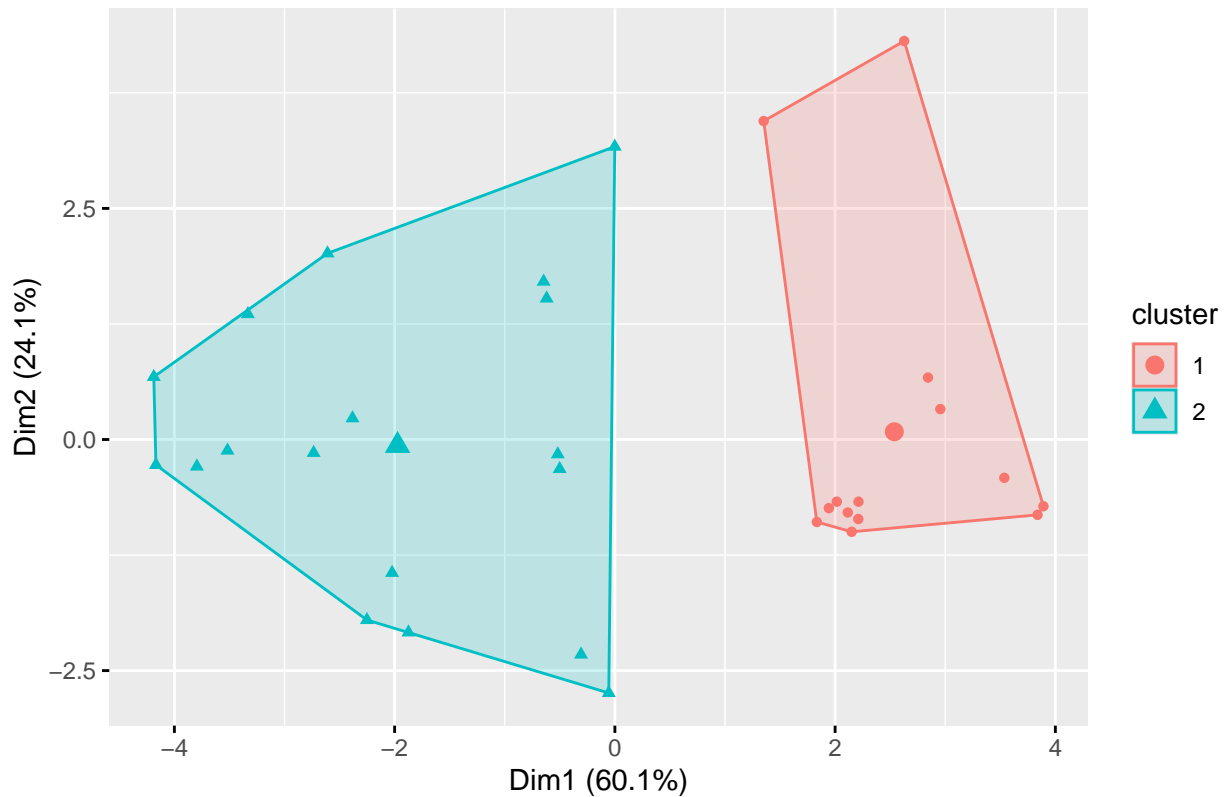
# Escalado de datos
mtcars_s <- scale(mtcars)

# Instalamos el paquete "factoextra" para poder realizar el análisis de K-means
km2 <- kmeans(mtcars_s, 2)
km2

## K-means clustering with 2 clusters of sizes 14, 18
##
## Cluster means:
##      mpg      cyl      disp      hp      drat      wt      qsec
## 1 -0.8280518  1.0148821  0.9874085  0.9119628 -0.6869112  0.7991807 -0.6024854
## 2  0.6440403 -0.7893528 -0.7679844 -0.7093044  0.5342642 -0.6215850  0.4685997
##      vs      am      gear      carb
## 1 -0.8680278 -0.5278510 -0.5445697  0.4256439
## 2  0.6751327  0.4105508  0.4235542 -0.3310564
##
## Clustering vector:
##      Mazda RX4      Mazda RX4 Wag      Datsun 710      Hornet 4 Drive
##      2              2              2              2
## Hornet Sportabout      Valiant      Duster 360      Merc 240D
##      1              2              1              2
```

