

# tablas de frecuencia

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## R Markdown

### \_\_\_\_\_ TABLAS DE FRECUENCIAS \_\_\_\_\_

Se implementa la matriz iris

## Importación de la matriz

Ocupamos el código: *data(BD)*

```
data(iris)
```

## Exploración de la matriz

1.- Dimensión de la matriz

```
dim(iris)
```

```
## [1] 150 5
```

2.- Nombre de las columnas

```
colnames(iris)
```

```
## [1] "Sepal.Length" "Sepal.Width" "Petal.Length" "Petal.Width" "Species"
```

4.- Tipo de variables

```
str(iris)
```

```
## 'data.frame': 150 obs. of 5 variables:
## $ Sepal.Length: num 5.1 4.9 4.7 4.6 5 5.4 4.6 5 4.4 4.9 ...
## $ Sepal.Width : num 3.5 3 3.2 3.1 3.6 3.9 3.4 3.4 2.9 3.1 ...
## $ Petal.Length: num 1.4 1.4 1.3 1.5 1.4 1.7 1.4 1.5 1.4 1.5 ...
## $ Petal.Width : num 0.2 0.2 0.2 0.2 0.2 0.4 0.3 0.2 0.2 0.1 ...
## $ Species : Factor w/ 3 levels "setosa","versicolor",...: 1 1 1 1 1 1 1 1 1 1 ...
```

5.- En busca de datos perdidos

```
anyNA(iris)
```

```
## [1] FALSE
```

## Generación de tablas

1.- Convertimos la matriz de datos a un data frame. Se agrupan los valores para la variable Petal.Length y se calcula la frecuencia absoluta.

```
tabla_PL<-as.data.frame(table(PL = iris$Petal.Length))
```

2.- *Frecuencia absoluta de la variable Petal.Length (PL)* Se muestra la tabla de contingencia para la variable PL con su respectiva frecuencia absoluta.

```
tabla_PL
```

| ##    | PL  | Freq |
|-------|-----|------|
| ## 1  | 1   | 1    |
| ## 2  | 1.1 | 1    |
| ## 3  | 1.2 | 2    |
| ## 4  | 1.3 | 7    |
| ## 5  | 1.4 | 13   |
| ## 6  | 1.5 | 13   |
| ## 7  | 1.6 | 7    |
| ## 8  | 1.7 | 4    |
| ## 9  | 1.9 | 2    |
| ## 10 | 3   | 1    |
| ## 11 | 3.3 | 2    |
| ## 12 | 3.5 | 2    |
| ## 13 | 3.6 | 1    |
| ## 14 | 3.7 | 1    |
| ## 15 | 3.8 | 1    |
| ## 16 | 3.9 | 3    |
| ## 17 | 4   | 5    |
| ## 18 | 4.1 | 3    |
| ## 19 | 4.2 | 4    |
| ## 20 | 4.3 | 2    |
| ## 21 | 4.4 | 4    |
| ## 22 | 4.5 | 8    |
| ## 23 | 4.6 | 3    |
| ## 24 | 4.7 | 5    |
| ## 25 | 4.8 | 4    |
| ## 26 | 4.9 | 5    |
| ## 27 | 5   | 4    |
| ## 28 | 5.1 | 8    |
| ## 29 | 5.2 | 2    |
| ## 30 | 5.3 | 2    |
| ## 31 | 5.4 | 2    |
| ## 32 | 5.5 | 3    |
| ## 33 | 5.6 | 6    |
| ## 34 | 5.7 | 3    |
| ## 35 | 5.8 | 3    |
| ## 36 | 5.9 | 2    |
| ## 37 | 6   | 2    |
| ## 38 | 6.1 | 3    |
| ## 39 | 6.3 | 1    |
| ## 40 | 6.4 | 1    |
| ## 41 | 6.6 | 1    |
| ## 42 | 6.7 | 2    |
| ## 43 | 6.9 | 1    |

3.- Se contruye la tabla de frecuencias completas redondeando las frecuencias absolutas a 3 decimales

```

tabla_no_agrupada<-transform(tabla_PL,
                             freqAc=cumsum(Freq),
                             Rel= round(prop.table(Freq),3),
                             RelAc=round(cumsum(prop.table(Freq)),3))

