A1.Gasto Sanitario por Proveedor

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Contents

1.PROCESAMIENTO DE LOS DATOS.

- En primer lugar leemos el fichero:

```
gasto_pro<-read.csv("C:/temp/GastoSanitario_Proveedor.csv",sep= ",")
```

- Realicemos una breve inspección de los datos:

```
str(gasto_pro)
```

```
## 'data.frame':    2000 obs. of  6 variables:
##  $ TIME              : int  2009 2009 2009 2009 2009 2009 2009 2009 2009 2009 ...
##  $ GEO               : Factor w/ 40 levels "Austria","Belgium",..: 15 15 15 15 15 16 16 16 16 16 ...
##  $ UNIT              : Factor w/ 1 level "Million euro": 1 1 1 1 1 1 1 1 1 1 ...
##  $ ICHA11_HP         : Factor w/ 5 levels "All providers of health care",..: 1 3 2 4 5 1 3 2 4 5 ...
##  $ Value             : Factor w/ 1259 levels ":","0.00","1,001,514.67",..: 1 1 1 1 1 1 1 1 1 1 ...
##  $ Flag.and.Footnotes: Factor w/ 3 levels "","b","d": 1 1 1 1 1 1 1 1 1 1 ...
```

```
colnames(gasto_pro) #Nombre de las variables
```

```
## [1] "TIME"               "GEO"                "UNIT"
## [4] "ICHA11_HP"          "Value"              "Flag.and.Footnotes"
```

```
nrow(gasto_pro) #Número de registros
```

```
## [1] 2000
```

```
ncol(gasto_pro) #Número de variables
```

```
## [1] 6
```

*Observamos las siguientes variables:

- **TIME**: variable cuantitativa. Indica el año en el que se ha realizado la medida, en este caso el valor de la variable "Value". Se ha cargado bien como número entero.
- **GEO**: variable cualitativa. Indica el país o región en el que se ha realizado la medida.Se ha cargado bien como factor.
- **UNIT**: variable cualitativa. Indica la medida de la variable valor.Se ha cargado bien como factor.
- **ICHA11_HP**: variable cualitativa. Entidad a la que se destina el gasto sanitario
- **Value**: Variable cuantitativa. Indica el valor en Millones de Euros de esta financiación.Se ha cargado mal como factor. Haremos la transformación a valor numérico.
- **Fal.and.footnotes**. Notas sobre etiquetas. Eliminamos esta columna.

*Años de las mediciones:

```
unique(gasto_pro$TIME)
```

```
##  [1] 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018
```

*Paises:

```r
unique(gasto_pro$GEO)
```

```
##  [1] European Union - 27 countries (from 2020)
##  [2] European Union - 28 countries (2013-2020)
##  [3] European Union - 27 countries (2007-2013)
##  [4] European Union - 15 countries (1995-2004)
##  [5] Euro area - 19 countries  (from 2015)
##  [6] Euro area - 18 countries (2014)
##  [7] Euro area - 12 countries (2001-2006)
##  [8] Belgium
##  [9] Bulgaria
## [10] Czechia
## [11] Denmark
## [12] Germany (until 1990 former territory of the FRG)
## [13] Estonia
## [14] Ireland
## [15] Greece
## [16] Spain
## [17] France
## [18] Croatia
## [19] Italy
## [20] Cyprus
## [21] Latvia
## [22] Lithuania
## [23] Luxembourg
## [24] Hungary
## [25] Malta
## [26] Netherlands
## [27] Austria
## [28] Poland
## [29] Portugal
## [30] Romania
## [31] Slovenia
## [32] Slovakia
## [33] Finland
## [34] Sweden
## [35] Iceland
## [36] Liechtenstein
## [37] Norway
## [38] Switzerland
## [39] United Kingdom
## [40] Bosnia and Herzegovina
## 40 Levels: Austria Belgium Bosnia and Herzegovina Bulgaria Croatia ... United Kingdom
```

*Unidad de las mediciones:

```r
unique(gasto_pro$UNIT)
```

```
## [1] Million euro
## Levels: Million euro
```

*Variable que indica la entidad a la que se destina el gasto sanitario:

```r
unique(gasto_pro$ICHA11_HP)
```

```
## [1] All providers of health care
```

```
## [2] Hospitals
## [3] General hospitals
## [4] Mental health hospitals
## [5] Specialised hospitals (other than mental health hospitals)
## 5 Levels: All providers of health care General hospitals ... Specialised hospitals (other than mental
```

