02-Multivariantes

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15/1/2022

Datos Multidimensionales

Ejemplo con tres dimensiones

```
ans = sample(c("Si", "No"), size = 100, replace = TRUE)
sex = sample(c("H", "M"), size = 100, replace = TRUE)
place = sample(c("Huercal-Overa", "Antas", "Pulpi", "Vera", "Mojacar"),         size = 100, replace = TI

table(sex, ans, place)
```

```
## , , place = Antas
##
##     ans
## sex No Si
##   H  4  4
##   M  7  4
##
## , , place = Huercal-Overa
##
##     ans
## sex No Si
##   H  7  3
##   M  8  5
##
## , , place = Mojacar
##
##     ans
## sex No Si
##   H  7  8
##   M  6  1
##
## , , place = Pulpi
##
##     ans
## sex No Si
##   H  3  1
##   M  4  6
##
## , , place = Vera
```

```
##
##      ans
## sex No Si
##   H  4  6
##   M  8  4
```

Cambiar la visualizacion de los datos de table

```
ftable(sex, ans, place)
```

```
##         place Antas Huercal-Overa Mojacar Pulpi Vera
## sex ans
## H   No            4             7       7     3    4
##     Si            4             3       8     1    6
## M   No            7             8       6     4    8
##     Si            4             5       1     6    4
```

Filtrar tablas

```
table(sex, ans, place)["M", "Si", "Huercal-Overa"]
```

```
## [1] 5
```

Frecuencias relativas

```
# Frec. Relativas Globales
prop.table(table(sex, ans, place))
```

```
## , , place = Antas
##
##      ans
## sex   No   Si
##   H 0.04 0.04
##   M 0.07 0.04
##
## , , place = Huercal-Overa
##
##      ans
## sex   No   Si
##   H 0.07 0.03
##   M 0.08 0.05
##
## , , place = Mojacar
##
##      ans
## sex   No   Si
##   H 0.07 0.08
```

```
##   M 0.06 0.01
##
## , , place = Pulpi
##
##     ans
## sex   No   Si
##   H 0.03 0.01
##   M 0.04 0.06
##
## , , place = Vera
##
##     ans
## sex   No   Si
##   H 0.04 0.06
##   M 0.08 0.04
```

```r
# Frec. Relativas Marginal por Lugar
prop.table(table(sex, ans, place), margin = 3)
```

```
## , , place = Antas
##
##     ans
## sex         No         Si
##   H 0.21052632 0.21052632
##   M 0.36842105 0.21052632
##
## , , place = Huercal-Overa
##
##     ans
## sex         No         Si
##   H 0.30434783 0.13043478
##   M 0.34782609 0.21739130
##
## , , place = Mojacar
##
##     ans
## sex         No         Si
##   H 0.31818182 0.36363636
##   M 0.27272727 0.04545455
##
## , , place = Pulpi
##
##     ans
## sex         No         Si
##   H 0.21428571 0.07142857
##   M 0.28571429 0.42857143
##
## , , place = Vera
##
##     ans
## sex         No         Si
##   H 0.18181818 0.27272727
##   M 0.36363636 0.18181818
```

```r
# Frec. Relativas Marginal por Sexo y Pais
prop.table(table(sex, ans, place), margin = c(1, 3))
```

```
## , , place = Antas
##
##    ans
## sex         No        Si
##   H 0.5000000 0.5000000
##   M 0.6363636 0.3636364
##
## , , place = Huercal-Overa
##
##    ans
## sex         No        Si
##   H 0.7000000 0.3000000
##   M 0.6153846 0.3846154
##
## , , place = Mojacar
##
##    ans
## sex         No        Si
##   H 0.4666667 0.5333333
##   M 0.8571429 0.1428571
##
## , , place = Pulpi
##
##    ans
## sex         No        Si
##   H 0.7500000 0.2500000
##   M 0.4000000 0.6000000
##
## , , place = Vera
##
##    ans
## sex         No        Si
##   H 0.4000000 0.6000000
##   M 0.6666667 0.3333333
```

```r
ftable(prop.table(table(sex, ans, place)))
```

```
##         place Antas Huercal-Overa Mojacar Pulpi Vera
## sex ans
## H   No         0.04          0.07    0.07  0.03 0.04
##     Si         0.04          0.03    0.08  0.01 0.06
## M   No         0.07          0.08    0.06  0.04 0.08
##     Si         0.04          0.05    0.01  0.06 0.04
```