```

3.1.- Visualización de la tabla

```
tabla_no_agrupada
```

| ##    | PL  | Freq | freqAc | Rel   | RelAc |
|-------|-----|------|--------|-------|-------|
| ## 1  | 1   | 1    | 1      | 0.007 | 0.007 |
| ## 2  | 1.1 | 1    | 2      | 0.007 | 0.013 |
| ## 3  | 1.2 | 2    | 4      | 0.013 | 0.027 |
| ## 4  | 1.3 | 7    | 11     | 0.047 | 0.073 |
| ## 5  | 1.4 | 13   | 24     | 0.087 | 0.160 |
| ## 6  | 1.5 | 13   | 37     | 0.087 | 0.247 |
| ## 7  | 1.6 | 7    | 44     | 0.047 | 0.293 |
| ## 8  | 1.7 | 4    | 48     | 0.027 | 0.320 |
| ## 9  | 1.9 | 2    | 50     | 0.013 | 0.333 |
| ## 10 | 3   | 1    | 51     | 0.007 | 0.340 |
| ## 11 | 3.3 | 2    | 53     | 0.013 | 0.353 |
| ## 12 | 3.5 | 2    | 55     | 0.013 | 0.367 |
| ## 13 | 3.6 | 1    | 56     | 0.007 | 0.373 |
| ## 14 | 3.7 | 1    | 57     | 0.007 | 0.380 |
| ## 15 | 3.8 | 1    | 58     | 0.007 | 0.387 |
| ## 16 | 3.9 | 3    | 61     | 0.020 | 0.407 |
| ## 17 | 4   | 5    | 66     | 0.033 | 0.440 |
| ## 18 | 4.1 | 3    | 69     | 0.020 | 0.460 |
| ## 19 | 4.2 | 4    | 73     | 0.027 | 0.487 |
| ## 20 | 4.3 | 2    | 75     | 0.013 | 0.500 |
| ## 21 | 4.4 | 4    | 79     | 0.027 | 0.527 |
| ## 22 | 4.5 | 8    | 87     | 0.053 | 0.580 |
| ## 23 | 4.6 | 3    | 90     | 0.020 | 0.600 |
| ## 24 | 4.7 | 5    | 95     | 0.033 | 0.633 |
| ## 25 | 4.8 | 4    | 99     | 0.027 | 0.660 |
| ## 26 | 4.9 | 5    | 104    | 0.033 | 0.693 |
| ## 27 | 5   | 4    | 108    | 0.027 | 0.720 |
| ## 28 | 5.1 | 8    | 116    | 0.053 | 0.773 |
| ## 29 | 5.2 | 2    | 118    | 0.013 | 0.787 |
| ## 30 | 5.3 | 2    | 120    | 0.013 | 0.800 |
| ## 31 | 5.4 | 2    | 122    | 0.013 | 0.813 |
| ## 32 | 5.5 | 3    | 125    | 0.020 | 0.833 |
| ## 33 | 5.6 | 6    | 131    | 0.040 | 0.873 |
| ## 34 | 5.7 | 3    | 134    | 0.020 | 0.893 |
| ## 35 | 5.8 | 3    | 137    | 0.020 | 0.913 |
| ## 36 | 5.9 | 2    | 139    | 0.013 | 0.927 |
| ## 37 | 6   | 2    | 141    | 0.013 | 0.940 |
| ## 38 | 6.1 | 3    | 144    | 0.020 | 0.960 |
| ## 39 | 6.3 | 1    | 145    | 0.007 | 0.967 |
| ## 40 | 6.4 | 1    | 146    | 0.007 | 0.973 |
| ## 41 | 6.6 | 1    | 147    | 0.007 | 0.980 |
| ## 42 | 6.7 | 2    | 149    | 0.013 | 0.993 |
| ## 43 | 6.9 | 1    | 150    | 0.007 | 1.000 |

4.- Agruparemos las variables en 8 clases y se calcula la frecuencia absoluta

```
tabla_clases<-as.data.frame(table (Petal.length = factor
                                   (cut(iris$Petal.Length,
                                       breaks = 8))))
```

4.1.- Visualizamos la tabla de clases

```
tabla_clases
```

```
##   Petal.length Freq
## 1 (0.994,1.74]   48
## 2 (1.74,2.48]    2
## 3 (2.48,3.21]    1
## 4 (3.21,3.95]   10
## 5 (3.95,4.69]   29
## 6 (4.69,5.43]   32
## 7 (5.43,6.16]   22
## 8 (6.16,6.91]    6
```

5.- Contrucción de la tabla de frecuencias completa redondeando las frecuencias relativas a 3 decimales

```
tabla_agrupada<-transform(tabla_clases,
                           freqAc=cumsum(Freq),
                           Rel= round(prop.table(Freq),3),
                           RelAc=round(cumsum(prop.table(Freq)),3))
```

5.1.- Visualización de la tabla

```
tabla_agrupada
```

```
##   Petal.length Freq freqAc   Rel RelAc
## 1 (0.994,1.74]   48     48 0.320 0.320
## 2 (1.74,2.48]    2     50 0.013 0.333
## 3 (2.48,3.21]    1     51 0.007 0.340
## 4 (3.21,3.95]   10     61 0.067 0.407
## 5 (3.95,4.69]   29     90 0.193 0.600
## 6 (4.69,5.43]   32    122 0.213 0.813
## 7 (5.43,6.16]   22    144 0.147 0.960
## 8 (6.16,6.91]    6    150 0.040 1.000
```