- Eliminamos la columna Fal.and.footnotes.

```
gasto_pro<-gasto_pro[,-6]
```

- Tendríamos que convertir la columna Value a numérico porque se ha cargado como factor y es erróneo. El resto de variables tienen el tipo correcto.

```
gasto_pro$Value<-as.character(gasto_pro$Value)
gasto_pro$Value<-(gsub(',','.',gasto_pro$Value) )
gasto_pro$Value<-substr(gasto_pro$Value,1,nchar(gasto_pro$Value)-3)
gasto_pro$Value<-as.numeric(gasto_pro$Value)
```

```
## Warning: NAs introducidos por coerción
```

- Comprobamos que valores tenemos en la columna **Value**:

```
table(gasto_pro$Value, useNA = "ifany")
```

```
##
##       0       1   1.021   1.036   1.039   1.042   1.045   1.047   1.051   1.057
##      26       2       1       2       1       1       1       1       1       1
##   1.064   1.072   1.077   1.083    1.09   1.101   1.108   1.109   1.115   1.126
##       1       1       1       1       1       1       1       1       1       1
##    1.13   1.137   1.141   1.142   1.146   1.163   1.176   1.179   1.199   1.202
##       1       1       1       1       1       1       1       1       1       1
##   1.211   1.215   1.221   1.222   1.227    1.23   1.232   1.234   1.238   1.243
##       1       1       1       1       1       1       1       1       1       1
##   1.248   1.249   1.265    1.27   1.274   1.276   1.277   1.286   1.289    1.29
##       1       1       1       1       2       1       1       1       2       1
##   1.298   1.299   1.318   1.321   1.322   1.341    1.35   1.359   1.364   1.371
##       1       1       1       1       1       1       1       1       1       1
##   1.373   1.388   1.403    1.41   1.416    1.43   1.431   1.432   1.441   1.442
##       1       1       1       3       1       2       1       1       1       1
##   1.463   1.485   1.491   1.495   1.498   1.501   1.519   1.522   1.535   1.538
##       1       1       1       1       1       1       1       1       1       1
##   1.556   1.572   1.573   1.575    1.59   1.595   1.609   1.613   1.661   1.669
##       2       1       1       1       1       1       1       1       1       1
##   1.673   1.701   1.706    1.71   1.722    1.73   1.734   1.752   1.763   1.766
##       1       1       1       1       1       1       1       1       1       1
##   1.779   1.781   1.804    1.81   1.811   1.829   1.834   1.841   1.845   1.856
##       1       1       1       1       1       2       1       1       1       1
##   1.862   1.872    1.91   1.969   1.981   1.982   1.986   1.987       2   2.007
##       1       1       1       1       1       1       1       1       6       1
##   2.008   2.023   2.029   2.031   2.051   2.062   2.073   2.078    2.09   2.096
##       1       1       1       2       1       1       1       1       1       1
##   2.099   2.119   2.127   2.146   2.172   2.179   2.196   2.207   2.212   2.222
##       1       1       1       1       1       1       1       1       1       1
##   2.227   2.265   2.275   2.294   2.326   2.366   2.392   2.399   2.406   2.423
##       1       1       2       1       1       1       1       1       1       1
##   2.443    2.46   2.463   2.485   2.492   2.501   2.515    2.57   2.581   2.632
##       1       1       1       1       1       1       1       1       1       1
```

```
##   2.638   2.652   2.708   2.716    2.72   2.732   2.734   2.751   2.782   2.793
##       1       1       1       1       1       1       1       1       1       1
##   2.825    2.85   2.855   2.866   2.882   2.907   2.913   2.946   2.972   2.987
##       1       1       1       1       1       1       1       1       1       1
##   2.994       3   3.003   3.025   3.027   3.038   3.127   3.135   3.137   3.154
##       1      10       1       1       1       1       1       1       1       1
##   3.174   3.176   3.183   3.185   3.193   3.199   3.251   3.255   3.261   3.301
##       1       1       1       1       1       1       1       1       1       1
##   3.305   3.309    3.31   3.322   3.327   3.386   3.397   3.417   3.428   3.466
##       1       1       1       1       1       1       1       1       1       1
##    3.52   3.524   3.636   3.648   3.768   3.785   3.797   3.897   3.898   3.903
##       1       1       1       1       1       1       1       1       1       1
##    3.92    3.94    3.95   3.954       4   4.084   4.102    4.12   4.271   4.464
##       1       1       1       1       3       1       1       1       1       1
##   4.476   4.504   4.535   4.969   4.971       5   5.018   5.033   5.139   5.256
##       1       1       1       1       1       