```
##           Merc 230           Merc 280           Merc 280C           Merc 450SE
##           2             2             2             1
##           Merc 450SL       Merc 450SLC   Cadillac Fleetwood Lincoln Continental
##           1             1             1             1
##   Chrysler Imperial       Fiat 128       Honda Civic       Toyota Corolla
##           1             2             2             2
##           Toyota Corona   Dodge Challenger   AMC Javelin       Camaro Z28
##           2             1             1             1
##   Pontiac Firebird       Fiat X1-9       Porsche 914-2       Lotus Europa
##           1             2             2             2
##   Ford Pantera L       Ferrari Dino       Maserati Bora       Volvo 142E
##           1             2             1             2
##
## Within cluster sum of squares by cluster:
## [1] 64.93441 114.14693
## (between_SS / total_SS = 47.5 %)
##
## Available components:
##
## [1] "cluster"      "centers"      "totss"        "withinss"     "tot.withinss"
## [6] "betweenss"    "size"         "iter"         "ifault"
fviz_cluster(km2, data = mtcars_s, geom = "point", ellipse.type = "convex", ellipse = TRUE)
```

Cluster plot



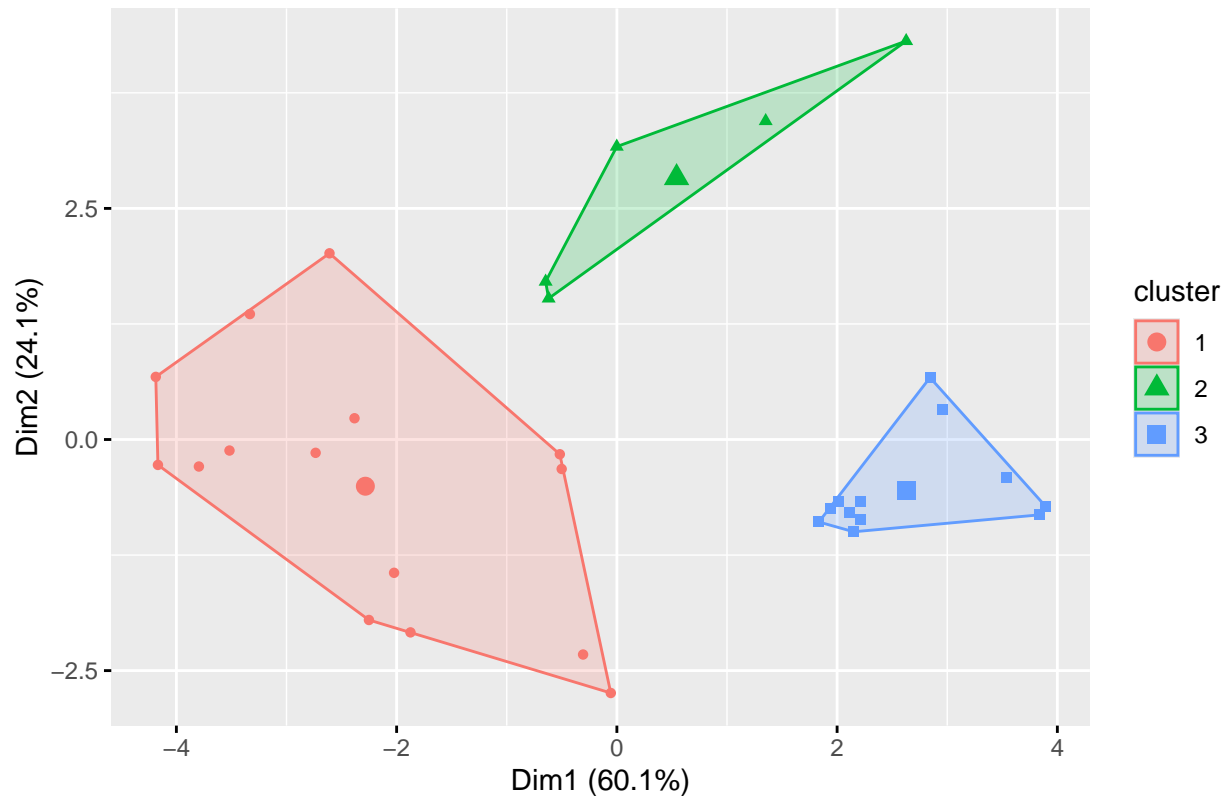
```
# K-means con 3 clusters
km3 <- kmeans(mtcars_s, 3)
km3
```