Ejemplo de color de ojos y de pelo

```
HairEyeColor
```

```
## , , Sex = Male
##
##        Eye
## Hair     Brown Blue Hazel Green
##    Black    32   11    10     3
##    Brown    53   50    25    15
##    Red      10   10     7     7
##    Blond     3   30     5     8
##
## , , Sex = Female
##
##        Eye
## Hair     Brown Blue Hazel Green
##    Black    36    9     5     2
##    Brown    66   34    29    14
##    Red      16    7     7     7
##    Blond     4   64     5     8
```

```
# Numero total de individuos
sum(HairEyeColor) -> total
```

El total de individuos de la tabla de datos es 592.

```
# Frecuencia marginal por sexo
prop.table(HairEyeColor, margin = 3)
```

```
## , , Sex = Male
##
##        Eye
## Hair          Brown        Blue       Hazel       Green
##    Black 0.114695341 0.039426523 0.035842294 0.010752688
##    Brown 0.189964158 0.179211470 0.089605735 0.053763441
##    Red   0.035842294 0.035842294 0.025089606 0.025089606
##    Blond 0.010752688 0.107526882 0.017921147 0.028673835
##
## , , Sex = Female
##
##        Eye
## Hair          Brown        Blue       Hazel       Green
##    Black 0.115015974 0.028753994 0.015974441 0.006389776
##    Brown 0.210862620 0.108626198 0.092651757 0.044728435
##    Red   0.051118211 0.022364217 0.022364217 0.022364217
##    Blond 0.012779553 0.204472843 0.015974441 0.025559105
```

```
# Frecuencia marginal por color de pelo y ojos
prop.table(HairEyeColor, margin = c(1,2))
```

```
## , , Sex = Male
##
```

```
##      Eye
## Hair        Brown      Blue     Hazel     Green
##    Black 0.4705882 0.5500000 0.6666667 0.6000000
##    Brown 0.4453782 0.5952381 0.4629630 0.5172414
##    Red   0.3846154 0.5882353 0.5000000 0.5000000
##    Blond 0.4285714 0.3191489 0.5000000 0.5000000
##
## , , Sex = Female
##
##      Eye
## Hair        Brown      Blue     Hazel     Green
##    Black 0.5294118 0.4500000 0.3333333 0.4000000
##    Brown 0.5546218 0.4047619 0.5370370 0.4827586
##    Red   0.6153846 0.4117647 0.5000000 0.5000000
##    Blond 0.5714286 0.6808511 0.5000000 0.5000000
```

```r
# Cambiar la distribucion de hair,eye,sex a sex,hair,eye
aperm(HairEyeColor, perm = c("Sex", "Hair", "Eye"))
```

```
## , , Eye = Brown
##
##        Hair
## Sex     Black Brown Red Blond
##   Male     32    53  10     3
##   Female   36    66  16     4
##
## , , Eye = Blue
##
##        Hair
## Sex     Black Brown Red Blond
##   Male     11    50  10    30
##   Female    9    34   7    64
##
## , , Eye = Hazel
##
##        Hair
## Sex     Black Brown Red Blond
##   Male     10    25   7     5
##   Female    5    29   7     5
##
## , , Eye = Green
##
##        Hair
## Sex     Black Brown Red Blond
##   Male      3    15   7     8
##   Female    2    14   7     8
```

```r
# Ver en formato DataFrame
library(xtable)
xtable(table(sex, ans))
```

% latex table generated in R 4.1.2 by xtable 1.8-4 package % Sat Jan 15 16:45:40 2022

	No	Si
H	25	22
M	33	20