5       1       1       1       1
##   5.286    5.37   5.372   5.403   5.418   5.429   5.436   5.459   5.548    5.55
##       1       1       1       1       1       1       1       1       1       1
##   5.563   5.564   5.583   5.614    5.62   5.649   5.659   5.666   5.669   5.721
##       1       1       1       1       1       1       1       1       1       1
##   5.857    5.92   5.991       6   6.025   6.199   6.224   6.232   6.253   6.258
##       1       1       1       7       1       1       1       1       1       1
##   6.272   6.281   6.299   6.322   6.325   6.363   6.398   6.415   6.439   6.488
##       1       1       1       1       1       1       1       1       1       1
##   6.493    6.52   6.521   6.533   6.534   6.535   6.541   6.569   6.635   6.638
##       1       1       1       1       2       1       1       1       1       1
##    6.65   6.662   6.671   6.703   6.758    6.77   6.781   6.782   6.786   6.792
##       1       1       1       1       1       1       1       1       1       1
##   6.821   6.828   6.832   6.927   6.975       7   7.037   7.093   7.139   7.145
##       1       1       1       1       1       3       1       1       1       1
##   7.174    7.18    7.22    7.29   7.393   7.396   7.423   7.428   7.431   7.467
##       1       1       1       1       1       1       1       1       1       1
##   7.488   7.522   7.568   7.597   7.603   7.611   7.642    7.73   7.842   7.849
##       1       1       1       1       1       1       1       1       1       1
##   7.922   7.975   7.999       8   8.002   8.008   8.058   8.123   8.173   8.202
##       1       1       1       1       1       1       1       1       1       1
##   8.213   8.219   8.348   8.364   8.509   8.531   8.685   8.686   8.766   8.771
##       1       1       1       1       1       1       1       1       1       1
##   8.873   8.963   8.981   9.118   9.209   9.232   9.277   9.452   9.497   9.514
##       1       1       1       1       1       1       1       1       1       1
##   9.671   9.692   9.727   9.728   9.921      10  10.101  10.109   10.11  10.185
##       1       1       1       1       1       3       1       1       1       1
##  10.235  10.448  10.487   10.52  10.599  10.612  10.662  10.714  10.738  10.837
##       1       1       1       1       1       1       1       1       1       1
##  10.913  10.919   10.95      11  11.008  11.058  11.092  11.236  11.329  11.337
##       1       1       1       4       1       1       1       1       1       1
##  11.357  11.371  11.438  11.487  11.533  11.661  11.673  11.731  11.734  11.863
##       1       1       1       1       1       1       1       1       1       1
##  11.937  11.989  11.998      12  12.015  12.057   12.06  12.155  12.168  12.179
##       1       1       1       3       1       1       1       1       1       1
##  12.202  12.314  12.323  12.379  12.501  12.609  12.713  12.747  12.815  12.875
##       1       1       2       1       1       1       1       1       1       1
##  12.935  12.982      13  13.037  13.047  13.113  13.162   13.23  13.264  13.272
##       1       1       2       1       1       1       1       1       1       1
```

```
##  13.366  13.395  13.403  13.454  13.537  13.572  13.607  13.631  13.639  13.657
##       1       1       1       1       1       1       1       1       1       1
##  13.761  13.782  13.857  13.864  13.873  13.965  13.966  13.996      14  14.005
##       1       1       1       1       1       1       1       1       3       1
##  14.024  14.147  14.175   14.21   14.23  14.251  14.331  14.337  14.354  14.498
##       1       1       1       1       1       2       1       1       1       1
##  14.799      15  15.028  15.096    15.2  15.214  15.224  15.367  15.476  15.615
##       1       6       1       1       1       1       1       1       1       1
##  15.742  15.811  15.871  16.099  16.132  16.198   16.27  16.374  16.563  16.594
##       1       1       1       1       1       1       1       1       2       1
##  16.606   16.65   16.79  16.811   16.85      17    17.2  17.332  17.415  17.565
##       1       1       1       1       1       1       1       1       1       1
##  17.668  17.679  17.732  17.933  18.261  18.281  18.292  18.505  18.541  18.591
##       1       2       1       1       1       1       1       1       2       2
##   18.69  18.692  18.714   18.85  18.941  19.231  19.271  19.303  19.415  19.468
##       1       1       1       1       2       1       1       1       1       2
##  19.721  19.855  19.865  19.923      20  20.034  