```

## K-means clustering with 3 clusters of sizes 15, 5, 12
##
## Cluster means:
##      mpg      cyl      disp      hp      drat      wt      qsec
## 1  0.7570512 -0.9262258 -0.79938884 -0.8073490  0.5625263 -0.6514165  0.7326758
## 2 -0.2639188  0.3429602 -0.05907659  0.7600688  0.4478156 -0.2210111 -1.2494801
## 3 -0.8363478  1.0148821  1.02385129  0.6924910 -0.8897477  0.9063586 -0.3952280
##      vs      am      gear      carb
## 1  0.9837648  0.2546807  0.3331960 -0.6268574
## 2 -0.8680278  1.1899014  1.2367782  1.4781451
## 3 -0.8680278 -0.8141431 -0.9318192  0.1676779
##
## Clustering vector:
##      Mazda RX4      Mazda RX4 Wag      Datsun 710      Hornet 4 Drive
##      2              2              1              1
##  Hornet Sportabout      Valiant      Duster 360      Merc 240D
##      3              1              3              1
##      Merc 230      Merc 280      Merc 280C      Merc 450SE
##      1              1              1              3
##      Merc 450SL      Merc 450SLC      Cadillac Fleetwood      Lincoln Continental
##      3              3              3              3
##  Chrysler Imperial      Fiat 128      Honda Civic      Toyota Corolla
##      3              1              1              1
##      Toyota Corona      Dodge Challenger      AMC Javelin      Camaro Z28
##      1              3              3              3
##      Pontiac Firebird      Fiat X1-9      Porsche 914-2      Lotus Europa
##      3              1              1              1
##      Ford Pantera L      Ferrari Dino      Maserati Bora      Volvo 142E
##      2              2              2              1
##
## Within cluster sum of squares by cluster:
## [1] 81.08611 23.40276 23.08349
## (between_SS / total_SS =  62.6 %)
##
## Available components:
##
## [1] "cluster"      "centers"      "totss"      "withinss"      "tot.withinss"
## [6] "betweenss"    "size"      "iter"      "ifault"
fviz_cluster(km3, data = mtcars_s, geom = "point", ellipse.type = "convex", ellipse = TRUE)

```

Cluster plot



```
# K-means con 4 clusters
km4 <- kmeans(mtcars_s, 4)
km4
```

```
## K-means clustering with 4 clusters of sizes 5, 11, 5, 11
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##
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```
## Cluster means:
```

```
##      mpg      cyl      disp      hp      drat      wt
## 1 -1.2395370  1.0148821  1.49814492  1.18595534 -0.7042781  1.5008829
## 2  1.0906036 -1.2248578 -1.01328736 -0.93419569  0.8871619 -0.9520319
## 3 -0.2639188  0.3429602 -0.05907659  0.76006884  0.4478156 -0.2210111
## 4 -0.4072146  0.6076567  0.35916538  0.04963925 -0.7705881  0.3702721
##      qsec      vs      am      gear      carb
## 1 -0.53429229 -0.8680278 -0.8141431 -0.9318192  0.7352031
## 2  0.72107647  0.9356663  0.6433438  0.5467699 -0.7844511
## 3 -1.24948009 -0.8680278  1.1899014  1.2367782  1.4781451
## 4  0.08972916 -0.1465501 -0.8141431 -0.6853877 -0.2216162
##
```

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## Clustering vector:
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```
##      Mazda RX4      Mazda RX4 Wag      Datsun 710      Hornet 4 Drive
##              3              3              2              4
##  Hornet Sportabout      Valiant      Duster 360      Merc 240D
##              4              4              1              2
##      Merc 230      Merc 280      Merc 280C      Merc 450SE
##              2              4              4              4
##      Merc 450SL      Merc 450SLC      Cadillac Fleetwood      Lincoln Continental
##              4              4              1              1
```

```
##   Chrysler Imperial      Fiat 128      Honda Civic      Toyota Corolla
##           1             2             2             2
##   Toyota Corona      Dodge Challenger      AMC Javelin      Camaro Z28
##           2             4             4             1
##   Pontiac Firebird      Fiat X1-9      Porsche 914-2      Lotus Europa
##           4             2             2             2
##   Ford Pantera L      Ferrari Dino      Maserati Bora      Volvo 142E
##           3             3             3             2
##
## Within cluster sum of squares by cluster:
## [1]  8.147907 42.657552 23.402761 36.330340
## (between_SS / total_SS =  67.6 %)
##
## Available components:
##
## [1] "cluster"      "centers"      "totss"        "withinss"     "tot.withinss"
## [6] "betweenss"    "size"         "iter"         "ifault"
fviz_cluster(km4, data = mtcars_s, geom = "point", ellipse.type = "convex", ellipse = TRUE)
```

