Grouping Things

JuJu

## Grab the Data

Data from an in-class survey was inputted into Excel and then exported to CSV. The file is imported from the CSV file into R.

 likes = read.csv("namesandlikes2016.csv")
 head(likes)

## Fname Gender Sport1 Sport2 Sport3 Politics AngelsDodgers
## 1 Chris Male Baseball Football Basketball No Dodgers
## 2 Cameron Male Golf Basketball Football No Neither
## 3 Michael Male Swimming Water Polo Hockey No Dodgers
## 4 Samantha Female Water Polo Swimming Basketball Yes Dodgers
## 5 Melissa Female Soccer Football Baseball Yes Dodgers
## 6 Monica Female Soccer Swimming Football Yes Dodgers
## EatSleep CatsDogs SandWater BurgerHotDog
## 1 Sleep Dogs Both Burger
## 2 Sleep Neither Sand Burger
## 3 Eat Dogs Water Burger
## 4 Eat Dogs Water Burger
## 5 Eat Dogs Sand Hot Dog
## 6 Sleep Neither Water Burger

## Chernoff Faces

People do a good job of classifying things by using visual cues. Herman Chernoff realized that we can use a graphical face with features tied to variables to classify things.

 p\_load(aplpack)

 ### Convert factor variables to numeric for faces
 temp <- likes[,-1] ### Make a copy of likes without the Fname (1st) column

 as.numeric.factor <- function(x) { ### Create a function that acts on a vector
 x = as.factor(x) ### Convert the string values to factor
 seq\_along(levels(x))[x] ### Change the factor values (character) into their levels (numeric)
 }

 likes ### Take a look at what's in likes

## Fname Gender Sport1 Sport2 Sport3 Politics AngelsDodgers
## 1 Chris Male Baseball Football Basketball No Dodgers
## 2 Cameron Male Golf Basketball Football No Neither
## 3 Michael Male Swimming Water Polo Hockey No Dodgers
## 4 Samantha Female Water Polo Swimming Basketball Yes Dodgers
## 5 Melissa Female Soccer Football Baseball Yes Dodgers
## 6 Monica Female Soccer Swimming Football Yes Dodgers
## 7 Topher Male Basketball Football Boxing Yes Neither
## 8 Derrick Male Golf Soccer Basketball No Dodgers
## 9 Blake Male Baseball Basketball Boxing Yes Dodgers
## 10 Cole Male Football Baseball Basketball Yes Dodgers
## 11 Will Male Football Basketball Basketball No Neither
## 12 Alfonso Male Football Soccer Basketball No Neither
## 13 Charly Female Lacrosse Basketball Tennis No Neither
## 14 Samuel Male Football Baseball Basketball Yes Neither
## 15 Katryna Female Football Basketball Baseball Yes Neither
## 16 Carlos Male Soccer Football Track No Neither
## 17 Sarah Female Tennis Basketball Baseball No Dodgers
## 18 Mitchell Male Football Basketball Baseball No Angels
## 19 Jonathan Male Football Baseball Basketball Yes Angels
## 20 Christian Male Soccer Basketball Boxing No Dodgers
## 21 David Male Basketball Football Baseball No Neither
## EatSleep CatsDogs SandWater BurgerHotDog
## 1 Sleep Dogs Both Burger
## 2 Sleep Neither Sand Burger
## 3 Eat Dogs Water Burger
## 4 Eat Dogs Water Burger
## 5 Eat Dogs Sand Hot Dog
## 6 Sleep Neither Water Burger
## 7 Eat Dogs Sand Burger
## 8 Eat Dogs Water Burger
## 9 Eat Dogs Sand Burger
## 10 Eat Dogs Water Burger
## 11 Sleep Dogs Water Burger
## 12 Eat Dogs Sand Burger
## 13 Eat Dogs Sand Burger
## 14 Eat Both Both Burger
## 15 Sleep Dogs Sand Burger
## 16 Eat Dogs Water Burger
## 17 Sleep Dogs Water Burger
## 18 Eat Both Sand Burger
## 19 Eat Dogs Water Burger
## 20 Eat Dogs Sand Burger
## 21 Eat Dogs Water Burger

 temp <- apply(temp,2,as.numeric.factor) ### Apply the function as.numeric.factor to the columns (2) of temp
 temp ### Look at temp to see if the numeric coding has worked