20.143  20.148  20.188  20.236
##       1       2       1       2       2       1       1       1       1       1
##  20.349  20.388  20.398  20.501  20.584  20.653  20.855  20.917  20.965      21
##       1       1       1       1       1       1       1       1       1       2
##   21.04  21.116  21.216  21.259  21.508  21.552  21.843      22  22.344  22.451
##       1       1       1       1       1       1       1       6       1       1
##  22.602  22.805      23      24  24.063  24.856      25  25.126  25.136  25.166
##       1       1       4       3       1       1       6       1       1       1
##  25.167  25.422  25.508  25.681      26  26.072  26.104  26.248  26.313      27
##       1       1       1       1       5       1       2       1       1       5
##  27.032   27.28  27.756  27.921      28   28.72      29  29.454  29.597      30
##       1       1       1       1       5       1       5       1       1       2
##  30.243  30.449  30.663      31  31.093  31.493  31.501      32  32.499      33
##       1       1       1       3       1       1       1       1       1       4
##  33.316      34   34.54  34.806      35  35.129  35.132   35.22  35.318  35.692
##       1       2       1       1       1       1       1       1       1       1
##  35.765  35.879      36  36.447  36.959  36.971      37   37.02  37.032  37.084
##       1       1       2       1       1       1       3       1       1       1
##  37.154  37.162      38  38.218  38.347    38.5  39.071  39.631   39.79  39.845
##       1       1       2       1       1       1       1       1       1       1
##  39.894  39.914      40  40.031  40.192  40.574      41  41.164  41.494  41.793
##       1       1       1       1       1       1       2       1       1       1
##      42  42.073  42.652      43  43.024  43.189   43.35  43.449  44.235  44.954
##       1       1       1       3       1       1       1       1       1       1
##      45  45.327  46.166  46.406  46.596      47  47.417  48.043  48.178      49
##       1       1       1       1       1       1       1       1       1       1
##   49.18      50  50.545      51  51.296  51.775      52  52.119      53      54
##       1       1       1       4       1       1       4       1       2       1
##      55  55.183      56  56.143      57  58.808      59      61      62  62.439
##       2       1       2       1       2       1       2       2       1       1
##  64.715   64.91  65.633  65.954      66  66.174  66.554      67  67.203  67.258
##       1       1       1       1       3       1       1       4       1       1
##  67.644  68.816  69.581  69.655    69.9  70.902  70.964      71  71.046  71.192
##       1       1       1       1       1       1       1       2       1       1
##  71.236  71.389   71.64      72  72.629      73  73.665      74  74.154  74.256
##       1       1       1       1       1       1       1       1       1       1
##  75.839  76.452      77  77.202  77.922      78  78.244      79  79.394      80
##       1       1       2       1       1       3       1       1       1       1
```

```
##  81.422  81.577      82  82.328   82.76  82.777      83      84  84.315  84.547
##       1       1       2       1       1       1       1       1       1       1
##    84.7  84.816  85.009      86  86.195   86.36   86.93  87.269      88  88.241
##       1       1       1       1       1       1       1       1       2       1
##  89.646      90  90.262      91  91.629   91.69      92  92.518   93.21  93.824
##       1       1       1       1       1       1       1       1       1       1
##  93.897  93.989  94.417  95.418      96  96.783  96.922      97  97.194  97.384
##       1       1       1       1       3       1       1       1       1       1
##  97.518  97.532  97.815   98.35  98.679  98.738      99  99.715 100.001 100.473
##       1       1       1       1       1       1       1       1       1       1
## 100.742 101.081 103.625 103.899     104     105 107.023 108.109 108.694     109
##       1       1       1       1       1       1       1       1       1       1
##     110     116     117     118     120     122     124     126     128     133
##       1       2       1       1       1       1       1       1       1       1
##     141 141.526 142.676     143 144.317     146 146.613 147.963 150.697 153.085
##       1       1       1       1       1       1       1       1       1       1
##     154     155     160     173     176     183     193     205     208 209.392
##       1       1       1       1       1       1       