

# Multivariante

Curso de Estadística Descriptiva

19/07/2023

## 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("San Francisco", "Barcelona", "Valencia", "Cobija", "Asturias"), size = 100, replace = TRUE)
table(sex, ans, place)
```

```
## , , place = Asturias
##
##      ans
## sex No Si
##  H  4  3
##  M  4  1
##
## , , place = Barcelona
##
##      ans
## sex No Si
##  H  4  5
##  M  7  5
##
## , , place = Cobija
##
##      ans
## sex No Si
##  H  4  4
##  M  7  1
##
## , , place = San Francisco
##
##      ans
## sex No Si
##  H  6  8
##  M  2  4
##
## , , place = Valencia
##
##      ans
## sex No Si
##  H  7  4
```

```
## M 11 9
ftable(sex, ans, place)

##           place Asturias Barcelona Cobija San Francisco Valencia
## sex ans
## H   No           4           4           4           6           7
##     Si           3           5           4           8           4
## M   No           4           7           7           2          11
##     Si           1           5           1           4           9
ftable(sex, ans, place, col.vars = c("sex", "ans"))
```

```
##           sex H     M
##           ans No Si No Si
## place
## Asturias      4 3  4  1
## Barcelona      4 5  7  5
## Cobija         4 4  7  1
## San Francisco  6 8  2  4
## Valencia      7 4 11  9
```

#### Filtrar las tablas

```
table(sex, ans, place)["M", "Si", "San Francisco"]
```

```
## [1] 4
```

```
table(sex, ans, place)[ , "Si", "Valencia"]
```

```
## H M
```

```
## 4 9
```

```
table(sex, ans, place)[ , "No", ]
```

```
##           place
## sex Asturias Barcelona Cobija San Francisco Valencia
## H           4           4           4           6           7
## M           4           7           7           2          11
```

```
table(sex, ans, place)["M", , "Cobija"]
```

```
## No Si
```

```
## 7 1
```

#### Frecuencias relativas

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

```
## , , place = Asturias
```

```
##
```

```
## ans
```

```
## sex No Si
```

```
## H 0.04 0.03
```

```
## M 0.04 0.01
```

```
##
```

```
## , , place = Barcelona
```

```
##
```

```

##      ans
## sex   No   Si
##   H 0.04 0.05
##   M 0.07 0.05
##
## , , place = Cobija
##
##      ans
## sex   No   Si
##   H 0.04 0.04
##   M 0.07 0.01
##
## , , place = San Francisco
##
##      ans
## sex   No   Si
##   H 0.06 0.08
##   M 0.02 0.04
##
## , , place = Valencia
##
##      ans
## sex   No   Si
##   H 0.07 0.04
##   M 0.11 0.09

```

```

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

```

```

## , , place = Asturias
##
##      ans
## sex           No           Si
##   H 0.33333333 0.25000000
##   M 0.33333333 0.08333333
##
## , , place = Barcelona
##
##      ans
## sex           No           Si
##   H 0.19047619 0.23809524
##   M 0.33333333 0.23809524
##
## , , place = Cobija
##
##      ans
## sex           No           Si
##   H 0.25000000 0.25000000
##   M 0.43750000 0.06250000
##
## , , place = San Francisco
##
##      ans
## sex           No           Si
##   H 0.30000000 0.40000000
##   M 0.10000000 0.20000000

```

```
##
## , , place = Valencia
##
##   ans
## sex      No      Si
##   H 0.22580645 0.12903226
##   M 0.35483871 0.29032258

prop.table(table(sex, ans, place), margin = c(1, 3)) # Frec. Rel. Marg. por Sexo y País

## , , place = Asturias
##
##   ans
## sex      No      Si
##   H 0.5714286 0.4285714
##   M 0.8000000 0.2000000
##
## , , place = Barcelona
##
##   ans
## sex      No      Si
##   H 0.4444444 0.5555556
##   M 0.5833333 0.4166667
##
## , , place = Cobija
##
##   ans
## sex      No      Si
##   H 0.5000000 0.5000000
##   M 0.8750000 0.1250000
##
## , , place = San Francisco
##
##   ans
## sex      No      Si
##   H 0.4285714 0.5714286
##   M 0.3333333 0.6666667
##
## , , place = Valencia
##
##   ans
## sex      No      Si
##   H 0.6363636 0.3636364
##   M 0.5500000 0.4500000

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

##           place Asturias Barcelona Cobija San Francisco Valencia
## sex ans
## H   No           0.04         0.04  0.04           0.06         0.07
##     Si           0.03         0.05  0.04           0.08         0.04
## M   No           0.04         0.07  0.07           0.02         0.11
##     Si           0.01         0.05  0.01           0.04         0.09
```