## Gender Sport1 Sport2 Sport3 Politics AngelsDodgers EatSleep CatsDogs
## [1,] 2 1 3 2 1 2 2 2
## [2,] 2 4 2 4 1 3 2 3
## [3,] 2 7 6 5 1 2 1 2
## [4,] 1 9 5 2 2 2 1 2
## [5,] 1 6 3 1 2 2 1 2
## [6,] 1 6 5 4 2 2 2 3
## [7,] 2 2 3 3 2 3 1 2
## [8,] 2 4 4 2 1 2 1 2
## [9,] 2 1 2 3 2 2 1 2
## [10,] 2 3 1 2 2 2 1 2
## [11,] 2 3 2 2 1 3 2 2
## [12,] 2 3 4 2 1 3 1 2
## [13,] 1 5 2 6 1 3 1 2
## [14,] 2 3 1 2 2 3 1 1
## [15,] 1 3 2 1 2 3 2 2
## [16,] 2 6 3 7 1 3 1 2
## [17,] 1 8 2 1 1 2 2 2
## [18,] 2 3 2 1 1 1 1 1
## [19,] 2 3 1 2 2 1 1 2
## [20,] 2 6 2 3 1 2 1 2
## [21,] 2 2 3 1 1 3 1 2
## SandWater BurgerHotDog
## [1,] 1 1
## [2,] 2 1
## [3,] 3 1
## [4,] 3 1
## [5,] 2 2
## [6,] 3 1
## [7,] 2 1
## [8,] 3 1
## [9,] 2 1
## [10,] 3 1
## [11,] 3 1
## [12,] 2 1
## [13,] 2 1
## [14,] 1 1
## [15,] 2 1
## [16,] 3 1
## [17,] 3 1
## [18,] 2 1
## [19,] 3 1
## [20,] 2 1
## [21,] 3 1

 ### Plot faces
 faces(temp[,c(2:10,1)],face.type=0) ### Note that the Gender variable has been moved to



## effect of variables:
## modified item Var
## "height of face " "Sport1"
## "width of face " "Sport2"
## "structure of face" "Sport3"
## "height of mouth " "Politics"
## "width of mouth " "AngelsDodgers"
## "smiling " "EatSleep"
## "height of eyes " "CatsDogs"
## "width of eyes " "SandWater"
## "height of hair " "BurgerHotDog"
## "width of hair " "Gender"
## "style of hair " "Sport1"
## "height of nose " "Sport2"
## "width of nose " "Sport3"
## "width of ear " "Politics"
## "height of ear " "AngelsDodgers"

 faces(temp[,c(2:10,1)],face.type=1) ### last position as it is a characteristic and not a like



## effect of variables:
## modified item Var
## "height of face " "Sport1"
## "width of face " "Sport2"
## "structure of face" "Sport3"
## "height of mouth " "Politics"
## "width of mouth " "AngelsDodgers"
## "smiling " "EatSleep"
## "height of eyes " "CatsDogs"
## "width of eyes " "SandWater"
## "height of hair " "BurgerHotDog"
## "width of hair " "Gender"
## "style of hair " "Sport1"
## "height of nose " "Sport2"
## "width of nose " "Sport3"
## "width of ear " "Politics"
## "height of ear " "AngelsDodgers"

 faces(temp[,c(2:10,1)],face.type=2)



## effect of variables:
## modified item Var
## "height of face " "Sport1"
## "width of face " "Sport2"
## "structure of face" "Sport3"
## "height of mouth " "Politics"
## "width of mouth " "AngelsDodgers"
## "smiling " "EatSleep"
## "height of eyes " "CatsDogs"
## "width of eyes " "SandWater"
## "height of hair " "BurgerHotDog"
## "width of hair " "Gender"
## "style of hair " "Sport1"
## "height of nose " "Sport2"
## "width of nose " "Sport3"
## "width of ear " "Politics"
## "height of ear " "AngelsDodgers"