1       1       1       1
## 218.751 224.272     227     228     229 229.998 230.575     232 232.178 236.311
##       1       1       2       1       2       1       1       1       1       1
##     238 240.259 242.123   242.3     244     246 248.958     249 252.075     253
##       1       1       1       1       1       1       1       1       1       1
## 256.954     257     258 261.567 261.667     264     265 265.763     267     272
##       1       1       1       1       1       2       1       1       1       1
##     273 274.841     276     278     282     283 284.568     286     287 290.266
##       1       1       1       1       1       1       1       2       1       1
##     292     294     295     297 297.784     298  309.02     310     320 322.481
##       1       1       1       1       1       2       1       1       2       1
##     324     325     326     328     329     331     332     333     338 338.267
##       1       2       1       2       1       2       3       2       1       1
##     339     340     342     344     350     351     352 352.045     355 358.609
##       1       1       1       2       2       2       1       1       1       1
##     360 361.966     364     367 369.091     372 372.249     373     376 377.162
##       1       1       2       1       1       1       1       1       3       1
## 377.926     378 383.636 383.906     384     385     387 389.134 389.966     391
##       1       1       1       1       1       1       1       1       1       1
## 393.675     395     396     398 399.054 399.962 402.148     405     407 407.731
##       1       1       1       1       1       1       1       1       1       1
##     408 408.679     409 411.422     416 417.509     418 418.567     420     423
##       1       1       1       1       1       1       1       1       4       2
##     424     427 430.796     433     434     436     439     440     441     442
##       1       2       1       1       1       1       1       1       1       1
##     443     444 444.547     452     454 456.184     457     458     459     461
##       1       1       1       1       2       1       1       1       1       1
##     463     465 469.913     471     473     475 476.558     477     481 483.524
##       1       2       1       1       1       2       1       1       1       1
##     484     489     490     492     494 496.066     497     499     500     505
##       1       3       1       1       1       1       1       2       1       1
##     509     511     512     516     520     522  522.72 523.922     524 524.006
##       2       1       2       1       1       1       1       1       1       1
## 525.859     529     532  532.38     537     540 543.353     546 551.868 553.241
##       1       1       1       1       1       1       1       1       1       1
## 554.754     556 556.185     557     559     561     562 565.569 567.108     572
##       1       1       1       1       1       1       1       1       1       1
```

```
##     576     577     579     580 580.535 582.204     585     587     592     593
##       1       1       1       1       1       1       1       2       1       1
##     598     605     609     617     622     624     636     638     641     656
##       1       1       1       1       1       1       1       1       1       1
##     658     668     679     692     693     698     704     705     706     708
##       1       1       1       1       1       1       2       1       1       2
##     709     716     722     724     727     728     737     739     741     742
##       1       1       1       1       1       1       2       1       1       1
##     745     751     752     757     759     762     764     765     766     774
##       1       1       1       2       3       1       1       1       1       2
##     786     788     795     800     804     808     810     813     824     831
##       1       1       1       1       1       1       1       1       1       1
##     834     835     849     851     852     854     858     864     873     887
##       1       2       1       1       1       1       1       1       1       1
##     889     890     898     901     908     922     925     932     938     939
##       1       2       1       1       1       1       1       1       2       1
##     945     948     949     961     966     969     970     975     981 986.082
##       1       2       1       1       1       1       1       1       1       1
##     991     999    <NA>
##       1       1     731
```