6.- Organización visual de la tabla (variable *Petal.length*)

6.1.- Instalamos la librería knitr

```
install.packages("knitr")
```

```
## Installing package into '/cloud/lib/x86_64-pc-linux-gnu-library/4.3'
## (as 'lib' is unspecified)
```

6.2.- Se abre la librería

```
library(knitr)
```

6.3.- Se visualizan las tablas

Primero se muestra la no agrupada

```
kable(tabla_no_agrupada)
```

| PL | Freq | freqAc | Rel   | RelAc |
|----|------|--------|-------|-------|
| 1  | 1    | 1      | 0.007 | 0.007 |

| PL  | Freq | freqAc | Rel   | RelAc |
|-----|------|--------|-------|-------|
| 1.1 | 1    | 2      | 0.007 | 0.013 |
| 1.2 | 2    | 4      | 0.013 | 0.027 |
| 1.3 | 7    | 11     | 0.047 | 0.073 |
| 1.4 | 13   | 24     | 0.087 | 0.160 |
| 1.5 | 13   | 37     | 0.087 | 0.247 |
| 1.6 | 7    | 44     | 0.047 | 0.293 |
| 1.7 | 4    | 48     | 0.027 | 0.320 |
| 1.9 | 2    | 50     | 0.013 | 0.333 |
| 3   | 1    | 51     | 0.007 | 0.340 |
| 3.3 | 2    | 53     | 0.013 | 0.353 |
| 3.5 | 2    | 55     | 0.013 | 0.367 |
| 3.6 | 1    | 56     | 0.007 | 0.373 |
| 3.7 | 1    | 57     | 0.007 | 0.380 |
| 3.8 | 1    | 58     | 0.007 | 0.387 |
| 3.9 | 3    | 61     | 0.020 | 0.407 |
| 4   | 5    | 66     | 0.033 | 0.440 |
| 4.1 | 3    | 69     | 0.020 | 0.460 |
| 4.2 | 4    | 73     | 0.027 | 0.487 |
| 4.3 | 2    | 75     | 0.013 | 0.500 |
| 4.4 | 4    | 79     | 0.027 | 0.527 |
| 4.5 | 8    | 87     | 0.053 | 0.580 |
| 4.6 | 3    | 90     | 0.020 | 0.600 |
| 4.7 | 5    | 95     | 0.033 | 0.633 |
| 4.8 | 4    | 99     | 0.027 | 0.660 |
| 4.9 | 5    | 104    | 0.033 | 0.693 |
| 5   | 4    | 108    | 0.027 | 0.720 |
| 5.1 | 8    | 116    | 0.053 | 0.773 |
| 5.2 | 2    | 118    | 0.013 | 0.787 |
| 5.3 | 2    | 120    | 0.013 | 0.800 |
| 5.4 | 2    | 122    | 0.013 | 0.813 |
| 5.5 | 3    | 125    | 0.020 | 0.833 |
| 5.6 | 6    | 131    | 0.040 | 0.873 |
| 5.7 | 3    | 134    | 0.020 | 0.893 |
| 5.8 | 3    | 137    | 0.020 | 0.913 |
| 5.9 | 2    | 139    | 0.013 | 0.927 |
| 6   | 2    | 141    | 0.013 | 0.940 |
| 6.1 | 3    | 144    | 0.020 | 0.960 |
| 6.3 | 1    | 145    | 0.007 | 0.967 |
| 6.4 | 1    | 146    | 0.007 | 0.973 |
| 6.6 | 1    | 147    | 0.007 | 0.980 |
| 6.7 | 2    | 149    | 0.013 | 0.993 |
| 6.9 | 1    | 150    | 0.007 | 1.000 |

Después de visualiza la tabla agrupada

```
kable(tabla_agrupada)
```

| Petal.length | Freq | freqAc | Rel   | RelAc |
|--------------|------|--------|-------|-------|
| (0.994,1.74] | 48   | 48     | 0.320 | 0.320 |
| (1.74,2.48]  | 2    | 50     | 0.013 | 0.333 |
| (2.48,3.21]  | 1    | 51     | 0.007 | 0.340 |
| (3.21,3.95]  | 10   | 61     | 0.067 | 0.407 |

| Petal.length | Freq | freqAc | Rel   | RelAc |
|--------------|------|--------|-------|-------|
| (3.95,4.69]  | 29   | 90     | 0.193 | 0.600 |
| (4.69,5.43]  | 32   | 122    | 0.213 | 0.813 |
| (5.43,6.16]  | 22   | 144    | 0.147 | 0.960 |
| (6.16,6.91]  | 6    | 150    | 0.040 | 1.000 |