- Observamos que tenemos **731 valores perdidos**.Guardamos en la variable **idx** los índices de los registros con valores **NA** de la variable **Value**.

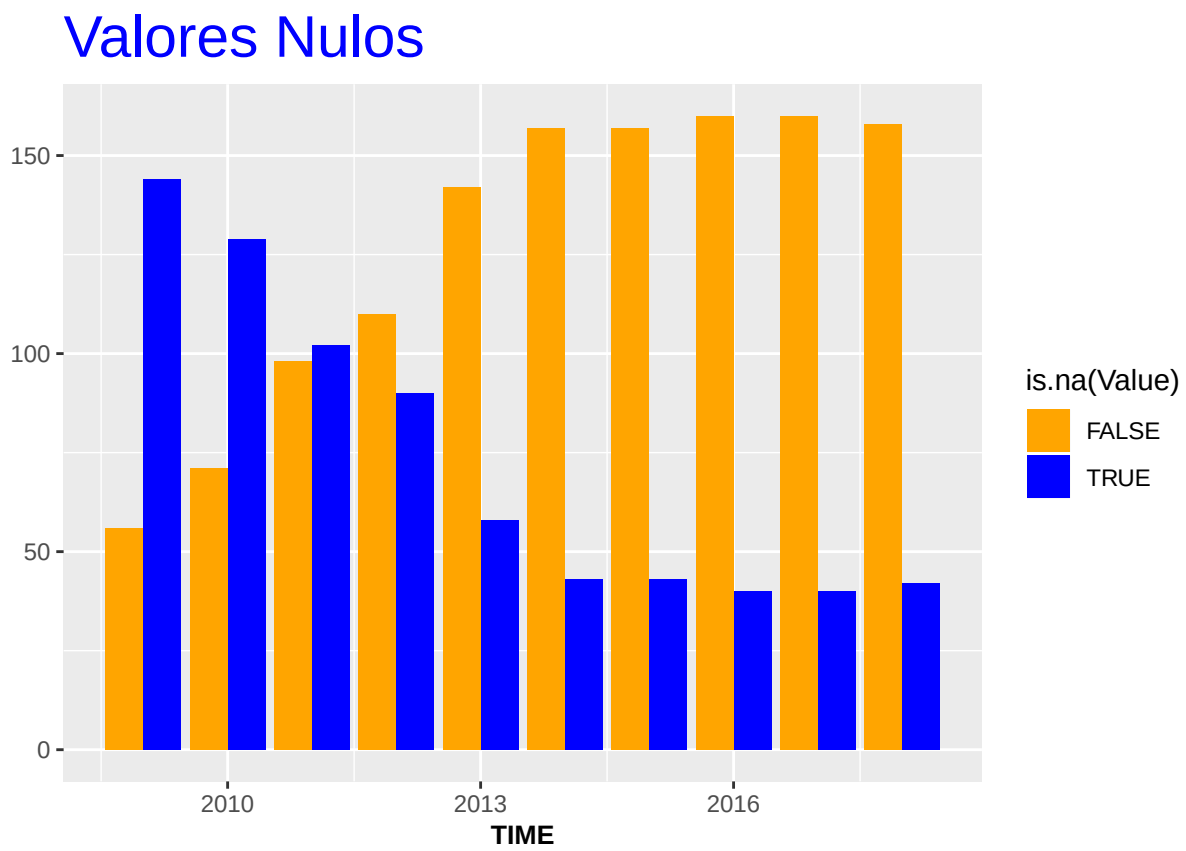
```
idx<-which(is.na(gasto_pro$Value))
length(idx)
```

```
## [1] 731
```

- Grafiquemos la información que contiene la variable **Value**

```
library(ggplot2)
library(scales)
g = ggplot(gasto_pro, aes(TIME, fill=is.na(Value)) ) +
labs(title = "Valores Nulos")+ylab("") +
theme(plot.title = element_text(size = rel(2), colour = "blue"))

g+geom_bar(position="dodge") + scale_fill_manual(values = alpha(c("orange", "blue"), 1)) +
theme(axis.title.x = element_text(face="bold", size=10))
```



- En caso de detectar algún valor anómalo (en nuestro caso los NAS) en las variables tendríamos que realizar una imputación de esos valores o bien sustituyéndolos por la media o usando el algoritmo KNN (k-Nearest Neighbour) con los 3 vecinos más cercanos usando la distancia que consideremos, en este caso usaremos Gower(Mediana), por ser una medida más robusa frente a extremos.

```
library(VIM)
```

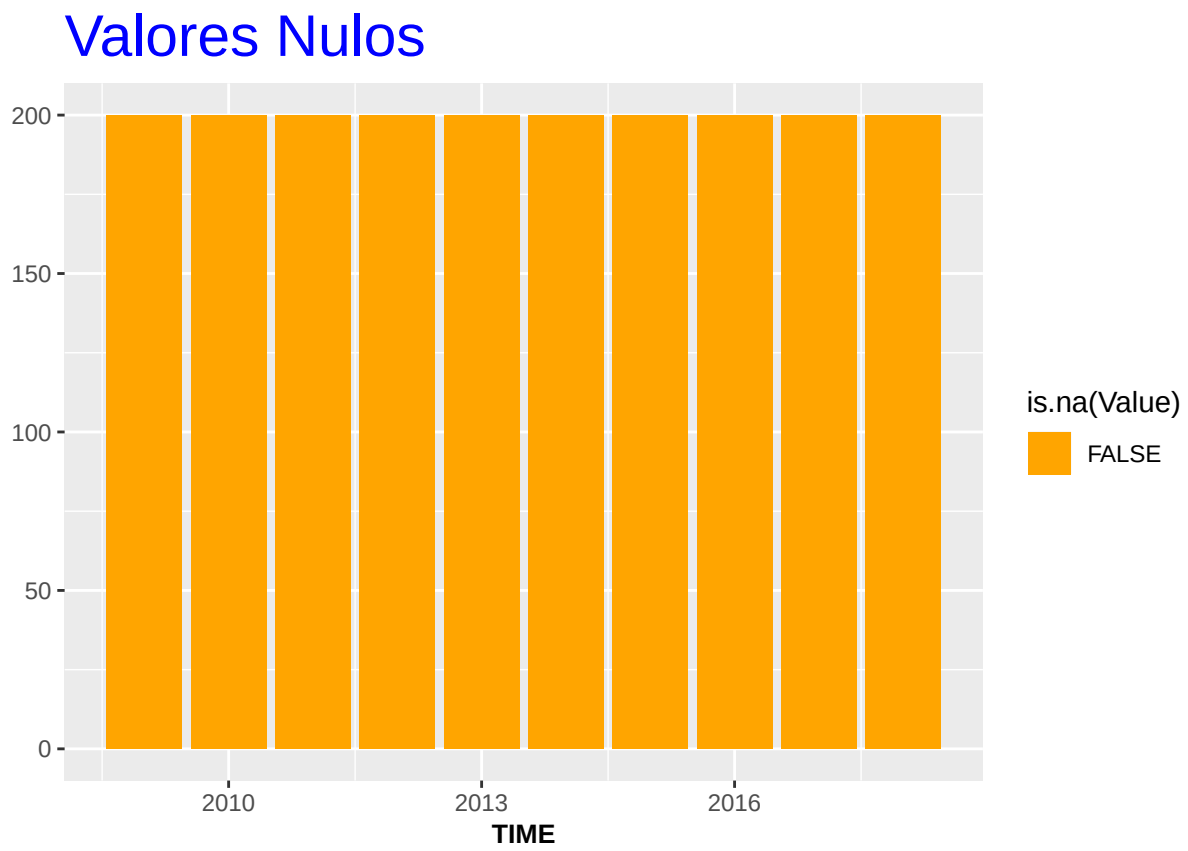
```
## Loading required package: colorspace
## Loading required package: grid
## VIM is ready to use.
## Suggestions and bug-reports can be submitted at: https://github.com/statistikat/VIM/issues
##
## Attaching package: 'VIM'
## The following object is masked from 'package:datasets':
##
##     sleep
```

```
output<-kNN(gasto_pro, variable=c("Value"),k=3)
gasto_pro<-output
```

- Comprobamos que no tenemos valores nulos después de la imputación

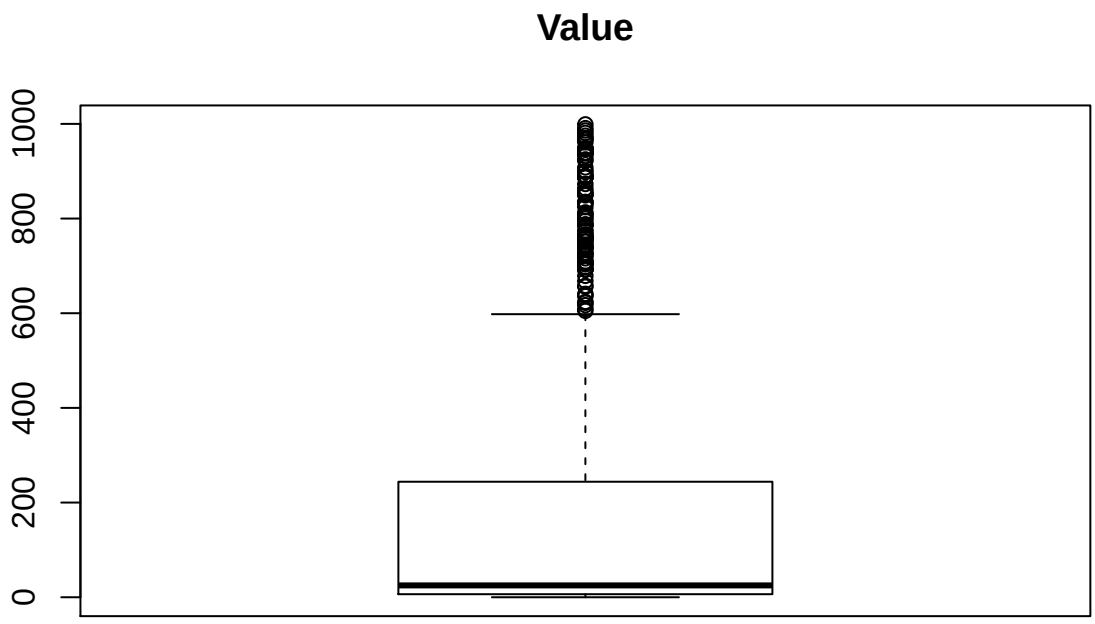
```
g = ggplot(gasto_pro, aes(TIME, fill=is.na(Value)) ) +
labs(title = "Valores Nulos")+ylab("") +
theme(plot.title = element_text(size = rel(2), colour = "blue"))
```

```
g+geom_bar(position="dodge") + scale_fill_manual(values = alpha(c("orange", "blue"), 1)) +
theme(axis.title.x = element_text(face="bold", size=10))
```



- Con el siguiente gráfico, observaremos que la variable **Value** tiene outliers o valores extremos:

```
boxplot(gasto_pro$Value, main="Value")
```



- Por otro lado, revisamos para el resto de columnas si tenemos valores NA.(desconocidos o perdidos)

```
table(gasto_pro$TIME, useNA = "ifany")
```

```
##
## 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018
##  200  200  200  200  200  200  200  200  200  200
```

```
table(gasto_pro$GEO, useNA = "ifany")
```

```
##
##                                    Austria
##                                         50
##                                    Belgium
##                                         50
##                     Bosnia and Herzegovina
##                                         50
##                                   Bulgaria
##                                         50
##                                    Croatia
##                                         50
##                                     Cyprus
##                                         50
##                                    Czechia
##                                         50
##                                    Denmark
##                                         50
##                                    Estonia
```

```
##                                             50
##             Euro area - 12 countries (2001-2006)
##                                             50
##                  Euro area - 18 countries (2014)
##                                             50
##            Euro area - 19 countries  (from 2015)
##                                             50
##        European Union - 15 countries (1995-2004)
##                                             50
##        European Union - 27 countries (2007-2013)
##                                             50
##        European Union - 27 countries (from 2020)
##                                             50
##        European Union - 28 countries (2013-2020)
##                                             50
##                                        Finland
##                                             50
##                                         France
##                                             50
## Germany (until 1990 former territory of the FRG)
##                                             50
##                                         Greece
##                                             50
##                                        Hungary
##                                             50
##                                        Iceland
##                                             50
##                                        Ireland
##                                             50
##                                          Italy
##                                             50
##                                         Latvia
##                                             50
##                                  Liechtenstein
##                                             50
##                                      Lithuania
##                                             50
##                                     Luxembourg
##                                             50
##                                          Malta
##                                             50
##                                    Netherlands
##                                             50
##                                         Norway
##                                             50
##                                         Poland
##                                             50
##                                       Portugal
##                                             50
##                                        Romania
##                                             50
##                                       Slovakia
##                                             50
##                                       Slovenia
```

```
##                                           50
##                                        Spain
##                                           50
##                                       Sweden
##                                           50
##                                  Switzerland
##                                           50
##                               United Kingdom
##                                           50
```

```
table(gasto_pro$UNIT, useNA = "ifany")
```

```
##
## Million euro
##         2000
```

```
table(gasto_pro$ICHA11_HP, useNA = "ifany")
```

```
##
##                              All providers of health care
##                                                       400
##                                        General hospitals
##                                                       400
##                                                Hospitals
##                                                       400
##                                     Mental health hospitals
##                                                       400
## Specialised hospitals (other than mental health hospitals)
##                                                       400
```

Observamos que no existen ahora valores perdidos después de la imputación.La suma de las cantidades de cada variable, suman el total.

- Finalmente, creamos un fichero con toda la información corregida.

```
write.csv(gasto_pro, file="GastoSanitario_Proveedor_clean.csv", row.names = FALSE)
```